

SIAA – CNSG Breakfast Meeting



Infocomm Powers Manufacturing Automation in the Era of Globalisation

By

Professor Hang Chang Chieh

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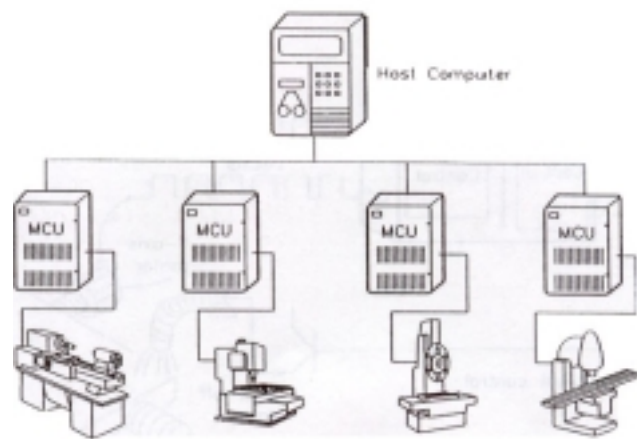
Until the 1930's the aerospace industry did not incorporate automation

Wood and fabric construction

Relatively low production rates

1930's, first automation in aerospace industry
Metals replace cloth and fiber
Production rates increase

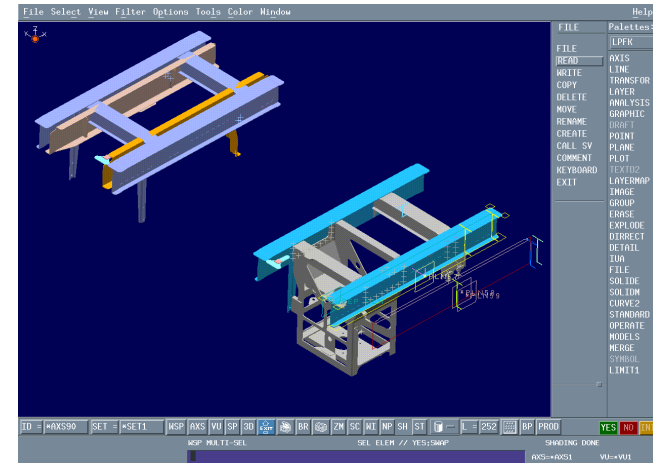




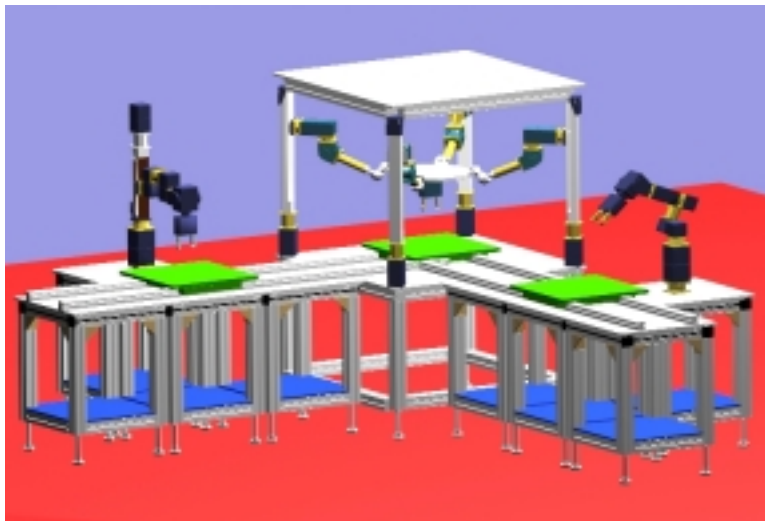
1960: Direct Numerical Control



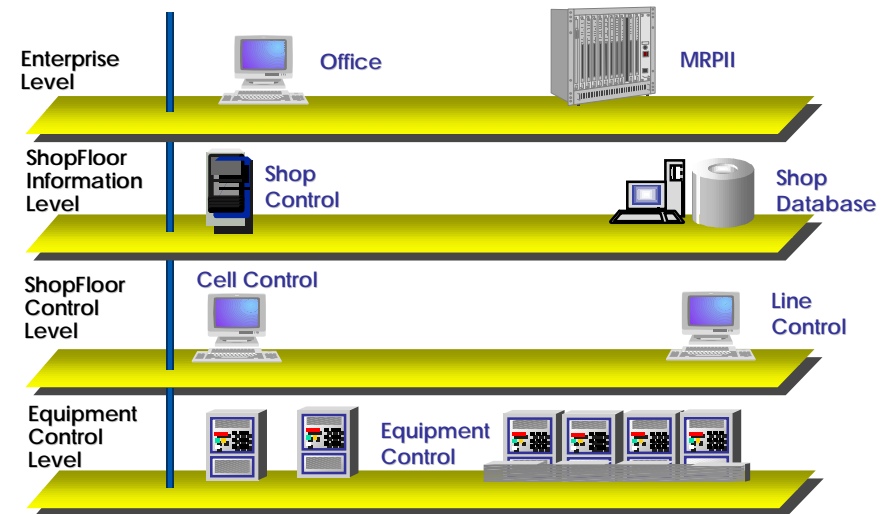
1962: The first industrial robot



1970's: CNC machines



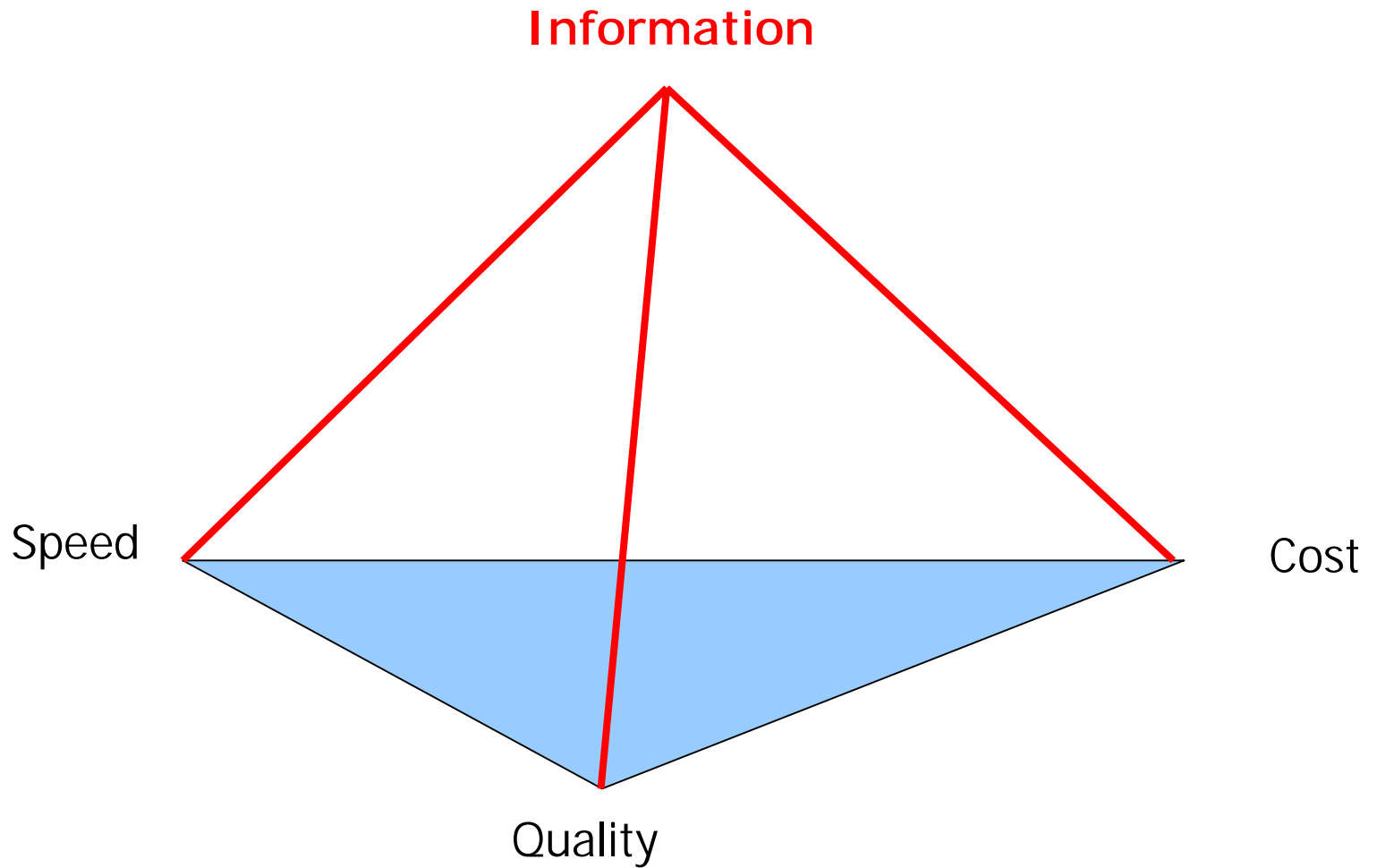
1980's: Computer Integrated Manufacturing



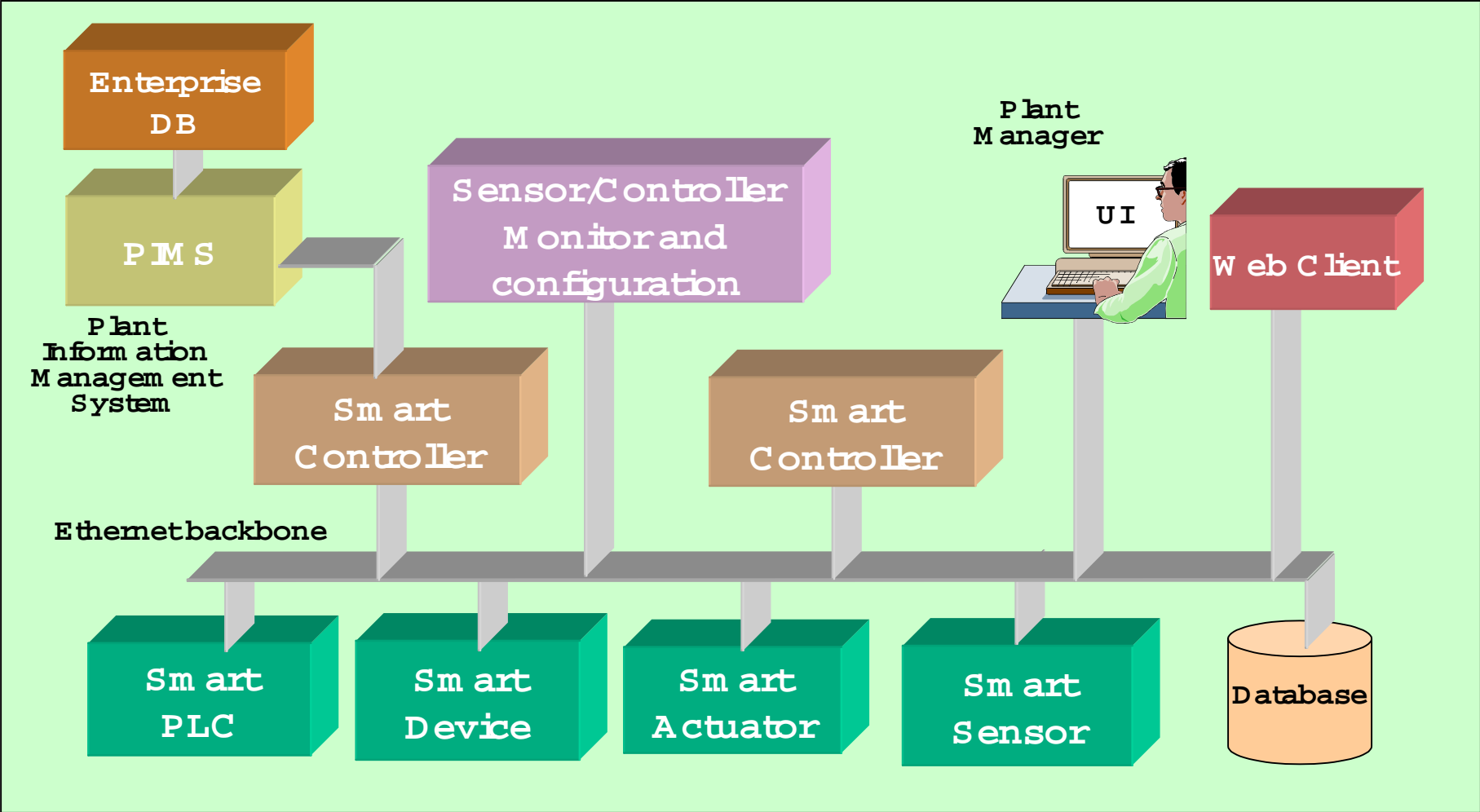
1990's: Intelligent Manufacturing System

Globalised Manufacturing

- Manufacturers operate globally and collaboratively
 - Labour cost & availability of skill sets
 - Proximity to the market
 - Lower tiers move with the first tiers
 - Dispersed and heterogeneous manufacturing entities
- Enterprises excel in their core competencies while outsourcing peripheral activities.
 - Contract manufacturing & contract design, from electronic products to equipment
 - Outsource: from logistics/service/information to HR
 - Lean and agile
 - Ever increasing manufacturing dynamism



Next Generation Manufacturing Automation

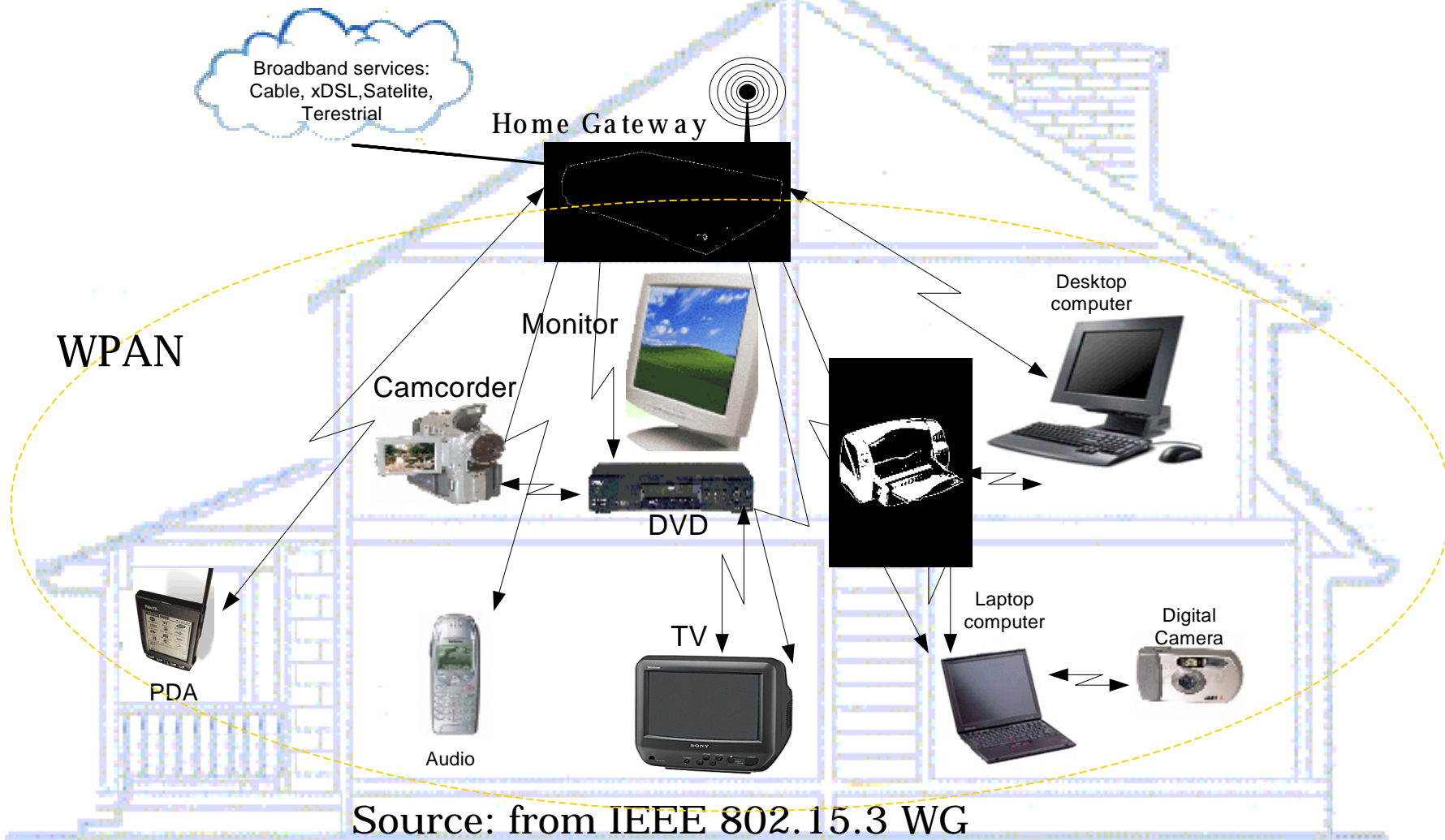


UWB Radio System

- Occupy very broad frequency range of a few GHz; FCC has allocated 7.5GHz of spectrum for unlicensed use in the 3.1 ~ 10.6 GHz
- High data rate of 100-480Mbps (2 to 10 metres)
- Robust low data rate of few hundreds kbps (10-50 metres)
- Radio needs to be small with low power consumption
- Needs to coexist with existing wireless system & minimize interferences.
- On-going standardization effort by IEEE 802.15.3a.
(expected by 2004)

Applications of UWB in home/office/industrial wireless network

Wireless personal area network(WPAN)



Source: from IEEE 802.15.3 WG

SIMTech - S'pore Institute of Manufacturing
Technology

(**250 RSEs**)

IMRE - Institute of Materials Research and
Engineering

(**140 RSEs**)

I2R - Institute for Infocomm Research

(**300 RSEs**)



The old stories are still relevant:
automation for quality gain;
automation for productivity gain



But with ever increasing penetration of
information and communication technology
in the manufacturing value chain in the era
of globalization

