

Requirements Inception

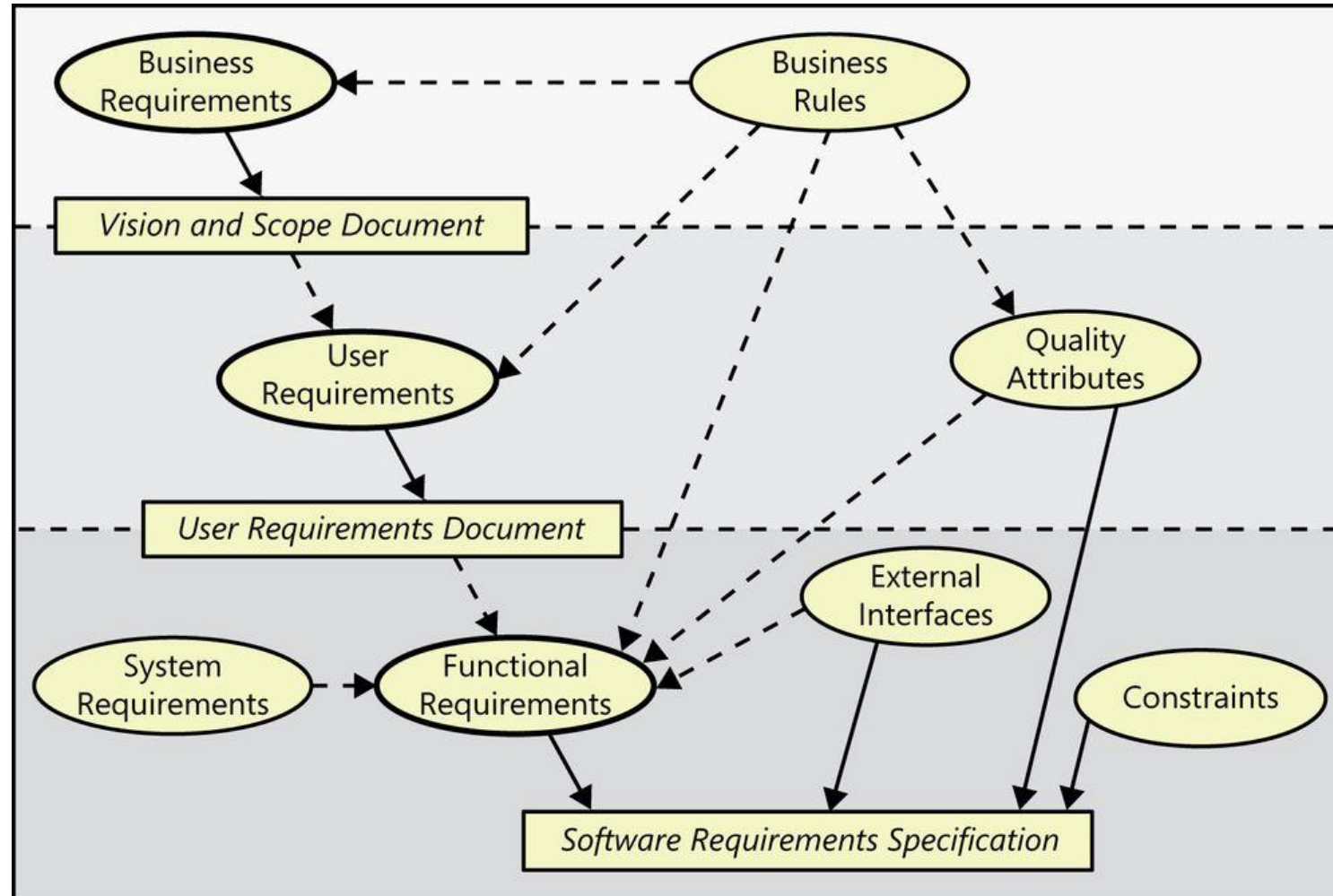
SE 311

Requirements Inception

- The goal is to establish a shared understanding of the context of the product, thereby defining its underlying problem, proposed solution, its boundaries, and benefit
- The result is documented into a vision and scope document

1. Business requirements
2. Scope and limitations
3. Business context

Why Requirements Inception?



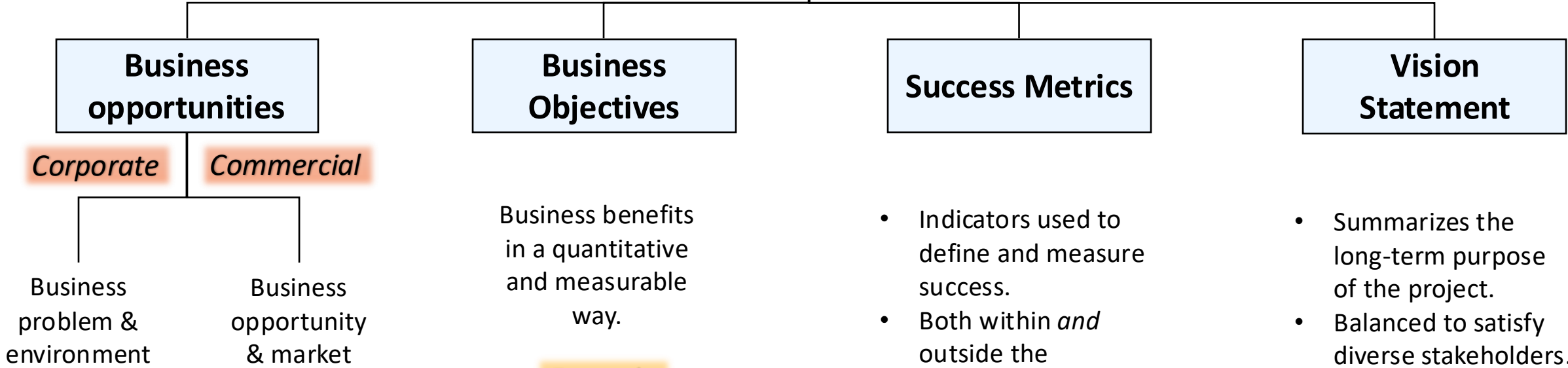
Why Requirements Inception?

- A project without a clearly defined and well-communicated direction invites disaster
 - Work based on unaligned objective
 - Stakeholders won't agree on requirements
 - Deadlines missed and budgets overrun

1. Business Requirements

- Describe the primary benefits that the new system will provide to its sponsors, buyers, and users.
- Directly influence which user requirements to implement and in what sequence.
- Sources
 - Funding sponsors
 - Corporate executives
 - Marketing managers
 - Product visionaries

Business Requirements



Business benefits in a quantitative and measurable way.

Example

- Indicators used to define and measure success.
- Both within *and* outside the organization.
- Indicate whether a project is on track to meet its business objectives.

Example

- Summarizes the long-term purpose of the project.
- Balanced to satisfy diverse stakeholders.
- Can be idealistic but still grounded in reality.

Example

Problems VS. Objectives	
<i>Problems</i> describe what is keeping the business from meeting their goals at present.	<i>Objectives</i> define ways to measure achievements of these goals.

Example

Business Objectives

Financial	Nonfinancial
<ul style="list-style-type: none">▪ Capture a market share of X % within Y months.▪ Increase market share in country W from X% to Y% within Z months.▪ Reach a sales volume of X units or revenue of \$Y within Z months.▪ Achieve X% return on investment within Y months.	<ul style="list-style-type: none">▪ Achieve a customer satisfaction measure of at least X within Y months of release.▪ Increase transaction-processing productivity by X% and reduce data error rate to no more than Y%.▪ Develop an extensible platform for a family of related products.▪ Develop specific core technology competencies.



Business Problems & Objectives

- Problems and objectives are intertwined: understanding one can reveal the other.
- Given a set of business objectives, ask:
 - *What is keeping us from reaching this goal?*
 - *Why do we care about that goal?*
 - *How will we assess the problem is solved?*

Example:

- Our ecommerce site is not profitable
 - Why is it not profitable?
 - Poor site design?
 - Bad pricing?
 - Poor customer management after the sale?
 - Some or all of the above?
- working backward to better understand the top-level business problem or opportunity.
- Given a business problem, ask to identify the measurable objective.
- The process is iterative – go on exploring through the problems and objectives until a list of features emerges.

Business Problems & Objectives

Analyst Questions

What motivates your interest in a chemical tracking system?

Managing chemical inventories manually costs too much and is inefficient.

How much would you like to reduce your chemical expenses?

By 25% within one year.

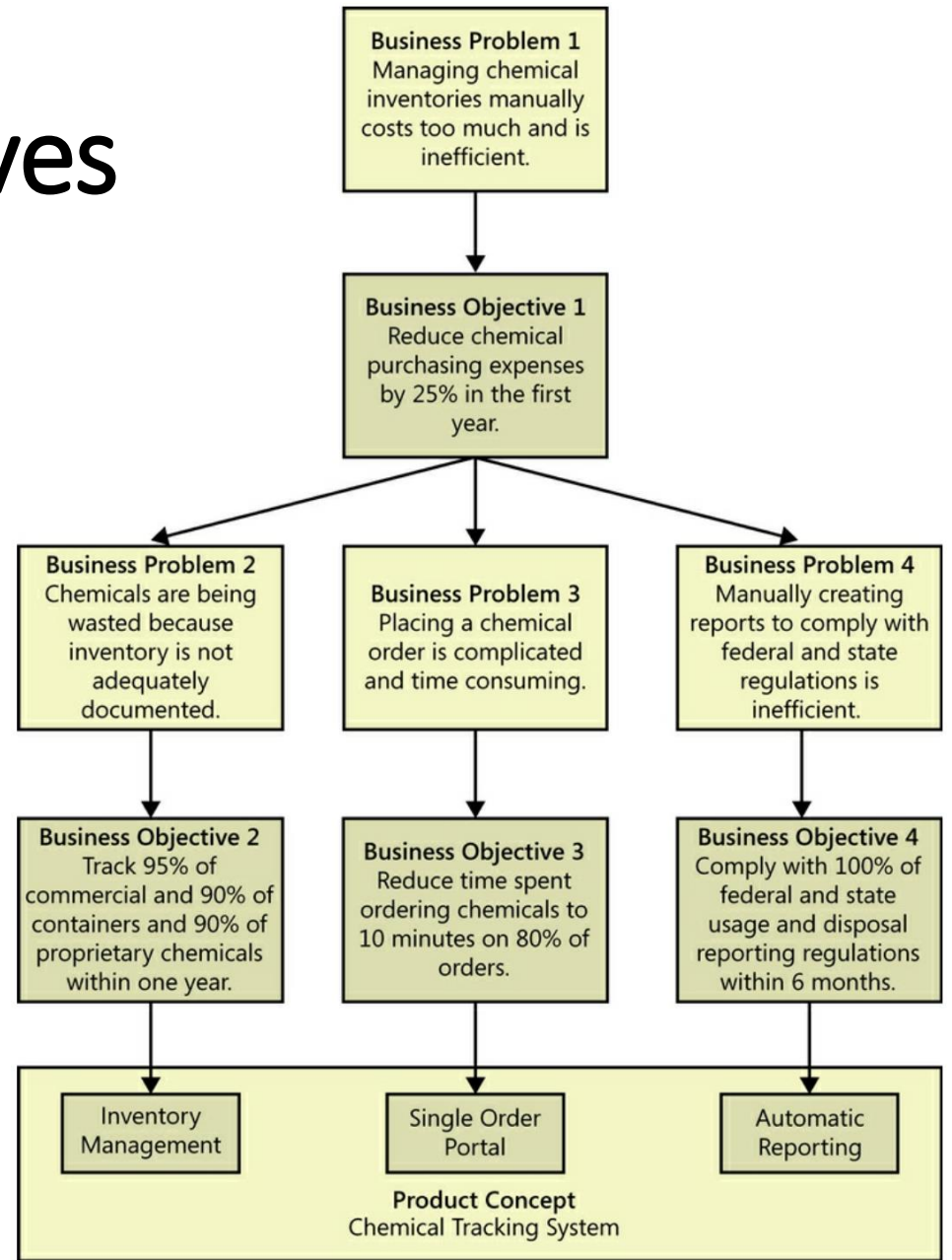
What is keeping you from cutting by 25% today?
What is causing the high cost and inefficiency?

We buy unnecessary chemicals because we don't know what we have in inventory. We discard too much unused material that has expired.

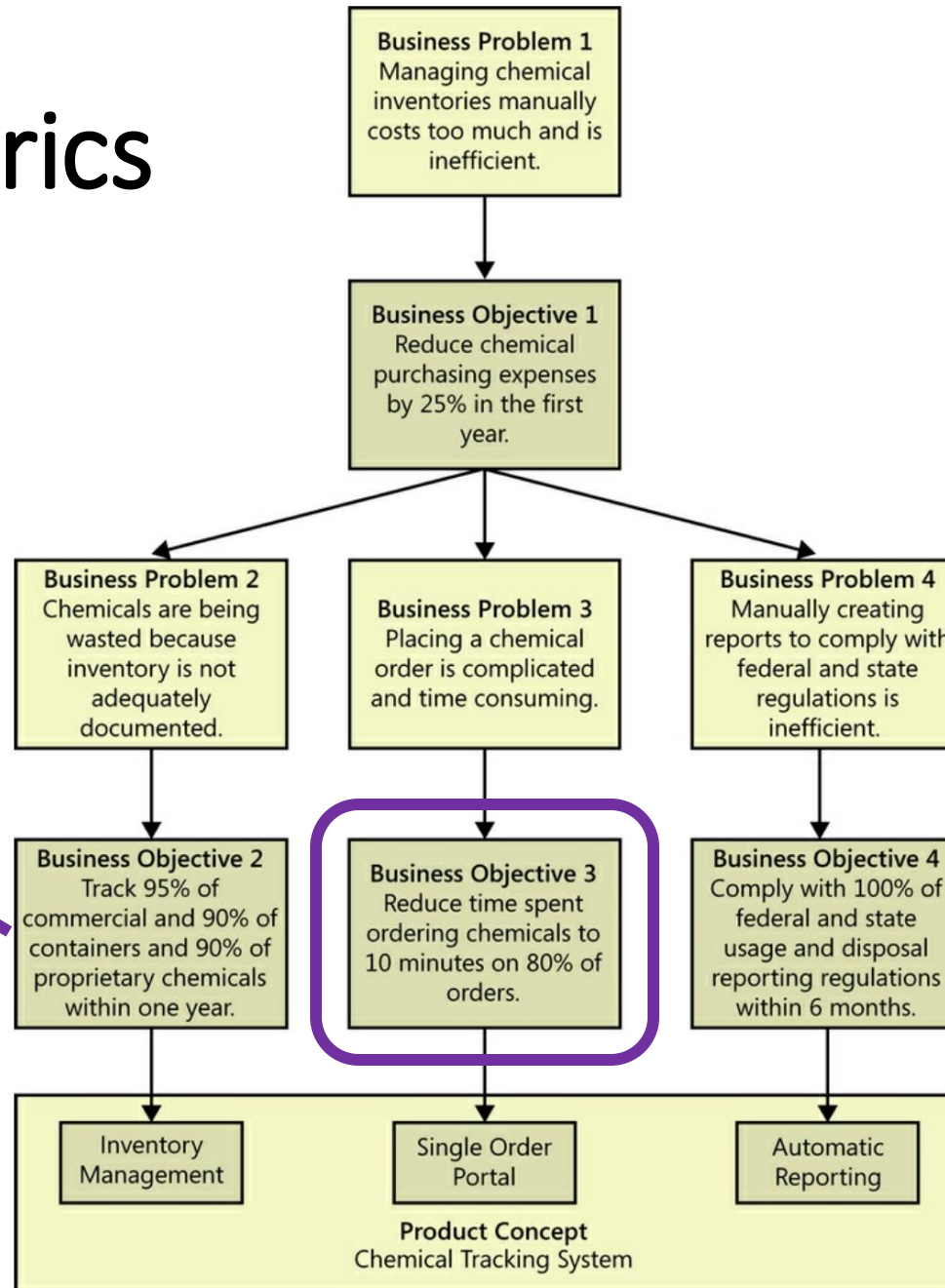
Anything else I should know?

Placing orders is complicated; it takes users a long time. The government reports we create are manually generated, which takes far too much time.

Executive Responses



Success Metrics



Track 60% of commercial chemical containers and 50% of proprietary chemicals within 4 weeks.



Vision Statement

- ***For***
- ***Who***
- ***The***
- ***Is***
- ***That***
- ***Unlike***
- ***Our product***

For scientists ***who*** need to request containers of chemicals, ***the*** Chemical Tracking System ***is*** an information system ***that*** will provide a single point of access to the chemical stockroom and to vendors. The system will store the location of every chemical container within the company, the quantity of material remaining in it, and the complete history of each container's locations and usage. This system will save the company 25 percent on chemical costs in the first year of use by allowing the company to fully exploit chemicals that are already available within the company, dispose of fewer partially used or expired containers, and use a standard chemical purchasing process. ***Unlike*** the current manual ordering processes, ***our product*** will generate all reports required to comply with federal and state government regulations that require the reporting of chemical usage, storage, and disposal.

Vision and Scope Document



1. Business requirements

- 1.1 Background
- 1.2 Business opportunity
- 1.3 Business objectives
- 1.4 Success metrics
- 1.5 Vision statement
- 1.6 Business risks
- 1.7 Business assumptions and dependencies

2. Scope and limitations

- 2.1 Major features
- 2.2 Scope of initial release
- 2.3 Scope of subsequent releases
- 2.4 Limitations and exclusions

3. Business context

- 3.1 Stakeholder profiles
- 3.2 Project priorities
- 3.3 Deployment considerations

Summary of major risks involved with developing –or not developing– the project.

- Potential Loss
- Likelihood of occurring
- Mitigation actions

Summary of the rationale and context for the new product

- All assumptions stakeholders made when conceiving project.
- Major dependencies on external factors.

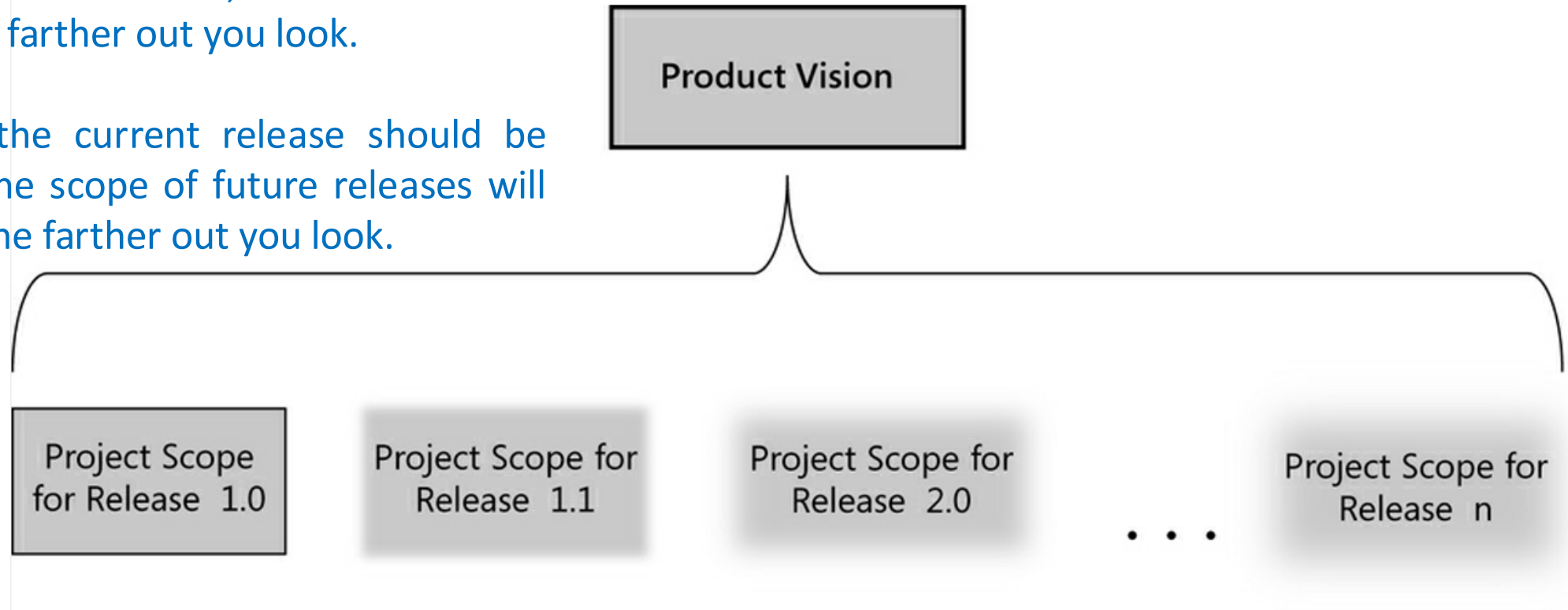
2. Scope and Limitations

Product Vision	VS.	Project Scope
<ul style="list-style-type: none">• Succinctly describes the ultimate product that will achieve the business objectives.• Applies to the product as a whole.		<ul style="list-style-type: none">• Identifies what portion of the ultimate project the current project will address.• Pertains to a specific project or iteration, and hence is more dynamic.

2. Scope and Limitation

The product vision encompasses the scope for each planned release, which is less well defined the farther out you look.

Scope for the current release should be clear, but the scope of future releases will be fuzzier the farther out you look.



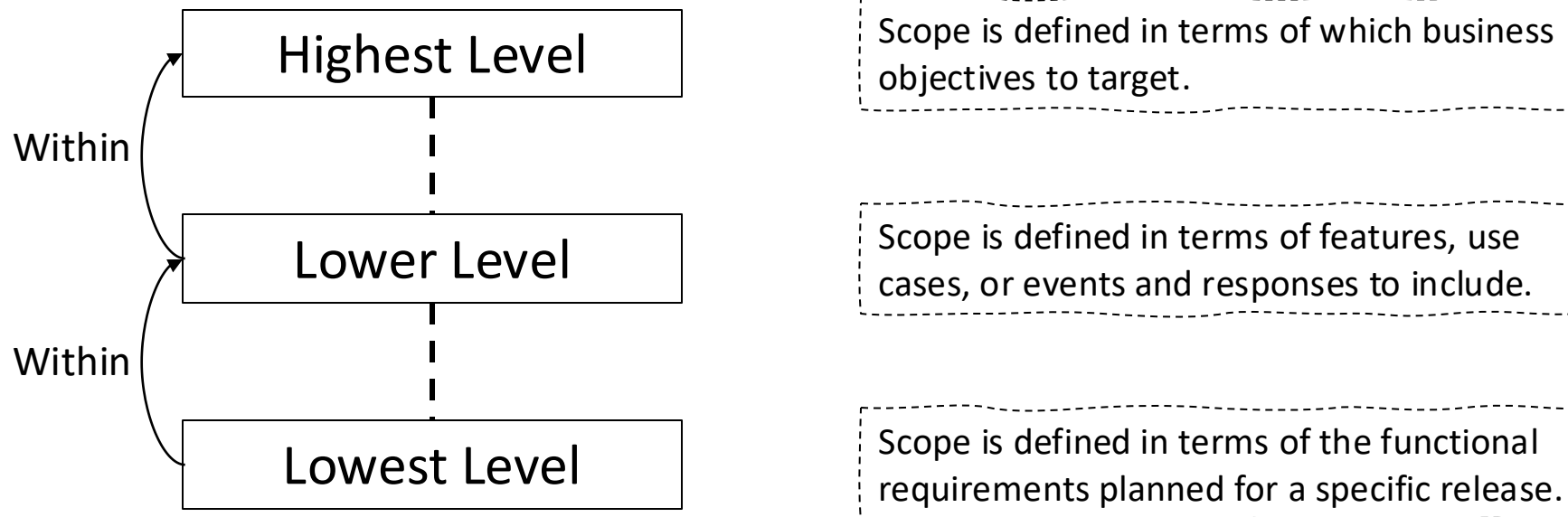
2. Scope and Limitations

- You need to state both what the solution being developed *is* and what *it is not*.
- **Scope creep**: continuous or uncontrolled growth in project scope as more and more functionality gets stuffed into the product.

Definition of <i>creep</i> verb	زحف، انسل
<p>a: to move along with the body prone and close to the ground // A spider was <i>creeping</i> along the bathroom floor.</p> <p>b: to enter or advance gradually so as to be almost unnoticed // Age <i>creeps</i> up on us.</p>	

2. Scope and Limitations

- Defining the scope and limitations helps manage stakeholder expectations.



For example, in-scope user requirements must map to the business objectives, and functional requirements must map to user requirements that are in scope.

Scope & Limitations

Major Features

- List major features
- Emphasize those that distinguish it from previous or competing products
- Don't include unnecessary ones

Scope of Initial Release

- List the features that are planned for inclusion in given project
- Focus on the ones that will provide the most value, at the most acceptable cost, to the broadest community, in the earliest timeframe

Scope of Subsequent Releases

- Build a release roadmap
- The further you look out, the fuzzier the scope statements will be

Limitations & Exclusions

- List features that a stakeholder might expect but are not planned for inclusion
- List items that were cut from scope

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- 2.2 Scope of initial release
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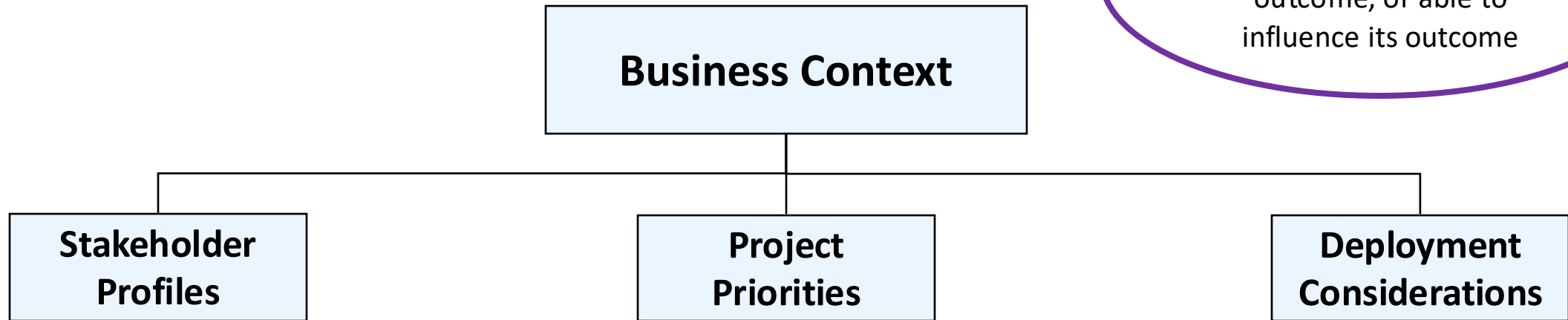
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3. Business Context

Stakeholders?

People or groups involved in project, affected by its outcome, or able to influence its outcome



Each stakeholder profile should include:

- Major value for stakeholder
- Anticipated attitude towards product
- Major features of interest
- Constraints that must be accommodated

- Stakeholders must agree on project priorities
- Priorities drive the decisions you make when change occurs

- Summarize information needed for effective deployment of the product into its operating environment
- Example: network access, data storage, and data migration

Vision and Scope Document



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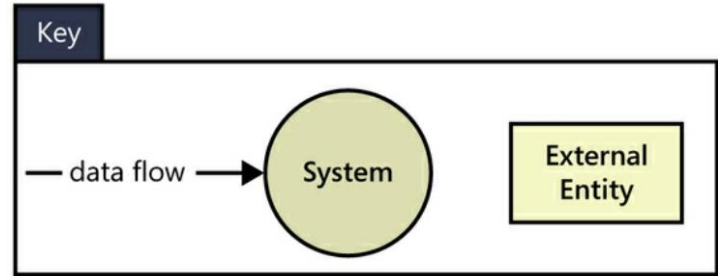
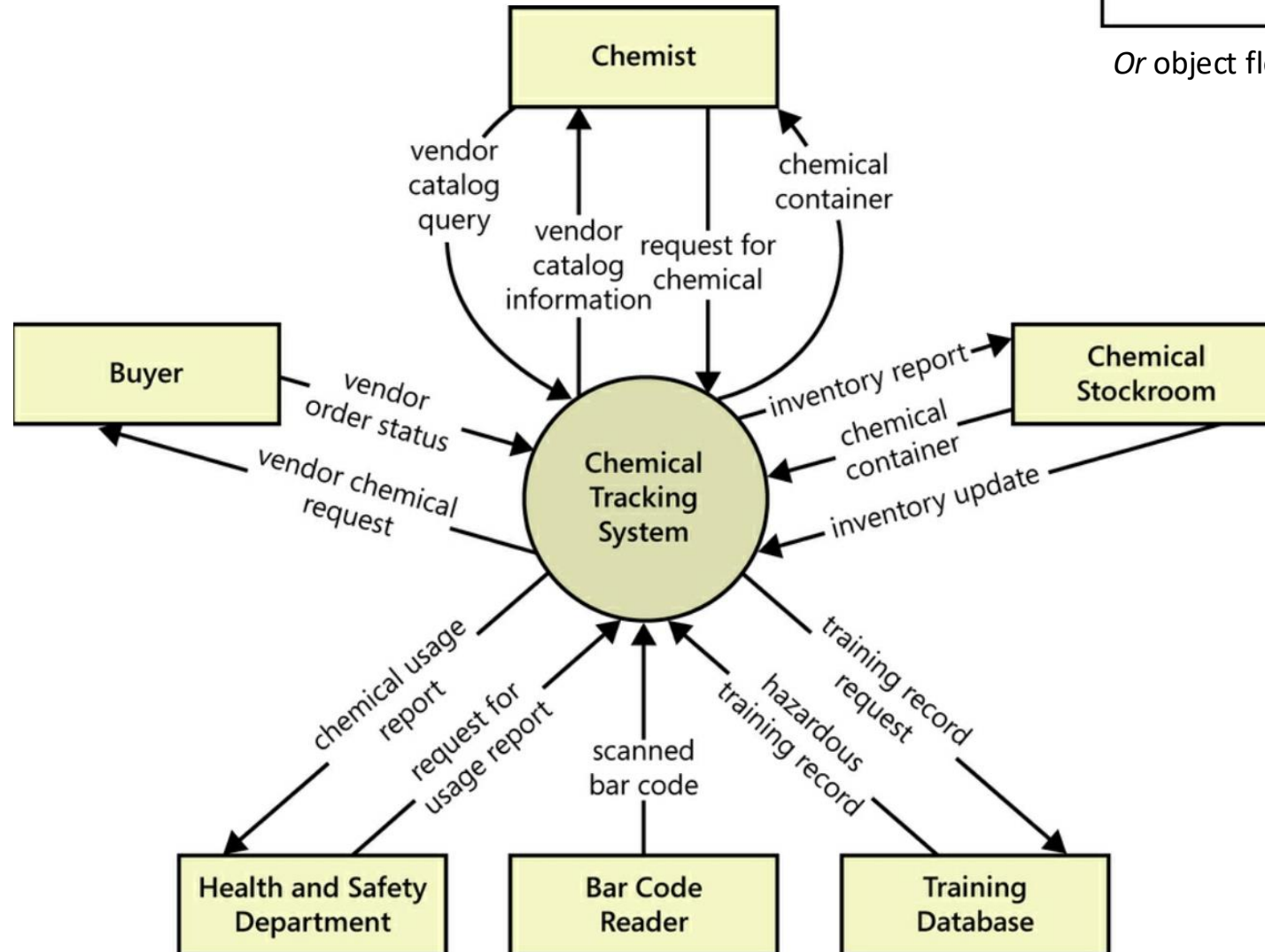
Scope Representation Techniques

- The purpose to is foster clear and accurate communication of scope among stakeholders
- It is important to follow a notation standard to achieve this goal
- Techniques:
 - Context Diagrams
 - Exosystem maps
 - Feature trees
 - Event lists

Context Diagrams

- Visually illustrates the boundary between the system being developed and everything else in the universe
- Provides no visibility into the system's internal objects, processes, or data
- Identifies *external entities (terminators)* that connect to the system, as well as data, control and material *flows*

Context Diagrams



Or object flow

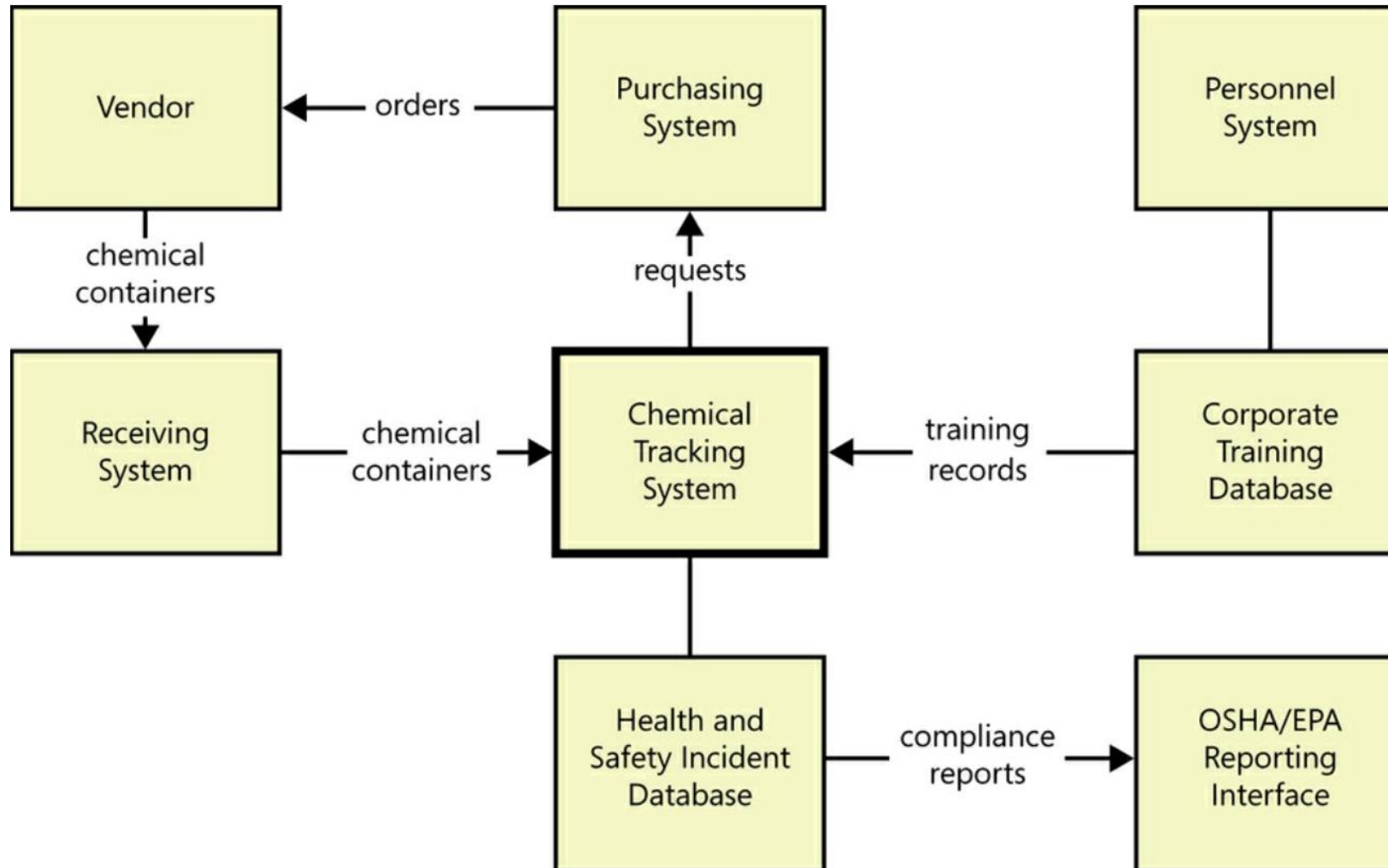
- User classes
- Organizations
- Other systems
- HW devices

Ecosystem Maps

- Shows all of the systems related to the system being developed and the interactions among them
- Identify those systems by determining which ones consume data from your system or vice versa

Context Diagram VS. Ecosystem Maps	
<i>All types of external entities that directly interface with the system</i>	<i>Systems that relate to the system whether directly or indirectly</i>

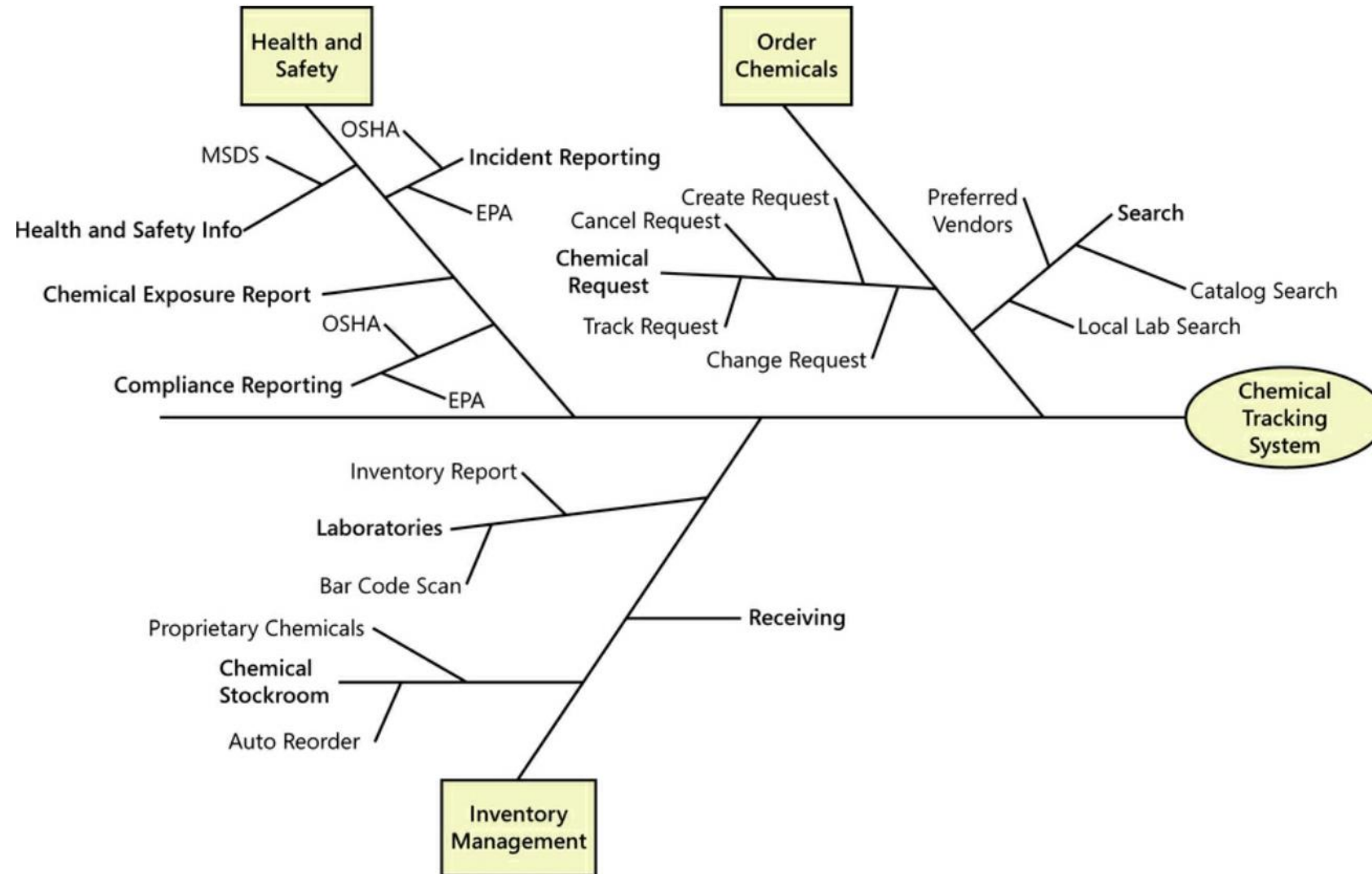
Ecosystem Maps



Feature Trees

- Visual depiction of the product's features organized in logical groups, hierarchically subdividing each feature into further levels of detail
- Can show up to three levels of features, commonly referred to as L1, L2, and L3
- The scope of a specific release consists of a defined set of L1, L2, and/or L3 features chosen from the feature tree

Feature Trees



Event Lists

- Identifies external events that could trigger behavior in the system
- Events could be triggered by users, time-triggered, or signal events received from external components
- The functional requirements that describe how the system responds to the events would be detailed in the SRS
- The scope of a release is defined in terms of certain events

Event Lists

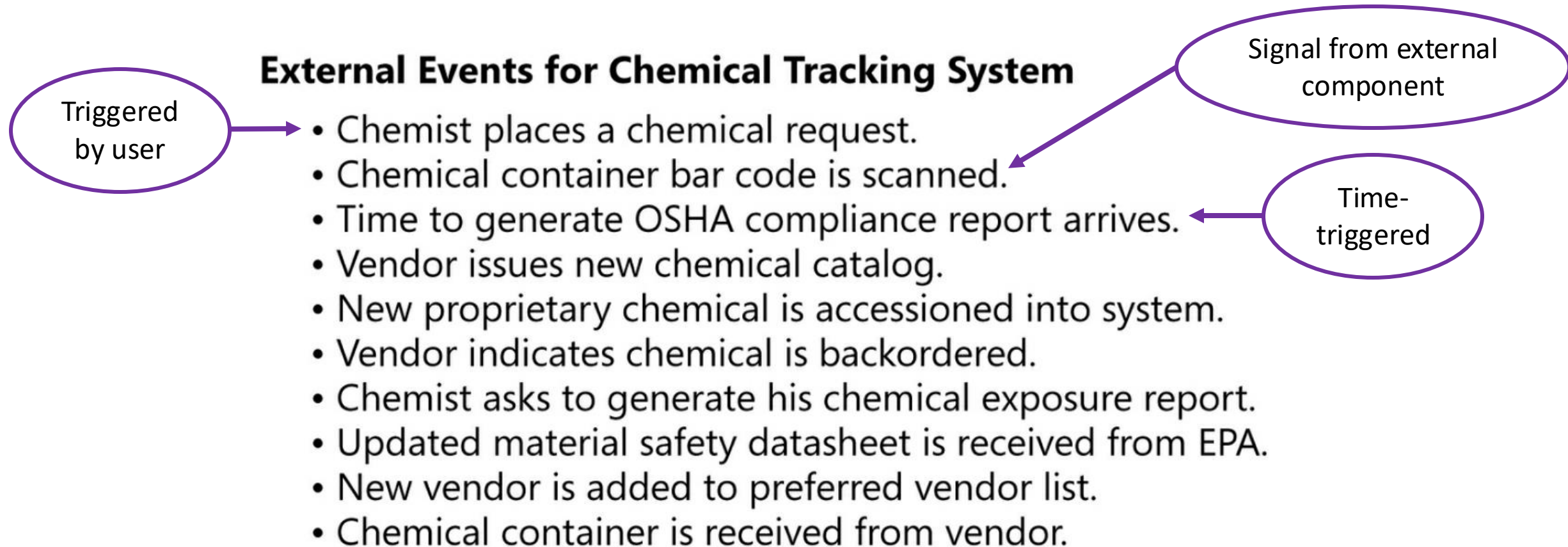


Figure 5-9. Partial event list for the Chemical Tracking System.

Final Remarks

Requirements inception in one sentence:

Agree on a well-defined project's vision, scope, and business case

Requirements Inception

*“The idea is to do **just enough** investigation to form a rational, justifiable opinion of the overall purpose and feasibility of the potential new system, and decide if it is worthwhile to invest in deeper exploration”* Craig Larman