Object-Oriented Systems Engineering Method (OOSEM)

Analyze Stakeholder Needs

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OOSEM Topics

- OOSEM Overview
- Method
  - Setup Model
  - Analyze Stakeholder Needs
  - Analyze System Requirements
  - Define Logical Architecture
  - Synthesize Candidate Physical Architectures
  - Optimize and Evaluate Alternatives
  - Manage Requirements Traceability
  - Integrate and Verify System
- Summary

Module Objectives

- After completion of this module, student should understand
  - The primary modeling artifacts from Analyze Stakeholder Needs
  - How to use causal analysis to identify limitations of the current system
  - How use cases are used to specify mission capabilities
  - How moe's are used to specify mission performance
  - How the domain model is used to scope the model and identify system boundaries
  - The need to develop a transition plan for the to-be system

Motivation

- Understanding the problem is a pre-requisite to developing an effective solution

Analyze Stakeholder Needs

- Characterize as-is system and enterprise and performing causal analysis
  - Capabilities and limitations
  - Potential for reuse
- Define to-be system and enterprise
  - Mission requirements
  - Top level context
  - Enterprise use cases
  - Measures of effectiveness

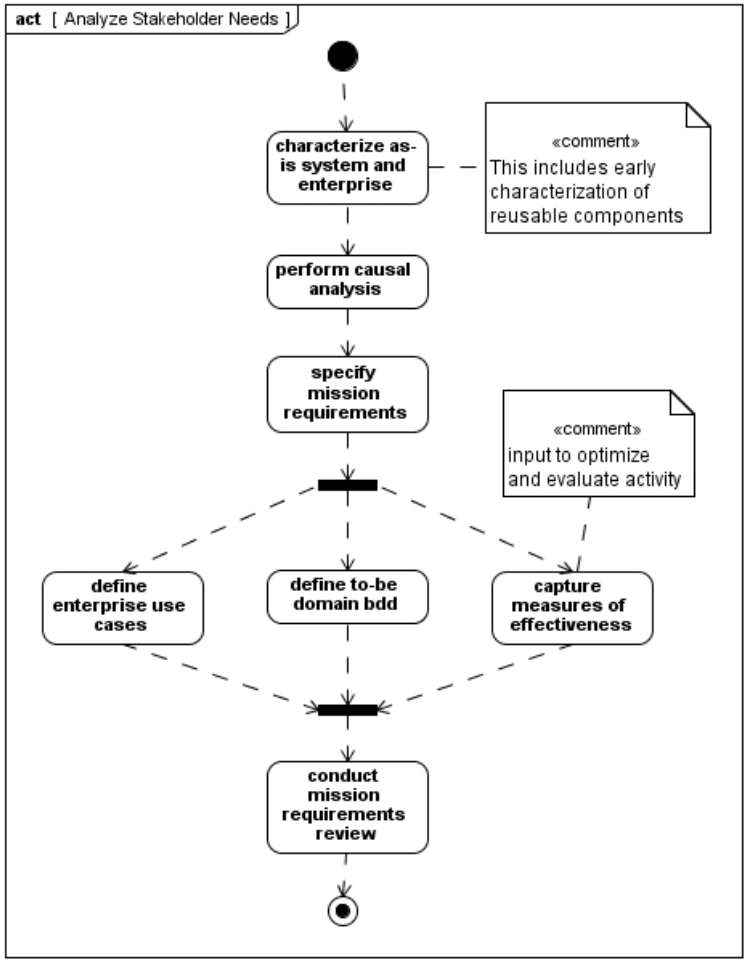
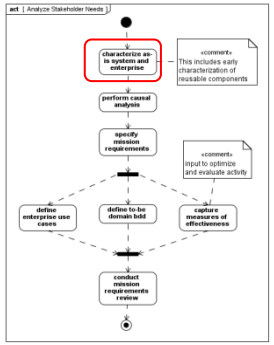


Figure 17.6

Characterize As-is System and Enterprise



- Model the current system sufficient to understand its capabilities, limitations, and potential areas for improvement
- The ‘as-is’ Domain BDD defines the system context that includes
  - the system-of-interest
  - the external systems and users

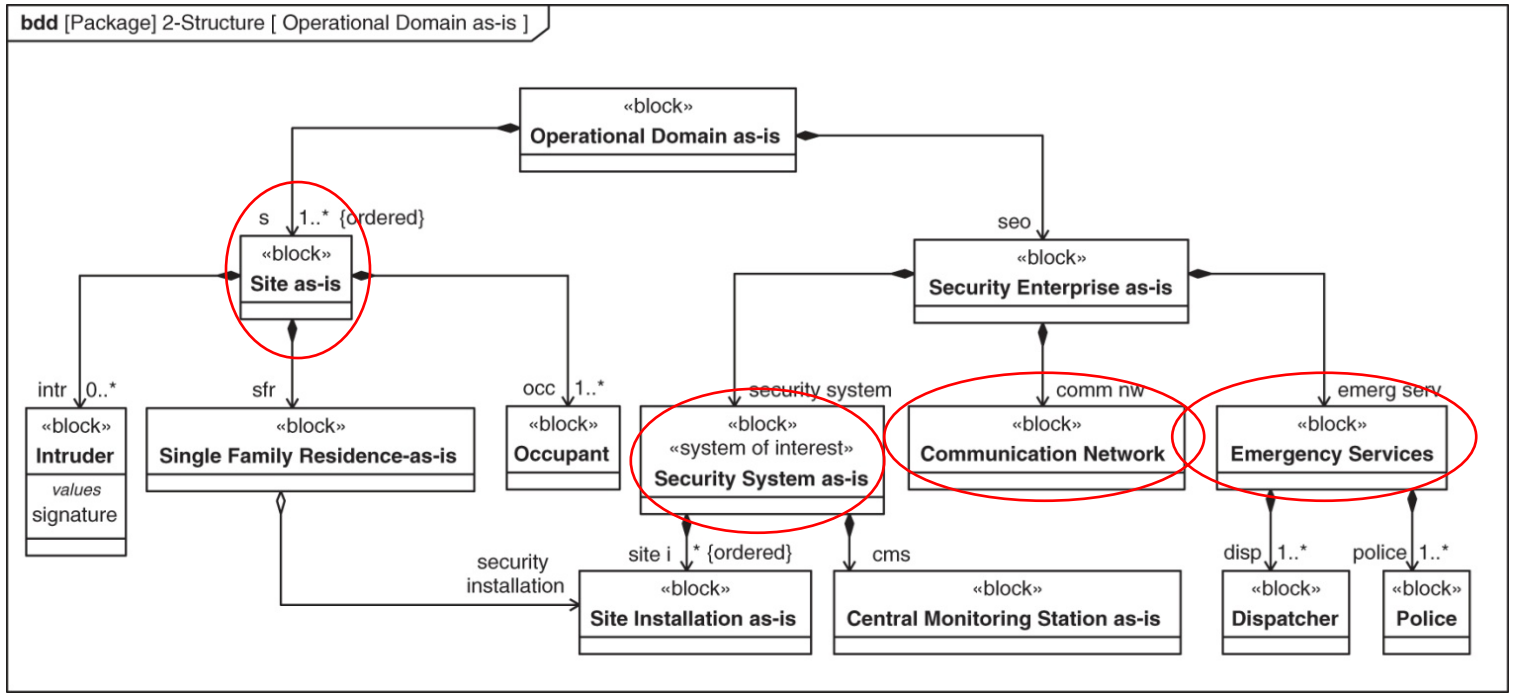
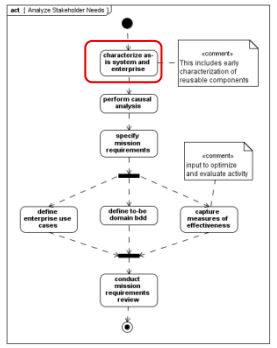


Figure 17.6

Characterize As-is System and Enterprise (iconic)



- The ‘as-is’ domain can also be shown using a more iconic representation

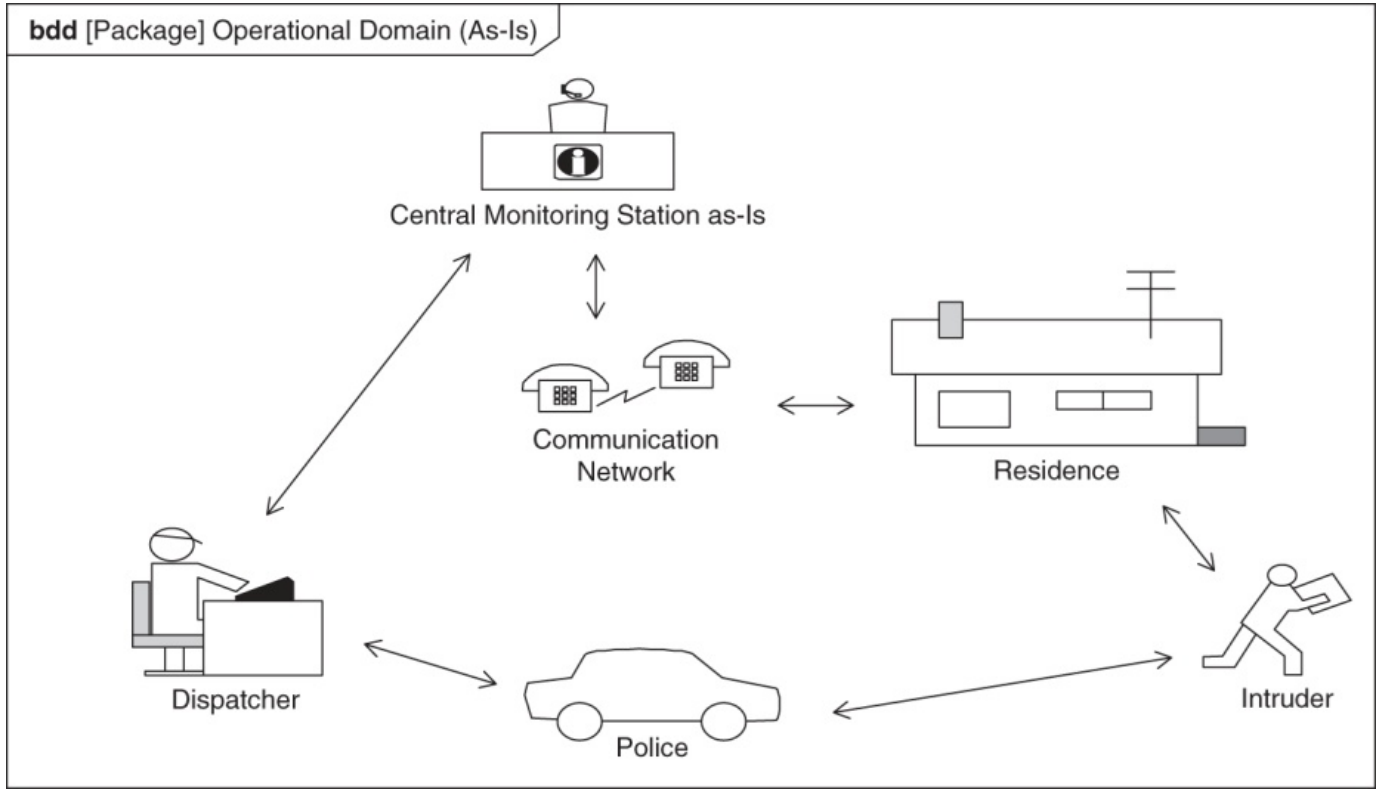
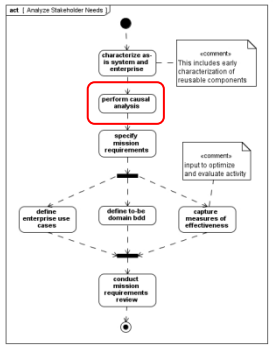


Figure 17.7

Perform Causal Analysis



- Assess current enterprise limitations and potential improvement areas
- Fishbone diagram represents cause-effect relationships among key system parameters and MOE's
- Identify each primary stakeholder and their concerns
- Identify causes that can impact the stakeholder concern
- Example:
  - High 'False Alarms' adversely impacts 'Security Effectiveness' which in turn impacts 'Customer Satisfaction', which leads to a 'Lack of Sales'

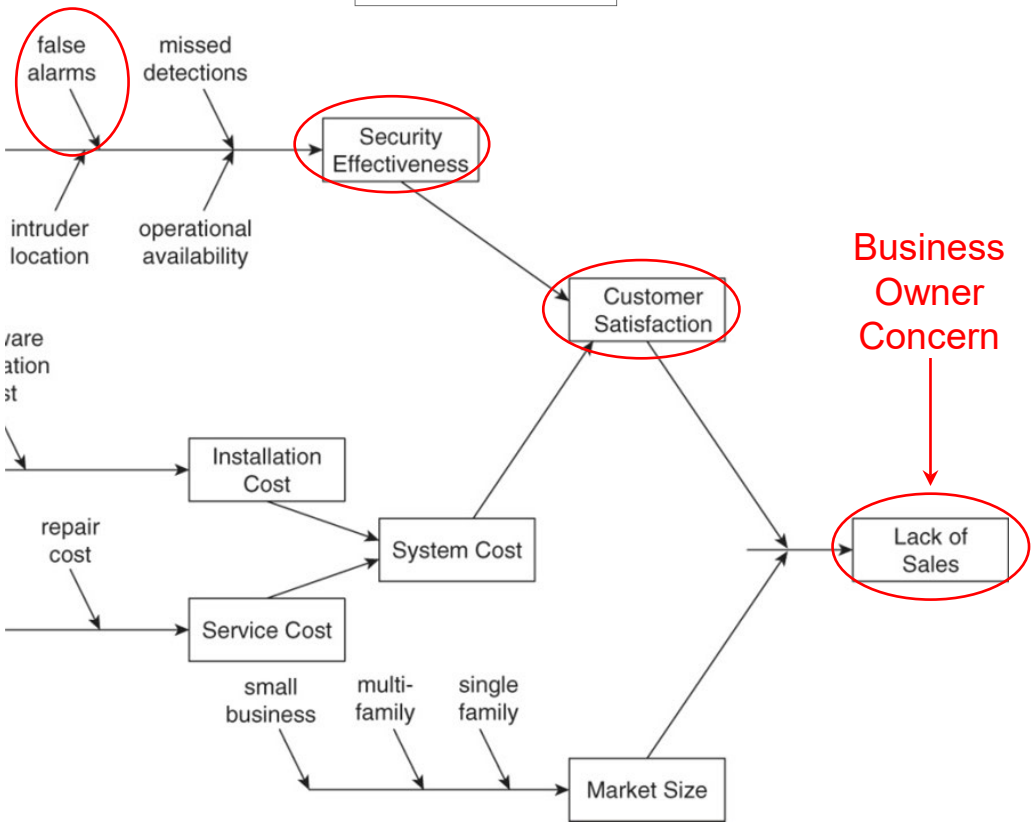
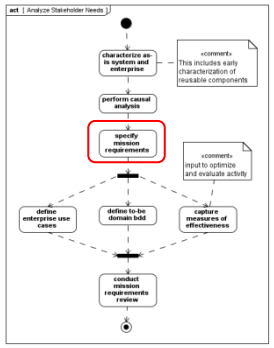


Figure 17.8

Specify Mission Requirements



- Specify mission requirements that provides capabilities to address the limitations of the ‘as-is’ enterprise

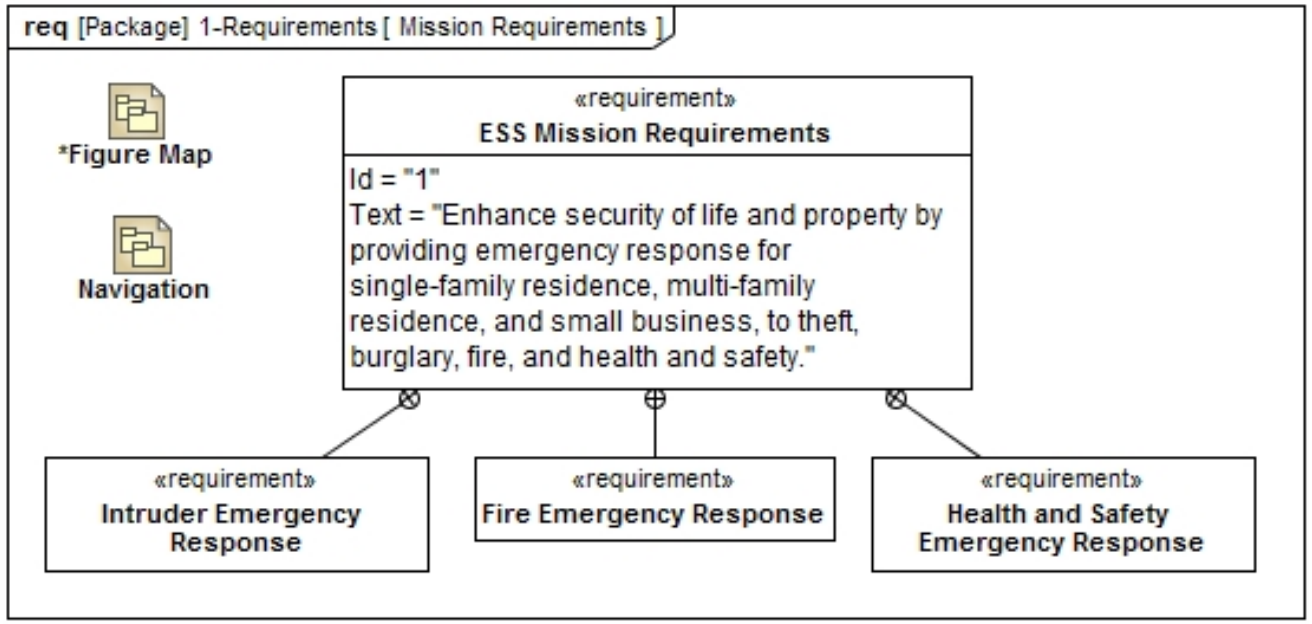
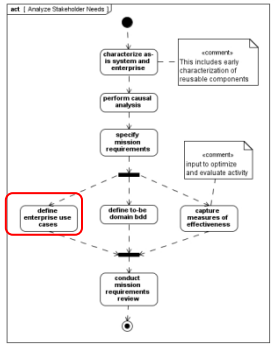


Figure 17.10

Define Enterprise Use Cases



- Define the goals for the enterprise that serve the primary actors
  - The subject is the enterprise
  - The actors are external to the enterprise
- The use cases relate to the mission requirements
  - Can use refine relationship
- The use cases are elaborated to help specify the ESS black-box requirements

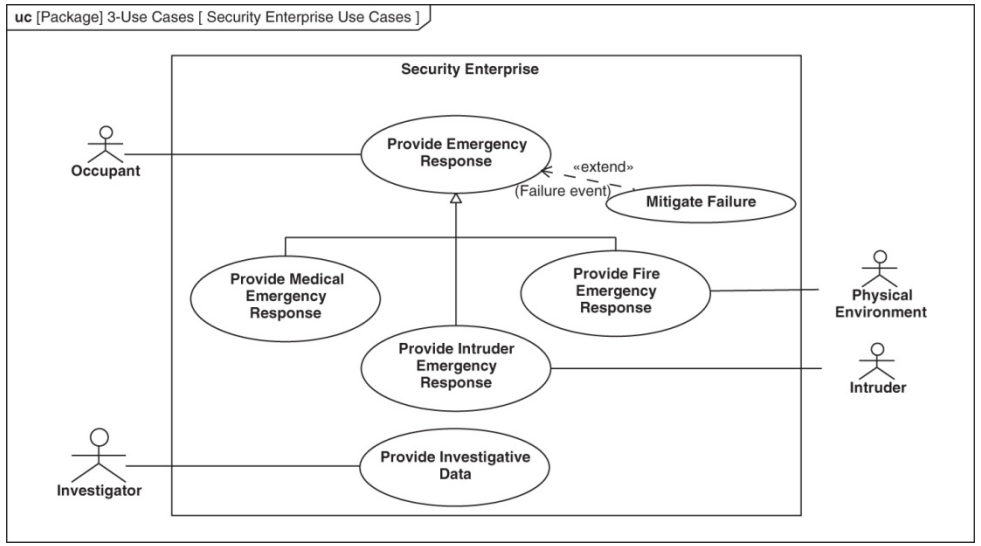


Figure 17.12

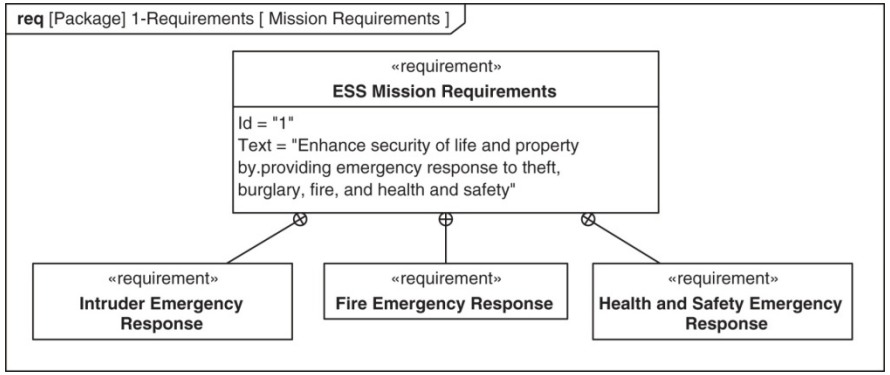
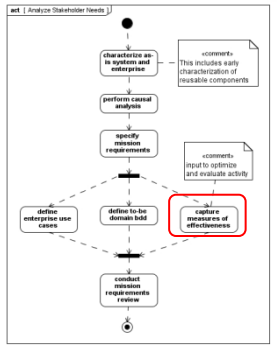


Figure 17.9

Capture Measures of Effectiveness (moe's)



- MOEs reflect mission performance requirements and measures of stakeholder value
- MOE's captured in top level parametric diagram
  - Include availability, emergency response time, operational cost, and probability of intruder conviction
  - Partially derived from the causal analysis
- Critical system parameters are derived from MOE's and captured in lower-level parametric diagrams

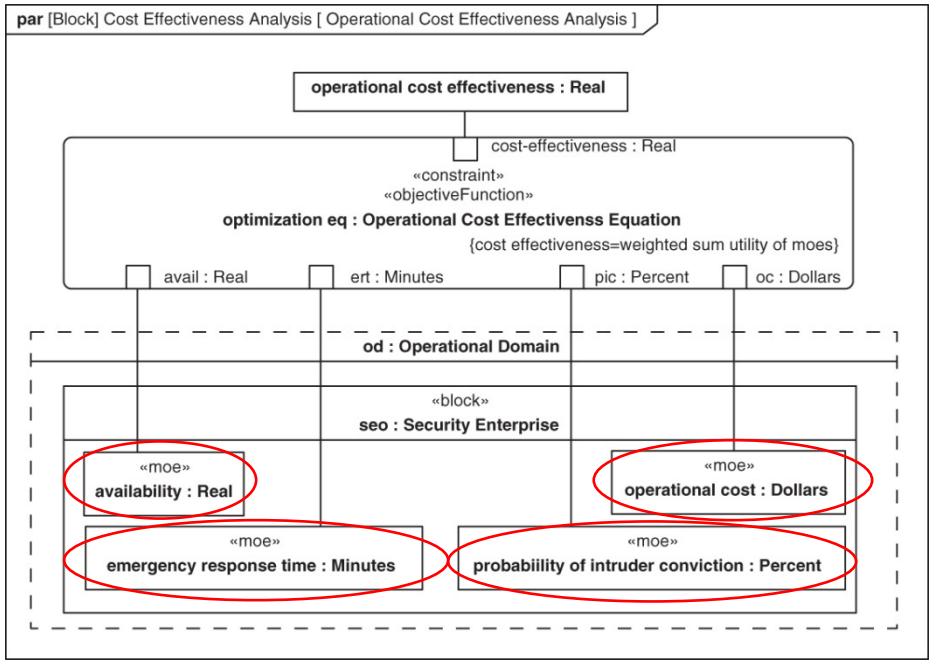
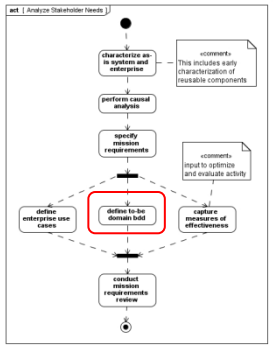


Figure 17.10

Define To-Be Domain Model



- Defines system of interest and external systems and users
  - Scopes the model
- Contrasts with as-is domain model to reflect additional mission requirements

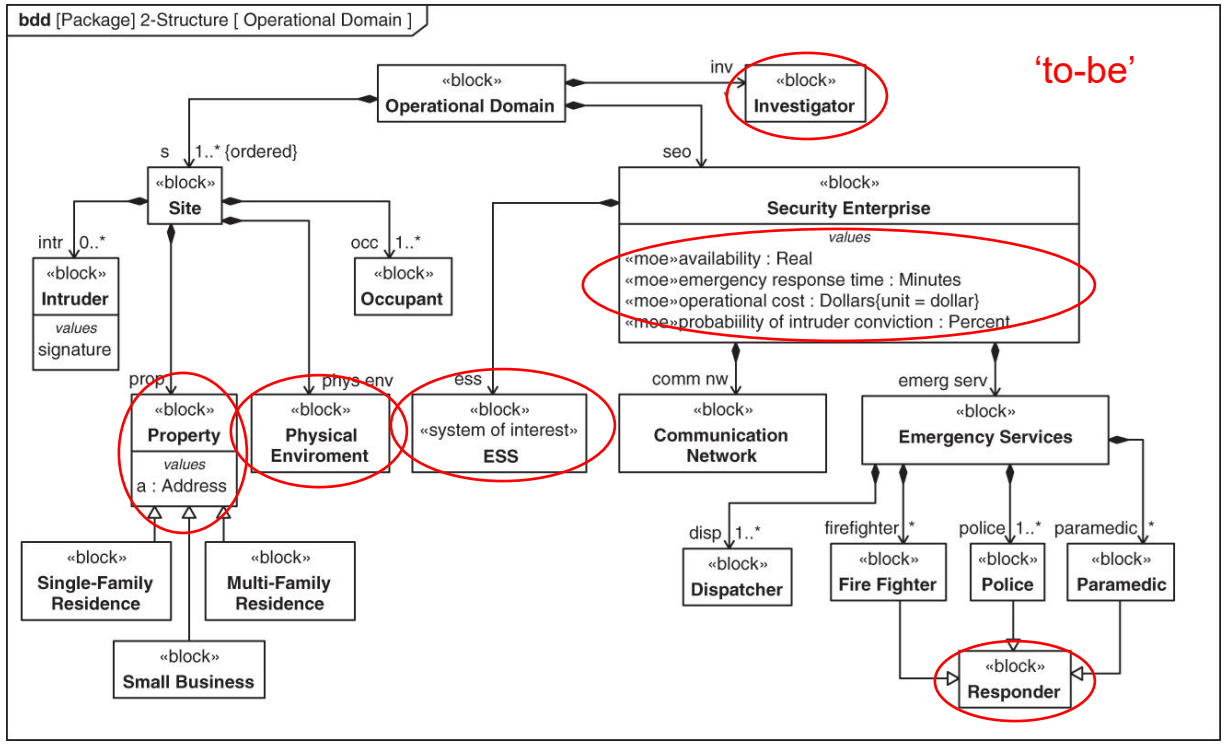
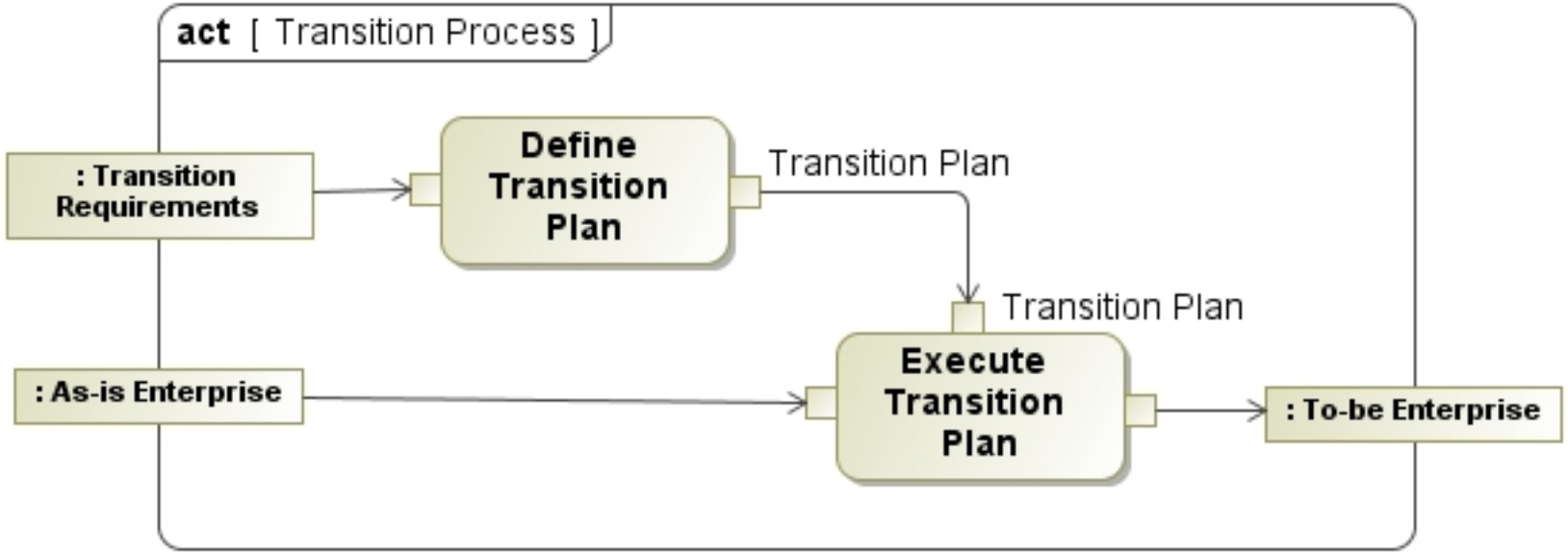


Figure 17.11

Transition Process

- Develop Transition Plan and Approach to transition from As-is Enterprise to To-be Enterprise
- Example consideration addressed by Transition Plan:
  - Are as-is Site Installations retrofitted or co-exist with to-be Site Installations?



Summary

- As-is analysis is used to understand the problem
  - Limitations, root cause, and potential improvement opportunities
- To-be analysis is used to specify
  - Mission requirements
  - Enterprise use cases
  - Measures of effectiveness
  - To-be Domain model
  - Transition plan