Structure of the Infrastructure?

Dr Shoumen Palit Austin Datta

MIT Auto-ID Labs and ICRI, Research Affiliate, Department of Mechanical Engineering, Massachusetts Institute of Technology • shoumen@mit.edu

Senior Scientist, MDPnP Lab Medical Device Interoperability, Massachusetts General Hospital, Harvard Medical School • sdatta8@mgh.harvard.edu

sdatta8@mgh.harvard.edu  shoumen@mit.edu
Structure of the Infrastructure?
Commerce
Question
Imagine
Invent
Innovate
Implement
Imagine
Invent
Innovate
Implement

Converge
Concepts
Complementarity

Atoms to Bits
Analytics
Decision

Science
Technology
Commerce

Data
Demand
Demographics
Question
Imagine
Invent
Innovate
Implement

Concepts
Convergence
Complementarity

Science

Engineering

Technology

Commerce

Imagine
Invent
Innovate
Implement

Concepts
Convergence
Complementarity

Science

Engineering

Technology

Commerce

Imagine
Invent
Innovate
Implement

Concepts
Convergence
Complementarity

Science

Engineering

Technology

Commerce

Imagine
Invent
Innovate
Implement

Concepts
Convergence
Complementarity

Science

Engineering

Technology

Commerce
Imagine
Invent
Innovate
Implement

Science

Concepts
Convergence
Complementarity

Data
Demand
Demographics

Engineering
Technology
Commerce
Imagine
Invent
Innovate
Implement

Question
Imagine
Invent
Innovate
Implement

Concepts
Convergence
Complementarity

Atoms to Bits
Analytics
Decision

Data
Demand
Demographics

Science

Engineering

Technology

Commerce
Critical Supply Chains
FOOD
A $1 dollar plate of bean stew costs the equivalent of $321.70 in South Sudan

Dubai, they overlooked one detail....!!

The modern Arab world!! You have seen those architectural wonders of Dubai.

However, none are hooked up to a sewer system!
In many developing countries, the prevalence of open defecation has a terrible effect on children: It exposes them to illnesses that cause malnutrition and stunt their growth.

About 569 million people in India defecate in the open.
Critical-Local-Global Supply Chains

- Food
- Water
- Sanitation
- Energy-Electricity
- Health-Healthcare
- Communication
- Transport
- Economy
- Security
If these companies didn’t exist at all

- Louis Vuitton: 29,242
- Hermès: 23,416
- Gucci: 13,548
- Chanel: 11,019
- Rolex: 8,053
- Cartier: 5,843
- Burberry: 4,285
- Prada: 3,950
- Christian Dior: 2,352
- Tiffany & Co.: 2,318

The world will lose ~US$2.2 Billion

<table>
<thead>
<tr>
<th>Brand</th>
<th>Value (Millions USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louis Vuitton</td>
<td>29,242</td>
</tr>
<tr>
<td>Hermès</td>
<td>23,416</td>
</tr>
<tr>
<td>Gucci</td>
<td>13,548</td>
</tr>
<tr>
<td>Chanel</td>
<td>11,019</td>
</tr>
<tr>
<td>Rolex</td>
<td>8,053</td>
</tr>
<tr>
<td>Cartier</td>
<td>5,843</td>
</tr>
<tr>
<td>Burberry</td>
<td>4,285</td>
</tr>
<tr>
<td>Prada</td>
<td>3,950</td>
</tr>
<tr>
<td>Christian Dior</td>
<td>2,352</td>
</tr>
<tr>
<td>Tiffany &amp; Co.</td>
<td>2,318</td>
</tr>
</tbody>
</table>
The world will lose $0.0022 TRILLION
The world will gain $12.00 TRILLION

Tackling gender inequality could add $12tn to world economy, study finds

Researchers say extra GDP output could come from reforms, such as allowing more women in workforce in countries where they currently face restrictions.
World will change - Who When How
Monopoly to Oligopoly?

DUTCH EAST INDIA COMPANY
1637

$7.9 trillion

20 MODERN COMPANIES

Apple
Alphabet
Microsoft
Amazon

facebook
Alibaba.com
ExxonMobil
Bank of America

Berkshire Hathaway Inc.
Wells Fargo
Johnson & Johnson

Tencent
Samsung

$7.9 trillion
Neutrality to Partiality?

Commissioner Clyburn: "I dissent from this fiercely-spun, legally-lightweight, consumer-harming, corporate-enabling Destroying Internet Freedom Order" #NetNeutrality
Continuous Imagination, Invention, Innovation

Magnetic Compass 1275
Gutenberg Press 1440
Galileo Telescope 1609
James Watt Steam Engine 1760
Atanasoff Computer 1939

165 years 169 years 151 years 179 years 166 years

1190 Two Truths Theory
1361 Italian Renaissance
1530 Copernican Astronomy
1687 Newtonian Mechanics
1859 Darwinian Evolution

85 86 79 90 79 78 73 99 80 87 79

171 years 169 years 157 years 172 years 167 years

Social, Cultural, Economic, Paradigm Shifts

Adapted from Norman Poire and loosely based on Kondratieff Waves
The Digital Chasm: 4.2 billion (57%) have no access to internet.
Raison d'être

Active Digital Use is less than 10% of the world
Active Digital Economy less than 1% of the world
Paradigm for Optimism Chained by Reality
Conscience and Common Sense

Far Reaching Changes in the Near Future

MIT LIBRARY - https://dspace.mit.edu/handle/1721.1/111021
Structure of the Infrastructure

It’s complicated

L’humanité a besoin rêveurs

Think?

► Leaders
► Transformers
► Entrepreneurs
HAPHAZARD REALITY

IoT is a Metaphor

MIT LIBRARY - https://dspace.mit.edu/handle/1721.1/111021
The education of a boy changes the fate of a man. The education of a girl could change the destiny of a nation.

sdatta8@mgh.Harvard.edu • shoumen@mit.edu
Oct 25, 1927, Fifth Solvay International Conference on Electrons and Photons, Brussels. 17 of the 29 attendees were or became Nobel Prize winners, including Marie Curie, the only female scientist, who won Nobel Prizes in two separate scientific disciplines.

www.numericana.com/fame/solvay.htm

This document is merely a collection of images which are neither original nor the outcome of the author’s research or creativity. The synthesis of existing facts and weaving them to suggest future action is one goal. The author has no claim or rights over the data, visuals and graphics used in this document. The material is sourced from the world wide web and expressly used for the sole purpose of explaining thoughts presented in this document. This presentation may be shared with anyone and disseminated or used for non-commercial or academic purposes. Please write to shoumen@mit.edu or sdatta8@mgh.harvard.edu for additional info.