


## Chapter 97

# The Impact of Unified Communication and Collaboration Technologies on Productivity and Innovation: Promotion for the Fourth Industrial Revolution

**Anthony Bolton**

 <https://orcid.org/0000-0002-1259-7479>

*University of South Africa, South Africa*

**Leilani Goosen**

 <https://orcid.org/0000-0003-4948-2699>

*University of South Africa, South Africa*

**Elmarie Kritzinger**

 <https://orcid.org/0000-0002-5141-4348>

*University of South Africa, South Africa*

### ABSTRACT

*Against the background of promoting inclusive growth in the context of the Fourth Industrial Revolution (4IR), the purpose of this chapter is to introduce Industry 4.0 in terms of the impact of Unified Communication and Collaboration (UC&C) technologies on productivity and innovation within a global automotive enterprise. To provide readers with a further overview of, and summarize, the content of the chapter, issues, controversies, problems, and challenges related to Industry 4.0 adoption, including, for example, Cyber-Physical Systems (CPS), are discussed. Solutions and recommendations for dealing with the issues, controversies, and/or problems are presented, and the chapter will also discuss future research directions and emerging trends, together with providing insight about the future of the book's theme from the perspective of the chapter focus on the impact of UC&C technologies on productivity and innovation. The last section will provide discussion of the overall coverage of the chapter and concluding remarks.*

DOI: 10.4018/978-1-7998-8548-1.ch097

## **INTRODUCTION**

Over the past fifty years, the third revolution in industrial and technical development has enabled humanity to escape the confines of Earth and venture into space, to explore the neighboring planets of the solar system. Within twenty years of launching the first satellite, the Voyager missions extended beyond mere planetary observation, to embark on a “Grand Tour” of space beyond the solar system (Lanius & MCCurdy, 2008, p. 231) and included communication, carrying technology and information about humanity into the cosmos. Digital transformation has propelled humanity towards what Schneider and Friesinger (2011) described as a new horizon of possibilities.

Now, suddenly, it seems to be all around: Artificial Intelligence (AI) and machine learning are mainstream, the ‘amplification’ of everything is becoming a reality, and 5G and even 6G are on the horizon. New technologies have the potential to revolutionize manufacturing enterprises.

The Fourth Industrial Revolution (4IR), however, feels like the ghost in the machine. Currently, there are debates around whether it is coming, or may it already be here? Is what is happening, actually, the 4IR? There are many names and definitions for the 4IR, as well as numerous frameworks, ranging from this merely being an extension of the Third Industrial Revolution, to Society 5.0. Since there does not seem to be a common understanding of what 4IR means, the 4IR naming convention will be used, as it is a widely communicated definition from the World Economic Forum (WEF).

The 4IR is about the emergence of Cyber-Physical Systems (CPS), AI and networks. Cyber-physical systems involve new ways of embedding technology within larger societies, communities, and even in the human body. Artificial intelligence and robots are already replacing many routine jobs, while technology may create many as yet unimagined jobs. How then can enterprises respond effectively to uncertain futures? How can the curation and transmission of knowledge be reimaged? How can enterprises be prepared to thrive when confronted with the unexpected? How can plans be made for yet unknown disruptive change? What are the challenges to realizing the rich potential of 4IR technologies in manufacturing? The irony is that standing on the brink of a brave new 4IR world, life could potentially be made better for all the world’s people.

Against the background of the book’s theme of promoting inclusive practice and growth in the context of the Fourth Industrial Revolution, this chapter will introduce the role of Unified Communication and Collaboration (UC&C) technologies in preparing enterprises for uncertain futures, and for societies that are changing at great speed in terms of their ability to drive job creation, economic growth and prosperity for millions in the future. It aims to unpack some of the issues around the 4IR, with reference to Science, Engineering, Technology (SET), productivity and innovation.

Enterprises all need to become more agile and find time to keep on mastering new technologies. Change management will have to be the new normal across all Information Technology (IT) departments. And now, more than ever before, fingers must be kept on the pulse of change by sharing knowledge with peers and colleagues. Exciting times lie ahead for the industry, and by working together, enterprises will be able to stay ahead of the changes and overcome challenges, to be more competitive globally.

## **Target Audience**

The target audience for this chapter, as for the book as a whole, include general and human resources managers/directors, organizational design specialists, as well as IT professionals.

21 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/the-impact-of-unified-communication-and-collaboration-technologies-on-productivity-and-innovation/276910](http://www.igi-global.com/chapter/the-impact-of-unified-communication-and-collaboration-technologies-on-productivity-and-innovation/276910)

## Related Content

---

### Capacity of Production

I. C. Dimaand Sebastian Kot (2013). *Industrial Production Management in Flexible Manufacturing Systems* (pp. 40-67).

[www.irma-international.org/chapter/capacity-production/73722](http://www.irma-international.org/chapter/capacity-production/73722)

### Living on the Edge: Balancing Rigor and Relevance Within an Action Research Context

Nils-Petter Augustssonand Jonny Holmström (2010). *Industrial Informatics Design, Use and Innovation: Perspectives and Services* (pp. 102-109).

[www.irma-international.org/chapter/living-edge-balancing-rigor-relevance/44240](http://www.irma-international.org/chapter/living-edge-balancing-rigor-relevance/44240)

### Design and Development of Hybrid Stir Casting Process

Abhishek Kamboj, Sudhir Kumarand Hari Singh (2012). *International Journal of Applied Industrial Engineering* (pp. 1-6).

[www.irma-international.org/article/design-and-development-of-hybrid-stir-casting-process/93011](http://www.irma-international.org/article/design-and-development-of-hybrid-stir-casting-process/93011)

### Continuous Review Inventory Model with Fuzzy Stochastic Demand and Variable Lead Time

Nita H. Shahand Hardik N. Soni (2012). *International Journal of Applied Industrial Engineering* (pp. 7-24).

[www.irma-international.org/article/continuous-review-inventory-model-with-fuzzy-stochastic-demand-and-variable-lead-time/93012](http://www.irma-international.org/article/continuous-review-inventory-model-with-fuzzy-stochastic-demand-and-variable-lead-time/93012)

### Maritime Transformable Area Systems: Towards Sustainability in Factory Planning and Development

Vejn Sredic (2023). *International Journal of Applied Industrial Engineering* (pp. 1-17).

[www.irma-international.org/article/maritime-transformable-area-systems/330969](http://www.irma-international.org/article/maritime-transformable-area-systems/330969)