PRODUCT SCOPING

AWARENESS™ METHODOLOGY TO BOUND AND MANAGE THE PRODUCT DEVELOPMENT LIFECYCLE

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Independent of the lifecycle methodology … the architect owns the product design and vision.

- As the architect you should be asking the same questions…
  - What should the product do? What should the product NOT do?
  - Why should features or functionality be added/changed/removed?
  - When should features be delivered?
  - Will the product perform as expected? Did the product perform as expected?
  - How much money, resources, headcount is required?

- As the architect you should be prepared to answer the questions which will inevitably come from upper management .
  - Description… What do you want from me, and why do you want it ?
  - Calendar … When do you want it ?
  - Money… How much will it cost/save/make me ?
  - Headcount … Do we need new people ?

Aggressive schedules and budgets along with demanding customers and investors mandate that the right product must be delivered.

- The Architect should help all stakeholders* define and communicate well-defined product boundaries… and use the product scope to plan for and measure success.

*executives, customers, product managers, architects, marketing manager, testers, system integrators, subcontractors, etc.

The Challenge

Too few or too many requirements (wrong, under or over scoped requirements) are risky and costly.

Call to Action

Employ the AWAREness methods to plan strategic functional, stakeholder, and use boundaries as well as product plans.

The Goal State

The product scope clearly defines strategic boundaries for efficient requirements acquisition, product development and delivery.

Who are the stakeholders responsible for defining the Product Scope?

- Respected Product Drivers are stakeholders who are:
  - In the critical path – technical and fiscal.
  - Visionary – capable of forecasting.
  - Experts in their given area.
  - Champions – can affect change on your behalf throughout the product lifecycle.

How will you gather input from these stakeholders to define Product Scope?

□ Individual Interviews? Or Workshop of selected influencers?

□ When?

Define Product Scope to specify the boundaries and **expectations** for the envisioned system.

What is the source of ALL conflict?

The AWAREness methodology outlines four key elements to define Product Scope:.

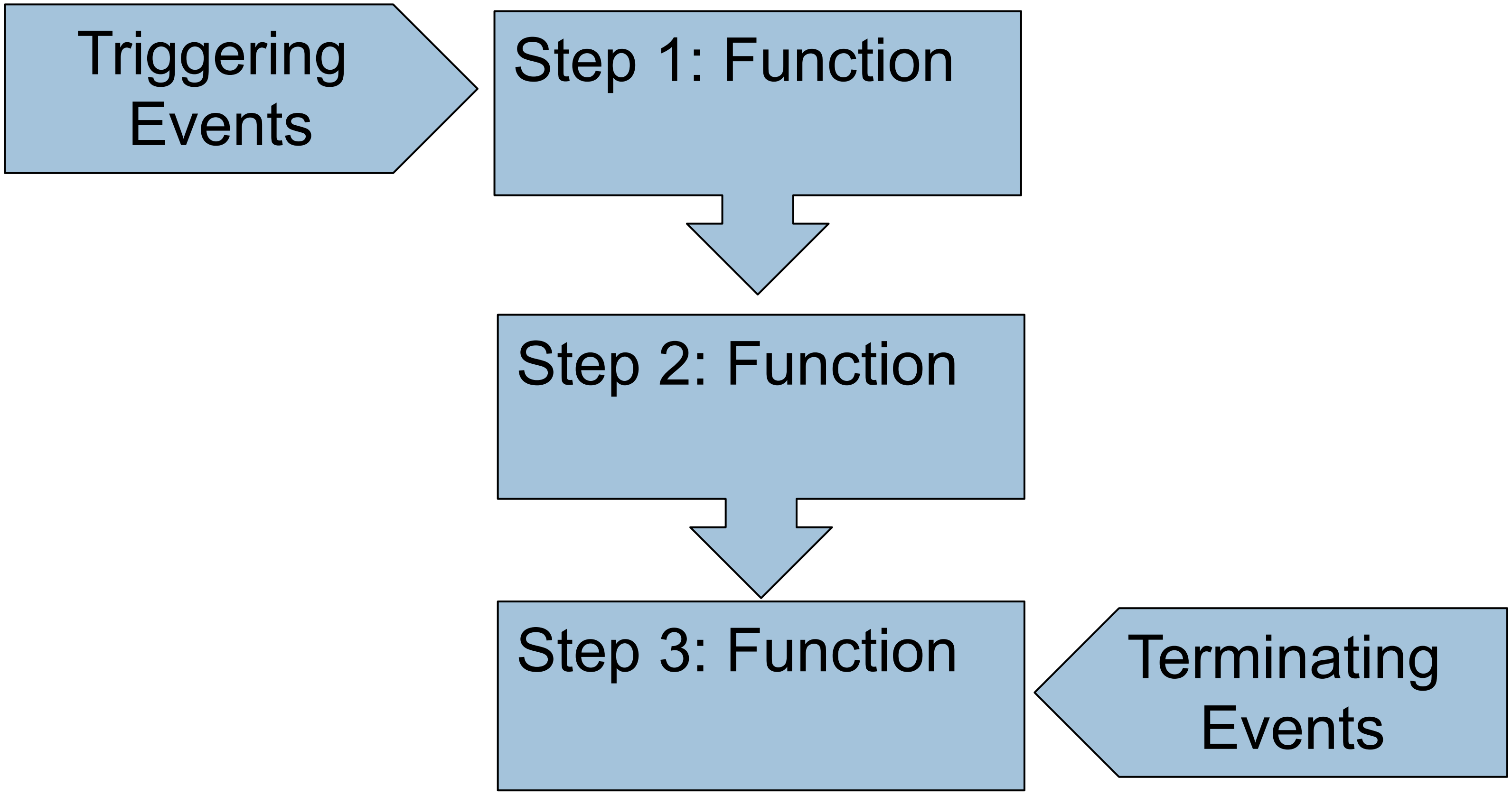
- Operational Reference Model
- Key Scenarios
- Viewpoints
- Sites

Operational Reference Model

Operational Reference Model will set boundaries on the capabilities expected for your business.

- Operational Reference Model will set boundaries on the capabilities expected of your product AND consequently set boundaries on the functionality of the system.
  - Note: This effort forces you to define and focus on “What is your Business?”
- ORM is the highest level business process model.
- ORM defines the high level functional categories.

The ORM is represented as a process diagram bounded by **measurable** events.



Triggering Events

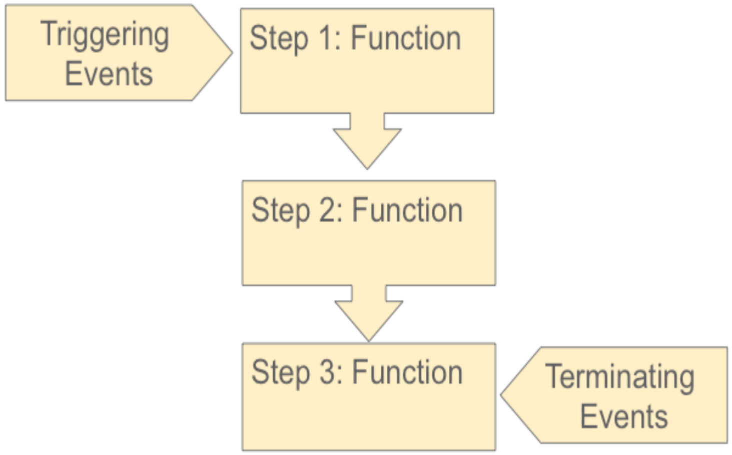
Step 1: Function

Step 2: Function

Step 3: Function

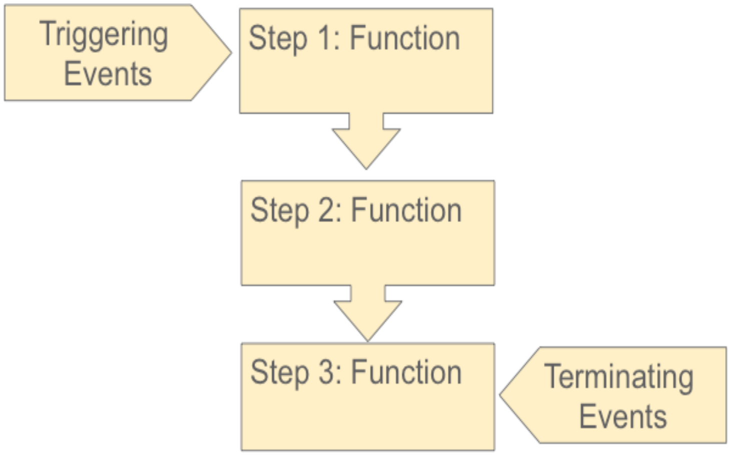
Terminating Events

ORM is the "poster child" for your product development.



- ORM must be understood by all stakeholders.
- In an effort to keep at the right level of abstraction, the ORM should fit on one page.
- ORM may contain more than 2 or more steps but recommend no more than 9.
  - This is really an artificial maximum but it has been shown that humans have a tough time cognitively managing more than 9 ideas/ constraints at a time.

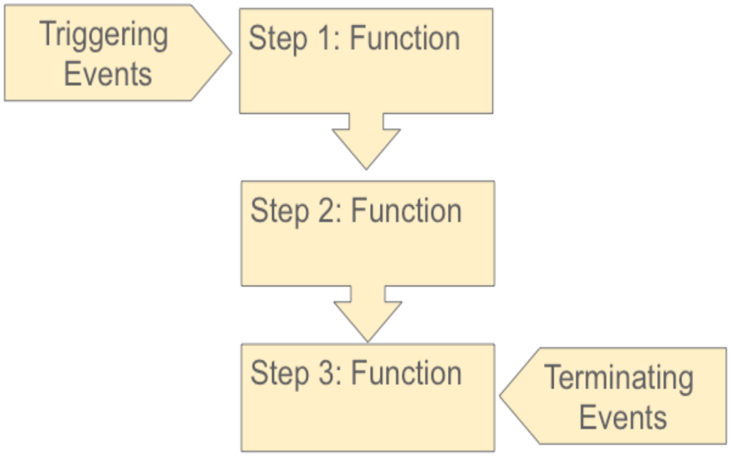
ORM is Implementation agnostic.



- ORM is written in the language of the business (not the developer)
- Design choices (solution choices) are omitted
  - Describe "What" the product must do not "How"
  - No performers (implementations) should be mentioned

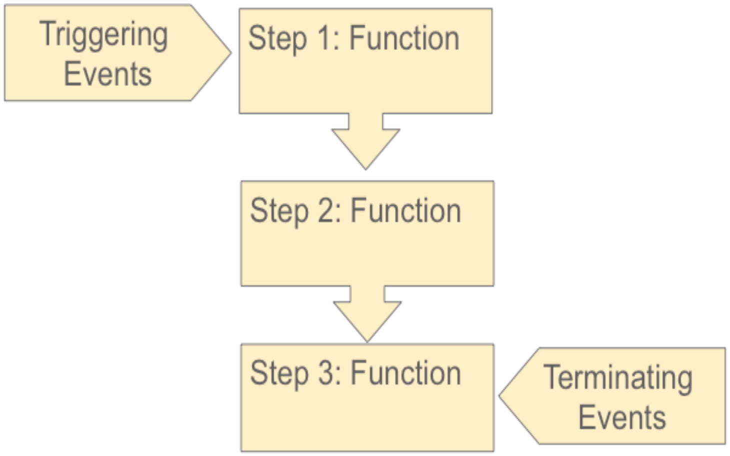
Why is it so very important to keep implementation choices out of the product scope?

Triggering and Terminating events define the boundaries.



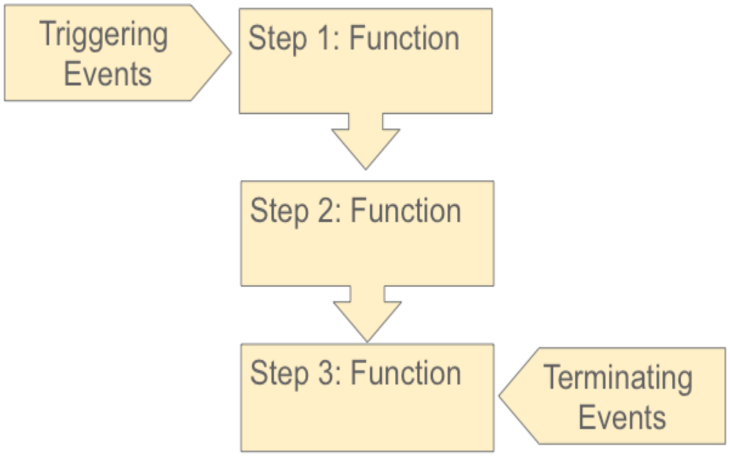
- □ Events: Observable past occurrences.
  - Always described in the past tense.
- □ Events represented in arrows at the beginning (Triggering) and end (Terminating) of the process
  - Triggering: The events (conditions) starting the process.
  - Terminating: The events (conditions) stopping the process.

Functions are actions/capabilities the essential product must perform/deliver



- □ Functions noted in boxes as part of steps in a process flow
  - □ Semantics: Start will a verb
  - □ "Register Student" vs. "Student Registration"

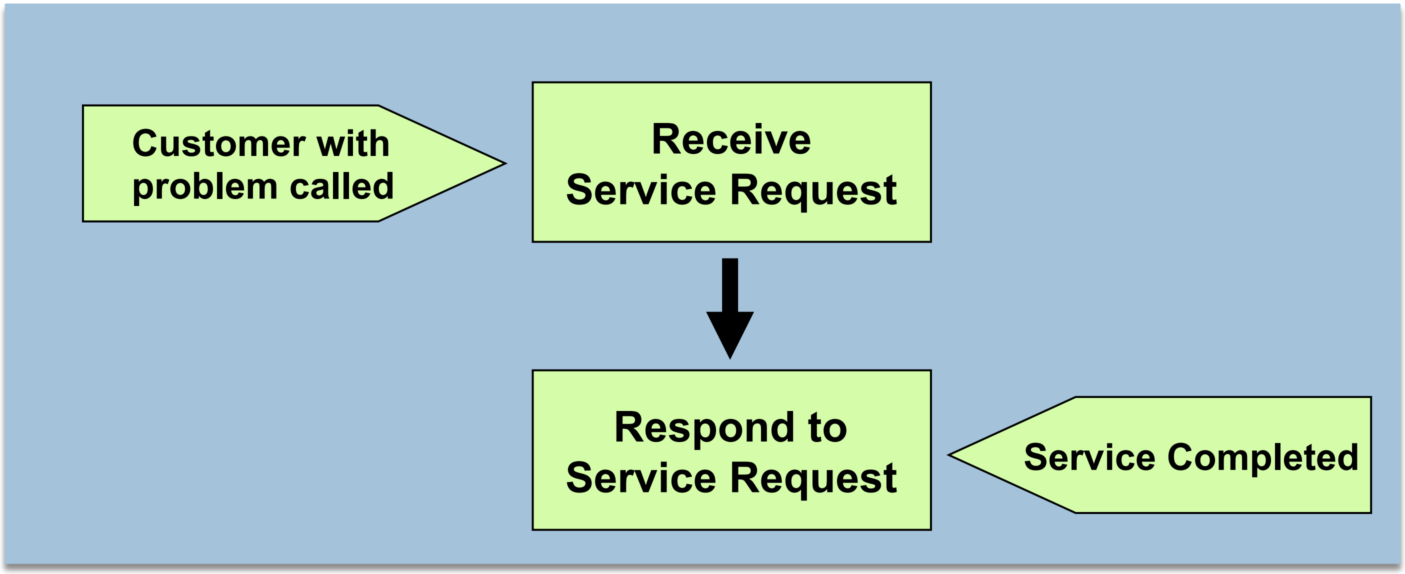
ORM Steps describe the highest level "happy lot" process for the product.

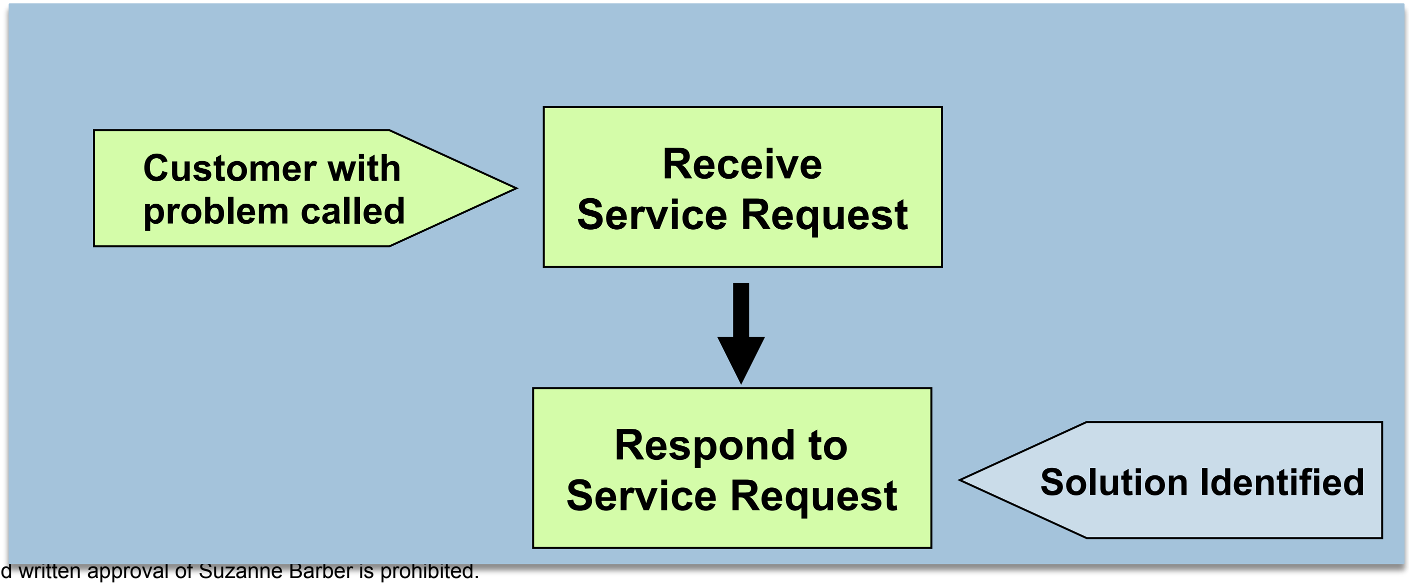


- "Happy Lot" -- the process when everything progresses as expected with no contingencies/problems.
  - Thus, the ORM has no branches.
  - No branches or conditional ("IF") statements

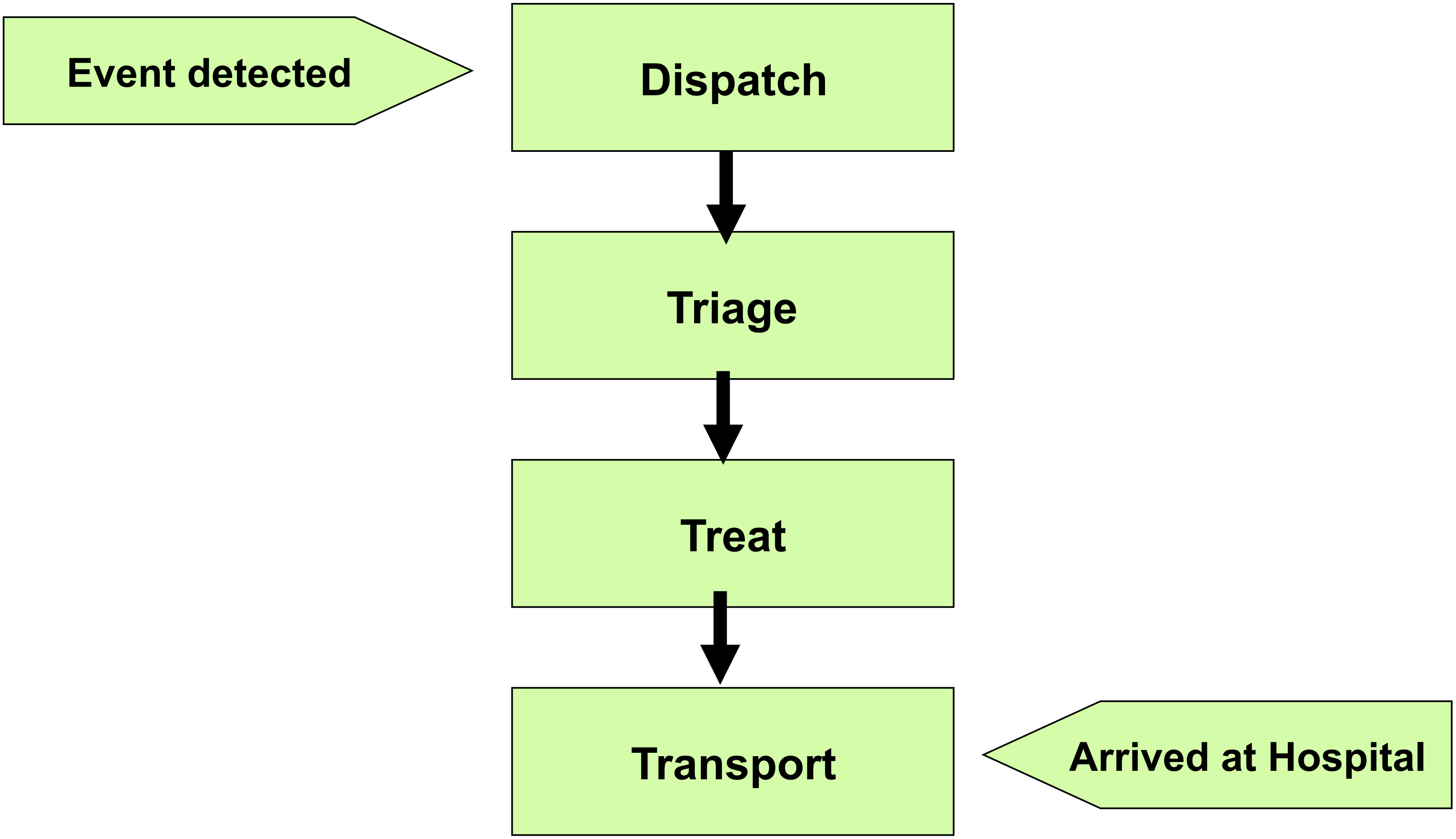
ORM for Service Call Center

- Decide
- Act
- Monitor
- Report
- Document
- Communicate
- Coordinate

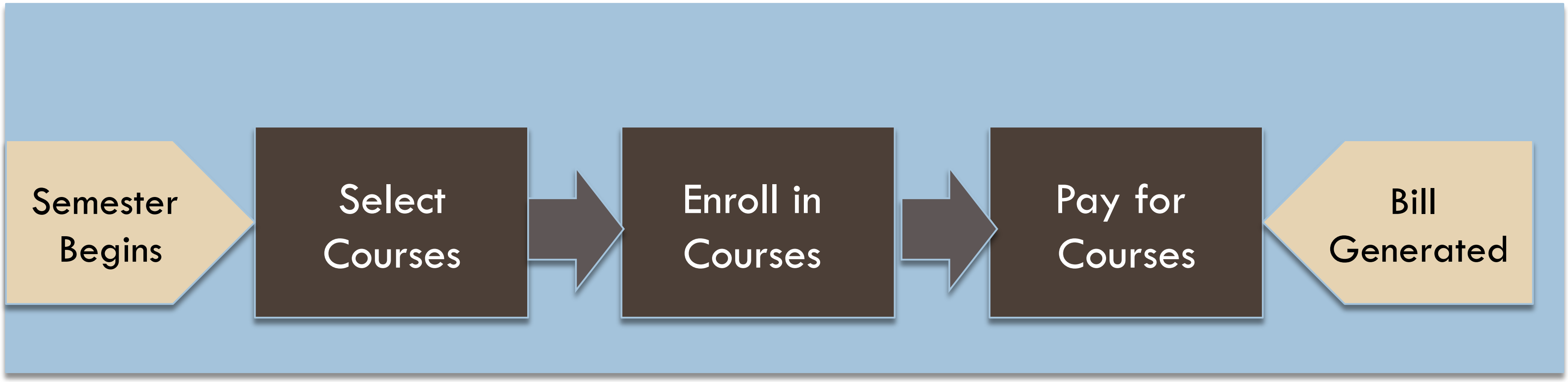




ORM for Emergency Response System



ORM for Course Registration



Exercise:

- Based on what you know course registration,

  Draw an ORM diagram for a course registration product.

Key Scenarios

Key Scenarios define critical path business processes.

- Key Scenarios define the top 10 (no more than 25) scenarios for your business.
- If your product can not deliver these scenarios, you will not be in business.
  - Note: This effort forces you to define and focus on “What is your Business?”
- Steps in the Key Scenarios define key capabilities/ functions your product must deliver.

Key Scenarios must be contained within ORM scope.

- Key Scenarios must “thread through” (“cover”) the ORM.
  - Taking the Key Scenarios in total … ALL of the ORM must be covered by the Key Scenarios.
    - ORM is a high level “top down” view of your system’s operations
    - Scenarios are “thread of execution” and represent respective granular view of system operations
  - If the parts of the ORM are not covered by the Key Scenarios, then (1) those parts of the ORM are not necessary or (2) some Key Scenarios are missing.

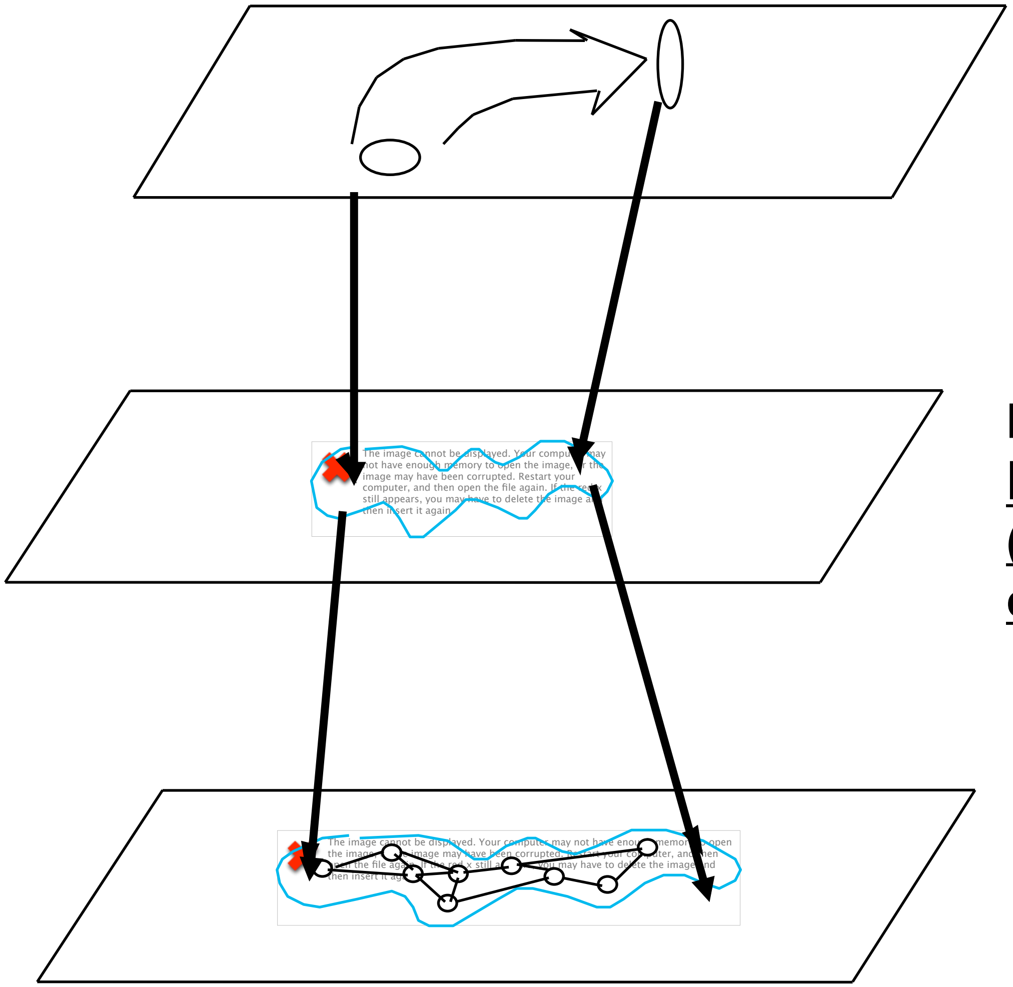
Important Questions to ask and Answers to know?

- Why is it important for the ORM and Key Scenarios to sync?

  Why is it important to have both the ORM and the Key Scenarios?

  What are the consequences when there is a misalignment between the Key Scenarios and the ORM?

There are three layers of a Scenario.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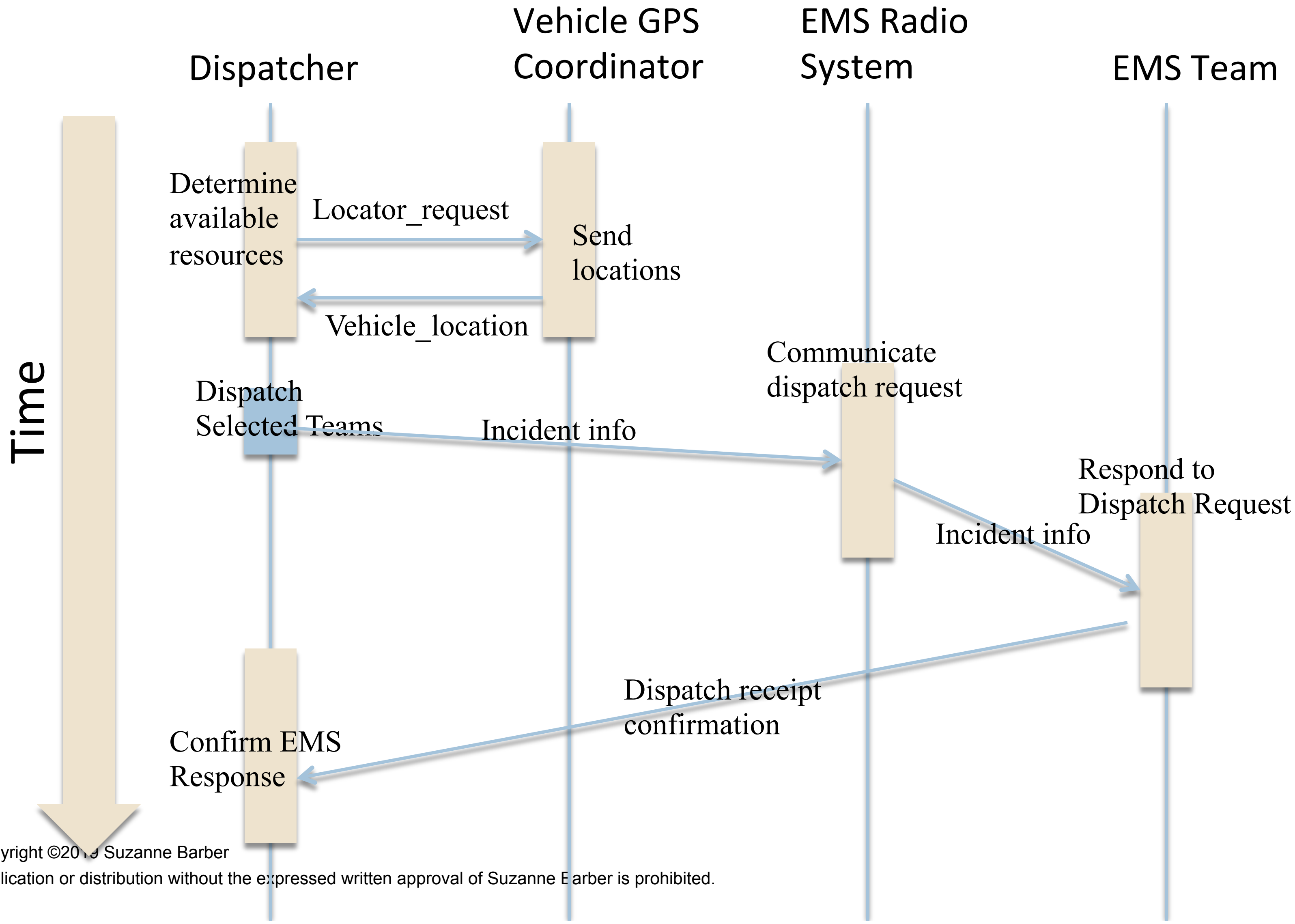
Business Process, data and timing
<u>Domain Layer (tasks performed,</u>
<u>By who, With what data, and when)</u>

Environmental Constraints
<u>Environmental Layer</u>
<u>(where tasks are performed,</u>
<u>conditions required to perform task)</u>

Tech Reqmts Constraints
<u>Technology Layer (task</u>
<u>performers, task resources)</u>

Scenario represented in temporal sequence diagrams help discover and define the actors, the functionality, I/O, and timing requirements.



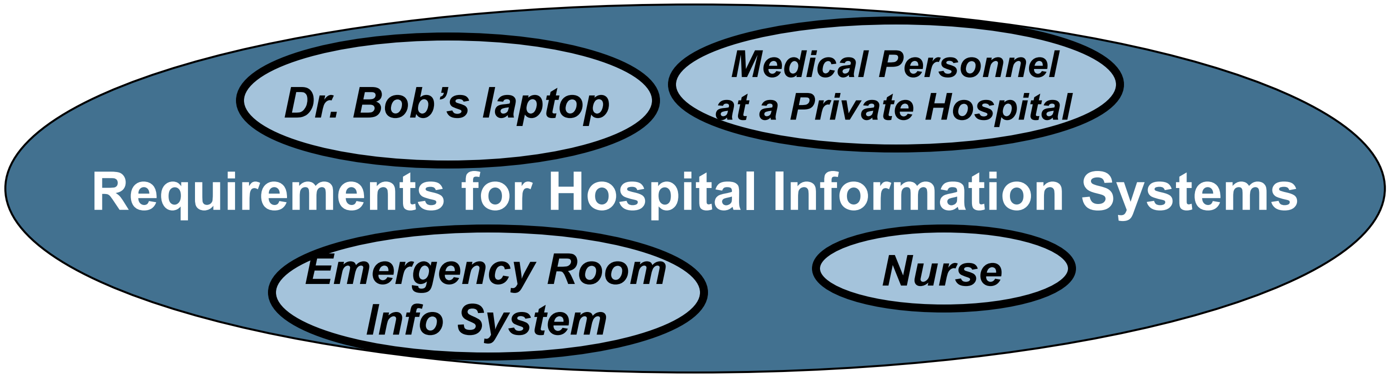
Exercise:

- Based on the current knowledge course registration, List 10 key scenarios

Site Scope

What is a site?

- Site is…
  - Where and with Whom the Product will reside.
  - The more specific the site, the more customized the Product

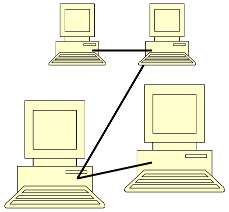

Dr. Bob's laptop
Medical Personnel at a Private Hospital
Requirements for Hospital Information Systems
Emergency Room Info System
Nurse

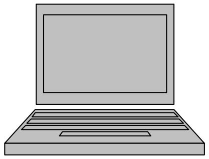
Example Deployment Sites

- □ A specific user, collection or type of user (Who not Where)

- □ A specific, collection, or type of Organization/ Business (Who not Where)

- □ A specific, collection, or type of computer(s) (Where not Who)





- □ Not specified
  - Not possible

Scope is based on the Site

- Single customer
  - Dr. Barber laptop
- Single customer organization
  - The University of Texas System registration system
- Single customer organization type
  - Public Universities registration systems
- Geographical Site
  - The University of Texas at Austin registration system
    - Electrical and Computer Engineering Admission Office
  - The University of Texas at Arlington registration system
  - The University of Texas at El Paso registration system

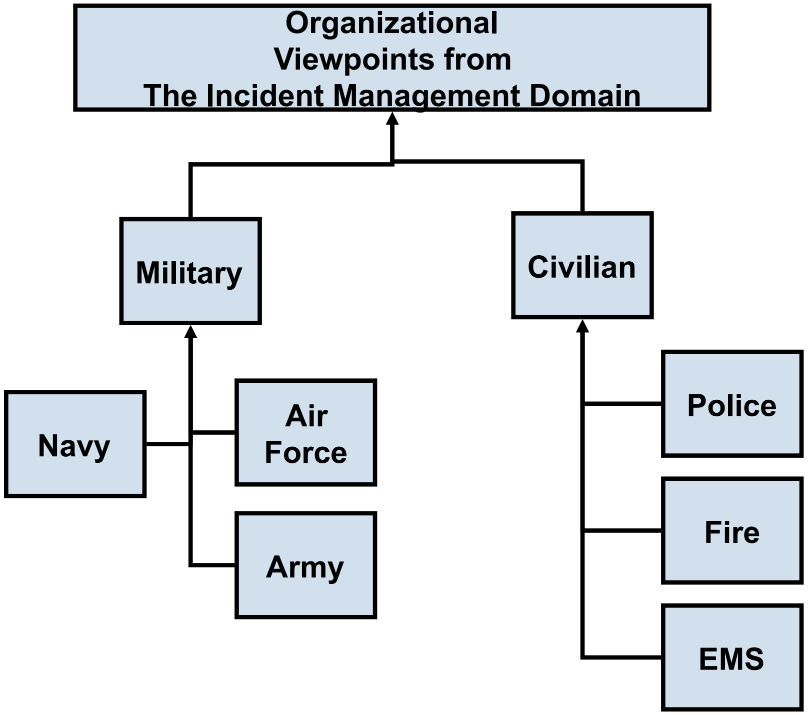
Stakeholder Viewpoints

Viewpoints define requirements sources -- the stakeholder roles and organizations.

- Viewpoints are organized in hierarchies to highlight similarities and differences.
  - Role Viewpoint Hierarchies are organized to capture the similarities and differences between stakeholder roles.
    - "Similar" viewpoints share the same requirements.
  - Organization Viewpoint Hierarchies are organized to capture the similarities and differences between stakeholder organizations.

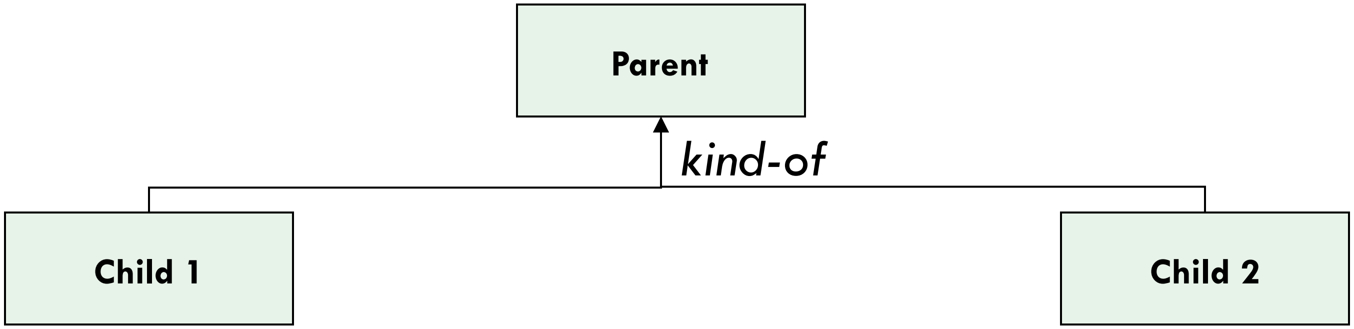
Different Viewpoints may have different requirements.

- EVERY requirement should be associated with one or more viewpoints. Why? Traceability and Justification.
- Every viewpoint is described by their respective requirements. In other words, a viewpoint's requirements represent their perspective about what is important for the business and system.
- The Viewpoint Hierarchies in the Product Scope represent the "Hypothesis" about the similarities and differences between stakeholder viewpoints.

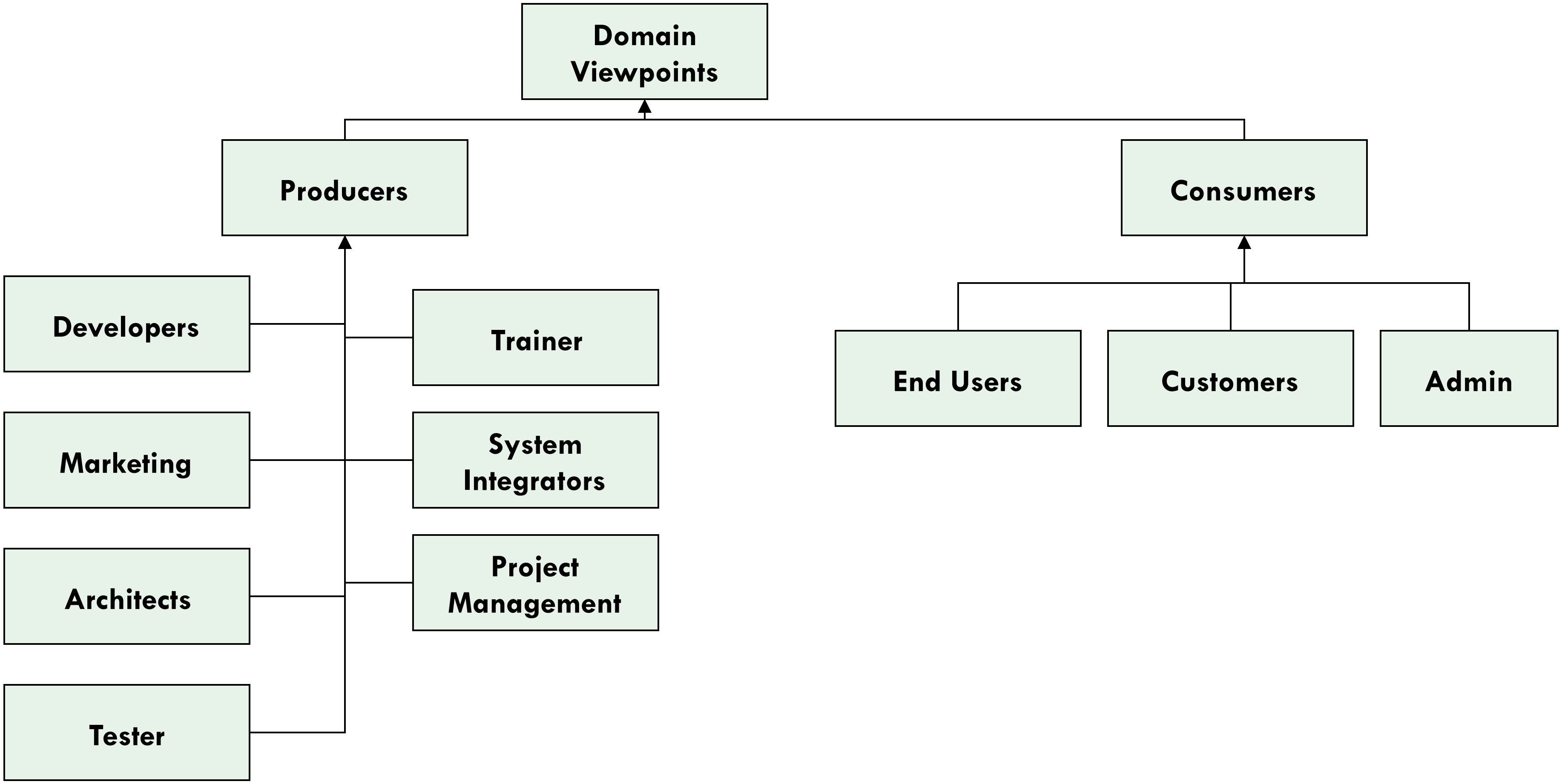

Organizational Viewpoints from The Incident Management Domain
Military
Civilian
Navy
Air Force
Army
Police
Fire
EMS

Viewpoints are modeled in hierarchies.

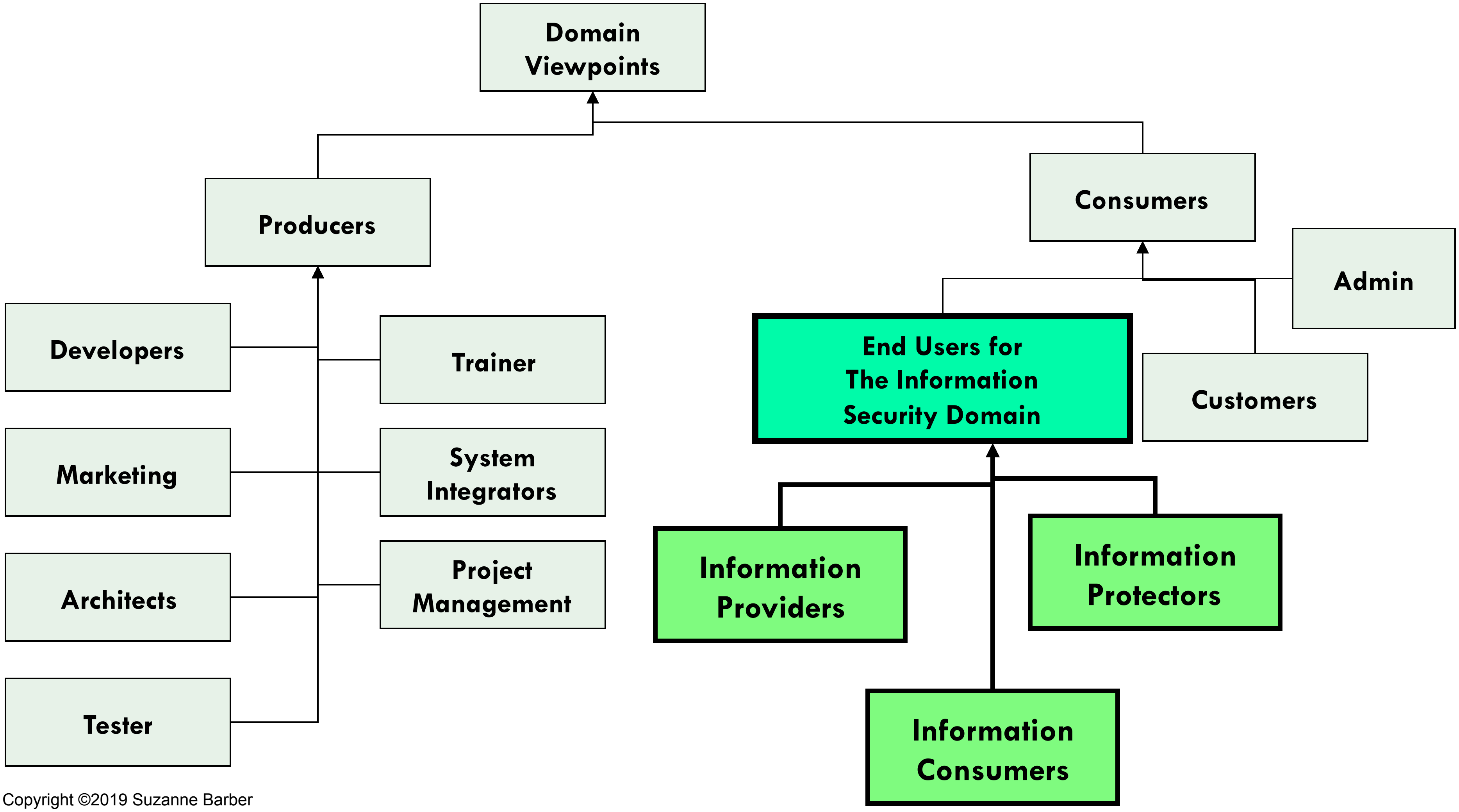
- □ A “parent” of entities in a viewpoint hierarchy represent common requirements among those entities
- □ “Children” of an entity in a viewpoint hierarchy represent differentiation of requirements



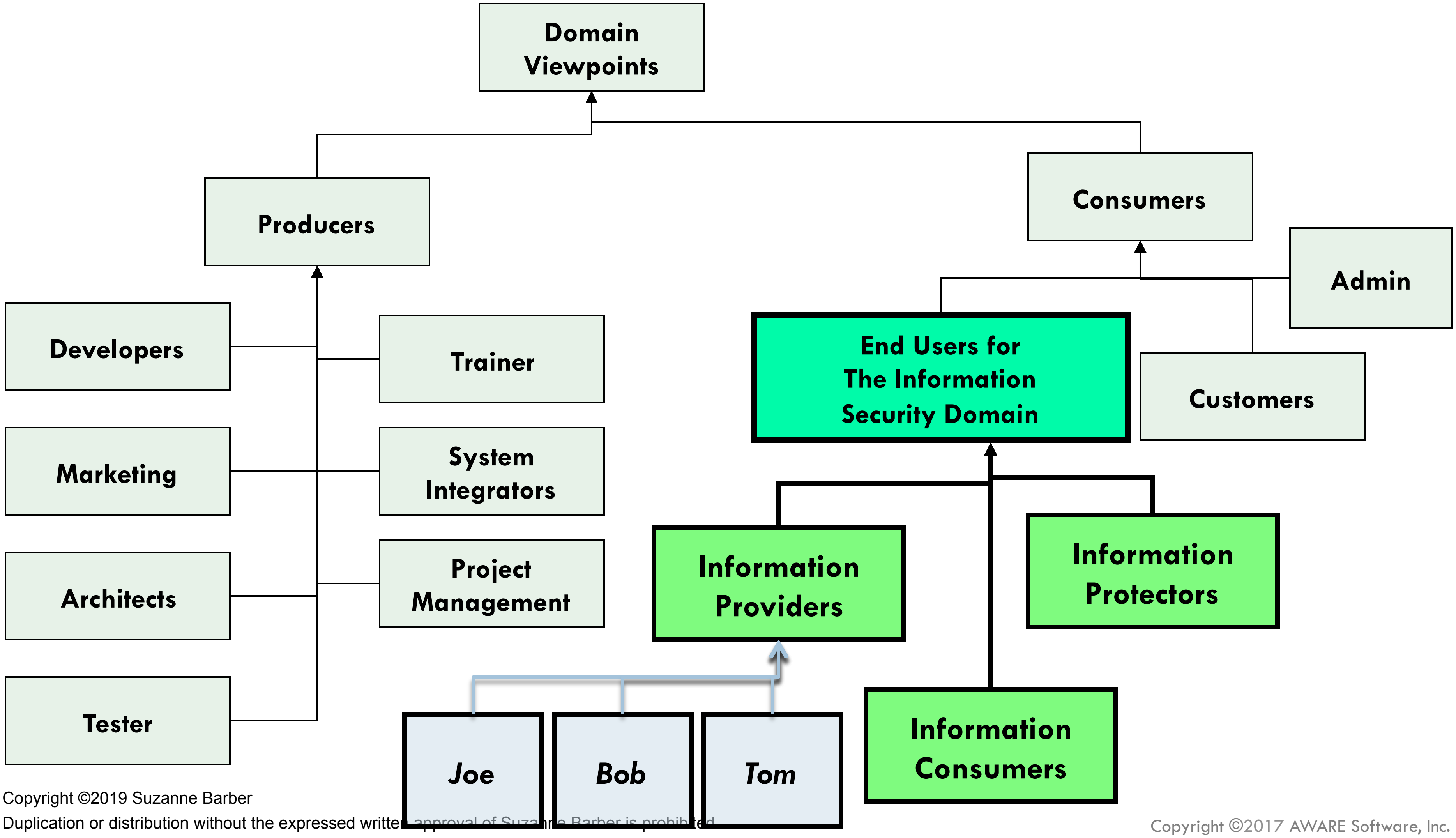
Domain Viewpoints organize stakeholder requirements according to the stakeholder’s role.



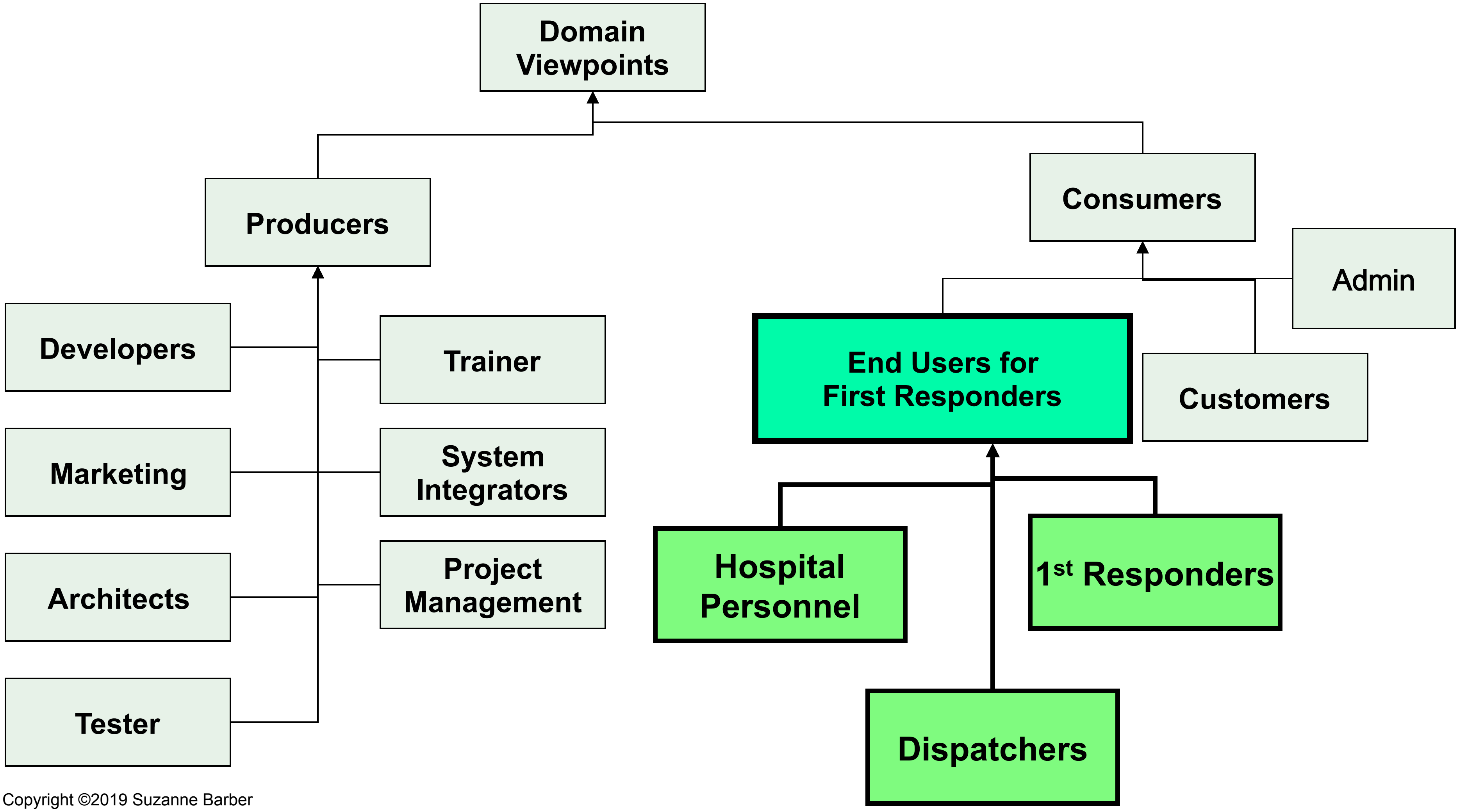
Domain (Role-based) Viewpoints can be specialized.



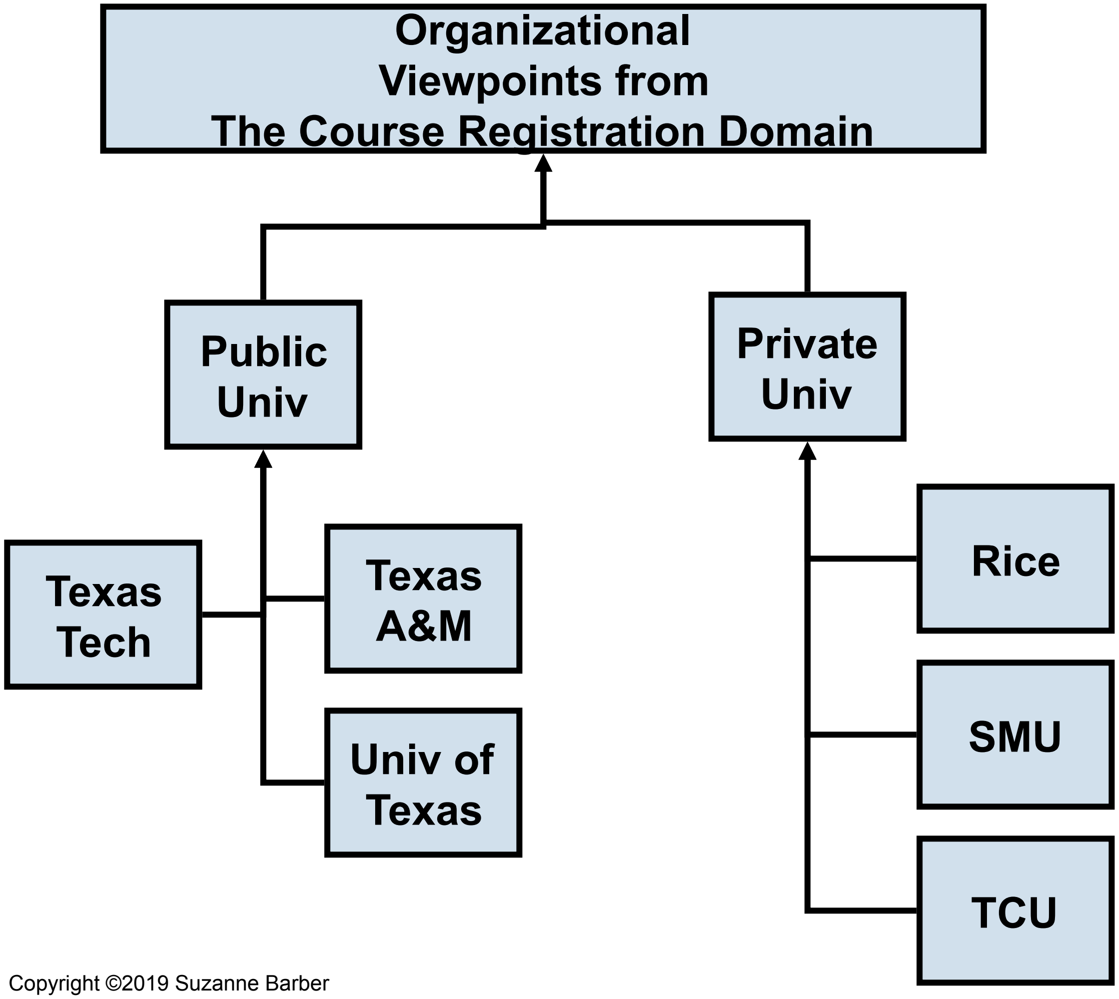
Domain (Role-based) Viewpoints can be specialized to the extent of highlighting individual instances (a stakeholder).



Domain (Role-based) Viewpoints

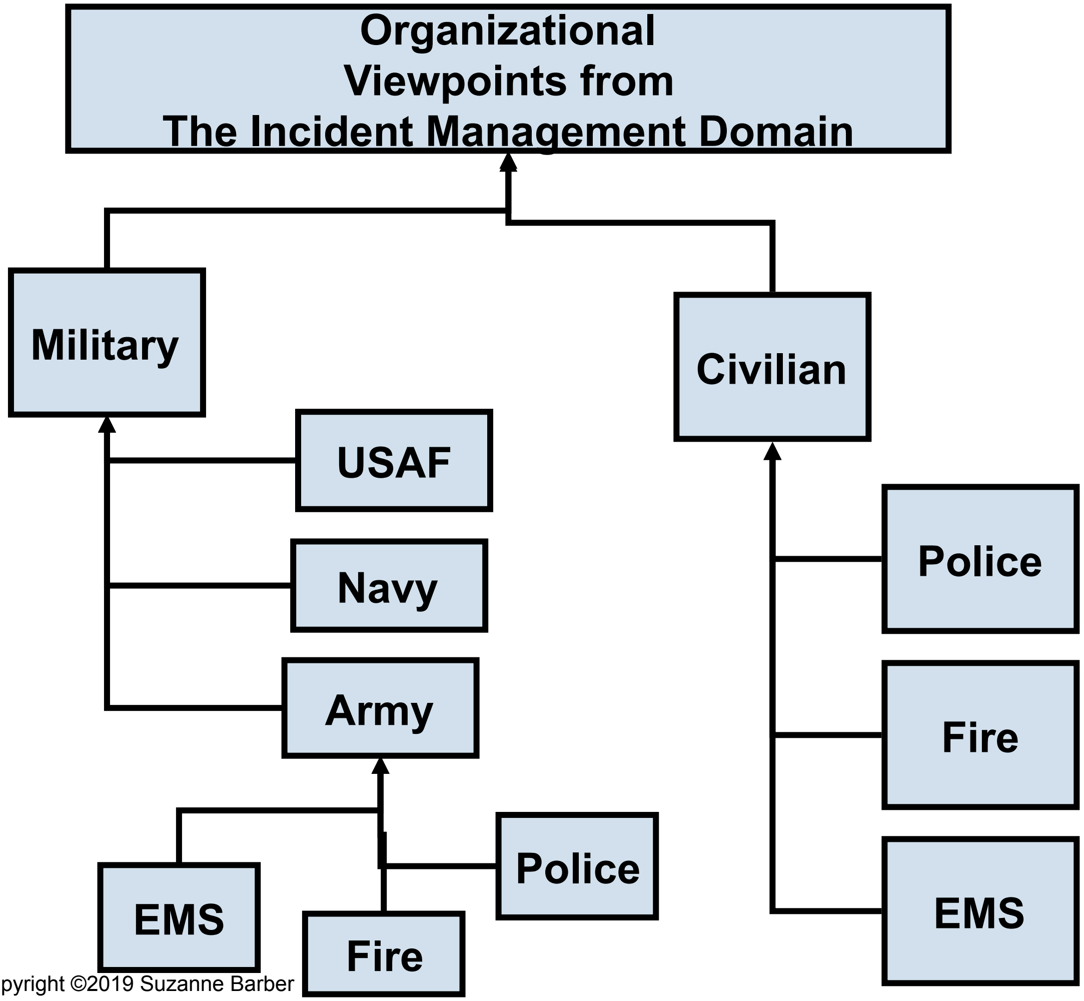


Organizational Viewpoint organize stakeholder requirements according to Organization types and User roles within those organizational types.



- □ Focus on "users" at different "sites"
- □ Answers the question…. Do requirements differ as a function of organization?
  - If requirements from same user types (student) at different organizations (e.g. public univ vs private univ) do not differ, an organizational viewpoint hierarchy may not be need

Organizational Viewpoint organize stakeholder requirements according to Organization types and User roles within those organizational types.


Organizational Viewpoints from The Incident Management Domain
Military
Civilian
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Fire
Police

- Focus on "users" at different "sites"
- Answers the question…. Do requirements differ as a function of organization?
  - If requirements from same user types (police) at different organizations (e.g. military vs civilian) do differ, an organizational viewpoint hierarchy maybe need AND
  - Custom product lines may be needed.

Exercise:

- Based on your knowledge about course registration,
  - Draw a domain viewpoint hierarchy.
  - Draw an organizational viewpoint hierarchy (if you need one)

AWAREness Methodology defines Product Scope in four models…

Scope	Described in ….
Functional	ORM
Uses (execution)	Key Scenario
Stakeholder Viewpoints	Requirements Sources
Sites	Deployment