



# Information Assurance For Enterprise Engineering (IAFEE)

Jody Heaney

703-983-5837 • [heaney@mitre.org](mailto:heaney@mitre.org)

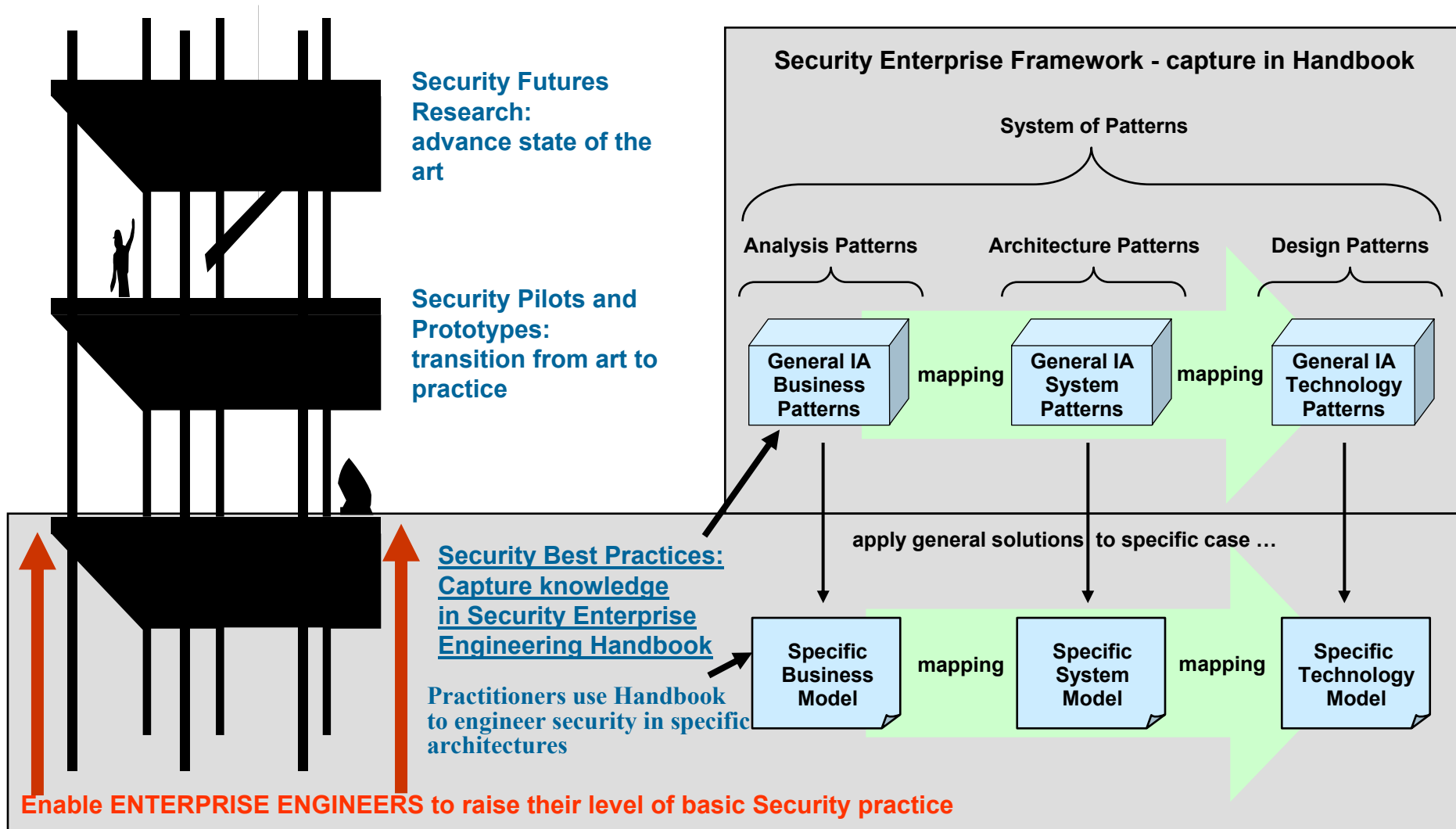
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# Problem

- **Security (called information assurance or IA in some communities) is a critical national problem**
- **Enterprise frameworks and architectures (EAs) are to be used to manage IT and IT investments (Clinger-Cohen and OMB A-130)**
- **Today, security is not effectively included in frameworks and EAs, and not well integrated into system architectures or designs**

# Background



# Objective

- **Capture common security solutions across full range of enterprise engineering views and perspectives**
  - Address full spectrum from high-level concepts to lower level instantiations
  - Define security solutions across all enterprise and system perspectives
  - Make solutions available in an architect's representation (*accessibility*)
- **Integrate solutions in a *Security Enterprise Engineering Handbook* to guide engineering practitioners**










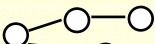
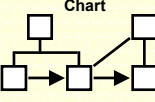
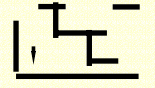


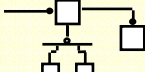
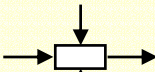
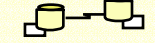
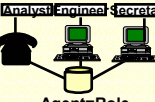
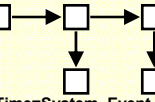
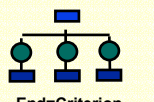
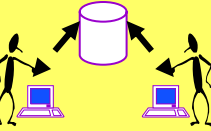






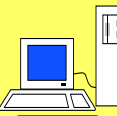
# Activities

- (1) Concepts associated with Security View and Plane for Zachman Framework**
  - Draft pattern trees per area to capture relation of patterns to each other and with corresponding level of framework**
- (2) Refined pattern template used to capture best practices**
  - Such patterns support the decision-making process inherent in architecture development**
- (3) Initial draft patterns focused on basic areas of any security taxonomy and security for the enterprise**
  - Identification and authentication (I&A), accounting (e.g., auditing, reporting), access control (e.g., access control and authorization)**
  - Enterprise security concerns (root patterns)**
- (4) Draft sections of IA Enterprise Engineering Handbook**
- (5) Two papers and one lessons learned panel presented in refereed forums**
- (6) Editing/contributing to book on Security Patterns, by community request**
- (7) Part of workshop technical committee, by community request, extending use of patterns**

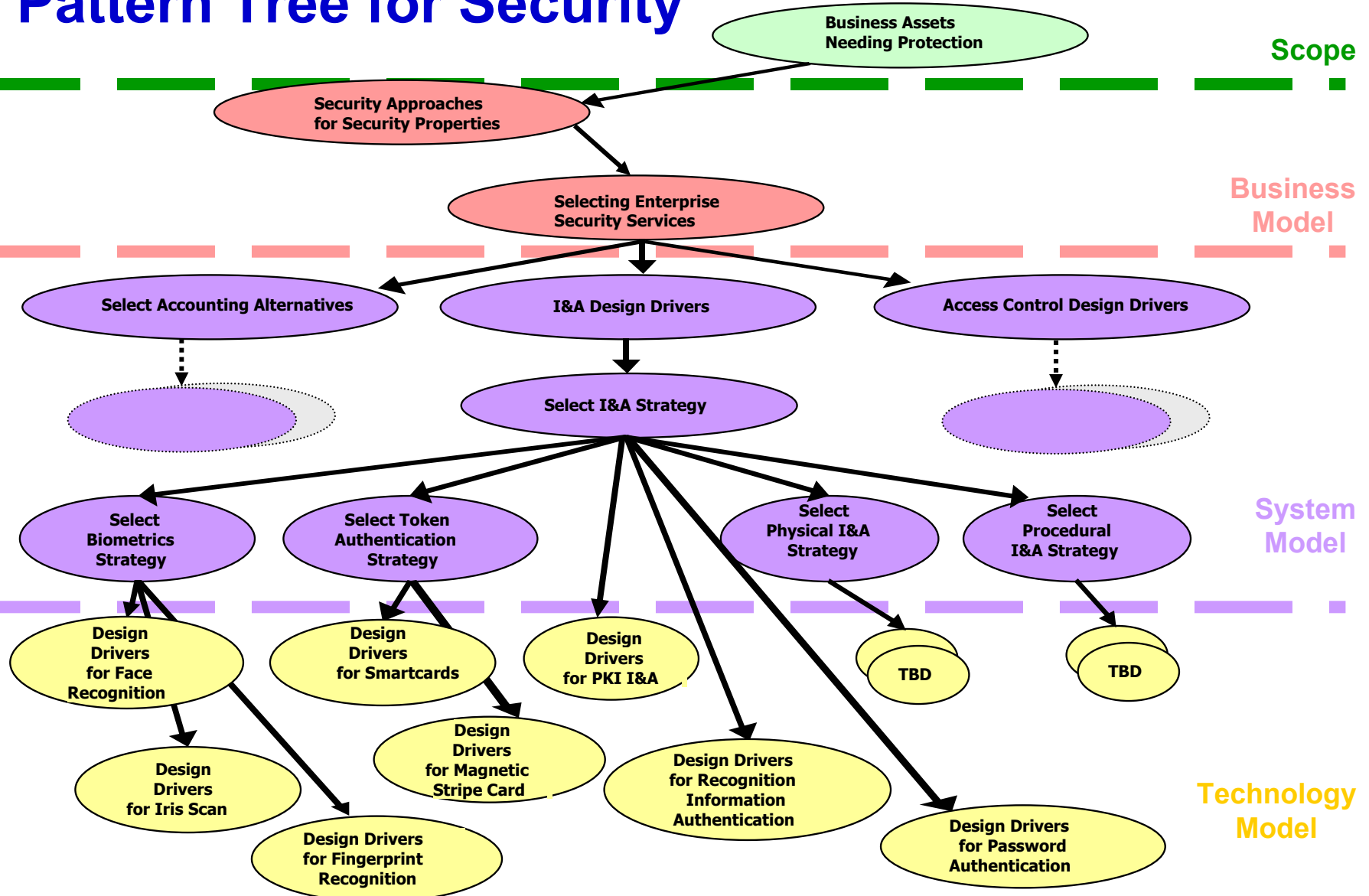
# Highlight Security Added to Zachman Framework

The rigor of an architecture framework facilitates incorporating security across the spectrum of system planning and engineering activities.

Zachman Framework\* →

	Data View	Function View	Network View	People View	Time View	Motivation View	Security View
Scope	List of Things Important to Business  Entity=Class of Business Thing e.g., Entity Relationship Diagram	List of Processes the Business Performs  Function=Class of Business Process e.g., Function Flow Diagram	List of Locations Important to Business  Node=Major Business Location e.g., Logistics Network	List of Organizations Important to Business  Agent=Major Org Unit e.g., Organization Chart	List of Events Significant to Business  Time=Major Business Event e.g., Master Schedule	List of Business Goals/Strategies  End/Mean=Major Business Goal/CSF e.g., Business Plan	 NAME ?
Business Model	Ent=Business Entity Rel=Business Rule e.g., Data Model 	Function=Business Process e.g., Data Flow Diagram 	Node=Business Location Link=Business Linkage e.g., Distributed System Architecture 	Agent=Org Unit Work=Work Product e.g., Human Interface Architecture 	Time=Business Event Cycle=Business Cycle e.g., Processing Structure 	End=Business Objectives Means=Business Strategy e.g., Knowledge Architecture 	 PROOF OF IDENTITY
System Model	Entity=Data Entity Relationship=Data Relationship e.g., Data Design 	Func=Appl Function Arg=User Views e.g., Structure Chart 	Node=Info Sys Funct Link=Line Char e.g., System Architecture 	Agent=Role Work=Deliverable e.g., Human/Technology Interface 	Time=System Event Cycle=Processing Cycle e.g., Control Structure 	End=Criterion Means=Option e.g., Knowledge Design 	
Technology Model/ Detailed Representations	Entity=Segment/Row Relationship=Pointer/Key e.g., Data Definition Description  Ent=Fields Rel=Addresses	Func=Computer Funct Arg=Screen/Device Formats e.g., Program  Funct=Language Stmt Arg=Control Blocks	Node=Hardware/System Software Link=Line Specification e.g., Network Architecture  Node=Addresses Link=Protocols	Agent=User Work=Job e.g., Security Architecture  Agent=Identity Work=Transaction	Time=Execute Cycle=Component Cycle e.g., Timing Definition  Time=Interrupt Cycle=Machine Cycle	End=Condition Means=Action e.g., Knowledge Definition  End=Subcondition Means=Step	 SMART CARD

# Demonstration Pattern Tree for Security



# Impacts

- **Incorporated in DoD Architecture Framework**
  - Security information to be considered
  - When to be considered and by whom
  - Adding security information to appropriate architecture products
- **Increase ability to address Security in Federal Enterprise Architecture Framework (FEAF) and others**
- **Help engineers address OMB Circular A-130**
- **Mitigate shortage of skilled security personnel by providing Security Engineering Basics Handbook**
- **Reach broader audience through international collaboration on Security Patterns book**

# Future Plans

## Complete Security Patterns and Integrate in Handbook

### Pattern Template

### Security Enterprise Eng. Handbook

- Pattern Name
- Problem Addressed
- Context/Circumstances
- Forces/Considerations
- Solution
- Resulting Context
- Examples
- Rationale/Benefits
- Related Patterns
- Known Uses



**Zachman Framework\***  
Scope

	Data View	Function View	Network View	People View	Time View	Motivation View	Security View
<b>Business Model</b>	List of Things Important to Business Entity=Class of Business Thing	List of Processes the Business Performs Function=Class of Business Process	List of Locations Important to Business Node=Major Business Location	List of Organizations Important to Business Agent=Major Org Unit	List of Events Significant to Business Time=Major Business Event	List of Business Goals/Strategies End=Means=Major Business Goal/CSF	
<b>System Model</b>	e.g. Entity Relationship Diagram Ent=Business Entity Rel=Business Role	e.g. Function Flow Diagram Function=Business Process	e.g. Logistics Network Diagram Node=Business Location Link=Business Link	e.g. Organization Chart Agent=Org Unit Work=Business Unit	e.g. Master Schedule Time=Business Event Cycle=Business Cycle	e.g. Business Plan End=Business Objectives Means=Business Strategy	
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	e.g. Data Definition Description Ent=Fields Rel=Addresses	e.g. Program Funct=Language Stmt Arg=Control Blocks	e.g. Network Architecture Node=Address Link=Protocols	e.g. Security Architecture Agent=Identity Work=Transaction	e.g. Timing Definition Time=Interrupt Cycle=Machine Cycle	e.g. Knowledge Definition End=Subcondition Means=Step	

\* Zachman Institute for Framework Advancement

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