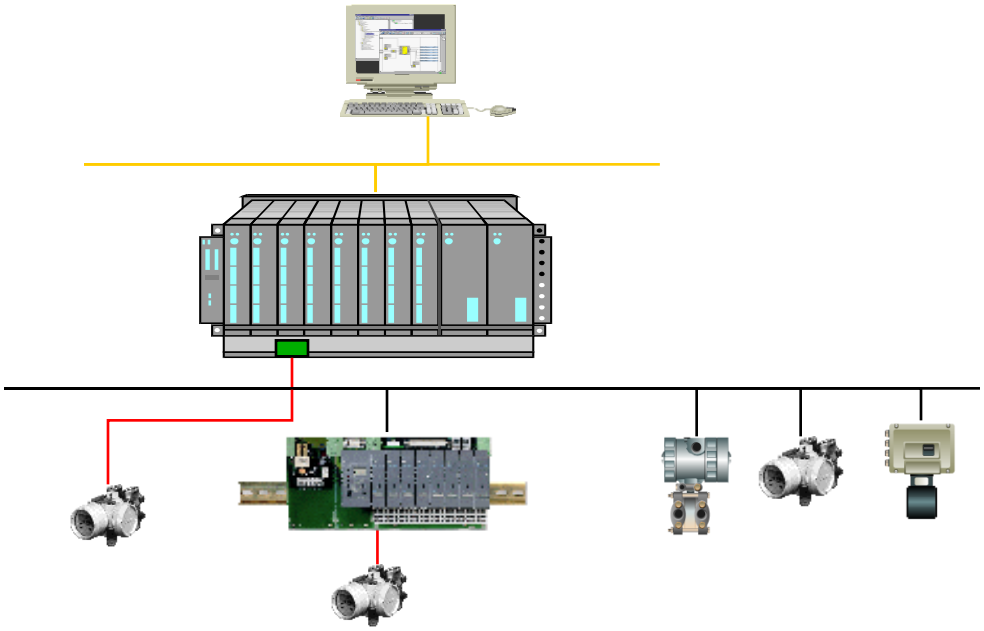


1.5 Control System Architecture

Principle

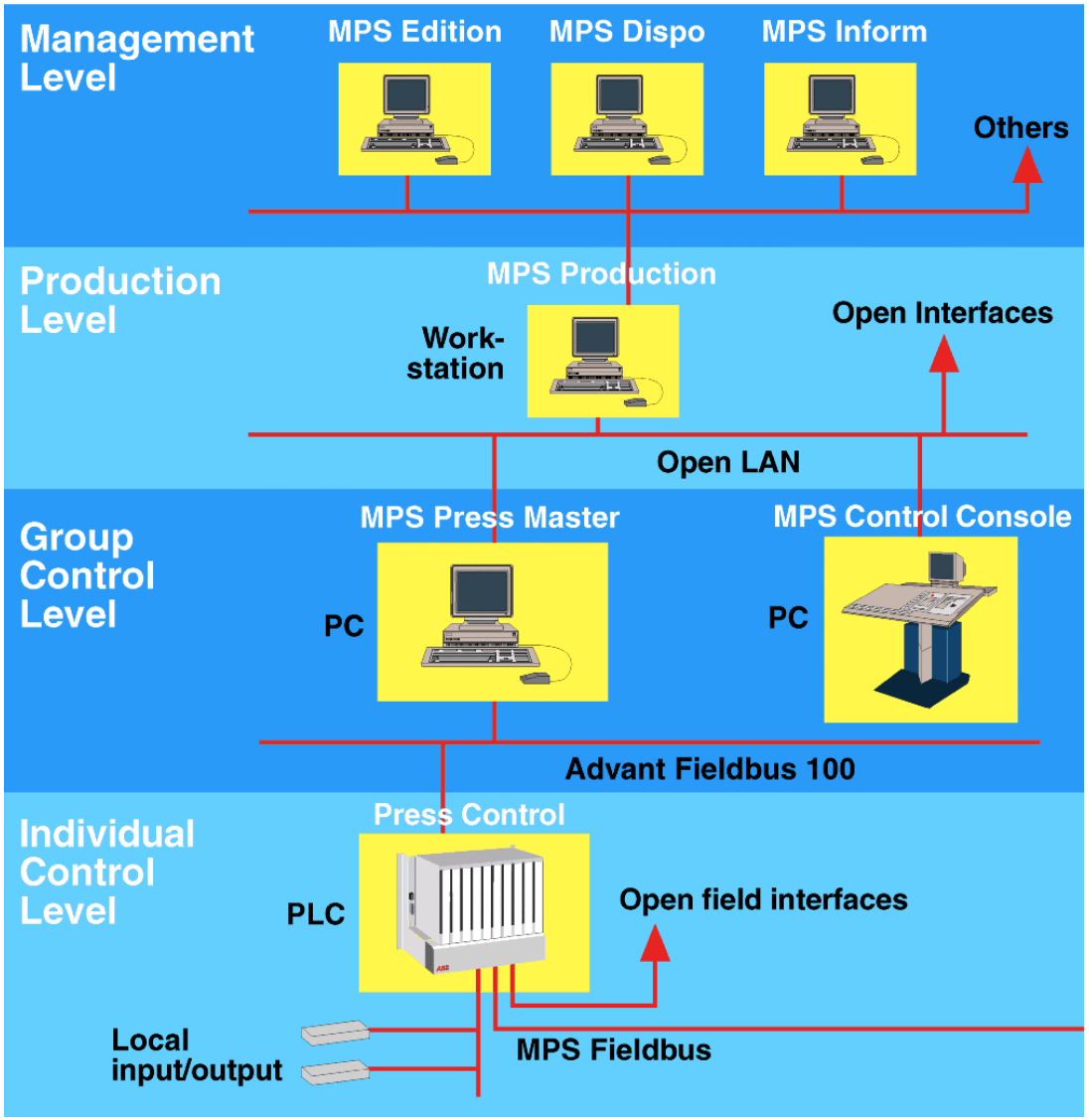
The control system has to suit the plant, not the reverse

The structure of the control system should reflects that of the plant

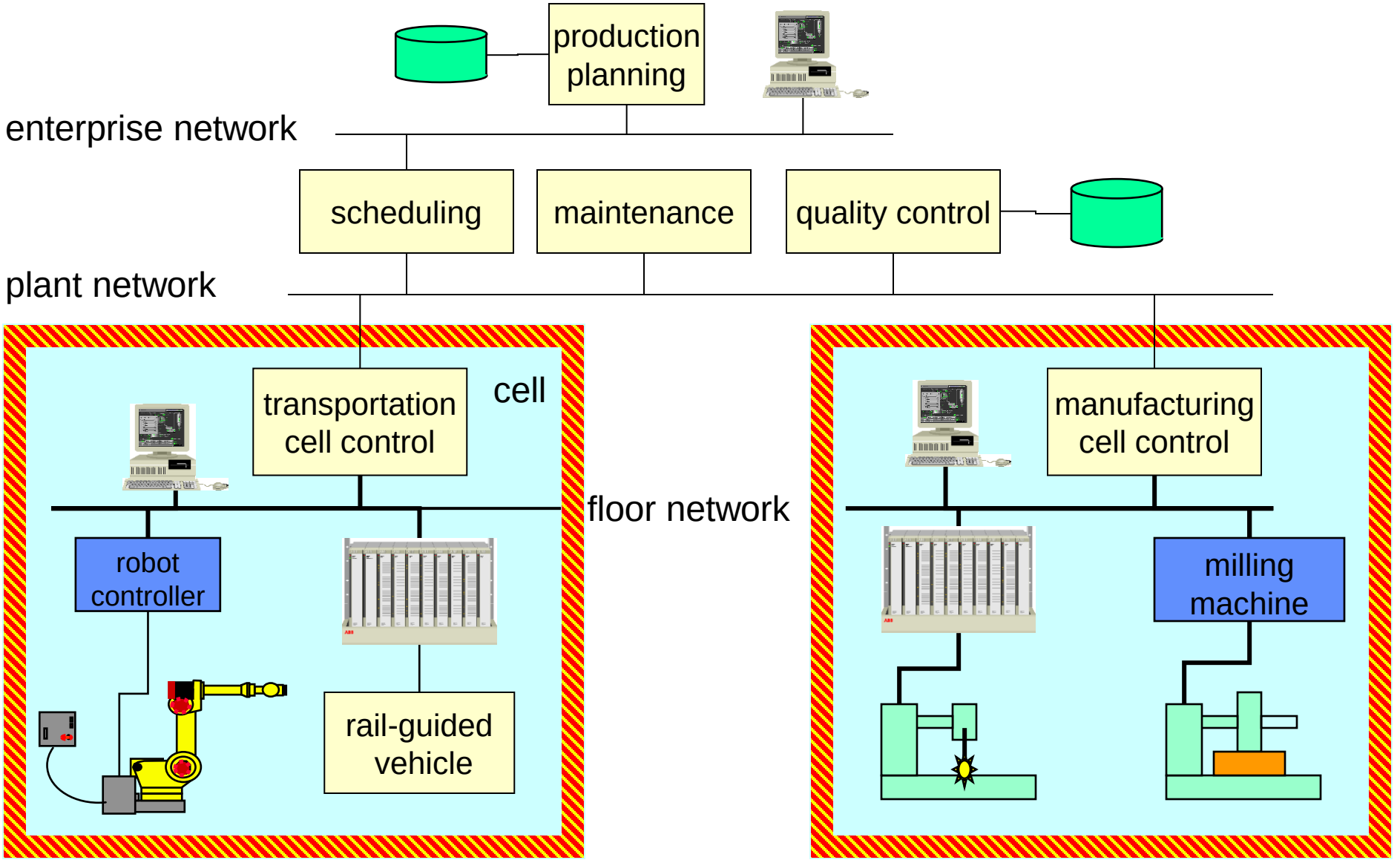
Ideally, each unit of the plant should have its own controller,
interacting with the controllers of the other, related units,
mirroring their physical interaction.

Example: Airbus: a wing is delivered with its own computers.

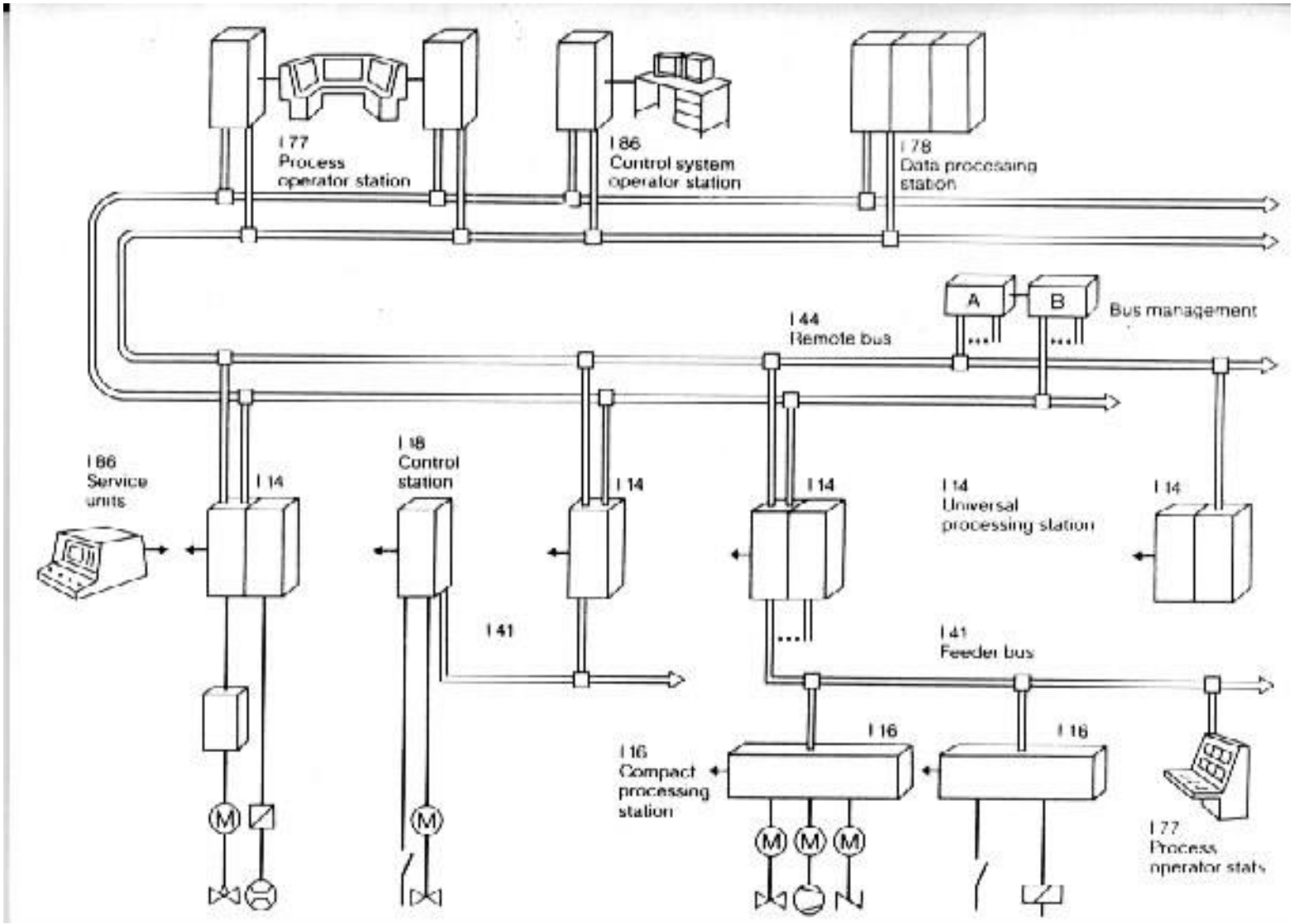
Example: Printing Architecture



Example: Production management system

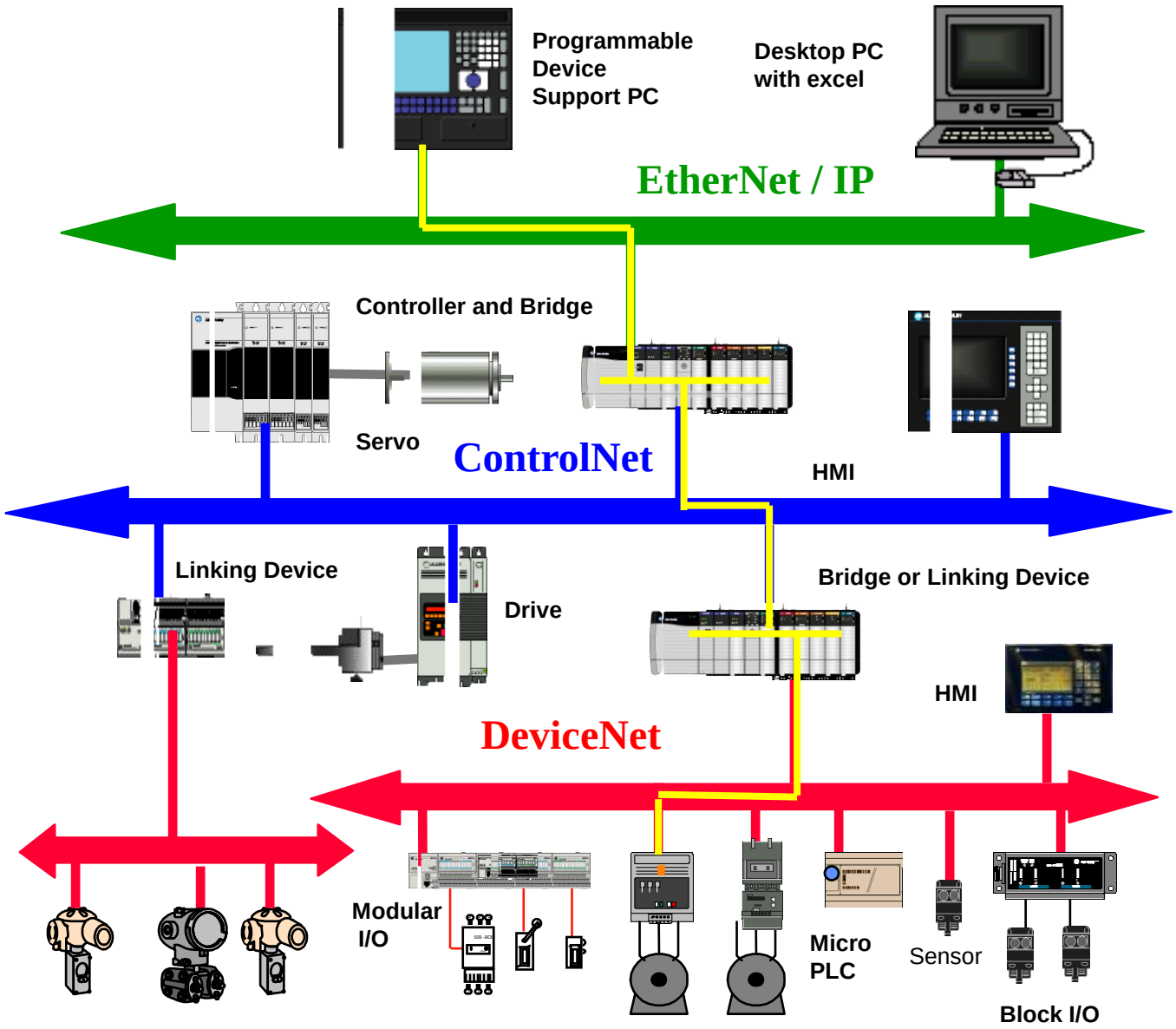


Example: Power plant control - 1980 (!)

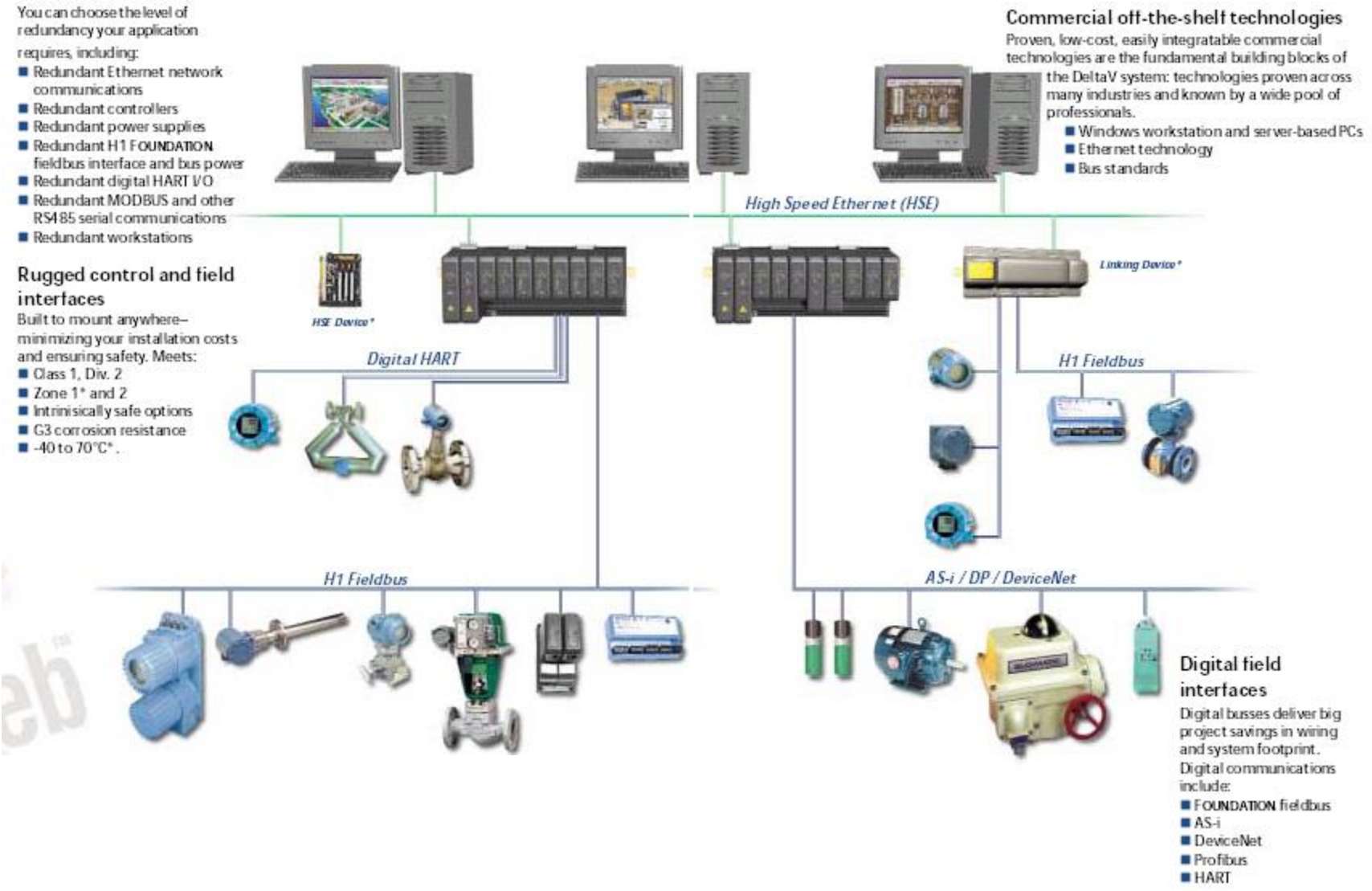


Control systems look similar

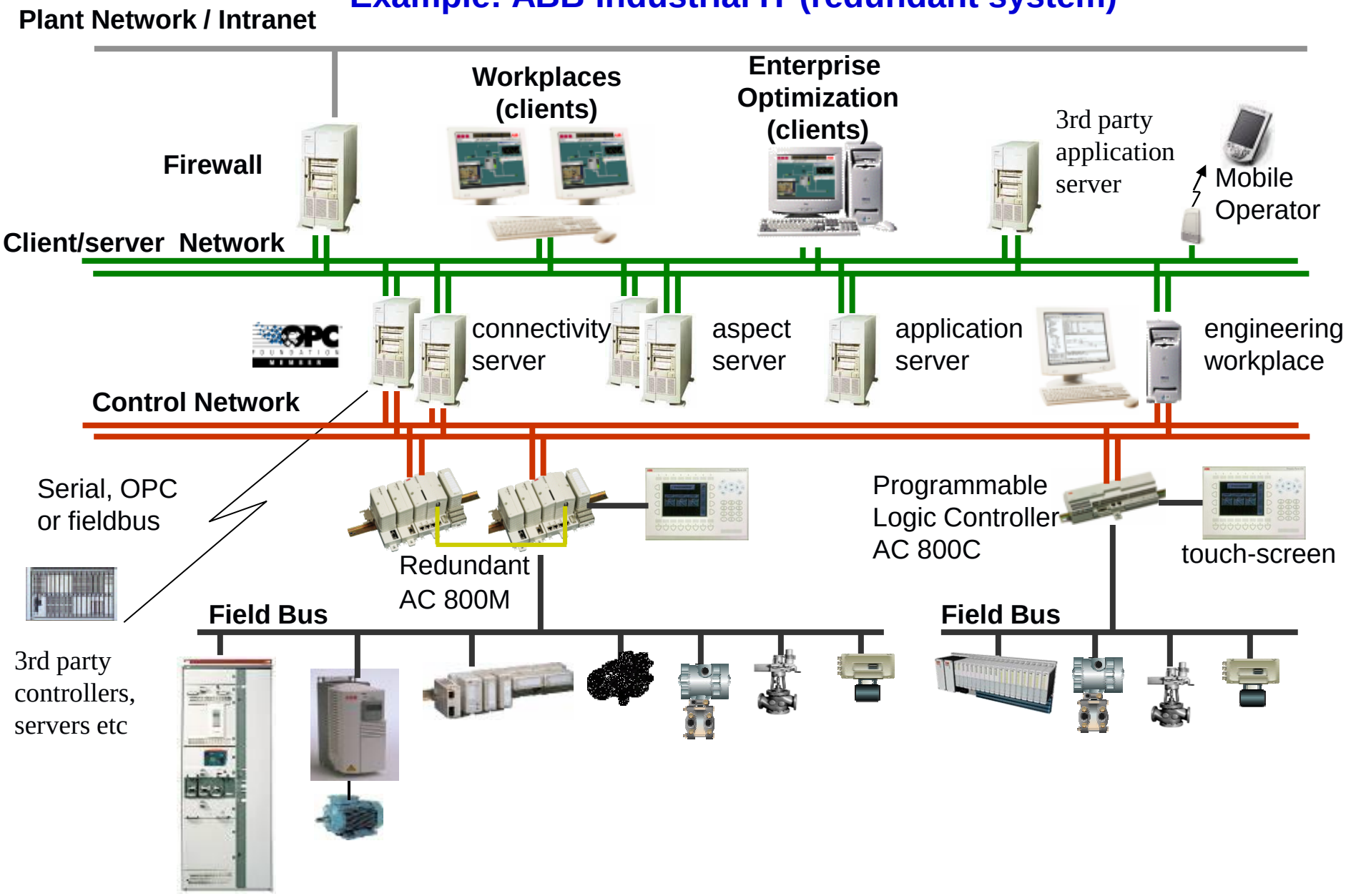
Example: Rockwell (Allen-Bradley) NetLinx



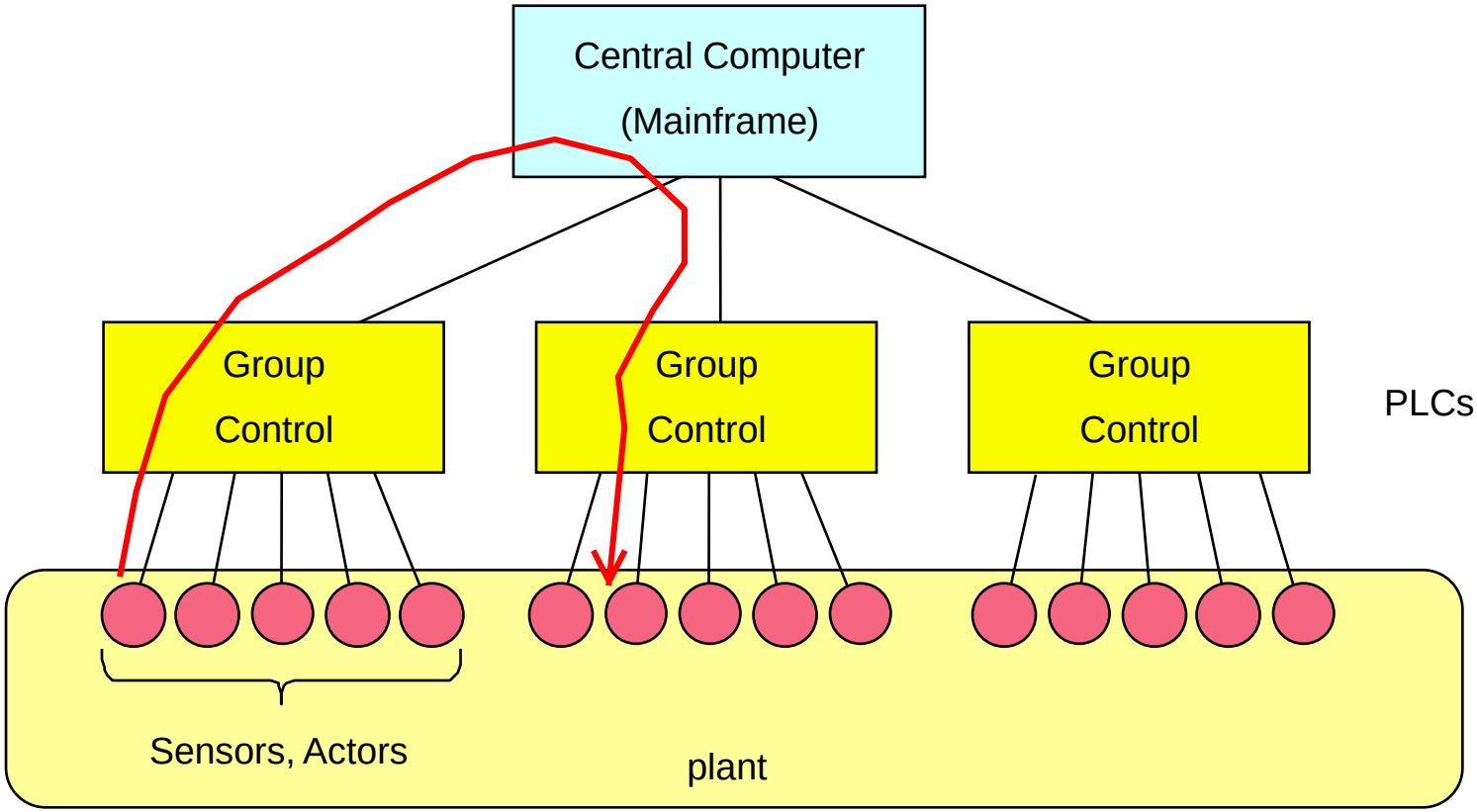
Example: Emerson's PlantWeb (Delta V)



Example: ABB Industrial IT (redundant system)



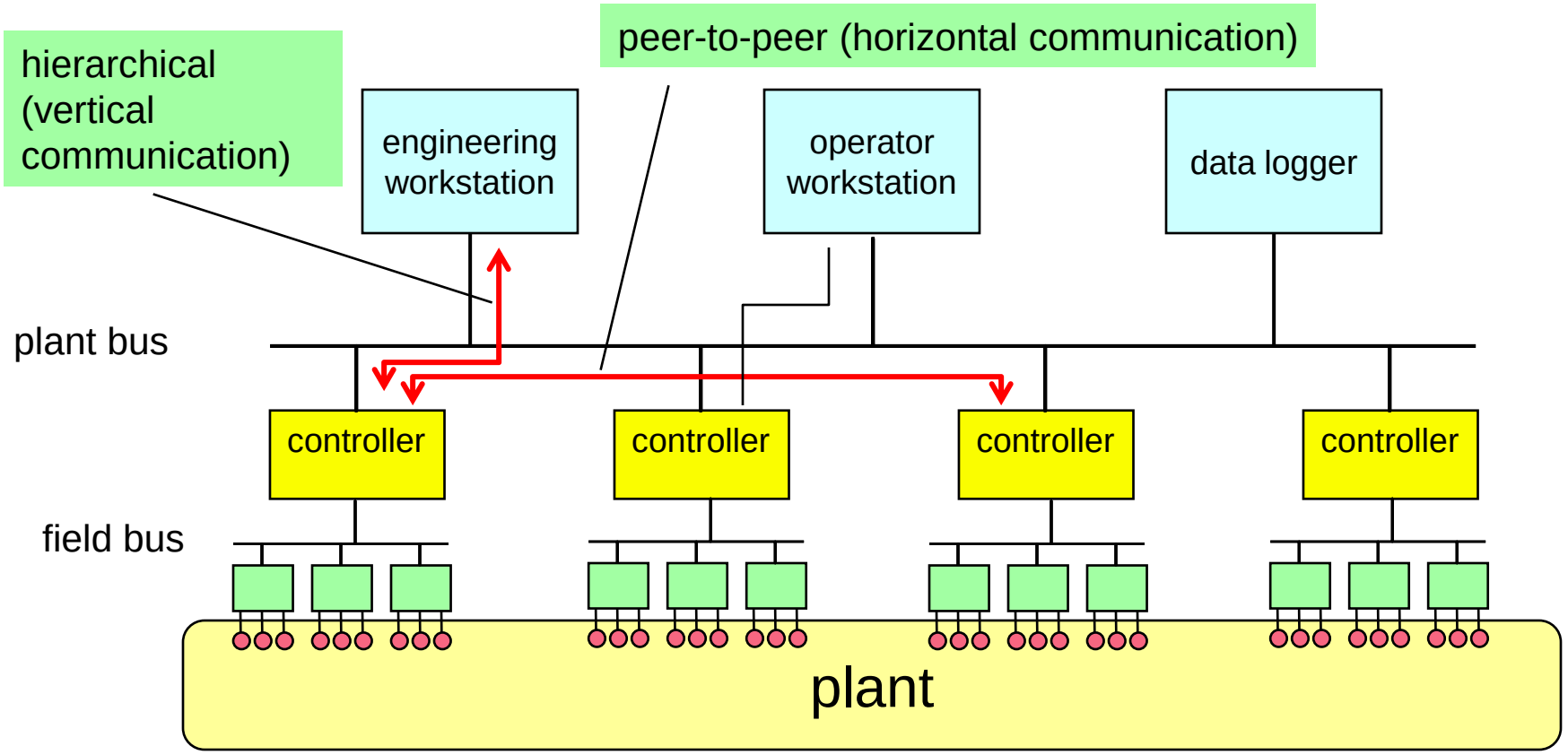
Centralized Control Architecture (classical)



Classical, hierarchical, centralized architecture.

The central computer only monitors and forwards commands to the PLCs

Decentralized Control System (DCS)



all controllers can communicate as peers (without going through a central master), restricted only by throughput and modularity considerations.

Note: Honeywell's "DCS™" stands for "Distributed Control System", it is not a decentralized control system, but a control system for the process industry.