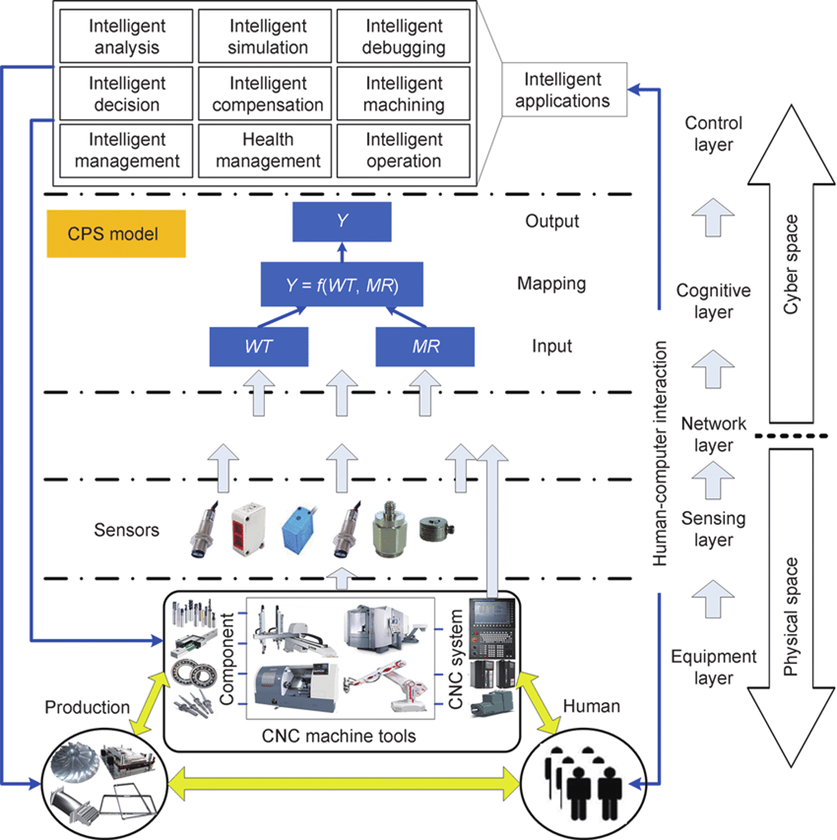
**Lab Sheet: Cyber Physical System (CPS) and Data Security**

**Introduction**

**A cyber physical system (CPS)** is a complex system that integrates computation, communication, and physical processes. **Digital manufacturing** is a method of using computers and related technologies to control an entire production process. **Industry 4.0** can make manufacturing more efficient, flexible, and sustainable through communication and intelligence; therefore, it can increase the competitiveness. Key technologies such as the Internet of Things, cloud computing, machine-to-machine (M2M) communications, 3D printing, and Big Data have great impacts on Industry 4.0. Therefore, **CPS** is the way to **streamlining process** in a production line of an existing traditional factory using a data flow diagram for Digital factory is important.

* **Application of CPS in manufacturing process**.



**The CPS architecture of CNC machine tools with a CPS model**

**Assignment**

Design and development of a system for CNC turning to be in the form of Cyber-Physical Production Systems by writing architecture, data flow diagram and some available services. Streamlining process in the production line of CNC turning. Use data below:

* CNC turning FANUC Series 18i MODEL B
* A series of Ultra-Compact, Ultra-Thin CNC with Embedded network interface
* integrated with LCD display and network features
* High Speed, High Precision and High Efficiency (High Precision Nano CNC System, State of the Art Servo Technology (HRV control), High Performance PMC to Reduce Cycle Time)
* Versatile Network Function (Ethernet Interface as Standard, Integrated Supervising Software Package by Networking)
* FOCAS 1 Driver
* Sockets (164.41.17.20:8193)

**Objective**

This lab reinforces the following skill:

- Concept of CPS in manufacturing process

- Design architecture, data flow diagram of CPS to **streamlining process** in a production line of an existing traditional factory.

**Instruction**

1. Read and understand the content and application of CPS in manufacturing process.
2. Design and development of a system for CNC turning to be in the form of Cyber-Physical Production Systems by writing architecture, data flow diagram and some available services.
3. You can search the equipment of physical and cyber space for design on the internet.

**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Cyber-Physical Production Systems: architecture, data flow and some available services**