**IoT-enabled Real-time Advanced Planning and Scheduling**

### IoT-enabled Manufacturing

IoT-enabled manufacturing is an advanced principle whereby typical production resources are converted into smart objects which are able to sense, interconnect, and interact with each other to automatically carry out manufacturing activities. As the wide usage of IoT digital devices which are able to generate huge number of data, manufacturing companies are facing challenges for making full use of the collected data: (1) as the deployment of enormous IoT-enabled devices which may be different in functionalities, vast heterogeneous data will be captured and collected; (2) the collected data are in large volumes and the relationships between each individual data entity are extremely complicated; (3) the complex and bulky datasets are difficult to use in various applications, thus, innovative data presentation and interpretation approach are needed.

### Innovations

- IoT devices such as RFID readers are used for creating a smart production environment, where real-time data are captured, especially disturbances are tracked and traced in real-time.
- Real-time RFID information plays important roles in coordinating decisions and operations across different parties in production processes.
- Adaptive optimization models, solution algorithms and rules are developed and deployed as Web services.
- Standard HPP decision-making process integrated with real-time RFID information enables more precise production plans.

**IoT-enabled real-time advanced planning and scheduling shell (RAPShell)** is designed and developed to coordinate decisions and operations across different production stages such as planning, scheduling, execution and control.