Linking Industrial Engineering and Enterprise Architecture to Create Business Value

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Outline

- Introduction
- EA Definitions, Concepts, Contributions
- IE Definitions, Concepts, Contributions
- EA and IE reinforcement to create Business Value
- Conclusion

Introduction

Business Value Today

- Not only by investing and managing physical, tangible assets

BUT

- The ability to mobilise and exploit its intangible or invisible assets (process / people / knowledge).

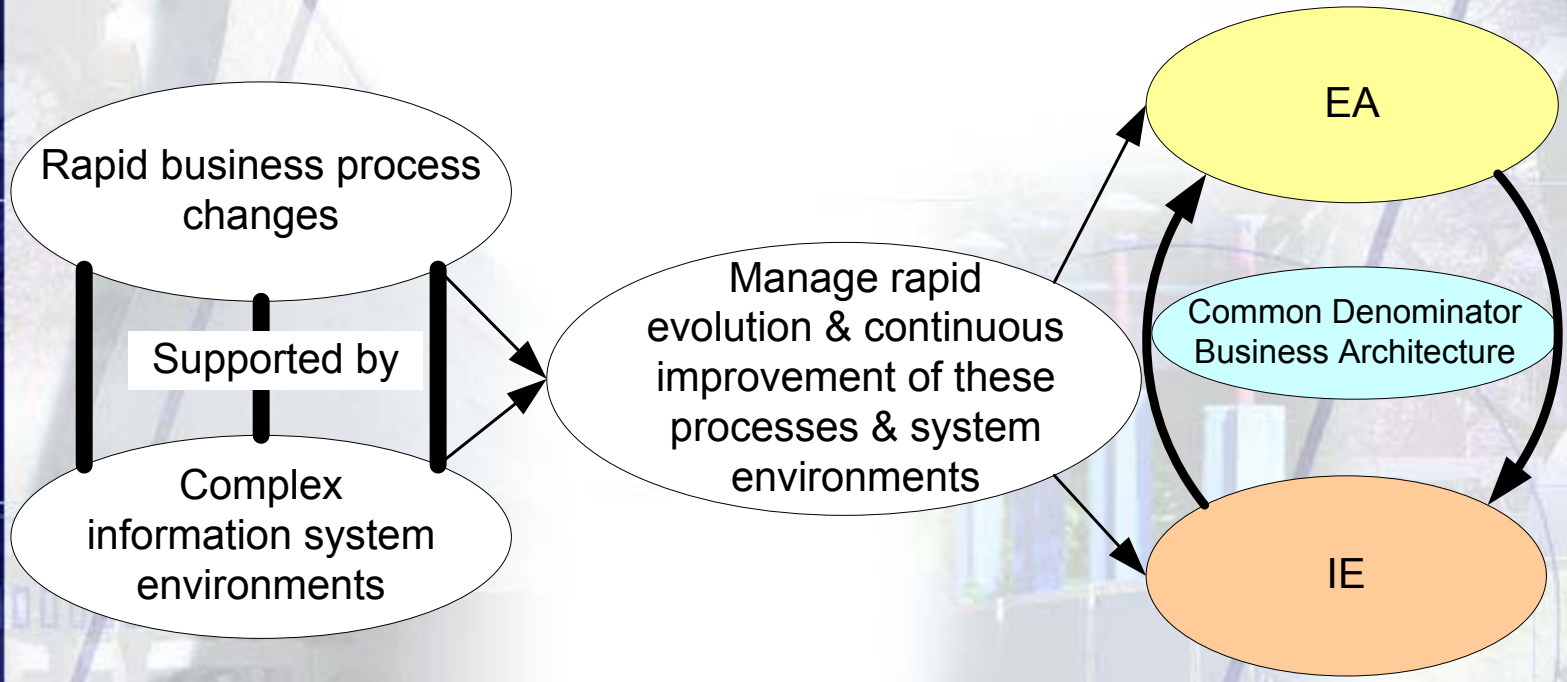
Rapid Change

- In the 1970s and 1980s, business processes were redesigned roughly once in every seven years.
- In the 1990s the rate of change started to increase rapidly and information systems lagged behind. Today IT departments struggle to keep up with the rapid change of business processes (Wagter *et al*, 2005).

Increasing Complexity

- Centralisation era (mainframe period)
- Decentralisation era
- ERP (Enterprise Resource Planning) era
- TODAY – era of mergers, acquisitions, increasing complexity

Introduction



EA Roots

- EA is still an emerging domain, with roots in Organisational Theory and Systems Theory.

Contributing Fields
Psychology
Sociology
Political Science
Public Administration

Emerging Fields
Information Resources Mgmt
Information Security
Enterprise Architecture
Records & Data Mgmt

Contributing Fields
Engineering
Computer Science
Business Administration
Operations Research

Contributing Concepts
Beliefs
Values & Ethics
Leadership
Culture
Language & Meaning
Competition
Bureaucracy

Emerging Concepts
System Lifecycle Development
Information Assurance
IT Program Mgmt
Knowledge Mgmt
IT Capital Planning
E-Government & Commerce
Digital Divide

Contributing Concepts
Process
Technology
Management
Quality
Environment
Reengineering
Risk

Source: S. Bernard, 2004

EA Definitions

- Literature provides numerous definitions. These all refer to the holistic approach required in viewing business strategy, business processes and IT capabilities.

Ross *et al* (2006, p48) in their book 'Enterprise Architecture as strategy', uses a top-down approach in defining EA as:

> "…the high-level logic for business processes and IT capabilities." Also: "The objective of the enterprise architecture is not so much to achieve a particular end state as it is to serve as a blueprint for the company's direction."

Handler (2004) also highlights the top-down approach when defining EA as a process:

> "It is a process of decomposing loose business strategies and requirements into meaningful operational design - of systems, of processes, of information, and of infrastructure."

EA Definitions…

Some emphasise the processes, tools and structures in creating EA's.

e.g. Kaisler et al (2005, p1):

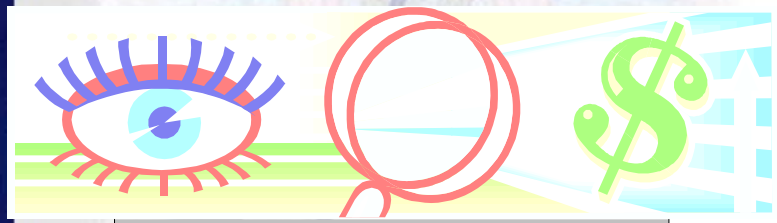
> "Enterprise Architecting is the set of processes, tools, and structures necessary to implement an Enterprise-wide coherent and consistent IT architecture for supporting the enterprise's business operations. It takes a holistic view of the enterprise's IT resources rather than an application-by-application view."

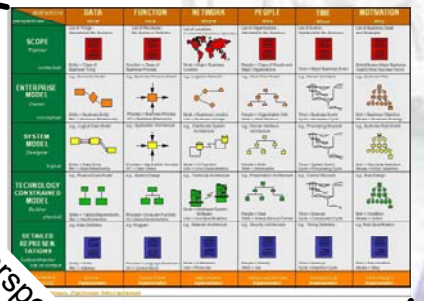
Another group highlights the interaction between different systems and components, as well as the principles governing the design and evolution of systems.

e.g. Theuerkorn (2005, p7)

> "How systems and their components interact and their relationships to other systems and their components, and the principles governing the design and evolution of all the systems, constitute the domain of enterprise architecture."

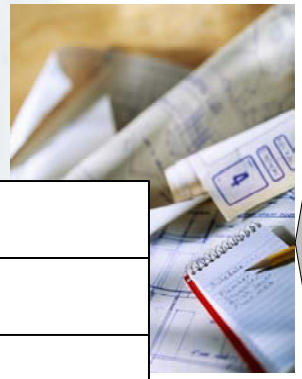
EA Concepts – EA Program

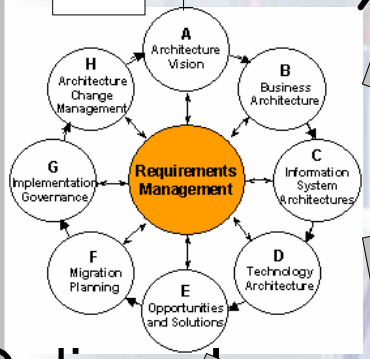




Various Perspectives

Strategy





Deliverables

Enterprise Principles

EA – Primary Contribution

- According to Boar (1999) there are only five generic ways of building advantage in a business:
  - **Cost.** Providing products / services cheaper.
  - **Differentiation.** Creating a product / service that offers highly desirable features or functionality.
  - **Focus.** Meeting the explicit needs of a particular customer.
  - **Execution.** Permitting one to service customer needs better than others.
  - **Manoeuvrability.** Being able to adapt to changing requirements quicker than the competitors.
- EA provides the potential to reduce cost (IT costs, e.g. integration costs, eliminating duplicating technologies).
- EA supports differentiation, customer focus and execution.
- The most important contribution – to enable manoeuvrability / the ability to change swiftly in terms of IT Capability.

Creating Agility – HOW?

- Simplifies and directs decision-making by providing coordinated views of the entire enterprise (creating guidelines and standards).
- Provides a better understanding of the effects of changes and pro-actively creates roadmaps for the future.
- Aims to prevent the building of silos that result in more time and cost to integrate. Integration being demanded by new initiatives in every industry to improve business processes. Progressively building a system landscape that is more manoeuvrable.
- Improves the efficiency of communication between different stakeholders, lowering the complexity barrier.

IE Definitions

- Industrial Engineering (IE) is about the analysis, design, planning, implementation, operation, management and maintenance of integrated systems.
- The main aim: Increase Organisational Performance / Bottom Line Results.
- Sperotto defines Modern Industrial Engineering as follows:

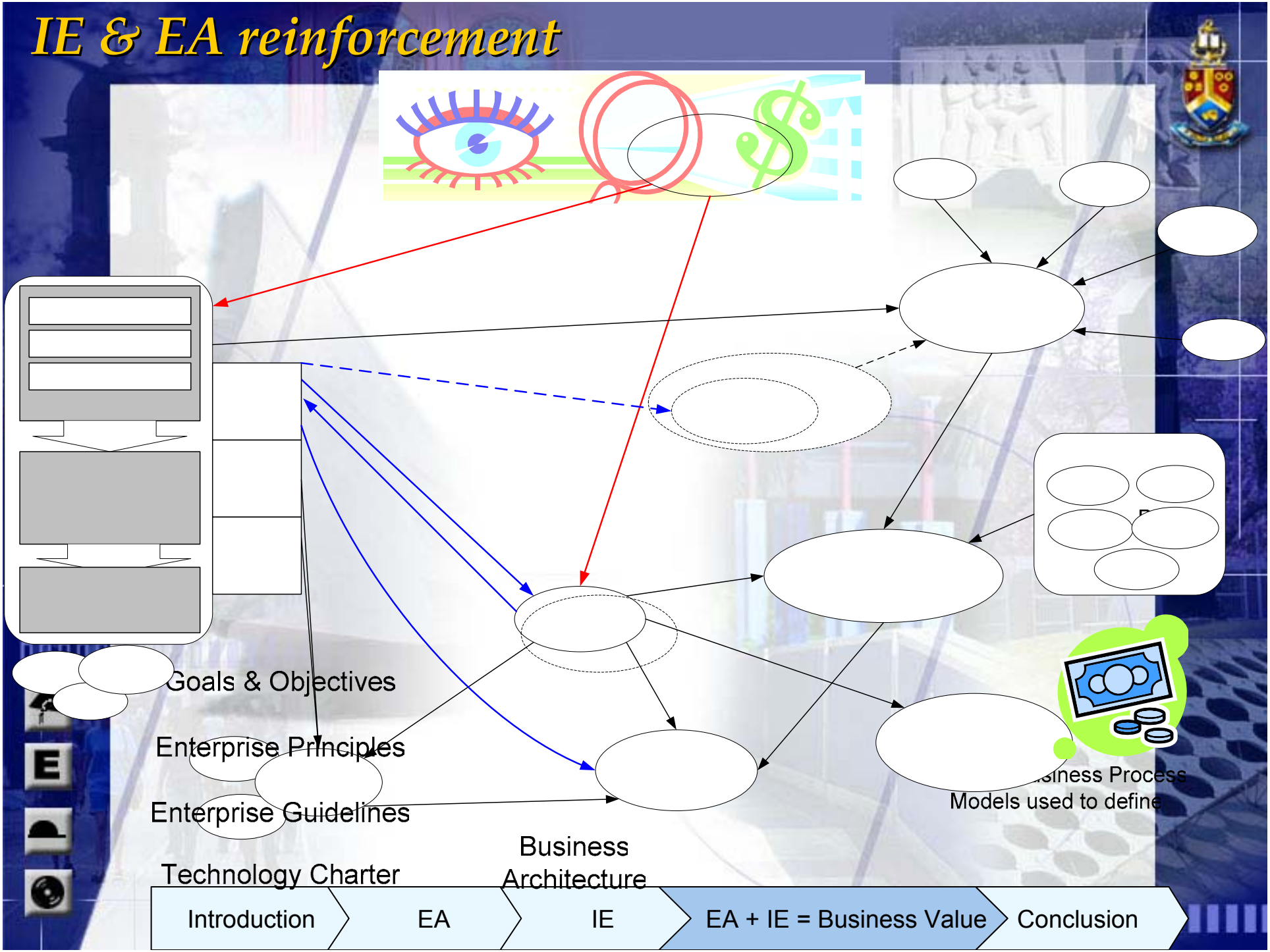
  "… being concerned with the integration of resources and processes into cohesive strategies, structures and systems for the effective and efficient production of quality goods and services".

  1. IE endeavours thus require a **holistic / systems view**,
  2. concerned with **resources** (including IT resources) and **processes**,
  3. through **effective** ('doing the right things') and **efficient** ('doing things right') production of BOTH quality goods and services.
- IE improvement initiatives that involve IT technology (IT being a resource) thus need to incorporate organisational strategy (ensuring effectiveness) and EA (for global optimisation).

IE Initiatives (Process Improvement)

- Following the Problem-solving approach:
  1. Identify the current inefficiencies (by analysing and measuring current systems).
     - Are we doing the right things?
     - Are we doing things right?
  2. Investigate problem-solving/improvement options/ opportunities and assess feasibility. Should automation be included?
  3. Engineer the to-be system (including to-be processes).
  4. Implement the to-be system.
     - Develop (and document) standard procedures.
     - Set new performance measures.
     - Implementation of the system (including processes).
  5. Measure performance improvement.

IE & EA reinforcement



IE and EA in creating Business Value

- IE and EA reinforce one another and are also dependent on one another.
- EA
  - Fast-tracks improvement projects in general (especially the initiation phase).
  - Provides a roadmap towards evolution of technology landscape, aligned with business strategy (for projects that require ITC).
  - Contributes to the ability to change business processes rapidly.
  - Provides IT capabilities that contributes to the **long-term objective** of profitable revenue growth.
- IE
  - Co-creates EA by engineering BA deliverables. BA deliverables (e.g. process models) could feed EA projects (e.g. SOA).
  - Focusing on operational processes, productivity improvement efforts usually lead to **short term financial improvement**.
  - BA deliverables are embedded into daily operations.

Conclusion

- Both EA and IE have a holistic / systems view, supporting global, rather than local optimisation. EA provides this global perspective (especially in terms of the technology landscape evolution).
- Both disciplines recognise the business value of strategy alignment (‘doing the right things’).
- Both domains support and reinforce one another in the rapid evolution of improved processes and information systems.
- Used in combination, they contribute to **both short-term financial improvement** as well as **long-term profitable revenue growth**.

Questions/Discussion