5G will unleash data for the 4th industrial revolution

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US Productivity Growth

- **ELECTRICITY & EARLY NETWORKS AGE**
  - 1900: 4%
  - 1950: 3%
  - 1960: 2%
  - 2016: 1%

- **INFORMATION AND COMMUNICATIONS AGE**
  - 1900: 0%
  - 1950: P
  - 1960: P
  - 2016: P

**THE BIG PROBLEM**

**STAGNATION IN PRODUCTIVITY GROWTH**
Physical industries lag in utilizing digital for productivity

Physical industries: Manufacturing, Construction, Mining, Utilities, Healthcare, Hotels, Food, Transportation, Wholesale and retail trade

Digital industries: Technology, Content, Finance & Insurance, Professional & Technical Services

Investment in ICT

- 30%
- 70%

Share of GDP

- 70%
- 30%

Annual productivity growth (15 year average)

- 0.7%
- 2.7%

Source: The Technology CEO Council
MODERNIZATION OF INDUSTRY DRIVES MASSIVE ECONOMIC IMPACT

$3.8T to $11T

Economic value of IoT (by 2025)

Source: McKinsey

up to 11% of global economy (in 2025)

Source: McKinsey

Estimated 2025 value creation potential of the IoT - McKinsey Global Institute
The 4th industrial revolution is driven by 3 technology disruptions.

IoT, connect everything without wires

AI and machine learning

5G

Learn

Control

Decide

Edge cloud computing everywhere
Transforming industries are creating stringent demands...
5G is the first mobile system designed to connect everything.

- **100 Mbps** whenever needed
- **>10 Gbps** peak data rates
- **10,000** x more traffic
- **10-100** x more devices
- **M2M** ultra low cost
- **10 years** on battery
- **<1 ms** radio latency
- **Ultra reliability**
5G Phasing – First Broadband followed by Critical Services

Phase 1 (2019-)
Consumer mobile broadband

Benefits

- 5-10x network capacity
- 5-10x user data rate

Phase 2 (2021-)
Critical services

- Industrial IoT
- Low delay
- High reliability
- Virtual networks per service
- New devices
Future X architecture for industries – underpinned by 5G
The New General Purpose Technology