СОЗДАНИЕ СЕТЕВОЙ ИНФРАСТРУКТУРЫ ДЛЯ ПОДДЕРЖКИ ИННОВАЦИОННОГО ПРЕДПРИНИМАТЕЛЬСТВА МОЛОДЕЖИ НА ПЛАТФОРМАХ ПРОИЗВОДСТВЕННЫХ ЛАБОРАТОРИЙ

FABLAB

DEVELOPMENT OF A NETWORK INFRASTRUCTURE FOR YOUTH INNOVATION ENTREPRENEURSHIP SUPPORT ON FABLAB PLATFORMS

Co-funded by the Erasmus+ Programme of the European Union

Rapid Prototyping and Manufacturing in the context of FABLAB

VNIVERSITAT DE VALÈNCIA

Escola Tècnica Superior d'Enginyeria

http://fablab-erasmus.eu

Topics

- Introduction, Industry 4.0.
- IoT and other technologies deeply involved in manufacturing
- PLC and automation for manufacturing
- Connections between FABLABs and Industry

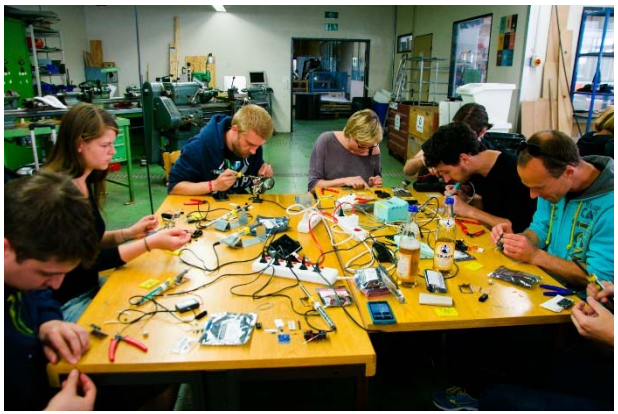
MAKERSPACE

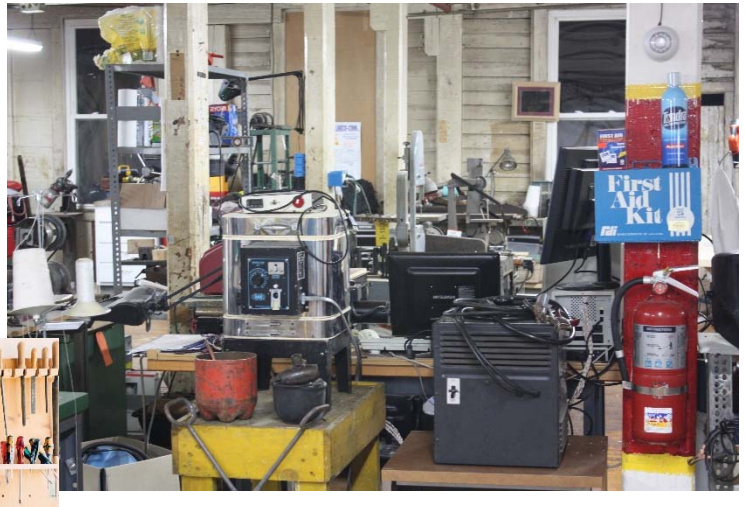
- **First in 2005, became popular in 2011**
  - "Communal workshop" could be another Word for 'makerspace'
- **Aim: Provide possibilities of creating something by yourself to anyone**
- **Similar equipment and facilites to an industry**
  - High Voltage, ventilation, different tolos, etc.
- **Open Access to any tool, shared among people (under security measures)**

HACKERSPACE

- Already appeared in 1995 (Germany) and became popular from 2005 and on
- NOT directly related to the term ‘hacker’
- Idea: Meet software programmers in the same place so that they can discuss about ideas and coordinate common informatic projects
- Its evolution has made ‘hackerspaces’ a mechatronic environment where electronics and informatics are a key factor
- Success stories: MakerBot Industries, born in ‘NYC Resistor’ hackerspace, inspired in METALAB (Viena). Leading edge 3D printers makers.
- Es un espacio pensado, más que para la creación, para la modificación de objetos (hardware y software) para que hagan cosas para las que no estaban diseñados, pero excluyendo la tarea del inventor o del artesano

WORKING ENVIRONMENTS





TechShop & FABLAB

- **TechShop: Purely comercial, pay per services**

- **FABLAB: Reduced fee (or inexistent), managed by public administration, NGO or non-profit associations**

FABLAB Valencia Project workshop. 4-6 April 2017

TechShop & FABLAB

- Fablabs have to compete with mass production and its associated economies of scale in fabricating widely distributed products

- Fablabs have already shown the potential to empower individuals to create smart devices for themselves

- These devices can be tailored to local or personal needs in ways that are not practical or economical using mass production

FAB LAB

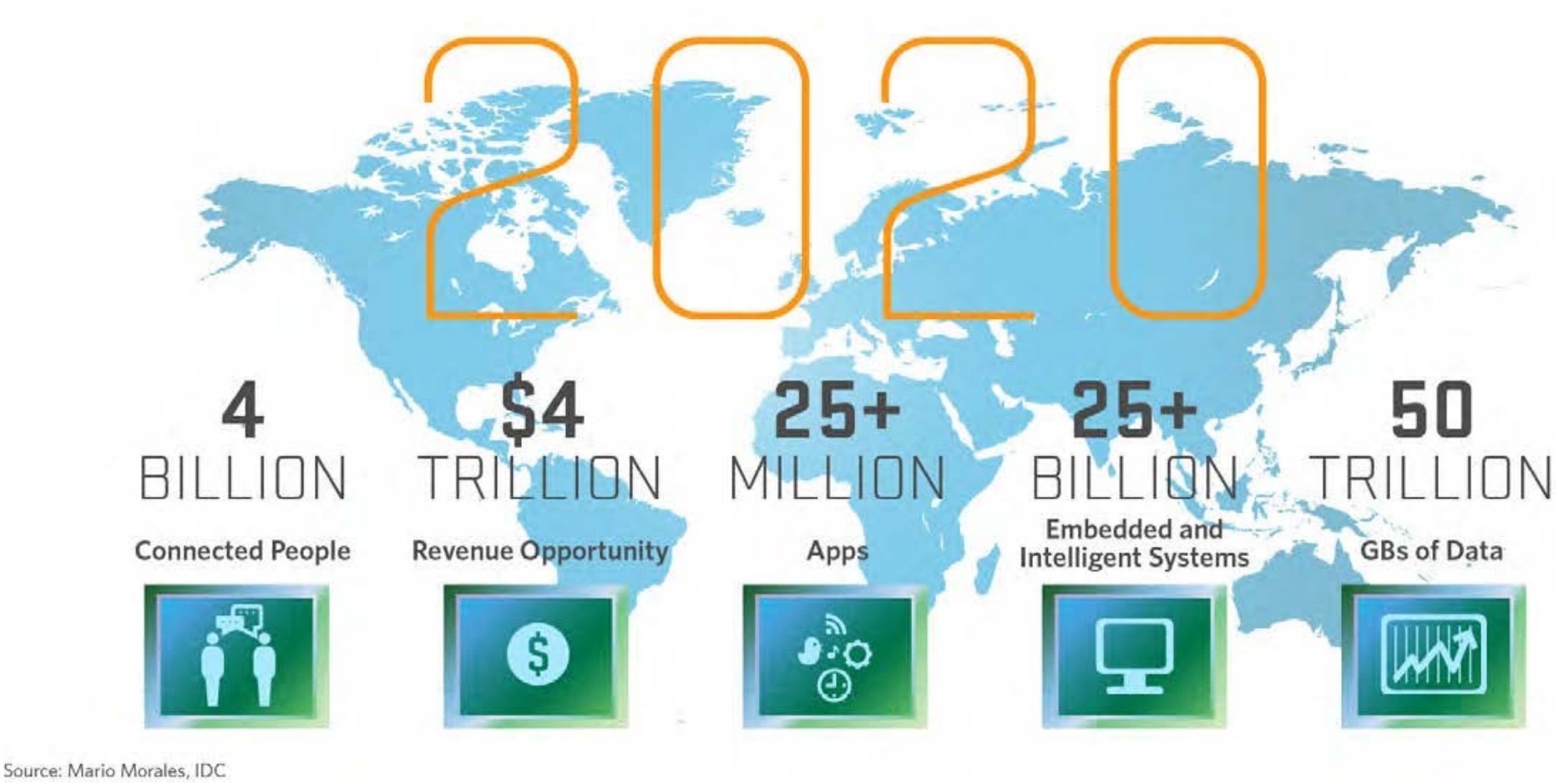
How can Fablab products migrate to industrial manufacturing?

- **Fablabs have to compete with mass production and its associated economies of scale in fabricating widely distributed products**
  - → FABLABs can become a place for prototyping
- **Fablabs have already shown the potential to empower individuals to create smart devices for themselves**
  - → FABLABs are an incubator for low budget ideas and projects
- **These devices can be tailored to local or personal needs in ways that are not practical or economical using mass production**
  - → FABLABs can create small businesses with growing capacity

Designing and prototyping in a FABLAB: Rapid prototyping

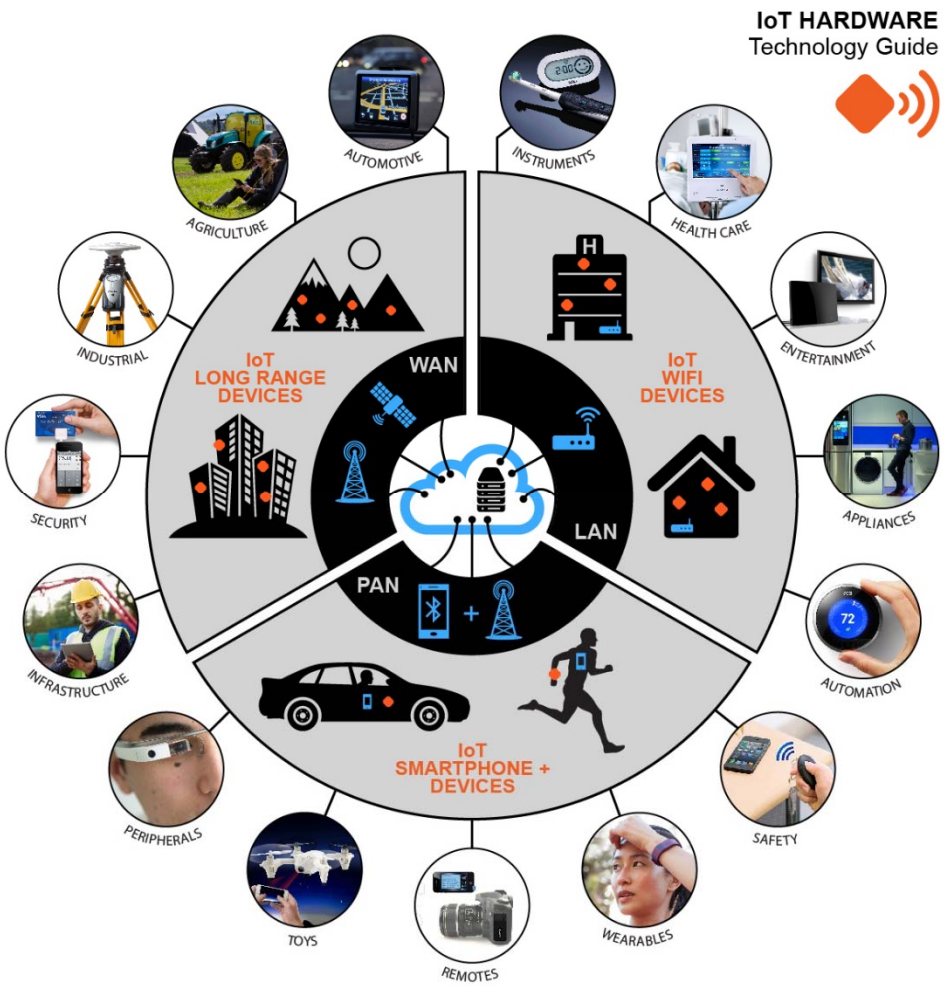
- **Current technology provides unlimited possibilities (with adequate knowledge)**
  - → Mechatronics is the future: adds intelligence
- **Including electronics in a FABLAB increases public attraction**
  - → The creation possibilities are greatly increased
- **A link between prototypes and industry is desirable**
  - → FABLABs may include equipment closely related to industrial manufacturing and provide availability of current technologies
    - Programmable Logic Controllers
    - Internet of Things (IoT) devices
    - Automation systems

Internet of Things (IoT)



Source: Mario Morales, IDC

Internet of Things (IoT)



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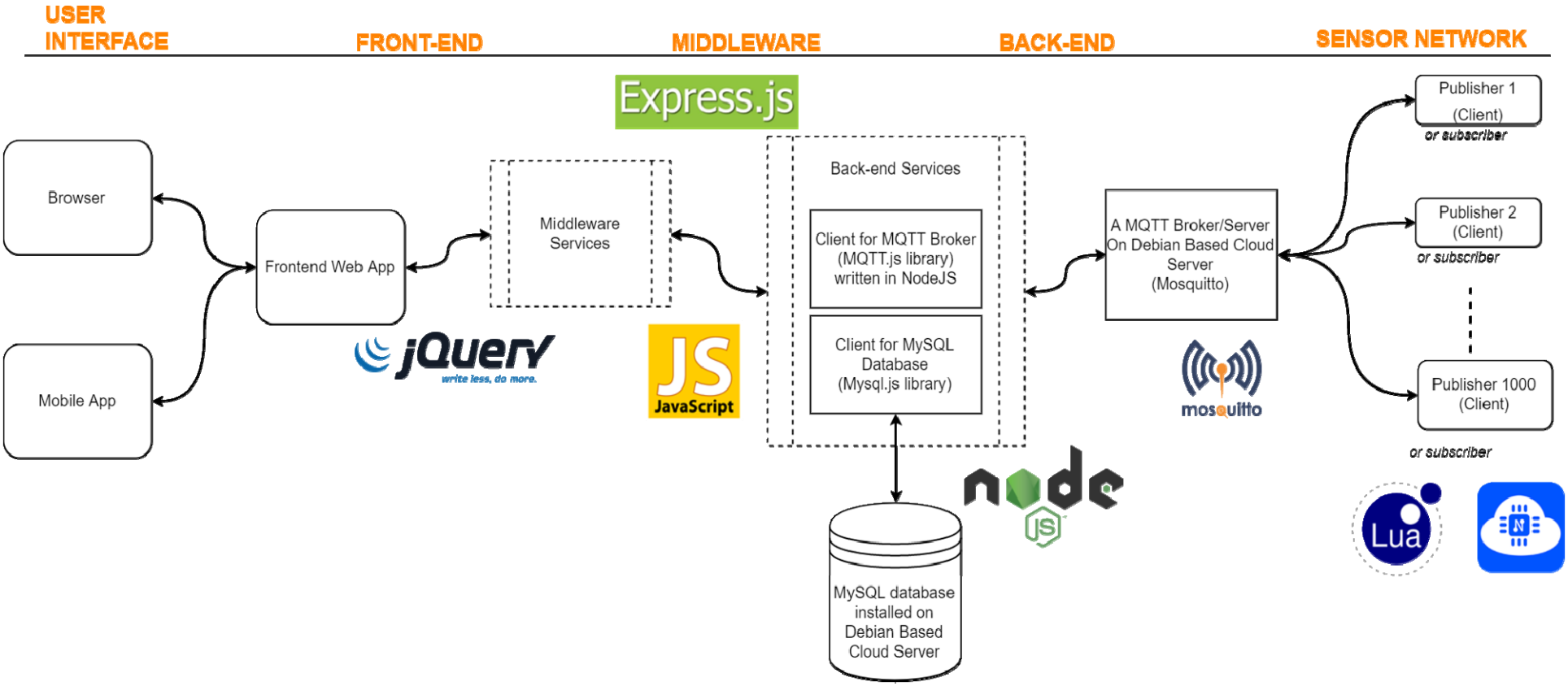

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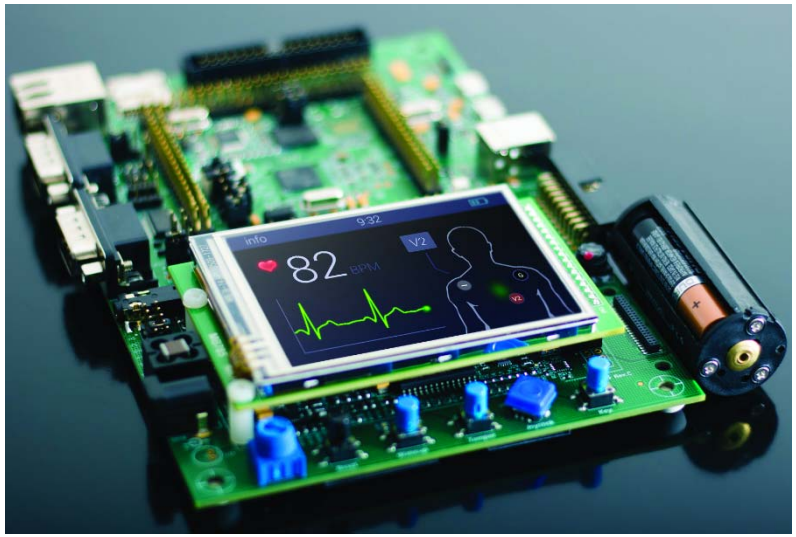
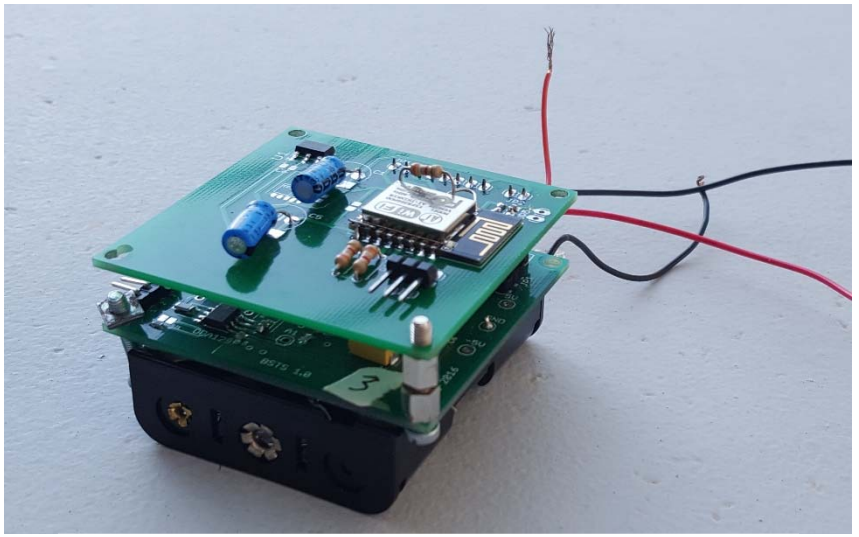
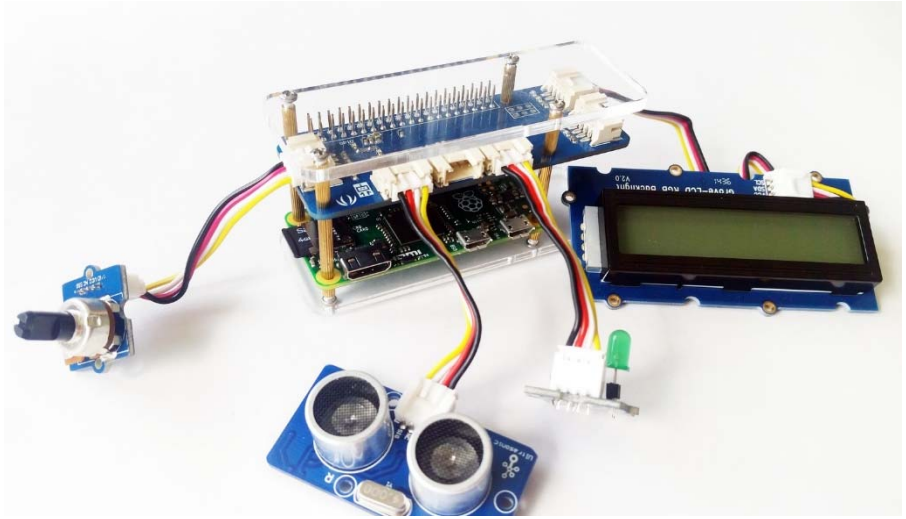
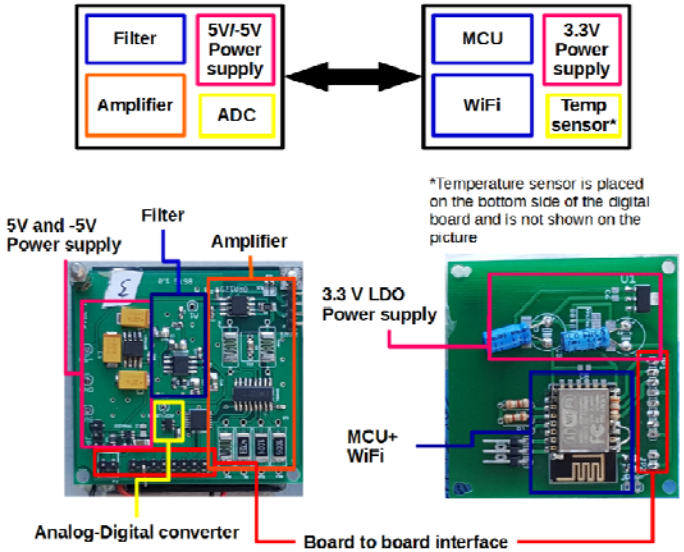
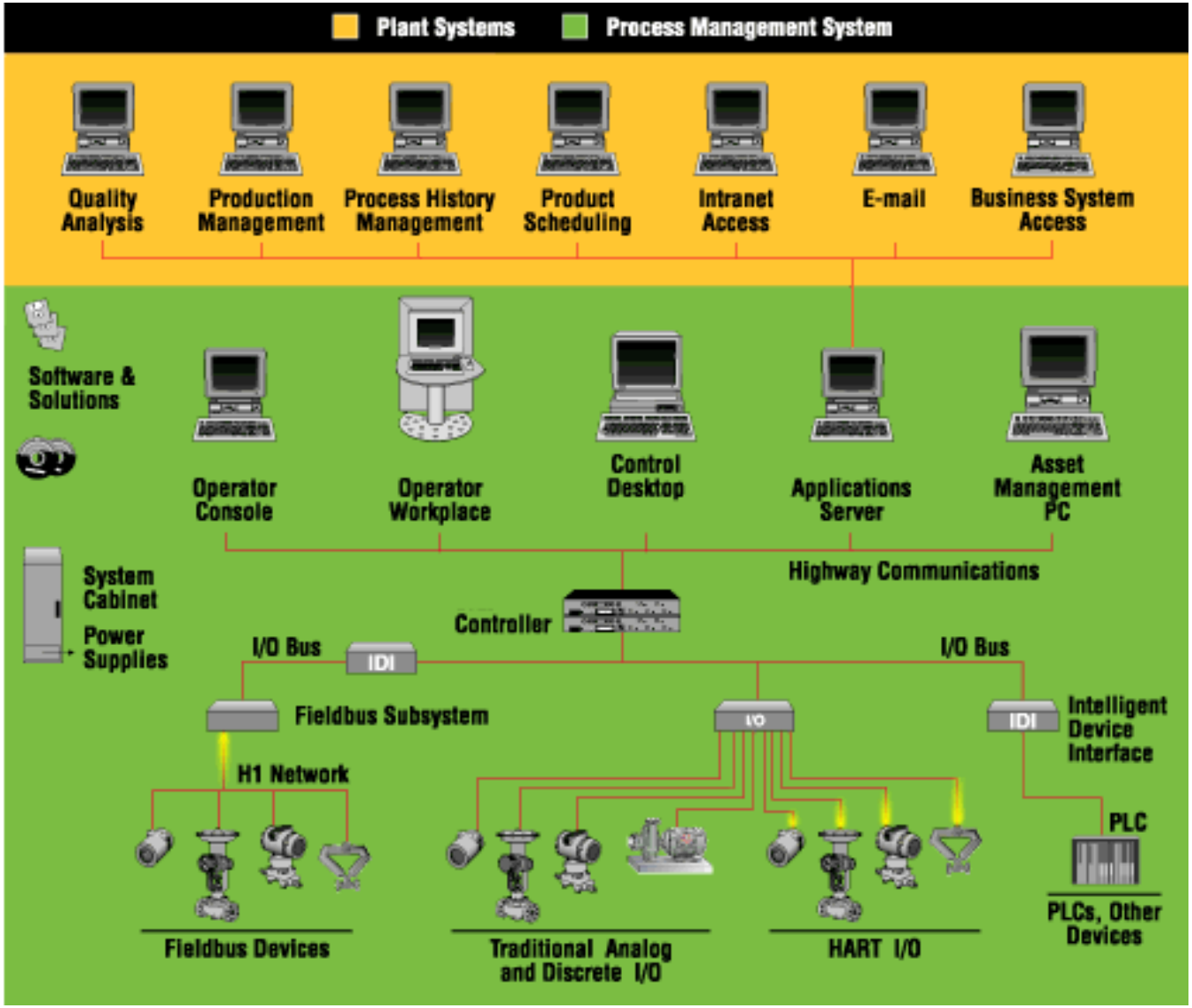




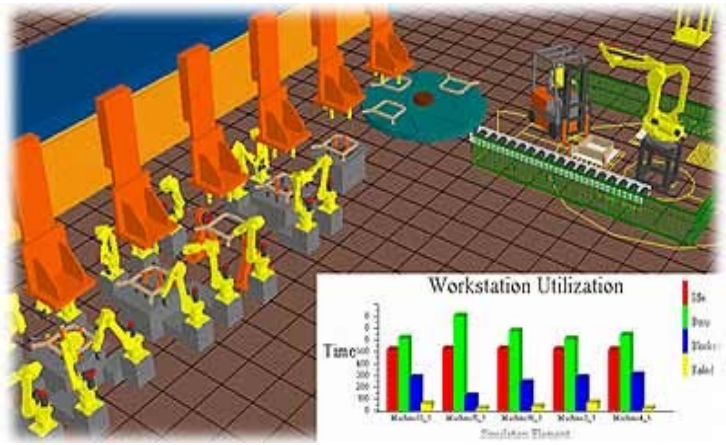




Industry network - manufacturing

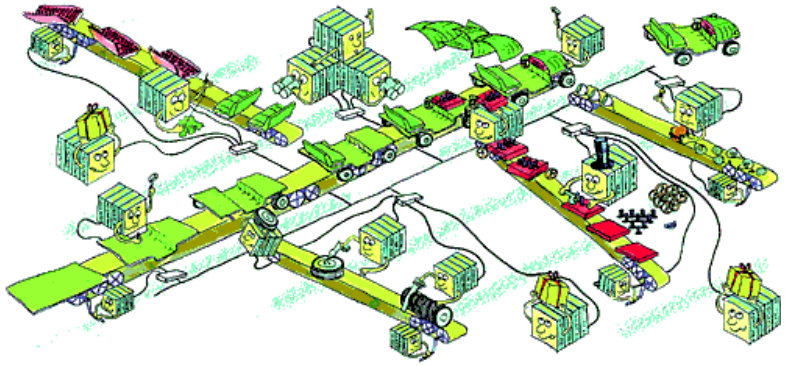
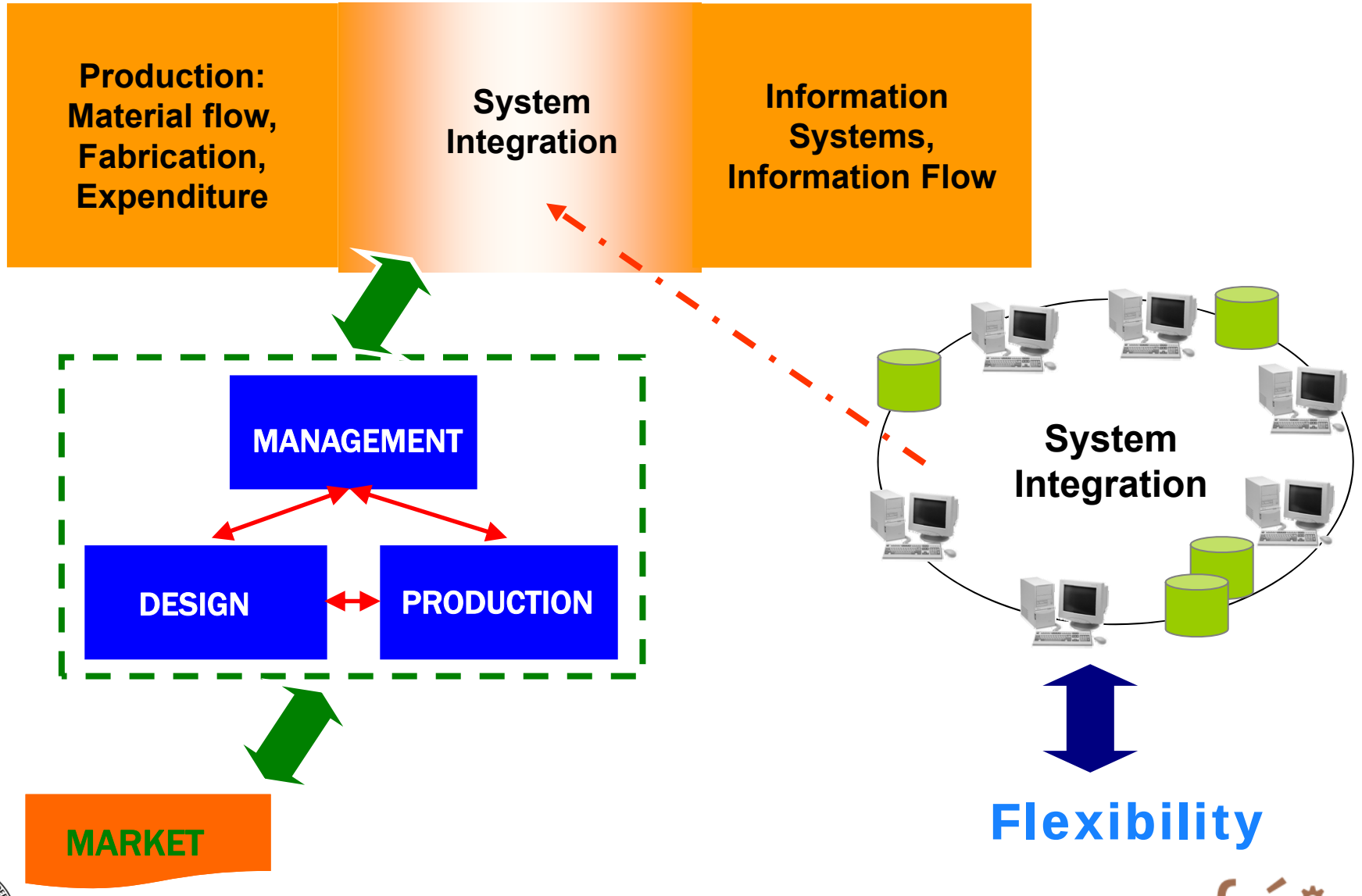


Automation Systems for Manufacturing



CASA/SME'S CIM WHEEL

By CASA/SME in 1980s



Complete integration in manufacturing processes