ACS2913
Software Requirements Analysis and Design

Instructor: Victor Balogun

INVESTIGATING SYSTEM REQUIREMENTS

Chapter 2 Outline

- The RMO Consolidated Sales and Marketing System Project
- Systems Analysis Activities
- What Are Requirements?
- Stakeholders
- Information Gathering Techniques
- Models and Modeling
- Documenting Workflows with Activity Diagrams

Learning Objectives

- Describe the activities of systems analysis
- Explain the difference between functional and nonfunctional requirements
- Identify and understand different kinds of stakeholders and their contributions to requirements definition
- Describe information-gathering techniques and determine when each is best applied
- Describe the role of models in systems analysis
- Develop UML activity diagrams to model workflows

Overview

- Chapter 1 introduced the system development lifecycle (SDLC) and demonstrated its use for a small project
- This chapter expands the SDLC processes to cover a wider range of concepts, tools and techniques
- Core process 3: Discover and understand the details of the problem or need—is the main focus of systems analysis
- Systems analysis activities are detailed in this chapter
- A larger Ridgeline Mountain Outfitters (RMO) project is introduced that will be used throughout the text to illustrate analysis and design

Ridgeline Mountain Outfitters (RMO)

- RMO has an elaborate set of information systems that support operations and management
- Customer expectations, modern technological capabilities, and competitive pressures led RMO to believe it is time to upgrade support for sales and marketing
- A new Consolidated Sales and Marketing System was proposed
- This is a major project that grew out of the RMO strategic planning process

RMO Information Systems Strategic Plan

Technology architecture— the set of computing hardware, network hardware and topology, and system software employed by the organization

Application architecture—the information systems that supports the organization (information systems, subsystems, and supporting technology)

RMO Existing Application Architecture

Supply Chain Management (SCM)

- 5 years old; Java/Oracle
- Tradeshow system will interface with SCM

Phone/Mail Order System

- 12 years old; Visual Studio/MS SQL
- Reached capacity; minimal integration

Retail Store System

- Older package solution; minimal integration

Customer Support System (CSS)

- Web based system; evolved over the years, minimal integration

Proposed Application Architecture: Integrate SCM and New CSMS

New Consolidated Sales and Marketing System (CSMS)

Sales Subsystem

- Integrates online, phone, and retail stores

Order Fulfillment Subsystem

- Track shipments, rate products and services

Customer Account Subsystem

- Shopping history, linkups, “mountain bucks” rewards

Marketing Subsystem

- Promotional packages, partner relationships, more complete merchandise information and reporting

Systems Analysis Activities

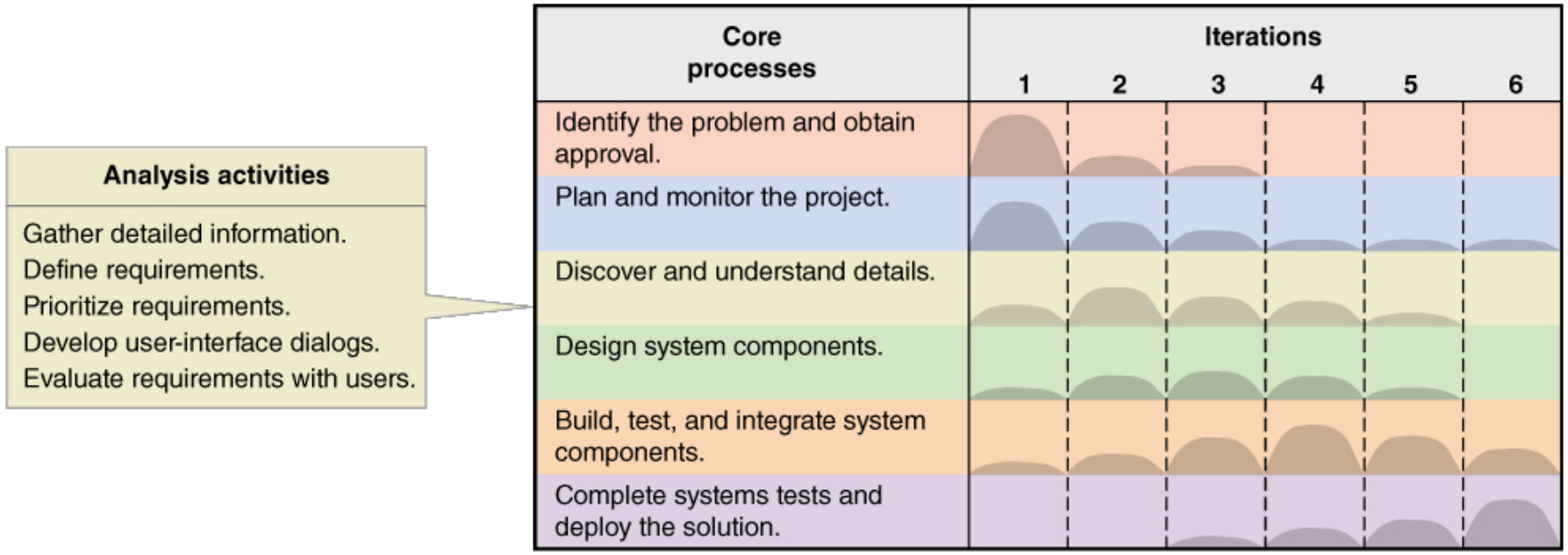
The New Consolidated Sales and Marketing System (CSMS) will require discovering and understanding extensive and complex business processes and business rules

The SDLC indicates the project starts with

- identifying the problem,
- obtaining approval,
- planning the project (as seen in Chapter 1)

To get to the heart of systems analysis, details of project planning activities are omitted

Systems Analysis Activities
Involve discovery and understanding



Systems Analysis Activities

Gather Detailed Information

- Interviews, questionnaires, documents, observing business processes, researching vendors, comments and suggestions

Define Requirements

- Modeling functional requirements and non-functional requirements

Prioritize Requirements

- Essential, important, vs. nice to have

Develop User-Interface Dialogs

- Flow of interaction between user and system

Evaluate Requirements with Users

- User involvement, feedback, adapt to changes

What Are Requirements?

System Requirements =

- Functional requirements
- Non-functional requirements

Functional Requirements– the activities the system must perform

- Business uses, functions the users carry out
- Shown as use cases in Chapter 1

Non-Functional Requirements– other system characteristics

- Constraints and performance goals

FURPS+ Requirements Acronym

Functional requirements

Usability requirements

Reliability requirements

Performance requirements

Security requirements

+ even more categories…

FURPS+ Requirements Acronym

Requirement categories	FURPS categories	Example requirements
Functional	Functions	Business rules and processes
Nonfunctional	Usability Reliability Performance Security	User interface, ease of use Failure rate, recovery methods Response time, throughput Access controls, encryption

Additional Requirements Categories

Design constraints –

- Specific restrictions for hardware and software

Implementation requirements

- Specific languages, tools, protocols, etc.

Interface requirements

- Interface links to other systems

Physical requirements

- Physical facilities and equipment constraints

Supportability requirements

- Automatic updates and enhancement methods

Stakeholders

Who do you involve and talk to?

Stakeholders– persons who have an interest in the successful implementation of the system

Internal Stakeholders– persons within the organization

External stakeholders – persons outside the organization

Operational stakeholders – persons who regularly interact with the system

Executive stakeholders– persons who don't directly interact, but use the information or have financial interest

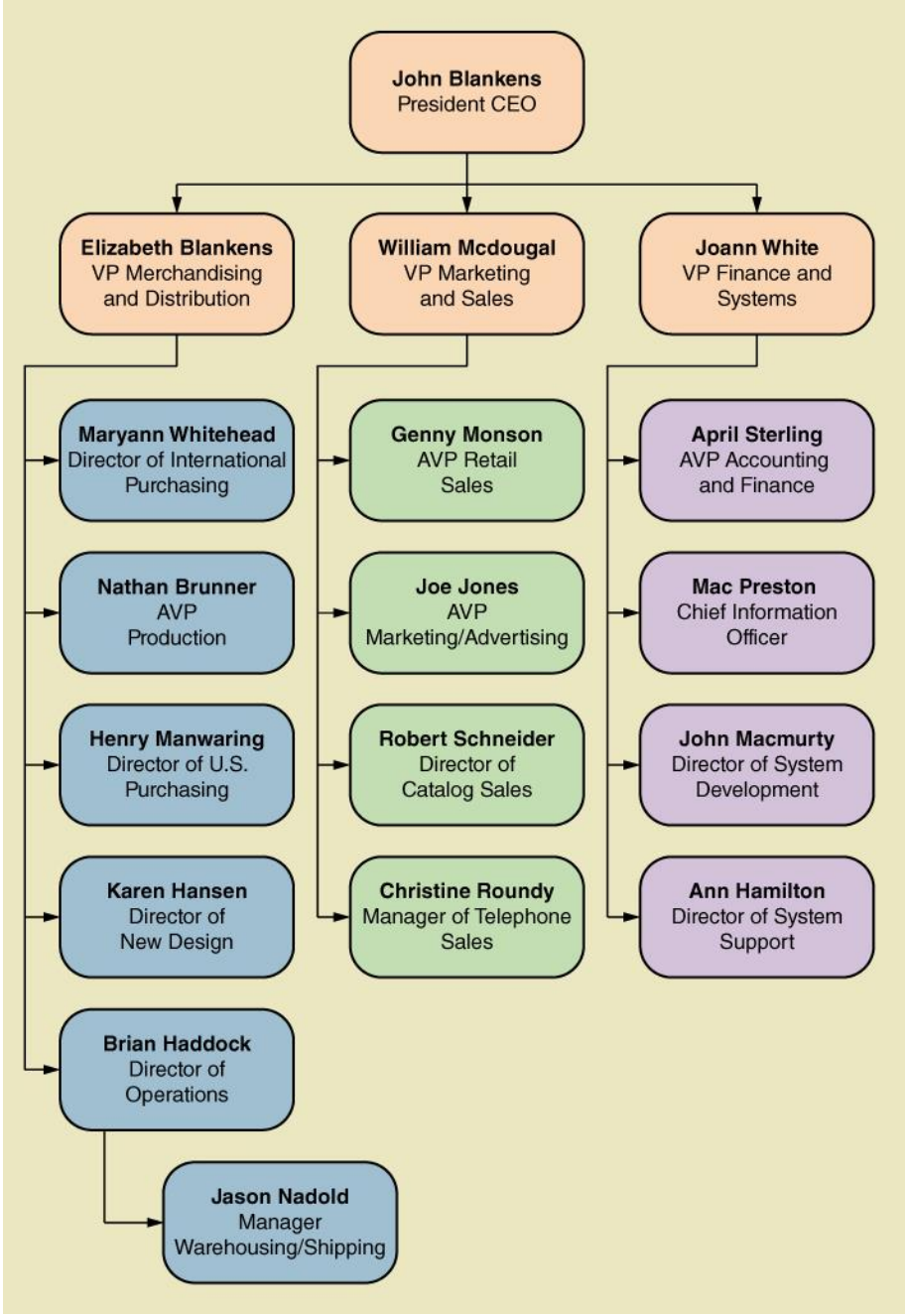
Stakeholders

Comprehensive accounting system for public company

Stakeholders For RMO CSMS Project

- Phone/mail sales order clerks
- Warehouse and shipping personnel
- Marketing personnel who maintain online catalog information
- Marketing, sales, accounting, and financial managers
- Senior executives
- Customers
- External shippers (e.g., UPS and FedEx)

RMO Internal Stakeholders



Summary

Systems analysis activities correspond to the core SDLC process *Discover and understand details*

System projects originate from the information system strategic plan, which contains an technology architecture plan and an application architecture plan

The RMO CSMS Project will be used throughout the text as an example of analysis and design

Summary

Systems analysis involves defining system requirements– functional and non-functional

Analysis activities include

- Gather detailed information
- Define requirements
- Prioritize requirements
- Develop user-interface dialogs
- Evaluate requirements with users

FURPS+ is the acronym for functional, usability, reliability, performance, and security requirements

Summary

Stakeholders are the people who have an interest in the success of the project

There are internal vs. external stakeholders and operational vs. executive stakeholders