

Cybersecurity Threats in the Arab Region in the Age of Big Data and 4IR

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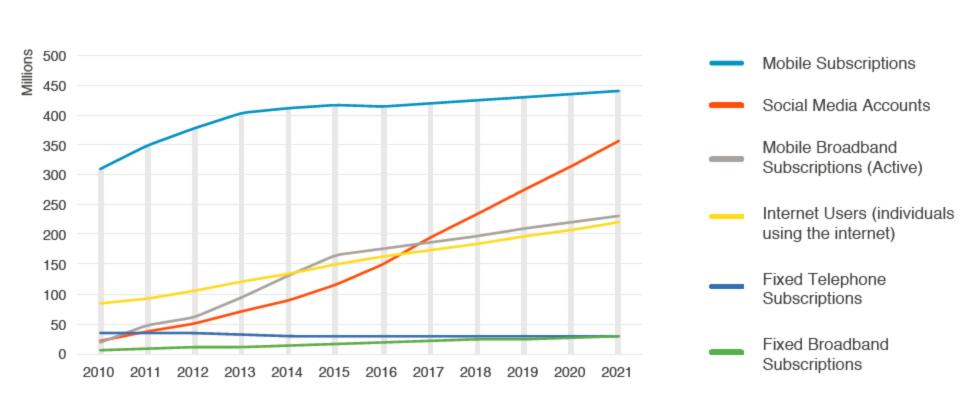
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Publications and Policy Think Tank on Digital Transformation



The Decade of Digital Transformation in the Arab Region (2010-2020)

ICT Usage Growth in the Arab World 2010-2021



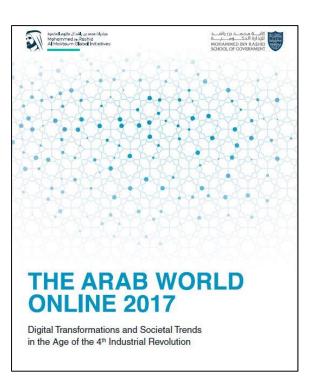
Societal Datafication

2010-2020:

The Arab World's Decade of Digital Transformation

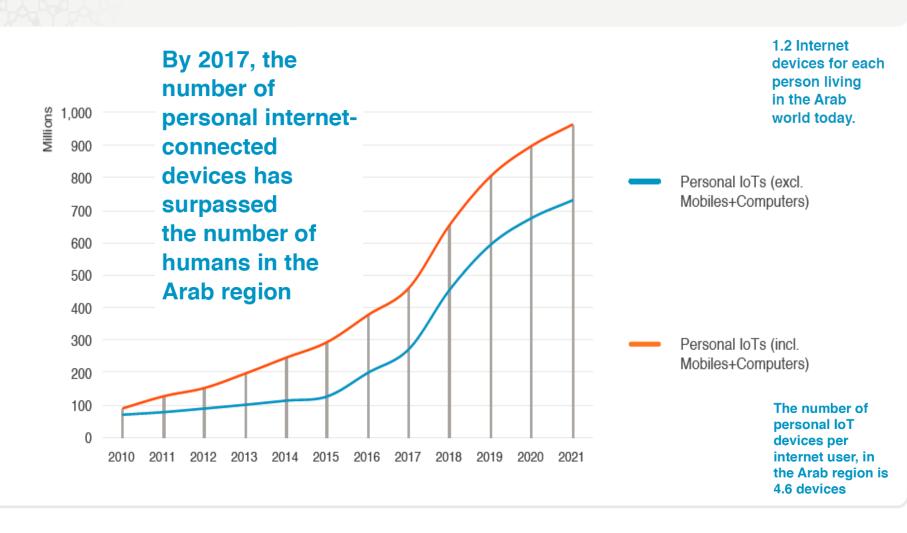
The Arab World by 2021*:

- 1 Billion personal "Internet of Things" (IoT) devices
- 100% mobile penetration
- 80% social media penetration
- New Users:
- 47 million new internet users (208m)
- 45 million new mobile broadband users (220m)
- 160 million new social media users (314m)



Regional State of Societal IoT

Personal Internet of Things (IoT) Growth in the Arab World 2010-2021



Hybrid Societal Big Data Ecosystems: Social Media and IoT as an Example

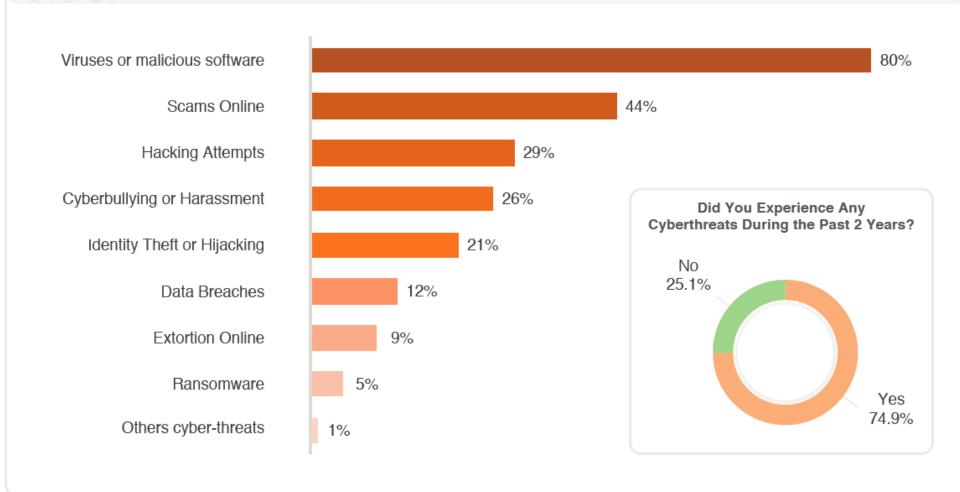


Fueling Machine Learning : <u>Data</u> generated by the interaction of social networks of people (physical and virtual) and social networks of IoT devices

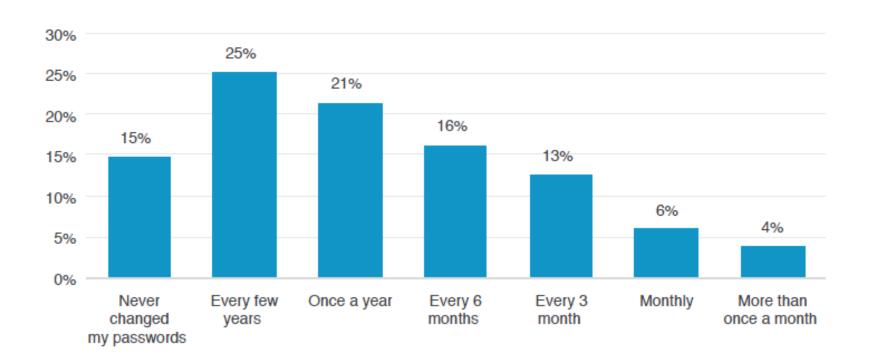




Cyberthreats Experienced During the Past 2 Years (by type)

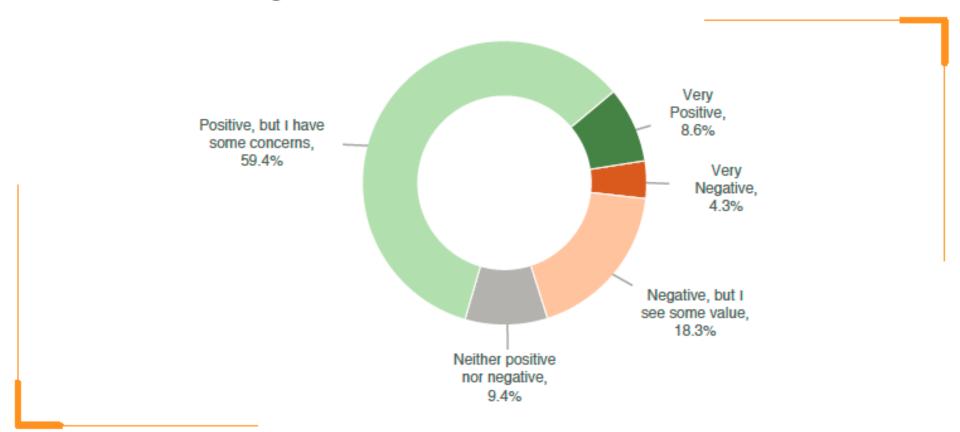


On average, How Often Do You Change Your Internet Accounts Passwords?



83% of People in MENA Have Concerns about Digitization

How do you feel about a future where almost everything around you would be connected to the Internet and interacting with other devices?





Cybersecurity in the Age of Artificial Intelligence and Big Data-Driven Governance

- Unrestricted Mass surveillance (No Safeguards)



- Wide-scale Privacy infringement
- Misuse of data (Governments & Businesses)
- Misinterpretation of digital behaviors
- Weaponizing data (IO and cyberwarfare)
- Faulty analysis
- Ethical dilemmas
- "Automation bias"
- "Algorithmic bias"

Al/Big Data-Driven Government Practices

- 1. Mass Public Data Scraping and Retention
 - 2. Trend Analysis
 - 3. Profiling
 - 4. Social Network Analysis
 - 5. Sentiment Analysis
 - 6. Frequency Tracking
 - 7. Geo-tracking
 - 8. Behavior Analysis
 - 9. Inter-linking Data sources
 - 10. Social Bots and "Influencers"
- 11. Predictive analytics in Policymaking

Concerns about the Internet in the Arab World in 2017

(How concerned are you today about the following when using the Internet?)

Cyber-terrorism (e.g. using the Internet to promote violent activities)

Cyber-crimes (e.g. ransomware, stealing your financial or other sensitive information)

Cyber-bullying: (children or others being "bullied" or harassed online)

"Fake news" online: systematic spread of false news on social media or other internet forums by organizations or countries

Commercial exploitation of personal data for targeted advertisement or profitmaking

Hacking of your Internet accounts

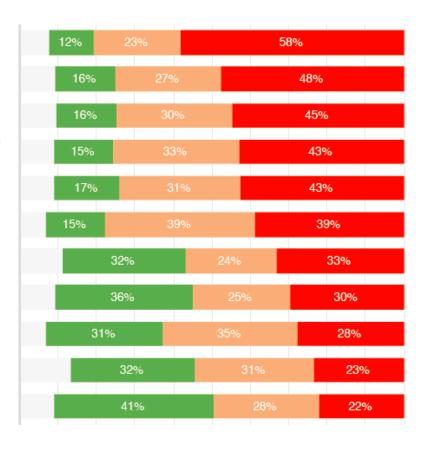
Other Governments Monitoring Your Online Activities.

Authorities Monitoring Your Online Activities (e.g. mass online surveillance)

Reputation damage online

Censorship of Online Content or Services

Your Job/Career Affected Negatively by Things You Do or Post Online







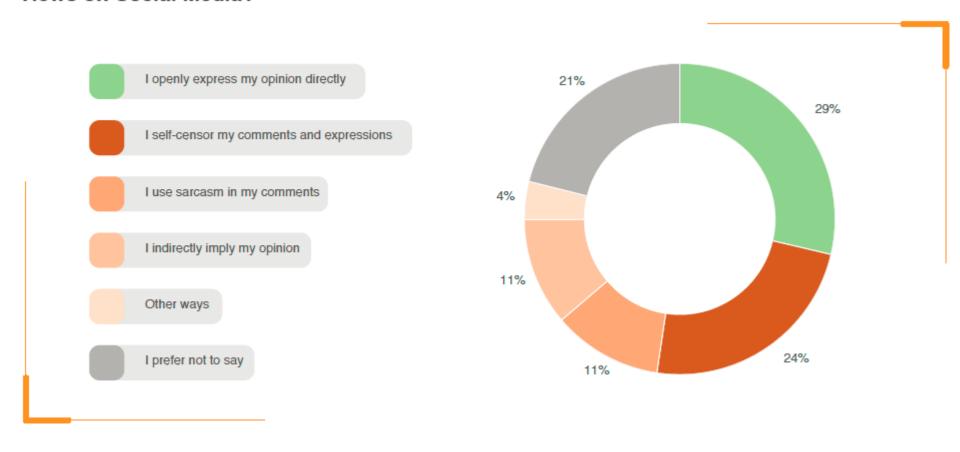




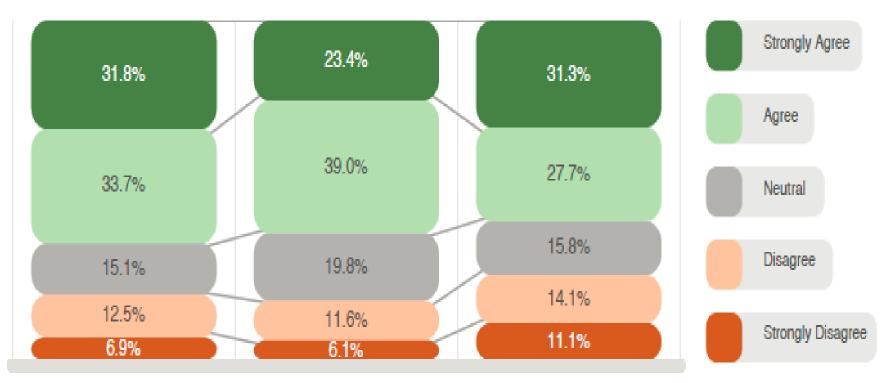
Four out of 5 internet users are concerned about cyberterrorism in the Arab region

How Open Are People with Government Online?

When Unhappy or Unsatisfied with a Government Policy, How do You Usually Express Your Views on Social Media?



Public Concerns about IoT



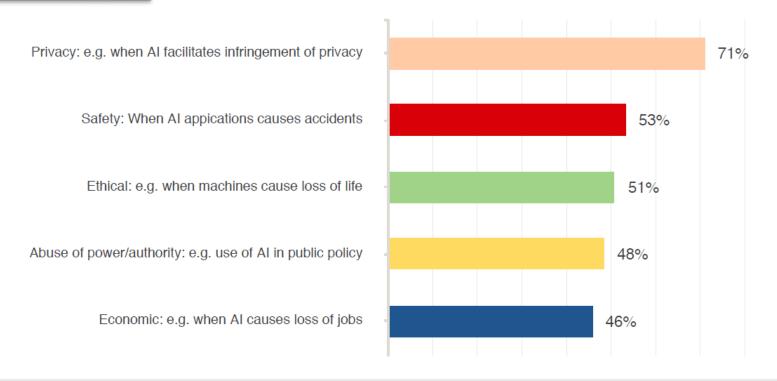
Collecting my Data: Concerned that my personal info and activities are collected by different entities online Monitoring: Concerned I am being monitored as everything around me connected to the internet Selling Mye Data: Concerned my personal info could be bought and sold as everything around me connected to the internet

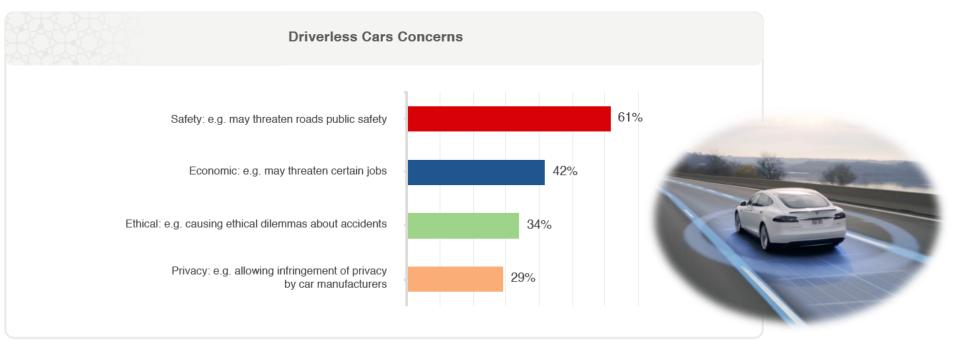


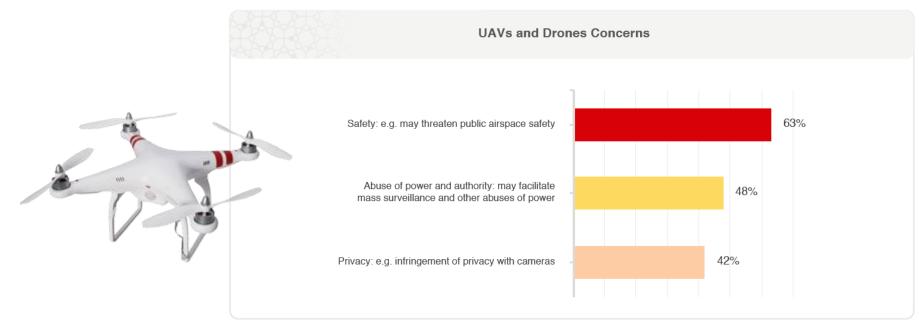
Public Concerns about Artificial Intelligence in MENA

59% of internet users in the Arab region are concerned about Al applications in general

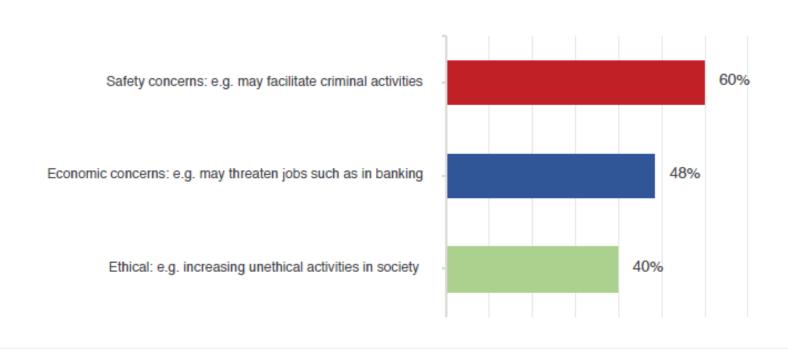
Artificial Intelligence Concerns





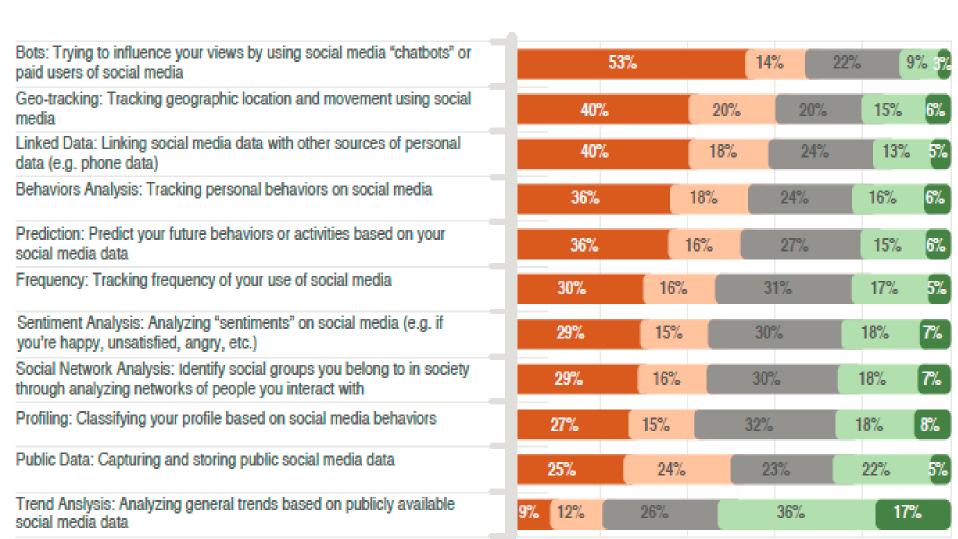








Public Concerns on Existing Government Practices on Social Media





Artificial Intelligence-based "Bots", "chatbots" or "social bots"

(What is your opinion about the following practices and uses of "chatbots" by businesses, governments or other entities?)

Customer Service "Chatbots": Bots that operate automatically online to provide customer support services (e.g. chatbots on shopping websites, government websites)

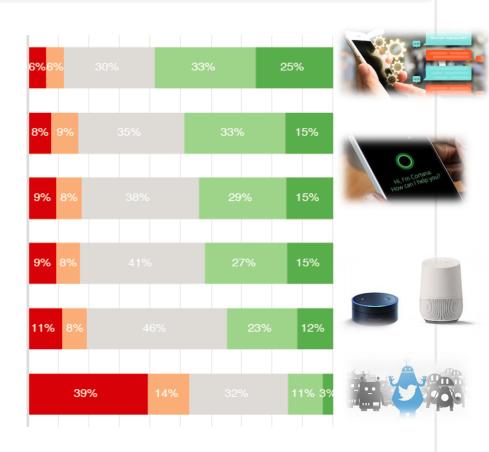
Commercial Marketing "bots": Chatbots that operate automatically online for marketing products or services (e.g. bots by retail companies)

"Virtual Personal Assistant" bots: Al-based chatbots that deliver personal services for a single user (e.g. Apple's Siri, Google Assistant, Amazon Alexa, Microsoft Cortana, Samsung Bixby/S Voice, etc.)

Telephone bots: Al voice recognition bots that provide services over the phone or internet voice channels

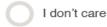
Gaming "bots": Bots operating on gaming platforms (e.g. bots that operate gaming characters targeting users for profit)

Political "bots" online: Chatbots that operate automatically on social media or other platforms pushing specific political views, supporting or attacking individuals, positions or countries





I Reject This, But I See Some Value











Policy Responses



Dealing with Data/AI Concerns

Actions by Businesses and Governments

Which of the following would provide you with enough assurances or make you feel less concerned?

I - Transparency:

- a. Knowing What Data: right to know exactly what data is collected and retained about them through social media and IoT devices.
- **b. Knowing Who Can Access the Data:** know the entities (companies or government agencies) that may have access to personal data.
- c. Getting the Data: get a complete copy or download all personal data.
- **d. Mapping IoT:** public maps about locations of sensors and cameras are available.



Dealing with Data/Al Concerns

Actions by Businesses and Governments

Which of the following would provide you with enough assurances or make you feel less concerned?

II – Personal Control:

- a. Ability to Remove Data: remove personal data from government or commercial repositories.
- **b. Consent:** explicit user consent on what may be done with the personal data collected. More supported for IoT data than for social media data.
- **c.** Approving Who Uses the Data: ability to approve and control which sectors can use their personal data = more likely for people to share data (e.g. only educational uses, research, public health, NGOs, government, etc.)



Dealing with Data/Al Concerns

Actions by Government!

Which of the following would provide you with enough assurances or make you feel less concerned?

III - Regulations:

- **a. Data Laws:** regulatory frameworks and appropriate data laws that protect the personal data of individuals.
- **b. Code of Conduct:** clear "fair use" policy, "ethical framework" or other acceptable use policy (AUP).
- **c. Certified privacy policies:** privacy and data policies applied approved or certified by independent standards body (e.g. academic boards, non-government expert committee, etc.)
- **d. Anonymization:** regulations forcing entities to "anonymize" personal data or delete any data that identify individuals.



Creating an Enabling Environment

What Governments Should do to Support the "knowledge economy"?

SKILLS: EXPAND AND SUPPORT TRAINING FOR DIGITAL ECONOMY SKILLS (PROGRAMING / CODING / DATA SCIENCE, ETC.)

CHILDREN EDUCATION: INCLUDE DIGITAL TECHNOLOGY RELATED COURSES IN OFFICIAL EDUCATION SCHOOL CURRICULA (PROGRAMING / CODING / DATA SCIENCE, ETC.)

RESEARCH AND DEVELOPMENT: SUPPORT LOCAL UNIVERSITIES AND RESEARCH CENTERS DOING RESEARCH IN INTERNET-RELATED DOMAINS

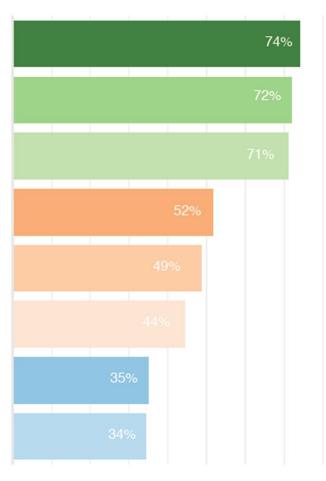
ARABIC CONTENT ONLINE: SUPPORT EFFORTS TO INCREASE AVAILABILITY OF ARABIC CONTENT ONLINE

FINANCIAL SUPPORT: ALLOCATE FUNDS TO SUPPORT INTERNET START-UPS AND BUSINESSES WORKING IN THE INTERNET DOMAIN

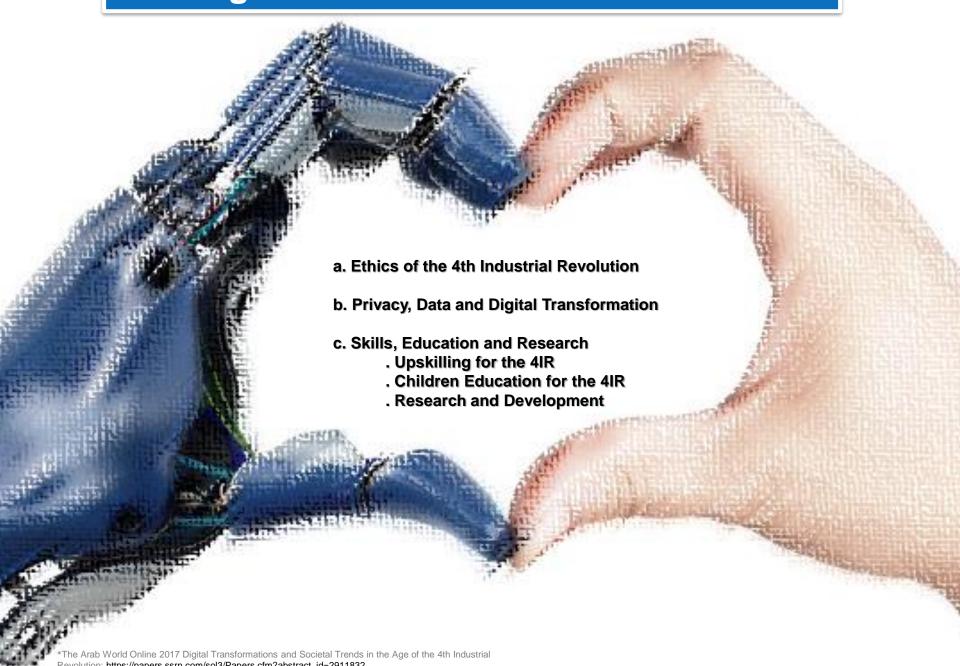
LOCALIZING THE INTERNET: SUPPORT AND USE LOCALIZED INTERNET DOMAIN NAMES (E.G. TOP LEVEL DOMAIN NAMES SUCH AS CCTLDS -E.G. (إمارات.

REMOVE TECHNOLOGICAL RESTRICTIONS BY THE GOVERNMENT ON SOME INTERNET TECHNOLOGIES (E.G. VOICE CALLS ONLINE, INTERNET PROTOCOLS RELATED TO NEW BUSINESSES, ETC.)

REGULATIONS: CHANGE OR CREATE REGULATIONS THAT EMPOWER LOCAL BUSINESSES WORKING IN INTERNET DOMAIN.



Big Data and "Good" Governance





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