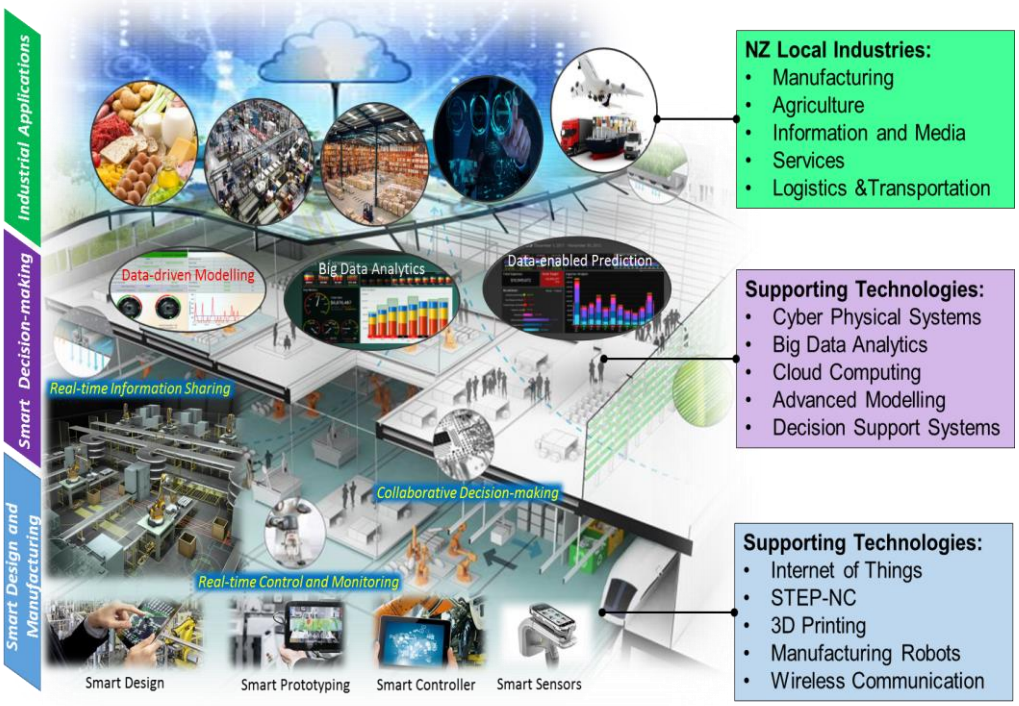
Industry 4.0 Centred Research

Industry 4.0

Industry 4.0 is based on the technological concepts of cyber-physical systems, Internet of Things and Internet of Services. It facilitates and contributes to the vision of Smart Factories. Within the modular structured smart factories of Industry 4.0, cyber-physical systems are in fact cyber-physical production systems that monitor physical processes, create a virtual copy of the physical world and make decisions autonomously. Over the Internet of Things, cyber-physical production systems communicate and cooperate with each other and humans in real time. Via the Internet of Services, both internal and cross-organizational services are offered and utilized by participants of the value chain.

Research Issues



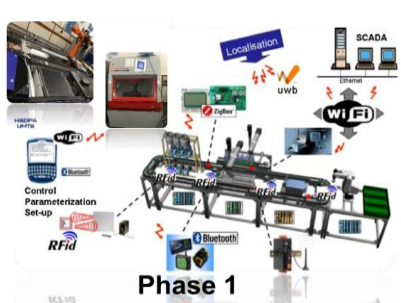
Aims

- Assist local industries in better understanding Industry 4.0
- Encourage collaborations between industry and researchers
- Showcasing and implementing the research works at local industries

Research Topics

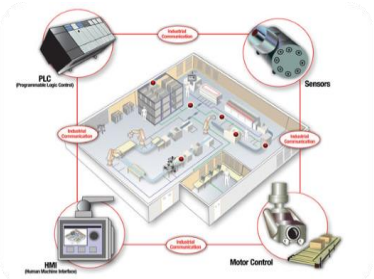
- **Real-time control & monitoring**
  - Cyber-physical machine tools
  - Real-time control mechanisms
  - Cyber-physical 3D printing
  - Internet of Things
  - Wireless communication
- **Manufacturing automation**
  - Manufacturing robots
  - Logistics automation
  - Human machine interaction
  - Automatic guided vehicle
- **Real-time information sharing**
  - Real-time data collection method
  - Data processing techniques
  - Sensor data presentation
  - Data visualization technologies
  - Data source management
- **Collaborative decision-making**
  - Smart factory
  - Smart planning and scheduling
  - Energy efficient machining
  - Integrated design and process planning
  - Cloud-based control
  - Data-driven decision models
- **Big Data Analytics**
  - Big Data processing
  - Big Data visualization
  - Big Data-enabled BI
  - Data-enabled prediction

3-Phase Plan



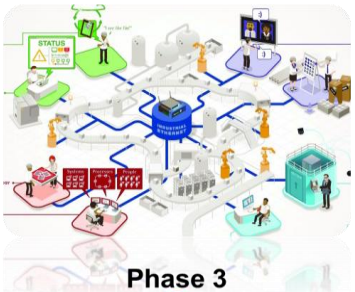
Phase 1

Smart Production/Assembly Line



Phase 2

Smart Factory



Phase 3

Smart Industry

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Smart Manufacturing Systems

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