

**ECONOMIC AND SOCIAL COMMISSION FOR WESTERN ASIA (ESCWA)**

**InnoCook:  
An Innovation Model to Enhance the Operations and Services of Arab  
Public Institutions**



## Acknowledgements

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## Executive Summary

This report presents InnoCook, a process model to be used by Arab public institutions to produce technology- and process-based innovations that can help meet the SDGs, encompassing SDG16 and beyond, as well as RITE objectives.

The InnoCook model attempts to strike a balance between a descriptive and a prescriptive approach to innovation work. As such, it does not so much focus on a single monolithic process to follow for innovating, but rather describes different pathways to innovation, taking stock of examples, practices, methods and tools and exist already, accommodating them within a uniform framework in a meaningful manner. Thus, the model provides some structure for the processes to be followed for innovation work, while at the same time seeking to leave room for freedom and creativity at different points in the course of this work.

In this respect, it follows a cooking metaphor, to build on the inherently familiar, social, creative and taste-based aspects of cooking. It comprises several ingredients (27 in total), each analysed into different flavours, that are all drawn from what exists already to cover different aspects of an innovation process. These ingredients are then grouped into the who, what, why, where, when and how dimensions of an innovation effort, to allow public institutions to make and enact their own storified plans for innovating. Then, the model provides an overall guideline in the form of basic steps for preparing a full meal, that corresponds to an innovation effort overall, from inception and planning all the way to enactment and evaluation.

In the full report, the model itself is presented in Chapter 2, whereas the different elements from which its ingredients are drawn, as well as different scenarios and advice for its use by Arab public institutions, are presented in surrounding Chapters 1, 3 and 4.

With respect to technology, the InnoCook model is not bound to any specific emerging technology per se but remains rather technology-agnostic. That said, it builds on the role of emerging technologies as an enabler for innovation, by accommodating corresponding ingredients and process advice.

The final recommendations that come out of this modelling work, and which at the same time constitute drivers for designing the InnoCook model, try to use technology in an innovative, rather than routine, way; try to make innovation a part of the government day-to-day, rather than an exceptional activity; and try to approach innovation in a spirit of co-creation, rather than standalone work. It is hoped that these recommendations, together with the InnoCook model itself, can help Arab public institutions find new and more effective and engaging pathways to innovation.

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## INTRODUCTION

### A. THE CONCEPT OF INNOVATION ADOPTED IN THIS REPORT

Innovation is a term used for many years and is globally accepted as something positive. What is new, namely what departs from old, always raises interest both in the sense of curiosity, to try to understand it and familiarize oneself with its implications, and in the sense of hope to see that this new thing might indeed solve the problems associated with old things. The hype that may be created by this curiosity and hope, can become enchantment when this new thing is based on ideas not thought of before, and can alleviate problems of old things. It can also turn into disenchantment when, no matter the novelty of underlying ideas, old problems are not solved, and/or new problems are risked. Therefore, navigating many different definitions that exist for innovation in the relevant literature<sup>1</sup> shows that the meaningfulness of innovation is inextricably linked to tangible improvement and practical response.

In this respect, the present report is based on the definition of innovation by the United Nations<sup>2</sup>: *“Innovation is a creative idea and implementation, which is different from invention. It is the act of conceiving and implementing a new way of achieving a result and/or performing work. An innovation may involve the incorporation of new elements, a new combination of existing elements or a significant change or a departure from traditional ways of doing things. It refers to new products, new policies and programmes, new approaches and new processes. Public sector management innovation may also be defined as the development of new policy designs and new standard operating procedures by public organizations to address public policy problems. Thus, an innovation in public administration may be an effective, creative and unique answer to new problems or a new answer to old problems”*.

In public institutions - namely institutions that, whether belonging to public administration or to the broader public sector, exist to serve public interests - the importance of innovation is even greater, due to four discrete factors. Firstly, the volume of assets and resources that public institutions manage, since all that exists in a country is by default public, unless created by or allocated to the private sector<sup>3</sup>. Secondly, the criticality of the domains in which public institutions intervene, which encompass the domains most vital to the safety and well-being of people, especially under the current conditions of accelerating changes and worldwide crises. Thirdly, the fact that public institutions have an obligation to serve all of society, unlike private institutions that may define their market segment. And fourthly, the fact that public institutions do not have the right to refuse to collaborate with each other, unlike private institutions that may select their private collaborators. These factors render the importance of eventual problems in the operations and services of public institutions even more critical, and thus the role innovation can play in improving those operations and services, making them respond to current and new needs, more crucial. In this respect, the present report adopts a working definition of innovation that specializes the abovementioned definition to:

*the realization and use of new practical methods that tangibly improve a public institution’s processes, services and products which address current and new needs of citizens, businesses and other public institutions.*

This working definition of innovation is underlying many initiatives of Governments and other public institutions, in the Arab region and worldwide, that aim to improve government-to-government<sup>4</sup> (G2G) processes, as well as government-to-citizen (G2C) and government-to-business (G2B) services and products. Three indicative examples, cutting across the different combinations of the process/service/product and G2G/G2C/G2B varieties, are briefly mentioned in Table 1.

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<sup>1</sup> Innovation, 2023.

<sup>2</sup> United Nations, Economic and Social Council, Committee of Experts on Public Administration, 2006.

<sup>3</sup> Meant, in this sense, to encompass citizens, as private natural persons, as well as businesses, as private legal persons.

<sup>4</sup> The term “government” being used here, for simplicity, as a collective reference to Governments in the strict sense, public administrations, as well as public institutions in general.



**Table 1. Examples of innovation underlying Government initiatives<sup>a</sup>**

Nr.	Name	Type	Description
#1	Oman e-Voting System	G2C	The system was implemented in 2011 and first deployed in 2019. The novelty aspects stem from the fact that paper-based proof of identify and vote casting have been replaced by their digital counterparts. Its practical aspects are based on providing smart ID cards to Omani citizens, which they can use to authenticate themselves and vote online. The tangible improvements it brings to the citizens' experience include the ability to vote remotely (even from abroad) and the elimination of vote-counting issues. The main technological enabler for this innovation is electronic identification technologies.
#2	Swedish Lantmäteriet Geodata Portal	G2B	Lantmäteriet is an authority within the Swedish Ministry of Rural Affairs and Infrastructure, responsible for providing the public sector, businesses and citizens with geospatial data on properties, buildings, roads, landscapes and population via a national geodata portal. The novelty aspects are that digital transformation allows for geospatial data in layered and re-usable forms, and at a fraction of paper-based costs. Its practical aspects are based on an easy-to-use website and contents. The tangible improvements, from a business's perspective, include the ability to plan and decide on business issues in a way informed by geospatial data that minimizes risks of oversight. The main technological enabler for this innovation is geospatial data management technologies
#3	Greek National Communication Register (NCR)	G2B	NCR allows all Greek public administrations to access the same contact details to interact with Greek citizens. The novelty aspects stem from the fact that the register is updated by the citizens themselves, and correlates, for the first time, all major identification numbers used at national level, i.e., tax register, identity card and social security numbers. Its practical aspects, from the public administrations' perspective, is the ability to have access to NCR through a standardized one-off request to the Greek Public Sector Interoperability Center <sup>b</sup> . The tangible improvements to the public administrations' experience include the ability to interact with citizens using reliable contact data that, public administrations do not have to maintain themselves. The main technological enabler for this innovation is web service technologies.

Sources: Compiled by the Author from <https://opengov.unescwa.org/node/1175>, Lantmäteriet, n.d. and Greece, Ministry of Digital Governance, 2023.

Notes:

<sup>a</sup> The examples used in this report are numbered consecutively throughout the report to facilitate reference.

<sup>b</sup> More information available from <https://www.gsis.gr/en/public-administration/ked> (in Greek)

As can be seen from the above examples, technology has a common role in all three, just as in many others. In all these examples, public administrations, with inspiration from technology, have imagined practical new ways of doing things with some tangible improvements using technology as an enabler to realize them. In this respect, the concept of innovation adopted in the present report, is finally updated as:

the realization and use of new practical methods that tangibly improve a public institution's processes, services and products which address current and new needs of citizens, businesses and other public institutions, using technology as an enabler.

## B. OBJECTIVE OF/REASON FOR THIS REPORT

As the OECD Observatory of Public Sector Innovation mention in one of their blog posts (Roberts & Tönurist, 2018), "*Innovation is a many-splendored thing*". This multi-faceted nature of innovation, which is demonstrated in the number of different processes for innovating that exist in the literature, from top-down vs. bottom-up, incremental vs. disruptive, to local and sustainable innovation, to name but a few, is further exacerbated by theoretical approaches, such as Kondratiev's waves of innovation (Kondratiev wave, 2023.) and Schumpeter's gale of creative destruction (Creative destruction, 2023) to more recent works by Etzkowitz and Leydesdorff on the triple helix model of innovation (2023) and Caragiannis and Campbell's quadruple and quintuple helix innovation (2023), and often leads to the quest for innovation appearing, in the eyes of public institutions, as a gordian knot, that risks paralyzing, rather than catalysing, practical action. At the same time, the equally multi-faceted relationship between innovation and technology, exemplified in sources like UNCTAD's recent Technology and Innovation Report 2023 (UNCTAD, 2023) and the OECD Data Innovation and Technology topical webpage (OECD Data, n.d.), often gives rise to the incapacitating idea that absence of latest technology is a *barrier* to innovation, instead of laying the grounds for the capacitating idea that innovation is an *enabler* to the meaningful use of technology.

To overcome these difficulties, to which public institutions, like all other innovation actors, are

susceptible, guidance is needed. Thus, the need for the innovation model presented in this report. A model which, in acknowledgement of the complexity of innovation thinking and practice, is not conceived as a normative or prescriptive guideline, to specify how things should be, but rather as a descriptive guideline, to accommodate how things are, and how they could be. The final purpose of this model, and its ultimate usefulness, would be to help Arab public institutions in *turning the new into the normal*, as the OECD Observatory of Public Sector Innovation very succinctly put it on their home page<sup>5</sup>.

This model is targeted at enhancing not only the final services and products delivered by public institutions, but also their internal operations, given that the former constitutes an outcome of the latter. To quote from the working definition of innovation adopted in this report, if the internal processes of a public institution are not tangibly improved by the realization and use of new practical methods using technology as an enabler, it is hard to see how this could happen for the end services and products, or how innovation could be turned into the new normal.

This spirit of enhancing both the operations and the services of public institutions stems, at the same time, from the premise that, at the end of the day, public sector innovation becomes meaningful to the extent that it visibly helps to accomplish some objectives, and these comprise both public-facing and internal-facing objectives. Therefore, the innovation model reported considers certain objectives, shown in Table 2, for the innovation work of Arab public institutions.

**Table 2. Public-facing and Internal-facing objectives of innovation in Arab public institutions**

Nr.	Name	The objective is met when...
<b>Public-facing objectives</b>		
Op.1	<i>Innovation for responsiveness</i>	Better responsiveness to citizen and business needs can be demonstrated as a result of innovation. Responsiveness, in this context, is meant in the dictionary sense of the term, as <i>“the quality of reacting quickly and positively”</i>
Op.2	<i>Innovation for inclusiveness</i>	Better inclusiveness of citizens, businesses, CSOs and the academia in the service design process of public institutions can be demonstrated as a result of innovation. Inclusiveness, in this context, is meant in the dictionary sense of the term, as <i>“the practice or policy of providing equal access to opportunities and resources for people who might otherwise be excluded or marginalized, such as those having physical or intellectual disabilities or belonging to other minority groups”</i>
Op.3	<i>Innovation for transparency</i>	Better transparency of government <sup>a</sup> decisions (e.g., spending decisions) and processes (e.g., service delivery workflows) to all of society can be demonstrated because of innovation. Transparency, in this context, is meant in the sense of the Open Government Partnership’s <sup>b</sup> value of access to information and OGP’s conceptualization of transparency in general.
Op.4	<i>Innovation for accountability</i>	Better mechanisms for accountability of government work to all of society can be demonstrated as a result of innovation. Accountability, in this context, is meant in the sense of the OGP value of public accountability and OGP’s conceptualization of public accountability in general.
<b>Internal-face objectives</b>		
Oi.1	<i>Innovation for effectiveness</i>	Better effectiveness of government work can be demonstrated because of innovation. Effectiveness, in this context, is meant in the sense of <u>achieving a bigger part of set internal goals</u> .
Oi.2	<i>Innovation for efficiency</i>	Better efficiency of government work can be demonstrated as a result of innovation. Efficiency, in this context, is meant in the sense of <u>improving internal result/cost ratios</u> , not necessarily by cutting down costs, but also, and perhaps more importantly, by <u>bringing about more results with the same costs</u> .

Source: Compiled by the Author

Note:

<sup>a</sup> The term “government”, for simplicity, is considered as a collective reference to Governments in the strict sense, public administrations, as well as public institutions in general.

<sup>b</sup> OGP information was sourced from OGP, 2019 and OGP, ©2023.

All these objectives contribute to a positive impact of innovation upon public institutions, and upon all of society that stands to benefit from public institutions’ service and product offerings, as well as from their more effective and efficient use of the resources. At the same time, these objectives inherently encompass several contextual factors, such as changing needs of citizens and businesses; changes and crises at a regional and global level, that create new challenges for resilience; as well as emergence of new technologies, that bring forward new capabilities which can be used as innovation enablers.

<sup>5</sup> For additional information on the OECD Observatory of Public Sector Innovation see <https://oecd-opsi.org/>.

### C. RELATIONSHIP WITH SDGs

The relationship between innovation and the United Nations Sustainable Development Goals is reminiscent of a star topology<sup>6</sup>. Indeed, it is hard to identify any goal from the UN SDGs for whose achievement innovation, in the sense adopted in this report, could not be imagined helping in several ways. This is also testified by several UN reports on that matter, including early reports by UNDP (2017) and UNCTAD (2017), as well as more recent reports by the UN Inter-Agency Task Team on STI for the SDGs and UNIDO (2022).

At the same time, in view of the public-facing and internal-facing innovation objectives which this report considers, it primarily focuses on the relationship of innovation in the Arab public institutions to selected goals and targets from the UN SDG spectrum, as follows:<sup>7</sup>:

- SDG16. Peace, Justice and Strong Institutions “Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels”, and especially
  - Target 16.6: “Develop effective, accountable and transparent institutions at all levels”, and
  - Target 16.7: “Ensure responsive, inclusive, participatory and representative decision-making at all levels”.
- SDG.11 Sustainable Cities and Communities: “Make cities and human settlements inclusive, safe, resilient and sustainable”; and
- SDG.17 Partnerships for the Goals: “Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development”, and especially
  - Target 17.7 “Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed”.

Based on this focus on the relationship of innovation with specific sustainable development goals and targets, the present report considers a set of additional societal (meant as defined for society as a whole) objectives for the innovation work of Arab public institutions (see Table 3). These objectives are as follows:

**Table 3. Societal objectives for innovation in Arab public institutions**

Nr	Name	The objective is met when...
Os.1	Innovation for peace	The promotion of living in peace for all of society. Living in peace, in this context, is considered both through peacebuilding and through peacekeeping.
Os.2	Innovation for justice	Better access to justice for all of society.
Os.3	Innovation for safety	Living protected against crime and violence.
Os.4	Innovation for disaster resilience	Making cities and settlements more resilient to natech hazards. Disaster resilience, in this context, is primarily considered through disaster risk reduction
Os.5	Innovation for climate resilience	Making cities and settlements more climate resilient. Climate resilience, in this context, is primarily considered through improved environmental footprint and climate change mitigation and adaptation.
Os.6	Innovation for green technology adoption	Adoption of green technologies by cities and settlements innovation. Green technology adoption, in this context, is meant in the sense of openness to the adoption of environmentally sound technologies at both the city/settlement and business/household/individual level.
Os.7	Innovation for cities deciding openly	Cities are more open to responsive, inclusive, participatory, and representative decision-making as a demonstrated result of innovation.

Source: Compiled by Author.

To showcase how these societal objectives are attainable through innovation, be it innovation carried out by public institutions alone or in collaboration with external stakeholders, some indicative examples are provided (Additional examples are available in Annex A.1)

<sup>6</sup> In telecommunications, star topology is a network topology in which each network component is physically connected to a central node (Rouse, 2023). Metaphorically speaking, herein innovation can be imagined as a central node of a star connecting it to all SDGs.

<sup>7</sup> For additional information on the SDGs see <https://sdgs.un.org/goals>.

**Table 4. Examples of innovation and societal objectives<sup>a</sup>**

Ex #	Name	Os. #	Novelty aspects	Practical aspects	Tangible improvements	Technological enabler
4	People for Peace	Os.1	Highlights individual living in peace contributors within the UN and beyond, allowing them to speak for themselves	Disseminates using easily accessible text-photo webpages which are available as a growing collection. Uses stories as presentation format	Recognition and example-setting for peace work, that could serve as a multiplier for future work.	Standard webpage technologies
5	Plain Language and Style Guide <sup>b</sup> (Argentina)	Os.2	Focuses on outcomes, rather than the processes of the work and documents solutions as a guide	Provides publicly available examples of plain language and textual presentations for written court decisions, as well as structures for twitter posts to inform the public.	Citizens can easily understand court decisions without the help of lawyers	Online collaboration technologies
6	Dubai Smart Police Stations (UAE)	Os.3	Moves the presence of police personnel from physical to remote	24/7 accessibility in several locations offering a range of services from community support to traffic and criminal reporting through a multi-lingual interface.	Citizens enjoy increased accessibility to police services and have the certainty that the reports filed will be properly considered	Audio/video and remote communication technologies
7	Urban Resilience.AI Lab research <sup>c</sup>	Os.4	Leverages analytic capabilities based on big data from several types of social and technical sensors	Uses data sources that already exist, for analysis of resilience aspects before, during and after the occurrence of disasters	Improved abilities to mitigate the impact of hazards on communities, especially the most vulnerable areas	Artificial intelligence, big data, satellite, and sensor technologies
8	Solar power microgrids (Puerto Rico)	Os.5	Moves the energy grid idea down to a micro-scale	Uses a renewable energy source that ensures supply during climate disasters and mitigates the acceleration of climate change. Deploys autonomous micro-grids not affected by backbone energy network failures	Energy resilience during and after disasters events	Renewable energy technologies
9	Digital Water City	Os.6	Employs a spectrum of digital technologies to modernize water and sewage infrastructures	Develops an inventory of solutions that cover the entire cycle of drinking water, sewage water and ground water	Improved abilities to monitor and safeguard the quality and quantity of all water resources for urban and peri-urban stakeholders.	Sensor, UAV, AI, cloud computing, AR and mobile technologies
10	Nonconform approach for city planning	Os.7	Involve city planning stakeholders in an adaptable and easy-to-go participation process	Includes a holistically defined number of stakeholders and uses physical presence and models for interaction and co-creation.	An accessible format for citizens to voice their views, and inclusive and sustainable planning decisions for cities.	Large facilities for photos/posters, meeting space and the physical modelling of space plans.

Sources: Compiled by the Author from United Nations Peacekeeping, n.d.; Head, 2021; Heller, 2021; OGP, 2021; Udawatte, 2023 United Arab Emirates, Dubai Police, 2023a and 2023b; Chapman, 2023; Moloney, 2023; Casa Pueblo, n.d.; Digital Water City, n.d. and Harby, 2021.

Notes:

<sup>a</sup> The examples used in this report are numbered consecutively throughout the report to facilitate reference. Further innovation examples of the societal objectives is given in Annex A.1, while examples corresponding to SDG goals and targets, can be accessed from <https://publicadministration.un.org/unpsa/database/UNPSA-Initiatives-and-the-SDGs>.

<sup>b</sup> To access the guide see go to <https://juzgado10pcyf.github.io/#/en/lenguaje-claro>. For additional information on open justice see <https://www.opengovpartnership.org/policy-area/justice/>.

<sup>c</sup> For additional information on the Urban Resilience.AI Lab see <https://www.urbanresilience.ai/research>.

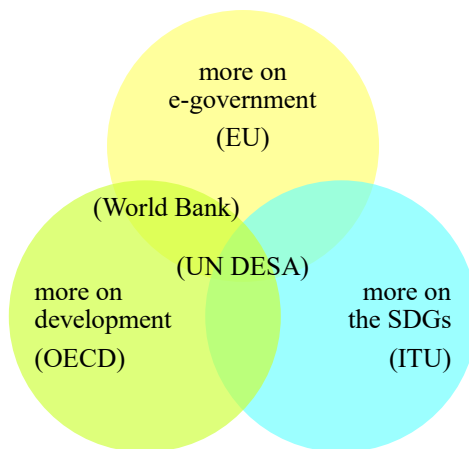
## I. INNOVATION IN THE PUBLIC SECTOR

### A. CURRENT TRENDS AND PRACTICES RELATED TO INNOVATION IN PUBLIC INSTITUTIONS

The study of current trends and practices related to innovation in public institutions for this report has been based on the analysis of the trends and examples featured in well-established international reports on the advancement of e-government, government innovation and the digital transformation of the public sector. A total of 21 reports<sup>8</sup>, published over the last 3 years were analysed and the results show varying levels of focus in government innovation (Figure 1).

The EU *eGovernment Benchmark* reports tend to focus more on government innovation for e-government, the OECD Observatory for Public Sector Innovation (OPSI) and Mohammed Bin Rashid Centre for Government Innovation (MBRCGI) *Government Innovation* reports on government innovation for development, and the ITU *WSIS Stocktaking* reports on government innovation for the SDGs. the World Bank *GovTech Maturity Index* reports have a shared focus on government innovation for e-government and development alike, and the United Nations Department of Economic and Social Affairs (DESA) *E-Government Survey* reports tend to have a balanced focus on all three domains, showcasing government innovation for e-government, for development and for the SDGs. More important from the above differences, however, is the complementarity that these reports provide, which helps to draw a more inclusive picture of the directions along which public institutions worldwide tend to innovate.

**Figure 1. Varying tendencies in innovation focus**



Source: Formulated by the Author based on an analysis of the EU eGovernment Benchmark, OECD OPSI & MBRCGI Government Innovation, ITU WSIS Stocktaking, World Bank GovTech Maturity Index and UN DESA E-Government Survey report series.

A total of 171 trends and practices and 288 examples featured in the reports published from 2020 to 2023 and were selected (see Annex A.2 for additional information), to showcase the innovative work of public institutions from many different countries to advance e-government, development and the achievement of the SDGs. Figure 2 provides a quick visual glimpse at the main terms mentioned in the wordings of these trends and practices, to give a first rough idea of the innovation directions undertaken.

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<sup>8</sup> Reports covered are the EU eGovernment Benchmark (EC CONNECT, 2020, 2021 and 2022), The World Bank GovTech Maturity Index (Dener and others, 2021; World Bank 2022), the OECD & MBRCGI Government Innovation (OECD OPSI & MBRCGI 2020a-e, 2021-2022a-c, 2023), the DESA E-Government Survey (United Nations, Department of Economic and Social Affairs 2020, 2022) and the ITU WSIS Stocktaking report series (ITU 2020a-b, 2021, 2022a, b).

**Figure 2. Word cloud of the top-40 terms<sup>a</sup> most mentioned in the wordings of the innovation trends and practices identified<sup>b</sup>**



Source: Compiled by the Author.

Notes:

<sup>a</sup> Terms are taken from the EU eGovernment Benchmark, OECD OPSI & MBRCGI Government Innovation, ITU WSIS Stocktaking, The World Bank GovTech Maturity Index and UN DESA E-Government Survey report series.

<sup>b</sup> Larger size fonts denote more occurrences

At the same time, these trends and practices lend themselves to clustering into some more general patterns for innovation in public institutions.

As a first pattern, the trends and practices studied locate the focus of innovation work undertaken by governments (and public institutions in general) at different levels, such as 1) using technology to provide new service capabilities and improved quality of service; 2) re-organizing operational structures and service-delivery processes made possible by the capabilities of technology; 3) regulating new technology so that it can be used to preserve and advance, citizens’ rights; 4) institutionalizing innovation as a core policy and function, accompanied by the establishment of new entities with a clear innovation mandate; and 5) building skills and a culture that can take stock of new technologies. In all cases, the guiding question to identify these different levels is:

*“what are we doing with our work?”*

These different focus levels of innovation work are presented in Table 5, together with trends and practices that may best illustrate them.

**Table 5. What are we doing with our work? Different focus levels of innovation work for governments and public institutions<sup>a</sup>**

Focus level (Fl)	Sampled trends and practices
Fl.1. use of technology to provide new service capabilities and improved quality of service	<ul style="list-style-type: none"> <li>• Transparency: Machine learning algorithms provide users with accurate estimations for the duration of the service delivery. (EU2<sup>b</sup>)</li> <li>• Substantial interest in developing government gateways, service bus, interoperability frameworks and cloud platforms for government enterprise architecture. (WB3)</li> <li>• AI, chatbots, blockchain, IoT and drones, inter alia, are used to reduce administrative burden, strengthen oversight and better service quality (WB10).</li> <li>• Core Government Systems: Government cloud (WB11).</li> <li>• GovTech Enablers: Digital signature (WB34).</li> <li>• Digital government at the local level: key areas include smart cities, intelligent transportation, precision agriculture and health care (UND38).</li> </ul>
Fl.2. re-organization of operational structures and service-delivery processes made possible by, and to take better advantage of, the capabilities offered by technology	<ul style="list-style-type: none"> <li>• Efforts are needed to expand the issuance of unique national IDs at birth and civil registration (WB9).</li> <li>• Core Government Systems: Shared platforms (WB14).</li> <li>• Seamless Government Theme 1: Invisible government (OOM6).</li> <li>• Seamless Government Theme 2: Matrixed government (OOM7).</li> <li>• Seamless Government Theme 3: Anticipatory government (OOM8).</li> <li>• Digital transformation in the public sector: Cognitive government leverages hindsight, real-time data, and foresight to drive policy- and decision-making (UND35).</li> </ul>

Fl.3. regulation of new technology so that it can be used in ways preserving, and even advancing, citizens' rights	<ul style="list-style-type: none"> <li>• Trend 1: New forms of accountability for a new era of government / Algorithmic accountability (OOM24).</li> <li>• Trend 1: New forms of accountability for a new era of government / New aspects of transparency (OOM25).</li> <li>• Trend 3: New methods for preserving identities and strengthening equity / Counteracting the creation of a gig economy underclass (OOM31).</li> <li>• (The role of digital government in the COVID-19 pandemic: consider unintended consequences of technology use and actively protect sensitive data and people's privacy and security (UND16).</li> <li>• Digital transformation in the public sector: Cybercrime and skills gaps challenge law enforcement, especially in cross-border contexts (UND33).</li> <li>• Digital transformation in the public sector: Non-uniform data protection regulations create conflicts for data sharing across jurisdictions (UND34).</li> </ul>
Fl.4. institutionalization of innovation as a core policy and function, accompanied by establishment of new entities with a clear innovation mandate	<ul style="list-style-type: none"> <li>• Digital government strategies and action plans establish institutions to support GovTech with focus on a whole-of-government approach, data-driven public sector, digital skills development, and innovation labs (WB7).</li> <li>• Core Government Systems: National strategy on disruptive/innovative technologies (WB16).</li> <li>• GovTech Enablers: GovTech institutions (WB29).</li> <li>• (GovTech Enablers: Public sector innovation strategy or program (WB36).</li> <li>• GovTech Enablers: Public sector innovation entity (WB37).</li> <li>• GovTech Enablers: GovTech start-ups (WB38).</li> </ul>
Fl.5. building of skills and culture enabling to take stock of new technologies	<ul style="list-style-type: none"> <li>• GovTech Enablers: Digital skills strategy or program (WB35).</li> <li>• Upskilling and Investing in People Theme 1: Investing in the public as a critical resource (OOM14).</li> <li>• Upskilling and Investing in People Theme 2: Upskilling the public service to unlock the potential of government (OOM15).</li> <li>• Towards data-centric e-government: overcome low understanding of data/data science, low political priority, low data leadership, resource constraints, quality, security and privacy concerns (UND10).</li> <li>• Towards data-centric e-government: harvesting public value from data requires long-term vision and mastering data governance economics, politics, security, privacy via whole-of-government approaches, frameworks, strategies, leadership and data ecosystems (UND11).</li> <li>• Capacities for digital transformation: put people needs first, promote digital inclusion, ensure that all can access new technologies to improve their wellbeing (UND14).</li> </ul>

Source: Compiled by the Author from Dener and others, 2021; EC CONNECT, 2020; OECD OPSI & MBRCGI, 2020b, 2020e, 2023; World Bank, 2022; United Nations, Department of Economic and Social Affairs, 2020, 2022.

Notes:

<sup>a</sup> The trends and practices have been selected from the overall set presented in Annex A.2, which also provide associated examples of implemented innovation cases.

<sup>b</sup> Identification code assigned to each trend and practice based on an abbreviation of the author and sequential numbering.

As a second pattern, the trends and practices studied tend to identify the envisaged beneficiaries of innovation work undertaken by governments (and public institutions in general) at different levels, such as 1) the governments themselves, in the sense of improved operations quality; 2) national citizens and businesses; 3) incoming citizens and businesses; 4) all of society, explicitly including people at disadvantage and at crisis and 5) the broader cross-border region. In all cases, the guiding question to identify these different levels is:

*“for whom are we doing this work?”*

These different levels of envisaged beneficiaries for innovation work are presented in Table 6, together with trends and practices that may best illustrate them.

**Table 6. For whom are we doing this work? Different envisaged beneficiaries of innovation work for governments and public institutions<sup>a</sup>**

Envisaged beneficiaries (Be)	Sampled trends and practices
Be.1. the governments themselves, in the sense of improved operations quality	<ul style="list-style-type: none"> <li>• Key enablers: Big data and cloud solutions enable governments to federate data sources, simplify and automate the filling in of forms for increased efficiency of eGovernment services (EU4<sup>b</sup>).</li> <li>• eID: the key to accessing eGovernment (EU16).</li> <li>• Core government systems remain disconnected, with point-to-point and unsecured data exchanges (WB2).</li> <li>• Core Government Systems: Core systems for central government operations (WB13).</li> <li>• Core Government Systems: Open-source software (WB15).</li> <li>• Impact of the COVID-19 pandemic: Procurement processes are improved to allow responding expeditiously to urgent demands (UND19).</li> </ul>
Be.2. national citizens and businesses	<ul style="list-style-type: none"> <li>• User Support: Providing Online Help (EU35).</li> <li>• (Public Service Delivery: Online service portals (WB17).</li> <li>• Public Service Delivery: Tax online services and e-filing (WB18).</li> <li>• Public Service Delivery: E-payment services (WB20).</li> <li>• Public Service Delivery: Social insurance/pension online services (WB21).</li> <li>• Public Service Delivery: Job portal (WB22).</li> </ul>
Be.3. incoming citizens and businesses	<ul style="list-style-type: none"> <li>• Cross-border mobility: Seamless and interoperable services allow citizens and businesses access to user-friendly online services in other countries, delivering on the potential of a Digital Single Market (EU3).</li> <li>• Cross-border online availability: accessing services across Europe (EU20, EU44).</li> <li>• Cross-border user support: assisting international users (EU21, EU45).</li> <li>• Cross-border eID: online identification across borders (EU22).</li> <li>• Cross-border eDocuments: online files across borders (EU23, EU47).</li> <li>• Rethink the user: tailor services for nationals as well as cross-border users (EU25).</li> </ul>
Be.4. all of society, explicitly including people at disadvantage and at crisis	<ul style="list-style-type: none"> <li>• Rethink the user: ensure perceivable, operable, understandable and robust websites for persons with disabilities (EU26).</li> <li>• Innovative COVID-19 Responses Theme 3: Social solidarity and caring (OOM3).</li> <li>• Focusing on the Overlooked Theme 1: New opportunities for the often neglected (OOM9).</li> <li>• Focusing on the Overlooked Theme 2: Bridging the urban-rural divide (OOM10).</li> <li>• Trend 3: New methods for preserving identities and strengthening equity / Enabling families and communities (OOM30).</li> <li>• Digital transformation in the public sector: Cloud computing facilitates disaster response and humanitarian efforts (UND32).</li> </ul>
Be.5. the broader cross-border region	<ul style="list-style-type: none"> <li>• (Governing Cross- Border Challenges Theme 1: Building cross-border governance bodies (OOM16).</li> <li>• Governing Cross- Border Challenges Theme 2: Innovative networks tackling cross-border collaboration (OOM17).</li> <li>• Governing Cross- Border Challenges Theme 3: Exploring emerging governance system dynamics (OOM18).</li> <li>• Surfacing Insights and Experimenting Across Borders Theme 2: Experimenting and testing across borders (OOM20).</li> <li>• Delivering and Enabling Impactful Cross-Border Solutions Theme 1: Delivering joint cross-border policy and solution-oriented services (OOM21).</li> <li>• Delivering and Enabling Impactful Cross-Border Solutions Theme 2: Digital architecture enabling cross-border innovation (OOM22).</li> </ul>

Source: Compiled by the Author from Dener and others, 2021; EC CONNECT, 2020, 2021, 2022; OECD OPSI & MBRCGI, 2020a, 2020c, 2021-2022a-c, 2023; United Nations, Department of Economic and Social Affairs, 2022; World Bank, 2022.

Notes:

<sup>a</sup> The trends and practices have been selected from the overall set presented in Annex A.2, which also provide associated examples of implemented innovation cases.

<sup>b</sup> Identification code assigned to each trend and practice based on an abbreviation of the author and sequential numbering.

As a third pattern, the trends and practices studied tend to identify the co-creation actors of innovation work undertaken by governments (and public institutions in general) at different levels, such as 1) across the government, in the sense of multiple government branches coming together; 2) across borders, in the sense



of multiple governments coming together; 3) multiple-helix actors, such as the private sector, the academia, the civil society and the media; and 4) all of society, in the sense of all citizens. In all cases, the guiding question to identify these different levels is:

*“with whom are we doing this work?”*

These different levels of co-creation actors for innovation work are presented in Table 7, together with trends and practices that may best illustrate them.

**Table 7. With whom are we doing this work? Different co-creation actors of innovation work for governments and public institutions<sup>a</sup>**

Co-creation actors (Ca)	Sampled trends and practices
Ca.1. across the government, in the sense of multiple government branches coming together	<ul style="list-style-type: none"> <li>• (EC DG CONNECT 2022) Realign the user journey: overcome service gaps across multiple layers of government (EU29<sup>b</sup>).</li> <li>• Reinforce the interoperability ambition: promote interoperable data exchange to deliver more services proactively (EU31).</li> <li>• GovTech Enablers: Data governance institutions (WB30).</li> <li>• GovTech Enablers: Whole-of-government approach (WB32).</li> <li>• Towards data-centric e-government: optimize government data use for productivity, accountability, inclusivity, trustworthiness of public institutions, in line with SDG16 principles (UND9).</li> <li>• Digital transformation in the public sector: Agile and adaptive government is flexible in, inter alia, policymaking, regulation, procurement and workforce (UND36).</li> </ul>
Ca.2. across borders, in the sense of multiple governments coming together	<ul style="list-style-type: none"> <li>• Cross-Border eID: Borderless Online Identification (EU46).</li> <li>• Delivering and Enabling Impactful Cross-Border Solutions Theme 3: Adding a cross-border dimension to upskilling and capacity building (OOM23).</li> <li>• Regional challenges, opportunities and initiatives: UN Regional Commissions play an important leading or coordinating role (UND1).</li> <li>• Regional challenges, opportunities and initiatives: focus on digital trade, digital economy, open government, open data, user-centric evaluation, disaster risk mitigation, large-scale digitalization of core public sector functions, adoption of national/regional strategic digital policies and implementation plans (UND2).</li> <li>• Regional challenges, opportunities and initiatives: importance of regional cooperation and relevance of digital transformation for specific regional challenges and the SDGs (UND3).</li> <li>• International and Regional Cooperation (ITU18, ITU36, ITU54).</li> </ul>
Ca.3. multiple-helix actors, such as the private sector, academia, civil society and the media	<ul style="list-style-type: none"> <li>• Few governments record or report transparently GovTech investments, results achieved, and challenges faced (WB1).</li> <li>• Few countries engage in public-private partnerships to draw on private sector skills, innovations and investments to address public sector challenges (WB8).</li> <li>• Surfacing Insights and Experimenting Across Borders Theme 1: Surfacing ground-up insights and collective intelligence (OOM19).</li> <li>• Local e-government development: need for involvement of local residents, public and private sector entities, NGOs and INGOs/IGO, incentives for SMEs to partner in innovative smart city projects and sharing of successful smart city initiatives (UND5).</li> <li>• Impact of the COVID-19 pandemic: Governments upgrade information-sharing systems between health-care providers, government agencies and the public (UND27).</li> <li>• Importance of engaging the private sector: Governments invest more in R&amp;D for high-growth and high-risk areas (UND28).</li> </ul>
Ca.4. all of society, in the sense of all citizens	<ul style="list-style-type: none"> <li>• Only few multifunctional citizen participation portals allow to submit petitions, publish citizen inputs, provide anonymous feedback, or post government’s response (WB6).</li> <li>• E-Participation: rising of multi-function platforms, ideation forums, new policy consultations/e-petitions, opinion surveys, complaint filing, corruption reporting, idea/innovation generation (UND6).</li> <li>• E-Participation: boundaries between public and private initiatives blur by private and NPO platforms for citizen action or user feedback (UND7).</li> <li>• Digital transformation in the public sector: Governments empower and engage the public in development discussions and decisions on an ongoing basis (UND29).</li> <li>• Leaving no one behind in the digital society: equity innovation that promotes equity, often with multistakeholder input (UND40).</li> </ul>

- Leaving no one behind in the digital society: inclusive innovation, via service development for and by those excluded from mainstream development (UND41).

Source: Compiled by the Author from Dener and others, 2021; EC CONNECT, 2022; ITU, 2020a, 2020b, 2021, 2022a, 2022b; OECD OPSI & MBRCGI, 2021-2022b-c; United Nations, Department of Economic and Social Affairs, 2020, 2022; World Bank, 2022.

<sup>a</sup> The trends and practices have been selected from the overall set presented in Annex A.2, which also provide associated examples of implemented innovation cases.

<sup>b</sup> Identification code assigned to each trend and practice based on an abbreviation of the author and sequential numbering.

These patterns of government innovation trends and practices, together with their nuances, are cross-checking and can be further complemented by government innovation trends identified recently<sup>7</sup> from additional sources, such as Deloitte’s *Government Trends 2023* (Deloitte, 2023). Deloitte’s analysis identifies a total of 5 cross-cutting and 4 domain-focused<sup>9</sup> trends for the workings of government. These trends cross-reference with the trends and practice patterns identified above, and they naturally lend themselves to innovation efforts by governments and public institutions.

At the same time, the World Government Summit’s *Global Government Services Handbook 2023* (World Government Summit, 2023a) identifies a total of 9 trends for the delivery of government services, alongside a spectrum of transformative technologies that can be used for improving various service quality aspects. The special focus of this event and report on Arab countries<sup>10</sup> allow for a comparison between the discussed international trends and the innovation priorities of Arab Governments and public institutions. The abovementioned findings were cross-checked with the corresponding findings of World Government Summit’s *Global Government Services Handbook 2023* and additional reports focused on the Arab Region countries to assess (a) whether there are local differences and (b) to what extent similarity with international findings may be confirmed. The reports sampled and studied are the:

- ESCWA *Government Electronic and Mobile Services (GEMS-2022) Maturity Index* report (ESCWA, 2023), highlighting 14 sectors of services for which to measure maturity, and three groups totalling 24 KPIs along which to measure service maturity.
- *Workshop report: Transforming government: Taking innovative approaches to public services and citizen engagement* (OECD, 2022b) highlighting 2 key innovative approaches to public services and citizen engagement; and
- *World Government Summit Arab Public Administration Report: Digital Transformation* (World Government Summit, 2023b) highlighting 8 recommendations and proposals for the future of digital transformation in Arab countries, and 10 most important technologies affecting government work today

The items highlighted in these reports cross-reference with the already identified international findings, thus confirming that the latter do apply to Arab region as well. At the same time, these reports identify three additional innovation trend and practice patterns with an Arab region focus:

a) Arab region-specific themes for innovation of government operations and services, answering the guiding question of “*which Arab region-specific government innovation theme are we addressing?*” (see Table 8)

**Table 8. Arab region-specific themes for innovation**

Arab region-specific government innovation themes (Ar)	Source reports
Ar.1. Improving service delivery in finance; education; interior; cross government affairs; utilities; labour; justice; trade and industry; transport/traffic/police; social affairs; migration; health; municipal affairs; and tourism sectors.	ESCWA (2023)
Ar.2. Promoting the Government-as-a-Platform paradigm: One platform where citizens can complete many or all government services.	World Government Summit (2023a)

<sup>9</sup> For details on the cross-cutting and domain-focused trends see Deloitte, 2023.

<sup>10</sup> For more information on the World Government Summit see <https://www.worldgovernmentsummit.org/about/leadership>.

Ar.3. Implementing new service delivery methods by adding digital assistants.	World Government Summit (2023a)
Ar.4. Implementing anticipatory/proactive services, bundled around a citizen's life events.	World Government Summit (2023a)
Ar.5. Implementing invisible services, completed in the back end without bothering the citizen.	World Government Summit (2023a)
Ar.6. Improving digital public service design and delivery for greater civic engagement and citizen participation.	OECD (2022)
Ar.7. Ensuring marginalized populations are not left behind.	World Government Summit (2023a)
Ar.8. Managing data as an infrastructure, and improving the openness, quality, flow and use of government data.	World Government Summit (2023b)
Ar.9. Managing cybersecurity in a holistic manner, beyond defensive software.	World Government Summit (2023b)
Ar.10. Promoting digital standards for secure platforms, logins, and data.	World Government Summit (2023a)
Ar.11. Moving forward to maturity and readiness for artificial intelligence.	World Government Summit (2023b)
Ar.12. Keeping government digitization at a fast pace, streamlining processes, removing bureaucracy and eliminating excessive regulation.	World Government Summit (2023b)
Ar.13. Establishing formal government service structures and budgets, with separate legal government entity dedicated to government services.	World Government Summit (2023a)
Ar.14. Moving away from organizational silos to open collaborations.	World Government Summit (2023a)
Ar.15. Establishing an Arab platform for government administrative exchange of expertise and data.	World Government Summit (2023b)
Ar.16. Relating the government talent strategy to government technology.	World Government Summit (2023b)
Ar.17. Reforming the government talent and incentives policies with new skills, new mix of team members, and new incentives.	World Government Summit (2023a)
Ar.18. Establishing cooperation models between the government and private sectors and frameworks for digital services.	World Government Summit (2023b)
Ar.19. Enabling local emerging companies to work with the government sector.	World Government Summit (2023b)
Ar.20. Unlocking innovation through cross-border collaboration.	OECD (2022)

Source: Author analysis based on the referenced source reports.

key performance indicators for innovation of government services, answering the guiding question “what are we measuring for performance: (see Table 9)

**Table 9. Key performance indicators for innovation of government services**

KPI group	Key performance indicators (Kp)
1) Service availability and sophistication on KPIs	Kp1.1. Portal services sophistication level. Kp1.2. Portal personalization. Kp1.3. Mobile services sophistication level. Kp1.4. Mobile services availability level. Kp1.5. Applications availability on various mobile platforms. Kp1.6. Availability of languages on the portal. Kp1.7. Feedback enablement through portal. Kp1.8. Persons with disability enablement through portal. Kp1.9. Availability of languages on mobile applications. Kp1.10. Feedback enablement through mobile. Kp1.11. Persons with disability enablement through mobile. Kp1.12. Channels interoperability. Kp1.13. Channels security level. Kp1.14. Open data provisioning. Kp1.15. Open data delivery format.
2) Service usage and user satisfaction KPIs	Kp2.1. Service usage over portal (service level). Kp2.2. Service usage over mobile (service level). Kp2.3. Overall usage over portal (entity level). Kp2.4. Overall usage over mobile (entity level). Kp2.5. User satisfaction over portal. Kp2.6. User satisfaction over mobile.
3) Public outreach KPIs	Kp3.1. Percentage of new services accompanied by marketing campaigns (services assessed in the index). Kp3.2. Percentage of new services accompanied by marketing campaigns (total services at the entity level). Kp3.3. Availability of support tools.

Source: ESCWA, 2023.

key technologies that affect government work today and can at the same time improve government service delivery, answering the guiding question “which key technology are we taking stock of?”. The identified technologies are:<sup>11</sup>

- Te.1. Artificial intelligence
- Te.2. Big data management
- Te.3. Blockchain
- Te.4. Cryptocurrencies
- Te.5. Virtual reality
- Te.6. Augmented reality
- Te.7. Autonomous robots
- Te.8. 3D printing
- Te.9. Internet of things
- Te.10. 5G and 6G wireless cellular networks
- Te.11. Biotechnology
- Te.12. Cloud computing and platforms
- Te.13. Application programming interfaces
- Te.14. Cybersecurity
- Te.15. Mobile applications
- Te.16. Geographic Information Systems
- Te.17. Digital identity solutions
- Te.18. Open data indicatives
- Te.19. Robotic process automation

A final point, with respect to the analysis is to note that cross-border government innovation, brought forward by two patterns, namely Be.5 and Ca.2, may be a trend not fully present in the current policy and practice of Arab countries. Still, an approach and its possibilities to take stock of, especially initially in meaningful regional domains that lend themselves to cross-border collaboration. The focus can be later broadened to include more domains such as education and entrepreneurship.<sup>12</sup>

## B. CHALLENGES AND PITFALLS OF INNOVATION IN PUBLIC INSTITUTIONS

The identification of challenges and pitfalls of innovation in public institutions, is approached by looking at the bigger picture within which their innovation efforts take place. This bigger picture is a more global view of innovation, from within and beyond the public sector, including a view of the challenges and risks faced by countries across different regions, and the planet.

Based on (a) the state of innovation and (b) challenges, risks and pitfalls at a global level from the last 4 years (2020-2023), to take stock of the Covid pandemic ripple effects the report series selected to draw challenges from are the:

- European Innovation Scoreboard (IES) report series<sup>13</sup>, published by the European Commission, offers a series of standardize indicators to assess the state of innovation enablers. Indicators are organized in categories/subcategories along 4 main themes, namely framework conditions,

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<sup>11</sup> Analysis by the Author based on World Government Summit, 2023a and 2023b

<sup>12</sup> To explore the potential of cross-border innovation for Arab region countries, see <https://www.worldbank.org/en/country/gcc>, <https://www.mofa.gov.bh/Default.aspx?tabid=119&language=en-US> and <https://archive.uneca.org/oria/pages/amu-arab-maghreb-union>.

<sup>13</sup> EC GROW, 2020; EC GROW, 2021; EC RTD and others, 2022; EC RTD & Hollanders, 2023.

investments, innovation activities and impacts (see Annex A.3 for detail).

- Global Innovation Index (GII) report series<sup>14</sup>, published by the World Intellectual Property Organization and other partners, offers a series of standardised indicators also to assess state of innovation enablers can be assessed, organized in 7 main themed categories, namely Institutions, human capital and research, infrastructure, market sophistication, business sophistication, knowledge and technology outputs and creative outputs. (see Annex A.4 for more detail).
- Sustainable Development Goals (SDG) Report series<sup>15</sup> published by the United Nations Statistics Division, which monitors the findings and challenges in the achievement of the 17 SDGs (see Annex A.5 for detail).
- the Global Risks Report (GRR) series<sup>16</sup>, published by the World Economic Forum, monitors the major risks perceived in the regions of the world through a corresponding survey, and offers a standardized classification of such risks across 5 categories rooted in their causes and effects, namely global economic risks, global environmental risks, global geopolitical risks, global societal risks and global technological risks (see Annex A.6 for detail).
- the World Development Report (WDR) series<sup>17</sup> published by the World Bank, covers a major development topic every year, and sheds light on the surrounding dimensions and issues through key messages, main findings and policy priorities for development. Between 2020 and 2023 global value chains, data for better lives, finance for an equitable recovery, and migrants, refugees and societies were covered respectively (see Annex A.7 for detail).

The importance and added value the IES and the GII<sup>18</sup> indicators afford public institutions' innovation work is the possibility to build upon and advance the state of innovation enablers. For example, public institutions' innovation work can take stock of the skills of their own personnel, as well as of academic experts, or private sector and civil society stakeholders. During this innovation work the skills contributed by personnel and experts should also be advanced, as it is necessary to enhance the sustainability of future public sector innovation work. Therefore, meaningful innovation processes and policies builds on existing intellectual capital and increases it. Thus, the IES and GII set of indicators can be considered as a process-level challenge for the innovation work carried out by public institutions. Table 10 presents a set of process-level challenges defined for the innovation work of public institutions under guidance of the question:

*“Which innovation indicators are we improving in the process of our innovation work?”*

**Table 10. Challenges to improve IES and GII innovation indicators through the process of public institutions' innovation work**

Indicator-level challenges (Ci)	Indicator sub-categories <sup>a</sup>
Ci-IES1. Improve	1.1 Human resources: 1.1.1 New doctorate graduates (in STEM; 1.1.2 Population aged 25-34 with

<sup>14</sup> Cornell University, INSEAD & WIPO, 2020; WIPO, 2021; 2022 and 2023.

<sup>15</sup> United Nations Statistics Division, 2020; 2021; 2022 and 2023.

<sup>16</sup> World Economic Forum, 2020; 2021; 2022 and 2023.

<sup>17</sup> World Bank, 2020; 2021; 2022b and 2023.

<sup>18</sup> It is noted, at this point, that IES innovation indicators could be considered as broadly subsumed by their GII counterparts.

Still, they are conceptualized in a specific regional context, that of Europe, which remains one of the major innovation players worldwide, and they are not necessarily defined and interpreted in the same way as their corresponding GII indicators. In this respect, for the purposes of the study, both sets of indicators are considered as complementary sources.

IES Framework conditions indicators	tertiary education; 1.1.3 Lifelong learning; 1.2 Attractive research systems: 1.2.1 International scientific co-publications; 1.2.2 Top 10% most cited publications; 1.2.3 Foreign doctorate students; 1.3 Digitalisation: 1.3.1 Broadband penetration; 1.3.2 Individuals who have above basic overall digital skills
Ci-IES2. Improve IES Investments indicators	2.1 Finance and support: 2.1.1 R&D expenditure in the public sector; 2.1.2 Venture capital expenditures; 2.1.3 Direct government funding and government tax support for business R&D; 2.2 Firm investments: 2.2.1 R&D expenditure in the business sector; 2.2.2 Non-R&D innovation expenditures; 2.2.3 Innovation expenditures per person employed in innovation-active enterprises; 2.3 Use of information technologies: 2.3.1 Enterprises providing training to develop or upgrade ICT skills of their personnel; 2.3.2 Employed ICT specialists
Ci-IES3. Improve IES Innovation activities indicators	3.1 Innovators: 3.1.1 SMEs with product innovations; 3.1.2 SMEs with business process innovations; 3.2 Linkages: 3.2.1 Innovative SMEs collaborating with others; 3.2.2 Public-private co-publications; 3.2.3 Job-to-job mobility of Human Resources in Science & Technology; 3.3 Intellectual assets: 3.3.1 PCT patent applications; 3.3.2 Trademark applications; 3.3.3 Design applications
Ci-IES4. Improve IES Impacts indicators	4.1 Employment impacts: 4.1.1 Employment in knowledge-intensive activities; 4.1.2 Employment in innovative enterprises; 4.2 Sales impacts: 4.2.1 Medium and high-tech product exports; 4.2.2 Knowledge-intensive services exports; 4.2.3 Sales of product innovations; 4.3 Environmental sustainability: 4.3.1 Resource productivity; 4.3.2 Air emissions by fine particulates PM2.5 in Industry; 4.3.3 Development of environment-related technologies
Ci-GII1. Improve GII Institutions indicators	1.1. Institutional environment (Operational stability for businesses; Government effectiveness); 1.2. Regulatory environment (Regulatory quality; Rule of law; Cost of redundancy dismissal); 1.3. Business environment (Policies for doing business; Entrepreneurship policies and culture)
Ci-GII2. Improve GII Human capital and research indicators	2.1. Education (Expenditure on education; Government funding/pupil; School life expectancy; PISA scales in reading, maths and science; Pupil–teacher ratio); 2.2. Tertiary education (Tertiary enrolment; Graduates in science and engineering; Tertiary inbound mobility); 2.3. Research and development (Researchers; Gross expenditure on R&D; Global corporate R&D investors; QS university ranking)
Ci-GII3. Improve GII Infrastructure indicators	3.1. Information and communication technologies (ICT access; ICT use; Government’s online service; E-participation); 3.2. General infrastructure (Electricity output; Logistics performance; Gross capital formation); 3.3. Ecological sustainability (GDP/unit of energy use; Environmental performance; ISO 14001 environment)
Ci-GII4. Improve GII Market sophistication indicators	4.1. Credit (Finance for start-ups and scaleups; Domestic credit to private sector; Loans from microfinance institutions); 4.2. Investment (Market capitalization; Venture capital investors; Venture capital recipients; Venture capital received); 4.3. Trade, diversification and market scale (Applied tariff rate; Domestic industry diversification; Domestic market scale)
Ci-GII5. Improve GII Business sophistication indicators	5.1. Knowledge workers (Knowledge-intensive employment; Firms offering formal training; GERD performed by business; GERD financed by business; Females employed w/advanced degrees); 5.2. Innovation linkages (University–industry R&D collaboration; State of cluster development; GERD financed by abroad; Joint venture/strategic alliance deals; Patent families); 5.3. Knowledge absorption (Intellectual property payments; High-tech imports; ICT services imports; Foreign direct investment net inflows; Research talent)
Ci-GII6. Improve GII Knowledge and technology outputs indicators	6.1. Knowledge creation (Patents by origin; PCT patents by origin; Utility models by origin; Scientific and technical articles; Citable documents H-index); 6.2. Knowledge impact (Labor productivity growth; Unicorn valuation; Software spending; High-tech manufacturing); 6.3. Knowledge diffusion (Intellectual property receipts; Production and export complexity; High-tech exports; ICT services exports; ISO 9001 quality)
Ci-GII7. Improve GII Creative outputs indicators	7.1. Intangible assets (Intangible asset intensity; Trademarks by origin; Global brand value; Industrial designs by origin); 7.2. Creative goods and services (Cultural and creative services exports; National feature films; Entertainment and media market; Creative goods exports); 7.3. Online creativity (Generic top-level domains; Country-code TLDs; GitHub commits; Mobile app creation)

Source: Author’s analysis based on EC RTD and Hollanders, 2023 and WIPO, 2023

Note:

<sup>a</sup> Challenges are encoded as one per each category of innovation indicators, based on IES and GII indicators, that could be improved. The guiding question answered by this table is: Which innovation indicators are we improving in the process of our innovation work?

As a final point, pitfalls of such work can be considered as the absence of response to any of the challenges. For instance, to organize and perform innovation work that only consumes but does not improves the state of innovation enablers within the organizational context and broader environment. In such pitfall situations, sustainability potential for innovation would be lost.

The SGD Reports, Global Risk Reports and the World Development Reports can be considered to

present challenges for the innovation work of public institutions, at an outcomes level. In the context to act locally but think globally, public institutions' innovation work could be more meaningful if it shows that specific innovation objectives it plans to meet (i.e. smaller picture), will also contribute to regional and global objectives (i.e. bigger picture). Table 11 presents a set of outcome-level challenges defined for the innovation work of public institutions under guidance of the question: *“Which global challenges or risks are we locally helping to address through the outcomes of our innovation work?”*

**Table 11. Challenges to help address achievement of SDGs, mitigation of global risks and world development topics through the outcomes of public institutions' innovation work**

<b>Global-level challenges (Cg)</b>	<b>Interpretation</b>
Cg-SDG.1 Help achievement of Goal 1. No poverty	End poverty in all its forms everywhere
Cg-SDG.2 Help achievement of Goal 2. Zero hunger	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Cg-SDG.3 Help achievement of Goal 3. Good health and well-being	Ensure healthy lives and promote well-being for all at all ages
Cg-SDG.4 Help achievement of Goal 4. Quality education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Cg-SDG.5 Help achievement of Goal 5. Gender equality	Achieve gender equality and empower all women and girls
Cg-SDG.6 Help achievement of Goal 6. Clean water and sanitation	Ensure availability and sustainable management of water and sanitation for all
Cg-SDG.7 Help achievement of Goal 7. Affordable and clean energy	Ensure access to affordable, reliable, sustainable and modern energy for all
Cg-SDG.8 Help achievement of Goal 8. Decent work and economic growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Cg-SDG.9 Help achievement of Goal 9. Industry, innovation and infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Cg-SDG.10 Help achievement of Goal 10. Reduced inequalities	Reduce inequality within and among countries
Cg-SDG.11 Help achievement of Goal 11. Sustainable cities and communities	Make cities and human settlements inclusive, safe, resilient and sustainable
Cg-SDG.12 Help achievement of Goal 12. Responsible consumption and production	Ensure sustainable consumption and production patterns
Cg-SDG.13 Help achievement of Goal 13. Climate action	Take urgent action to combat climate change and its impacts
Cg-SDG.14 Help achievement of Goal 14. Life below water	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Cg-SDG.15 Help achievement of Goal 15. Life on land	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Cg-SDG.16 Help achievement of Goal 16. Peace, justice and strong institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Cg-SDG.17 Help achievement of Goal 17. Partnership for the Goals	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development
Cg-GRR.1 Help mitigation of global economic risks	Asset bubble bursts; Collapse of a systemically important industry or supply chain; Debt crises; Failure to stabilize price trajectories; Proliferation of illicit economic activity; Prolonged economic downturn
Cg-GRR.2 Help mitigation of global environmental risks	Biodiversity loss and ecosystem collapse; Failure of climate-change adaption; Failure to mitigate climate change; Large-scale environmental damage incidents; Natural disasters and extreme weather events; Natural resource crises
Cg-GRR.3 Help mitigation of global geopolitical risks	Geoeconomic confrontation; Ineffectiveness of multilateral institutions and international cooperation; Interstate conflict; State collapse or severe instability; Terrorist attacks; Use of weapons of mass destruction
Cg-GRR.4 Help mitigation of global societal risks	Chronic diseases and health conditions; Collapse or lack of public infrastructure and services; Cost-of-living crisis; Employment crises; Erosion of social cohesion and societal polarization; Infectious diseases; Large-scale involuntary migration; Misinformation and disinformation; Severe mental health deterioration

Cg-GRR.5 Help mitigation of global technological risks	Adverse outcomes of frontier technologies; Breakdown of critical information infrastructure; Digital inequality and lack of access to digital services; Digital power concentration; Widespread cybercrime and cyber insecurity
Cg-WDR.1 Help development through Global Value Chains	Drivers of participation in GVCs; Consequences of GVCs for development; Macroeconomic implications of GVCs; Impact of GVCs on the environment; GVCs and technological change; Policies to enhance GVC participation; Policies for GVC inclusion and sustainability; GVC and cooperation on trade; GVCs and cooperation beyond trade
Cg-WDR.2 Help development through Data for Better Lives	Harnessing the value of data for the poor; Data as a force for public good; Data as a resource for the private sector; Creative reuses of data for greater value; Data infrastructure policy: Ensuring equitable access for poor people and poor countries; Data policies, laws, and regulations: Creating a trust environment; Creating value in the data economy: The role of competition, trade, and tax policy; Institutions for data governance: Building trust through collective action; Creating an integrated national data system
Cg-WDR.3 Help development through Finance for an Equitable Recovery	Emerging risks to the recovery; Resolving bank asset distress; Restructuring firm and household debt; Lending during the recovery and beyond; Managing sovereign debt; Policy priorities for the recovery
Cg-WDR.4 Help development through Migrants, Refugees and Societies	Changing patterns, needs, and risks; Origin countries: Managing migration for development; Destination countries: Maximizing gains through economic and social policies; Refugees: Managing with a medium-term perspective; Distressed migrants: Preserving dignity; Making migration work better;

Source: Author's analysis based on United Nations Statistics Division, 2020, 2021, 2022, 2023; World Economic Forum, 2020, 2021, 2022, 2023; World Bank, 2020, 2021, 2022b, 2023.

Note:

<sup>a</sup> Challenges are encoded as one per each SDG achievement, global risk or world development topic that could be addressed, adopting the SDG, GRR and WDR topical categories. The guiding question answered by this table is: Which global challenges or risks are we locally helping to address through the outcomes of our innovation work?

A final point pitfall of such work can be considered the absence of response to any of these challenges. For instance, to deliver results that only meet locally defined objectives, without aiding a major current issue at the global level or even acting against such issues. A 'think globally act locally' principle would not be met, and the outcomes would be of limited broader value.

### C. EXAMPLES OF INNOVATION IN PUBLIC INSTITUTIONS FROM THE REGION AND BEYOND

The detailed study of current trends and practices for public institutions' innovation work worldwide, presented in Section A above, has brought forward a set of 288 examples of innovation efforts, across different innovation trends, which are catalogued in Annex A.2. Out of these, 29 examples (approximately 10% of the total set) originate from national efforts of Arab countries. Table 12 shows a selection of these examples, annotated with the associated innovation trends and practices.

**Table 12. Selected examples of innovation initiatives of public institutions from Arab region countries, featured in international reports**

Country	Featured initiative	Featured trends and practices	Id
Bahrain	Al Nawras Flight Permission and Scheduling System	Applications of e-environment	ITU12, ITU30, ITU48
Bahrain	Tawasul Complaint and Suggestions System	E-Participation: rising of multi-function platforms, ideation forums, new policy consultations/e-petitions, opinion surveys, complaint filing, corruption reporting, idea/innovation generation	UND6
Egypt	ICT 2030 Strategy	GovTech Enablers: Digital strategy.	WB31
Egypt	Digital Egypt	GovTech Enablers: Digital skills strategy or program.	WB35
Jordan	Amman e-tenders platform	Local e-government development: most city portals are still offering few or no services, but nearly all city portals are accessible from mobile devices, confirming awareness of the importance of multichannel service delivery	UND4
Morocco	Casablanca Casa Store	Local e-government development: most city portals are still offering few or no services, but nearly all city	UND4



Country	Featured initiative	Featured trends and practices	Id
		portals are accessible from mobile devices, confirming awareness of the importance of multichannel service delivery	
Oman	Early Diagnosis of Breast Cancer using Artificial Intelligence	Applications of e-health	ITU10, ITU28, ITU46
Oman	eParticipation	Digital Citizen Engagement: E-participation.	WB26
Qatar	Kahramaa Mobile Application - Employee Section	Applications of e-employment	ITU11, ITU29, ITU47
Qatar	SafeSpace Platform	Building confidence and security in the use of ICTs	ITU5, ITU23, ITU41
Saudi Arabia	KSA Free Wi-Fi	The role of governments and all stakeholders in the promotion of ICTs for development.	ITU1, ITU19, ITU37
Saudi Arabia	Agriculture Holdings Platform	Applications of e-agriculture	ITU13, ITU31, ITU49
Saudi Arabia	Attaa Initiative	Cultural diversity and identity, linguistic diversity and local content	ITU15, ITU33, ITU51
Tunisia	Startup Tunisia	Enabling environment	ITU6, ITU24, ITU42
UAE	SHEFAA Platform	Applications of e-health	ITU10, ITU28, ITU46
UAE	Geospatial Infrastructure Platform	Access to information and knowledge	ITU3, ITU21, ITU39
UAE	Emirati School Smart Learning Ecosystem	Applications of e-learning	ITU9, ITU27, ITU45
UAE	Government Experience Exchange Programme	Delivering and Enabling Impactful Cross-Border Solutions Theme 3: Adding a cross-border dimension to upskilling and capacity building	OOM23
UAE	Ministry of Possibilities, United Arab Emirates	Seamless Government Theme 1: Invisible government	OOM6
UAE	DEWA Rammas chatbot	Local e-government development: most city portals are still offering few or no services, but nearly all city portals are accessible from mobile devices, confirming awareness of the importance of multichannel service delivery	UND4
UAE	Digital Dubai	AI, chatbots, blockchain, IoT and drones are used to reduce administrative burden, strengthen oversight and better service quality.	WB10
UAE	UAE PASS	Efforts needed to expand issuance of unique national ID at birth and civil registration.	WB9

Source: Author's analysis based on Dener and others, 2021; ITU, 2020a, 2020b, 2021, 2022a, 2022b; OECD OPSI & MBRCGI, 2020b, 2021-2022c; United Nations, Department of Economic and Social Affairs, 2020; World Bank, 2022.

Many more examples of innovation work by public institutions in the Arab region and beyond are featured in several repositories, maintained by national public sector entities, international organizations, as well as academic, civil society and private sector entities. A selected set of online repositories, from which innovation examples from different countries and in different domains can be sourced, is catalogued in Table 13.

**Table 13. Catalogue of online repositories, featuring selected innovation efforts from different countries and in different domains**

Maintaining entity	Repository information
The World Bank	<ul style="list-style-type: none"> <li>Digital Governance Projects Database. <a href="https://datacatalog.worldbank.org/search/dataset/0038056">https://datacatalog.worldbank.org/search/dataset/0038056</a></li> <li>GovTech Global Partnership newsletter. <a href="https://www.worldbank.org/en/programs/govtech/partners">https://www.worldbank.org/en/programs/govtech/partners</a></li> </ul>
EC join up	<ul style="list-style-type: none"> <li>Open Source Observatory (OSOR). <a href="https://joinup.ec.europa.eu/collection/open-source-observatory-osor">https://joinup.ec.europa.eu/collection/open-source-observatory-osor</a></li> </ul>
Digital Public Goods Alliance	<ul style="list-style-type: none"> <li>Community of Practice Reports. <a href="https://digitalpublicgoods.net/highlighted-digital-public-goods/">https://digitalpublicgoods.net/highlighted-digital-public-goods/</a></li> <li>Hope in Action: Open-Source Innovations for Information Integrity.</li> </ul>

Maintaining entity	Repository information
	<a href="https://digitalpublicgoods.net/information-pollution/">https://digitalpublicgoods.net/information-pollution/</a>
The Innovation in Politics Institute	<ul style="list-style-type: none"> <li>• <i>Discover the Winners of the Innovation in Politics Awards 2023</i>. Available from <a href="https://innovationinpolitics.eu/press-release/discover-the-winners-of-the-innovation-in-politics-awards-2023/">https://innovationinpolitics.eu/press-release/discover-the-winners-of-the-innovation-in-politics-awards-2023/</a></li> <li>• <i>IPI Showroom: Best practice in politics</i>. <a href="https://innovationinpolitics.eu/showroom/">https://innovationinpolitics.eu/showroom/</a></li> </ul>
GovLab, New York University	<ul style="list-style-type: none"> <li>• <i>The Living Library Catalog</i>. <a href="http://thelivinglib.org/catalog/">http://thelivinglib.org/catalog/</a></li> </ul>
WIRED magazine	<ul style="list-style-type: none"> <li>• <i>Science &amp; Technology Essays &amp; Ideas</i>. <a href="https://www.wired.com/category/ideas/">https://www.wired.com/category/ideas/</a></li> </ul>
MIT Technology Review	<ul style="list-style-type: none"> <li>• <i>The Algorithm: Artificial intelligence, demystified</i> (newsletter). <a href="https://forms.technologyreview.com/newsletters/ai-demystified-the-algorithm/">https://forms.technologyreview.com/newsletters/ai-demystified-the-algorithm/</a></li> <li>• <i>The Spark: Explaining the tech that could combat the climate crisis</i> (newsletter). <a href="https://forms.technologyreview.com/newsletters/climate-energy-the-spark/">https://forms.technologyreview.com/newsletters/climate-energy-the-spark/</a></li> </ul>
Creative Bureaucracy Festival	<ul style="list-style-type: none"> <li>• <i>Creative Bureaucracy Festival Award Recipients 2018-2022</i>. <a href="https://creativebureaucracy.org/previous-awards/">https://creativebureaucracy.org/previous-awards/</a></li> <li>• <i>The Creative Bureaucracy Content Library</i>. <a href="https://creativebureaucracy.org/library/">https://creativebureaucracy.org/library/</a></li> </ul>
Global Partnership for Sustainable Development Data	<ul style="list-style-type: none"> <li>• <i>data4sdgs.org</i>. (n.d.). <i>Resource catalog</i>. <a href="https://www.data4sdgs.org/resources">https://www.data4sdgs.org/resources</a></li> </ul>
Open Government Partnership	<ul style="list-style-type: none"> <li>• <i>Digital Governance commitments</i>. <a href="https://www.opengovpartnership.org/policy-area/digital-governance/#commitments">https://www.opengovpartnership.org/policy-area/digital-governance/#commitments</a></li> <li>• <i>Education commitments</i>. <a href="https://www.opengovpartnership.org/policy-area/education/#commitments">https://www.opengovpartnership.org/policy-area/education/#commitments</a></li> <li>• <i>Health commitments</i>. <a href="https://www.opengovpartnership.org/policy-area/health-nutrition/#commitments">https://www.opengovpartnership.org/policy-area/health-nutrition/#commitments</a></li> </ul>
Ash Centre for Democratic Governance and Innovation, Harvard Kennedy School	<ul style="list-style-type: none"> <li>• <i>Innovations in American Government Awards</i>. Available from <a href="https://ash.harvard.edu/innovations-american-government-awards">https://ash.harvard.edu/innovations-american-government-awards</a></li> <li>• <i>Case Studies</i>. Available from <a href="https://ash.harvard.edu/case-studies">https://ash.harvard.edu/case-studies</a></li> </ul>
UK Research and Innovation	<ul style="list-style-type: none"> <li>• <i>Innovate UK blog</i>. <a href="https://www.ukri.org/councils/innovate-uk/blog/">https://www.ukri.org/councils/innovate-uk/blog/</a></li> </ul>
Division for Public Institutions and Digital Government	<ul style="list-style-type: none"> <li>• <i>Knowledge Base of UN Public Service Awards Initiatives</i>. <a href="https://publicadministration.un.org/en/Research/Case-Studies/unpsacases">https://publicadministration.un.org/en/Research/Case-Studies/unpsacases</a></li> </ul>
apolitical	<ul style="list-style-type: none"> <li>• <i>Cities and Local Government Topic Page</i>. <a href="https://apolitical.co/topics/cities-and-local-government/">https://apolitical.co/topics/cities-and-local-government/</a></li> <li>• <i>Digital and Data Topic Page</i>. <a href="https://apolitical.co/topics/digital-and-data/">https://apolitical.co/topics/digital-and-data/</a></li> <li>• <i>Innovation Topic Page</i>. <a href="https://apolitical.co/topics/innovation/">https://apolitical.co/topics/innovation/</a></li> </ul>
European Institute of Public Administration	<ul style="list-style-type: none"> <li>• <i>EIPA European Public Sector Awards database</i>. <a href="https://www.eipa.eu/epsa/">https://www.eipa.eu/epsa/</a></li> </ul>
UNESCWA	<ul style="list-style-type: none"> <li>• <i>Case Studies</i>. In: <i>Arab Open and Innovative Government Portal</i>. <a href="https://opengov.unescwa.org/index.php/case-studies">https://opengov.unescwa.org/index.php/case-studies</a></li> </ul>

Source: Compiled by the Author.

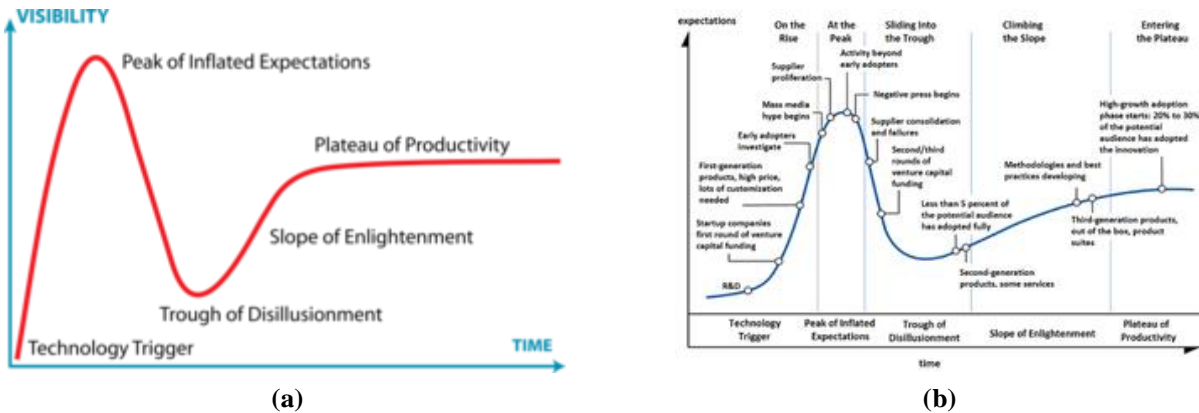
#### D. THE ROLE OF EMERGING TECHNOLOGIES IN INNOVATION PRACTICES OF PUBLIC INSTITUTIONS

The emerging nature of technology has been studied and analysed in academic literature and by technology consultancy firms. In general, it is accepted that technologies evolve in a life-cycle approach, characterized by three significant principles. Firstly, any given technology matures for use over time. Secondly, the adoption of technology is accompanied by opportunities for benefits (when sufficiently matured), and also by threats or risk (when not fully matured). Thus, an assessment of technology maturity attained at a given point is key for accurate adoption decisions. Thirdly, technologies do not live productively forever, and the end of their life cycle will likely compare poorly to new alternative technologies, or to changed contextual factors.

These principles are prevalent in established maturity assessment methodologies for emerging technologies, like the well-established Gartner's Hype Cycle Methodology<sup>19</sup> (that is based on the premise of a 5-stages curve that all technologies traverse through from inception to productivity, as shown in Figures 3(a) and 1.3(b)).

<sup>19</sup> Gartner, ©2023a; Gartner hype cycle, 2023; Terrell & Wigmore, 2023.

**Figure 3. Gartner’s Hype Cycle model for the technology maturity process. (a) Basic stages on the way towards maturity. (b) Periods between, and events surrounding, the basic stages.**



Source: (a) Kemp, 2007; (b) Tarkovskiy, 2013.

In their most recent predictions for emerging technologies, Gartner<sup>20</sup> presents some new technologies, like generative AI, at different levels of maturity, indicating to potential users that it is the right time to adopt. Generative AI technology is classified by Gartner mid-way within the *Peak of Inflated Expectations* stage

Gartner’s Hype Cycle falls, as a technology maturity assessment technique, is a form of future-oriented technology analysis (FTA) is an umbrella term under Futures Studies (2023) for “*analyzing future technology and its consequences.*”<sup>21</sup>. The widely applied, albeit criticised, Technology Readiness Levels (TRLs) originates from NASA and its process of technology development for space missions. It comprises a series of 9 successive stages or levels (Figure 4) across which a technology evolves through successive rounds of testing and improvements from TRL1 (“*Basic principles observed and reported*”) to TRL9 (“*System ready for full scale deployment*”)<sup>22</sup>.

**Figure 4. Representation of the Technology Readiness Levels model**



Source: Innovation for Sustainable Development Network, 2019.

The idea of readiness also refers to acceptance by real world users, in the form of societal readiness of

<sup>20</sup> Gartner, ©2023b, Perri, 2023.

<sup>21</sup> Future-oriented technology analysis, 2023.

<sup>22</sup> Innovation for Sustainable Development Network, 2019; Technology readiness level, 2023; TWI, 2023.

technology, under the broader responsible research and innovation (RRI) field. The RRI perspective focuses on ways to conduct research and innovate which remain compatible with some fundamental dimensions of public engagement, open access, science education, gender and ethics.<sup>23</sup>

A key point is that the emerging nature of a technology does not automatically imply its readiness for use; between the two, a maturation process needs to take place, and this process needs to evolve over time.

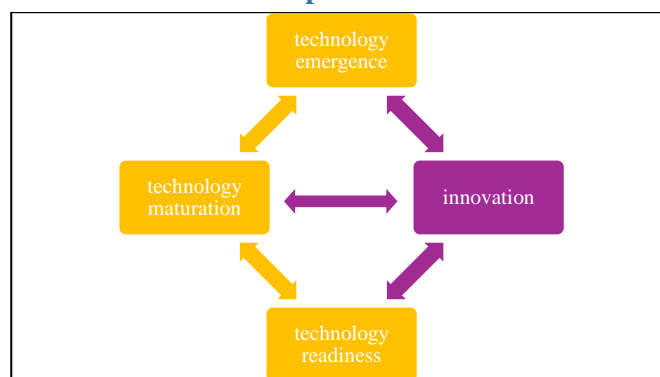
This is especially pertinent to public institutions, which have an institutional obligation to serve all of society, and the public interest. Therefore, public institutions cannot exclude from service recipients anyone that do not have access to an emerging technology due to availability, cost, interoperability or literacy. Serving the public interest implies that public institutions cannot tolerate the use of technology that could malfunction or be unsafe, as this could create disruptions in the availability and quality of critical public interest services the technology delivers.

Emerging technology, even if not ready for use, always creates a tendency for use because of its emerging nature; thus, it is compatible with the first part of the innovation imperative, that of doing things in *new* ways. The second part of this imperative, focused on *improving* things in new ways, is expected as a natural outcome due to the lure of experimenting with new technologies. Although the emerging nature of technology used is neither a necessary nor a sufficient condition for innovation, it can help to bring innovation forward by:

- challenging users to find *what can be done* with the capabilities of new technologies, especially technologies that lend themselves to a wide spectrum of potential applications; and
- challenging users to find new ways of *putting technology into a specific practice*, especially when different emerging technologies should be combined to accomplish a specific objective or deliver a specific service.<sup>24</sup>

The emergence of a technology inspires its use for innovating, through which experience is gained and shared, thus contributing to the maturation process of this technology, including its readiness for use. The same happens during the maturation process of the technology. Once the technology is considered mature the focus shifts to using it to improve things at a larger scale. Therefore, the relationship between innovation and emerging technologies can be generalized into a more holistic relationship of innovation to the whole life cycle of technologies (see Figure 5).

**Figure 5. A mutual contributions relationship between innovation and the entire technology lifecycle**



Source: Compiled by the Author.

<sup>23</sup> RRI Tools, n.d.

<sup>24</sup> For more information on the broad spectrum of emerging technologies that public institutions could use for innovation see Chapter 1.Ac and for existing examples of innovation by public institutions using emerging technologies and others, see Introduction and Annex A.2

This approach also opens a more specific domain for innovation using emerging technologies for good and includes a whole ensemble of applications for social good, public good and humanitarian action. This is closely linked to the idea of using technology for the *common good* and *public interest*.<sup>25</sup>

Table 14 identifies (a) Google search queries for initiatives; and (b) Google Scholar queries for articles relevant to innovative applications for good focused on a set of 10 interesting technologies at varying degrees of emergence.<sup>26</sup> Annex A.8 lists suggested academic articles on innovative applications for good.

**Table 14. Google search queries for initiatives and Google Scholar queries for academic articles relevant to innovative applications for good of a set of 10 interesting technologies at varying degrees of emergence**

Technology	Google search general query	Google Scholar query for review articles
AI	<a href="https://www.google.com/search?q=AI+for+good">https://www.google.com/search?q=AI+for+good</a>	<a href="https://scholar.google.com/scholar?q=AI+for+good">https://scholar.google.com/scholar?q=AI+for+good</a>
Big data	<a href="https://www.google.com/search?q=big+data+for+good">https://www.google.com/search?q=big+data+for+good</a>	<a href="https://scholar.google.com/scholar?q=big+data+for+good">https://scholar.google.com/scholar?q=big+data+for+good</a>
Blockchain	<a href="https://www.google.com/search?q=blockchain+for+good">https://www.google.com/search?q=blockchain+for+good</a>	<a href="https://scholar.google.com/scholar?q=blockchain+for+good">https://scholar.google.com/scholar?q=blockchain+for+good</a>
Data	<a href="https://www.google.com/search?q=data+for+good">https://www.google.com/search?q=data+for+good</a>	<a href="https://scholar.google.com/scholar?q=data+for+good">https://scholar.google.com/scholar?q=data+for+good</a>
Drones	<a href="https://www.google.com/search?q=drones+for+good">https://www.google.com/search?q=drones+for+good</a>	<a href="https://scholar.google.com/scholar?q=drones+for+good">https://scholar.google.com/scholar?q=drones+for+good</a>
ID	<a href="https://www.google.com/search?q=ID+for+good">https://www.google.com/search?q=ID+for+good</a>	<a href="https://scholar.google.com/scholar?q=ID+for+good">https://scholar.google.com/scholar?q=ID+for+good</a>
IoT	<a href="https://www.google.com/search?q=IoT+for+good">https://www.google.com/search?q=IoT+for+good</a>	<a href="https://scholar.google.com/scholar?q=IoT+for+good">https://scholar.google.com/scholar?q=IoT+for+good</a>
VR	<a href="https://www.google.com/search?q=VR+for+good">https://www.google.com/search?q=VR+for+good</a>	<a href="https://scholar.google.com/scholar?q=VR+for+good">https://scholar.google.com/scholar?q=VR+for+good</a>
AR	<a href="https://www.google.com/search?q=AR+for+good">https://www.google.com/search?q=AR+for+good</a>	<a href="https://scholar.google.com/scholar?q=AR+for+good">https://scholar.google.com/scholar?q=AR+for+good</a>
ChatGPT	<a href="https://www.google.com/search?q=chatGPT+for+good">https://www.google.com/search?q=chatGPT+for+good</a>	<a href="https://scholar.google.com/scholar?q=chatGPT+for+good">https://scholar.google.com/scholar?q=chatGPT+for+good</a>

Source: Compiled by the author.

#### E. STRUCTURAL PATTERNS IN INNOVATION PRACTICES OF PUBLIC INSTITUTIONS

Structural patterns – encountered in contemporary digital transformation, process re-engineering, performance improvement and innovation efforts – have a direct or indirect influence on the planning of innovation processes and the practices of public institutions, and thus have value in their design. The patterns relate to *people* and *values*, and the relationships between them as two important assets for successful innovation.

Four distinct clusters of patterns are identified, each subdivided in further patterns:

- (a) Co-creation: sharing, evaluating/prioritizing and implementing concerns, aspirations, solutions,

<sup>25</sup> Common good can be considered that “what is shared and beneficial for all or most members of a given community”, or “what is achieved by citizenship, collective action, and active participation in the realm of politics and public service”, or according to Aristotle, “the good proper to, and attainable only by, the community, yet individually shared by its members” (Dupré, L. (2009). *The Common Good and the Open Society. The Review of Politics*, 55(4), 687–712). Public interest is generally considered as “the welfare or well-being of the general public and society”. For more discussion on viewpoints and philosophical doctrines behind common good and public interest see [https://en.wikipedia.org/w/index.php?title=Common\\_good&oldid=1180229782](https://en.wikipedia.org/w/index.php?title=Common_good&oldid=1180229782) and [https://en.wikipedia.org/w/index.php?title=Public\\_interest&oldid=1186984546](https://en.wikipedia.org/w/index.php?title=Public_interest&oldid=1186984546).

<sup>26</sup> For additional examples of innovating with emerging technologies for good see 1) the ACM GoodIT conference series (<http://goodit.campusfc.unibo.it/>; <http://www.grc.upv.es/goodit2021/> & <https://cyprusconferences.org/goodit2022/>), 2) the EAI GoodTechs conference series (<https://goodtechs.eai-conferences.org>), and 3) ESRC Digital Good Network (<https://digitalgood.net>).

and ideas between stakeholders differing in provenance and perspectives.

- Co-creation under normal conditions that happens in routine situations and is focused on the co-design, co-production and/or co-evaluation of public services.<sup>27</sup>
- Humanitarian co-creation that happens under field emergencies and humanitarian crises, calling for building back basic infrastructures and services, and responding to pressing vital needs in a resilient manner.<sup>28</sup>
- Multiple-helix co-creation that involves two or more stakeholders from the public sector, private sector, academia, civil society, and the environment.<sup>29</sup>

(b) Incubation: setting up and operating incubator-like organizational structures to protect and encourage early-stage innovation and failures, and to offer an environment for innovation teams to gather and interact with incubator organizations.

- Internal-facing incubation, such as govtech incubators (GovTech4all, GovCon Incubator@bwtech and DigitalWell), innovation centres (the Emirates Innovation Center, the European Institute of Innovation and Technology), and innovation accelerators (EIC Accelerator)<sup>30</sup>.
- Public-facing incubation, such as established structures addressing the public (European Network of Living Labs (ENOLL)<sup>31</sup>), and ephemeral structures requiring public involvement: 1) Government hackathons (Singapore India Hackathon 2023, GovHack 2023)<sup>32</sup>, 2) Academic (University of Sydney 2023 Humanitarian Innovation Awards)<sup>33</sup>, 3) Social hackathons (Arizona State University Hacks for Humanity: Hacking for the Social Good)<sup>34</sup>, 4) National innovation days, months weeks, years, for example Sweden Innovation Days (2023), South Carolina Innovation Month (2023) and UAE Innovates (2023).
- Joined-up national innovation, like the New European Innovation Agenda (NEIA) and the policy instruments it oversees, such as European Digital Innovation Hubs (EDIH), European Innovation Ecosystems (EIE) and Regional Innovation Valleys (RIV)<sup>35</sup>.

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<sup>27</sup> For more information on and examples of co-creation under normal circumstances see Selloni, 2017; Loeffler & Bovaird, 2020 and Cepiku and others, 2020.

<sup>28</sup> For more information on and examples of humanitarian co-creation see Mitcham & Muñoz, 2010; Koumpouros and others, 2022a; Koumpouros and others, 2022b.

<sup>29</sup> For more information on and examples of multi-helix co-creation see Carayannis & Campbell, 2018; De Oliveira Monteiro & Carayannis, 2017; Etzkowitz, 2008; Saad & Zawdie, 2011.

<sup>30</sup> Latour, 2023.

<sup>31</sup> See <https://enoll.org>.

<sup>32</sup> See <https://www.sih.gov.in/> and <https://govhack.org/>.

<sup>33</sup> See <https://hack-eng.sydney.edu.au/>.

<sup>34</sup> See <https://www.hacksforhumanity.io/>.

<sup>35</sup> For more information see <https://research-and-innovation.ec.europa.eu/>; <https://digital-strategy.ec.europa.eu/en/activities/edihs>; [https://eisme.europa.eu/programmes/european-innovation-ecosystems\\_en](https://eisme.europa.eu/programmes/european-innovation-ecosystems_en).

(c) Culture, meaning an ensemble of values that guide decisions and manners of doing and avoiding things. Five different patterns can be further identified within this cluster:

- A culture for accomplishment, i.e., a shift from measuring what we do, to measuring what we accomplish (Gault & Soete, 2022; OECD, 2018).
- A culture for well-being, i.e., a shift from managing results only, to managing employee well-being as well (Miller and others, 2008; Hamill, 2019).
- A culture for granting, i.e., a shift from holding/owning public sector resources (especially, public sector data), to stewarding (Experian, ©2024; Rosales, 2019; Lajoie and others, 2022) and curating (Pratt, 2022; Curator, 2023) these resources, granting to others (Open Data Institute, 2023).
- A culture for change, i.e., a shift from considering change as an option/threat/foe, to change as a need/opportunity/friend, especially in innovation and job insecurity (Van Hootegem and others, 2018; Shoss and others, 2022).
- A culture for expanded possibilities, i.e., a shift from thinking in terms of what is allowed, no matter how it works, to thinking in terms of what should be allowed and work in a better way (Thompson 1965; Kattel and others, 2022).

(d) Openness, as a manifested tendency towards transparency, accountability and sharing, exchanging and collaborating with others. Four different patterns can be further identified within this cluster:

- Intra-organizational openness, i.e., curating an internal organizational culture and mechanisms of sharing ideas between organization members from different branches and hierarchy levels (Ishak, 2017; Francisco, 2021).
- Inter-organizational openness, i.e., coming together in cross-organizational one-off projects (e.g., European Institute of Public Administration, 2021a) or lasting forums (e.g., European Institute of Public Administration, 2021b) for (i) sharing of ideas and (ii) co-creation of new ideas for innovation.
- Partial public-facing openness, i.e., allowing their innovation ideas to be discussed with the public across the Inform, Consult and Involve levels of IAP2’s Spectrum of Public Participation (International Association for Public Participation, n.d.).
- Full public-facing openness, i.e., allowing their innovation ideas to be co-created by the public across the Collaborate and Empower levels of IAP2’s Spectrum of Public Participation, allowing room to people-led innovation (People-led Innovation, n.d.; European Environment Agency, 2021; Saunders, 2022).

These structural patterns can guide the planning and implementing of public institution innovation for specific cases and for more generally adopted processes and practices. All these patterns could be possible answers to the following guiding question: “how do we want to structure our innovation work across relationships between people and values?”. Table 15 brings together this guiding question with the structural patterns identified and concludes the analysis of this chapter.

**Table 15. Structural patterns (Pa) in innovation practices of public institutions**

<b>Guiding question: how do we want to structure our innovation work across relationships between people and values?</b>	
<b>Common theme</b>	<b>Structural patterns (Pa)</b>
Co-creation of innovation	Pa.1 Co-creation under normal conditions.
	Pa.2 Humanitarian co-creation.
	Pa.3 Multiple-helix co-creation.
Incubation of innovation	Pa.4 Internal-facing incubation.
	Pa.5 Public-facing incubation.

<b>Guiding question: how do we want to structure our innovation work across relationships between people and values?</b>	
<b>Common theme</b>	<b>Structural patterns (Pa)</b>
	Pa.6 Joined-up national innovation.
Culture of innovation	Pa.7 A culture for accomplishment.
	Pa.8 A culture for well-being.
	Pa.9 A culture for granting.
	Pa.10 A culture for change.
	Pa.11 A culture for expanded possibilities.
Openness of innovation	Pa.12 Intra-organizational openness.
	Pa.13 Inter-organizational openness.
	Pa.14 Partial public-facing openness.
	Pa.15 Full public-facing openness.

Source: Developed by the Author.



## II. INNOVATION MODEL FOR ARAB PUBLIC INSTITUTIONS

### A. AN EXPLANATION OF THE NEED FOR A MODEL

The opening section of this chapter focuses on the need for a model that can be used to deploy innovation processes within Arab public institutions. The choice to think of a model as a solution that can help Arab public institutions (just like public institutions in other regions, or, more generally, just like other institutions in a broader perspective) with their innovation efforts, is a choice that it is meaningful to discuss.

According to a basic definition by Wikipedia<sup>36</sup>, a model is “*an informative representation of an object, person or system*”. Thus, an important function of models is to inform, about something which, due to reasons of complexity or dynamics, may be difficult for us to conceive in a complete manner. In this line of thought, modelling studies like the General Model Theory by H. Stachowiak posit that the fundamental properties of any model are “*1. Mapping: Models are always models of something, i.e. mappings from, representations of natural or artificial originals, that can be models themselves. 2. Reduction: Models in general capture not all attributes of the original represented by them, but rather only those seeming relevant to their model creators and/ or model users. 3. Pragmatism: Models are not uniquely assigned to their originals per se. They fulfil their replacement function a) for particular – cognitive and/ or acting, model using subjects, b) within particular time intervals and c) restricted to particular mental or actual operations.*”<sup>37</sup>.

Conceptual models can be defined as referring “to any model that is formed after a conceptualization or generalization process”. They “are often abstractions of things in the real world, whether physical or social”, and the value of a conceptual model “is usually directly proportional to how well it corresponds to a past, present, future, actual or potential state of affairs”<sup>38</sup>.

The abovementioned scope and properties of models and conceptual models are all useful for approaching innovation, which is by nature a multi-faceted, complex and creative process, involving a number of intertwined factors<sup>39</sup>, with no single path guaranteeing success. The importance and usefulness of models is also recognized in other domains with similar difficulties, from design (Center for Heritage & Society, n.d.), all the way to instructional design (Instructional Design Central, n.d.), software engineering (McGregor and Cohen, 2023) and systems engineering (Friedenthal and others, n.d.; Friedenthal and others, 2012) as well as in the domain of epistemology itself (Titelbaum 2013).

In all these domains, models are used with a twofold purpose: to represent *something that exists*, and, to help build *something that does not exist yet*. These capabilities are especially useful when talking about a model for innovation, as such a model can be used to represent innovation processes that exist already, and to provide degrees of creativity and freedom for building up new processes that can lead to innovation.

This thinking drives the premises of this report, to propose an innovation model for public institutions in the Arab region. Additionally, the need for a model in this context is also driven by four more context-

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<sup>36</sup> Model (2023). In *Wikipedia: The Free Encyclopedia*. 5 December. Available from <https://en.wikipedia.org/w/index.php?title=Model&oldid=1188423750>.

<sup>37</sup> modelpractice (2012). *General Model Theory by Stachowiak*. 12 July. Available from <https://modelpractice.wordpress.com/2012/07/04/model-stachowiak/>.

<sup>38</sup> Conceptual model (2023). In *Wikipedia: The Free Encyclopedia*. 21 November. Available from [https://en.wikipedia.org/w/index.php?title=Conceptual\\_model&oldid=1186150771](https://en.wikipedia.org/w/index.php?title=Conceptual_model&oldid=1186150771).

<sup>39</sup> *Intertwingularity* being a term coined by Ted Nelson to express the complexity of interrelations in human knowledge. For more information see <https://en.wikipedia.org/w/index.php?title=Intertwingularity&oldid=1168289514>.

specific factors, which are:

- needs that stem from the complexity of conceiving public innovation.
- needs that stem from the complexity of managing public innovation.
- needs that stem from the specific context of the Arab region, in terms of public innovation.
- the need to provide, as an aid for innovation, Arab region public institutions with a more structured model which, as opposed to a more general unstructured guideline, is standardized, thus having a series of important direct positive effects.

Table 16 shows an analysis of the context-specific needs of Arab public institutions that drove the development of the proposed innovation model. At the same time, the relation of the model proposed to these needs is not limited only to the fact that these needs have driven development of the model. The satisfaction of these needs comprises an overall design goal for the model proposed.

**Table 16. Context-specific needs driving development of the proposed innovation model for Arab public institutions**

<b>Context-specific needs</b>	<b>Detailed aspects</b>
Needs that stem from the complexity of conceiving public innovation	Multiple dimensions of publicness in the concept of public innovation, in the sense that it comprises innovation, which is produced by public institutions, in a public manner, and with a public purpose
	Multiplicity of factors that come into interplay and affect the feasibility and quality of innovation, be it information systems factors (procedures, data, and others), PEST factors, as well as human factors (attitudes, knowledge, motives, fears, and others)
	Multiplicity of synergies between these factors that come into interplay
	Multiplicity and complexity of different relations that exist between innovation and technology
	Intensification of this complexity when referring to emerging technology
Needs that stem from the complexity of managing public innovation	Managing multiple factors individually, and across their synergies, at the same time
	Managing public innovation efforts as projects, with time, budget, quality and people satisfaction objectives that, although antagonistic to each other, still have to be met at the same time
	Managing, risks (i.e., keep it down to low probability and impact levels, and mitigate their appearance) that are inherent in an innovation effort, given that the latter is an effort attempting to change something that is known, into something yet unknown
	Provide structure and guidance to the people involved in an innovation effort, to help them handle the multiplicity of factors
	Allow freedom of choice to these same people, due to the creative nature of innovation that eludes algorithmic prescriptions
	Facilitate the separation of concerns, not to risk that innovation work may stagnate because of trying to cope with too many different concerns at the same time
Needs that stem from the specific context of the Arab region in terms of public innovation	Desire to take stock of lessons learnt and experience from other countries
	Diligence required to avoid porting into the Arab region ready-made recipes from other countries, that might not fit the Arab region countries' characteristics
	Differences between countries within the region which may have advanced more than fellow countries or less than fellow countries in the region in terms of innovation culture and technology maturity
	Differences between the levels of resources available to different

Context-specific needs	Detailed aspects
	countries in the region
	“Tailorability” of solutions that is required because of these differences
Need to provide as an aid for innovation to Arab region public institutions a more structured model which, as opposed to a more general unstructured guideline, is standardized, thus having a series of important direct positive effects	Need to provide a model with a closed description, to place limits on the time and effort required for communicating it
	Need to provide a model which, once its learning curve is traversed, leads to uninterrupted productivity
	Facilitate the artifacts created by applying the model to have a standard format for presentation and storage
	Facilitate, in case of improvements, these artifacts to have a clear versioning history and management
	Make work and collaboration less charged with clarification questions and answers, and free up time for essential work
	Allow innovation work to be integrated into the day-to-day realities, as one more standard organizational function

Source: Developed by the Author.

Considering this analysis, the overall design goal of the model proposed can be stated as follows:

*To map and represent the different elements found in public sector innovation efforts in a manner that is informative, offers structure, and provides Arab public institutions with an array of pathways to innovation, together with guidance and freedom for selecting their path preferred, according to the own contexts, realities and priorities at each point in time.*

#### B. BRIEF DESCRIPTION OF THE METHODOLOGY USED TO DEVELOP THE MODEL

As an introduction to the methodology, it is important to start from the specific design objectives that were set for this model, drawing from the analysis and overall design goal presented in the previous section.

Table 17 presents the first part of these design objectives, including those from the needs’ analysis above. All design objectives set for this model are considered of equal value, and they are not subsumed by each other, in the sense that achievement of any design objective does not automatically imply achievement of another. Therefore, the model development work embarked on a quest to meet every objective separately, and at the same time.

**Table 17. Needs analysis-based design objectives for the innovation model proposed for Arab public institutions**

Needs analysis-based design objectives (NDOs)	Descriptions of the objectives
NDO.1	Keep the model short in template size and textual descriptions, explicitly focused on asking to think about only what is essential
NDO.2	Avoid employing technical terminology, to keep the model understandable without specialized prior knowledge
NDO.3	Accommodate the ‘what’ as well as the ‘how’ aspects of an innovation effort
NDO.4	Strike a good balance between innovation process structure and freedom
NDO.5	Keep the model modular, so that it allows innovation teams to work on different issues one-by-one, and manage their progress accordingly
NDO.6	Support use process versatility
NDO.7	Have tolerance to stakeholder contribution irregularities
NDO.8	As much as possible, simplify, demystify and trivialize innovation efforts, so that they can become an activity accessible to all members of a public institution
NDO.9	Help with quantifying progress of innovation efforts
NDO.10	Ensure conceptual clarity of the elements used
NDO.11	Provide visual representations of the elements used
NDO.12	Provide support for visionary thinking
NDO.13	Have potential to convey a positive experience for participating in an innovation effort
NDO.14	Have potential to convey a positive experience for coordinating an innovation effort

Source: Developed by the Author.

A second part of the model’s design objectives builds on the understanding that innovation<sup>40</sup>, although not synonym with change, still has an important aspect of change inherent in its realization, as it calls for realizing and using *new* practical methods. On these grounds an innovation model, i.e., a model to be used for conceiving, implementing and managing innovations, needs to provide support for managing change as well.

In today’s dynamic environment, change management is an important function of all public institutions and organizations in all sectors, whether formally recognized as such or not. Lawton & Pratt (2022) defines change management as “*a systematic approach to dealing with the transition or transformation of an organization’s goals, processes or technologies*”, with the purpose to “*implement strategies for effecting change, controlling change and helping people to adapt to change*”. In this light, change management is a complex and multi-faceted process, and thus specific models, to help successful change management, have emerged over the years.

Sources like GuideSpark (n.d.), CU|Online (2017), SafeStart (2020), Indeed (2022), Whatfix (2022a; 2022b), Indeed (2023a) offer a simple introductory guidance to the use of change management models and highlight the currently popular and better-established models. Table 18 presents 5 of these models and their main components.

**Table 18. Some well-established change management models and their main components**

<b>Change management model</b>	<b>Main components</b>
ADKAR Model <sup>a</sup>	Awareness; Desire; Knowledge; Ability; Reinforcement
Kotter’s 8-Step Change Model <sup>b</sup>	Increase urgency; Recruit guiding team; Develop the vision; Communicate the required buy-in; Empower action; Develop quick wins; Build on the change; Make it stick
Kübler-Ross’ Change Curve <sup>c</sup>	Denial; Anger; Bargaining; Depression; Acceptance
Lewin’s Change Model <sup>d</sup>	Unfreeze; Change; Refreeze
McKinsey 7-S Model <sup>e</sup>	Strategy; Structure; Systems; Shared values; Style; Staff; Skills

Source: Author’s analysis from GuideSpark (n.d.), CU|Online (2017), SafeStart (2020), Indeed (2022), Whatfix (2022), Indeed (2023b) for model selection. Model components drawn from Indeed (2023a).

Notes:

<sup>a</sup> For additional information and explanations of the model see ProSci (n.d.) and LucidChart (n.d.).

<sup>b</sup> For additional information and explanations of the model see MindTools (n.d.b), Lucidity (n.d.), Warrilow (n.d.).

<sup>c</sup> For additional information and explanations of the model see Malik (2022), WalkMe (2023).

<sup>d</sup> For additional information and explanations of the model see Stone & Hartzell (2023), Raza (2019).

<sup>e</sup> For additional information and explanations of the model see Malik (2023), Management Consultant (2023), Kenton (2022), Corporate Finance Institute (n.d.), McKinsey 7S Framework (2024)

Change management becomes more related to soft management elements and strategies. Communication, collaboration and commitment are discussed as the essentials of effective change management whereas the quest for sustainable organizational change links more and more change management to leadership and gives rise to the people-centred notion of change agents.<sup>41</sup> This line of thought points more to the side of soft management, focusing primarily on people and emotions, in place of hard management, focusing primarily on plans, structures and performance.<sup>42</sup> This shift is already present in the McKinsey 7-S Model for change management, one of the best-established ones which complements the hard elements of Strategy, Structure and Systems with the soft elements of Style, Staff and Skills, and places one

<sup>40</sup> The report adopts the working definition of “*the realization and use of new practical methods that tangibly improve a public institution’s processes, services and products which address current and new needs of citizens, businesses and other public institutions*”. For a more detailed discussion of this working definition see the Introduction of this report.

<sup>41</sup> Crestcom, 2022; Abbas, 2022; Whatfix, 2022b.

<sup>42</sup> Freifeld, 2013; Personio, n.d.

more soft element, that of Shared Values, at the centre.<sup>43</sup>

Considering this analysis, and the important role of change management within innovation efforts two more design goals are put forward for the innovation model proposed and presented in Table 19. Concerning the rationale behind setting these goals it is mentioned that, given the creative and people-intensive nature of innovation as a process, the soft strategy elements mentioned above are of critical importance for innovation work. In this respect, support for soft strategy elements by the innovation model is promoted to a design goal of its own.

**Table 19. Change management-based design objectives for the proposed innovation model**

Change management-based design objectives (CDOs)	Descriptions of the objectives
CDO.1	provide support for the components of well-established change management models and the role these play in innovation work
CDO.2	facilitate structuring of innovation work and management of changes incurred from innovation around people-centred soft strategy elements, besides planning-centred hard strategy elements

Source: Developed by the Author.

With these design goals in mind, the overall methodology that has been adopted to develop the innovation model was structured as follows:

(a) Elaborate on the study parts focusing on *the current state of play* concerning innovation work of public institutions in the Arab region and beyond, and bring forward objectives (see Introduction), current trends and practices, challenges and pitfalls, examples, the role of emerging technologies, structural patterns (see Chapter 1) that currently exist for this work.

(b) Elaborate on the study parts focusing on *a future state of play* concerning innovation work of public institutions in the Arab region and beyond, and bring forward suggested steps for triggering innovation, guidelines to address the challenges of implementing innovation, ideas on nurturing/integrating innovation as part of the government day-to-day (see Chapter 3), as well as issues or challenges that can be addressed through innovation and guidelines for building local use cases of innovation (see Chapter 4).

(c) Make appropriate abstractions of all of these findings for the present and ideas for the future and formulate these abstractions as components that are fed into the innovation model (presented in Chapter 2 herein), so that this model *loops back* into findings of the current state of play, while it also *loops forward* into ideas for a future state of play, and thus serves as a *methodological vector* that can move us from the current state of play into a future state of play concerning the innovation work of Arab public institutions.

(d) Make sure that the model components developed in this manner cover all the concepts that are necessary according to the needs analysis-based and change management-based design goals of the model, with a special interest for soft strategy concepts.

(e) Give to this model some structure, which defines how the model components can be used by Arab public institutions for conceiving and managing innovation. Make sure that this structuring effort remains guided by the design goals of the model, and by design goal NDO.6 for supporting process *versatility*.

(f) With versatility of innovation processes in mind, structure and represent this model through a cognitive metaphor which is familiar to all people, and representative of different pathways that we can take to success. The cognitive metaphor of this sort that has been chosen for the innovation model is that of an *innovation cookbook*.

(g) As a general principle, allow the model to be proposed to depart from a *descriptive* logic in terms of how things are at present, move on to a more *prescriptive* logic in terms of how things could be in the

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<sup>43</sup> Malik, 2023.

future, but not end up in a *normative* logic in terms of how things should be.<sup>44</sup> In this sense, the model would take the cookbook cognitive metaphor one step further: just as there are generally accepted cooking rules and recipes for good nutritional value and nice taste, without this implying that a given recipe is equally nutritionally fit and tasteful for two different people, the model would prescribe some innovation recipes for good quality of outcomes and nice experience from the process, without nevertheless moving on to normalize an one-size-fits-all approach and claim that any of these recipes is suitable for all institutions. This principle, in other words, calls for keeping *tailorability* as an overarching principle that guides development of the innovation model.

(h) Finally, integrate into this model appropriate approaches and results from the work presented in UN ESCWA’s *Guideline on Fostering Innovation in the Public Sector of the Arab Region*<sup>45</sup>, such as the IDEA lifecycle model for public sector innovation and other approaches that form parts of this Guideline.

### C. DETAILED DESCRIPTION AND EXPLANATION OF THE MODEL, ITS COMPONENTS AND THE PROCESS CYCLE

The proposed innovation model, in the form of an *innovation cookbook*, comprises a total of 27 elements (termed as *ingredients*) and 253 different nuances of these elements (termed as *flavours*) that can be used for public sector innovation work, be it in ad hoc innovation efforts, in day-to-day innovation work or in an organization function of innovation of Arab public institutions and local administrations.

Table 20 presents these ingredients with some basic information for each, in order of appearance in the study text. Annexes B.1 to B.27 present the different flavours of each innovation ingredient identified, in alphabetical order of the bigrams used as short reference to the innovation ingredients.

**Table 20. Ingredients of the proposed innovation model**

Ingredient	Bigram	Guiding question	Further discussed in	Number of flavours
Public-facing objectives of innovation	Op	which objective in terms of improvements tangible by the public do we want to accomplish with innovation?	Introduction	4 Op flavours
Internal-facing objectives of innovation	Oi	which objective in terms of improvements to internal operations do we want to accomplish with innovation?	Introduction	2 Oi flavours
Societal objectives of innovation	Os	which objective in terms of societal needs do we want to accomplish with innovation?	Introduction	7 Os flavours
Focus level	Fl	what are we doing with our work?	Chapter 1 Section A	5 Fl flavours
Envisaged beneficiaries	Be	for whom are we doing this work?	Chapter 1 Section A	5 Be flavours
Co-creation actors	Ca	with whom are we doing this work?	Chapter 1 Section A	4 Ca flavours
Arab region-specific government innovation themes	Ar	which Arab region-specific government innovation theme are we addressing?	Chapter 1 Section A	20 Ar flavours
Key performance indicators	Kp	what are we measuring for performance?	Chapter 1 Section A	24 Kp flavours
Technologies for innovating	Te	which key technology are we taking stock of to innovate?	Chapter 1 Section A	14 Te flavours
Indicator-level challenges	Ci	which innovation indicators are we improving in the process of our innovation work?	Chapter 1 Section B	11 Ci flavours
Global-level challenges	Cg	which global challenges or risks are we locally helping to address through the outcomes of our innovation work?	Chapter 1 Section B	26 Cg flavours
Structural patterns	Pa	how do we want to structure our innovation	Chapter 1 Section	15 Pa flavours

<sup>44</sup> Dillon, 1960; Bell and others, 1988.

<sup>45</sup> ESCWA, 2017.

<b>Ingredient</b>	<b>Bigram</b>	<b>Guiding question</b>	<b>Further discussed in</b>	<b>Number of flavours</b>
		work across relationships between people and values?	E	
Organizational elements	Oe	which organizational elements do we want to integrate in the innovation function of our institution?	Chapter 3 Section A	7 Oe flavours
Options for ideation methods	Id	which options for ideation methods do we want to consider for the innovation function of our institution?	Chapter 3 Section A	3 Id flavours
Options for public participation methods	Pp	which options for public participation methods do we want to consider for the innovation function of our institution?	Chapter 3 Section A	5 Pp flavours
Options for co-creation and innovation toolkits	Cc	which options for co-creation and innovation toolkits do we want to consider for the innovation function of our institution?	Chapter 3 Section A	4 Cc flavours
Options for participatory design methods	Pd	which options for participatory design methods do we want to consider for the innovation function of our institution?	Chapter 3 Section A	5 Pd flavours
Options for serious play methods	Sp	which options for serious play methods do we want to consider for the innovation function of our institution?	Chapter 3 Section A	3 Sp flavours
Options for gamification elements	Ge	which options for gamification elements do we want to consider for the innovation function of our institution?	Chapter 3 Section A	3 Ge flavours
Options for flat organizational designs	Fd	which options for flat organizational designs do we want to consider for the innovation function of our institution?	Chapter 3 Section A	3 Fd flavours
Innovation team dynamics	Td	what are the individual and team dynamics that we need to manage, to help the innovation team deliver successfully?	Chapter 3 Section B	10 Td flavours
Innovation process types	Pt	which process type can we best choose for further structuring our innovation work?	Chapter 3 Section B	9 Pt flavours
Innovation life cycle activities	Lc	which ideation, deliberation, evolution and assimilation activities for the innovations to be developed can we best choose for further structuring our innovation work?	Chapter 3 Section B	25 Lc flavours
Nurturing day-to-day innovation tactics	Nu	what manners can we use to nurture innovation as an integral part of the day-to-day activity in the workplace?	Chapter 3 Section D	9 Nu flavours
Issues for success	Is	what issues for the success of innovation work are we identifying within our institutions and for external beneficiaries/adopters of our innovations?	Chapter 4 Introduction, Chapter 4 Section A	7 Is flavours
Suggestions for success	Su	what suggestions for the success of innovation work are we considering, with respect to priorities and application domains of our innovation planning?	Chapter 4 Introduction, Chapter 4 Section A	11 Su flavours
Local use case innovation guidelines	Lg	with what guidelines can we build local use cases of innovation to share with others?	Chapter 4 Introduction, Chapter 4 Section B	12 Lg flavours

Source: Compiled by the Author.

In summary, part of the ingredients comes from analysis of the current state of play in the public sector innovation work of Arab public institutions and worldwide, and is discussed in the Introduction (the Op, Oi and Os ingredients) and Chapter 1 of the study (the Fl, Be, Ca, Ar, Kp, Te, Ci, Cg and Pa ingredients). The remaining part of the ingredients come from analysis of a future state of play for public sector innovation work in Arab public institutions and worldwide and is discussed in Chapter 3 (the Oe, Id, Pp, Cc, Pd, Sp, Ge, Fd, Td, Pt, Lc and Nu ingredients) and in Chapter 4 (the Is, Su and Lg ingredients) of the study. Therefore,

Chapter 2 loops back and forth into the different parts of the report. Consequently, the interested reader could be advised to peruse the present study either in a linear manner, following the serial order of the study parts as they appear in the study text, or in a non-linear manner, starting with the Introduction and Chapter 1, then moving on to Chapter 3 and Chapter 4, and finally ending up in Chapter 2.

This model has been developed to meeting the needs analysis-based design objectives (NDOs) (see Table 17), and the change management-based design objectives (CDOs) (see Table 19). Consequently, a central feature of the model, which traverses both its structure, and its use tactics is that of *versatility*, in that innovation work is always a multi-faceted, complex and creative process, for which no algorithmic one-size-fits-all guideline can be given. In this respect, the cognitive metaphors presenting this model, were all drawn from creative human activities that share the form of a small (or bigger) adventure with uncertain and open-ended outcomes, such as *cooking*, *writing*, and *chemistry*. There are at least three different cognitive metaphors through which the model could be conceived, summarized in Table 21.

**Table 21. Different cognitive metaphors for conceiving the proposed innovation model**

Different ways to see innovation	<i>cooking</i>	<i>writing</i>	<i>chemistry</i>
Different ways to see different pathways to innovation through the model	<i>recipes</i>	<i>sentences</i>	<i>reactions</i>
Different ways to see people that engage in innovation by means of the model	<i>chefs</i>	<i>writers</i>	<i>chemists</i>
Different ways to see the first-level elements of the model	<i>ingredients</i>	<i>letters</i>	<i>chemical elements</i>
Different ways to see the inventory of all of the model's first-level elements	<i>a pantry</i>	<i>an alphabet</i>	<i>a periodic table</i>
Different ways to see the nuances of each first-level element of the model	<i>flavours</i>	<i>accents</i>	<i>atoms</i>
Different ways to see the entire model	<i>a cookbook</i>	<i>a writer's guide</i>	<i>a chemistry manual</i>

Source: Compiled by the Author.

Out of all the different cognitive metaphors, the *cooking* metaphor was adopted. The model is presented and discussed overall as an *innovation cookbook*, with the rest of the relevant terminology used for its different aspects, and with the people engaged in innovation work by means of this model to think of themselves as *innovation chefs*.<sup>46</sup> The main reason for adopting the cooking metaphor, is twofold:

- firstly, cooking is fundamental to everyday human life across geographies and civilizations, with a history going back to times before the discovery of writing and the establishment of chemistry; thus, the cooking metaphor is one that speaks to all of us, across all cultures.
- secondly, cooking is a process that combines the practical need to prepare food with elements of creativity and aesthetics for our own pleasure, as well as with aspects of health, nutrition and love for the people that we care for, i.e., the people that we are cooking for. In this respect, there is a clear and strong analogy drawn between cooking with love for someone to feed and innovating with care for the users of our innovations, and this analogy should not go unnoticed.

Based on these two observations, it is not by chance that *cookbook* is a word much used nowadays, both literally, and metaphorically such as how-to guides, and especially in the realm of modern technology, digital transformation innovation itself. Thus, the adoption of this metaphor in the present study, with one notable exception: in the following, the inventory of the innovation model ingredients, beyond being called *an innovation pantry*, is also presented as *a periodic table of innovation elements*, in preference to an *innovation alphabet*, due to the strong self-explanatory potential of the periodic table metaphor, which is also

<sup>46</sup> As innovation remains a process that can only succeed when we come to feel part of it, different audiences may feel better fit with a different cognitive metaphor, such as the writing metaphor (seeing themselves as innovation writers), or the chemistry metaphor (seeing themselves as innovation chemists). They are free to adopt the most suitable metaphor for their context.



used in other similar modelling contexts<sup>47</sup>, as well as due to the random-access and non-finite/non-exhaustive nature of a periodic table of chemical elements, unlike the sequential access and finite/exhaustive nature of on alphabet.

A first possible view of the model is a *design objectives satisfaction* view, showing how the model's ingredients, their properties and tactics of use may contribute to meeting the design objectives. Table 22 shows that effective coverage of the design objectives set is achieved by the proposed model as each objective is contributed to by as at least one combination of model ingredients, their properties and use tactics contributes, directly or indirectly, to at least one design objective.

**Table 22. Ways in which ingredients of the innovation model proposed, their properties and use tactics contribute to the design objectives set for the innovation modelling effort**

<b>Design objectives for the innovation modelling effort</b>	<b>Meeting these objectives through the innovation model proposed</b>
NDO.1 keep the model short in template size and textual descriptions, explicitly focused on asking to think about only what is essential	All model ingredients are introduced by short guiding questions, focusing on essential aspects.
NDO.2 avoid employing technical terminology, to keep the model understandable without specialized prior knowledge	All model ingredients are explained in non-technical terminology.
NDO.3 accommodate the 'what' as well as the 'how' aspects of an innovation effort	Specific model ingredients correspond, directly or indirectly, to the "what" (for instance, the Op, Oi, Os, Fl, Be, Ar, Cg ingredients) and to the "how" (for instance, the Ca, Te, Is, Su, Lg ingredients) aspects of an innovation effort, as further elaborated in the innovation pantry / periodic table of innovation elements view provided below.
NDO.4 strike a good balance between innovation process structure and freedom	Ingredients like the Pt ingredient on innovation process types and the Lc ingredient for Innovation life cycle activities explicitly address this design objective.
NDO.5 keep the model modular, so that it allows innovation teams to work on different issues one-by-one, and manage their progress accordingly	The breakdown of different and intertwined aspects of innovation work to atomic ingredients helps separate concerns and focus on using one model ingredient at a time.
NDO.6 support use process versatility	Ingredients like the Pt ingredient on innovation process types and the Lc ingredient for Innovation life cycle activities, coupled with the overall model use tactics described below, explicitly address this design objective.
NDO.7 have tolerance to stakeholder contribution irregularities	Ingredients like the Td ingredient for innovation team dynamics and the Fd ingredient for flat organizational design options explicitly address this design objective.
NDO.8 as much as possible, simplify, demystify, and trivialize innovation efforts, so that they can become an activity accessible to all members of a public institution	Ingredients like Oe for the organizational elements to include in an innovation function explicitly addresses this design objective.
NDO.9 help with quantifying progress of innovation efforts	Ingredients like the Kp ingredient for key performance indicators and the Ci ingredient for indicator-level challenges explicitly address this design objective.
NDO.10 ensure conceptual clarity of the elements used	All ingredients and their associated flavours are discussed in the corresponding parts of the study by means of textual explanations (as an example, the Td ingredient), images (as an example, the Nu ingredient), innovation examples (as an example, the Os ingredient), references to sources (as an example, the Pp ingredient) or combinations thereof, whereas guiding questions serve to keep the scope of each ingredient clear and apart from the scope of other ingredients.

<sup>47</sup> For instance, the *Periodic Table of Gamification Elements*, by A.Marczewski, online available at <https://www.gamified.uk/2017/04/03/periodic-table-gamification-elements/>.

Design objectives for the innovation modelling effort	Meeting these objectives through the innovation model proposed
NDO.11 provide visual representations of the elements used	The innovation pantry/periodic table of innovation elements view provided below addresses this design objective.
NDO.12 provide support for visionary thinking	Ingredients like the Id ingredient for options for ideation methods, the Pp ingredient for options for public participation methods, the Cc ingredient for options for co-creation and innovation toolkits and the Pd ingredient for options for participatory design methods explicitly address this design objective.
NDO.13 have potential to convey a positive experience for participating in an innovation effort	Ingredients like the Sp ingredient for options for serious play methods and the Ge ingredient for options for gamification elements explicitly address this design objective.
NDO.14 have potential to convey a positive experience for coordinating an innovation effort	Ingredients like the Pa ingredient for different structural patterns to connect people and values, as well as the Nu ingredient for nurturing day-to-day innovation tactics explicitly address this design objective.
CDO.1 provide support for the components of well-established change management models and the role these play in innovation work	Ingredients like Fl for the focus level of innovation work, Pa for structural patterns connecting people and values, Oe for the organizational elements to integrate in an innovation function, Td for innovation team dynamics, Pt for innovation process types and Lc for innovation life cycle activities, combined, address this design objective.
CDO.2 facilitate structuring of innovation work and management of changes incurred from innovation around people-centred soft strategy elements, besides planning-centred hard strategy elements	Ingredients like Td for innovation team dynamics, Fd for flat organizational design options, and Nu for nurturing day-to-day innovation tactics, combined, address this design objective.

Source: Compiled by the Author.

A second, more practical view of the model is a “storification” potential view, which involves exploring the model’s potential to think, structure, design, present and enact an innovation effort in the form of a story. Such an *innovation story* could be structured across the traditional 5W1H storytelling format, corresponding to the *who, what, where, when, why* and *how* basic questions, which is well established in the literature for storytelling as well as for many more realms.<sup>48</sup> All of the domains where the 5W1H storytelling are used as a thinking and management tool are related to innovation. Therefore, in innovation, an effort could be conceived, communicated and managed, along the 5W1H storification dimensions shown in Table 23.

**Table 23. Guiding questions for storifying the conception, communication and management of an innovation effort across the 5W1H storytelling format**

Guiding questions	Explanations
<i>Who</i> is innovating?	Who is us, inclusively thinking? Who else is involved in any way in this effort, beyond us?
<i>Where</i> are we innovating?	Within which organizational or cross-organizational context (structure, function) are we innovating?
<i>When</i> are we innovating?	How does our innovation work relate timewise to our organizations’ day-to-day operations?
<i>What</i> are we innovating?	What is it that are we changing for the better through this innovation?
<i>Why</i> are we innovating?	What are the objectives and/or challenges to meet through this innovation?
<i>How</i> are we innovating?	What process, tactics, methods, tools are we using in our innovation work?

Source: Compiled by the Author.

<sup>48</sup> For more information on the 5W1H storytelling format see Five Ws (2024) and Creative Minds (©2015). for introductory descriptions, Visual Paradigm Online (n.d.) and Yulianti (2021) for discussions on how this format can be used in tasks such as information gathering, structured thinking and problem solving and Miro (n.d.) and T2Informatik (n.d.) for design projects, including Winer (2023) and Li (2019) for designing products, Arora (2023) and Daily (2023) for designing user experiences; and Ram (2018) and Perfony (n.d.) for project management.

Table 24 presents in a structured manner the storification potential of the proposed innovation model, by relating the model’s ingredients to specific dimensions of the 5W1H storytelling format.

**Table 24. Storification potential of the innovation model proposed, based on the correspondence of the model ingredients to the 6 basic questions of the 5W1H storytelling format**

Ingredients	Storification potential					
	Who	Where	When	What	Why	How
Op – Public-facing objectives of innovation: which objective in terms of improvements tangible by the public do we want to accomplish with innovation?					Why	
Oi – Internal-facing objectives of innovation: which objective in terms of improvements to internal operations do we want to accomplish with innovation?					Why	
Os – Societal objectives of innovation: which objective in terms of societal needs do we want to accomplish with innovation?					Why	
Fl – Focus level: what are we doing with our work?				What		
Be – Envisaged beneficiaries: for whom are we doing this work?	Who				Why	
Ca – Co-creation actors: with whom are we doing this work?	Who					
Ar – Arab region-specific government innovation themes: which Arab region-specific government innovation theme are we addressing?				What	Why	
Kp – Key performance indicators: what are we measuring for performance?				What	Why	
Te – Technologies for innovating: which key technology are we taking stock of to innovate?				What		How
Ci – Indicator-level challenges: which innovation indicators are we improving in the process of our innovation work?				What	Why	
Cg – Global-level challenges: which global challenges or risks are we locally helping to address through the outcomes of our innovation work?				What	Why	
Pa – Structural patterns: how do we want to structure our innovation work across relationships between people and values?	Who	Where	When			How
Oe – Organizational elements: which organizational elements do we want to integrate in the innovation function of our institution?	Who	Where	When			How
Id – Options for ideation methods: which options for ideation methods do we want to consider for the innovation function of our institution?						How
Pp – Options for public participation methods: which options for public participation methods do we want to consider for the innovation function of our institution?	Who					How
Cc – Options for co-creation and innovation toolkits: which options for co-creation and innovation toolkits do we want to consider for the innovation function of our institution?	Who					How
Pd – Options for participatory design methods: which options for participatory design methods do we want to consider for the innovation function of our institution?	Who					How
Sp – Options for serious play methods: which options for serious play methods do we want to consider for the innovation function of our institution?				What		How
Ge – Options for gamification elements: which options for gamification elements do we want to consider for the innovation function of our institution?				What		How
Fd – Options for flat organizational designs: which options for flat organizational designs do we want to consider for the innovation function of our institution?	Who	Where	When			How
Td – Innovation team dynamics: what are the individual and team dynamics that we need to manage, to help the innovation team deliver successfully?	Who	Where	When			How
Pt – Innovation process types: which process type can we best choose for further structuring our innovation work?	Who	Where	When			How
Lc – Innovation life cycle activities: which ideation, deliberation,	Who					How

Ingredients	Storification potential					
	Who	Where	When	What	Why	How
evolution and assimilation activities for the innovations to be developed can we best choose for further structuring our innovation work?						
Nu – Nurturing day-to-day innovation tactics: what manners can we use to nurture innovation as an integral part of the day-to-day activity in the workplace?	Who	Where	When			How
Is – Issues for success: what issues for the success of innovation work are we identifying within our institutions and for external beneficiaries/adopters of our innovations?				What	Why	
Su – Suggestions for success: what suggestions for the success of innovation work are we considering, with respect to priorities and application domains of our innovation planning?				What	Why	
Lg – Local use case innovation guidelines: with what guidelines can we build local use cases of innovation to share with others?	Who	Where	When	What	Why	How

Source: Compiled by the Author.

As can be seen from this analysis, each of the format’s basic questions is answered by more than one model ingredient whereas, at the same time, each model ingredient provides an answer to at least one of the 5W1H questions and, in most cases, to more than one, with the Lg ingredient answering to all questions. Therefore, the proposed model fits well with the 5W1H storytelling format and lends itself to a storified approach to conceive, communicate and manage innovation work.

This potential can be further presented by grouping the model ingredients under basic 5W1H questions each ingredient answers (see Table 25).

**Table 25. Storification potential of the innovation model proposed, shown by grouping the model’s ingredients under the 5W1H basic questions that they answer**

Questions of an innovation story	Innovation model ingredients providing answers
Who is innovating? Who is “us”, inclusively thinking? Who else is involved in any way in this effort, beyond “us”?	Be – Envisaged beneficiaries   Ca – Co-creation actors   Pa – Structural patterns   Oe – Organizational elements   Pp – Public participation methods   Cc – Co-creation and innovation toolkits   Pd – Participatory design methods   Fd – Flat organizational designs   Td – Innovation team dynamics   Pt – Innovation process types   Lc – Innovation life cycle activities   Nu – Nurturing day-to-day innovation   Lg – Local use case guidelines
Where are we innovating? Within which organizational or cross-organizational context (structure, function) are we innovating?	Pa – Structural patterns   Oe – Organizational elements   Fd – Flat organizational designs   Td – Innovation team dynamics   Pt – Innovation process types   Nu – Nurturing day-to-day innovation   Lg – Local use case guidelines
When are we innovating? How does our innovation work relate timewise to our organizations’ day-to-day operations?	Pa – Structural patterns   Oe – Organizational elements   Fd – Flat organizational designs   Td – Innovation team dynamics   Pt – Innovation process types   Nu – Nurturing day-to-day innovation   Lg – Local use case guidelines
What are we innovating? What is it that are we changing for the better through this innovation?	Fl – Focus level   Ar – Arab region themes   Kp – Key performance indicators   Te – Technologies for innovating   Ci – Indicator-level challenges   Cg – Global-level challenges   Sp – Serious play methods   Ge – Gamification elements   Is – Issues for success   Su – Suggestions for success   Lg – Local use case guidelines
Why are we innovating? What are the objectives and/or challenges to meet through this innovation?	Op – Public-facing objectives   Oi – Internal-facing objectives   Os – Societal objectives   Be – Envisaged beneficiaries   Ar – Arab region themes   Kp – Key performance indicators   Ci – Indicator-level challenges   Cg – Global-level challenges   Is – Issues for success   Su – Suggestions for success   Lg – Local use case guidelines
How are we innovating? What process, tactics, methods, tools are we using in our innovation work?	Te – Technologies for innovating   Pa – Structural patterns   Oe – Organizational elements   Id – Ideation methods   Pp – Public participation methods   Cc – Co-creation and innovation toolkits   Pd – Participatory design methods   Sp – Serious play methods   Ge – Gamification elements   Fd – Flat organizational designs   Td – Innovation team dynamics   Pt – Innovation process types   Lc – Innovation life cycle activities   Nu –

Questions of an innovation story	Innovation model ingredients providing answers
	Nurturing day-to-day innovation   Lg – Local use case guidelines

Source: Compiled by the Author.

The above analysis lays the grounds for an arrangement of the innovation model ingredients in an overall ensemble, which represents the complete inventory of these ingredients (i.e., the innovation pantry, by following through the innovation cookbook metaphor), arranged in groups of ingredients that jointly provide answers to one question of an innovation story per group. Additionally, given that the *where* and *when* questions are answered by the same ingredients, these two questions can merge into a single group. This arrangement, then, undertakes the form of a periodic table of innovation ingredients, arranged into thematic groups that provide answers to specific questions of an innovation story (see Figure 6).

It should be noted that some of the innovation model ingredients is entered more than once on the periodic table if they can provide answers to more than one question of an innovation story. Therefore, the innovation pantry of Figure 6 contains more than 27 ingredient occurrences, due to some of the 27 innovation ingredients recognized occurring more than once or stated otherwise, appearing in more than one *shelf* of the pantry, with each shelf corresponding to one of the Who (green shelf), What (orange shelf), Where and When (blue shelf), Why (purple shelf) and How (red shelf) questions of an innovation story.

**Figure 6. Innovation pantry: a periodic model of innovation ingredients from the proposed innovation cookbook**

Who	What	Where and When	Why	How
<div style="border: 1px solid gray; padding: 10px; width: fit-content; margin: 0 auto;">           innovation pantry            a periodic model            of innovation ingredients         </div>				
<b>Be</b> envisaged beneficiaries				<b>Te</b> technologies for innovating
<b>Ca</b> co-creation actors				<b>Pa</b> structural patterns
<b>Pa</b> structural patterns	<b>Fl</b> focus level		<b>Op</b> public-facing objectives	<b>Oe</b> organizational elements
<b>Oe</b> organizational elements	<b>Ar</b> Arab region themes		<b>Oi</b> internal-facing objectives	<b>Id</b> ideation methods
<b>Pp</b> public participation methods	<b>Kp</b> key performance indicators		<b>Os</b> societal objectives	<b>Pp</b> public participation methods
<b>Cc</b> co-creation and innovation toolkits	<b>Te</b> technologies for innovating		<b>Be</b> envisaged beneficiaries	<b>Cc</b> co-creation and innovation toolkits
<b>Pd</b> participatory design methods	<b>Ci</b> indicator-level challenges	<b>Pa</b> structural patterns	<b>Ar</b> Arab region themes	<b>Pd</b> participatory design methods
<b>Fd</b> flat organizational designs	<b>Cg</b> global-level challenges	<b>Oe</b> organizational elements	<b>Kp</b> key performance indicators	<b>Sp</b> serious play methods
<b>Td</b> innovation team dynamics	<b>Sp</b> serious play methods	<b>Fd</b> flat organizational designs	<b>Ci</b> indicator-level challenges	<b>Ge</b> gamification elements
<b>Pt</b> innovation process types	<b>Ge</b> gamification elements	<b>Td</b> innovation team dynamics	<b>Cg</b> global-level challenges	<b>Fd</b> flat organizational designs
<b>Lc</b> innovation life cycle activities	<b>Is</b> issues for success	<b>Pt</b> innovation process types	<b>Is</b> issues for success	<b>Td</b> innovation team dynamics
<b>Nu</b> nurturing day-to-day innovation	<b>Su</b> suggestions for success	<b>Nu</b> nurturing day-to-day innovation	<b>Su</b> suggestions for success	<b>Pt</b> innovation process types
<b>Lg</b> local use case guidelines	<b>Lg</b> local use case guidelines	<b>Lg</b> local use case guidelines	<b>Lg</b> local use case guidelines	<b>Lc</b> innovation life cycle activities
				<b>Nu</b> nurturing day-to-day innovation
				<b>Lg</b> local use case guidelines

Source: Developed by the Author.

To complete the cooking cognitive metaphor for this model, the model itself is branded under the name of *InnoCook*, denoting a model conceived to allow an innovation effort to be considered and managed like a cooking task. All the usual cooking concepts of *recipes*, *cookware*, *stoves*, *meals* and *dishes*, *starters* and *desserts*, and of course the *ingredients* and *flavours* already discussed, can find a meaningful place in the manner this model is used to guide innovation efforts.

Therefore, an innovation effort can be thought of as a *complete meal*, that contains all the menu elements:

- a *starter*, corresponding to the activities that lay the grounds and provide appetite for the innovation to take place
- a *main dish*, corresponding to the activities for planning, setting up, realizing and evaluating this innovation, as well as
- a *dessert*, corresponding to the activities for recognizing and rewarding the help that has been granted by colleagues and any other stakeholders, throughout the innovation effort.

The starter, main dish and dessert stages can be further broken down into specific activities that should take place within each one, by making use of the *InnoCook* model ingredients and flavours discussed already.

The breakdown of these stages into specific activities is presented in the following in the form of sequential process diagrams.

- Figure 7 depicts the overall *complete meal* structure of an innovation effort.
- Figure 8 presents the analysis of the *starter* stage to activities.
- Figure 9 presents the analysis of the *dessert* stage to activities.
- Figures 10 to 14 present the sub-stages and the activities of each sub-stage that make up the *main dish* stage, i.e., the main work of innovation enactment.

The main dish stage of an innovation effort, in this respect, comprises 4 discrete sub-stages, presented in Figure 10:

- a *decide* sub-stage (analysed into activities in Figure 11), to plan the innovation across all aspects by deciding on its ingredients, just like we decide for all the ingredients of a meal.
- a *prepare* sub-stage (analysed into activities in Figure 12), to set up the innovation in practical terms, just like we prepare our materials for cooking.
- a *cook* sub-stage (analysed into activities in Figure 13), to realize the innovation, just like we cook a meal.
- a *serve* sub-stage (analysed into activities in Figure 14), to have this innovation evaluated by its intended users, just like we have our invitees assess the taste of the meal that we have cooked and served to them.

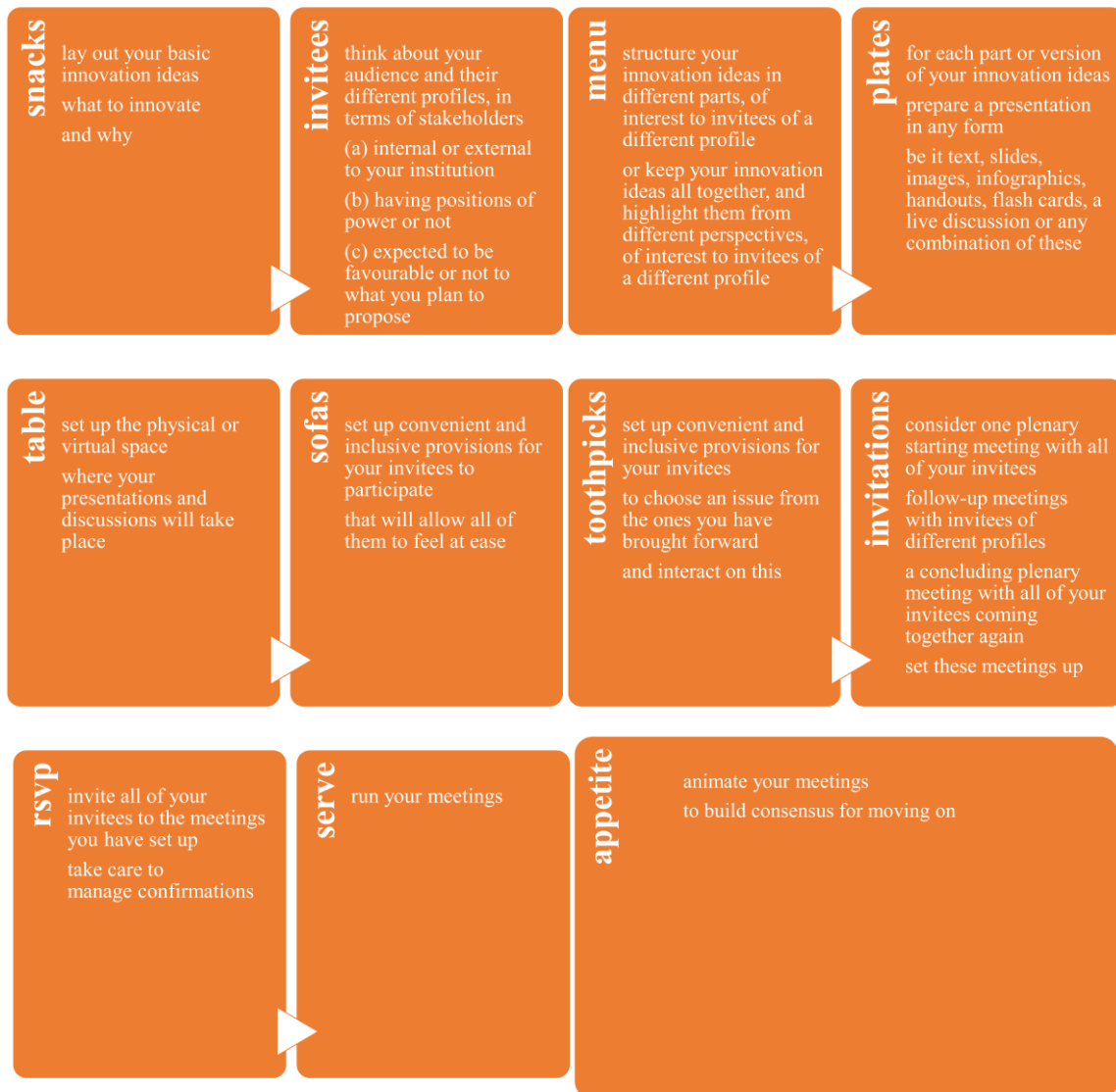
All these stages and activities can make use of the ingredients and flavours. The activities making heaviest use of the ingredients and flavours are those included in the *main dish* stage for planning, preparing, enacting and evaluating the innovation to be delivered, starting from the *decide* sub-stage where the ingredients and flavours that will be used for this innovation effort need to be selected (See Section D for a discussion on selection tactics).

**Figure 7. A top-level structure of an innovation effort, considered in terms of the InnoCook model as an innovation *full meal***



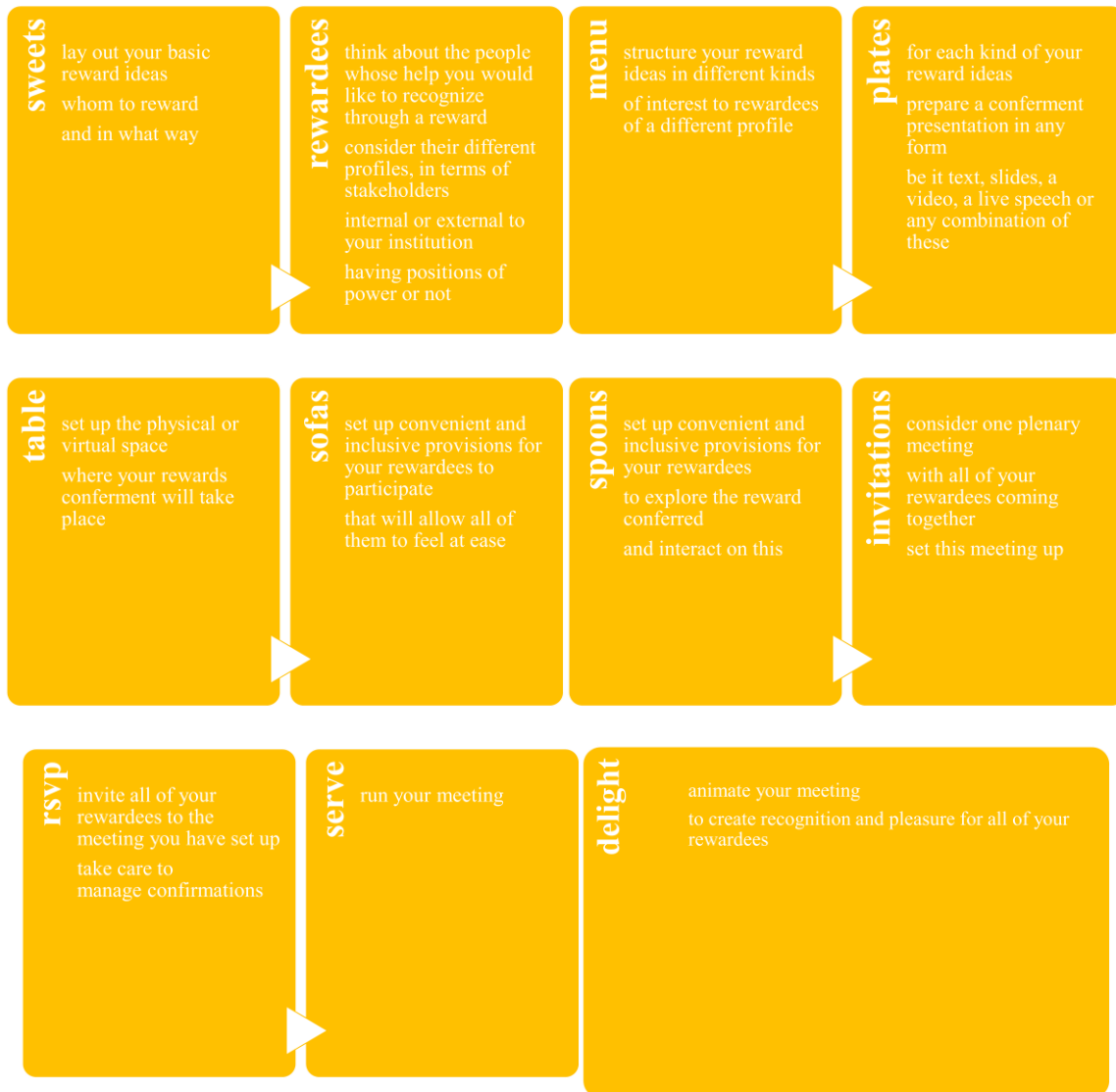
Source: Developed by Author. Photo source: The Mediterranean Dish (n.d.).

**Figure 8. The activities involved in the *starter* stage, to be read in a left-to-right and top-to-down sequence.**



Source: Developed by Author.

**Figure 9.**The activities involved in the *dessert* stage, to be read in a left-to-right and top-to-down sequence.



Source: Developed by Author.

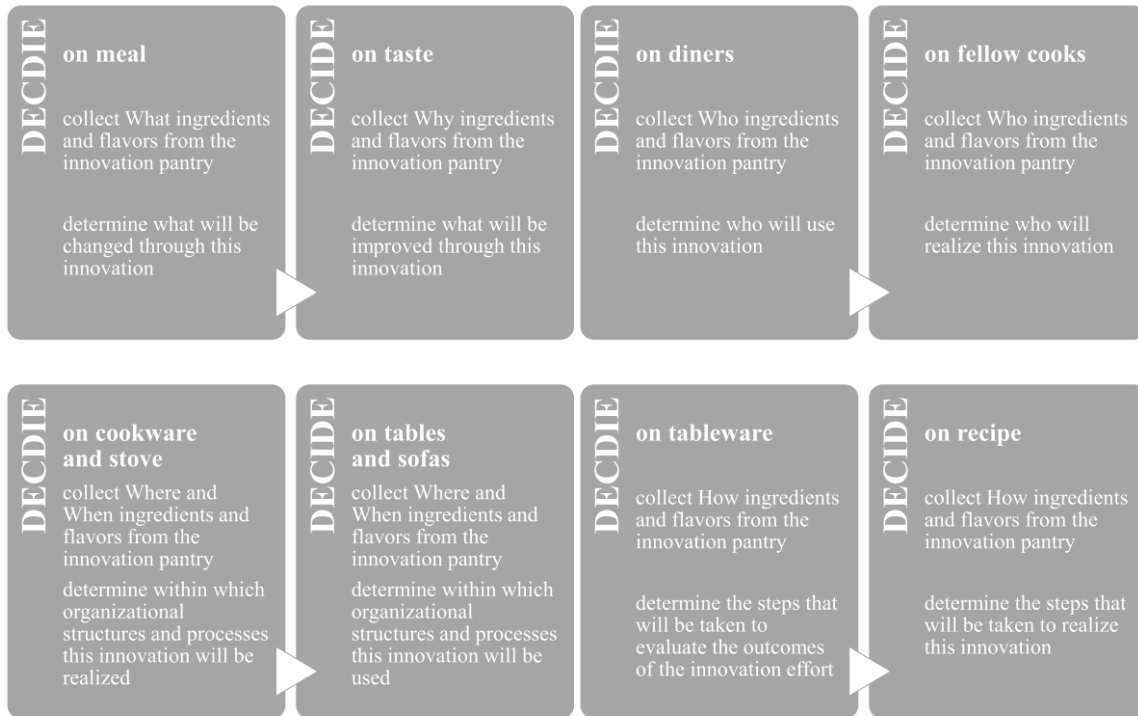
**Figure 10.** The sub-stages of the *main dish* stage.



Source: Developed by Author.

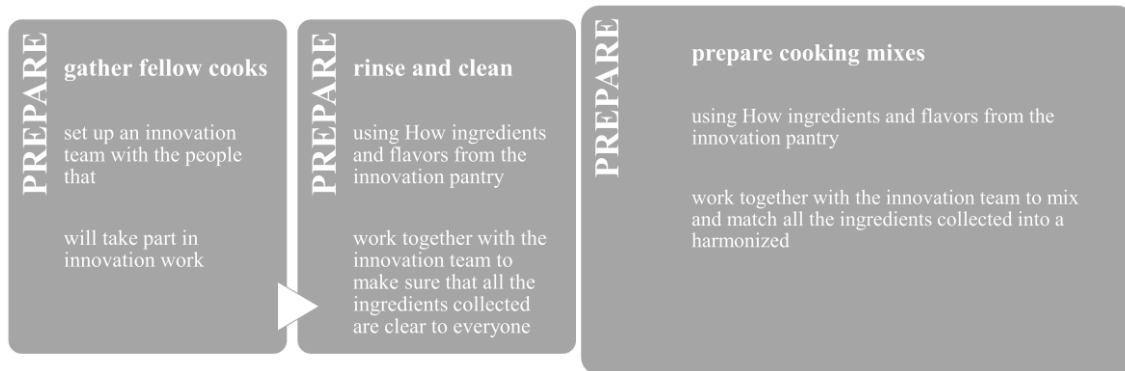
**Figure 11.** The activities involved in the *decide* sub-stage.





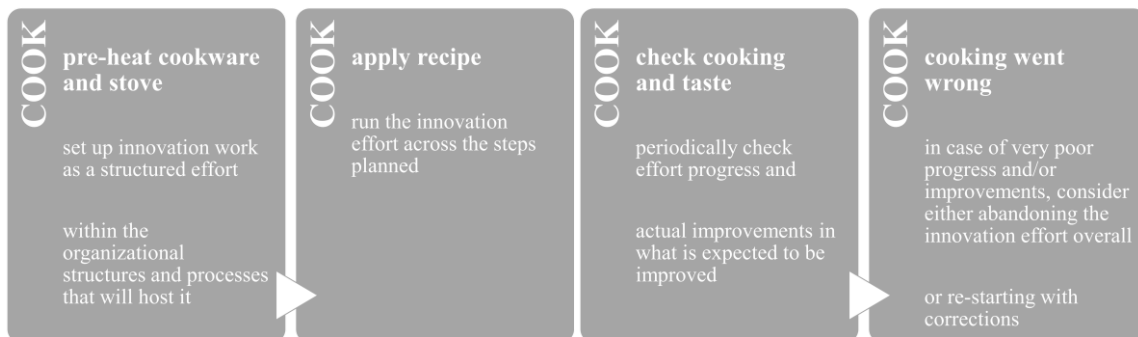
Source: Developed by Author.

**Figure 12. The activities involved in the *prepare* sub-stage.**



Source: Developed by Author.

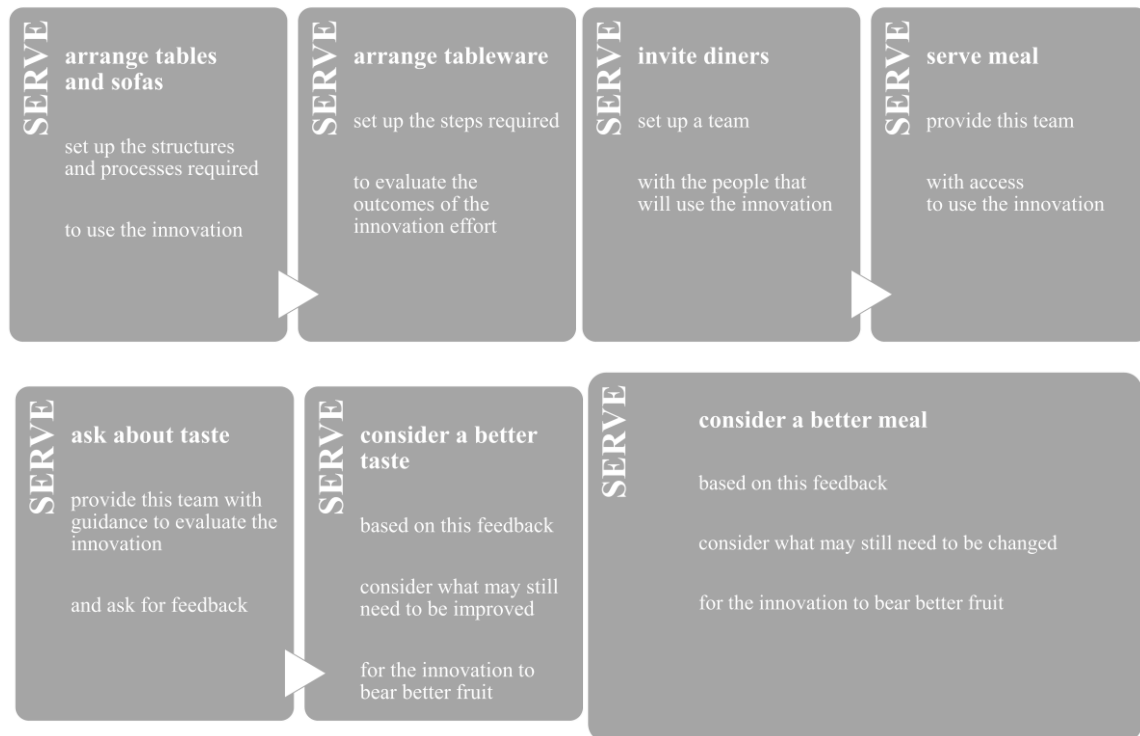
**Figure 13. The activities involved in the *cook* sub-stage.**





Source: Developed by Author.

**Figure 14. The activities involved in the *serve* sub-stage.**



Source: Developed by Author.

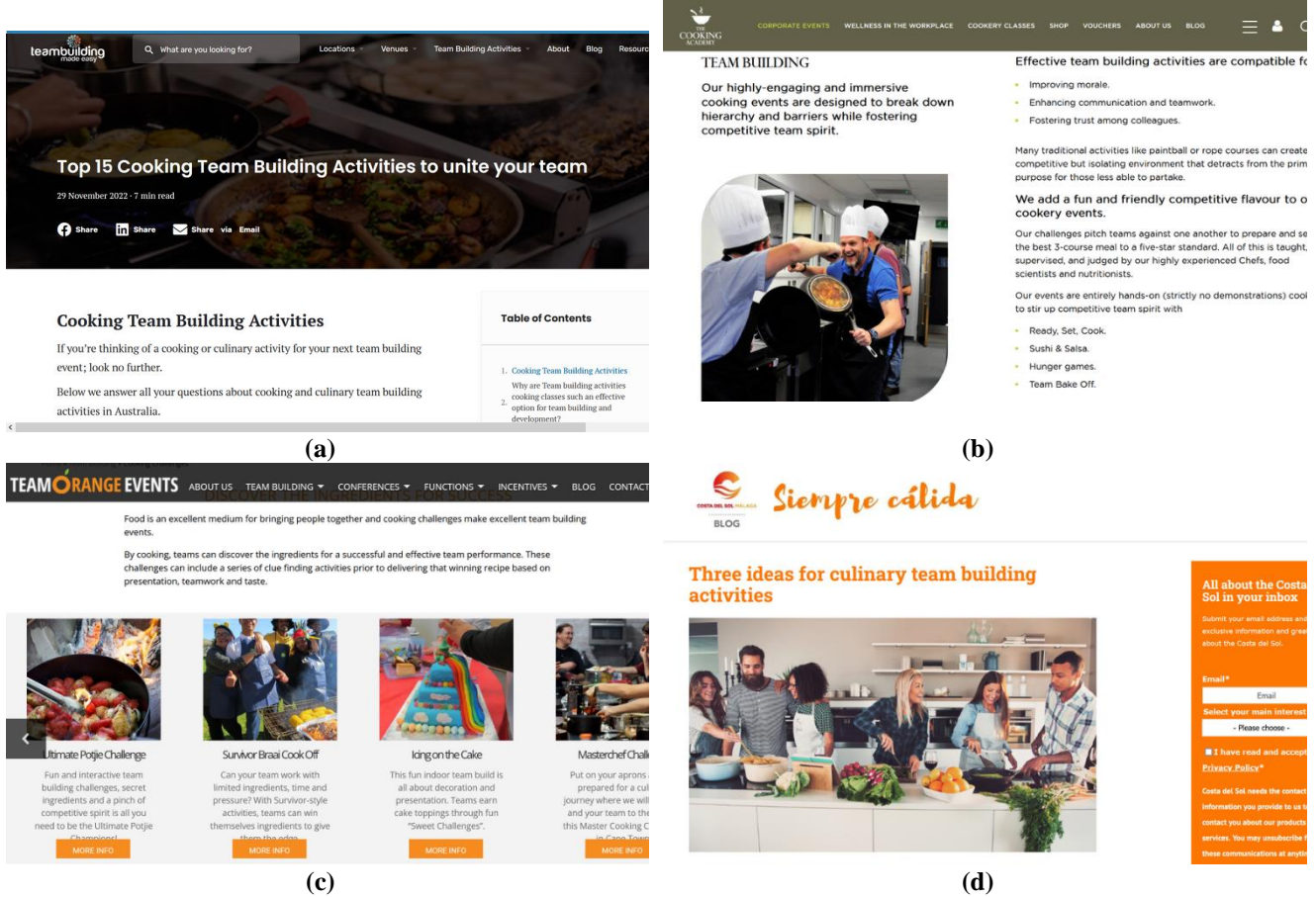
Due to the social aspects – collaboration and team building – of innovation work, the metaphor of *InnoCook* can be taken one step further by innovation teams, as part of their socializing activities and side breaks: they can engage in *real cooking and dining together*. In other words, innovation teams, as part of their team building activities, could effectively prepare food together, be it starters, main dishes or desserts, and dine together, serving and eating the food that they have collectively prepared.

There are a multitude of examples for such team building activities worldwide, such as Team Building Made Easy (2022) (Australia), Team Orange Events (n.d.) (South Africa), and Turismo y Planificación Costa del Sol (n.d.) (Spain), which give rise to the discussion for *culinary team building*<sup>49</sup>. Figure 15 below presents indicative snapshots from these sources which, commercial for the most part, still give an interesting insight into what such an endeavour, with the participation of public institutions personnel and other stakeholders,

<sup>49</sup> For more results on this term, cf. a relevant Google search: <https://www.google.com/search?q=culinary+team+building>.

could create as a team-building ambiance and mindset for an innovation team.

**Figure 15. Indicative snapshots from websites offering culinary team-building activities.**



(Sources: (a) Team Building Made Easy (2022); (b) The Cooking Academy (n.d.); (c) Team Orange Events (n.d.); (d) Turismo y Planificación Costa del Sol (n.d.).)

It is not by chance that the food photos used in Figure 7 for the three courses of an innovation complete meal, are real photos of typical Lebanese and other regional dishes, i.e., the falafel starter, the fatteh main dish, and the maamoul dessert. Innovation teams in Arab public institutions, could prepare such meals and eat together as an informal yet very human way to strengthen their bond, and to draw an experiential parallel with the cooking metaphor interpretation of the InnoCook innovation model.

#### D. GUIDANCE FOR COLLECTING INGREDIENTS AND FLAVOURS TO USE IN AN INNOVATION EFFORT

As mentioned above, out of the stages and activities presented in the above process diagrams for enacting an innovation effort by use of the ingredients and flavours of the InnoCook model, the activities making heaviest use of these ingredients and flavours are the ones included in the *main dish* stage for planning, preparing, enacting and evaluating the innovation to be delivered, and especially so the activities involved in the *decide* sub-stage where the InnoCook model ingredients and flavours need to be selected.

The tactics for this selection are discussed herein. These tactics cannot be prescribed in a close one-size-fits-all manner, as this would contradict the innovation model's intended versatility of use, as already discussed. In this respect, innovation teams should be free, and feel free, to select those ingredients from the What, Why, Who, Where and When, and How groups of ingredients of the InnoCook model (Figure 2.1) that teams members feel best suited, and/or more interesting, for their specific context, be it the case on which they wish to work, their own member profiles, their overall mandate and/or their broader realities. However, some guidance can still be provided towards the selection of InnoCook model ingredients, and the flavours for each selected ingredient.

As a first rough guide, at least one ingredient from each one of the What, Why, Who, Where and When, and How groups should be selected since, otherwise, the story will not be complete, and the innovation effort itself will lack some important elements. For each ingredient selected, at least one flavour of this ingredient should be selected, as no selection would invalidate selection of the ingredient itself.

As a second rough guide, stemming from the first one, the selection of ingredients and flavours could be guided by a more top-level assessment made by the innovation team, based on the number of ingredients and flavours that the team wishes to work with for their innovation effort. An innovation team could consider

- *a minimal variety option*: select only one ingredient per group, and only one flavour per ingredient
- *a controlled variety option*: select only a few (say, 1 to 3) ingredients from each group, and only a few (say, 1 to 2) flavours for each ingredient
- *a rich variety option*: selecting many (say, half or more) ingredients from each group, and many (say 3 or more) flavours for each ingredient
- *a maximal variety option*: selecting all the ingredients of each group, and all the flavours of each ingredient.

Each one of these options certainly has its pros and cons. Generally, more variety brings more complexity, but more completeness as well; thus, a balance between complexity and completeness of an innovation effort should be sought. This balance could in fact be imagined as a break-even point beyond which the disadvantages of increased complexity outplay the advantages of increased completeness. Therefore, the safe side for the selection of a variety of ingredients and flavours could be determined by

- the different facets of an innovation effort that the team may feel should not go unnoticed, and thus need to be covered by corresponding model ingredients.
- specific ingredients, or specific flavours of ingredients, that may appear particularly interesting or appealing to an innovation team to explore, either because they seem to be responding to existing problems, or because they seem to be opening opportunities not yet thought of.
- critical requirements that the innovation mandate of the team may prescribe to.
- critical time and/or resource constraints that the innovation team may face.
- the perceived familiarity, or lack of familiarity, that team members have with the ingredients and flavours offered by the innovation model.

As a third rough guide, that follows from the previous two, the innovation team could deliberate over each one of the innovation model ingredients (and, subsequently, over the flavours of this ingredient), by asking itself two simple questions:

- *why choose* this ingredient (or flavour) for our innovation effort?
- *why not choose* this ingredient (or flavour) for our innovation effort?

Depending on whether the reasons/arguments for choosing are stronger than the reasons/arguments for not choosing, or vice versa, the team could decide accordingly. In the case of parities or near-parities, the team could opt to further scrutinize and re-assess the reasons/arguments put forward by each side, so as to arrive at a clearer basis for their decision.

the innovation team members would need to examine and discuss the innovation model's ingredients one-by- to make their decisions. This process necessitates the availability of a practical representation of each ingredient that team members handle and focus on, or put on the table and discuss collectively, for example a *flashcard* bearing all important information for this ingredient.

Annex C provides complete printable sets of flashcards for the innovation model ingredients and flavours, annotated with the guiding question for each ingredient as well as references to the parts of the study where this ingredient is elaborated. For simplicity, flashcard sets are provided for all model ingredients in all varieties (the green, orange, blue, purple and red varieties corresponding to the Who, What, Where and When, Why and How aspects of a storified innovation effort, according to the colour code used in Figure 6, to allow all possible scenarios of use. Figure 16 provides an indicative example of such a flashcard.

**Figure 16. A flashcard for the Ar ingredient of the InnoCook innovation model.**

**the Ar ingredient: arab region-specific government innovation themes**

*guiding question: which Arab region-specific government innovation theme are we addressing?*

individual flavors	
<input type="checkbox"/>	Ar.1. Improving service delivery in finance; education; interior; cross government affairs; utilities; labour; justice; trade and industry; transport/traffic/police; social affairs; migration; health; municipal affairs; and tourism sectors.
<input type="checkbox"/>	Ar.2. Promoting the Government-as-a-Platform paradigm: One platform where citizens can complete many or all government services.
<input type="checkbox"/>	Ar.3. Implementing new service delivery methods by adding digital assistants.
<input type="checkbox"/>	Ar.4. Implementing anticipatory/proactive services, bundled around a citizen's life events.
<input type="checkbox"/>	Ar.5. Implementing invisible services, completed in the back-end without bothering the citizen.
<input type="checkbox"/>	Ar.6. Improving digital public service design and delivery for greater civic engagement and citizen participation.
<input type="checkbox"/>	Ar.7. Ensuring marginalized populations are not left behind.
<input type="checkbox"/>	Ar.8. Managing data as an infrastructure, and improving the openness, quality, flow and use of government data.
<input type="checkbox"/>	Ar.9. Managing cybersecurity in a holistic manner, beyond defensive software.
<input type="checkbox"/>	Ar.10. Promoting digital standards for secure platforms, logins, and data.
<input type="checkbox"/>	Ar.11. Moving forward to maturity and readiness for

<input type="checkbox"/>	artificial intelligence.
<input type="checkbox"/>	Ar.12. Keeping government digitization at a fast pace, streamlining processes, removing bureaucracy and eliminating excessive regulation.
<input type="checkbox"/>	Ar.13. Establishing formal government service structures and budgets, with separate legal government entity dedicated to government services.
<input type="checkbox"/>	Ar.14. Moving away from organizational silos to open collaborations.
<input type="checkbox"/>	Ar.15. Establishing an Arab platform for government administrative exchange of expertise and data.
<input type="checkbox"/>	Ar.16. Relating the government talent strategy to government technology.
<input type="checkbox"/>	Ar.17. Reforming the government talent and incentives policies with new skills, new mix of team members, and new incentives.
<input type="checkbox"/>	Ar.18. Establishing cooperation models between the government and private sectors and frameworks for digital services.
<input type="checkbox"/>	Ar.19. Enabling local emerging companies to work with the government sector.
<input type="checkbox"/>	Ar.20. Unlocking innovation through cross-border collaboration.

*HINT: further discussed in the InnoCook model study, Chapter 1 Section A*

Source: Developed by the Author.

Team members could convene physically around a meeting table, hold these printed flashcards at hand, and debate over the inclusion of each model ingredient, or debate over the inclusion of the ingredient's flavours. Alternatively, team members could convene virtually in a teleconference space and have these digital flashcards on their screens to debate the inclusion of ingredients and flavours in a similar manner.

The flashcards provided in Annex C, are annotated with an on/off activation switch icon<sup>50</sup> next to each flavour of each ingredient, by default set to off and meant to be toggled on in case this flavour is selected. In case of printed flashcards, this toggling on can be engaged by manually drawing the "on" positions in the flavour selection switches of a printed flashcard. Still, in case of digital flashcards, these on/off switches could be implemented with software, to record the flavour selections in a digital file that accommodates information for all the choices made by an innovation team.<sup>51</sup>

<sup>50</sup> Designed by Freepik, available from [https://www.freepik.com/icon/switch\\_3815470](https://www.freepik.com/icon/switch_3815470).

<sup>51</sup> This possibility gives rise to a broader discussion and ideas for implementing the entire model use process by means of an IT wizard, which would incorporate the guidance provided on software-coded steps and rules. Such a discussion goes beyond the scope of the present study but provides, at the same time, a direction for future work.

A fourth rough guide for use of the model ingredients and flavours, that stems from the previous three, focus on the order in which the ingredients are discussed by the innovation team to arrive at selections. Here, the guidance provided already in the decide sub-stage of the main dish stage mentioned above states that ingredients from the What group are to be discussed and selecting first, followed by discussing and selecting ingredients from Why, Who, Where and When, and How groups, in this order. Still, the order to be followed for considering/discussing ingredients within each group (for instance, which Who ingredient to discuss first, which Who ingredient to discuss afterwards, and so on) remains a matter of choice.

One option would be to follow within each group of ingredients the order that appears from top-to-bottom in Figure 6, which is also the order in which ingredients appear in the study text. This option is a simple one and straightforward to use but, as it does not consider any contextual factors, and always comes up with the same order of ingredients, it risks not being well fit for prioritizing in the discussion the ingredients that may be better fit/ are more interesting to innovation team members in a specific case.

An option that could overcome this risk would be to ask the innovation team members themselves to say which ingredient from the current group they would like to discuss next. This option allows to bring sooner into discussion the ingredients that interest the innovation team members but, at the same time, exactly because of its dependence upon the preferences of team members, it risks delaying discussion, or even losing from sight, the ingredients which team members may feel that matter less.

Yet another option, to overcome this latter risk, is to introduce a randomness factor in the selection of the next ingredient to discuss. This factor would need to be controlled in a simple manner, for making one more random run, in case the previous one pointed to an ingredient discussed already. Then, the randomization instrument required in this process could undertake some more conventional form, like that of a random number generator, or some more playful form, like that of a polyhedral rolling dice, with the ingredient bigrams curved on its sides<sup>52</sup>. In this respect, one could imagine 5 differently-coloured such dices, curved with the What, Why, Who, Where and When and How ingredients, that would be cast to decide, in each group of these, which ingredient to select next for discussion. The colour code of Figure 6 could be used here as an elegant solution, with orange colour for the What dice, purple colour for the Why dice, green colour for the Who dice, blue colour for the Where and When dice, and red colour for the How dice. Figure 17 provides an example of what these dice might look like.

**Figure 17. A typical set of differently coloured polyhedral dice used for non-entertainment purposes.**



(Source: Learning Resources (n.d.)).

In terms of pros and cons, this option lies in the middle between the first static order option and the second team members-led one, as it allows to bring into discussion all ingredients of a group, but in a way which, exactly because of randomness, is different each time and not the same as the order which team members might have wished for. Still, the playful character of this option comprises its major asset, given that playfulness here may, on the one side, be the subject of fun and jokes between team members, which can help team building, and, on the other side, create a surprise (in case of an unexpected ingredient coming up as the next for discussion), which can be creative and mind challenging. If team members are called upon

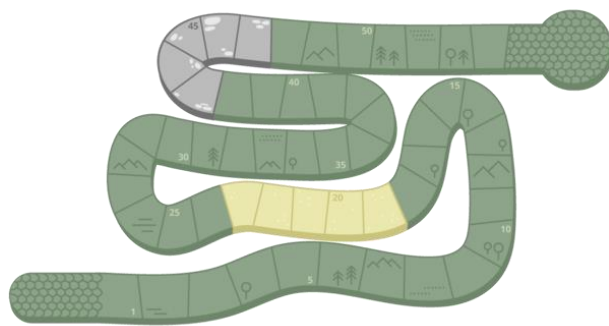
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<sup>52</sup> Cf. a Google image search like <https://www.google.com/search?q=polyhedral+dice&tbn=isch> for examples of polyhedral dice.

to discuss about selecting or not an ingredient for which they had not really thought about, this can lay the grounds for more spontaneous, and thus, more insightful, thinking.

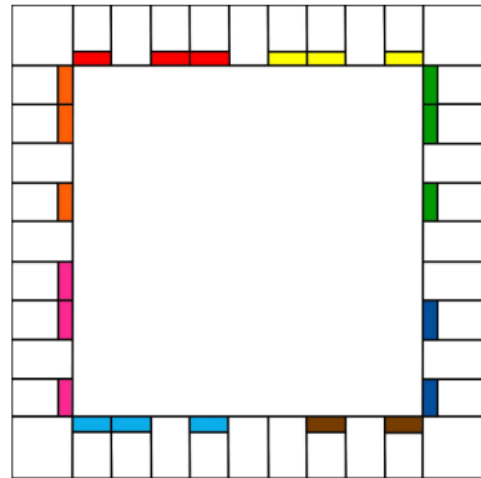
To take this line of thought one step further, one could imagine a simple board game based on dice, such as Snakes and Ladders, or Monopoly, and develop a new game taking stock of game templates available (Figure 18) the whole set of ingredients is arranged in the template cells, and usual number dice are used to navigate the cells and select ingredients to discuss. This is a playful tactic that could even be used for the purpose of learning the model proposed, prior to using it. Here again, such a discussion goes beyond the scope of the present study but provides one more direction for future work.

**Figure 18. Templates for (a) the Snakes and Ladders game; and (b) the Monopoly Game.**



**(a)**

(Sources: (a) Genially (n.d.); (b) Fielding (2023)).



**(b)**

#### E. DEMONSTRATION OF THE USE OF THE MODEL THROUGH THE DEVELOPMENT OF A USE CASE

Such an effort can proceed along two alternative scenarios. One scenario would be to demonstrate how *an existing case* of public sector innovation, which has been developed without using the innovation model, could have been developed, in the same way or in alternative ways using the innovation model. Another scenario would be to demonstrate how the innovation model could be used to help an Arab public institution develop *a new case* of public sector innovation, which does not currently exist.

The first scenario of demonstrating use of the innovation model by means of reverse engineering and re-engineering the development of an existing innovation case can be based on the following steps:

- (a) Identify a real case of public sector innovation, which has already been developed.
- (b) Reverse-engineer the way in which this case has been developed in practice and map this way to the use of specific ingredients, flavours and use tactics of the innovation model proposed.
- (c) Explore how this public sector innovation can be worked out in alternative ways, using additional flavours of the given ingredients, and/or additional ingredients, and/or additional tactics of the model proposed.

Ideally, in this scenario, to identify a use case that talks as much as possible to Arab public institutions, this case

- could come from an Arab region public institution or local administration.
- might refer to innovation on some G2C service which is well known and exists in many different, if not all, Arab region countries; and

- would need to have as complete as possible available documentation for the way in which it has been designed/implemented, and for the way in which it currently works.

The best way to identify this case of innovation might perhaps be to select from the cases catalogued on the Arab Open and Innovative Government Portal (AOIGP)<sup>53</sup>, which is maintained by ESCWA, or from any other collection of public sector innovation cases.

A limitation of this scenario for demonstrating use of the innovation model is that it cannot be based only on documentation of an existing innovation use. Documentation of any such case, however complete, may still not allow to correctly reverse engineer this case back into elements of the innovation model proposed. This could be realized in a much more credible manner if it would be based, beyond documentation, to interaction and collaboration with the people behind this innovation case, so that the realizers of this innovation could explain their choices and rationale.

This scenario inevitably entails working together with Arab public institutions people and any other external stakeholders that may have been involved in realizing the innovation case which has been selected for study. To organize this sort of collaboration, the best way to go would be to

- identify the Arab public institution(s) involved in the realization of this innovation.
- identify inclusively the innovation case realizers, whether internal or external to the aforesaid public institution(s); and
- organize and run with the people identified a series of consultations and focus groups, in a way similar to the planning that is presented elsewhere in the present study<sup>54</sup> for exploring the tailoring of the innovation model to needs of specific types of institutions.

To bring all of this discussion together, Table 26 summarizes the steps proposed.

**Table 26. The steps proposed for demonstrating use of the innovation model by means of reverse engineer and re-engineering an existing case of public sector innovation from the Arab region.**

Phase	Contents
(I). Identify the case	(I.1) Select from the Arab Open and Innovative Government Portal or other equivalent catalogue, a case that comes from an Arab region public institution or local administration; refers to innovation on some G2C service which is well known and exists in many different, if not all, Arab region countries; and has as complete as possible available documentation for the way in which it has been designed/implemented, and for the way in which it currently works. (I.2) Identify the Arab public institution(s) involved in the realization of this case. (I.3) Identify inclusively the innovation case realizers, whether internal or external to the aforesaid public institution(s).
(II). Reverse engineer the case	(II.1) Organize a series of consultations and focus groups with participation of the innovation case realizers. (II.2) Through these consultations and focus groups, gradually reverse engineer the way in which this case has been developed in practice and map this way to the use of specific ingredients, flavours and use tactics of the innovation model proposed.
(III). Re-engineer the case	(III.1) Organize a series of consultations and focus groups with participation of the innovation case realizers. (III.2) Through these consultations and focus groups, gradually explore how this public sector innovation can be worked out in alternative ways, using additional flavors of the given ingredients, and/or additional ingredients, and/or additional tactics of the model proposed

<sup>53</sup> Website: <https://opengov.unescwa.org/>.

<sup>54</sup> Please see Chapter 3, Section C on *Ideas on the possibility of tailoring the model to specific needs of a specific type of organization, level of government and/or technological advancement.*



Source: Compiled by the Author.

The second scenario discussed, of demonstrating how the innovation model could be used to help an Arab public institution develop *a new case* of public sector innovation, which does not currently exist, could be based in a similar manner in the following steps:

(a) Identify a new public sector innovation case.

(b) Work with Arab public institutions and/or external stakeholders to develop this innovation by means of using specific ingredients, flavours and tactics of the innovation model proposed.

Here again, identifying a new innovation case entails some steps for

- recognizing a need for innovation which is of interest for more than one Arab region countries or local administrations.
- showing that innovations that meet this need do not currently exist.
- recognizing the Arab public institutions or local administrations that may be interested.
- from these institutions, recognizing specific people that may be interested; and,
- recognizing the external stakeholders whose viewpoints and ideas may be required.

Working with teams of people to develop this case by means of using the innovation model entails some steps for

- bringing together all the people that have been recognized to form an innovation team; and then
- working with this team to develop the new case, by means of using the innovation model proposed.

Here again, working with the aforesaid team to develop the new case could best be organized by a series of consultation exercises and focus groups, as discussed above.

Table 27 summarizes the steps proposed.

**Table 27. The steps proposed for demonstrating use of the innovation model by means of developing a new case of public sector innovation in the Arab region**

Phase	Contents
(I). Identify the case	(I.1) Recognize a need for innovation which is of interest for more than one Arab region countries or local administrations. (I.2) Show that innovations that meet this need do not currently exist. (I.3) Recognize the Arab public institutions or local administrations that may be interested in developing and using this innovation. (I.4) From these institutions, recognize specific people that may be interested to develop and/or use this innovation. (I.5) Recognize any external stakeholders whose viewpoints and ideas may be practically required or otherwise meaningful.
(II). Develop the case	(II.1) Bring together all the people that have been recognized and form an innovation team. (II.2) Organize a series of consultations and focus groups with participation of the innovation team members, as case developers and future users. (II.3) Through these consultations and focus groups, gradually develop this case by means of using specific ingredients, flavours and tactics of the innovation model proposed.

Source: Compiled by the Author.

### III. REALISING INNOVATION IN ARAB PUBLIC INSTITUTIONS

#### A. SUGGESTED STEPS TO TAKE TO TRIGGER INNOVATION AND THE USE OF THE MODEL IN ARAB PUBLIC INSTITUTIONS

For innovation, to happen and bear fruit, it should be mainstreamed into public institution operations as a standard function that's part of its core business, rather than a fragmented occasional, crisis-driven or command-driven activity. It necessary to focus the steps - suggested to trigger innovation and the use of the model in Arab public institutions - on organizational elements that could be introduced to add an innovation function to institution functions. The following organizational elements, identified by the guiding question: "Which organizational elements do we want to integrate in the innovation function of our institution?", should be the focus.

##### 1. *Organizational element Oe.1. People involved in innovation work*

People, in this context, are not necessarily new people in the organization with an innovation mandate. This option could be imagined, but has the disadvantage that, as a lateral effect, *sole* mandate could be interpreted in the opposite manner, namely that these people have a *unique* mandate of innovation and thus, they are the *only* people vetted with an innovation mandate risking the removal of the innovation mandate from everyone else. A preferable option would be to include existing staff when innovation teams are built. They will keep their regular roles and, additionally, they are empowered with innovation skills and thinking.

##### 2. *Organizational element Oe.2. Structures undertaking innovation work*

An organizational structure undertaking innovation work is not necessarily a new structure solely invested with an innovation mandate. Similarly, as above, this option could communicated and interpreted in the opposite manner, namely that this structure has a *unique* mandate of innovation and therefore, it is the *only* structure in the organization vetted with an innovation mandate and poses the same risks as Oe1, the removal of innovation mandate for other units. A preferable option would be to conceive an innovation organizational structure as a structure which is:

- additional to an institution's organizational chart, thus an addition to existing structures, without replacing any;
- horizontal, in the double sense of traversing intra-organizational boundaries, while having a more flat than hierarchical internal configuration; and
- more or less porous and fluid, thus it self-adjusts its membership over time, based on dynamic missions/projects rather than static roles. Also, it can communicate with all hierarchy levels and organizational branches required for its work.

##### 3. *Organizational element Oe.3. A recruitment policy for staffing innovation work*

A recruitment policy to staff innovation teams and structures, realizing the porosity/fluidity of the latter, as follows:

- people in the institution, and external stakeholders, could dynamically join the structure for specific missions or projects, then leave, possibly coming back later for new opportunities, and so on.
- so that an innovation structure, at any point in time, would be dynamically staffed by the people required to carry out its assignment at that specific point.
- Such a recruitment policy, of course, cannot be completely dynamic, as a defined innovation structure would need some permanent staffing at two different levels:
  - lower clerical, staffed by people that accumulate experience and expertise by maintaining the logistics of this structure; and

- higher leadership led by people that can curate and ensure continuity of operations, maintain organizational memory during transitions between innovation missions/projects, and manage re-staffing activities.
- The permanent staffing needs, which are by nature more static, could be kept to a minimum, to maximize availability for dynamic mission/project-based recruitment productive activity.

*4. Organizational element Oe.4. Process paradigms for carrying out innovation work*

Process paradigms are taken from literature and include bottom-up, top-down, collaborative, open and disruptive innovation. Therefore, a process paradigm used to carry out innovation work is the chosen paradigm an innovation structure follows to conduct its work at any given time.

It would be preferable not to have a specific innovation paradigm hardcoded into an innovation structure's mandate. On the contrary, all different innovation paradigms could be made available for the innovation structure, allowing it to choose the innovation paradigm best suited to its mission at that point. Therefore, to take this decision, allows for the self-determination of an innovation structure, and increases its accountability for its own decisions.

*5. Organizational element Oe.5. Motives for carrying out innovation work*

These are the various rewards that would be offered to people serving in an innovation structure for a specific innovation mission/project at a specific point in time. The motives could be based on:

- performance: how well the staff worked during the mission/project;
- outputs: what the staff delivered; and
- results: the broader impact of innovation work produced.

These motives could range as:

- imminent rewards upon work completion,
- longer-term rewards based on an accumulated contribution record
- material rewards such as money bonuses, paid leaves, covered participation in international schools and events,
- quasi-material rewards such as accumulated points taken into account in promotion decisions,
- immaterial rewards such as honourable mentions and public recognition of achievement.

It would be preferable to consider only positive motives, and not negative counter-motives, to ensure that innovation work is promoted among institution staff as something from which they only stand to gain.

*6. Organizational element Oe.6. A power and responsibility balance for innovation work*

The people engaged in innovation work should ideally have:

- power corresponding to their responsibility so that can request help from colleagues and the institution, to develop their ideas and test pilots-
- responsibility corresponding to their power so that they can correctly be rewarded for successes and held accountable for failures.
- awareness of balance between power and responsibility to develop their innovation ideas with due moderation and diligence.

### 7. Organizational element Oe.7. Rules and shared values for innovation work

Rules and shared values are necessary to govern the work and delivery of innovation. They would share a foundation, from an abstract set of founding principles to a specific internal regulation document developed for innovation-making. In all cases, the rules and values are best be stated along practical implications for day-to-day work of the institution, making them useful and a guide for everyday action. Examples of values and associated rules could be:

- the value that innovation is something beneficial, and thus the time allocated to innovation-making is productive time but must clearly linked to a specific purpose to improve outcomes and/or to benefit workplace well-being. An associated rule could be that demands for top-down or approval for bottom-up innovation efforts requires a clearly stated and linked purpose.
- the value of ensuring balance between innovation work and day-to-day operations, since both these activities inspire and cross-fertilize each other. An associated rule could be that innovation-making time is counted as normal worktime, but with a clear limit of how many hours should be used.

Overall, organizational elements could be used within an institution to establish and trigger an innovation function that becomes part of the institution's core business. Thus, considered constructive, allowing for the continuation of regular work, while innovative improvements are developed over time. If it is considered destructive, it could destabilize business continuity and halt work. Therefore, balance must be maintained regarding risk and function when deciding on establishing and triggering an innovation.

To mitigate critical risk, several methods, toolkits and organizational designs is available to help ensure that innovation activity will bring improvement. The options stem from the premise that the innovation function of an institution can be considered *as a public participation exercise*, as follows:

- Even if the innovation function does not involve external stakeholders or citizens/businesses/civil society members, and only includes an internal team, such an innovation team is considered the *public*, called upon to deliberate on ideas, objectives and solutions, and formulate and voice concerns, aspirations, assessments, and improvements.
- The public's participation role within an innovation team, is to express points for improvement of given solutions, and to co-create new solutions from scratch.

The participation of people (internal to the institution) in an innovation team, resembles public participation in public consultation and co-creation processes. Thus, it can be approached by taking stock of some conceptual tools that already exist in public participation.


The Spectrum of Public Participation of the International Association for Public Participation (IAP2) is the most renowned such tools. IAP2 makes use of every public participation effort, from informing the public about an issue, to asking the public to co-create solutions.<sup>55</sup> Figure 19 provides the 5 categories, IAP2 uses to define the public's role, namely arranged in order of increased impact of the public upon the final decision.

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<sup>55</sup> International Association for Public Participation, n.d.

**Figure 19. The IAP2 Spectrum of Public Participation**

IAP2's Spectrum of Public Participation was designed to assist with the selection of the level of participation that defines the public's role in any public participation process. The Spectrum is used internationally, and it is found in public participation plans around the world.

INCREASING IMPACT ON THE DECISION 


	<b>INFORM</b>	<b>CONSULT</b>	<b>INVOLVE</b>	<b>COLLABORATE</b>	<b>EMPOWER</b>
<b>PUBLIC PARTICIPATION GOAL</b>	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
<b>PROMISE TO THE PUBLIC</b>	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

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Source: International Association for Public Participation, n.d.

An analogy can be made between the IAP2 Public Participation Spectrum and the manner in which innovation team members participate in the innovation function of a public institution, especially if innovation team leadership undertake the role of process owner, and the innovation team members undertake the role of the public. This analogy, presented in Figure 20, helps to naturally highlight the increasing impact innovation team members could have on the final innovation delivered.

**Figure 20. Cases of increasing impact that members of an innovation team may have upon the innovation delivered by this team, by exact analogy to the IAP2 Spectrum of Public Participation.**

INCREASING IMPACT OF THE INNOVATION TEAM UPON THE FINAL INNOVATION 

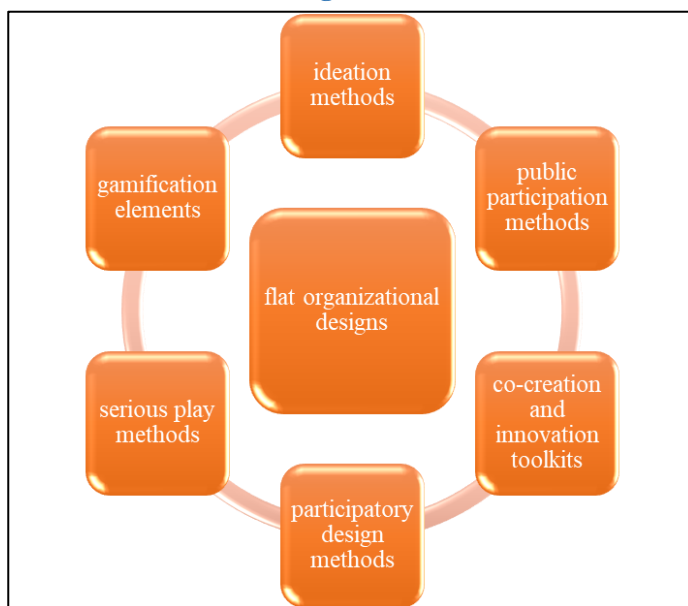
	<b>INFORM</b>	<b>CONSULT</b>	<b>INVOLVE</b>	<b>COLLABORATE</b>	<b>EMPOWER</b>
<b>GOAL OF THE INNOVATION LEADER</b>	To provide the innovation team with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain innovation team feedback on analysis, alternatives and/or decisions.	To work directly with the innovation team throughout the process to ensure that innovation team concerns and aspirations are consistently understood and considered.	To partner with the innovation team in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the innovation team.
<b>PROMISE TO THE INNOVATION TEAM</b>	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how innovation team input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how innovation team input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Source: Developed by Author, based upon IAP2. n.d.

Considering that innovation team members form a public that participates in the development and delivery of the final innovation, several types of methods and toolkits emerge that a team could use to

systematically implement different levels of impact on the final innovation (see Figure 20). Figure 21 shows the themes under which the options are classified.

**Figure 21. Themes in which an innovation team has available options for methods and toolkits for realizing innovation work**



Source: Developed by Author

Each theme presented in Figure 8, is further developed for clarity in Tables 28 to 34). All themes and options serve as answers to the guiding question: “Which options for ideation methods, public participation methods, co-creation and innovation toolkits, participatory design methods, serious play methods, gamification elements and/or flat organizational designs do we want to consider for the innovation function of our institution?”

**Table 28. Suggested introductory references for ideation methods (Id) to integrate in a public institution’s innovation function, together with specific options and documentation sources per option**

Suggested introductory references	Specific methods/method collections and documentation
<ul style="list-style-type: none"> <li>Smart, J. (May19, 2023). 37 brainstorming techniques to unlock team creativity. In <i>SessionLab Blog</i>. Available from <a href="https://www.sessionlab.com/blog/brainstorming-techniques/">https://www.sessionlab.com/blog/brainstorming-techniques/</a>.</li> <li>Payne, W. (September 13, 2023). Mastering Ideation: Techniques and Strategies. In <i>IENSTITU Blog</i>. Available from <a href="https://www.ienstitu.com/en/blog/mastering-ideation-techniques-and-strategies">https://www.ienstitu.com/en/blog/mastering-ideation-techniques-and-strategies</a>.</li> <li>Dam, R.F., &amp; Siang, T.Y. (2020). Introduction to the Essential Ideation Techniques which are the Heart of Design Thinking. In <i>Interaction Design Foundation / Literature</i>. Available from <a href="https://www.interaction-design.org/literature/article/introduction-to-the-essential-ideation-techniques-which-are-the-heart-of-design-thinking">https://www.interaction-design.org/literature/article/introduction-to-the-essential-ideation-techniques-which-are-the-heart-of-design-thinking</a>.</li> <li>Strimaityte, A. (November 26, 2019). 9 Best Exercises to Spark Creativity in Ideation. In <i>Innovation Lab Blog</i>. Available from <a href="https://innovationlab.net/blog/9-best-exercises-to-spark-creativity-in-ideation/">https://innovationlab.net/blog/9-best-exercises-to-spark-creativity-in-ideation/</a>.</li> </ul>	<p>Id.1. MindTools</p> <ul style="list-style-type: none"> <li>MindTools. (n.d.). <i>MindTools - Develop your personal wellbeing and career skills</i>. Available from <a href="https://www.mindtools.com/">https://www.mindtools.com/</a>.</li> </ul> <p>Id.2. Gamestorming</p> <ul style="list-style-type: none"> <li>Gamestorming. (n.d.). <i>Gamestorming – A toolkit for innovators, rule-breakers and changemakers</i>. Available from <a href="https://gamestorming.com/">https://gamestorming.com/</a>.</li> </ul> <p>Id.3. Google collections</p> <ul style="list-style-type: none"> <li>Ideation techniques. (November 14, 2023). <i>Ideation techniques: From sources across the web</i>. Available from <a href="https://www.google.com/search?q=ideation+techniques">https://www.google.com/search?q=ideation+techniques</a>. [Google Search results]</li> <li>Ideation methods. (November 14, 2023): <i>From sources across the web</i>. Available from <a href="https://www.google.com/search?q=ideation+methods">https://www.google.com/search?q=ideation+methods</a>. [Google Search results]</li> </ul>

Source: Compiled by the Author.

**Table 29. Suggested introductory references for public participation methods (Pp) to integrate in a public institution’s innovation function, together with specific options and documentation sources per option**

Suggested introductory references	Specific methods/method collections and documentation
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<ul style="list-style-type: none"> <li>• OECD. (September 24, 2022). <i>OECD Guidelines for Citizen Participation Processes</i>. In series OECD Public Governance Reviews. Available from <a href="https://www.oecd.org/publications/oecd-guidelines-for-citizen-participation-processes-f765caf6-en.htm">https://www.oecd.org/publications/oecd-guidelines-for-citizen-participation-processes-f765caf6-en.htm</a>.</li> <li>• Saunders, S. (November 24, 2022). How public engagement improves research and innovation. In <i>UK Research and Innovation Blog</i>. Available from <a href="https://www.ukri.org/blog/voices-how-public-engagement-improves-research-and-innovation/">https://www.ukri.org/blog/voices-how-public-engagement-improves-research-and-innovation/</a>.</li> <li>• EPA. (n.d.). <i>Public Participation Guide</i>. Available from <a href="https://www.epa.gov/international-cooperation/public-participation-guide-introduction-guide">https://www.epa.gov/international-cooperation/public-participation-guide-introduction-guide</a>.</li> <li>• Fillet, S. (April 3, 2020). Participation methods: how to choose the right one. In <i>CitizenLab Blog</i>. Available from <a href="https://www.citizenlab.co/blog/civic-engagement/choosing-the-right-participation-method/">https://www.citizenlab.co/blog/civic-engagement/choosing-the-right-participation-method/</a>.</li> </ul>	<p>Pp.1. Participedia</p> <ul style="list-style-type: none"> <li>• Participedia. (n.d.). <i>Participedia - A global network and crowdsourcing platform for researchers, educators, practitioners, policymakers, activists, and anyone interested in public participation and democratic innovations</i>. Available from <a href="https://participedia.net/">https://participedia.net/</a>.</li> </ul> <p>Pp.2. Action Catalogue</p> <ul style="list-style-type: none"> <li>• Engage2020. (2025). <i>Action Catalogue</i>. Available from <a href="http://actioncatalogue.eu/">http://actioncatalogue.eu/</a>.</li> </ul> <p>Pp.3. Organizing Engagement</p> <ul style="list-style-type: none"> <li>• Organizing Engagement. (n.d.). <i>MODELS: Introductions to influential and widely used organizing, engagement, and equity models</i>. Available from <a href="https://organizingengagement.org/models/">https://organizingengagement.org/models/</a>.</li> </ul> <p>Pp.4. IAP2 Public Participation Toolbox</p> <ul style="list-style-type: none"> <li>• IAP2. (2006). <i>IAP2's Public Participation Toolbox</i>. Available from <a href="https://icma.org/sites/default/files/305431_IAP2%20Public%20Participation%20Toolbox.pdf">https://icma.org/sites/default/files/305431_IAP2%20Public%20Participation%20Toolbox.pdf</a>.</li> </ul> <p>Pp.5. IDS collection</p> <ul style="list-style-type: none"> <li>• IDS. (n.d.). <i>Participatory Methods: People working together around the world to generate ideas and action for social change</i>. Available from <a href="https://www.participatorymethods.org/methods">https://www.participatorymethods.org/methods</a>.</li> </ul>
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Source: Compiled by the Author

**Table 30. Suggested introductory references for co-creation and innovation toolkits (Cc) to integrate in a public institution's innovation function, together with specific options and documentation sources per option**

Suggested introductory references	Specific methods/method collections and documentation
<ul style="list-style-type: none"> <li>• IxDF. (October 27, 2021). <i>What is Co-Creation?</i> Interaction Design Foundation Topics. Available from <a href="https://www.interaction-design.org/literature/topics/co-creation">https://www.interaction-design.org/literature/topics/co-creation</a>.</li> <li>• LIVING INNOVATION. (2021). <i>Co-Creation Toolkit: A Guidance on the design, development and implementation of effective co-creation in industry-citizen collaboration settings</i>. Available from <a href="https://www.living-innovation.net/news/article?id=212&amp;title=new-toolkit-for-effective-co-creation">https://www.living-innovation.net/news/article?id=212&amp;title=new-toolkit-for-effective-co-creation</a>.</li> <li>• Reynolds, S. (September 29, 2021). <i>Your Co-Creation Guide: Everything You Need to Know</i>. In <i>Vurvey.ai Resources</i>. Available from <a href="https://vurvey.ai/resources/co-creation/co-creation-guide/">https://vurvey.ai/resources/co-creation/co-creation-guide/</a>.</li> <li>• Manual Thinking. (n.d.). <i>Tools and spaces for co-creation / Methods</i>. Available from <a href="https://manualthinking.com/methods/">https://manualthinking.com/methods/</a>.</li> </ul>	<p>Cc.1. OGP collection</p> <ul style="list-style-type: none"> <li>• OGP. (June 4, 2020). <i>Taking the OGP Co-Creation Process Online – Online Tools &amp; Platforms</i>. Available from <a href="https://www.opengovpartnership.org/documents/taking-the-ogp-co-creation-process-online-online-tools-platforms/">https://www.opengovpartnership.org/documents/taking-the-ogp-co-creation-process-online-online-tools-platforms/</a>.</li> </ul> <p>Cc.2. OECD OPSI collection</p> <ul style="list-style-type: none"> <li>• OECD OPSI. (n.d.). <i>Toolkit Navigator: Putting innovation theory into practice</i>. Available from <a href="https://oecd-opsi.org/toolkit-navigator/">https://oecd-opsi.org/toolkit-navigator/</a>.</li> </ul> <p>Cc.3. UNaLAB collection</p> <ul style="list-style-type: none"> <li>• UNaLAB. (n.d.). <i>Tools for Co-creation</i>. Available from <a href="https://unalab.enoll.org/">https://unalab.enoll.org/</a>.</li> </ul> <p>Cc.4 SAP AppHaus collection</p> <ul style="list-style-type: none"> <li>• SAP AppHaus. (n.d.c). <i>Methods: Practice Human-Centered Innovation Step by Step</i>. Available from <a href="https://apphaus.sap.com/toolkit/methods">https://apphaus.sap.com/toolkit/methods</a>.</li> </ul>

Source: Compiled by the Author.

**Table 31. Suggested introductory references for participatory design methods (Pd) to integrate in a public institution's innovation function, together with specific options and documentation sources per option**

Suggested introductory references	Specific methods/method collections and documentation
<ul style="list-style-type: none"> <li>• Participatory design. (n.d.). In <i>Wikipedia: The Free Encyclopedia</i>. Available from <a href="https://en.wikipedia.org/wiki/Participatory_design">https://en.wikipedia.org/wiki/Participatory_design</a>.</li> <li>• Hensley, J., &amp; Kitch, B. (February 1, 2023). <i>What is Co-design? A Primer on Participatory Design</i>. In <i>Mural Blog</i>. Available from <a href="https://www.mural.co/blog/co-design-method">https://www.mural.co/blog/co-design-method</a>.</li> <li>• Sunlight Foundation. (n.d.). <i>Guide to co-design: Learn how to create a participatory design process</i>. In <i>Sunlight Foundation Roadmap to Informed Communities</i>. Available from <a href="https://communities.sunlightfoundation.com/action/codesign/">https://communities.sunlightfoundation.com/action/codesign/</a>.</li> </ul>	<p>Pd.1. Akvopedia collection</p> <ul style="list-style-type: none"> <li>• Akvopedia. (n.d.). <i>Participatory methods</i>. Available from <a href="https://akvopedia.org/wiki/Participatory_methods">https://akvopedia.org/wiki/Participatory_methods</a>.</li> </ul> <p>Pd.2. ACI library</p> <ul style="list-style-type: none"> <li>• ACI. (n.d.). <i>Co-design toolkit: Library of co-design resources</i>. New South Wales Government Agency for Clinical Innovation. Available from <a href="https://aci.health.nsw.gov.au/projects/co-design/library-of-related-resources">https://aci.health.nsw.gov.au/projects/co-design/library-of-related-resources</a>.</li> </ul> <p>Pd.3. UX Magazine collection</p> <ul style="list-style-type: none"> <li>• Naranjo-Bock, C. (April 24, 2012). <i>Creativity-based Research: The Process of Co-Designing with Users</i>. UX Magazine.</li> </ul>

<ul style="list-style-type: none"> <li>Usability Body of Knowledge. (n.d.). Participatory Design. In <i>Usability Body of Knowledge / Topics / Methods / Design Methods</i>. Available from <a href="https://www.usabilitybok.org/participatory-design">https://www.usabilitybok.org/participatory-design</a>.</li> <li>MakeTools. (n.d.) <i>MakeTools - Generative Research for the Front End of Design</i>. Available from <a href="https://maketools.com/">https://maketools.com/</a>.</li> </ul>	<p>Available from <a href="https://uxmag.com/articles/creativity-based-research-the-process-of-co-designing-with-users">https://uxmag.com/articles/creativity-based-research-the-process-of-co-designing-with-users</a>.</p> <p>Pd.4. Smallfire collection</p> <ul style="list-style-type: none"> <li>Hagen, P. (July 4, 2012). Co-design Workshop Resources: Techniques and Methods. In <i>Smallfire - Facilitating design: strategy, research &amp; methods to support participation</i>. Available from <a href="https://www.smallfire.co.nz/2012/07/04/co-design-workshop-resources-techniques-and-methods/">https://www.smallfire.co.nz/2012/07/04/co-design-workshop-resources-techniques-and-methods/</a>.</li> </ul> <p>Pd.5. 18F Methods collection</p> <ul style="list-style-type: none"> <li>18F Methods. (n.d.). <i>18F Methods - A collection of tools to bring human-centered design into your project</i>. Available from <a href="https://methods.18f.gov/">https://methods.18f.gov/</a>.</li> </ul>
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Source: Compiled by the Author.

**Table 32. Suggested introductory references for serious play methods (Sp) to integrate in a public institution’s innovation function, together with specific options and documentation sources per option**

Suggested introductory references	Specific methods/method collections and documentation
<ul style="list-style-type: none"> <li>Serious play. (n.d.). In <i>Wikipedia: The Free Encyclopedia</i>. Available from <a href="https://en.wikipedia.org/wiki/Serious_play">https://en.wikipedia.org/wiki/Serious_play</a>.</li> <li>Hartmann Hindrichson, P., &amp; Cattani, A. (2022). Memories of the Future: a design technology by scenarios. <i>Strategic Design Research Journal</i> 15(1), 52-65. Available from <a href="https://www.revistas.unisinos.br/index.php/sdrj/article/view/21270">https://www.revistas.unisinos.br/index.php/sdrj/article/view/21270</a>.</li> <li>Lego Serious Play. (n.d.). In <i>Wikipedia: The Free Encyclopedia</i>. Available from <a href="https://en.wikipedia.org/wiki/Lego_Serious_Play">https://en.wikipedia.org/wiki/Lego_Serious_Play</a>.</li> <li>Seriously Training. (n.d.). <i>The Association of Master Trainers in the LEGO® SERIOUS PLAY® Method</i>. Available from <a href="https://seriousplay.training/">https://seriousplay.training/</a>.</li> <li>Pro.Play Method. (n.d.). <i>play like a pro: Learn to solve complex problems, by playing. Become a Certified Facilitator in the Pro.Play® process and tools</i>. Available from <a href="https://www.proplaymethod.com/">https://www.proplaymethod.com/</a>.</li> </ul>	<p>Sp.1. SAP Scenes</p> <ul style="list-style-type: none"> <li>SAP AppHaus. (n.d.a). <i>Scenes: Every great experience starts with a great story</i>. Available from <a href="https://apphaus.sap.com/resource/scenes">https://apphaus.sap.com/resource/scenes</a>.</li> </ul> <p>Sp.2. Lego Serious Play</p> <ul style="list-style-type: none"> <li>LEGO. (n.d.). <i>SERIOUS PLAY®</i>. Available from <a href="https://www.lego.com/en-us/themes/serious-play/background">https://www.lego.com/en-us/themes/serious-play/background</a>.</li> </ul> <p>Sp.3. Playmobil pro</p> <ul style="list-style-type: none"> <li>Playmobil. (n.d.). <i>PLAYMOBIL pro - modelling kit for professionals</i>. Available from <a href="https://pro.playmobil.com/">https://pro.playmobil.com/</a>.</li> </ul>

Source: Compiled by the Author.

**Table 33. Suggested introductory references for gamification elements (Ge) to integrate in a public institution’s innovation function, together with specific options and documentation sources per option**

Suggested introductory references	Specific methods/method collections and documentation
<ul style="list-style-type: none"> <li>Domagala, A. (June 22, 2020). Gamification. In <i>CapGemini Insights</i>. Available from <a href="https://www.capgemini.com/dk-en/insights/expert-perspectives/gamification/">https://www.capgemini.com/dk-en/insights/expert-perspectives/gamification/</a>.</li> <li>Alimansyah, E. (April 17, 2023). The Gamification Cheatsheet: Key Elements and Best Practices. In <i>Bootcamp</i>. Available from <a href="https://bootcamp.uxdesign.cc/the-gamification-cheatsheet-key-elements-and-best-practices-d14cc3f08bad">https://bootcamp.uxdesign.cc/the-gamification-cheatsheet-key-elements-and-best-practices-d14cc3f08bad</a>.</li> <li>Aristek Systems. (September 19, 2023). <i>Gamification in eLearning: Essential Elements</i>. Available from <a href="https://aristeksystems.com/blog/essential-elements-of-gamification-in-elearning/">https://aristeksystems.com/blog/essential-elements-of-gamification-in-elearning/</a>.</li> <li>Lahey, J. (n.d.). <i>Story Pyramid of Gamification Elements</i>. Available from <a href="https://workforcecommunication.com/story-pyramid-of-gamification-elements/">https://workforcecommunication.com/story-pyramid-of-gamification-elements/</a>.</li> </ul>	<p>Ge.1. Periodic Table of Gamification Elements</p> <ul style="list-style-type: none"> <li>Marczewski, A. (n.d.). <i>Periodic Table of Gamification Elements: 52 Gamification Mechanics and Elements</i>. Available from <a href="https://www.gamified.uk/user-types/gamification-mechanics-elements/">https://www.gamified.uk/user-types/gamification-mechanics-elements/</a>.</li> </ul> <p>Ge.2. Octalysis Framework</p> <ul style="list-style-type: none"> <li>Chou, Y.-K. (n.d.). <i>The Octalysis Framework for Gamification &amp; Behavioral Design</i>. Available from <a href="https://yukaichou.com/gamification-examples/octalysis-complete-gamification-framework/">https://yukaichou.com/gamification-examples/octalysis-complete-gamification-framework/</a>.</li> </ul> <p>Ge.3. Mambo.IO collection</p> <ul style="list-style-type: none"> <li>Kanazawa, M. (June 7, 2023). 108 Gamification Elements and Mechanics to Encourage Engagement. In: <i>Mambo.IO Blog</i>. Available from <a href="https://mambo.io/blog/gamification-elements-and-mechanics">https://mambo.io/blog/gamification-elements-and-mechanics</a>.</li> </ul>

Source: Compiled by the Author.

**Table 34. Suggested introductory references for flat organizational designs (Fd) to integrate in a public institution’s innovation function, together with specific options and documentation sources per option**

Suggested introductory references	Specific methods/method collections and documentation
<ul style="list-style-type: none"> <li>Flat organization. (n.d.). In <i>Wikipedia: The Free Encyclopedia</i>. Available from <a href="https://en.wikipedia.org/wiki/Flat_organization">https://en.wikipedia.org/wiki/Flat_organization</a>.</li> </ul>	<p>Fd.1. Flatarchy</p>



- Indeed. (February 4, 2023). What Is a Flattened Organizational Structure? (Plus Tips). In *Indeed / Career Guide*. Available from <https://www.indeed.com/career-advice/career-development/flattened-organizational-structure>.
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Fd.2. Sociocracy

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Source: Compiled by the Author.

The methods and toolkits given in Tables 28-34, if activated by a public institution, can directly and indirectly contribute to more effective and efficient integration of organizational elements (Oe.1-Oe.7) into the institution’s innovation function (see Table 35).

**Table 35. The direct or indirect contribution of methods and toolkits options (mentioned in table rows) to the smooth, effective and efficient integration of organizational elements (mentioned in table columns) into a public institution’s innovation function**

Options for methods and toolkits	Organizational elements						
	Oe.1. People involved in innovation work	Oe.2. Structures undertaking innovation work	Oe.3. A recruitment policy for staffing innovation work	Oe.4. Process paradigms for carrying out innovation work	Oe.5. Motives for carrying out innovation work	Oe.6. A power and responsibility balance for innovation work	Oe.7. Rules and shared values for innovation work
Options for ideation methods	direct	indirect	direct	direct	indirect	direct	direct
Options for public participation methods	direct	indirect	direct	direct	indirect	direct	direct
Options for co-creation and innovation toolkits	direct	indirect	direct	direct	indirect	direct	direct
Options for participatory design methods	direct	indirect	direct	direct	indirect	direct	direct
Options for serious play methods	direct	direct	direct	direct	direct	direct	direct
Options for gamification elements	indirect	direct	indirect	indirect	direct	indirect	direct
Options for flat organizational designs	indirect	direct	indirect	indirect	indirect	indirect	direct

Source: Compiled by the Author.

Table 35 shows that all organizational elements can have direct contributions from one or more methods and toolkits integrated into the innovation function. Also, all methods and toolkits contribute to the effective and efficient integration of one or more organizational elements each into the innovation function.

## B. GUIDELINES ON HOW TO ADDRESS THE CHALLENGES OF IMPLEMENTING INNOVATION IN PUBLIC INSTITUTIONS, WITH EXAMPLES

The dynamics of teams engaged in innovation work within public institutions are considered through different cases introduced step-by-step, with examples of nuances. Team dynamics are considered herein *irregular*, and if not properly managed, could impede the innovation team's pace, delivery, quality of work and their collaboration. All dynamics considered is identified through the guide question: "*What are the individual and team dynamics that we need to manage, to help the innovation team deliver successfully?*"

### 1. Innovation team dynamics Td.1-Td.5: Irregular individual contributions

The ultimate challenge in implementing innovation relates to managing human relations. The first set of dynamics for teams relates to cases of irregular individual contributions to innovation teamwork, and the challenge in coping with it at the team level, such as:

- *Td.1. contribution 'laziness'*: contributions are made in a lazy way, providing the minimum feedback, without sufficient details and substantiation.
- *Td.2. contribution 'craziness'*: ideas proposed through contributions seem crazy, either in terms of irrationality, or in terms of impracticality.
- *Td.3. contribution 'lossiness'*: stakeholder feedback could become volatile over time, such as taking less part in meetings, taking more time to respond to messages, or responding in an absent-minded way.
- *Td.4. contribution 'bossiness'*: stakeholder feedback is delivered in closed-form statements, leaving insufficient room for discussion of alternatives or the justification of claims. Not agreeing with stakeholder views may cause tensions and disengagement.
- *Td.5. contribution 'messiness'*: people do not pursue order, especially when it calls for sacrificing time amidst many other obligations. Stakeholder feedback may be poorly organized, mixing-up issues, or advancing irrelevant issues.

Each of these irregularities can recur in social and cognitive tactics. These tactics would not try to change people's attitudes and habits but try to overcome irregularities constructively. The goal is to retain the added value of each person's contribution and append it to already completed work. Social tactics that could be applied include:

- qualities and skills of leadership in general, and I with social impact r<sup>56</sup>, exemplified.
- high emotional intelligence skills in leadership<sup>57</sup>
- taking stock of empathy-building activities and games, empathy-building activities and empathy-

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<sup>56</sup> For more information on leadership skills see <https://changecreator.com/qualities-and-skills-of-leader/> and <https://www.ccl.org/articles/leading-effectively-articles/characteristics-good-leader/>.

<sup>57</sup> For more information on emotional intelligence and leadership see <https://online.hbs.edu/blog/post/emotional-intelligence-in-leadership> and <https://www.forbes.com/sites/forbesbusinesscouncil/2023/07/25/why-emotional-intelligence-is-crucial-for-effective-leadership/>.

building games.<sup>58</sup>

Although leadership- and emotional intelligence-based tactics essentially address people leading the innovation team, the empathy-building activities, and games address the whole team, especially team members that deliver irregular contributions. An example could be using a role-playing game as a means to build empathy among team members. In such a game:

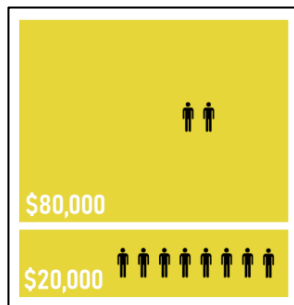
- a team member delivering irregularly (lazy, crazy, lossy, bossy, messy contributions, as defined above) could role play as team leader, while the team leader plays as team member.
- both could imitate an everyday situation where an irregular contribution is delivered and though roleplaying see themselves through the eyes of the other.
- the team member could gain understanding on the problems irregular contributions pose for the team leader and the whole team.
- the team leader could gain understanding on (a) the reasons behind the delivery of irregular contributions and (b) what the team member, despite irregular contributions, could bring to the team.

## 2. Innovation team dynamics Td.6: Pareto effects

A common problem among teams may, including innovation teams, is the phenomenon of Pareto effects that appears between the individual contributions of team members. Although a team starts equally sharing the work effort, over the time some members gradually start to under-deliver, because of the irregularities discussed above, and consequently, to keep everything on schedule, other team members try to compensate by over-delivering. Left to evolve, it could lead asymmetry where the largest part of the results is delivered by the smallest part of team., and vice versa.

The Pareto principle states that “for many outcomes, roughly 80 per cent of consequences come from 20 per cent of causes” (referred to as “the vital few”), with the remaining 20 per cent of consequences coming from the remaining 80% of causes (referred to as “the trivial many”).<sup>59</sup> Figure 22 depicts a typical manifestation of the Pareto principle in fundraising.

**Figure 22. A manifestation of the Pareto principle in fundraising efforts**



Source: Belbury, 2021.

<sup>58</sup> Abramson, 2021; Carpenter, 2020; Filler, ©2023; Porath & Boissy, 2023.

<sup>59</sup> Named by Quality Management consultant Joseph Juran (for more information see [https://en.wikipedia.org/wiki/Joseph\\_M.\\_Juran](https://en.wikipedia.org/wiki/Joseph_M._Juran)) after Italian economist Vilfredo Pareto (for more information see [https://en.wikipedia.org/wiki/Vilfredo\\_Pareto](https://en.wikipedia.org/wiki/Vilfredo_Pareto)) who, based on a series of observations, posited that “in any group of things that contribute to a common effect, a relatively few contributors account for the majority of the effect” (see <https://www.cec.health.nsw.gov.au/CEC-Academy/quality-improvement-tools/pareto-charts>).

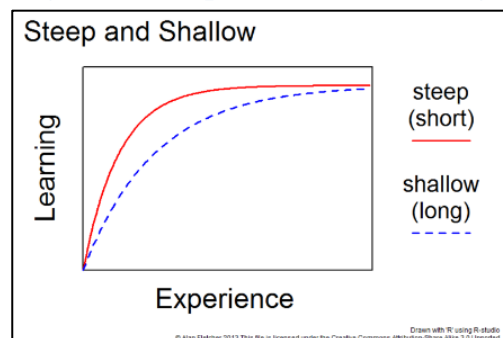
A Pareto effect appearing in the work of an innovation team could be due to irregularities in the contributions of 80per cent trivial many team members (e.g., lazy, lossy, messy contributions as defined above). It can also be the outcome of irregularities in the contributions of the vital few team members. This could occur due to crazy or bossy contributions, which other team members are finding hard to integrate. Their contributors are gradually left to deliver alone, thus they undertake the role of the vital few.

Pareto effects in the work of an innovation team could be a problem for team leaders, as they could compromise the positive experience of team members (the vital few team members may complaint about overwork, the trivial many team members may become disengaged), and place the shared values at risk and the quality of end results (could depend upon knowledge and skills that trivial many team members may possess, but not applied due to their disengagement). To manage the Pareto effects the social and cognitive tactics could be called upon.

### 3. Innovation team dynamics Td.7: Uneven learning curves

A *learning curve* shows how the proficiency of individuals in performing a process is improved over time as experience accumulates, or how a process itself improves over time as learning and proficiency accumulates.<sup>60</sup> Therefore, working on something over time leads to learning, which leads to experience, proficiency and quality end results. Depending on the rate at which learning accumulates over time, curves can be characterized as *steep*, when increasing at a faster pace, or *shallow*, when increasing at a slower pace (see Figure 23).

**Figure 23. Steep and shallow learning curves**



Source: Fletcher, 2013.

In an innovation team, it is not expected that members follow the same learning curve. Some members may be more knowledgeable from the beginning about the domain of innovation from the beginning. Some members may engage more on a day-to-day basis with teamwork, thus accumulating more experience over time. Some members could simply be able to learn faster than others.

Due to uneven individual learning curves, innovation teams risk being divided into two sub-teams: one comprising members who have learnt more and tend to move faster and attack more advanced issues of the innovation work; and another that includes members who have learnt less and tend to move slower and focus on more basic issues of the innovation work. Faster learners' risk becoming the vital few of the team, and slower learners risk becoming the trivial many that could lead to a Pareto effect within the team and its work.

Uneven learning curves is a challenge that team leaders should manage, to ensure that the entire team continues to deliver regularly, and that each team member continue to contribute regularly. This challenge is more cognitive in nature, and harder to meet through social tactics, even though the latter it can help by relieving tensions between faster and slower learners, and by bridging the cognitive distance between faster and slower learners via team cohesion facilitation and intra-team social learning processes.

<sup>60</sup> Kagan, 2023; Learning curve, 2023.

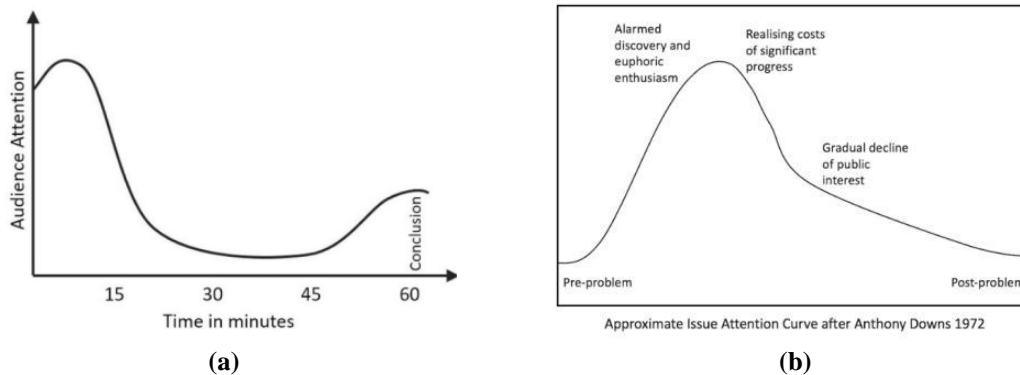
#### 4. Innovation team dynamics Td.8: Fluctuating attention curves

Attention, a term under study in cognitive psychology, is “the concentration of awareness on some phenomenon to the exclusion of other stimuli”. Quoting from the influential work of James (1890, as reported by Cheyney W. McCallum)<sup>61</sup>, “Everyone knows what attention is. It is the taking possession by the mind, in clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence. It implies withdrawal from some things in order to deal effectively with others.”

The process of paying attention to one thing implies withdrawing our attention from others, thus it is an antagonistic process by nature.<sup>62</sup> The occurrence of attention, and the retention of attention over time, cannot be taken for granted. Attention levels fluctuate during time windows, thus giving rise to the concepts of (a) an *attention span*, defined as “the amount of time spent concentrating on a task before becoming distracted”<sup>63</sup>, which has been found to vary by age, and (b) a time-fluctuating *attention curve*, discussed as early as 1934 by Philpott and later on by Gibbs (1992), who proposed the attention curve (see Figure 24(a)). These concepts were also brought to the level of public attention as issues of importance to society, through the work of Downs (1972), with the introduction of the *issue attention curve* (see Figure 24(b)), along which public attention paid to new solutions to existing problems passes from an *alarmed discovery and euphoric enthusiasm* stage to a *realizing costs of significant progress* stage and then to a final *gradual decline of public interest* stage for solutions that are not delivering as expected.

Fluctuation in the attention paid to evolve innovation work also exists within the innovation teams of public institutions. Innovation team members have multiple stimuli competing for their attention, including stimuli from their day-to-day work, their own perceptions of the importance of the issues on which they are working to innovate, and the potential of the solutions proposed to deliver progress which would be more significant than any associated costs. The attention innovation team members pay to innovation teamwork is subject to Gibbs’ (1992) attention curve and Downs’ (1972) issue attention curve. Therefore, it fluctuates at the micro-level, that of the innovation team meetings and discussions, and at the macro-level, that of the overall innovation work timeframe.

**Figure 24. (a) The attention curve proposed by Gibbs, concerning the attention of individual learners to a subject taught, and (b) the issue attention curve proposed by Downs, concerning the attention of the public to an issue of importance to society.**



Sources: Gibbs, 1992; Downs, 1972.

<sup>61</sup> See <https://www.britannica.com/science/attention>.

<sup>62</sup> For more on attention see <https://thepeakperformancecenter.com/educational-learning/learning/process/obtaining/types-of-attention/>, <https://study.com/academy/lesson/attention-as-part-of-cognitive-development-definition-process.html> and <https://www.britannica.com/science/attention>.

<sup>63</sup> See [https://en.wikipedia.org/wiki/Attention\\_span](https://en.wikipedia.org/wiki/Attention_span).

this also poses a challenge of irregular team dynamics, as attention deficits could result in irregular individual contributions with a resulting Pareto effect. Innovation teams could encounter issue attention curve problems, in the effort to communicate their work to the management and leadership of their host public institution.

The challenge of managing fluctuating attention curve issues is more of a cognitive than a social one and could best be approached by the cognitive tactics. Social tactics may be able help, especially if they are applied to improve communication between team members and bring about increased shared feeling that their common innovation mandate is important, and that the challenge that they are facing in common is to develop solutions that will bring about much more progress. Both approaches could help keep the attention of all team members on innovation work thus minimizing unwanted attention curve fluctuations.

#### 5. Innovation team dynamics Td.9: An emotional partaking counter-clock

Given the potential fluidity and porosity in an institution's innovation team, the composition of the team may include members that feel a sense of *cultural otherness* towards each other. This could be due to differences in provenance (members from the public institution, external stakeholders from civil society, academia or the private sector), demographic differences (such as differences in terms of gender, age, socio-economic status, education levels), and simply differences in personal traits (e.g., different learning styles, different behavioural styles, different expression). This feeling could result in at least three discrete shortages of trust: (a) low trust in the idea that others will value us as we would like to be valued; (b) low trust in the idea that others will behave along the same code of conduct that we adopt ourselves; and (c) low trust in the idea that others can appreciate our own ideas and proposals by seeing behind the lines our internal rationale.

Low levels of trust lead to irregularities in the team dynamics, like poor communicate and collaboration. Therefore, a first level of team cohesion is needed, namely a level of institutional membership. All members of a team are bound by its mandate and bylaws, sharing the same rights and obligations. This creates a perception of *commonness* and *equality* between team members. This *institutional membership* creates a first level of security for team members feeling culturally other and helps them overcome hesitations to speak up and participate regularly in joint activities.

Institutional membership comprises a level of team cohesion that is necessary, but not sufficient, for success. This is simply because team members, although peers institutionally speaking, may still have diverging or even conflicting interests and views regarding the team's innovation mandate. Therefore, problems that are raised and the solutions proposed during innovation teamwork could be viewed perceived as win/lose situations by team members. They see different potential outcomes some in which their supported cause could lose, and some in which their supported cause could gain. This could create difficult to bridge disagreements between team members, as at the root team members' interests were not harmonized. Thus, *rational partnership* is essential as a level of team cohesion. It can be achieved through the creation of win-win situations team members, convincing them that the scenarios encompass everyone's goals and in doing so tightening the team's cohesion.

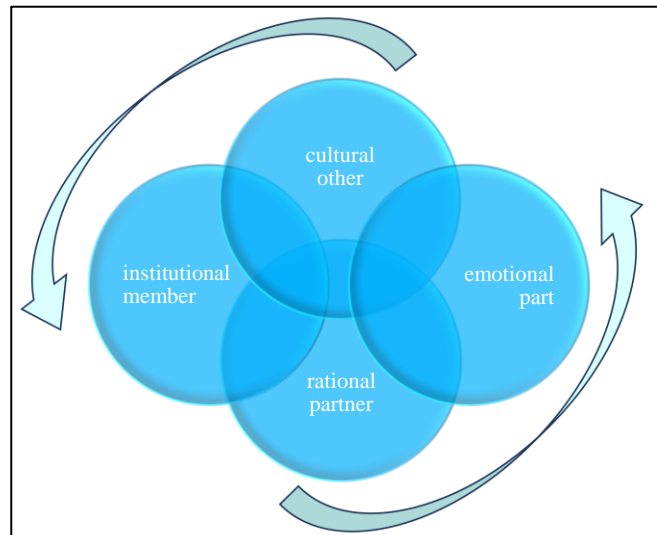
However, even this level of cohesion may not be sufficient for team success, if it is defined and sought in terms of final outcomes and in the experience of working in the team. People working together as rational partners, could still feel emotionally apart, because of persistent cultural otherness and if the manner of work seems too formal, and does not leaving room for spontaneity such as a smile, a greeting, an applause, taking a break together, or making small talk about everyday life. A layer of feeling emotionally well in the team is important to ensure positivity in daily tasks. The level of team cohesion formed is *emotional partaking*.

If an innovation team is cohesive, it delivers better. It is therefore important that the dynamics of the team is well managed so that every team member can traverse the levels of cohesion. Figure 25 illustrates this journey through an emotional partaking counter-clock, showing (a) circles to be traversed counter-clockwise; and (b) processes that are time-critical. If too much time elapses before the journey is initiated, or the journey is initiated but slows down, so that emotional partaking is reached late, the counter-clock will not deliver on its full potential. The emotional partaking counter-clock is meaningful for all teams, whether

they have an innovation mandate or any other one, as it is an essentially tool for team cohesion. However, in innovation teams, where creativity plays a role, it is critical to ensure every member’s creative mood and an overall creative ambiance.

The challenge for leadership in endorsing a counter-clock is manageable with social and cognitive tactics. Transitions from cultural otherness to institutional membership, and from rational partnership to emotional partaking, could be affected through social tactics, whereas transition between institutional membership and rational partnership could be affected with cognitive tactics.

**Figure 25. An emotional partaking counter-clock for innovation teams, and for teams beyond the innovation mandate**



Source: Compiled by the Author.

*6. Innovation team dynamics Td.10: From time as foe to time as friend*

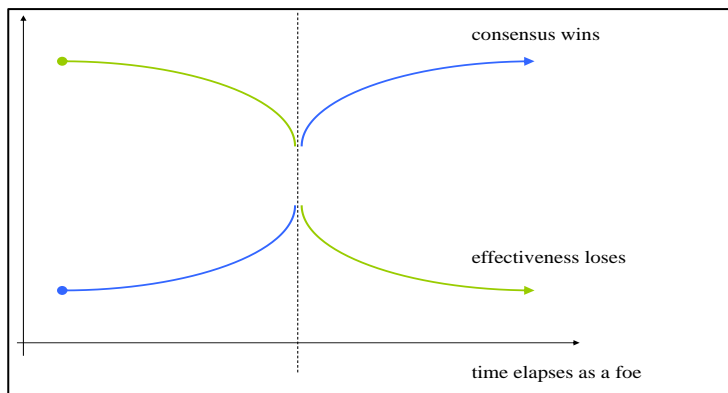
An important aspect of dynamics for innovation teams (and teams in general), is their relationship with time. Each innovation team has a timeframe for delivery of output. During their work two concurrent trends evolve, both competing for time: a trend for effectiveness, pointing towards doing rather than to discussing; and a trend of consensus, pointing towards discussing rather than to doing. Both trends require time, every time a dilemma arises and can bring about a win-lose situation between them. If effectiveness wins (i.e., take the time to achieve effectiveness), consensus loses (i.e., do not have the time to build consensus), and vice versa.

Figure 26 shows this antagonistic relationship between effectiveness and consensus As time elapses (horizontal axis), and the team tries for consensus (blue line going up) less time is available to try for effectiveness (green line going down), and vice versa, resulting in a win-lose situation. Time, therefore, does not allow the team to achieve the two things it wants most, namely effectiveness *and* consensus, making it a foe.

Viewing time as a foe constitutes a fundamental irregularity in the work life of an innovation team, risking stress that can paralyze creativity, and frustration that can spoil team cohesion across all the levels. The most effective way to remove this stress is to make good decisions on the time needed to deliver innovation. Assuming the time needed to deliver innovation is estimated using conventional time planning

techniques (such as work breakdown structures<sup>64</sup>, PERT diagrams<sup>65</sup>, and CPM analysis<sup>66</sup>) at  $T$  time units, without considering consensus discussions. To account for consensus, the timeframe allocated could be set to  $C \cdot T$  time units.  $C$  is an adjustment factor calculated based on parameters like originality, need for creativity, knowledgeability of team members, and size and heterogeneity of the team. Some typical values for  $C$ , could range from 1.1 (simple consensus needs) to 2 or higher (demanding consensus needs). Therefore, if the time needed to deliver on innovation (without consensus) is 6 months, and the consensus adjustment factor is then assessed at 1.5, the timeframe allocated to the innovation team for delivery with the consensus would be 6 months x 1.5, thus 9 months.

**Figure 26. When time does not suffice, it elapses as a foe, placing consensus and effectiveness in an antagonistic relationship**

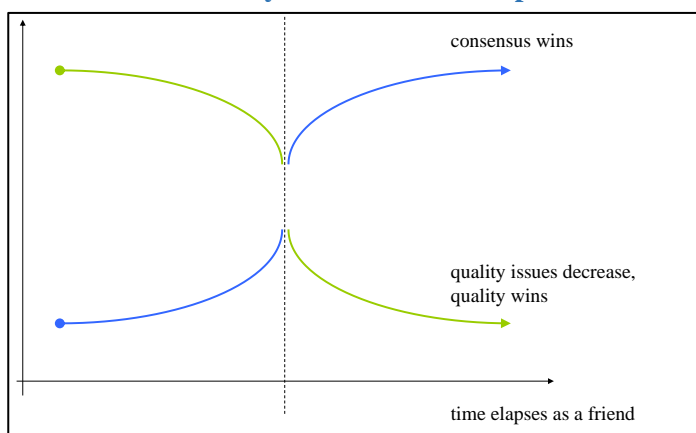


Source: Compiled by the Author.

Provided that the time assessment is correct, the team has sufficient time to build stronger consensus and increasing the quality while reducing the possibility of non-acceptance of the final innovation. Time, in this context, is no longer a foe, but regarded as a friend that brings consensus and quality.

Figure 27 shows as time elapses (horizontal axis), the blue line for building consensus goes up, in parallel the green line for poor quality/non-acceptance goes down, and a win-win situation is achieved upon completion of the innovation effort.

**Figure 27. When time suffices, it elapses as a friend, placing consensus, effectiveness and quality in a symbiotic relationship**



Source: Compiled by the Author.

<sup>64</sup> For more information on breakdown structures see <http://www.netmba.com/operations/project/wbs/>.

<sup>65</sup> For more information on PERT diagrams, see <http://www.netmba.com/operations/project/pert/>.

<sup>66</sup> For a more information on CPM analysis, see <http://www.netmba.com/operations/project/cpm/>.



Another time related issue, is when the time available for innovation is limited by external constraints and consequently the abovementioned calculations are not sufficient. In such cases two provisions could be made:

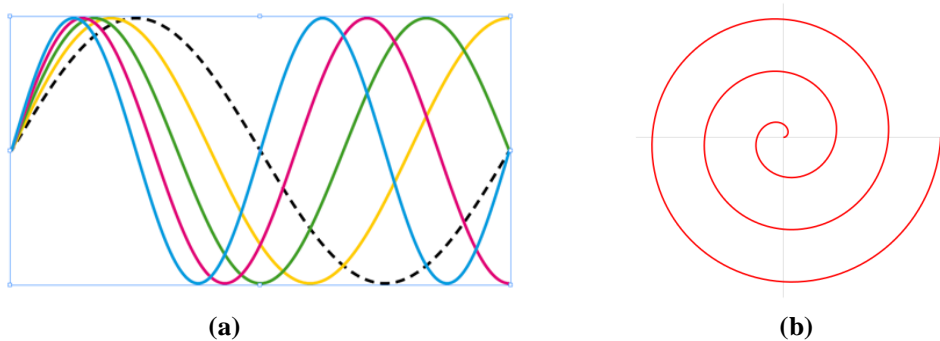
- Downsize the expected innovation to achieve it, with the consensus required, and within the constrained timeframe. For example, if an innovation requires an overall timeframe of 9 months, but only 4.5 are available, then 50 per cent of the innovation effort should be downsized.
- Consider continuing the innovation work in the future, beyond the time constraints.

To keep the innovation efforts, embarked upon at different time periods, connected in a meaningful manner some time-spanning innovation patterns can be considered:

(a) Innovation waves (Figure 28(a)): The innovation function of a public institution evolves through successive sinusoidal waves. All these waves could have the same scope, a whole domain of issues/needs to be addressed, and then each such wave would cover this scope mostly in breadth, addressing multiple issues/needs, but not in full depth, targeting for each such issue/need a small-scale innovation that can be delivered fast. Then, the next wave could take the innovation effort from there, and so on.

(b) Innovation spirals (Figure 28(b)): The greater innovation function of a public institution evolves through successive rounds of a spiral. Each one of these rounds could have a specific scope, a single issue or need to address through innovation in more complete depth, without trying to reach out and cover the breadth of all issues and needs. Then, the next spiral could take the innovation effort from there.

**Figure 28. (a) Wave and (b) spiral patterns for realizing the overall innovation function of an institution over a bigger period**



Sources: (a) Indiscripts, 2021; (b) AdiJapan, 2009.

### 7. Cognitive tactics for managing irregular innovation team dynamics

The cognitive tactics is used to manage the challenges posed by irregular innovation team dynamics. Two main cognitive tactics are proposed, namely a) use of the Innovation Process Empirical Guide (IPEG) model; and b) use of the IDEA Lifecycle for Public Sector Innovation model.<sup>67</sup>

(c) The Innovation Process Empirical Guide (IPEG)<sup>68</sup> is an examples-based guide to different innovation process types applicable to public sector innovation efforts. The innovation process types currently included in IPEG are, in alphabetical order: bottom-up innovation; collaborative innovation; continuous innovation; disruptive innovation; frugal innovation; incremental innovation; local innovation; open innovation; and sustainable innovation (see Box 1).

<sup>67</sup> ESCWA, 2017.

<sup>68</sup> For detailed explanation of the Innovation Process Empirical Guide, see ESCWA, 2017, Chapter II and Gouscos, 2019.

### Box 1. Some innovation process types supported by the IPEG model

**Bottom-up innovation efforts** are conceived at lower responsibility and authority levels of an organizational structure and communicated upwards along organizational layers for approval.

- Rationale: people at the field level know better
- Critical success factors: people at lower organizational levels need to commit beyond formal responsibility; people at lower organizational levels need to embrace the big picture
- Risks: the process may end up with ideas egocentric or otherwise fragmented
- Promises: innovations better suited to field-level realities.

**Collaborative innovation efforts** where people source and evaluate ideas that are prescribed on a broader organizational role/layer basis, and selected later during the process, the latter being communicated to them in terms of importance to participate

- Rationale: the issues to tackle cross organizational levels and specializations
- Critical success factors: participants need to work jointly rather than in parallel; leadership needs to drive collaboration in a rigorous way
- Risks: ideas may sum up partial interests, rather than synthesize them
- Promises: innovations with all aspects worked out, backed up with consensus.

**Disruptive innovation efforts** meet two or more of the following characteristics: (a) bring forward large changes and/or changes with large lateral effects, (b) do so at a fast (with respect to the size of changes) pace over time, and (c) establish new ways of work in replacement of existing ones, setting a fixed and possibly pressing for the latter to become abandoned.

- Rationale: problems are too interlinked to solve one at a time, the Gordian knot needs cutting; too much time has passed unused, everything needs to change now
- Critical success factors: change towards the environment needs to be managed smoothly during uptime, without creating chaos; people inside and outside need to be helped to disrupt their own culture and habits
- Risks: too many / too fast changes with unexplored consequences may create problems that defame innovation
- Promises: everything will be better, before the past has time to resist.

**Frugal innovation efforts** bring forward small-sized and low-cost changes that may have a multiplier effect and/or desirable impacts positively disproportionate to the budget and resource consumptions that they demand; and/or remove non-essential features to make something more accessible or affordable.

- Rationale: instead of trying to entirely change something complicated, start by identifying small, isolated changes that accumulate to a meaningful improvement; to improve does not only mean to add something new, but also to remove something that adds complexity but not real value.
- Critical success factors: the changes to effect, although small and simple, need to be meaningful; the changes to effect need to have no undesirable lateral effects
- Risks: considering frugal as a synonym to cheap and making low cost a priority over real value.
- Promises: if we are ingenious enough and understand something well enough, we can find small changes that can make a big difference

**Incremental innovation efforts** focus on effecting a series of small innovative improvements, one at a time, using the achievement of some set objectives as concept of success.

- Rationale: innovation costs need to be proportionate to some set objectives; not too many innovations need to be affected at the same time
- Critical success factors: out of many innovations increments possible at some point, the right one needs to be chosen for realization
- Risks: keeping increments proportionate to set objectives may not allow some nice and bigger-scale ideas to find their way to realization
- Promises: innovation, wisely used, can achieve objectives without wasting resources.

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Source: Compiled by the Author from ESCWA. 2017.

The model is accompanied by EIPwiz<sup>69</sup>, an empirical wizard that serves as an aid for public sector

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<sup>69</sup> For detailed explanation of the EIPwiz, see ESCWA, 2017, Chapter IV.

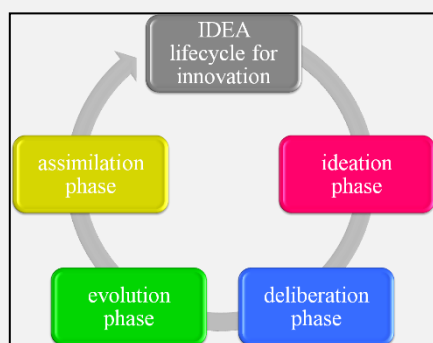
personnel, managers and external stakeholders involved in specific innovation efforts or that are faced with the need for innovation work, by helping them to understand which innovation process types may fit their context the best.

- The innovation process types catalogued and supported by IPEG and the EIPwizard could be brought forward by the guiding question: “Which process type can we best choose for further structuring our innovation work?” The IPEG process types facilitates a more structured response to the challenges posed by the dynamics and irregularities in the innovation team’s work. This additional structure can help the team streamline allocation of tasks, responsibilities and expected contributions. The outcome is a more transparent and accountable work process.
- In cognitive tactics there is the innovation team’s capability to deliberate the merit of each process type to find the one best suited to their needs, using the IPEG model and the EIPwizard tool. Selecting a process together could empower the team with a sense of autonomy, responsibility and accountability. It can help create commitment to innovation work, and further regularize individual contributions and team dynamics.

(d) The IDEA Lifecycle for Public Sector Innovation<sup>70</sup> is a methodology (see Box 2) used to develop and sustain innovations in the public sector and is systematically connected with ICT tools that to implement the way of work and is based on the premise that innovation in public sectors have three important characteristics essential for the sustainability of public sector innovation:

- it comprises a multi-step, rather than monolithic, process;
- it is complex in nature and involve internal and external stakeholders; and
- it not linear in nature and necessitates iterations at specific stages and in the overall implementation frame.

### Box 2. Innovation activities supported by the IDEA Lifecycle Model for Public Sector Innovation



At the top level the **IDEA lifecycle includes** four discrete phases to generating ideas for innovation (Ideation Phase), deliberate on these with external stakeholders (Deliberation Phase), implement ideas in a circular evolutionary process (Evolution Phase), and monitor their adoption by involved stakeholders (Assimilation Phase).

In the **Ideation Phase** internal stakeholders of the public sector generate ideas for innovation, grounded in the potential to innovate and the needs of the public sector. All the activities of this phase (collaboration, idea management, data visualization, employee engagement and gamification) are recommended when using the methodology for the first time. Later iterations can exclude some, but collaboration is always recommended.

In the **Deliberation Phase** internal stakeholders reach out to external stakeholders with an interest in the generated innovation proposals and encourage them to deliberate each proposal. All these activities of the phase (participation, crowdsourcing, debating, argumentation, semantic modelling, sentiment analysis, opinion mining, open innovation and policy making) are recommended for the first time. Some could be omitted in later iterations. However, participation activity is always recommended.

In the **Assimilation Phase** innovations effected by public sectors are adopted by all stakeholders involved and monitored. All the activities of the phase (online community, social media management, advocacy and feedback management) are recommended the first time it methodology is used and some can be omitted in later iterations. However, online community activity is always recommended.

Source: Compiled by the Author from ESCWA, 2017.

<sup>70</sup> For detailed explanation of the IDEA Life cycle see ESCWA, 2017, Chapter III and Gouscos, 2019.

The IDEA lifecycle includes provisions to build consensus, gain support and make improvements to innovations beyond the initial implementation.. The different innovation activities catalogued and supported in the IDEA lifecycle model can all be brought forward by the following guiding question: “Which ideation, deliberation, evolution and assimilation activities for the innovations to be developed can we best choose for further structuring our innovation work?”

- Here again, in a way much similar to the capabilities of the IPEG model for process types, the IDEA lifecycle can facilitate a response to the challenges posed by the various dynamics and irregularities in the work of an innovation team as discussed above, as it can serve to provide to this work more structure. This additional structure can in turn help the innovation team be based on a shared understanding of the way of work to be applied in common, thus helping to streamline allocation of tasks, responsibilities and expected contributions. In this respect, the working process of the innovation team becomes more transparent and accountable to all team members.
- At the same time, in terms of cognitive tactics to meet the team dynamics challenges discussed already, an important possibility that should not go unnoticed is the capability of the innovation team as a whole to deliberate over the choice of the ideation, deliberation, evolution and assimilation activities of this lifecycle best suited to their needs, based on the guidance offered by the IDEA model. Then, selection of a sequence of activities for innovation work by all team members together, according to their own felt needs, based on member profiles and on the specific innovation case to work upon, can in turn serve to empower the innovation team with a sense of autonomy, and thus responsibility and accountability for their choices of work methods. This serves as one more factor that can help create commitment to innovation work, and further regularize individual contributions and the dynamics of the team.

Table 36 summarises the direct and indirect ways that the social and cognitive tactics can help address the challenges posed by irregular team dynamics.

**Table 36. The direct or indirect contribution of social and cognitive tactics in addressing the challenges posed to innovation teams from irregular team dynamics.**

Potentially irregular innovation team dynamics	Social tactics	Cognitive tactics
	Applying leadership/social leadership skills, emotional intelligence skills, empathy-building activities/games	Using the IPEG/EIPwizard process type models and the IDEA lifecycle model
Td.1. Contribution laziness	direct	indirect
Td.2. Contribution craziness	direct	indirect
Td.3. Contribution lossiness	direct	indirect
Td.4. Contribution bossiness	direct	indirect
Td.5. Contribution messiness	direct	indirect
Td.6: Pareto effects	direct	indirect
Td.7: Uneven learning curves	indirect	direct
Td.8: Fluctuating attention curves	indirect	direct
Td.9: An emotional partaking counter-clock	direct	direct
Td.10: From time as foe to time as friend	indirect	direct

Source: Compiled by the Author.

### C. IDEAS ON THE POSSIBILITY OF TAILORING THE MODEL TO SPECIFIC NEEDS OF A SPECIFIC TYPE OF ORGANIZATION, LEVEL OF GOVERNMENT AND/OR TECHNOLOGICAL ADVANCEMENT

Although the innovation model proposed is not meant for NGOs, but rather for the government, public sector, public institutions, and local administrations, the co-creation and multistakeholder aspects of innovation work requires the involvement of civil society organizations and NGOs Their involvement and via tailoring to their own needs, could further support co-created innovation of public institutions and government. It also makes it possible for Arab NGOs to experiment with the model to produce their own innovations with a public purpose. Such activities could be further beneficial for the innovation community and ecosystem of the Arab region.

A tailoring exercise that adapts the innovation model to specific needs of organizations based on experience and findings in the literature, could be envisaged, but would remain speculative and disregard the realities of Arab organizations. Therefore, the exercise must be grounded and based on results of interactions with Arab organizations. Such an option practically points at leave this tailoring unspecified in the current version of the study, and have it emerged from the findings of a consultation to be organized with Arab region stakeholder organizations that would be interested and available to contribute to this effort. This consultation would be based on the innovation model developed in Chapter 2, as well as on the ingredients of this model that are developed in all the other parts of the study and invite participating stakeholders to express their own views on these, including criticism for omissions, difficulties to apply in practice and any other eventual weaknesses, as perceived the stakeholders themselves in their own realities.

Planned consultation exercises should be include the dimensions of *who*, *when*, *where* and *how*.

### *1. Consultation planning (I): Who could be consulted?*

A sample of Arab stakeholder institutions is needed each providing 1 or 2 participants. The participants will be asked to take stock of their perceptions regarding their institution's realities, and their own experience within their institution. The outcome is used to assess what should be discussed. To benefit from this exercise, it is important that participants have some mid-level experience, of at least 3 full years of work, in their institution.

The sample of stakeholder institutions and participants could be balanced as follows:

- encompassing a total of 6 stakeholder institutions from the Arab region, comprising 2 public institutions, 2 local administrations and 2 NGOs. Of this 1 public institution, 1 local administration and 1 NGO are characterized by higher innovation maturity and technology dynamism, and 1 public institution, 1 local administration and 1 NGO are characterized by lower innovation maturity and technology dynamism.
- higher and lower maturity/dynamism stakeholder institutions should not all be from the same country to avoid shifting processes and findings towards country comparisons and biases.
- the sample of participants should be gender balanced at 40-60 per cent male and 40-60 per cent female participants. This means for a sample of 12 participants from 6 institutions, gender should be 5-7 male and 5-7 female participants.
- representatives of higher and lower maturity/dynamism stakeholder institutions should not all be same gender to retain gender variables and avoid shifting the processes and findings shifting towards gender-cliché comparisons and biases.

### *2. Consultation planning (II): How would the consultation be driven by underlying conceptual models?*

Several approaches and conceptual models are available to explore user community participants opinions about proposed solutions, including:

- Information system approaches, such as the Design-Reality Gap model, based on the ITPOSMO dimensions (information, processes, objectives & values, skills & knowledge, management systems & structures, technology, other resources). These two approaches have been used in the literature to study failures of information systems in developing countries, e-government initiatives in developing countries and barriers to big data for development. In a consultation exercise, these approaches could be used for participant identified gaps between the proposed innovation model and the realities of their institutions, and to drill down, tailoring amendments to facilitate bridging the gaps.<sup>71</sup>

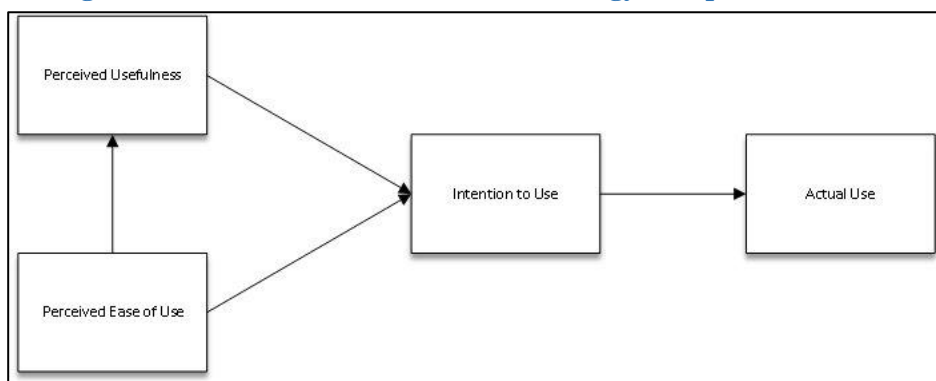
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<sup>71</sup> IGI Global, n.d.; Alduraywish and others, 2017; Syamsuddin, 2011; Fernández Gómez & Heeks, 2016.

- Technology acceptance approaches, featuring models such as TAM, UTAUT, LUM, and MAPS (Model of Acceptance with Peer Support). In a planned consultation exercise, these approaches can identify participants’ reasons for accepting an innovation model, based on their perceptions of usefulness and the models ease of use.<sup>72</sup>

Technology acceptance models are assessed to ensure a good fit during the consultation. Figure 29 shows the basic TAM model that could be used to identify participants’ perceptions of usefulness, ease of use and their intentions behind using the innovation model. It can drill down to the specific reasons participants perceive the model and guidelines as useful or not and its intended use. Although the TAM model has evolved into newer versions (TAM2, TAM3) for the purpose of the consultation exercise the basic version is sufficient.<sup>73</sup>

**Figure 29. The basic version of the Technology Acceptance Model (TAM)**



Source: Theory Hub, n.d..

Based on the concepts of the TAM model and the materials of the proposed innovation model, the consultation exercise to tailor the model to specific needs of different Arab organizations could be structured in a series of successive rounds, as shown in Table 37.

**Table 37. Successive rounds of a consultation exercise for tailoring the innovation model proposed to specific needs of different types of organizations in the Arab region**

Consultation round	Topics to be explored
Round 1. Model ingredients  The topics in this round would be explored with all participants at the same time.	<ul style="list-style-type: none"> <li>• How much useful is each ingredient of the model felt to be?</li> <li>• Are there ingredients particularly useful, and why?</li> <li>• Are there ingredients particularly non-useful, and why?</li> <li>• How much easy to use is each ingredient of the model felt to be?</li> <li>• Are there ingredients particularly easy to use, and why?</li> <li>• Are there ingredients particularly non-easy to use, and why?</li> </ul>
Round 2. Flavors of model ingredients  The topics in this round would be explored with all participants at the same time.	<ul style="list-style-type: none"> <li>• Are there some specific flavours of model ingredients which are particularly useful, and why?</li> <li>• Are there some specific flavours of model ingredients which are particularly non-useful, and why?</li> <li>• Are there some specific flavours of model ingredients which are particularly easy to use, and why?</li> <li>• Are there some specific flavours of model ingredients which are particularly non-easy to use, and why?</li> </ul>
Round 3. Guidelines for using the model	<ul style="list-style-type: none"> <li>• How much useful is each guideline for using the model felt to be?</li> <li>• Are there guidelines particularly useful, and why?</li> </ul>

<sup>72</sup> Technology acceptance model, 2024; Unified theory of acceptance and use of technology, 2023; Lazy user model, 2023; Sykes and others, 2009.

<sup>73</sup> Theory Hub, n.d.

Consultation round	Topics to be explored
The topics in this round would be explored with all participants at the same time.	<ul style="list-style-type: none"> <li>• Are there guidelines particularly non-useful, and why?</li> <li>• How much easy to use is each guideline for using the model felt to be?</li> <li>• Are there guidelines particularly easy to use, and why?</li> <li>• Are there guidelines particularly non- easy to use, and why?</li> </ul>
Round 4. Tailoring to specific needs  The topics in this round would be explored independently for each participant.	<ul style="list-style-type: none"> <li>• Which are the model ingredients, flavours, use guidelines which are felt to be the most useful? (up to 5 answers)</li> <li>• Which are the model ingredients, flavours, use guidelines which are felt to be the least useful? (up to 5 answers)</li> <li>• Which are the model ingredients, flavours, use guidelines which are felt to be the easiest to use? (up to 5 answers)</li> <li>• Which are the model ingredients, flavours, use guidelines which are felt to be the least easy to use? (up to 5 answers)</li> <li>• To what extent would each participant intend to use the model? (on a 5-point Likert scale, from 1=not at all to 5=certainly)</li> </ul>

Source: Compiled by the Author.

To implement consultation rounds, focus groups are proposed as it has the capabilities show how participants think and behave and why.<sup>74</sup> The data thus collected can be drilled down to specific topics. The envisaged focus groups will be approximately 90 minutes in duration and within each round of the focus group playful methods should be used to open, explore and close brainstorming discussions (see Chapter III.D).<sup>75</sup>

### 3. Consultation planning (III): When and where could the consultation exercise take place?

To implement the planned consultation exercise, three alternative versions could be considered:

(a) A very intensive physical presence-based version. In this option, the 4 focus groups planned would be concentrated in a working day, with two focus groups in the morning and 2 focus groups in the afternoon, and the physical presence of all participants. An example would be a satellite activity to an event organized at ESCWA.

(b) An intensive remote version. In this option, the 4 focus groups planned would be arranged online as four successive weekdays, in the same online meeting space and possibly during the same hours each day. This version of the consultation exercise could best be organized at some period of low workload for the institutions and people to participate.

(c) A non-intensive remote version. In this option, the 4 focus groups planned would be arranged online during the four weeks in a month, in the same online meeting space and possibly during the same weekday and hours. This version of the consultation exercise could best be organized at some period of non-high workload for the institutions and people to participate.

The 3 different versions each has pros and cons, and none is preferred above the others. The main trade-offs to explore in a comparison are fatigue from sessions too close to each other (a risk that mostly appears in version (a)), a lack of sufficient time for participants, organizers and facilitator to reflect on the previous session, gather and process findings before the next session, and the potential distraction of participants from sessions too far apart from each other (a risk that mostly appears in version (c)). Version (b) might seem like the best option, however all three versions have advantages to explore before deciding.

## D. IDEAS ON NURTURING AND FULLY INTEGRATING INNOVATION IN PUBLIC INSTITUTIONS AS PART OF THE GOVERNMENT DAY-TO-DAY

Nurturing and integrating innovation should be driven by the day-to day government workplace

<sup>74</sup> Focus group, 2024; George, 2023; Question Pro, n.d.; MethodSpace, n.d.

<sup>75</sup> For more information see “Nurturing day-to-day innovation tactic #5”.

realities and be based on the following premises:

*1. Premise #1. Human relations need to be managed in a way compatible with a day-to-day innovation culture*

(a) Relations with people engaging and not engaging in innovation need to be run on smooth terms.

(b) Must encourage and recognize the engagement of work colleagues with innovation, and encourage and recognize the contribution of other colleagues, not engaged in innovation, but performing critical day-to-day work.

(c) The nature of innovative and creative thinking, which crosses mental boundaries, also needs to communication patterns for innovation that cross boundaries across branches, hierarchies, and specializations, which implies that human relations within the organization need to be managed in a similarly boundary-crossing manner, so that any worker can practically have the capability to cut across organizational boundaries and exchange with any other.

*2. Premise #2. Innovation needs to be thought of as part of the normal.*

A practical way to consider the integration of innovation in day-to-day work to be on the lookout for innovation ideas that might come up, taking hints from any circumstances. In this respect,

(a) no time is wrong for innovation: an innovative idea can come at any point in time and should be voiced without delay.

(b) no place is wrong for innovation: an innovative idea can come from anywhere in the workplace, like the front office, desks for citizen reception, coffee break rooms and meeting rooms. It should be voiced without being constrained by its origin.

(c) no person is wrong for innovation: anyone in the organization, from entry-level to higher management, can formulate an innovative idea.

*3. Premise #3. Innovation needs to be shared in an open manner.*

Innovation ideas are best shared publicly in the workplace, to enable awareness, activate cross-fertilization, and create momentum.

(a) Although the deployment of a specific organizational processes for the submission and consideration of innovative ideas could be meaningful, it is best not to treat these ideas with secrecy and constrained within innovation process limits. Open communication is essential.

(b) Workers listening to the innovation ideas of fellow workers can react in the same way they react to social media posts i.e., express their like or dislike, comment, and reshare to other organizational contacts.

*4. Premise #4. Innovation can best be nurtured through collective thinking.*

Day-to-day informal innovation in the workplace, can benefit from sustained thinking and brainstorming. This leads back to the first premise of nurturing pro-innovation human relations in the workplace.

(a) Public institutions that wish to nurture innovation as part of their day-to-day work, should establish formal processes for discussing innovative ideas, and allow for informal day-to-day communication between their personnel.

(b) This implies that workers could block time to complete their daily work and reserve space within the workplace, to meet and discuss innovative ideas.

Based on these premises, several practical tactics could be used to nurture day-to-day innovation in the workplace of public institutions. All these tactics, are possible answers to the guiding question: “*What manners can we use to nurture innovation as an integral part of the day-to-day activity in the workplace?*”



(a) Nurturing day-to-day innovation tactic Nu.1. An innovation whistle refers to creating and using an innovation whistle-blower instrument (an *innowhistle*). This means whoever has an innovative idea, should be able to easily to blow the whistle and draw the attention of fellow workers to it. The mechanism should be simple, adapted to the workplace and consider physical, in-person interaction and emotion sharing, rather than on digital communication. Even the idea of using a physical whistle should not be excluded, as it can make the tactic clearly visible and fun to engage in.<sup>76</sup>

(b) Nurturing day-to-day innovation tactic Nu.2. An innovation wall refers to creating and using a social network-like innovation wall (an *innowall*), or a meeting room with blank papers on its walls. Every worker would have a profile with the biographic information and space to post notes, including their innovative ideas and the ability to react to ideas posted by others. Reactions are done similar to social media using like, commenting, sharing and following This *innowall* is permanent and only refreshed periodically based on a consensus policy, and serves as a repository of the workplace's collective innovation thinking. An *innowall* could draw from low-tech social networks which is a method of teamwork and co-creation.<sup>77</sup>

(c) Nurturing day-to-day innovation tactic Nu.3. An innovation workbench and space, refers to creating convenient day-to-day works spaces and conditions where public institution workers can meet, share and work on innovative ideas. After an innovation idea was raised, it should be formally transferred to an innovation workbench instrument (an *innoworkbench*) where it is further elaborated. It could be a large meeting table with paper sheets for notes and drawings, located in a dedicated space (an *innospace*) where innovation groups meet and work.

Transfer to an *innoworkbench* should be visible and publicly announced as this conveys recognition of a new innovative idea. Recognition could create and sustain satisfaction, enthusiasm and a positive experience all people involved leading to more innovative ideas. It can also draw on existing toolkits such as the SAP Mosaic toolkit.

(d) Nurturing day-to-day innovation tactic Nu.4. An innovation blueprint and an innovation canvas refer to providing conceptual tools that could help to visually and textually represent innovation ideas under development within an organization. In this respect, to make the elaboration of an innovation idea more practical, some concept of minimum innovation blueprint (*innoblueprint*) could be devised. This minimum blueprint would contain the minimum elements required to show that this idea is meaningful. Then, once the blueprint is produced, the idea could be transferred on to an innovation canvas (*innocanvas*), as a more complete design and presentation format, needed for further development.

Identifying from available solutions or defining anew an innovation blueprint conceptual tool, can draw from several approaches that exist in the innovation landscape already, such as Board of Innovation (n.d.), Collins (2012), Lucid (n.d.) and Planbox (n.d.). In a similar manner, definition of an innovation canvas conceptual tool can draw from a multitude of approaches already available, encompassing innovation canvases by Canvas Revolution (n.d.) and Innovate UK KTN (n.d.), a collaborative innovation canvas by Hype (Woods 2022), a sustainable innovation canvas by Maplebloom (n.d.), a social innovation canvas by the Global School for Social Leaders (n.d.), and others. These approaches are building, in their turn, on ways of representing innovation elements (Spruijt, 2019) on the basic business canvas model (Strategyzer, n.d.),

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<sup>76</sup> Although the use of innovation for whistleblowing is discussed well in literature, the use whistleblowing for innovation is not extensively explored. Eshghi & Tassiulas (2018) and World Justice Project (2022) voice some ideas in this regard.

<sup>77</sup> Innovation walls have yet gained extensive attention in the innovation landscape. A few notable ideas for using walls as surfaces for sharing innovative thinking can be found in Law Print & Packaging (2017), POM West-Vlaanderen (2020), Nelson (n.d.) and, with a better worked out account of such an effort, in Knight (2019). For more information on low-tech social networks see Gray (2011), IFI (n.d.) and Wentte-Chaney (2013).

which lends itself to such adaptations (Gouscos and others, 2022).

(e) Nurturing day-to-day innovation tactic Nu.5. Innovation gamestorming, refers to combining brainstorming activities, inherent to innovation work, with playfulness tactics to help creativity and engagement. All the tactics mentioned could be combined with playful methods for brainstorming to open discussions, diagnose problems, explore solutions, and evaluate solutions. Playful brainstorming methods such as empathy maps, dot voting, fishbowl, the anti-problem, the five whys, the \$100 test and start-stop-continue<sup>78</sup> could be helpful.

(f) Nurturing day-to-day innovation tactic Nu.6. Innovation points, refers to coupling day-to-day work with playfulness of thinking and interaction to help creativity and engagement and can be used by any worker to gain innovation points. Points could be defined according to standard gamification mechanics and additional elements to encourage engagement<sup>79</sup> It is important to use such tactics in a meaningful manner that helps workers engage with innovative thinking.

(g) Nurturing day-to-day innovation tactic Nu.7. Technology innovationization, refers to the coupling of day-to-day innovation work with more specific quests, which can be associated with gamified rewards. A quest could be finding new innovative ways to use technologies, whether emergent or existing, to improve a process, product, or service. Employees would also scan their daily work activities to identify shortcomings and problems that call for innovation. This requires a change in mindset from just installing or using technology, to *find new meaningful ways of using technology, in our own context and for our own needs, and meeting these needs in a better manner than before. The guiding question therefore is “In what new way can we, as innovators, imagine the use of technology to serve our needs better?”* This could be described as the *innovationization* of technology. Any technology – traditional, new and emerging – could be the subject of a quest. This includes using technology for a task it wasn’t conceived for, i.e., technology repurposing. A mobile phone, for example, was repurposed to send messages and access the Internet. Therefore, webpages and online forms could be innovationized into a whistleblowing channel, which can be more available, more accessible, and safer to use, than traditional such channels, as for instance in Partner Africa (n.d.). The quest to innovationize technology is proposed as a day-to-day innovation tactic to help the new mindssset to emerge, with its own rewards for those engaged in it.

(h) Nurturing day-to-day innovation tactic Nu.8. Innovation ventures, innovation missions, innovation projects, refers to giving day-to-day innovation work some better formed management structure in a re-active manner where the management structure is activated and offered after an innovative idea emerges on its own, to nurture this idea more systematically and a pro-active manner where the management structure is active and permanently available to help innovative emerging ideas. *Innovation venture, innovation mission* and *innovation project* concepts could represent and serve, subsequent stages of maturity of an innovation effort, as follows:

- Upon start, this effort is loosely defined with many open ends, uncertainties, and risks, making it look like an adventure with an unknown end, rather than a well-structured plan of work. At this stage, the effort could be termed an *innovation venture*.
- As this effort matures and arrives at formulating a purpose for innovations, and possible means to achieve the purpose, it could be promoted to the concept of an *innovation mission*.
- As this effort becomes more organized, with a structured workplan and outcomes, it could be promoted to the concept of an *innovation project*.

This hierarchy of concepts could operate as a meta-tactic, providing structure and contextualization to the work performed, and at the same time, provide a reward system for contributors, who are motivated by

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<sup>78</sup> For more information on playful methods see <https://gamestorming.com/>.

<sup>79</sup> For a list of gamified engagement elements and mechanics see Kanazawa, 2023.

seeing their innovative thinking promoted from venture, to mission, to project. These three concepts could be turned into specific innovation management structures of a public institution, that activates as innovation work, inspired by daily realities in the workplace, gradually matures. Each such structure should provide appropriate support instruments and resources to nurture innovation work, and help it mature and move to the next level in the hierarchy.

(i) Nurturing day-to-day innovation tactic Nu.9. Innovation badges, refers to coupling day-to-day innovation work with playfulness of achievement recognition, to help creativity and engagement such as innovation badges (innobadges). It could be allocated to people in an institution for innovation accomplishments, and for innovation work done independently of outcomes. Multiple types of badges can be created for different contributions and work, thus creating a badge system. Badges could be used to reward all innovation behaviours that an organization nurtures daily and could comprise:

- *success-related badges*, such as badges for success of innovation efforts, badges for quality of innovation outcomes; as well as
- *effort-related badges*, such as badges for good collaboration during innovation efforts, badges for creating a positive experience; and even
- *failure-related badges*, such as badges for not being afraid to test more risky ideas, badges for not being disappointed from failures, badges for being able to draw the correct lessons from a failure.

Failure-related badges are an important inclusion, as it essentially conveys the message that failure is an acceptable possibility in innovation work, if it is managed in a proper manner. This allows to decouple innovative thinking from stress for success and gives people liberty to experiment with more risky and unorthodox innovation ideas.

The best way to define a badge system for innovation efforts would be to co-create it with the involvement of all workers in the organization. Workers will have an opportunity to articulate their concerns, build some shared understanding and shared values on innovation. Consequently, a co-created badge system would better integrate collective values, would be better accepted in the community, and would not seem biased towards a management mindset.

Implementation of such a system could be simple created rules for badge management and representations of badges, or more complex with badges fully-fledged performance credentials of the organization considered part of its professional profile, it could play a role in promotion decisions, and be recognized by other organizations. An example of more complex badge management is Open Badges, which originated from work by the Mozilla Foundation, is since 2017 being managed by 1EdTech Consortium<sup>80</sup>. Open badges create opportunities to digitally recognize and validate achievements (and has already been recognized in the education sector by UK Open University and the EU Erasmus+ Virtual Exchange Initiative. It also lends itself to any other sector.<sup>81</sup>

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<sup>80</sup> For more information see Mozilla Open Badges, n.d.; <https://openbadges.org/>;

<sup>81</sup> UNESCO IITE, 2020; Open University, n.d.; UNICollaboration, 2020.

## IV CONCLUSION AND RECOMMENDATIONS

This chapter provides two main inputs in the presentation and discussion of the innovation model proposed:

- suggestions on issues or challenges that can be addressed through the innovation model, elaborated in Section A; and
- guidelines for building local use cases for the model in different scenarios that can be distributed throughout public institutions as guiding examples, elaborated in Section B.

The issues, suggestions and guidelines identified are all comprising, in a looping-back manner, ingredients of the innovation model proposed, and are thus summarized in Tables 39-40 respectively, together with the guiding questions that can help to identify them.

**Table 38. Important issues to consider for successful innovation work in public institutions**

<b>Guiding question: what issues for the success of innovation work are we identifying within our institutions and for external beneficiaries/adopters of our innovations?</b>	
<b>Common theme</b>	<b>Issues for success (Is)</b>
Preference of public-facing over internal-facing innovations as a starting point	Is.1. Publics having pressing needs that can be met with innovation at the delivery end of public sector products and services
	Is.2. Publics having limited or no trust in the potential of public institutions to innovate
	Is.3. Public sector innovation plans facing severe technology and implementation risks because of the need to amend existing ways and systems of work
Preference of local use case-based over global use case-based innovations as a starting point	Is.4. Local contexts in need of innovation, having specific needs very deeply rooted in local factors, that are hard to understand for non-locals
	Is.5. Global contexts in need of innovation, encompassing local contexts of high heterogeneity
	Is.6. Centrally based innovation efforts that face difficulties in diffusion and adoption
	Is.7. Centrally based innovation efforts that face difficulties in diffusing to and having uptake by their extramural stakeholders their own innovation potential

Source: Compiled by the Author

**Table 39. Suggestions to consider for successful innovation work in public institutions**

<b>Guiding question: what suggestions for the success of innovation work are we considering, with respect to priorities and application domains of our innovation planning?</b>	
<b>Common theme</b>	<b>Suggestions for success (Su)</b>
Priorities of innovation planning	Su.1. Prefer to start with public-facing innovation
	Su.2. Prefer to start with building local use cases that can be easily shared
Application domains of innovation planning	Su.3. Cross-fertilize the institutional mandate with innovating for the Good Life Goals
	Su.4. Cross-fertilize the institutional mandate with innovating for the Leaving No One Behind universal value
	Su.5. Cross-fertilize the institutional mandate with innovating for the One Planet One Health approach
	Su.6. Cross-fertilize the institutional mandate with innovating for Our Common Agenda
	Su.7. Cross-fertilize the institutional mandate with innovating for topics of work by the UNSG Envoy on Technology
	Su.8. Innovate for the innovation ecosystem: innovation services procurement and innovative players
	Su.9. Innovate for government-to-employee and government-to-government services
	Su.10. Innovate through multistakeholder dialogues and co-creation of innovation with a public purpose
	Su.11. Explore technology-specific and technology-intensive innovation challenges

Source: Compiled by the Author.

**Table 40. Guidelines for building local use cases for the innovation model in different scenarios that can be distributed throughout public institutions as guiding examples**

<i>Guiding question: with what guidelines can we build local use cases of innovation to share with others?</i>	
<b>Common theme</b>	<b>Local use case innovation guidelines (Lg)</b>
Framing innovation work: providing an overall framework within which the innovation effort will take place	Lg.1. Bringing a small group of stakeholders together
	Lg.2. Formulating a mission for supporting and sharing a local use case innovation across its life cycle
	Lg.3. Taking a think big/start small and a dolphin, not whales approach
	Lg.4. Preferring technologies with a fast availability and learning curve
	Lg.5. Preferring to build upon, rather than amend, what exists already
	Lg.6. Identifying a proper publication venue for the innovation
	Lg.7. Considering broader publication venues
	Lg.8. Considering submitting documented innovation efforts for recognition as Digital Public Goods
	Lg.9. Using the innovation model in a lean manner
Formatting innovation work: defining a specific format that will structure the way in which innovation work will take place, within the framework chosen	Lg.10. Considering organizing the innovation effort in a workshop format
	Lg.11. Considering organizing the innovation effort in a hackathon format
	Lg.12. Considering organizing the innovation effort in a gamified format

Source: Compiled by the Author.

#### A. SUGGESTIONS ON ISSUES OR CHALLENGES THAT CAN BE ADDRESSED THROUGH THE INNOVATION MODEL

In this respect, 2 suggestions for a total of 7 main issues, and then a series of suggestions for a total of 9 application domain-level challenges for public sector innovation work are highlighted. These suggestions are primarily addressed to institutions newly venturing into the domain of public sector innovation; still, given the experience that already exists with public institutions of the Arab region - from institutions newly venturing to already more experienced and mature in this domain - the suggestions can be addressed, *mutatis mutandis*, to all public institutions.

##### **Suggestion Su.1. Prefer to start with public-facing innovation**

It addresses the following issues relevant to the success of public sector innovation work:

- Issue (Is.1.) Public has pressing needs that can be met with innovation at the delivery end of public sector products and services
- Issue (Is.2.) Public has limited or no trust in the potential of public institutions to innovate
- Issue (Is.3.) Public sector innovation plans facing severe technology and implementation risks because of the need to amend existing ways and systems of work.

With these issues in mind, the suggestion posits that institutions newly venturing into public sector innovation, as well as institutions already more experienced in public sector innovation who feel that they would like to invest in some new ways for innovation work, could prefer to use the innovation model proposed for starting with an effort of

- *public-facing innovation*, i.e., innovation meant to improve the delivery channels of a product or service, or the user interface of a product or service delivered online, in a way that is directly (as soon as the innovation is realized) and clearly (through a tangible positive change) visible to the public,

rather than with an effort of

- *internal-facing innovation*, meant to improve the quality or efficiency of some internal organizational process, even if this process is involved in service delivery workflows, in a way that is only indirectly (with time needed past implementation of the innovation) and less clearly (through a less tangible positive change) visible to the public.

Public-facing innovations can be built on top of what already exists, even if they interoperate with it, and thus they stand to run less technical and implementation risks. They also stand to gain attention and satisfaction, and thus support, and eventually trust of the public, in more direct ways. On the contrary, internal-facing innovations defined as above can tend to amend what already exists, and thus stand to run more risks of technology and implementation, also risking facing organizational obstacles, ripple effects and delays. they also find it difficult to attract public attention, satisfaction, support and trust during the timeframe needed for their positive impacts to become visible to the public in the form of tangible improvements. The combination of these two factors creates a time window of risk and threat for internal-facing innovations, which public institutions, especially those newly venturing into public sector innovation, could have interest to avoid.

However, public sector innovation cannot only proceed with public-facing innovation efforts, as this would risk creating a shell of innovation around otherwise non-innovative ways and systems of work. It is certain that internal-facing innovation work will be needed at some point. Therefore, internal-facing innovation work could stand to benefit more when following public-facing innovation work, rather than from preceding it.

### **Suggestion Su.2. Prefer to start with building local use cases that can be easily shared**

It addresses the following issues relevant to the success of public sector innovation work:

- Issue (Is.4.) Local contexts in need of innovation, especially specific needs deeply rooted in local factors, that are hard to understand for non-locals.
- Issue (Is.5.) Global contexts in need of innovation, encompassing local contexts of high heterogeneity.
- Issue (Is.6.) Centrally based innovation efforts that face difficulties in diffusion and adoption.
- Issue (Is.7.) Centrally based innovation efforts that face difficulties in diffusion and uptake by their extramural stakeholders in their own innovation potential

With these issues in mind, the suggestion posits that institutions engaged in public sector innovation can stand to benefit from preferring to start building innovation with

- *local use cases*, i.e., use cases that only consider the specific needs of a particular local context<sup>82</sup> and then, once implemented at a final level of demonstrable improvements, can be easily shared for creative porting to other local contexts (upscaling?),

rather than with

- *global use cases*, i.e., use cases that consider a standard perception of user needs, agnostic of specific local context and, once implemented at a final level of demonstrable improvements, are distributed to local contexts for use as is.

Local use cases can be easier understood in terms of needs for improvements and to implement in terms of solutions, exactly because (a) these needs are more specific, and can be expressed by local stakeholders easily identified and involved, and (b) solutions are freed up from the need to prove that they

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<sup>82</sup> *Local context*, in this respect, does not only refer to a specific geographical location, but can also refer to a specific organization, a specific domain of public sector intervention, and any other specific dimension of the application domain. More simply put, a local use case may refer to a specific city (geographical locality), or to a specific institution (organizational locality), or to a specific theme of the life of people and businesses (domain locality), or to any other specific aspect / concept of locality defined in such a line of thought.

fit all contexts, since they are expressly built for a given local context with easily identified stakeholders for evaluation. Communication of an innovation that works well for as local use case to other local contexts, should done on the explicit premise that this innovation does not purport to work well for other local contexts, which is exactly why a porting effort is needed. This effort lays the grounds for unleashing creativity and further innovation work, to allow each new local context to gain the feeling that, through its own work, it has done something innovative and of added value , to make this innovation *its own*.

Global use cases risk suffering from the opposite of all the advantages for local use cases. Needs are less specific, solutions need to stick to an “one-size-fits-all” spirit, and stakeholders to express needs and evaluate solutions are harder to identify and involve. They are communicated to local contexts on the premise that they should be used as is, which does not allow for local creativity or added value, and thus makes hard to emerge the feeling that a local context has itself made this innovation its own. This may make it difficult to embrace global use case-based innovations at the local level, and lead to a loss potential to encourage further innovation work at the local level.

However, public sector innovation cannot be constrained to proceed with local use cases only. At some point, when enough experience has been gathered, it will be necessary to move on with a one-size-fits-all global use case-based innovation approach. Therefore, starting with local use cases and then ending up in global use cases, is less risky than, more beneficial than, and thus preferable.

These suggestions, focusing on the priorities that could be adopted in new plans for public sector innovation, are complementary to and can be combined with considerations for innovating along the guidelines for building local use cases of the model. The outcome can be distributed to other public institutions as guiding examples.

Concerning the challenges that can be addressed through the innovation model proposed, the overall approach taken is to think of these challenges in terms of application domains for public sector innovation, rather than in terms of more abstract organizational or process challenges. In this respect, the suggestions that follow towards public institutions engaging in innovation are essentially referring to the potential that exists for each public institution to see how their mandate may cross-reference and cross-fertilize with one or more of application-level challenges presented below.

### **Suggestion Su.3. Cross-fertilize the institutional mandate with innovating for the Good Life Goals**

It is an interesting challenge for any public institution, whether newly venturing into or more experienced with public sector innovation, to apply the innovation model proposed for innovating across the Good Life Goals (GLGs)<sup>83</sup>, popularized by UNEP and partnering organizations for policymakers, citizens, businesses and young people, and corresponds to the SDGs. Good Life Goals have been formulated as “*personal actions that everyone around the world can take to help support the Sustainable Development Goals*”. The SDG Business Hub of the World Business Council for Sustainable Development (WBCSD)<sup>84</sup>. provides a full pack of resources for the Good Life Goals, encompassing a manual, flash cards, animated emojis, media library, media toolkit and a business guide. Figure 30 presents a synopsis of the Good Life Goals emojis and key messages, as well as a sample of their link to everyday life actionable items.

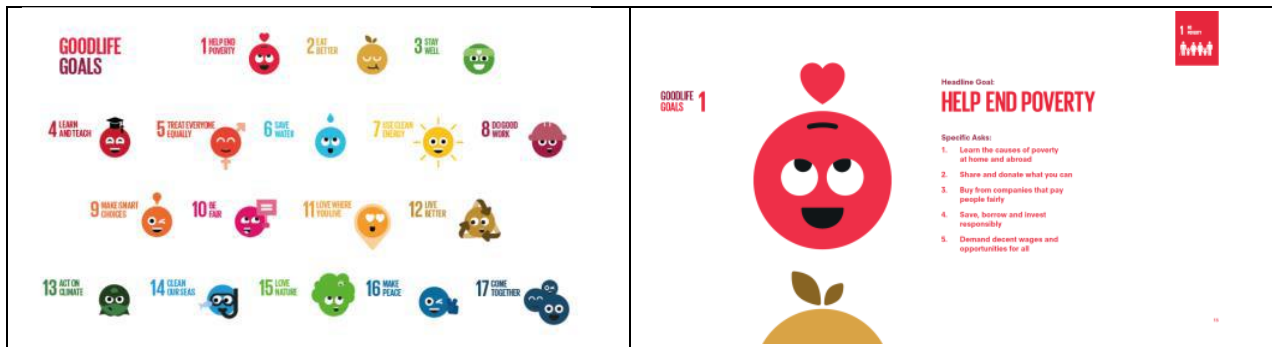
An institution newly venturing into public innovation could start by deploying an innovative G2C/G2B service that helps citizens, businesses or young people to accomplish a GLG. Then, at a next stage, the institution could extend this service into a new G2E process addressed at its own personnel, as well as into a new G2G service addressed at its collaborating institutions, for accomplishing this GLG internally, through their own operations.

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<sup>83</sup> One Planet Network, 2022

<sup>84</sup> For more information see <https://sdghub.com/>.

**Figure 30. (a) Good Life Goals key messages, in correspondence to the UN SDGs; (b) analysis of Good Life Goal #1(Help End Poverty) into everyday life actionable items.**



(Sources: (a) One Planet Network, 2022; (b) ESCWA (n.d.)).

**Suggestion Su.4. Cross-fertilize the institutional mandate with innovating for the Leaving No One Behind universal value**

It is an interesting challenge for any public institution, whether newly venturing into or more experienced with public sector innovation, to apply the innovation model proposed for innovating across the well-established Leaving No One Behind UN universal value, which has been operationalized into practical policies by relevant work of UN System organizations such as UNDP (2018), the United Nations Sustainable Development Group (2022), and UNICEF (2021).

Public institutions could consider to innovate with building G2C/G2B services more responsive to citizens and businesses that are usually left behind because of factors like discrimination, shocks and vulnerability, socio-economic status or geography (UNDP, 2018), and/or building G2G processes for better including in service design citizens and businesses that are usually left behind for the reasons mentioned in (Lessa and others, 016), using tactics like the ones proposed by the UN Sustainable Development Group (2022) and UNICEF (2021).

**Suggestion Su.5. Cross-fertilize the institutional mandate with innovating for the One Planet One Health approach**

It is an interesting challenge for any public institution, whether newly venturing into or more experienced with public sector innovation, to apply the innovation model proposed for innovating across the One Planet One Health approach, as developed by the FAO (n.d.), WOA (n.d.), WHO (n.d.), UNEP (n.d.) individually, and jointly through the Quadripartite (2022).

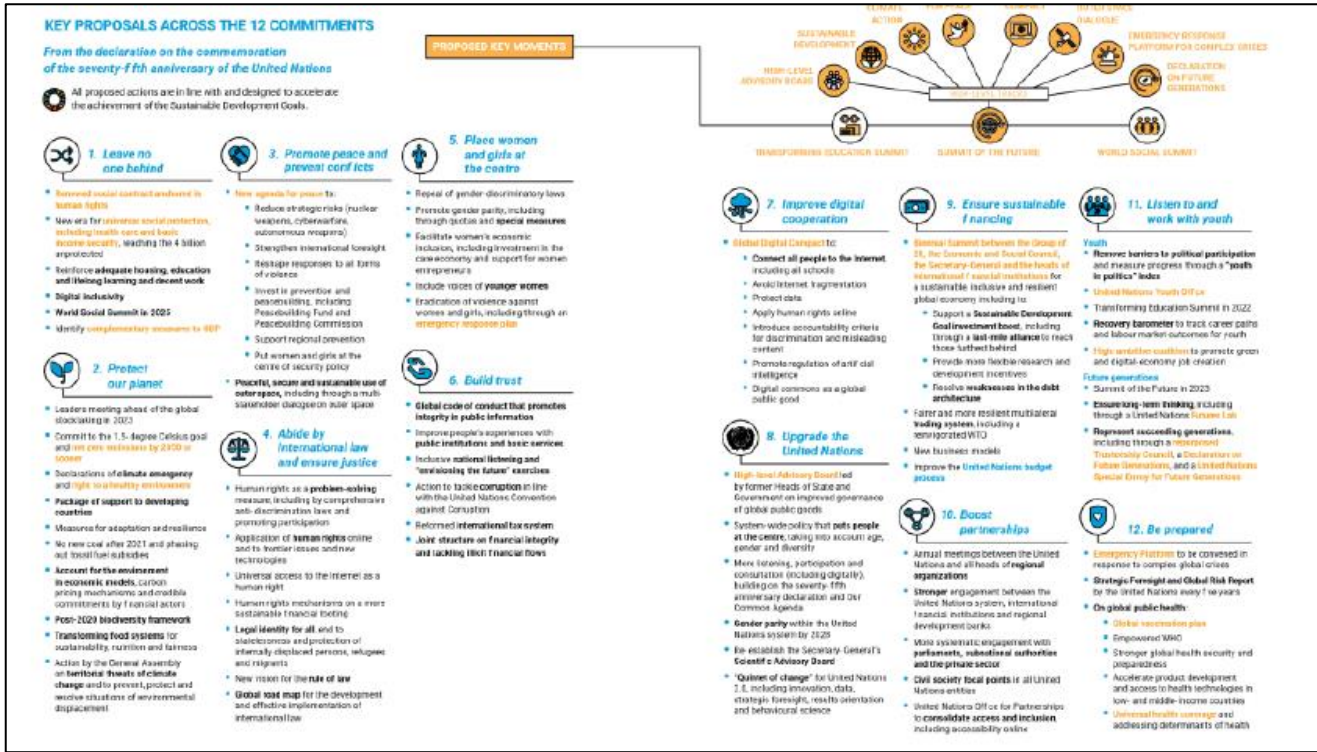
Public sector institutions could consider innovating with new G2C/G2B services for animal, plant, food and water health, as well as through G2G processes for sharing One Planet One Health data across institutions, and cross-border. This latter possibility, it is to be noted, could give a case for government-to-government cross-border innovation.

**Suggestion Su.6. Cross-fertilize the institutional mandate with innovating for Our Common Agenda**

It is an interesting challenge for any public institution, whether newly venturing into or more experienced with public sector innovation, to apply the innovation model proposed for innovating across commitments of Our Common Agenda (United Nations, 2020), as this has been reported by the UN Secretary-General. The 12 key commitments and associated proposals of Our Common Agenda (Figure 31) cut across sectors, as well across the societal objectives for public sector innovation mentioned in the Introduction of the study.



Figure 31. Key commitments and proposals of Our Common Agenda.



Source: United Nations, 2020.

### Suggestion Su.7. Cross-fertilize the institutional mandate with innovating for topics of work by the UNSG Envoy on Technology

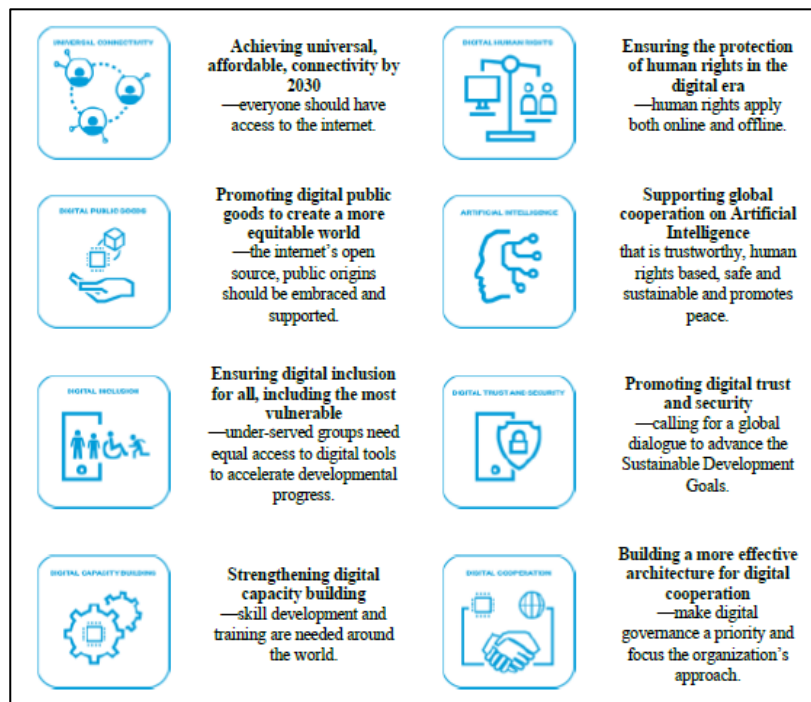
It is an interesting challenge for any public institution, whether newly venturing into or more experienced with public sector innovation, to apply the innovation model proposed for innovating across topics from the work done at the level of the United Nations Office of the Secretary-General's Envoy on Technology, namely the 8 key actions (see Figure 32) of the Secretary-General's Roadmap for Digital Cooperation<sup>85</sup> and the Entity's other topics such as, digital environmental sustainability.

The Action Plan for Sustainable Planet in the Digital Age<sup>86</sup> provides grounds for innovation using emerging technologies, given that the Digital Environmental Sustainability topic and CODES Action Plan call for collaboration across 9 proposed, and any new, Impact Initiatives, that can embrace applications of digital technology at the service of environmental sustainability (such as impact initiative II.6, on a Digital Product Passport for Circularity).

<sup>85</sup> For a detailed version of the report see <https://www.un.org/techenvoy/content/roadmap-digital-cooperation>.

<sup>86</sup> CODES, 2022.

**Figure 32. Key actions of The Secretary-General’s Roadmap for Digital Cooperation.**



(Source: United Nations, Office of the Secretary-General's Envoy on Technology, 2020).

### **Suggestion Su.8. Innovate for the innovation ecosystem: innovation services procurement and innovative players**

There is one more area of innovation ecosystem-related challenges which the innovation model proposed might be used to address. These challenges tend to refer more to public institutions more experienced with public innovation, who regularly engage in procurement of technology and services in this respect but, nevertheless, due to regulatory frameworks, require market players to demonstrate an experience record that is inevitably absent from otherwise much innovative would-be tenderers, such as start-up providers of new applications and services.

A specific challenge would be to use the innovation model proposed to come up with some innovations at the level of regulatory framework improvements, that would allow tall players of the innovation ecosystem, including newly established ones, a minimum merit-based fair chance of acquiring project experience with the public sector. This, in other words, would be a challenge to innovate the support itself that the public sector part may offer to the private sector part of the innovation ecosystem.

### **Suggestion Su.9. Innovate for government-to-employee and government-to-government services**

The challenge Su. 8 could also pave the way to a broader array of challenges that public institutions more experienced with innovation could tackle. They could use the proposed innovation model to pursue innovative improvements to their internal processes and services.

A specific type of challenge is to innovate on government-to-employee (G2E) services, i.e., on the services that public institutions and local administrations provide to their own employees for the latter to perform their individual work and collaborate within and across organizational boundaries.

Another specific type of challenge would be to innovate on government-to-government (G2G) services, i.e., on services that public institutions may provide to each other, be it provision of data, checks, or

documents needed for case handling in G2B and G2C services that require inter-agency collaboration, or provision of datasets, or technical comments for policy-making processes that require such collaboration.

**Suggestion Su.10. Innovate through multistakeholder dialogues and co-creation of innovation with a public purpose**

A special challenge that could be pursued by means of the innovation model, addressed to all public institutions, newly venturing and more experienced with public innovation, relates to the potential of multistakeholder dialogues and the co-creation for innovation with a public purpose. This potential can draw upon two different pillars that could both help Arab region government/public institutions and local administrations to get in closer collaboration terms with the broader Arab region innovation community, be it the private sector and start-ups, the academic sector and research centres and innovation hubs, or the civil society and NGOs:

- the guidelines and examples available by OGP (2016) and other sources such as the Center for International Forestry Research (CIFOR) (n.d.) and Stakeholder Forum (n.d.) on multistakeholder forums (MSFs) which, beyond working on open government reforms, also comprise a policy instrument that could be ported to co-creation in other domains, such as innovation with a public purpose;
- guidelines for managing multiple-helix (especially, quadruple-helix) innovation models from the literature (Aggarwal & Sindakis, 2022; Schütz and others, 2019; Riconfigure, 2021), which provide guidance about integrating contributions from the public, private, academic sector and civil society, in an overall innovation effort.

Multistakeholder/multiple-helix innovation efforts could target the improvement of government services towards all recipients, including G2C and G2B services offered to citizens and businesses, but also G2E services offered to public sector employees, and G2G services offered from one public institution or local administration to another. In case of multistakeholder/multiple-helix innovation for G2E and G2G services, public institutions and local administrations would essentially embark on a challenging journey to open up their own internal ways of work to external stakeholders, and seek to improve the former through ideas, feedback and co-creation by the latter.

**Suggestion Su.11. Explore technology-specific and technology-intensive innovation challenges**

A final set of challenges for innovative use of technologies, that can be addressed to all public institutions and local administrations, both those more experienced and those newly venturing with public innovation. Two types of technology challenges could be pursued by means of the innovation model proposed:

- *technology-specific innovation challenges*, i.e., efforts to use the innovation model to develop some innovation that has, at its heart, a specific emerging technology evaluated and selected for some specific potential; and
- *technology-intensive innovation challenges*, i.e., efforts to use the innovation model to develop some innovation that relies on the heavy use of one or more technologies, of which some may be emerging and some not.

It is important that these challenges are articulated in a manner that ensures that they are not perceived as a disguised effort to identify the needs a technology can serve, or problems that it can solve. This means not part of a *digital transformation effort* to identify a market for some technology, but as a *genuine innovation effort* to use technology as a means for innovation. Therefore, at their core, these challenges are not concerned with using a technology for a known need, as intended, but to depart from known needs, and try to use technology, in an innovative way, to address this need.

Two examples of potential public sector innovation efforts that could make the differences between these two types of emerging technology-reliant innovation are briefly introduced herein clearer are:

(a) Example #1. Technology-specific innovation for improved public participation in the renovation of a public space

- Imagine a public space with social value, but which is not in good shape anymore, for example an abandoned public park that requires renovation. The need for the renovation aligns with the needs of citizens.
- There is an array of options available for citizens to express their needs in relation to the renovation of the park. These options would be based on public participation approaches such as public surveys or citizen assemblies. At best participants would have access to some textual information or visual representations about different renovation plans and reconfigurations of this space, beyond their own experience and knowledge. This form of representation limits the participation of citizens in the future to-be park and, consequently, their capacity to actively engage in well-thought proposals for the design of this park and its different facilities.
- To provide participants with a more vivid experience of the current state and different potential futures of the park, an innovation effort could result in a representation of the park in a virtual reality environment. All participating citizens can navigate the virtual park space and, tour superposed models of new facilities or any other items, while virtually annotating comments about the proposed park.
- This would comprise a VR technology-specific innovation effort, as it embarks from an existing need, arrives at creating a vision for this need to be met through the capabilities of a specific technology, and formulates a solution in which technology capabilities are harnessed in a way that meets user needs.

(b) Example #2. Technology intensive innovation for improved participatory management of clean water resources.

- Imagine a rural setting in which clean water resources needed for drinking, sanitation, livestock farming, and irrigation are becoming more and more scarce, unfortunately a too common phenomenon in many parts of the world., Inhabitants need to adapt to the shortage of clean water, and implement the fair use of available clean water resources through systematic preservation and monitoring, and informed and collective decisions.
- An innovation effort to provide or improve these capabilities could be based on an array of technologies such as a) water treatment technologies for reconstituting clean water resources; b) IoT-enabled sensors for monitoring clean water quantity, quality as well as consumption; c) data analytics and visualization technologies for making clean water resource and trends information available to the public; d) smart app technologies for making this information available on mobile devices; e) water budgeting tools<sup>87</sup> for responsible irrigation; and, in a more exploratory manner, f) participatory budgeting tools<sup>88</sup> to customize for collectively deciding on participatory clean water budgets.
- This would comprise a technology-intensive innovation effort, as it embarks from an existing need, arrives at creating a vision for this need to be met through an array of capabilities of different technologies, and formulates a solution in which technology capabilities are harnessed and coupled in a way that meets user needs.

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<sup>87</sup> For examples see [https://fes.org.in/resources/sourcebooks\\_manuals\\_atlases-&-ecoprofiles/manuals/crop-water-budgeting-tool.pdf](https://fes.org.in/resources/sourcebooks_manuals_atlases-&-ecoprofiles/manuals/crop-water-budgeting-tool.pdf) and <https://www.irrigation.org/IA/Resources/Tools-Calculators/Water-Budgeting/IA/Resources/Water-Budgeting.aspx>.

<sup>88</sup> For examples see <https://www.citizenlab.co/platform-features/participatory-budgeting> and <https://pbstanford.org/>

## B. GUIDELINES FOR BUILDING LOCAL USE CASES FOR THE MODEL IN DIFFERENT SCENARIOS THAT CAN BE DISTRIBUTED THROUGHOUT PUBLIC INSTITUTIONS AS GUIDING EXAMPLES

The guidelines are grouped in two main themes, namely *framing guidelines*, and *formatting guidelines*. Framing guidelines (guidelines 1-9 below) refer to choices and tactics that public institutions can consider as an overall framework within which the innovation effort will take place. Formatting guidelines (guidelines 10-12 below), refer to alternatives for defining a specific format that will structure the way in which innovation work will take place, within the framework chosen.

### **Local use case innovation guideline Lg.1. Bringing a small group of stakeholders together**

Identify and bring together a small no more than 10 members) working group of people internal to the organization. The group can be extended with a few (2 or 3) external stakeholders that embrace innovation as a need, rather than an option, and understand the benefits of innovation in terms of public-facing objectives Op.1 and Op.2 (See Introduction).

### **Local use case innovation guideline Lg.2. Formulating a mission for supporting and sharing a local use case innovation across its life cycle**

Embrace the group of stakeholders of Lg.1 with a mission, which can be thought of as a new service to be designed, that will be curated across a full life-cycle approach as follows:

- Realization of the innovation by the working group.
- Documentation of this innovation.
- Publication through an appropriate avenue.
- Distribution of this innovation to other public institutions as a guiding example.
- Promotion of this innovation to these institutions by the working group in a mentoring role, for (a) helping to *adopt* as is, and/or (b) helping to *adapt* to their own local contexts.

### **Local use case innovation guideline Lg.3. Taking a think big/start small and a dolphin, not whales approach**

Ask the working group to undertake a “think big/start small”<sup>89</sup>, and a “dolphins not whales” approach<sup>90</sup>, to come up soon (in a 4-6 months’ timeframe) with one single innovation that works and can show an impact.

### **Local use case innovation guideline Lg.4. Preferring technologies with a fast availability and learning curve**

Allow the working group to take stock of emerging or more mature technologies. They should select technologies from the ones that group members feel can be available quickly and have an acceptable learning curve for all involved in the innovation’s life cycle, thus the designers and the users of the innovation.

### **Local use case innovation guideline Lg.5. Preferring to build upon, rather than amend, what exists already**

To minimize organizational ripple effects and associated delays, and maximize portability of the innovation sought, public institutions should ask the working group to think in terms of building something

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<sup>89</sup> For more information and practical advice on the “think big/start small” approach see Mui (2016), Sopheon (n.d.), Turrecha (2020) and Carroll (2010)

<sup>90</sup> For information and practical advice about the “dolphins, not whales” approach see Silver (2014), Dibartolomeo (2020) and Pastore (2015).

new, therefore, something which falls under the institution’s mandate but comes on top of what already exists, rather than trying to change what already exists.

### **Local use case innovation guideline Lg.6. Identifying a proper publication venue for the innovation**

Local use cases for innovation developed along the guidelines should be documented and published in a venue appropriate for the innovation ecosystem, while visible to public institutions with whom it is meant to be shared and promoted, to be curate its life-cycle approach.

An appropriate publication venue for the local use case innovations developed, in the Arab region, would be the Arab Open and Innovative Government Portal (AOIGP)<sup>91</sup>. AOIGP is curated by ESCWA as a “*subject-driven portal supporting the creation of – open and innovative – responsive, inclusive, trustworthy and effective digital governments in the Arab region*”, allowing access to information, knowledge and cases of innovation efforts, and thus could serve as a venue.

### **Local use case innovation guideline Lg.7. Considering broader publication venues**

Beyond the proposed AOIGP venue, additional publication venues connected and visible to the academia and research community is also possible. This opens the landscape of Research Data Repositories, platforms that allows storage in an organized and DOI-addressable<sup>92</sup> manner of data sets and documents from scientific research efforts. It could serve as a venue for data sets and documents of public sector innovation efforts. Examples of such repositories include Harvard Dataverse<sup>93</sup> by Harvard University, Zenodo<sup>94</sup> by CERN, and repositories provided by Vanderbilt Libraries Digital Lab<sup>95</sup>. The publication of local use case-based innovation efforts in broader venues can also draw from standard description format of such efforts, such as the Strategy Markup Language (StratML)<sup>96</sup>.

### **Local use case innovation guideline Lg.8. Considering submitting documented innovation efforts for recognition as Digital Public Goods**

Consider the possibility of formulating finished documented innovation efforts as digital public goods, that could be of value to all institutions of the Arab region. A digital public good, in this respect, can be understood as: “*Digital public goods are public goods in the form of software, data sets, AI models, standards or content that are generally free cultural works and contribute to sustainable national and international digital development.*”<sup>97</sup>

Such an effort could be based on the relevant requirements forward by the Digital Public Goods Alliance DPG Standard and the DIA Principles for Digital Development<sup>98</sup> and serve a threefold purpose:

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<sup>91</sup> Website: <https://opengov.unescwa.org/>.

<sup>92</sup> For more information on Digital Object Identifiers (DOIs) and their use as a reference system for published items see <https://www.doi.org/>.

<sup>93</sup> Website: <https://dataverse.harvard.edu/>.

<sup>94</sup> Website: <https://zenodo.org/>.

<sup>95</sup> Website: <https://heardlibrary.github.io/digital-scholarship/manage/repository/>

<sup>96</sup> For more information about the Strategy Markup Language see StratML (n.d.) and ISO (2015).

<sup>97</sup> See [https://en.wikipedia.org/wiki/Digital\\_public\\_goods](https://en.wikipedia.org/wiki/Digital_public_goods).

<sup>98</sup> For more information on the Standard see <https://digitalpublicgoods.net/standard/> and the principles see <https://digitalprinciples.org/principles/>

- firstly, enhance local use cases with aspects that might otherwise have gone unnoticed, such as scalability, privacy and security, do no harm, and others.
- secondly, provide local use case developers with a broader recognition for their work and achievements; and
- thirdly, communicate the idea that a good piece of innovative thinking and practice deserves being promoted to the status of a public good.

#### **Local use case innovation guideline Lg.9. Using the innovation model in a lean manner**

Consider using the model in a manner sufficiently lean to remain compatible with the rest of the choices made for the innovation effort. The degrees of freedom and flexibility provided by the model's use guidance in Chapter 2 for taking the liberty to

- use some, and not all, of the model's ingredients.
- for each ingredient that will be used, identify the flavour(s) better fit and more simply suited to the context of innovation work and the objectives/needs to be met; and
- use those parts of the innovation process that are felt to have more value for the case at hand
- can all be considered. The important point, is this line of thought, is not trying to make this innovation work exhaustive in terms of model use, but first and foremost successful, in terms of outcomes. In this respect, if more lean patterns of model use are felt to lead to successful outcomes in a more simple and less risky manner, they are to be preferred.

#### **Local use case innovation guideline Lg.10. Considering organizing the innovation effort in a workshop format**

The effort being undertaken to develop a local use case-based innovation can be organized, as a first alternative, as a workshop. A workshop, in this respect, is to be understood by porting the literal definition provided by Wikipedia (*"Beginning with the Industrial Revolution era, a workshop may be a room, rooms or building which provides both the area and tools (or machinery) that may be required for the manufacture or repair of manufactured goods."*<sup>99</sup>) to the context of the innovation work under discussion.

Such a format would imply planning the overall innovation work to take place within a series of workshops. This format could best serve in cases where it is felt that the most critical factor for success of innovation work is *structure*. This could be the case, for instance, when there are lots of different issues to discuss at different levels, and it is necessary to find some way for separating concerns. Should this be the case, different workshops could be planned, with each one addressing a different concern.

Developing a workshop format for innovation work in this respect, no matter if the workshops planned may take place offline, online or in a hybrid manner, can take stock of digital platforms and resources that are currently available, such as the following:

- the SessionLab platform<sup>100</sup>, which offers tools and guides for organizing, managing and, most

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<sup>99</sup> See <https://en.wikipedia.org/wiki/Workshop>.

<sup>100</sup> Website: <https://www.sessionlab.com/>.

importantly, for facilitating workshops.

- visual collaboration platforms like Miro<sup>101</sup>, Mural<sup>102</sup> and others<sup>103</sup>, which provide tools and guides for participants to mind map their ideas on digital spaces in an array of diagrammatic manners.
- the Involve platform<sup>104</sup>, which offers tools and guides for creating public participation and deliberation exercises; such a platform could be used to further structure the collaboration in the form of public influence to be expressed and exercised upon the proposals under discussion; and
- citizen engagement platforms like Decidim<sup>105</sup> and Consul Democracy<sup>106</sup> and possibly others, which can be used to drive this public participation-based structuring of innovation work even further.

### **Local use case innovation guideline Lg.11. Considering organizing the innovation effort in a hackathon format**

As a second alternative, and innovation effort can be organized as a hackathon. A hackathon, in this respect, is to be understood by porting the definition provided by Wikipedia ( “*A hackathon is an event where people engage in rapid and collaborative engineering over a relatively short period of time such as 24 or 48 hours.*”<sup>107</sup> to the context of the innovation work under discussion.

Such a format would imply planning the main part of innovation work to take place during a hackathon, with perhaps a preparatory workshop leading up to the hackathon and a recapitulation and stocktaking workshop following to conclude the process. This format could best serve in cases where the most critical factor for success of innovation work is *creativity*. For example, when there are issues that have never been dealt with before and are felt to require some original thinking to arrive at equally original solutions. A hackathon could be planned, with the key message that the outcomes sought are creative solutions, that are not constrained by traditional thinking and practice.

Developing a hackathon format for innovation work in this respect, no matter if the hackathon planned may take place offline, online or in a hybrid manner, can take stock of digital platforms and resources that are currently available, such as:

- personal independent or commercial practical accounts of tools to use in a hackathon context, such

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<sup>101</sup> Website: <https://miro.com/>.

<sup>102</sup> Website: <https://www.mural.co/>.

<sup>103</sup> For more information on available visual collaboration platforms, please see the relevant software category listing of G2 (<https://www.g2.com/categories/visual-collaboration-platforms>), on software market intelligence services such as GetApp (<https://www.getapp.com/collaboration-software/a/miro/alternatives/>), TrustRadius (<https://www.trustradius.com/products/miro/competitors>), SourceForge (focusing on open source software, <https://sourceforge.net/software/product/Miro/alternatives>) and AlternativeTo (based on crowdsourced software recommendations, <https://alternativeto.net/software/miro--formerly-realtimeboard/>).

<sup>104</sup> Website: <https://www.involve.org.uk/>.

<sup>105</sup> Website: <https://decidim.org/>.

<sup>106</sup> Website: <https://consuldemocracy.org/en/>.

<sup>107</sup> Hackathon. (n.d.). In *Wikipedia: The Free Encyclopedia*. Available from <https://en.wikipedia.org/wiki/Hackathon>.



as Chan (2020), Swan (n.d.), and others.

- guides and tool listings for organizing hackathons coming from platforms such as TAIKAI (n.d.), The Enlight Lab (n.d.), HackerEarth (2017).
- hackathon-hosting platforms like TAIKAI<sup>108</sup>, HackerEarth<sup>109</sup> and others; and
- last and not least, good practices from the New York University, Abu Dhabi (NYUAD) International Hackathon for Social Good in the Arab World, now in its 12<sup>th</sup> Annual Edition, to take place during April 2024<sup>110</sup>.

### **Local use case innovation guideline Lg.12. Considering organizing the innovation effort in a gamified format**

As a third option, not necessarily alternative as it can be combined with the previous options, is a gamified format. Gamification, in this respect, is to be understood by porting the definition provided by Wikipedia (*“Gamification is the strategic attempt to enhance systems, services, organizations, and activities by creating similar experiences to those experienced when playing games in order to motivate and engage users. This is generally accomplished through the application of game design elements and game principles (dynamics and mechanics) in non-game contexts.”*<sup>111</sup>) to the context of the innovation work under discussion.

Implies planning the whole process of innovation work, no matter if it happens within workshops, or within a hackathon, or in any other format, in terms of challenges, quests, points, levels, badges, trophies, progress bars, leader boards, onboarding procedures, social feedback loops and any other gamification dynamics. This format could best serve in cases where the critical success factor is *engagement*. For example, when there are stakeholders who are not considered sufficiently informed about or interested in the innovation work to take place. Should this be the case, the whole innovation effort could be planned as a gamified process throughout, to reward two expected results: (a) successful outcomes of, and (b) positive experience from, this effort.

Developing a gamified format for innovation work in this respect, no matter if the gamified processes planned may take place offline, online or in a hybrid manner, in the context of workshops, hackathons or not, can take stock of digital platforms and resources that are currently available, such as the following:

- the Growth Engineering Impact Suite platform<sup>112</sup>, which offers tools and guides for gamifying learning processes; and
- gamified collaboration platforms like Gametize<sup>113</sup>, GooseChase<sup>114</sup> and others<sup>115</sup>, which provide tools and guides to develop gamified missions and rewards.

Without going into further details about the platforms referenced, Figure 34 presents snapshots from

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<sup>108</sup> Website: <https://taikai.network/>.

<sup>109</sup> Website: <https://www.hackerearth.com/>.

<sup>110</sup> For more information see <https://sites.nyuad.nyu.edu/hackathon/>.

<sup>111</sup> Gamification. (n.d.). In *Wikipedia: The Free Encyclopedia*. Available from <https://en.wikipedia.org/wiki/Gamification>.

<sup>112</sup> Website: <https://www.growthengineering.co.uk/gamification/>.

<sup>113</sup> Website: <https://gametize.com/>.

<sup>114</sup> Website: <https://www.goosechase.com/>.

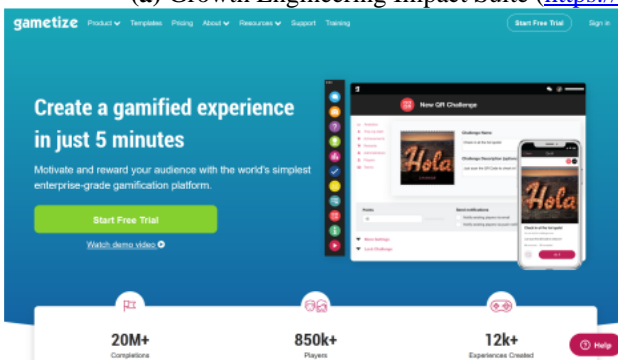
<sup>115</sup> For more information on available gamification platforms, please cf. the relevant software category listings of the software market intelligence services mentioned above.

their websites, to allow a glimpse into their main capabilities.

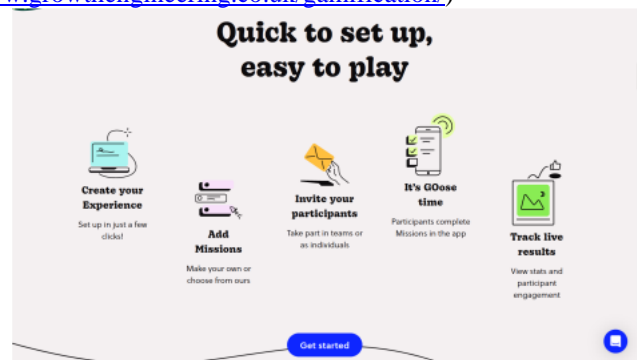
**Figure 33. Platforms that can be used when organizing local use case-based innovation work in a gamified format.**



(a) Growth Engineering Impact Suite (<https://www.growthengineering.co.uk/gamification/>)



(b) Gametize (<https://gametize.com/>)  
(Sources: Public websites of the platforms referenced).



(c) GooseChase (<https://www.goosechase.com/>)

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