Lecture 2
Requirements discovery

Com S/SE 409/509

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Assignment (from Tues): form teams by Thursday

- Teams: HW and Project may be done in teams of 3 or 4:
- Email Olukorede fakorede@iastate.edu by this Thursday:
  - Option 1: with the **names & emails** of your team's members. If your team has 2 members & you'd like more, put that in your email.
  - Option 2: with a statement that you want to work individually
  - Option 3: otherwise, we'll assign you to a team

Reading assignment: Chapters 1-3, Robertson & Robertson

- Chap. 1 "Some Fundamental Truths" Debunking myths (read now)
- Chap. 2 "The Requirements Process" Volere Overview (read before Exam 2)
- Chap. 3 "Scoping the Business Problem" Today's lecture (read now)
- Textbook has:
  - Appendix with templates for topics described in text
  - Glossary
  - Online only, in Canvas: lectures, exams, office hours

IceBreaker

- Case study used by the textbook. Become familiar with it.

- Product to predict when and where ice will form on roads, & schedule trucks to treat the roads with de-icing material.

vaisala.com/en/roaddss-manager

Types of Requirements

- Requirements describe:
  - what the product is intended to accomplish for its users,
  - in what manner it is to accomplish it
  - what constraints it must satisfy in its context

1. A **functional** requirement is something the product must do (p. 10)
   - Ex: "The product shall produce an updated schedule when a truck's status changes."

2. A **nonfunctional** requirement is a quality (a property) that the product must have (p. 10)
   - Ex: "The product shall produce this amended schedule in less than 0.25 seconds."

3. A **constraint** is a restriction placed on the project or eventual design of the product. (p. 10)
   - Ex: "The product shall be available at the beginning of the new tax year."
   - Ex: "The product shall operate on an iPad."

Capability
Functionality
behavior

Quality
*attribute*

Constrains
the design
space

1. Agree on the project's scope

3 steps

- What is the scope of the work (the processing activity and information that your product will support)?

- The scope is that part of the business that will change when you install the product you intend to build. (p. 39)

- Model the scope in a **Context Diagram**

Figure 3.3

The work is the part of the organization that you need to study to discover the requirements. The work is usually connected to other parts of the organization and to the outside world. You must study the work well enough to understand how it functions. This understanding will enable you to come up with alternative scopes for the product and eventually choose the one to build.

The Outside World

The Work
(the area under study)

The Organization

Alternative Product Scopes
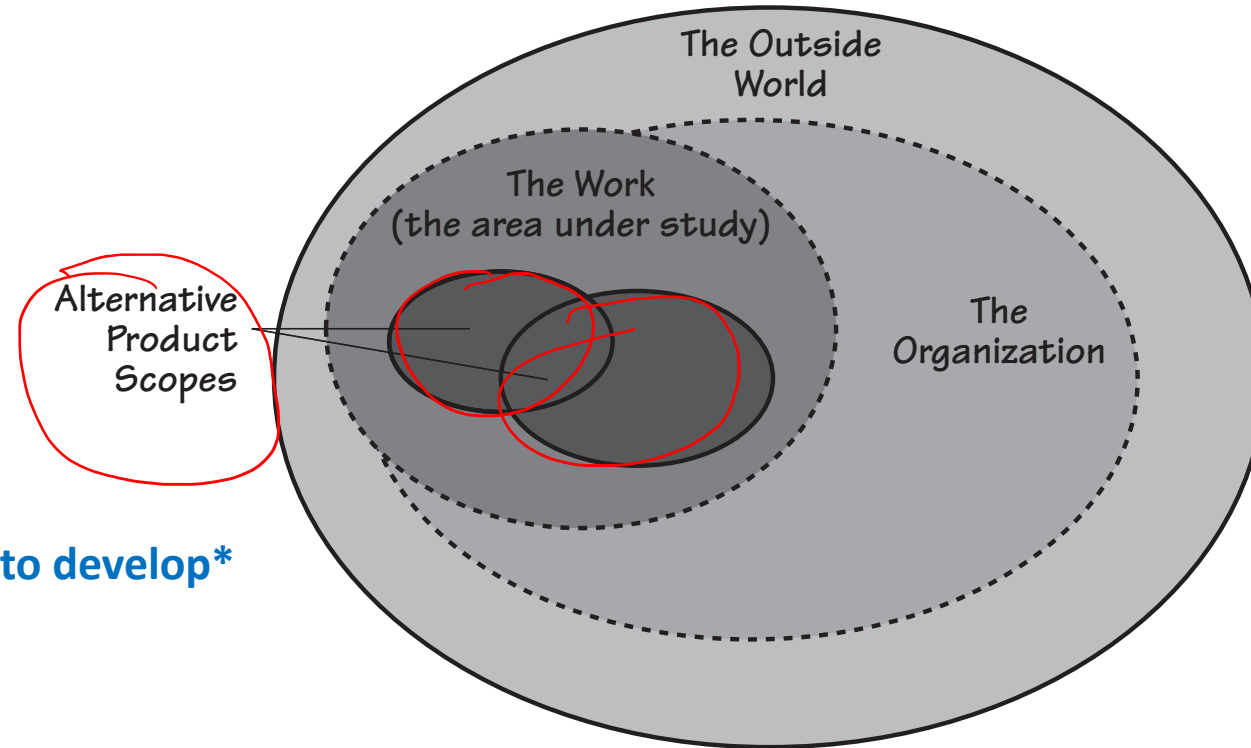
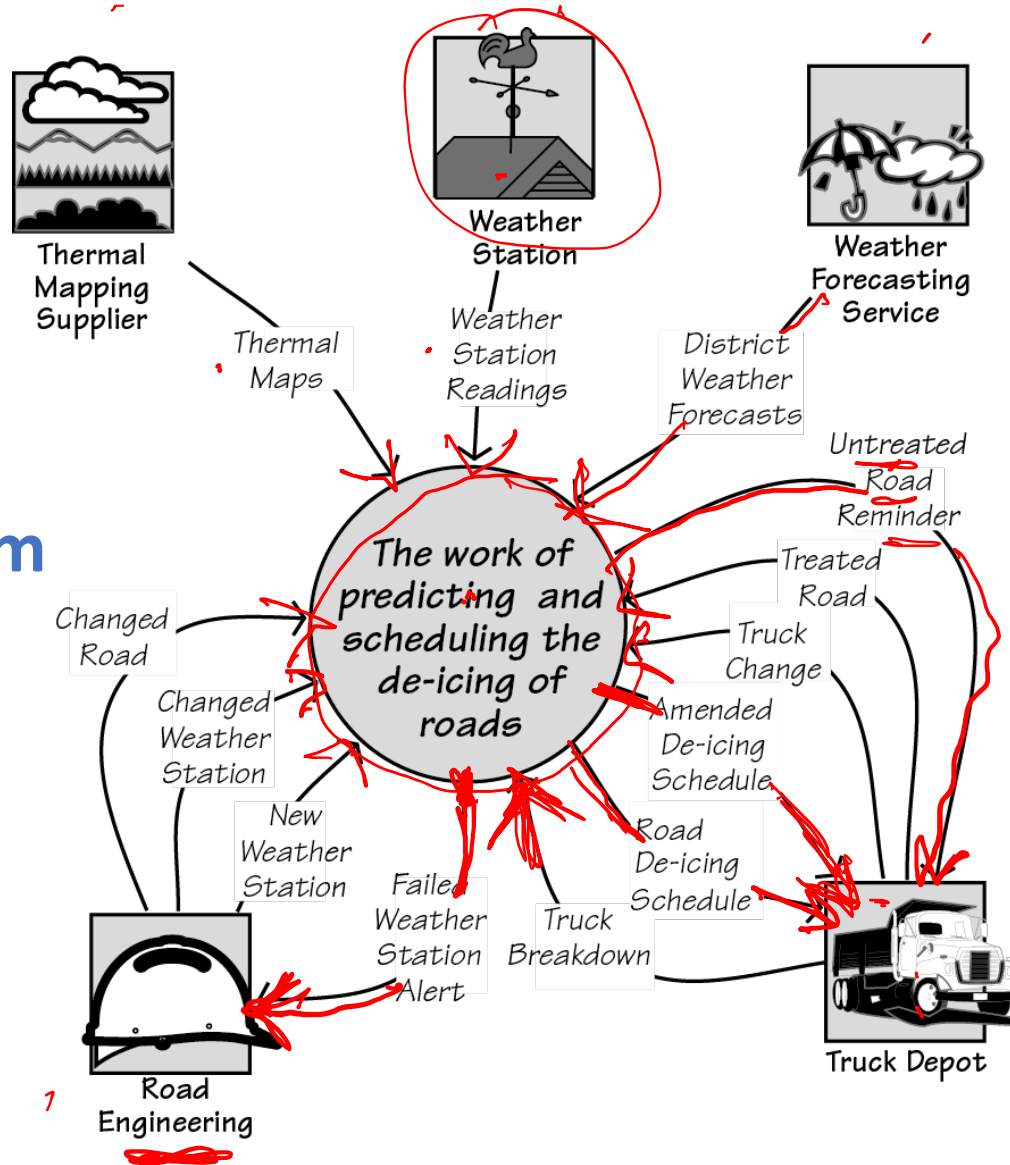**AGREE on which product to develop***

*Blue annotations are mine, placed on top of figures from the textbook

Figure 3.5

The work context diagram identifies the scope of the work to be studied. It shows the work as a single activity, surrounded by the adjacent systems. * The named arrows represent the data that flows between the work and the adjacent systems. The adjacent systems are the activities that you have decided not to study.

IceBreaker Context Diagram

*Adjacent systems are automated or human systems that receive data or services from your work activity &/or supply data or services to your work. (Read pp. 190-192.)

Thermal Mapping Supplier

Weather Station

Weather Forecasting Service

Thermal Maps

Weather Station Readings

District Weather Forecasts

Untreated Road Reminder

Treated Road

Truck Change

The work of predicting and scheduling the de-icing of roads

Changed Road

Changed Weather Station

Amended De-icing Schedule

New Weather Station

Failed Weather Station Alert

Truck Breakdown

Road De-icing Schedule

Truck Depot

Road Engineering

Interfaces

2. Identify the Stakeholders

- Anyone with an interest in, or an effect on, the outcome of the product (p. 44)

- Why do we care?

- Because stakeholders are a source of requirements! If you don't find all the stakeholders, you'll miss some requirements.

- IceBreaker stakeholders include *road engineers, truck depot supervisors, road safety experts, weather forecasters, . . .*
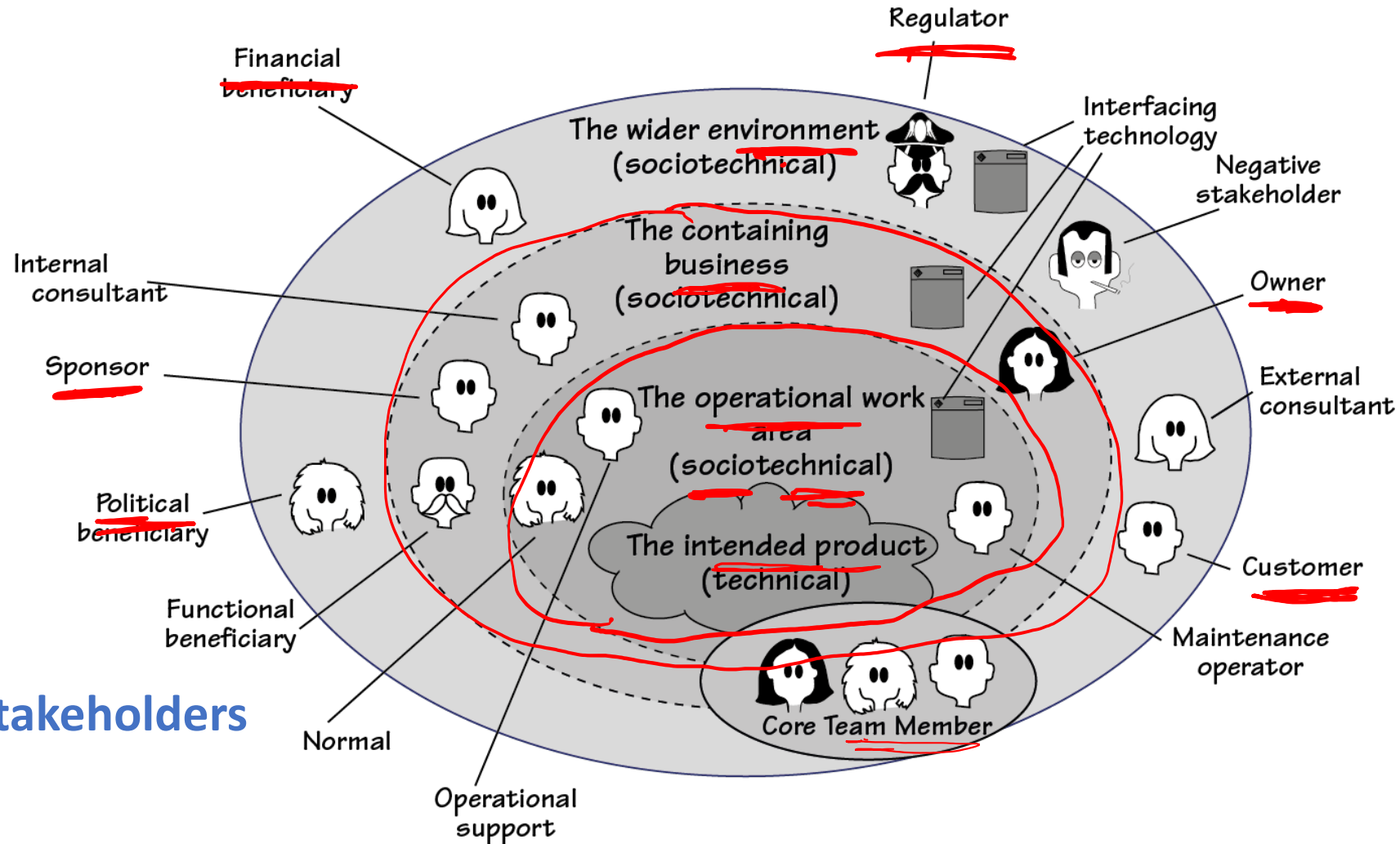
Figure 3.7

This stakeholder map shows the organizational rings surrounding the eventual product, and the classes of stakeholders who inhabit these rings. Use this map to help determine which classes of stakeholders are relevant to your project and which roles you need to represent them.

3. Discover the high-level requirements (aka Goals)

- Business Goals of IceBreaker project:
 - more accurate prediction & de-icing schedule
  - safer roads
  - reduced waste of de-icing supplies
- Software product is there to solve a business problem; understand it.

1. Agree on scope

2. Identify stakeholders

3. Discover goals

Figure 3.6

The scope, stakeholders, and goals are not decided in isolation from one another. Rather, the scope of the work indicates the stakeholders who have an interest in the work; the stakeholders, in turn, decide what they want the goals of the project to be.
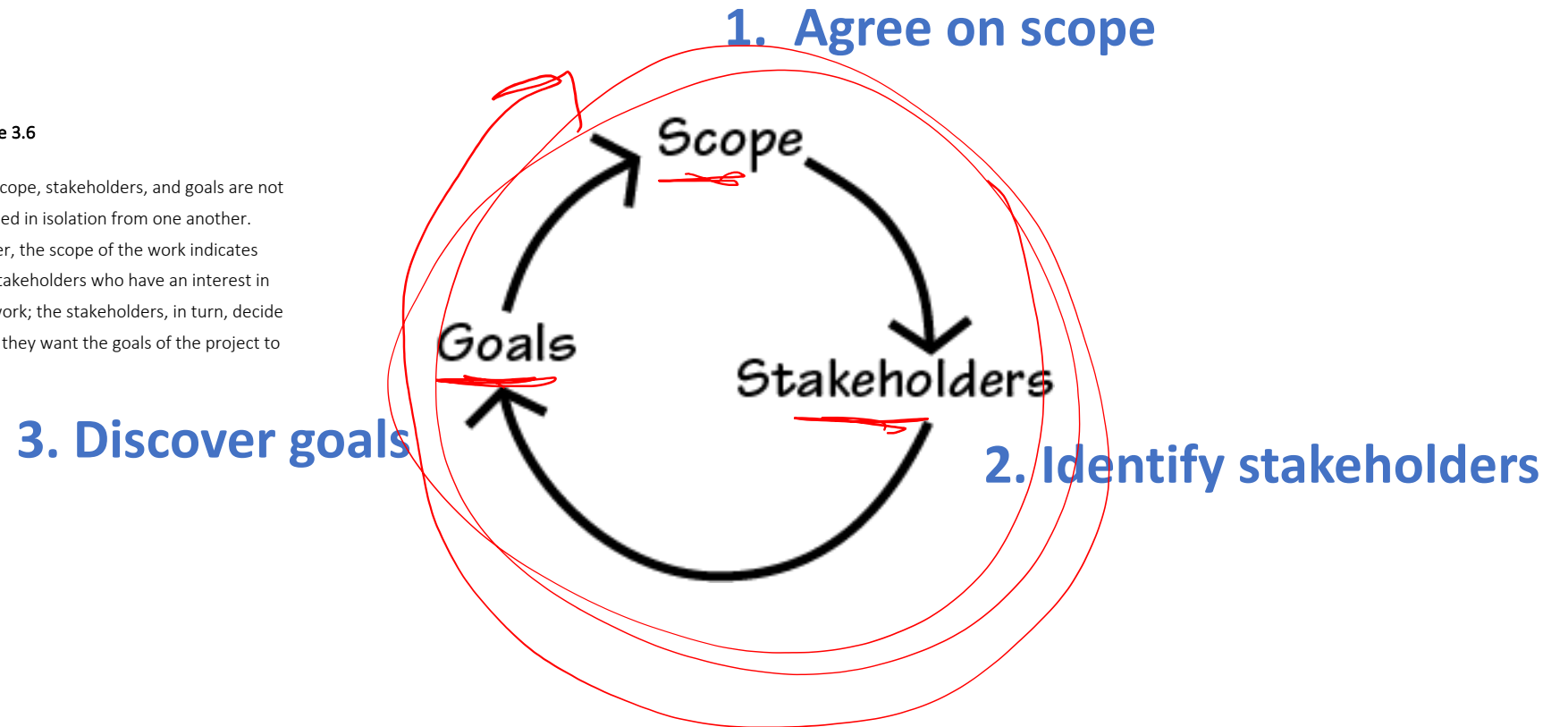
Discovering the requirements

Risk: "You must come to the correct understanding of the requirements and have your client agree with them, or your product will be seriously deficient."

Risk Reduction:

1. scope (with context diagram),
2. identify stakeholders with requirements/constraints for the product, and
3. understand the business goals

Textbook's subtitle: "getting requirements right" has it right!

Homework 1

- Teams will be assigned by Monday

- HW1 will be posted by Monday

- Due Thurs, 9/3

- I'll talk through it in Lecture 3

- HW questions? 1st stop is the TAs:

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