

Open System view of Business Enterprise System: Informational and physical work systems

Vijay V. Mandke

Research Leader,

Center for Information Integrity Research,

Delhi Center: B-64, Gulmohar Park, New Delhi – 110 049,

Pune Center: Flat A-2, Nikash Skies, Someshwar Wadi, Pashan, Pune-4110 08

Visit us at: centerforinformationintegrityresearch.org

Information Integrity/Integrity Information System/Management Information System

Course Lecture # 18

2006-2007

Lecture # 18

Open System view of
Business Enterprise System:
Informational and physical work
systems

OVERVIEW

- Traditional Business Enterprise
- Systems representation of an automated production system producing "standard" product in high volumes
- Modeling a business process- A controls interpretation
- Shift from Energy based to Data-driven Technologies and its implications for business enterprises
- A systems representation of a generic business process modeled as integral to a closed loop information and control system
- Systems representation of computer-integrated business enterprise activities showing interrelationship between informational and physical work systems

Traditional Business Enterprise

- Seeking to produce only **‘standard’ product in high volumes**
- Characterized by control systems tuned to **‘fixed data/information decisions’**
- Strategic advantage sought by emphasizing **business objectives of operational optimization and cost efficiency**
- Carries computerized **information systems (IS) developed in isolation**; e.g., even if decision in product mix would certainly affect inventory investment, the production control application and inventory control application did not communicate with each other, the management emphasis being on integration minimization
- Requirement of business, therefore, in terms of **automation of functions of ‘hard’ components**, i.e., of ‘mechanical’ or ‘physical’ work wherein physical variables or rather material is transformed or processed or converted so as to add value to the product produced
- In other words, there is **no effort to optimize data or information for improved decision making.**

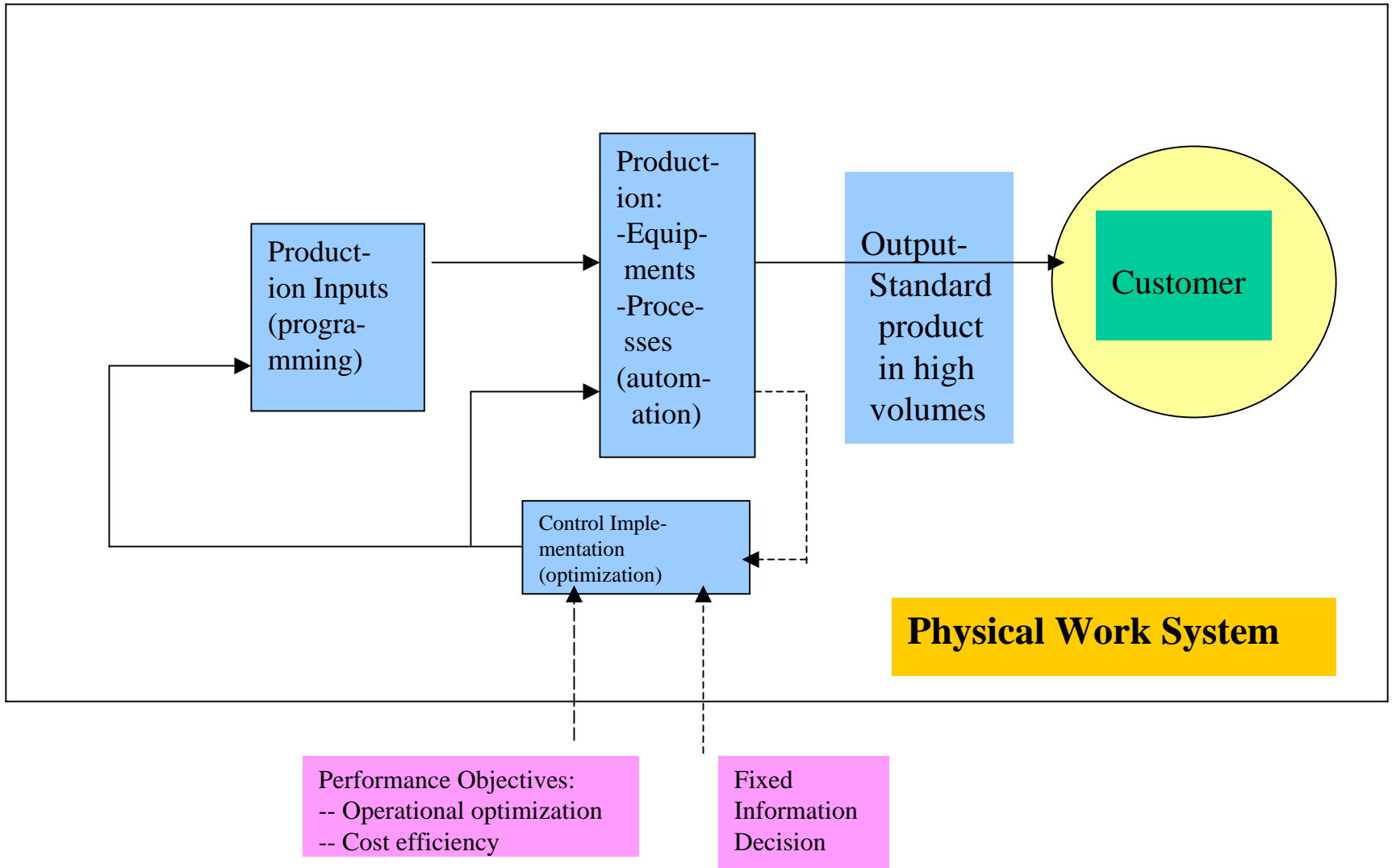


Figure: Systems representation of an automated production system producing "standard" product in high volumes

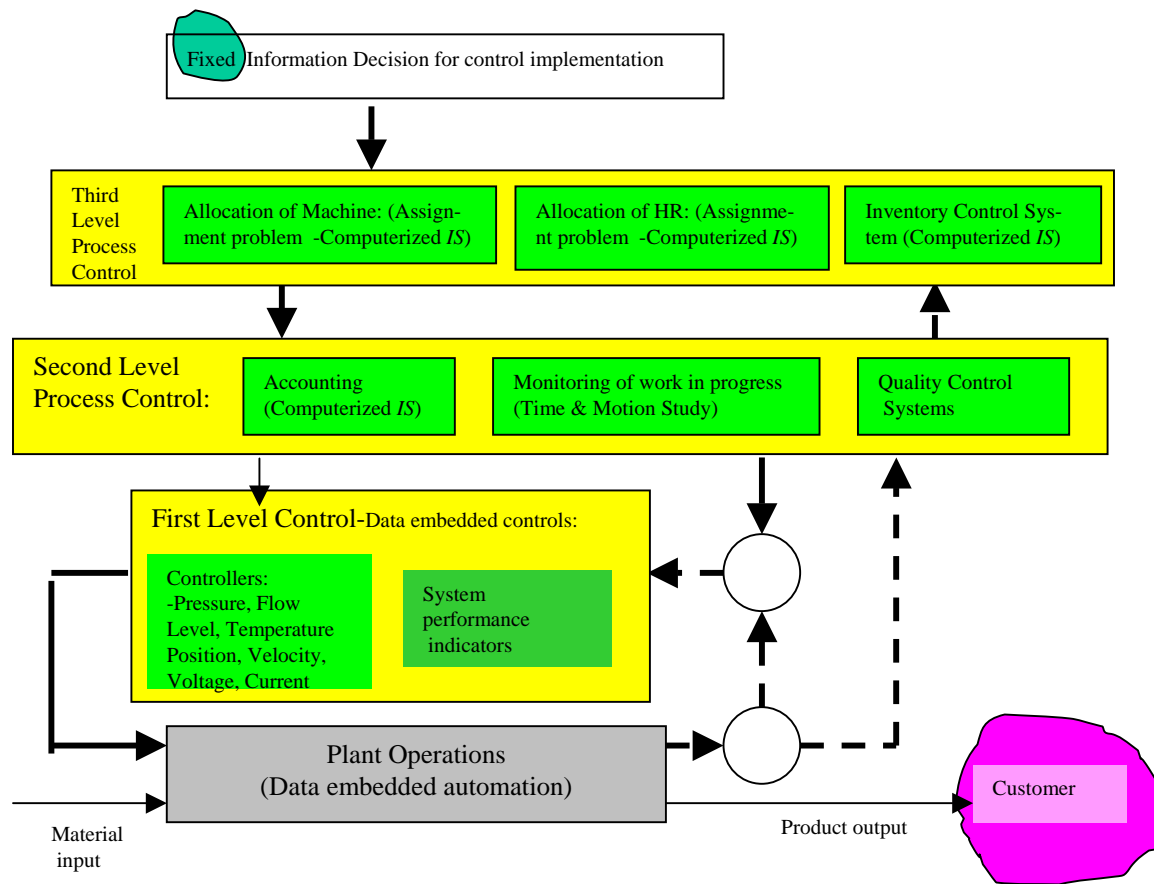


Fig.: Modeling a business process- A controls interpretation - 1

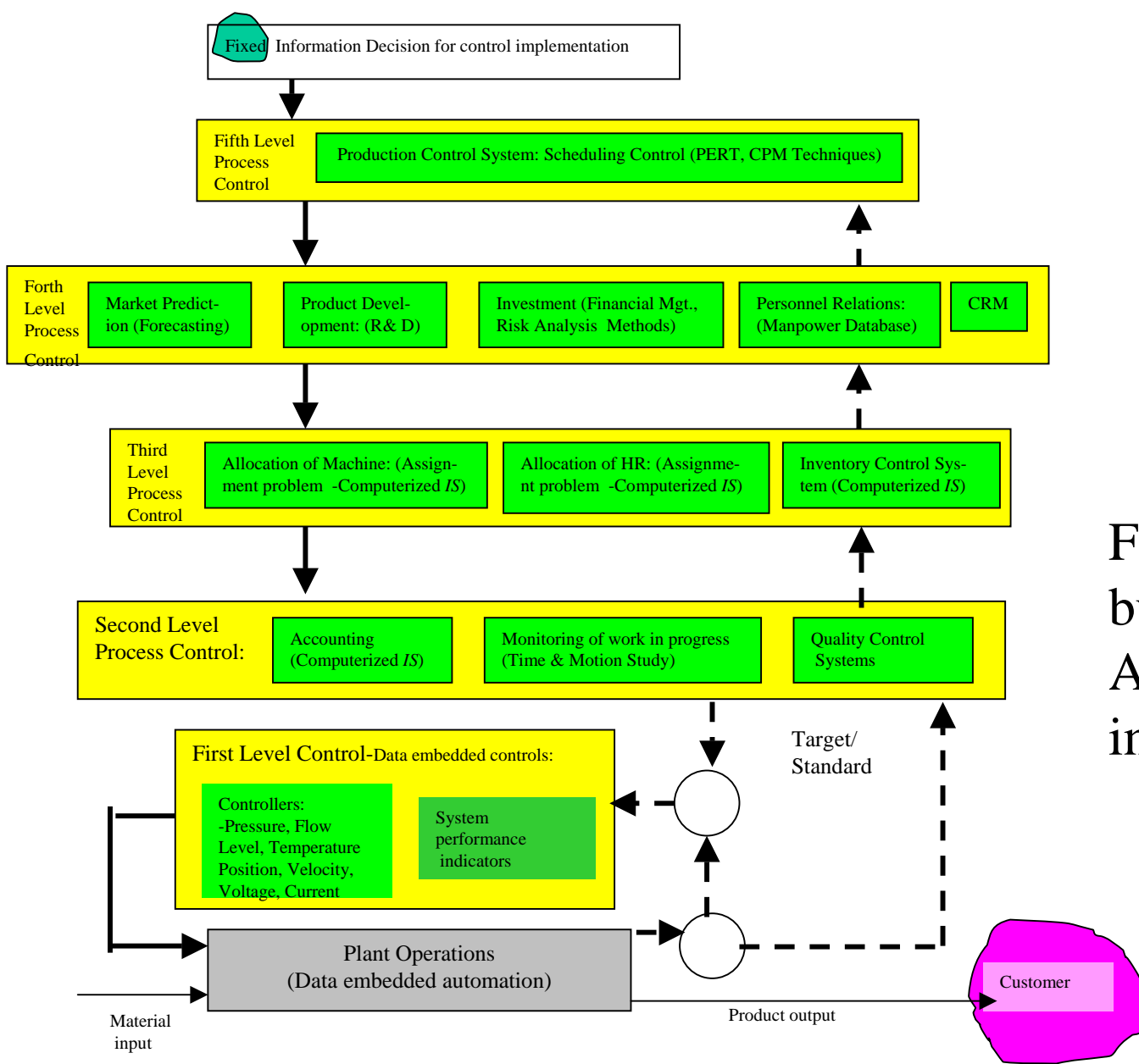


Fig.: Modeling a business process-
A controls interpretation -2

Shift from Energy based to Data-driven Technologies and its implications for business enterprises - 1

- **However, with the reality of Net and of the flow of digital data throughout an enterprise and with pressures of achieving business objectives of effectiveness and efficiency, the business enterprise has a further requirement for utilizing data/information decisions 'smarter.**
- **This calls for automation of 'informational work' carried out by the soft components of the enterprise, so as to deliver 'information decision ' in the form of information to add value to the product.**
- **As seen, this is a networked, computerized information system.**

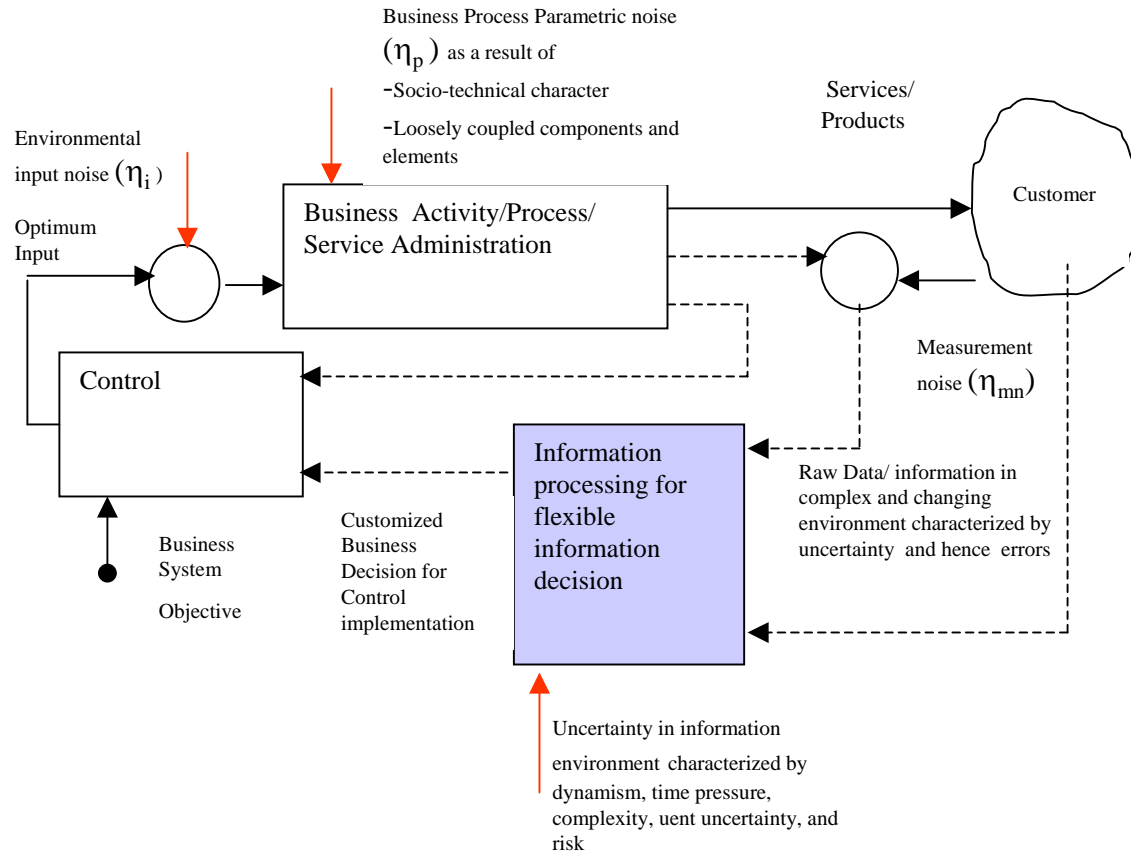


Figure: A systems representation of a generic business process modeled as integral to a closed loop information and control system.

Shift from Energy based to Data-driven Technologies and its implications for business enterprises - 2

- **This is an application of flexible automation** accounting for product innovation, customer needs -(product requirements) and constraints of costs and capabilities - a structural variant from inflexible automation of 1950s.
- Specifically, the flexible automation is becoming possible due to **(a)** availability of on-line computers, **(b)** computers providing capability for moment by moment optimization of processes and decision-making, and **(c)** availability of system integration capability so as to yield a computer integrated system for attaining business objectives (Figure (1)).
- What makes it possible now to '**put it all together**' in a total production and delivery system is technological reality of digital data as medium of information flow across the enterprise.
- Further, most importantly, **such systems can be applied to both hard** components of production like processes, machinery and equipment, **and soft components** like information flow and data bases --- the informational work systems.

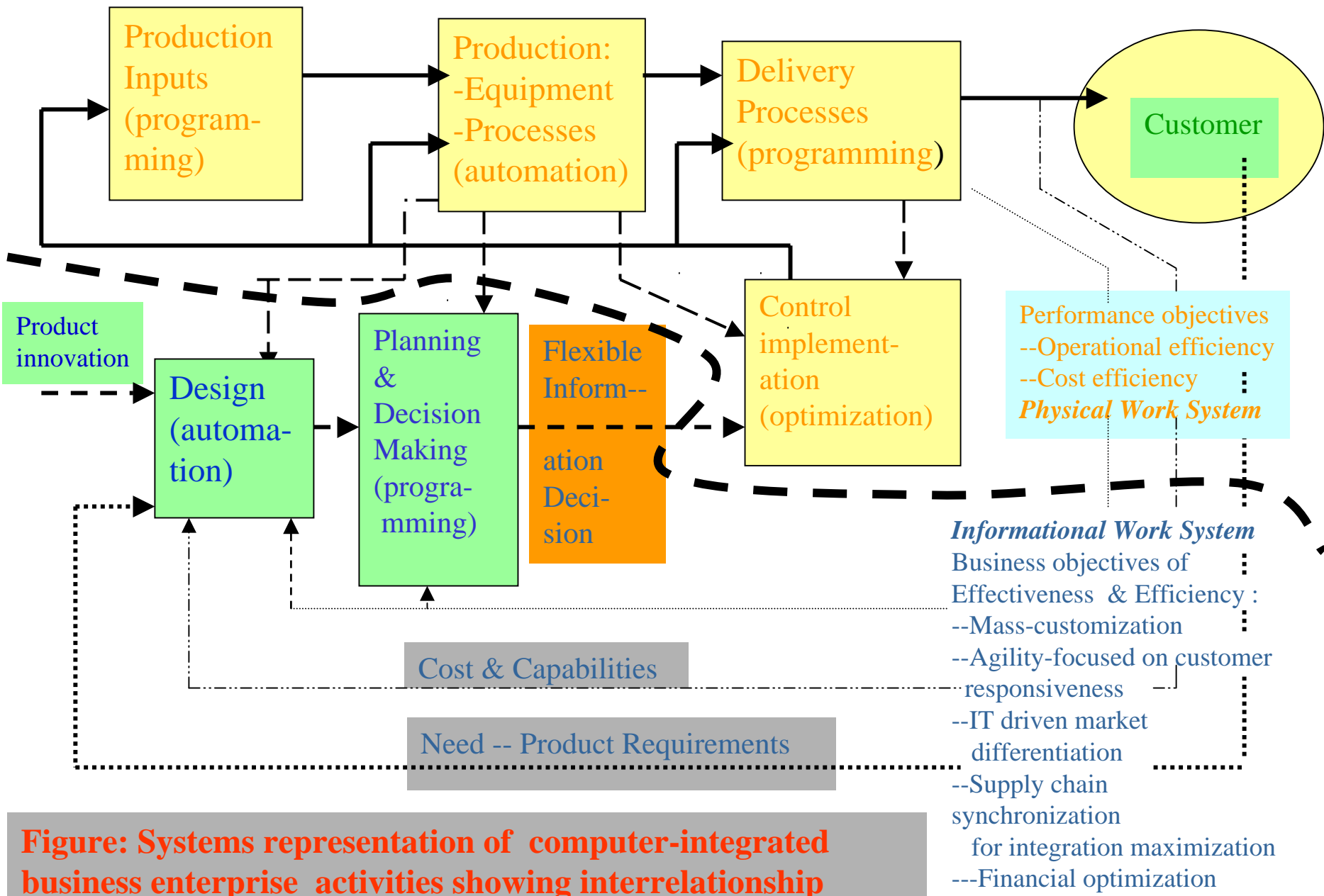


Figure: Systems representation of computer-integrated business enterprise activities showing interrelationship between informational and physical work systems

SUMMARY-1

- Traditional business models seeking to produce “standard” product in high volumes emphasize physical work systems. They have control systems tuned to ‘fixed data/ information decisions’ to ensure business objectives of operational optimization and cost efficiency, so as to achieve competitive advantage.
- However, with the technological shift in the form of the reality of the Net and the flow of digital data/information throughout the enterprise, the customer (external as well as internal) requirements are becoming increasingly instant and local.

SUMMARY-2

- This calls for automation of 'informational work' carried out by the soft components of the enterprise, so as to deliver 'flexible information decision' for control implementation and to add value to the product.
- Delivering the flexible information decision, i.e., flexible information is the act/process of information origination.
- For competitive advantage, this is requiring to pass on the control baton to controlling Information Integrity of the information origination process and the flexible information there from in the presence uncertainty.

EXERCISES-1

- (E15.1) “Successes in production automation precipitated various structured and periodic information processing control responses for “standard” product in high volume business models implemented in international market place”. Briefly explain.
- (E15.2) “With innovations in IT, the volume and speed of information processing and decision-making undergoing sharp increases, business enterprises for their competitive survival are looking for bigger business opportunities through delivering of products, systems and services designed for localized internationalism of market place”. Briefly explain.

EXERCISES-2

- (15.3) In traditional business model, why is there no requirement to optimize data or information for improved decision making?
- (E15.4) Develop a systems view of the physical work system under the business model.
- (E15.5) Develop a process controls' interpretation of the traditional business process model.

EXERCISES-3

- (E15.6) Develop a systems representation of a generic business process modeled as integral to a closed loop information and control system.
- (E15.7) What do you understand by the term “requirement to treat information decisions smarter”?
- (E15.8) What is informational work system? Why was it not possible to automate it earlier? What makes it possible now?

EXERCISES-4

- (E15.9) What is a soft component of the system? (Hint: Informational view makes a component soft.)
- (E15.10) Compare performance objectives of physical work system (*PWS*) and informational work system (*IWS*)?
- (E15.11) Develop a systems representation of computer-integrated business enterprise activities showing interrelationship between *IWS* and *PWS*.

THANK YOU