Supply chain transformation enabled by advanced technologies
Implications for producers, consumers and society

22nd Cambridge International Manufacturing Symposium
27-28 September 2018
Digital Supply Chain Consortium

• **Work-to-date**
  - Digital Transformation scenarios
  - Digital Innovation and collaborative consortia models; reflections on Remedies
  - Digital Network Design; multi-layer modelling

• **Input sessions to future activity**
  - Capturing value in digital supply chains – incremental and radical perspectives
  - Refining the ten scenario transformation framework – academic and practitioner perspectives
  - Digital backbone – a gamification approach through pairwise comparison
Reconfiguring medicines E2E supply – Project Remedies

- Headed up by GlaxoSmithKline (GSK)
- Research led by the University of Cambridge’s Institute for Manufacturing (IfM)
- Brings together key players in the medicines end-to-end supply chain
- £11.5 m contribution from industry, £11.5 m of government funding through The Advanced Manufacturing Supply Chain Initiative (AMSCI) and the Scottish Funding Council

http://remediesproject.com/

Processes and Technologies developed:
- Continuous Manufacturing techniques that shrink factory scale, provide speed, lower cost
- Smart Packaging technologies that enable product tracking, monitoring and patient engagement
- Technologies that support right-first time quality and yield improvements
- Improved Process Analytical Technologies for in-line monitoring and quality assurance
- Supportive Regulatory Regimes for these emerging technologies
- Developing new End-to-End SC Clinical & Commercial platforms that support patient-centric agile supply
World Economic Forum 2018, 12th Jan 2018 Weekly Expert Edition:

• Future Agenda: Srai J.S., *The Digital Supply Chain Revolution- A mountain worth climbing?*

Shaping the Future of Production - Six drivers on how production will play out through to 2030

**Disrupted**
Exponential takeoff of new technologies, early breakthroughs propelling artificial and machine intelligence to unimaginable levels. Hyperconvergence of key technologies already happening.

**Damaged**
Populism and unbridled protectionism translate into a profoundly uneven landscape for global production – widespread “islandization” of both economies and production systems.

**Deterred**
Advancement of production curtailed by pervasive cyber conflict between states and their proxies, owing to critical infrastructure being compromised and production processes being interrupted.

**Devolved**
Sharp deterioration in the physical environment prompts urgent action to mitigate the consequences, leading to production becoming more localised.
Digital Lighthouses

Use-Cases
- 14 sites nominated
- China, Europe, US

Performance differentiators
- OEE
- Inventory reduction
- Lead Time
- Labour Productivity
- Quality Defect Reduction
- Energy Saving
4IR - Country Readiness and projected impact on jobs

The diagram illustrates the 4IR (Fourth Industrial Revolution) Country Readiness and projected impact on jobs. It categorizes countries into four groups based on their readiness and the structure of their production:

1. **High Potential** - Limited current base, positioned well for the future.
2. **Global Leaders** - Strong current base, positioned well for the future.

The drivers of production are categorized as favorable and unfavorable. The structure of production is divided into small/simple and large/complex.
### Projected Impact of 4IR Digital Technologies on Jobs

Geographies will be affected in different ways, as job creation will not occur equally across regions or types of workers.

<table>
<thead>
<tr>
<th>Region</th>
<th>Current:</th>
<th>Change:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe</td>
<td>15.4 m</td>
<td>-17.5%</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>14.5 m</td>
<td>-19.3%</td>
</tr>
<tr>
<td>Latin America</td>
<td>15 m</td>
<td>-21%</td>
</tr>
<tr>
<td>North America</td>
<td>8.2 m</td>
<td>-1.2%</td>
</tr>
<tr>
<td>China</td>
<td>115 m</td>
<td>-6.5%</td>
</tr>
<tr>
<td>East Asia</td>
<td>10.9 m</td>
<td>-18.3%</td>
</tr>
<tr>
<td>South Asia</td>
<td>57.9 m</td>
<td>-22.6%</td>
</tr>
<tr>
<td>Rest of World (Other)</td>
<td>79 m</td>
<td>-26.8%</td>
</tr>
</tbody>
</table>

**Notes:**
- Number of people are the total number of people engaged within that geography for the 5 value chains.
- % of total is the % of people that geography employs of the total global employment of the 5 sample value chains.
- Change is the net change in employment for the specific geography.
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Industry Day 1
Supply chain transformation enabled by advanced technologies
Implications for producers, consumers and society

Academic Day 2

Keynotes

Special Tracks

Parallel Tracks

Global supply networks
Digital supply chain design, analysis and operation
Sustainability and the circular economy
Supply chain transformation enabled by advanced technologies
Digital supply chain analytics

Digital transformation of the Automotive supply chain
Food supply chains – Sustainable production
Global Manufacturing and China
Evening dinner – Christ’s College