Security Architecture
- Week 8 -

Enterprise Architecture

Week 8

- Topics in-the-news
- Week 8 assignment:
  - RBAC vs ABAC
- Lecture: Enterprise Architecture
- Quiz

Enterprise Architecture

Enterprise architecture (EA) is a discipline for proactively and holistically leading enterprise responses to disruptive forces by identifying and analyzing the execution of change toward desired business vision and outcomes.

- Gartner

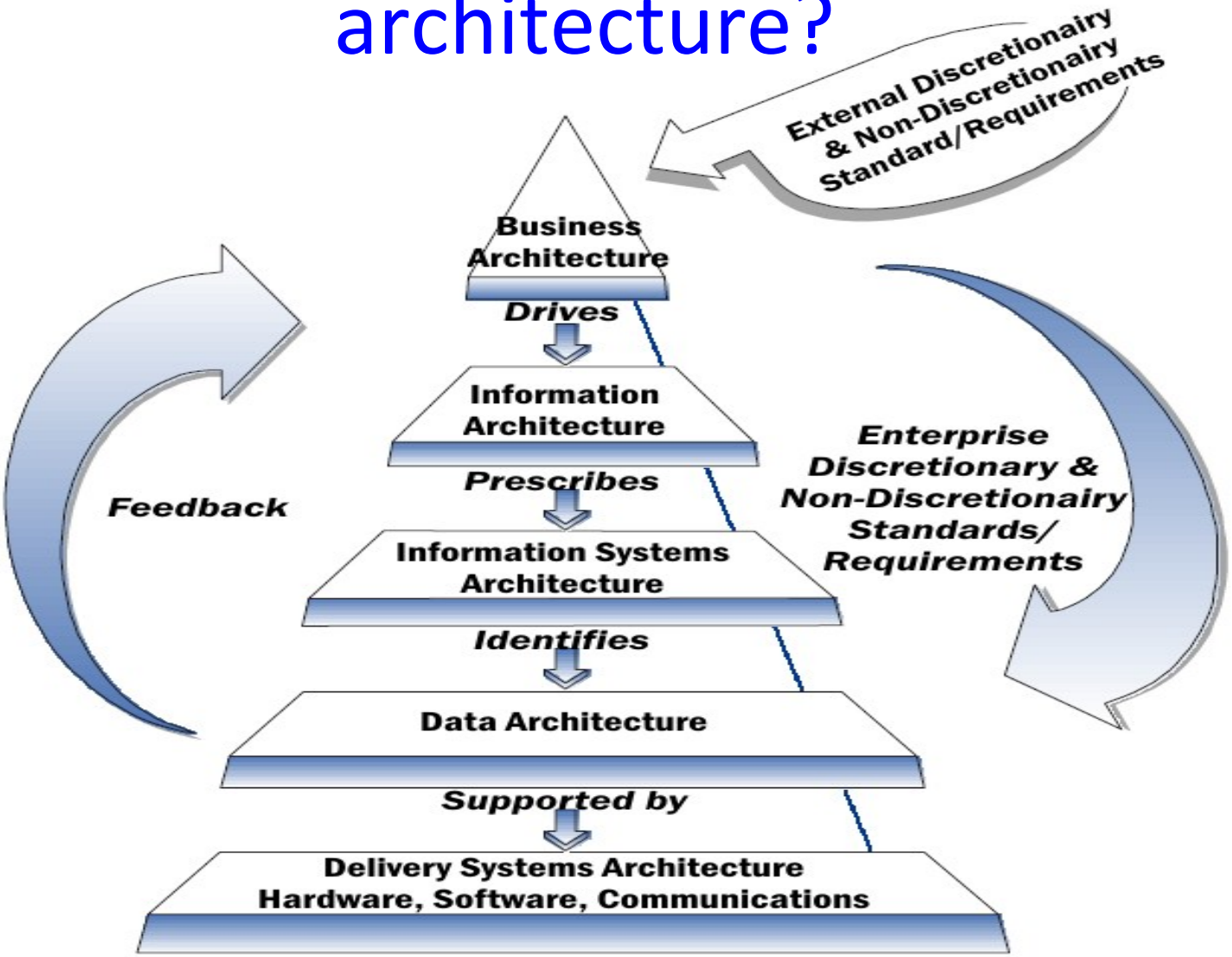
What do we mean by enterprise architecture?

- What do we mean by enterprise architecture
- Evolution of enterprise computing
- Architectural components
- Process Orientation
- Federal and NIST standards
- Advantages of Enterprise Architecture
- Limitation and vulnerabilities

What do we mean by enterprise architecture?

Microsoft's Michael Platt offers a view of enterprise architecture as containing four points-of-view called the business perspective, the application perspective, the information perspective and the technology perspective.

What do we mean by enterprise architecture?



NIST

What do we mean by enterprise architecture?

- Business perspective
- Application perspective
- Information perspective
- Technology perspective

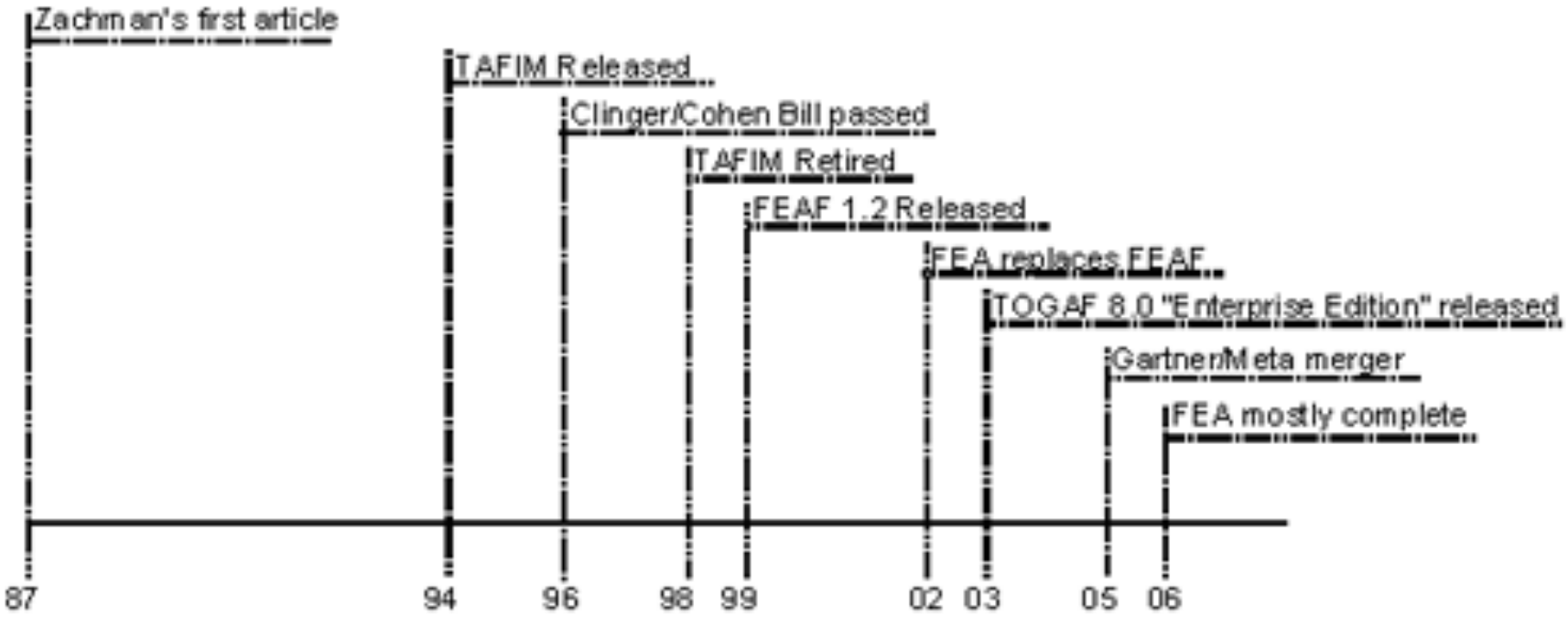
Evolution of Enterprise Architecture

Why discuss this?

- Enterprise security parallels the evolution of enterprise architecture

- formal versus informal history

Formal History



- Microsoft

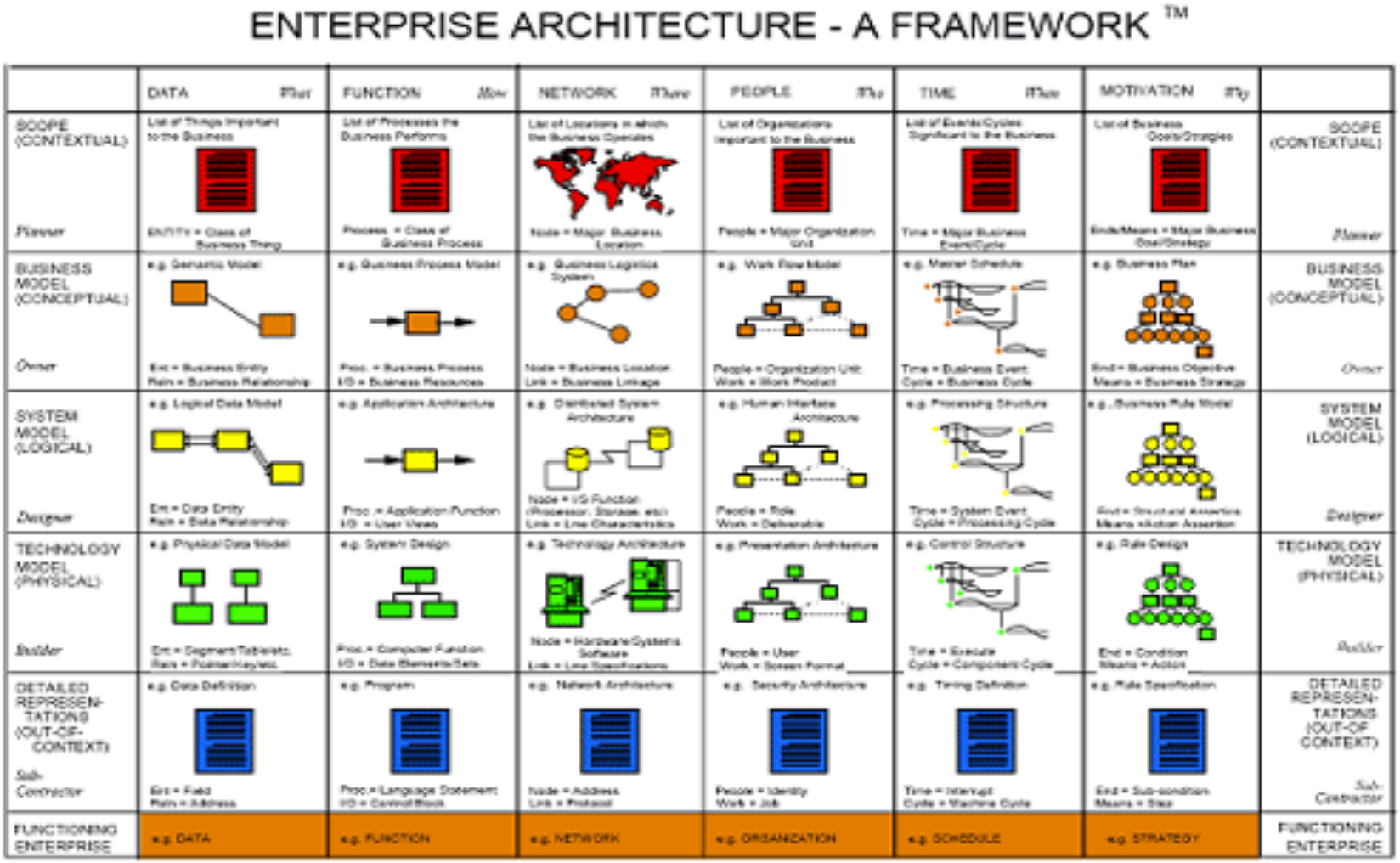
Informal History

- Software vendors like Hogan Systems started building Enterprise systems for financial institutions in the mid-1980s
  - Security was at the application and database level
  - PC/terminal sessions identified specific system users by username and password
- Networks were still mostly private business communications systems. The internet existed but was mostly used by students, academics, government and for inter-company email
  - So, things were mostly locked down and local
- Increasing use of the internet (ISPs) during the 90s
  - Separate parts of company integrated with available broadband (fiber build out)
  - Manufacturing systems started integrated supply chain functions
- Risks of an interconnected world with an enterprise architecture that connects the entire supply chain

Implications for Security Architecture

- Evolved from a period of isolation
  - Isolated systems
  - Isolated networks
  - Private networks
- Adapting to complex connectivity context
  - Perimeter security orientation
  - Evolving application and “object” security
  - Move toward predictive analytics and advanced detection and response

Architectural Components



See www.ZachmanInternational.com for 2005 Zachman Framework Standards

Security applied across the Zachman Framework

ELEMENT	SECURITY COMPONENT(S)
Data	Elemental Data control through database and application acess control systems
Function	Application specific restrictions to tools and functions based on application level Access Control Language
System	System logon controls through ID/Password and two factor authentication processes
Technology	Device specific access controls – examples, WiFi encryption, MDM systems, identity security appliances
People	Identity Management Systems, Behavior-based access controls, predictive analytics
Time	Time-based data sensitivity classification, timed access permissions

Movement toward "Process Orientation"

- Inter-connected world allows for processes that expand beyond:
  - Company departments (accounts payable/sales)
  - Company operations (order management/production planning
  - Supplier management (integrated supply chain/ JIT materials)
  - Dis-intermediated customer relationships (distributors versus direct client sales)

- What is the "perimeter?"
  - Vendor systems
  - Customer systems
  - Mobile devices
  - The internet

NIST and Other Standards

- Defense industry frameworks
  - DOD
  - Individual services
- Intelligence community frameworks
  - CIA
  - NSA
- Other Government frameworks
  - NIST
  - FEA
- Open-source frameworks
  - TOGAF
- Proprietary frameworks
  - IBM/Oracle reference architectures

Advantages of Enterprise Architecture

- Strategic perspective
- Opportunity for holistic approach
- Can evolves with advances in technologies
- Supported with well documented formal frameworks
- Well understood and tested appraoch

Limitations of Enterprise Architecture

- Legacy of perimeter security
- Slow to respond to rapid changes in technology
- Can never fuller anticipate impact changing customer expectations
- Expensive to document and maintain
- Can become a mission in itself

Quiz