# Gold Coast Industry 4.0 Business and Investment Project - Executive Summary

## Industry 4.0

The term "Industry 4.0" was first coined in 2011 as Germany sought to increase competitiveness in their manufacturing sector. The term Industry 4.0 effectively describes the ongoing automation and digitization of supply chains with reduced need for human intervention.

Today, the term is being applied to not just manufacturing but other sectors who use the following technologies to improve supply chain processes:

- Big data
- Robotics/automation
- Cloud computing
- The internet of things
- 3D printing/additive manufacturing
- Artificial intelligence
- Augmented/virtual reality
- Advanced manufacturing/computer assisted manufacturing
- Advanced design/3D modelling
- Digital twin
- Nanotechnology
- Blockchain
- Machine to machine communications
- Sensor technologies.

Industry 4.0 presents generational opportunity to drive productivity; reduce repetitive and unsafe tasks in workplaces; build global digital supply chain networks and catalyze workforce transition.

## Industry 4.0 Drivers

Industry 4.0 is being used to drive the following outcomes:

- Maintaining competitiveness in a global marketplace
- Improving business productivity
- Accessing new markets (i.e. domestic and international)
- Creating new markets for business and by business (e.g. 3D printing)
- New product and service development and delivery
- Improving business communication channels (e.g. face to face and virtual)
- Accessing supply chain capability (e.g. business operations, logistical partnerships, research and development partnerships).

## Industry 4.0 Supply Chain

Industry 4.0 is dependent on the development of a traditional supply chain that focuses on the interaction of people, activities and resources with the objective to move a product and/or service to an end user or customer as described at right:

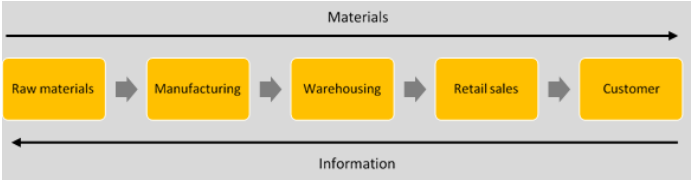


*Figure 1 Traditional linear supply chain*

Industry 4.0 is also dependant on a digital supply chain as shown at right which is being enabled by new technologies and investment in infrastructure and skills. Through connection and integration across different elements of the supply chain, this is enabling new levels of performance, improving operational efficiencies and effectiveness and creating new revenue streams for businesses.

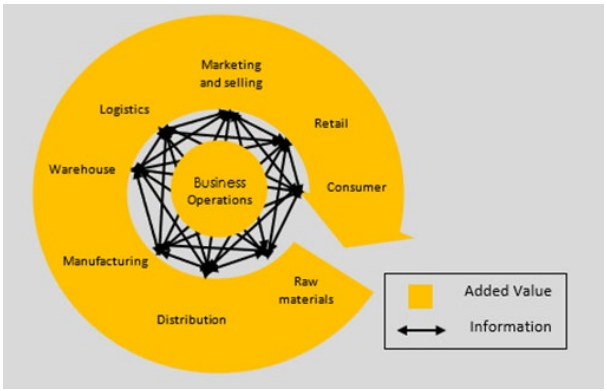


*Figure 2 Digital supply chain*

**Gold Coast Industry 4.0 Capability**

The Gold Coast Industry 4.0 Business and Investment Project has highlighted significant Industry 4.0 capability on the Gold Coast across a number of sectors including advanced manufacturing, health and medical technology, space and aerospace, textiles, additive manufacturing, food technology, sport and film. In many cases this capability is developing in clusters as shown below where organisations are located within proximity to each other and are using similar advanced technologies in similar industries.

It also highlighted that different sectors are leveraging off advances made in one sector for the benefit of another.

Gold Coast Industry 4.0 businesses are committed to adopting new advanced technologies to increase productivity and there are growing connections between universities and industry to leverage Industry 4.0 capability.

The City has a strong digital city infrastructure framework following significant investment in its 5G, Fibre Optic Network and LoRaWAN technology.

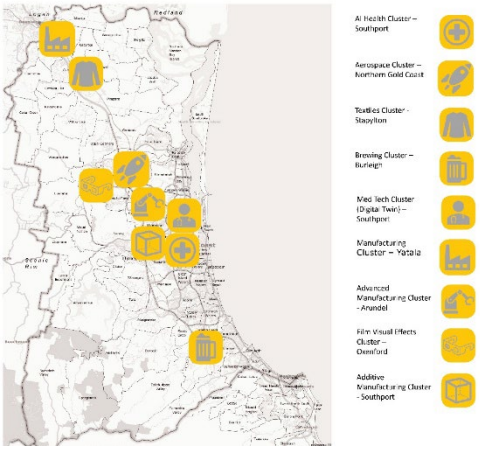


*Figure 3 Gold Coast Industry 4.0 Clusters*

**Workforce Change**

For key Gold Coast industries, most jobs will undergo substantial change, driven by technological changes including Industry 4.0 technologies. This is best demonstrated by research conducted by the Australian Computer Society 2020 [1]detailed below:

| Industry | Jobs changed by technology (%) | Replaceable jobs (%) |
|---|---|---|
| Health Care/Social Assistance | 39 | 11 |
| Education and Training | 34 | 27 |
| Accommodation/Food Service | 32 | 22 |
| Professional, Scientific/Technical | 41 | 19 |
| Manufacturing | 33 | 30 |
| Information, Media/Telecoms | 42 | 18 |
| Construction | 30 | 25 |

[1] TECHNOLOGY IMPACTS ON THE AUSTRALIAN WORKFORCE, Australian Computer Society, 2020

**COVID-19**

Whilst the adoption of advanced technology was already well under way, COVID-19 has fast tracked its adoption and in turn, accelerated the need for a workforce with skill sets aligned with Industry 4.0. This has been demonstrated at a local and national scale.

COVID-19 has also led to an increased expectation of sovereign capability and supply chain independence and subsequently to an increased push to build maturity in the manufacturing sector.

**Moving Forward**

Industry 4.0 adoption is critical to drive competitiveness and productivity. COVID-19 has catalysed this requirement and the opportunity exists to ensure that there is an appropriately trained workforce to meet these requirements, enable Industry to adopt best practice advanced technology adoption and build digital and physical supply chain connections.