Systems Analysis and Design in an Age of Options

G. Spurrier and H. Topi
Chapter 2—Identifying Opportunities for Business Transformation with IT

Chapter 2: Identifying Opportunities for Business Transformation with IT

Systems Analysis and Design
in an Age of Options

Learning Objectives

- Identify problems and opportunities that can be addressed with IT
- Name the three primary ways in which IT solutions can benefit businesses
- Understand connections between organizational strategy and IT-based solutions

Learning Objectives

- Skill: Recognize sources of ideas for IT projects
- Skill: Document and analyze IT project ideas through initial visioning
- Skill: Discover and structure characteristics of current and future business processes through business analysis
- Skill: Model current and future business processes using the UML activity diagram

Fundamental Purpose of SA&D

- Determining how IT-based solutions can be applied within an organization to help it achieve its goals
- Three primary ways:
  - Increase top-line revenues or other key outputs
  - Increase bottom-line profits
  - Stay in business

Increasing Revenue

- Increase revenue of non-IT products and services sold
  - Improve product/service quality
  - Add/improve features (or a brand-new product)
  - Create new products or services
- Increase revenue directly via selling software
  - Licenses
  - Software as a Service fees
  - Maintenance fees
- Increase ad revenue when "giving away" the IT product

Increasing Efficiency → Improving Profits

- Decrease hours required to deliver product or service
- Decrease hourly compensation costs (e.g., more junior, less skilled users)
- Use resources more efficiently
  - E.g., reduce raw material use by reducing waste with better planning

Staying in Business

- Ensuring regulatory compliance: For example, complying with legal audits or ADA (Americans with Disabilities Act) requirements
- Protecting privacy and security, especially for personal information and personally identifiable information
- Keeping enabling technology current
- Increasing accessibility through architecting for reliability
- Responding to competitor actions

History of Changing Organizational Processes with IT

- Business Process Reengineering (1990s)
- Business Process Management, Modeling, and Design (2000s and later)
- Digital Transformation (2010s)

Multiple Levels of IT Impact

- Business Model
- Strategy
- Tactics
- Operations

Strategy, Business Models, Tactics, and Operational Decisions

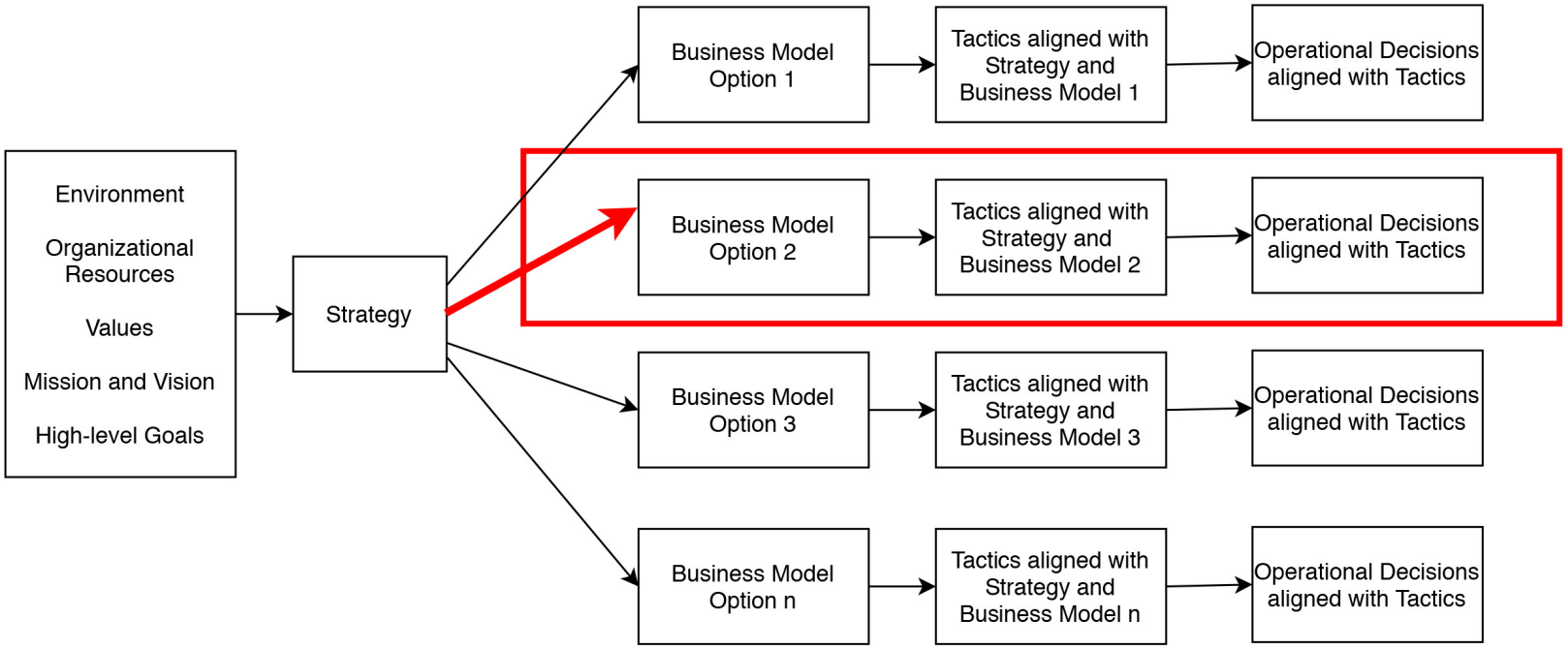

Figure 2-2

Schematic Representation of Scaled Agile Framework

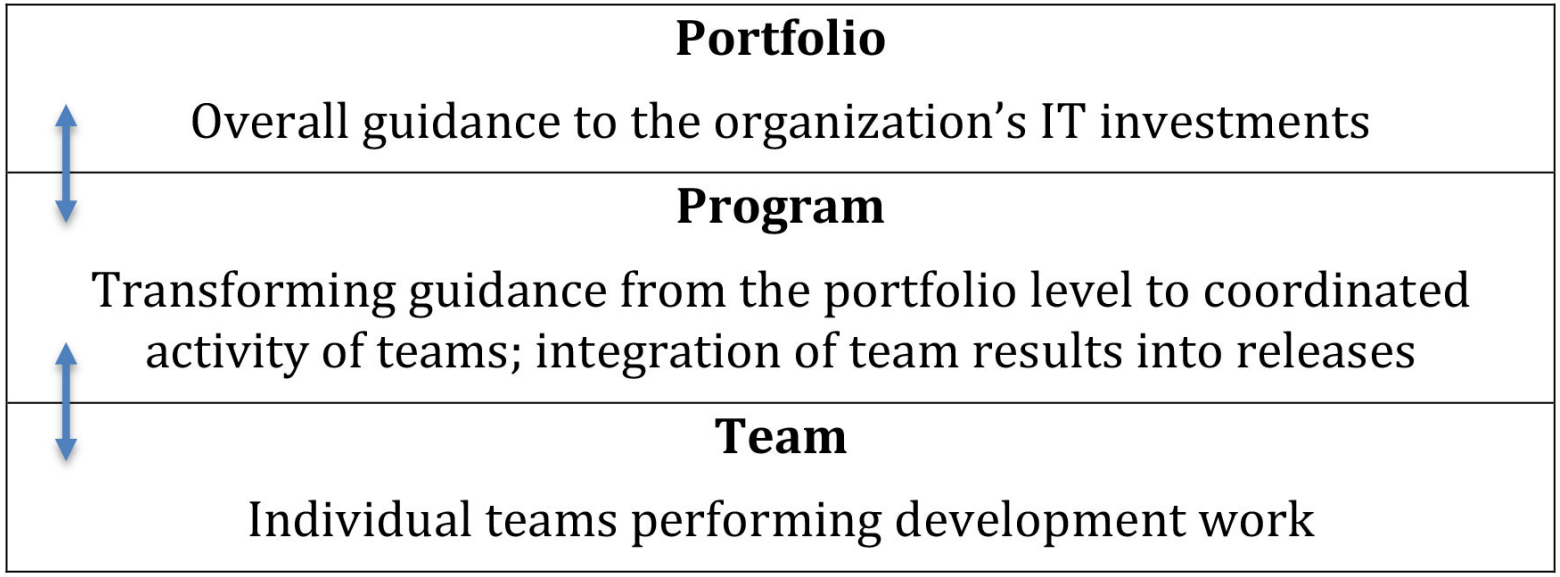

Figure 2-3. (From Leffingwell 2018)

Starting Point: Initial Visioning

- Setting the stage for a possible project:
  - Development of a brief description of the problem/opportunity
  - Outlining the business benefits
  - Performing an initial analysis of the feasibility of the project.
- The outcome of initial visioning will determine whether or not it makes sense to perform a more detailed business analysis

Purpose of Initial Visioning

- Communicate the project's underlying idea to all relevant stakeholders,
- Ensure that the proposed project is aligned with the organization's overall strategy and long-term plans for IT,
- Ensure that there is a reasonable likelihood that the project will meet its outcome expectations at an acceptable cost level,
- Ensure that the project will not lead to unacceptable risks, and
- Secure necessary resources (people and money) for the next stage of the project.

Business Analysis: Modeling

- Business Processes (This chapter)
- Key Concepts (Chapter 3)
- User Stories (Chapter 4)
- User Experience/User Interface (Chapter 4)

Key Actions in Business Analysis

- Discovery: Finding out the facts regarding the current way in which the organization conducts business
- Structuring: Presenting the findings of discovery in a systematic, consistent, and easily understandable.
- Transformation: Determining how to change the way the organization conducts business.

Our Focus: Business Process Modeling

- Tool: UML Activity Diagram, a widely used tool for behavioral modeling
  - determining what actions and activities take place in the context of the area of interest
- Purpose: Articulating activities and specific rules for control and object flows that specify the way in which an organized group of actors (typically human beings) act to achieve a goal

Activity Diagram Symbols

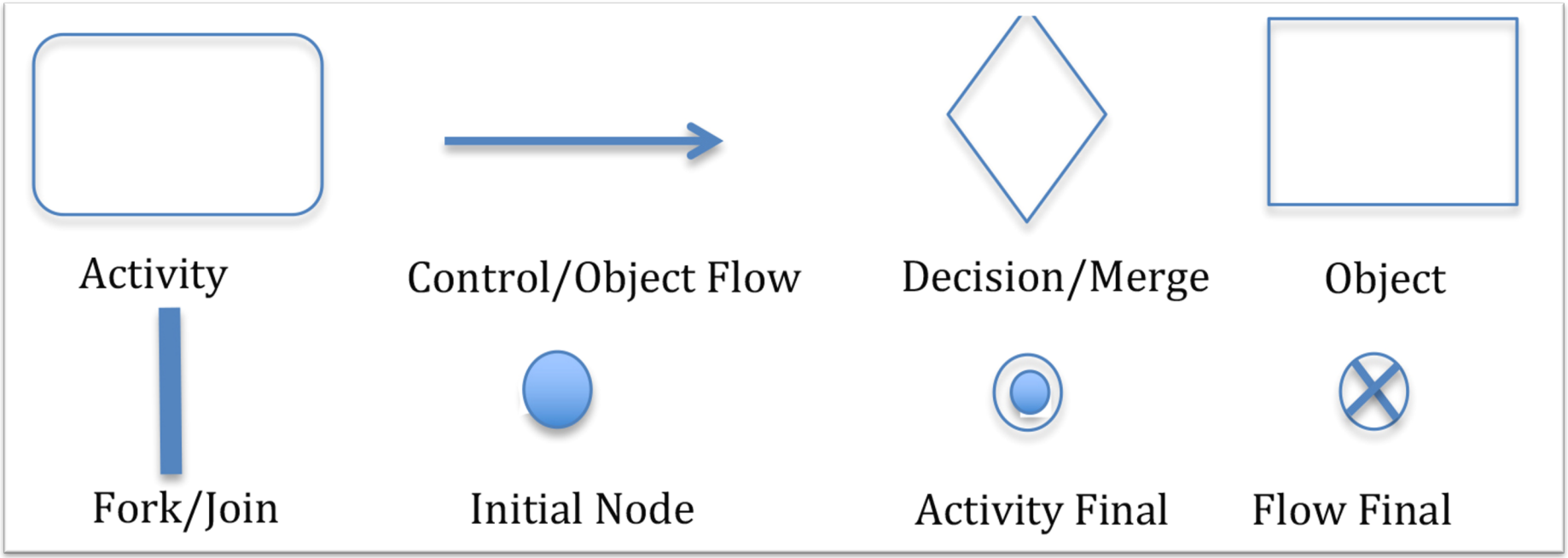

Figure 2-5

Simple, Incomplete Activity Diagram Example

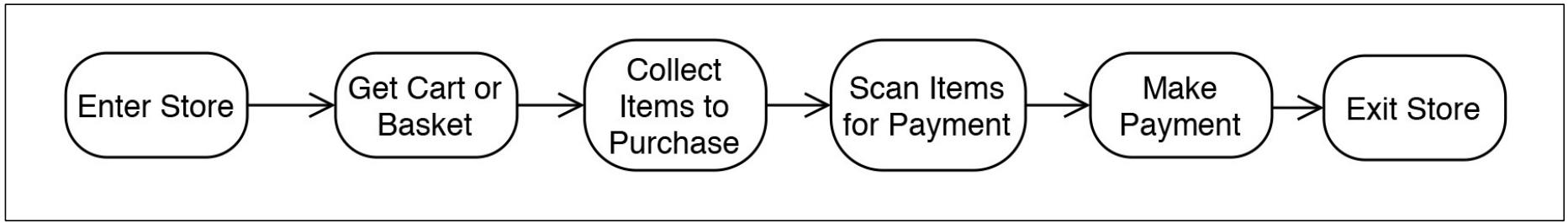

Figure 2-6

Activity Diagram Example with Beginning and Final Nodes Added

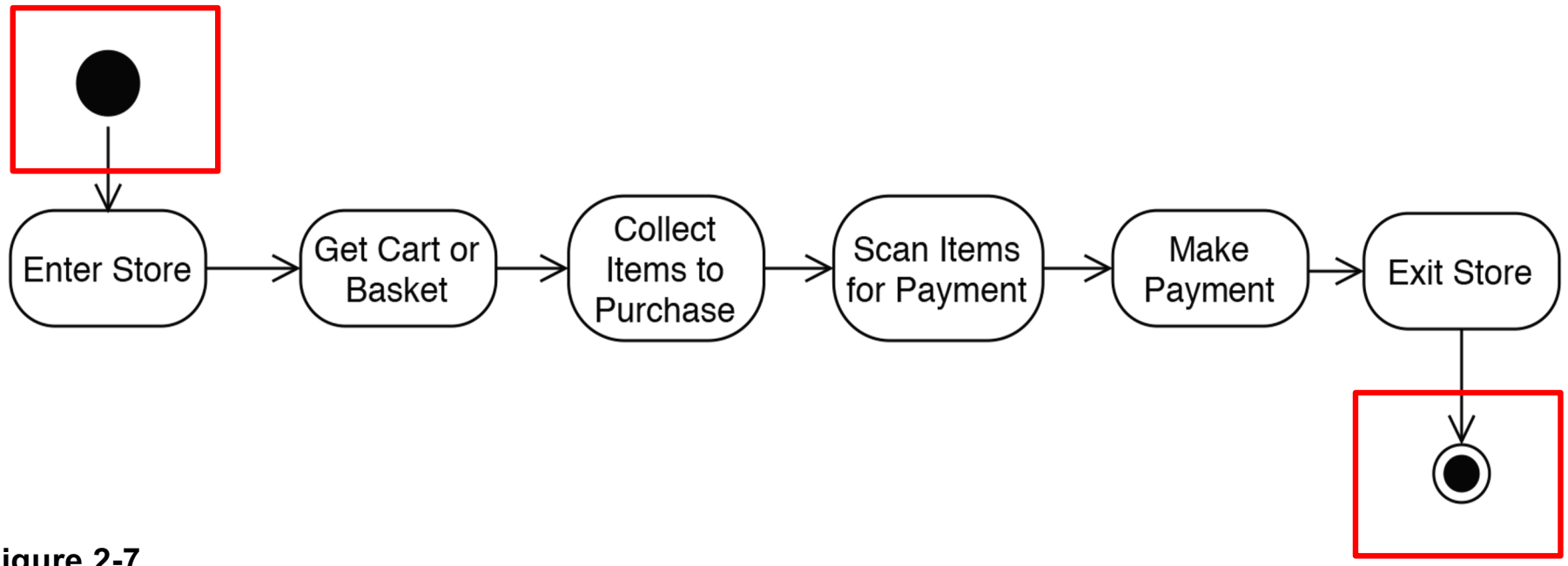

Figure 2-7

Activity Diagram with Decision Node and Flow Final Added

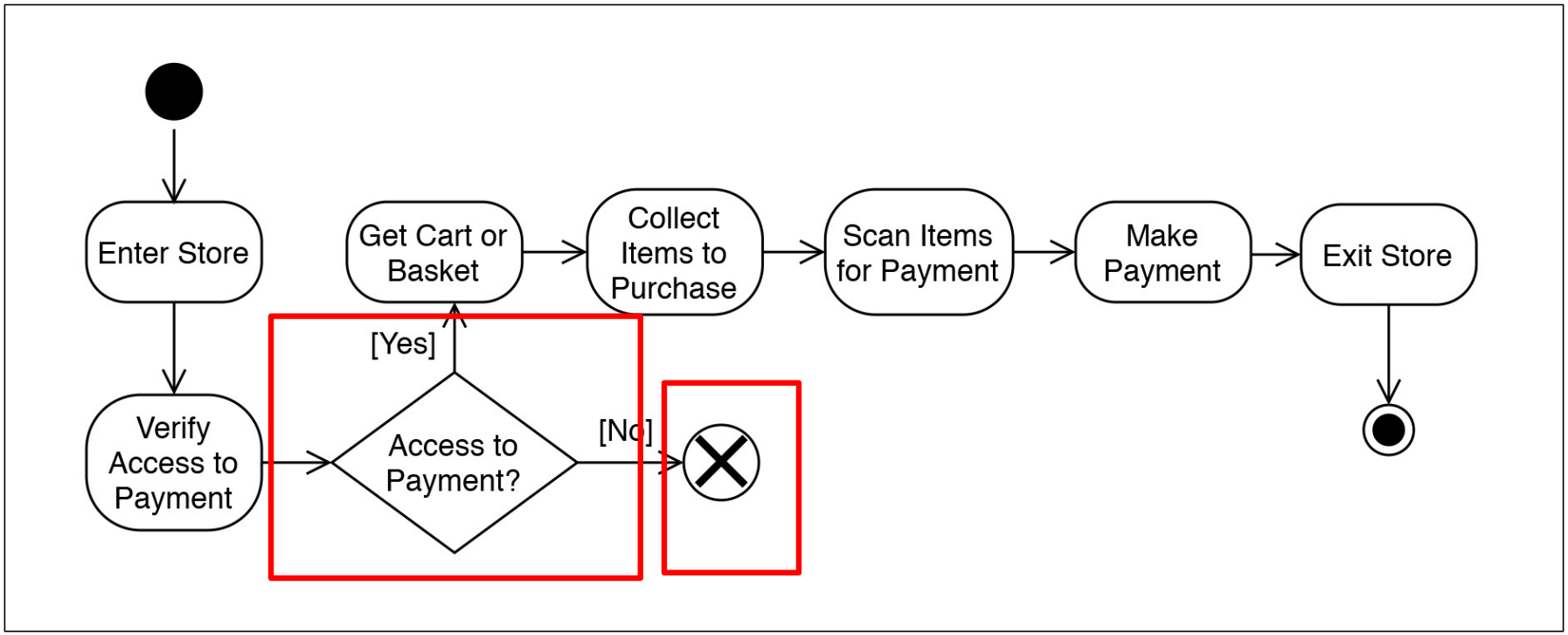

Figure 2-8

Activity Diagram with Actor Roles Specified

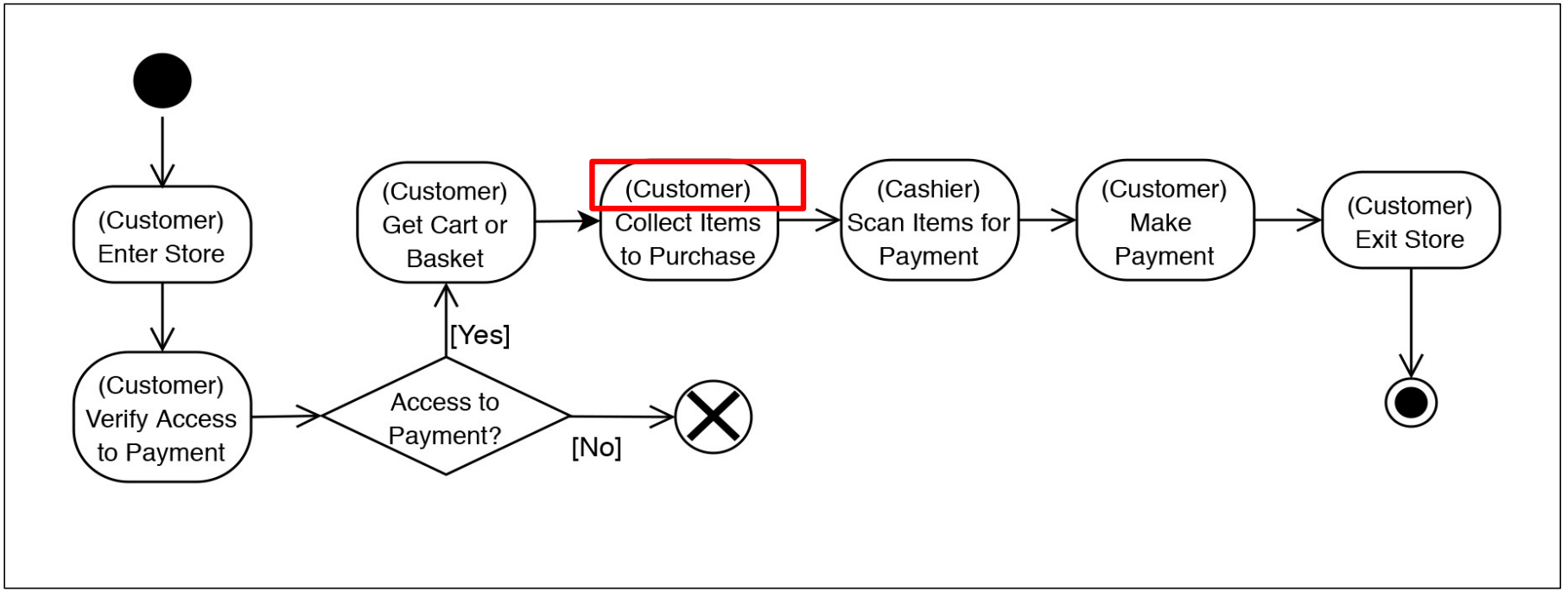

Figure 2-9

Activity Diagram with Fork and Join Added

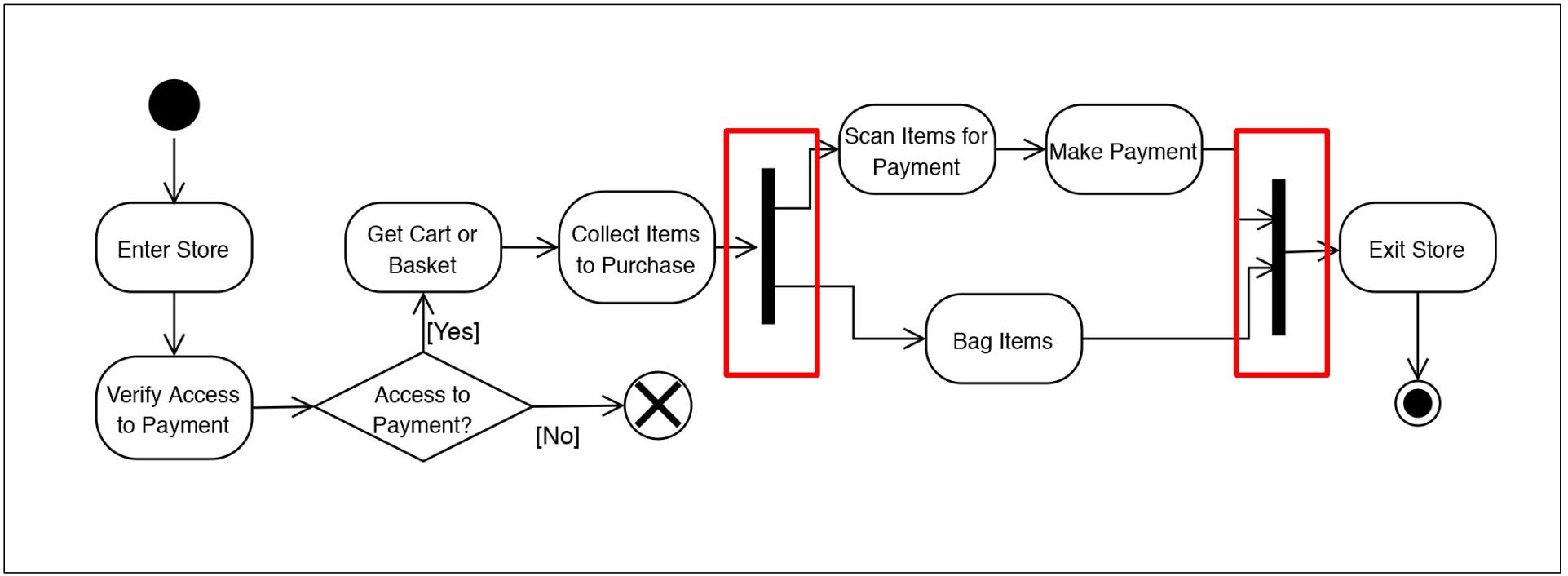

Figure 2-10

Activity Diagram with Merge Added

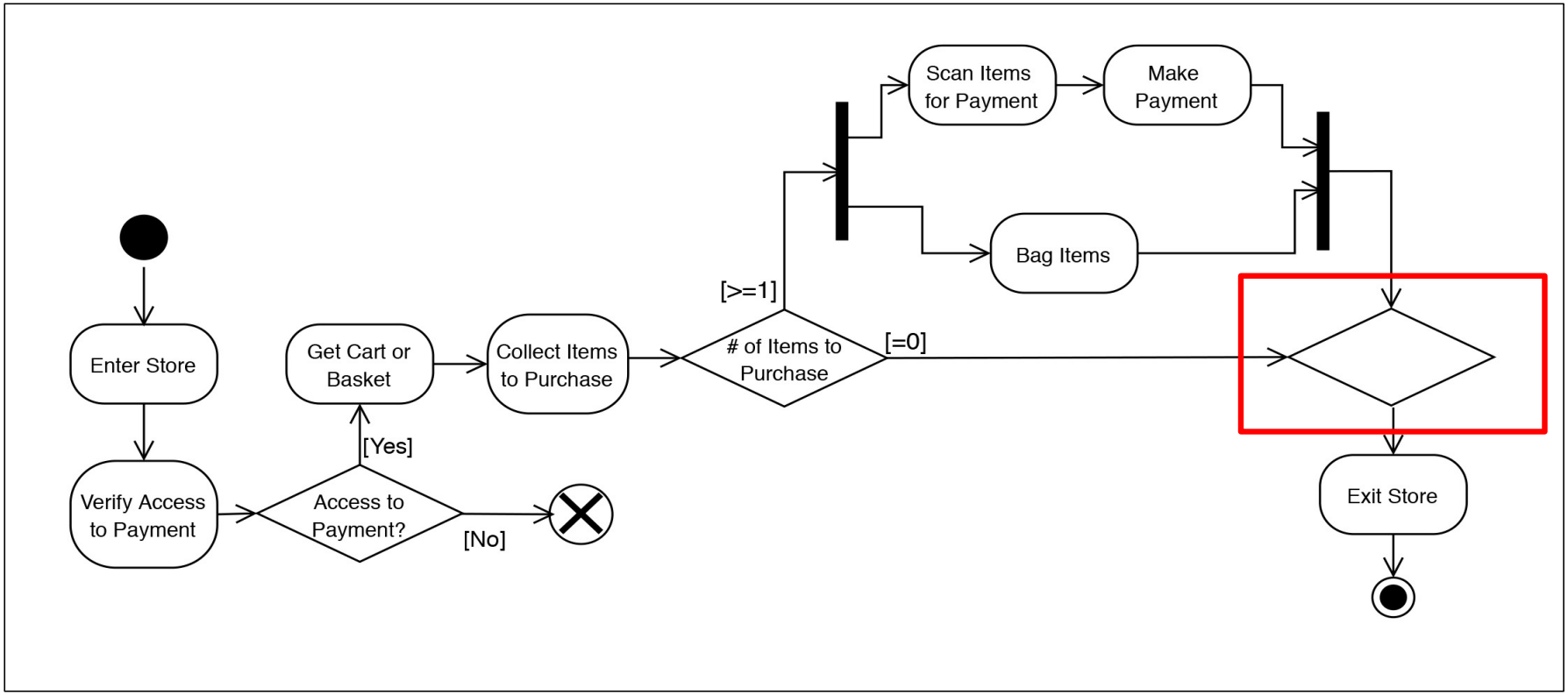

Figure 2-11

Activity Diagram with Swim Lanes Added

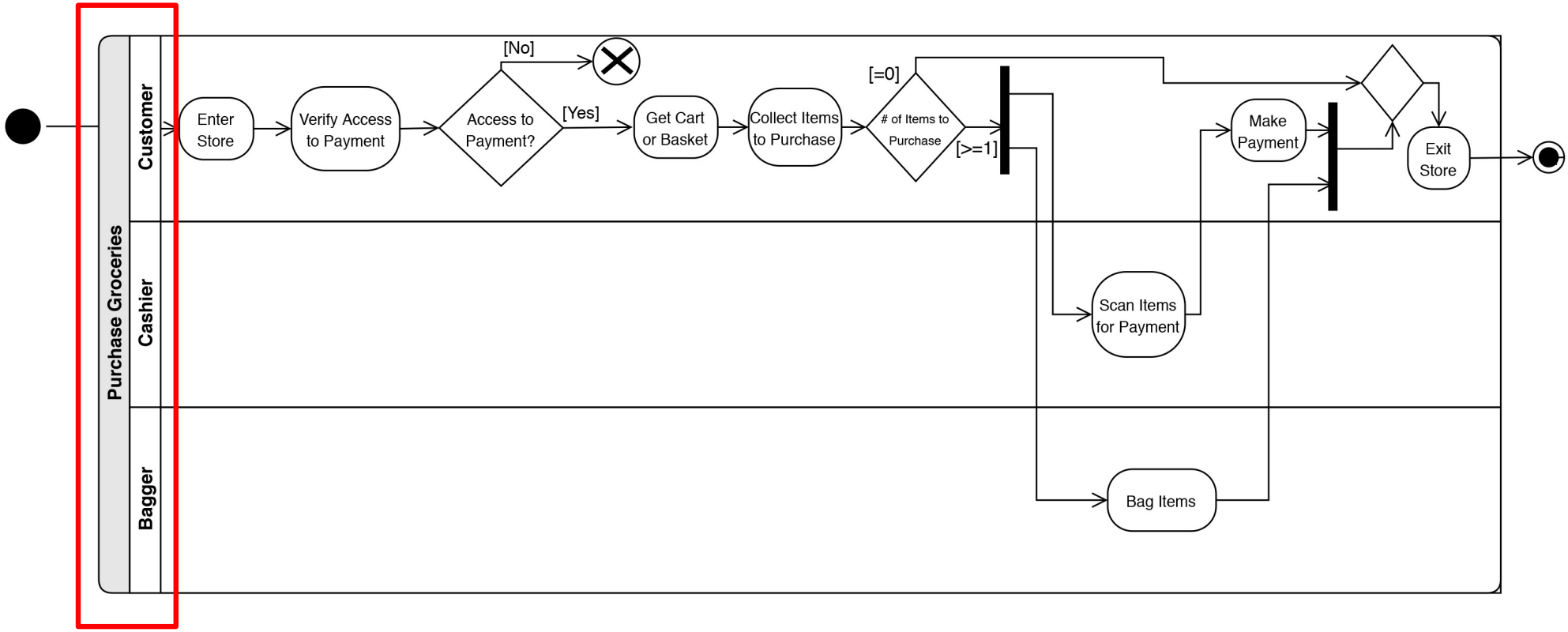

Figure 2-12

Iteration Notation Added

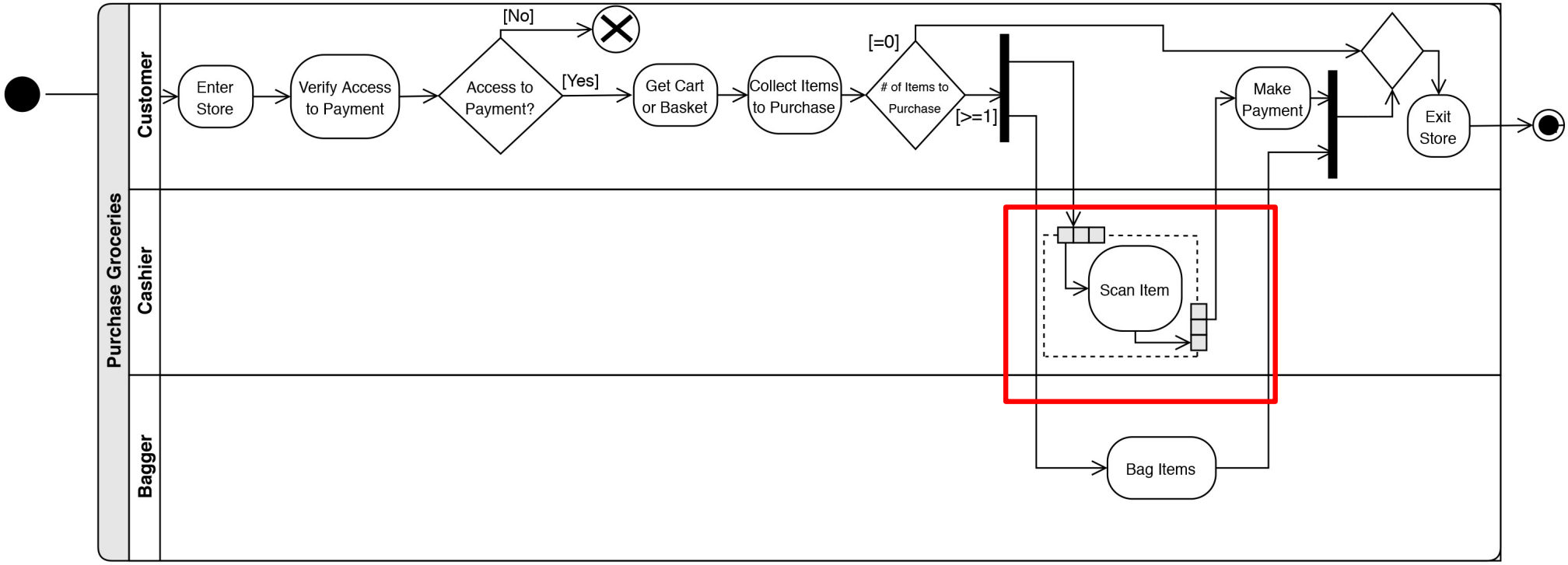

Figure 2-13

Advanced Activity Diagram Notation

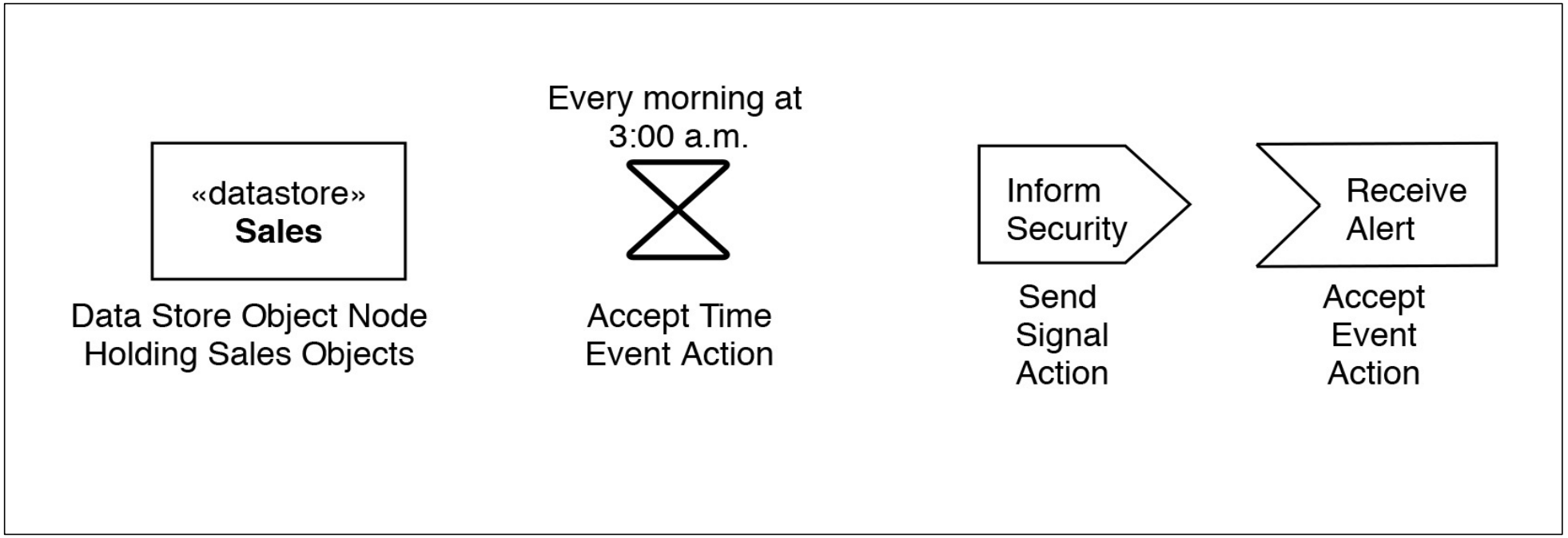

Figure 2-14

Activity Diagram with Object Node and Object Flows Added

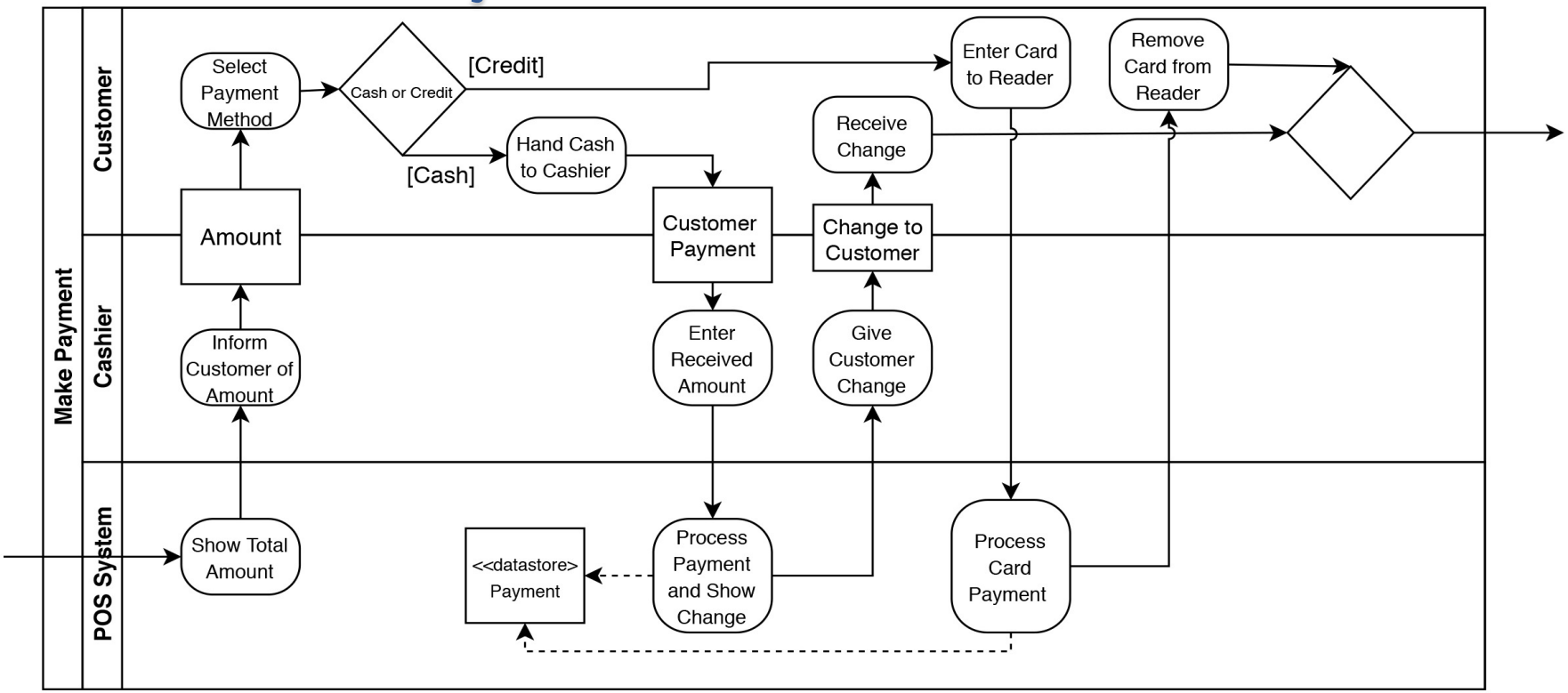

Figure 2-15

Activity Diagram with Signals Added

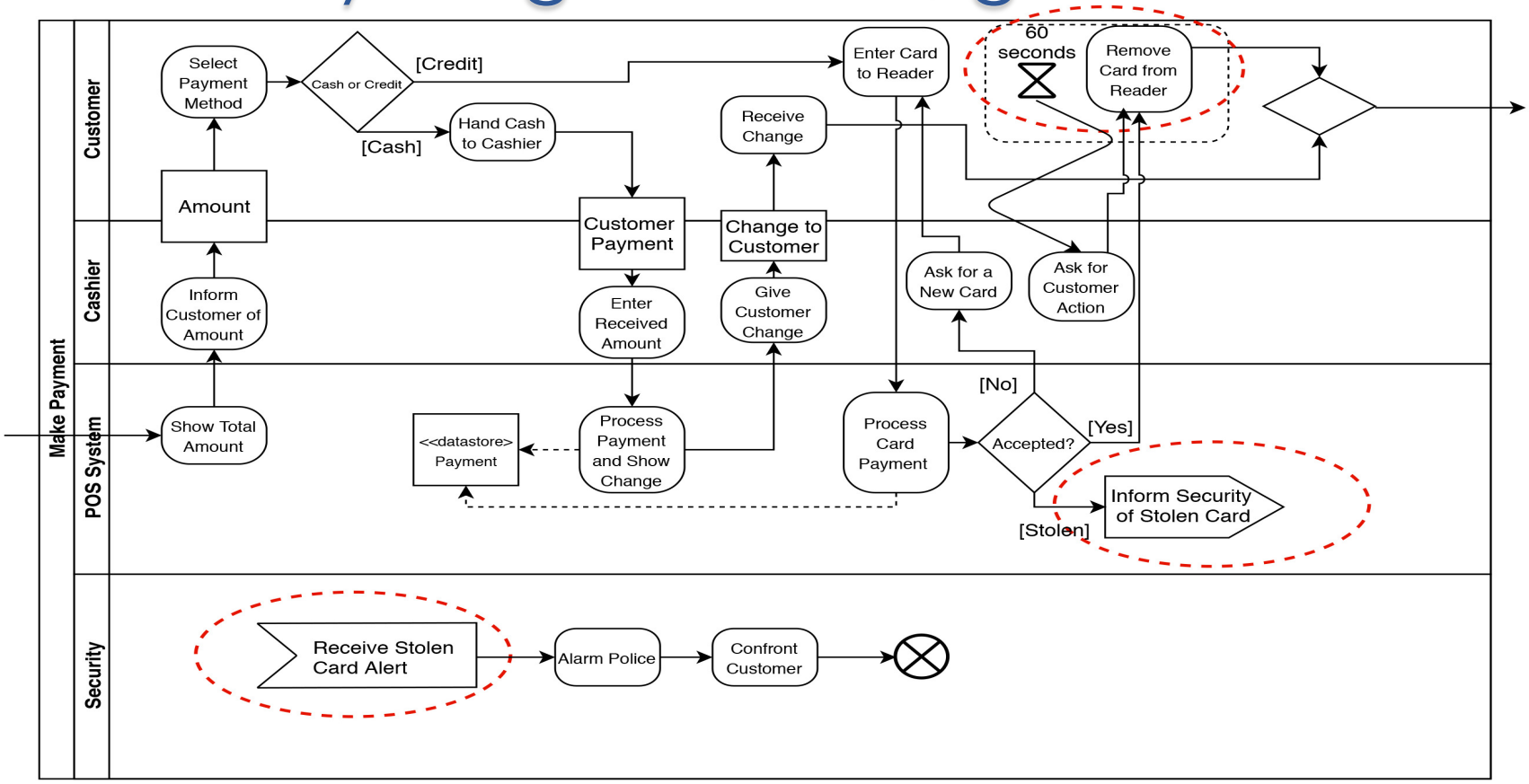

Figure 2-16

Current State Activity Diagram

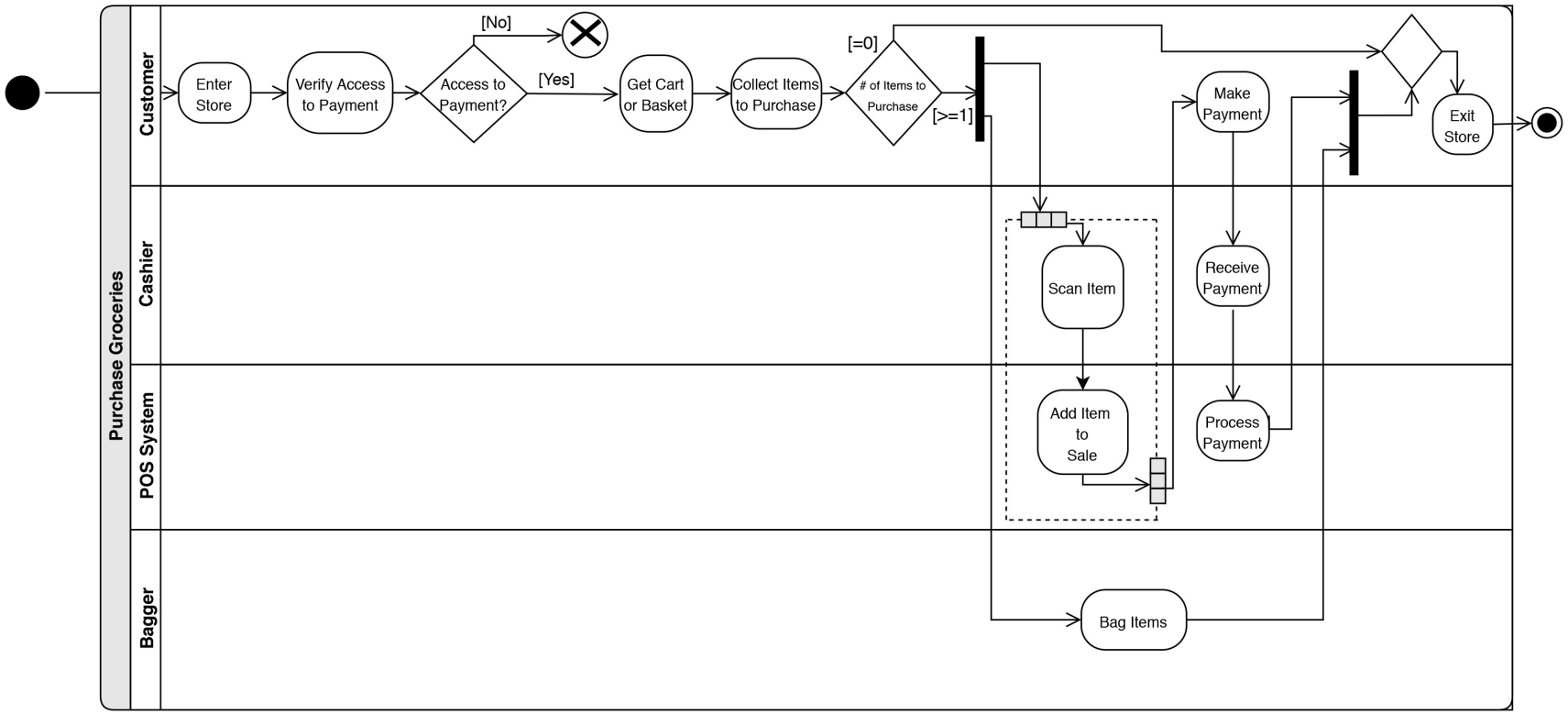

Figure 2-17

Future-State Activity Diagram

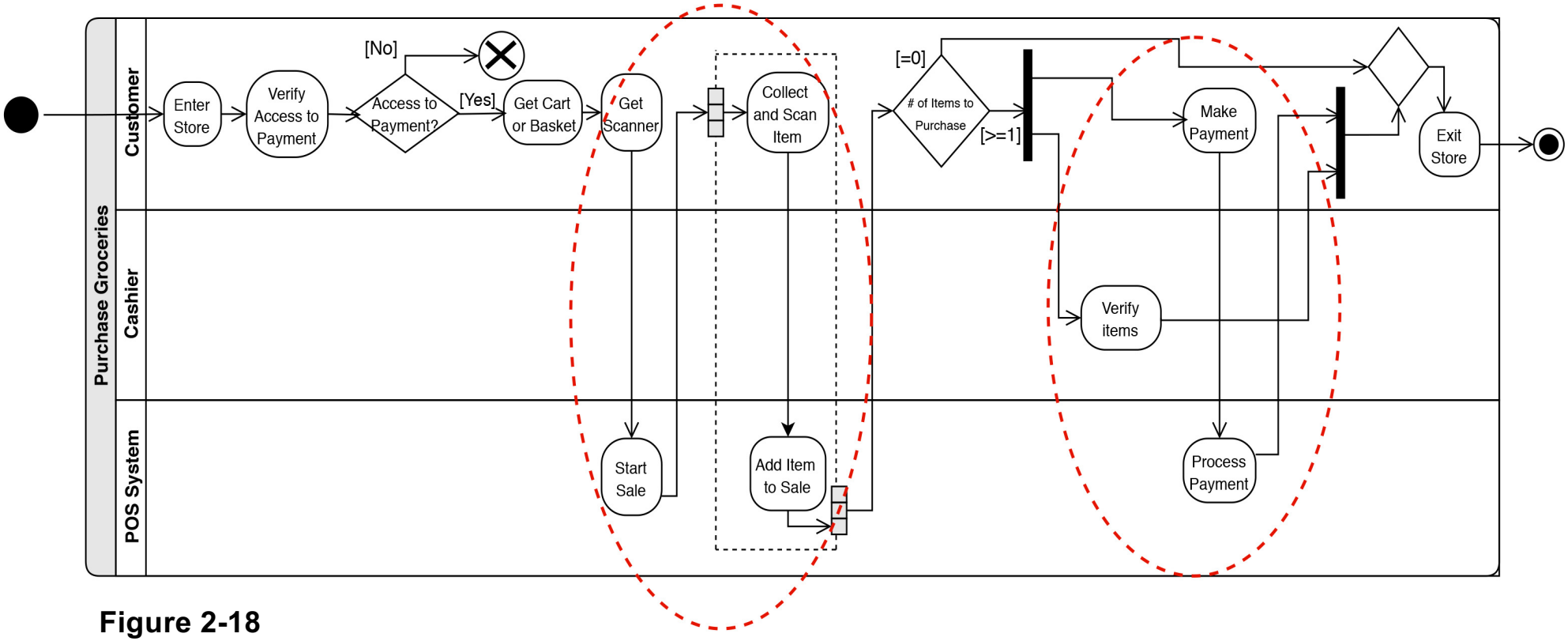

Figure 2-18

Chapter Summary

Let's Review

- Essential linkage between organizational goals at various levels and the way information systems can enable the attainment of the goals
  - Strategy
  - Business Model
  - Tactics
  - Operations
- It all starts from Initial Visioning
  - Key business changes
  - Required high-level systems capabilities
  - Business benefits
  - Initial feasibility analysis
- If ok from Initial Visioning, we continue with Business Analysis
  - Business Processes
  - Key concepts and their relationships
  - User Stories
  - UI/UX
- Business Process Modeling with UML Activity Diagram
  - Current System vs. Future System – the difference between these two is the essence of business transformation
  - From very simple to highly complex
  - The choice is yours, depending on the project needs
- Introduction of the I2C2 case