Data Synergy: Bridging Business, Management, Computers and Engineering Globally

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Data Synergy

The collaborative and integrated use of data across various domains or disciplines to achieve enhanced outcomes
Approximately 328.77 million terabytes of data are created each day.

Approximately 120 zettabytes of data will be generated this year.

Videos account for over half of internet data traffic.

The U.S. has 2,214 data centers.
Break down traditional silos...
Utilize collective intelligence
Data Synergy

Interdisciplinary Collaboration

Informed Decision-Making

Continuous Learning & Adaptation

Inovation and Optimization

Data Integration

Technology Integration
Data Synergy = Industrial Engineering and Management Systems
Industrial Engineers

Percent change in employment, projected 2022-32

- Industrial engineers: 12%
- Engineers: 7%
- Total, all occupations: 3%

Note: All Occupations includes all occupations in the U.S. Economy.
Industry 1.0: Mechanization, water power, steam power
Industry 2.0: Mass production, assembly line, electricity
Industry 3.0: Computer and automation
Industry 4.0: Cyber physical systems
Industry 5.0: Mass customization & cyber physical cognitive systems
Data Synergy

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Innovation and Optimization

Data Integration

Technology Integration
Interdisciplinary Collaboration
83 percent of “digitally maturing” companies reported using cross-functional teams.

73% of digitally maturing companies create an environment where cross-functional teams can succeed.

Teams make 75 percent better decisions than individuals.

https://www2.deloitte.com/uk/en/insights/topics/strategy/cross-functional-collaboration.html
Informed Decision-Making
Up to 50% of companies that have failed have done so because of not making informed decision making.

Direct and indirect job losses impact between 5 and 7 million employees annually.

80 percent of organizations report struggles with decision making.

Data Integration
The global data integration market size was evaluated at USD 12.14 billion in 2022 and is expected to hit around USD 39.25 billion by 2032.

On average, companies’ are experiencing a data creation growth rate of 23% through 2025.

67% of enterprises are relying on data integration to support analytics and BI platforms today, and 24% are planning to in the next 12 months.
At least 92 percent of manufacturers, including leaders like GE and Boeing, are already exploring metaverse tools.

Combining generative AI with all other technologies, work automation could add 0.5 to 3.4 percentage points annually to productivity growth.

https://epsnews.com/2023/10/19/integration-is-industry-4-0s-biggest-challenge/
Innovation and Optimization
<table>
<thead>
<tr>
<th>Innovation</th>
<th>Time Span from Hype to Productivity Plateau (years)</th>
<th>Expected Increase in Productivity (%)</th>
<th>People in the Workforce Affected (%)</th>
<th>IPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generative Artificial Intelligence</td>
<td>2-5&lt;sup&gt;1&lt;/sup&gt;</td>
<td>30-40%&lt;sup&gt;2&lt;/sup&gt;</td>
<td>70%&lt;sup&gt;3&lt;/sup&gt;</td>
<td>700</td>
</tr>
<tr>
<td>Cloud Computing</td>
<td>5</td>
<td>20-30%</td>
<td>90%</td>
<td>450</td>
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<tr>
<td>Big Data Analytics</td>
<td>5</td>
<td>15-20%</td>
<td>80%</td>
<td>280</td>
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<tr>
<td>Internet of Things</td>
<td>5-10</td>
<td>10-15%</td>
<td>60%</td>
<td>100</td>
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<tr>
<td>Robotics</td>
<td>5-10</td>
<td>10-15%</td>
<td>50%</td>
<td>83</td>
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<tr>
<td>Virtual Reality</td>
<td>5-10</td>
<td>5-10%</td>
<td>30%</td>
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<tr>
<td>Augmented Reality</td>
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<td>5-10%</td>
<td>20%</td>
<td>20</td>
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<tr>
<td>Blockchain</td>
<td>5-10</td>
<td>5-10%</td>
<td>10%</td>
<td>10</td>
</tr>
</tbody>
</table>

Sources: <sup>1</sup> (Gartner, 2023), <sup>2</sup> (Somers, 2023) (Dell’Acqua et al., 2023), <sup>3</sup> (Adecco Group, 2023, S. 1)

\[
IPI = \frac{(Average \ Expected \ Increase \ in \ Productivity) \times (Average \ People \ in \ the \ Workforce \ Affected)}{(Average \ Time \ Span \ from \ Hype \ to \ Productivity \ Plateau)} \times 100
\]
Continuous Learning and Adaptation
Company training programs yield 218% higher income per employee than those without formalized training.

Companies are 17% more productive when employees get the training they need.

40% of Fortune 500 companies use Learning Management Systems (LMS) to stay competitive.
Data Synergy

- Smart Cities
- Healthcare Analytics
- Supply Chain Optimization
- Financial Services Fraud Detection
- Manufacturing Process Improvement
- E-commerce Personalization
- Energy Grid Management
- Educational Analytics
Thank you!

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