LETTER FROM THE CHAIRS OF THE DIGITAL TRANSFORMATION WORKING GROUP

Dear Reader:

Digital transformation is hardly a new topic. From the early beginnings of the IT revolution, over six decades ago, organizations have leveraged digital technologies to digitize their information, digitalize their business processes to enhance their operational efficiencies, optimize the way they deliver value to the market, and ultimately improve their overall ROI.

DX, primarily a business objective, is the natural progression of these efforts. It is the innovative and principled application of digital technology and the strategic realignment of the organization, with the objective of creating transformative and highly competitive business, commercial and operational models for the organization. The term DX can be used in the context of several market spaces and domains: consumer, business and industry (Figure 1).

- In the consumer space: for example, disruptive technologies have transformed how media content and transportation services are delivered to consumers (Netflix and Uber),
- In business: for example, mobile payment applications have transformed the way individuals and corporations consume banking services,
- And finally, in industry: for example, disruptive technologies are transforming how companies operate and deliver products and services.

Digital Transformation for Consumers

Example: Netflix leveraged digital technologies to radically change the business model about how media content is delivered to consumers – made Blockbuster obsolete.

Digital Transformation of Business (IT)

Example: Mobile Payment Systems have revolutionized banking services

Digital Transformation in Industry (IT-OT)

Leverage connected things to transform processes and operations and produce better outcomes

Industries at the boundary of physical and digital worlds: cities buildings, healthcare, physical infrastructure, manufacturing, power distribution, etc.
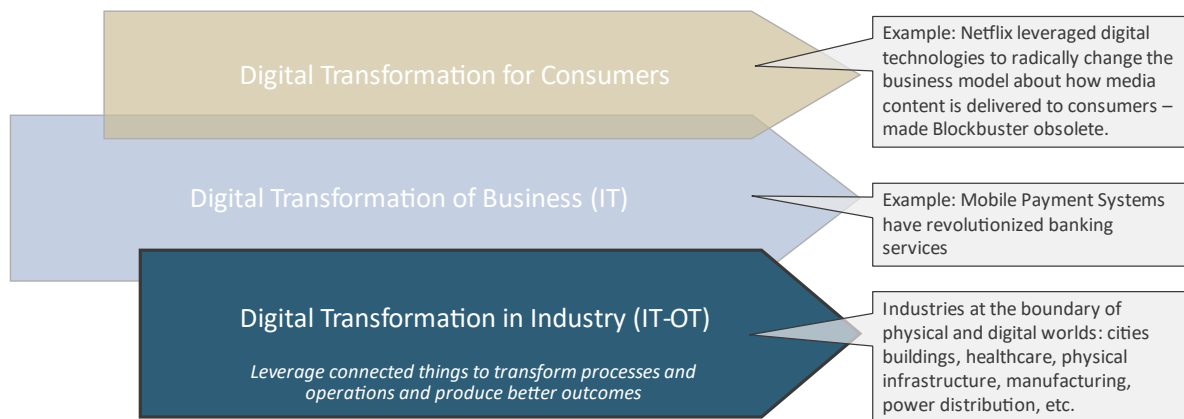
Figure 1: Digital Transformation in Industry. *Source: IIC.*

Increasingly, digital transformation is taking place in enterprise environments that comprise a growing population of IIoT solutions, which span the digital-physical divide.

A distinguishing characteristic of this "new wave" of DX is that the context of the transformation is defined to a great extent by the emergence of disruptive technologies that impact Operational Technology (OT) and the way it is converging with Information Technology (IT), with all the

technical and organizational implications of this convergence. This presents unique opportunities for organizations seeking DX; it also presents challenges and risks as well.

Digital Transformation is a not a project. It is the journey from the mounting challenges facing the organization to the better outcomes being sought by it. The journey is also underpinned by business, technology, and trustworthiness factors.
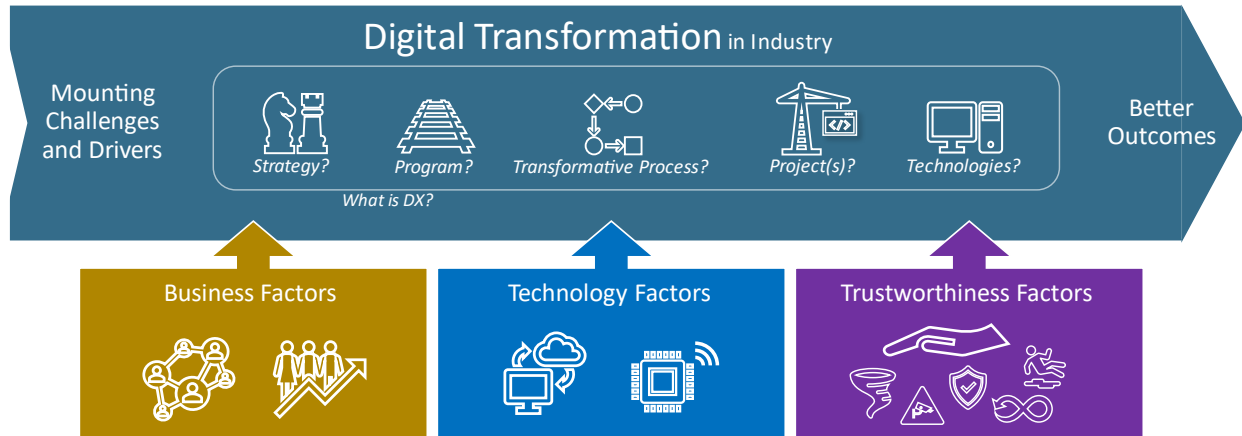

Figure 2: Digital Transformation Journey. *Source IIC.*

Another important point to underscore in this article is that IIoT systems are beginning to play major, and in some cases mission critical, roles within the overall enterprise operation. Naturally, this raises the bar for these systems in terms of the technical, operational and trustworthiness requirements they are expected to meet. In addition, this also raises the stakes for the DX efforts that involve these IIoT systems.

THE ARTICLES IN THIS ISSUE

The articles in this Journal of Innovation issue explore the above issues from multiple facets and provide real-world examples of digital transformation efforts in the market.

1. **The New Innovation Process of Undergoing Digital Transformation in Industries**

A firm undergoing Digital Transformation in industry faces a challenge of achieving fast and customer centric innovation process of the firm in which "test fast, learn fast, scale fast" matters. It is difficult to use frameworks originally developed for the software world, for example lean startup, agile DevOps and others, as tools for changing existing innovation processes. However, these frameworks have limited usefulness in industry given the constraints and complexity of IT/OT integration. This article defines commonly appearing features of innovation processes in industry (BizOps for Digital Transformation in Industry or BDXI). It also identifies the conflicts between BDXI processes and management systems and highlights various IIC initiatives related to the design BDXI processes.

Author: Chaisung Lim

2. The Digital Transformation Journey in the Enterprise and its Leadership

The article discusses the terms *digitization*, *digitalization*, and *digital transformation*, and how they relate, when the focus of the transformation is a particular process and when the focus is the whole enterprise. The article also describes the Digital Transformation journey and its various stakeholders (including executive officers, department managers, plant managers, operational staff, IT staff, security staff, and possibly other groups). The article also discusses the diverse views of stakeholders and how these views can be harmonized and integrated within the context of a unified DX Program. The article provides a description of the structure, mission and mandate DX Program, its stakeholder composition, and the type of leadership (the DX Tsar) that is needed to drive the transformation strategy and guide its execution towards achieving the set objectives, with examples.

Author: Bassam Zarkout

3. A Continuous Improvement (Kaizen) Driven Approach for Realistic Digital Transformation in Smart Manufacturing

Digital transformation is fostering the evolution of the manufacturing industry entering a new era of smart manufacturing. Manufacturers face challenges in organizing the integration of systems across manufacturing hierarchy, domain boundaries and lifecycle phases. To benefit from the full potential of smart manufacturing, it is vital to take a realistic and stepped approach for manufacturing improvements. It is equally important to improve the ROI and make smart manufacturing happen with an applicable implementation roadmap. The article illustrates the interconnecting process in smart manufacturing and introducing the Smart Manufacturing Kaizen Level (SMKL) to build up the capability at various stages of implementation of DX. The article also provides actual lessons learned case studies, example empowering workers productivity and integrating OT and IT, to show the effectiveness of utilizing maturity performance management and capture the values in smart manufacturing.

Authors: Nicole Shonan Otoki, Ph.D., Hajime Sugiyama, Mitsushiro Fujishima

4. Digital Transformation in Practice: Learning from IIC Deployments

IIC testbed and test drive results include observations and learnings about DX. IIC testbeds are projects and platforms for experimentation that represent real-world deployments. IIC test drives are solutions deployed as pilots in real-world environments. This article represents valuable learnings about digital transformation in practice from select IIC deployments; testbeds and test drives.

Authors: Jennifer Bortchen, Dr. Xinxin Fan, Florian Frick, Dirar Hakeem, Dr. James J. Hunt, Hail Jung, Chaisung Lim, Jung-Ywn Park, Dr. Kym Watson.

5. Digital Transformation in Steel Inspection: Toshiba MetalSpector Customer Case Study

Toshiba has been selling MetalSpector, a leading-edge steel inspection equipment, to several major steel companies for the past few years. In 2020, Toshiba released a new steel grade evaluation service, designed to reduce steel inspector's workload while assuring data integrity of the steel grading process. The key approach is to understand how the inspection equipment is used rather than just how it works. By transforming the steel inspection equipment offering into a Software-as-a-Service model, the latest AI technology can be continually deployed to assist in the inspection accuracy, speed, and verification. The service provides traceability and automated logging to protect against unauthorized access and data fraud. The service also offers operator training for new as well as veteran inspectors, enabling critical knowledge transfer to new inspectors and maintaining a consistent skill level for all inspectors.

Authors: Hiroshi Yamamoto, Daniel Young.

Sincerely,

The Co-Chairs of the Digital Transformation Working Group

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Executive Vice President
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The views expressed in the IIC Journal of Innovation are the authors' views and do not necessarily represent the views of their respective employers nor those of the Industry IoT Consortium.

LETTER FROM THE IIC MARKETING TEAM

Dear Reader:

The *Industry IoT Consortium* is pleased to publish this 18th edition of *The IIC Journal of Innovation*. This collaborative effort is the sum of very many parts, and we would like to take this opportunity to recognize and thank the team of editors and peer reviewers who lent their time and expertise to the editorial process of enhancing each of the articles contained in this edition with their unique perspectives and wisdom.

- Daniela Previtali, Global Marketing Director at WIBU-SYSTEMS AG
- Edy Liongosari, Chief Research Scientist at Accenture Labs
- Vincent Bemmel, Industry Technology Lead at Corlina
- Abhik Chaudhuri, Chevening Fellow (UK), FCSA (US), Tata Consultancy Services
- Bassam Zarkout, Executive Vice President, IGnPower Inc.
- Kevin Kalish, Lead IoT Technology Strategist, Europe, SAS
- Brian Jones, Marketing Manager, Industry IoT Consortium
- Evan Birkhead, Marketing Communications, Industry IoT Consortium

As a global, not-for-profit, public-private partnership of nearly 200-member organizations, we encourage every organization across all industries to get involved and be proactive in shaping the Industrial IoT. We welcome your feedback and participation.

Many thanks,

Cheryl Rocheleau
Director of Marketing
Industry IoT Consortium

Cover image courtesy of Dreamstime.