Digital dividends
Digital divides

Natalia Milovantseva, PhD
07.03.2018

Digital economy key societal impact question

- Can the societies capitalize on technological advancements?

  OR

- Will the digital divides grow wider in the coming decades?

Digital divides

1. Between technology advances

   and

   – (a) people's ability to develop new skills
   – (b) organizations' adaptation and transformation
2. Between the haves and have-nots (welfare)
3. Between and within countries
4. Gender, age, geography, access, capability

A significant digital divide remains in the world

6 BILLION *without* BROADBAND

4 BILLION *without* INTERNET

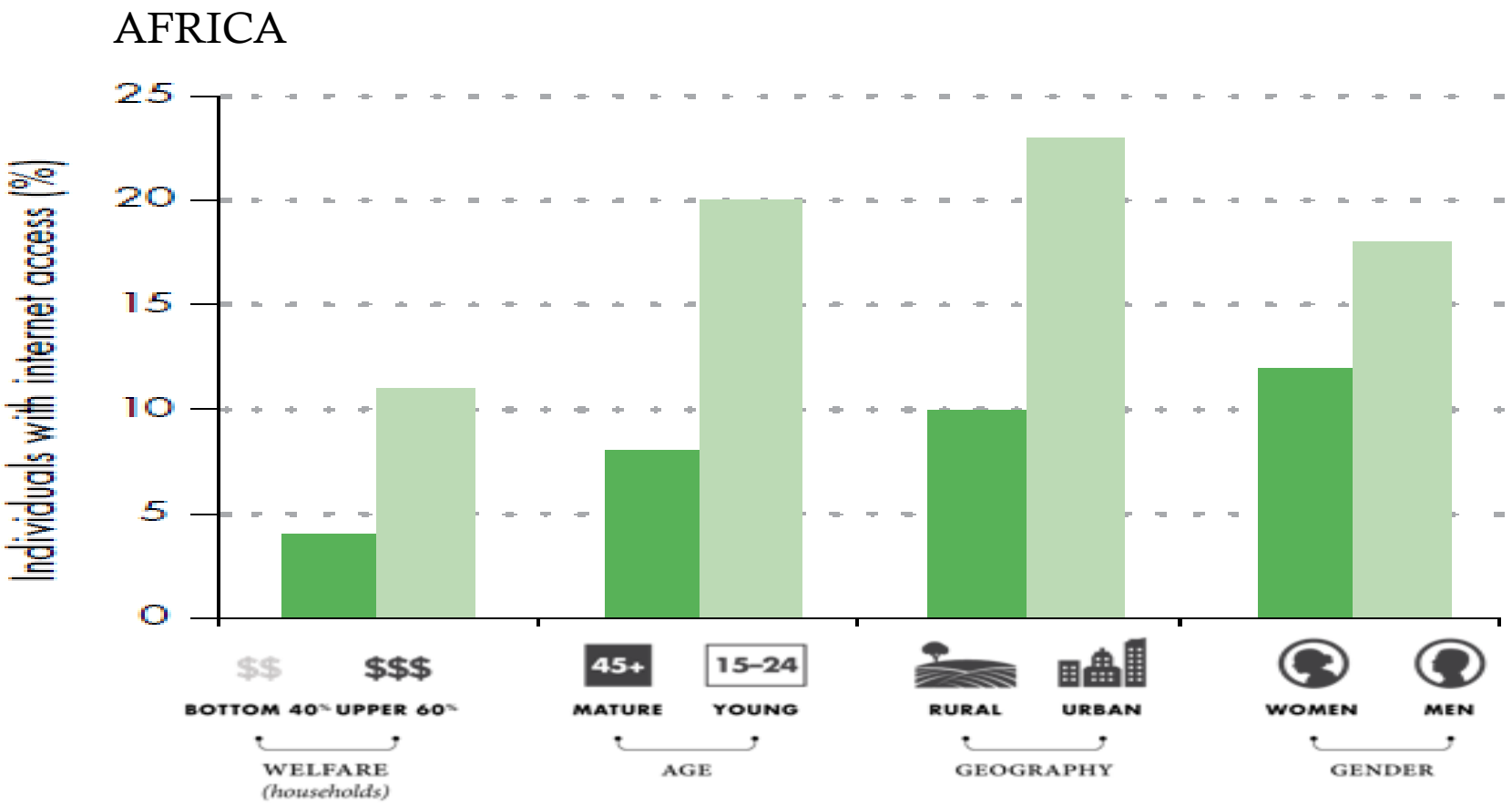
2 BILLION *without* MOBILE PHONES

0.4 BILLION *without* A DIGITAL SIGNAL

Divides persist between and within countries—in access and capability

SOURCE: *www.worldbank.org/wdr2016*

Significant disparity between and within countries—in access and capability

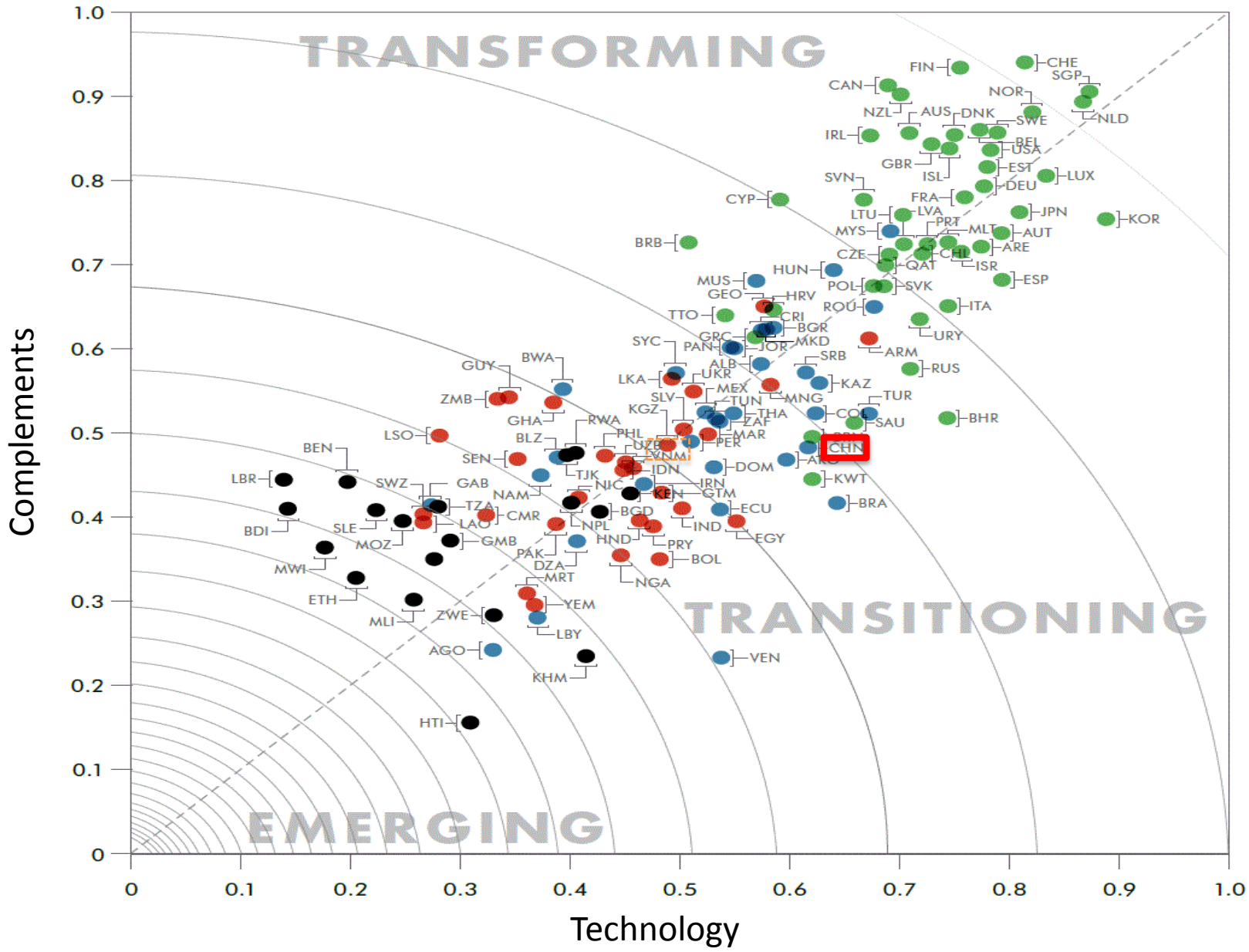


SOURCE: www.worldbank.org/wdr2016

Digital technologies hold benefits as well as risks

What are those complements?

Race between technology and complements



- High-income
- Upper-middle-income
- Lower-middle-income
- Low-income

Complements: *Index of quality of institutions, skills and regulations.*

Technology: *Digital adoption index - businesses, people and governments.*

SOURCE: *www.worldbank.org/wdr2016*

Digital dividends development strategies need to be broader than ICT strategies

Connectivity + Complements = Digital Dividends

- Regulations that allow firms to connect and compete
- Skills that leverage technology
- Institutions that are accountable and capable

Match policies to the level of digital development

- Emerging: Lay the foundations by promoting digital adoption
- Transitioning: Enable everyone to take advantage of new technologies
- Transforming: Deal with the wicked problems faced in the new economy

The payoff

- Increasing digital dividends:
  Faster growth, more jobs and better services

Three levels for developing dividends development policies

SECTORAL

NATIONAL

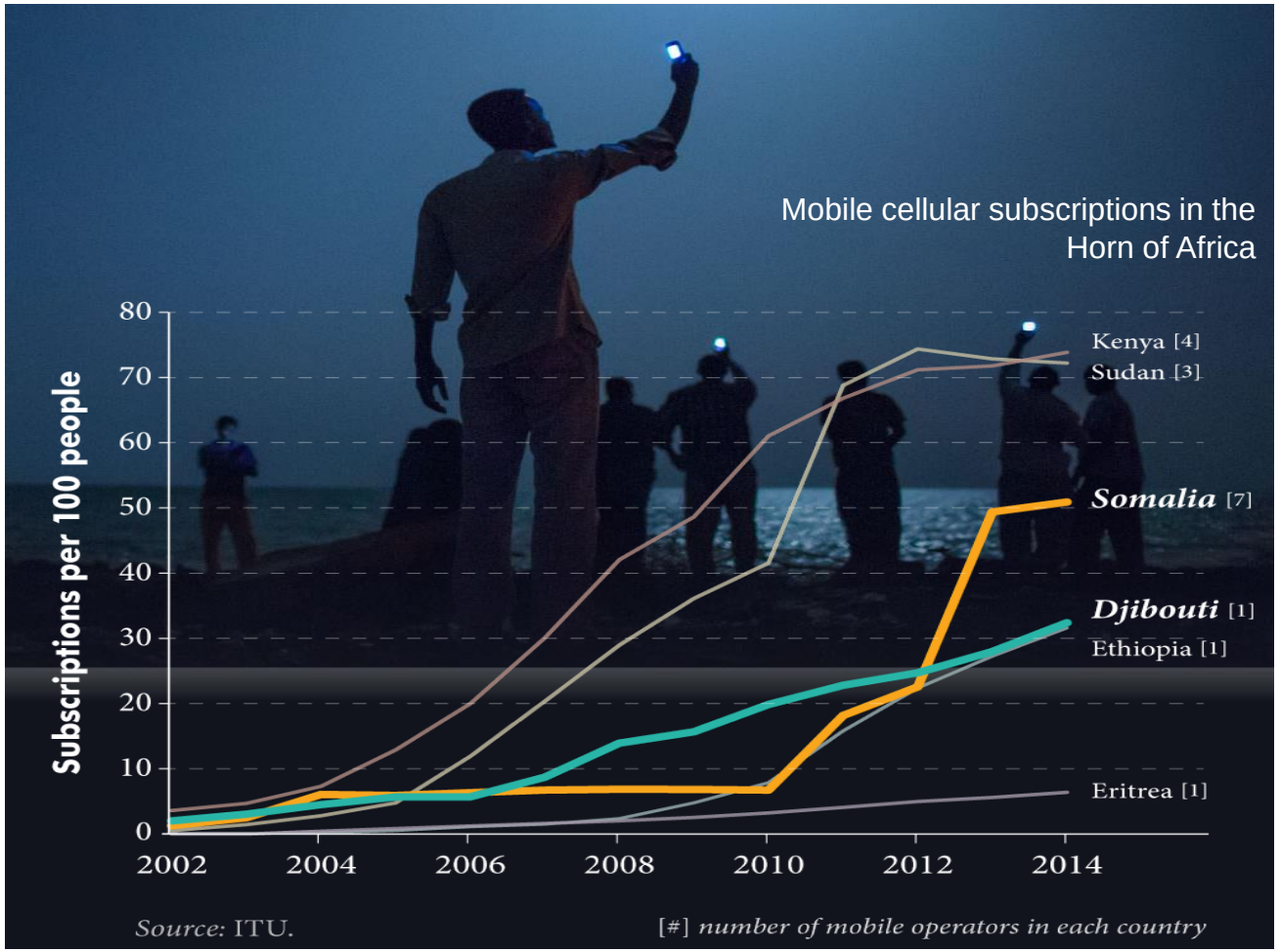
GLOBAL

SECTORAL
POLICIES

Making internet access universal, affordable, open and safe

SUPPLY SIDE ISSUES

- Competition policy
- Public-private partnerships
- Effective telecom & internet regulation



SECTORAL
POLICIES

Making internet access universal, affordable, open and safe

DEMAND SIDE ISSUES

- Protecting personal privacy
- Cybersecurity
- Censorship and content filtering

1993

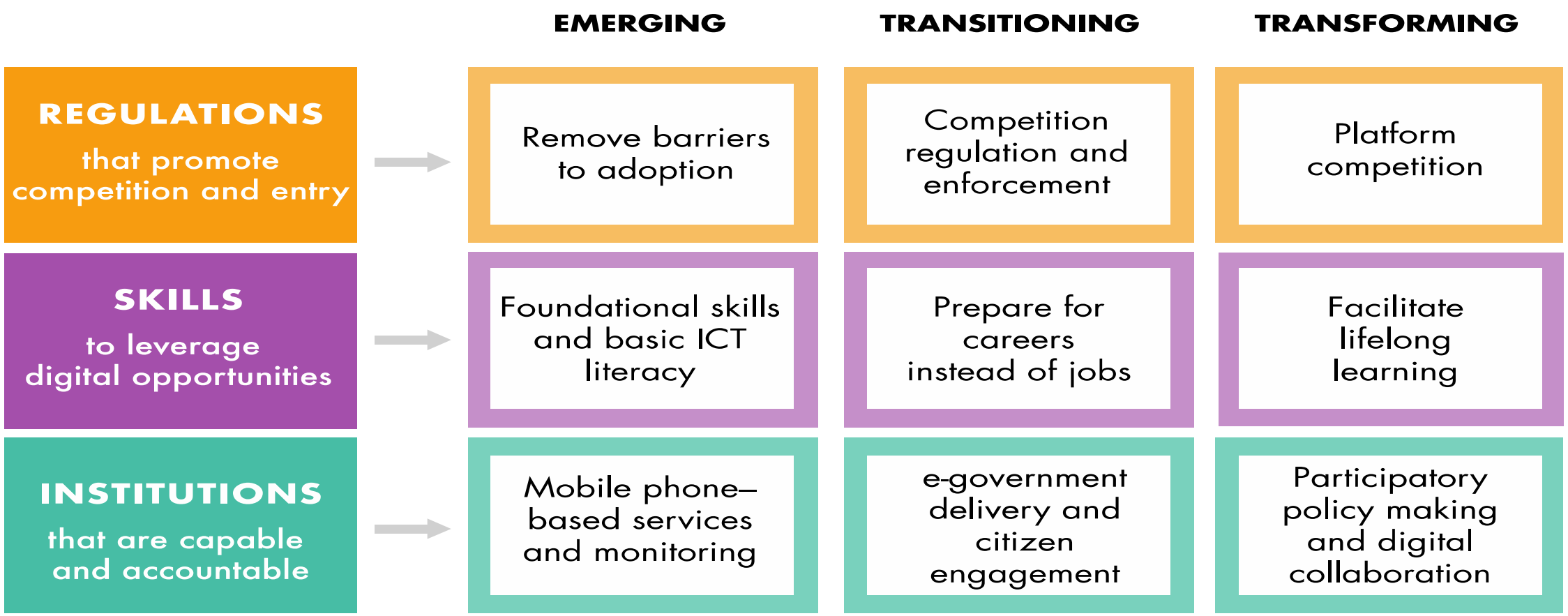
"On the Internet, nobody knows you're a dog."

2014

"Now Google and its like are surveillance machines that know not only that you're a dog but whether you have fleas and which brand of meaty chunks you prefer." (Economist)

NATIONAL PRIORITIES

Analog foundations for a digital economy



SOURCE: *WDR 2016 team.*

GLOBAL
COOPERATION

International consensus on cross-border issues

- A governance model for an open and safe internet
- Removing barriers to a global digital market
- Leveraging information for sustainable development
  - *Get wired*
  - *Build platforms*
  - *Go global*

Digital economy dividends: Militarization

AI development

- Growing ability of computer systems to
  - adapt rapidly to novel conditions,
  - respond autonomously,
  - make certain decisions within rules set by programmers
- AI could speed up warfare

Military adaptation – "dual-use technology"

- Explore this computer systems' ability
- Decisions in the military are made in a specific decision ----> action loop
- Warfare sped up to a point where **unassisted humans can't keep** (aka Hyperwar)

Adaptation of AI by military vs. cyber war

Militarization of computing power growth

- Advances in processing power is an emerging area of strategic competition among nations
- China boasts building a conventional supercomputer 10 times faster than today's supercomputers by 2020
- Major competitors in the new arms race in AI: US, China, Russia
  - China is looking for military advantage by making big investments in AI
  - Pentagon is determined to maintain its edge
  - Russia has focused on creating autonomous weapons powered by AI
    - plans in 10years to have 30% of its military robotized, which could transform how it fights
    - exceptional expertise in electronic warfare, which can be further boosted by AI technologies
    - sophisticated drone development, probably lags the US

Digital economy dividends: Militarization.1

Transformative AI technologies

- Artificial-intelligence program can scan video from drones and find details that a human analyst would miss

Military application

- Identify a particular individual moving between previously undetected terrorist safe houses

Digital economy dividends: Militarization.2

Transformative AI technologies

- Advancing in quantum information sciences could give a big boost to AI
- Ability of subatomic particles, like photons, to exist in multiple states simultaneously and to mirror each other across vast distances

Military application

- Vast improvements in secure communication
- Supercharging speed of AI

Digital economy dividends: Militarization.3

Transformative technologies

- Quantum computing
  - Different from digital – data is binary coded
    - either 0 or 1
  - Quantum computing uses quantum bits
    - quantum states can be added together ("superposed")

Military application

- Quantum communications satellite
- Transmitting information with essentially unbreakable quantum encryption