



Requirements Reuse: Fantasy or Feasible?

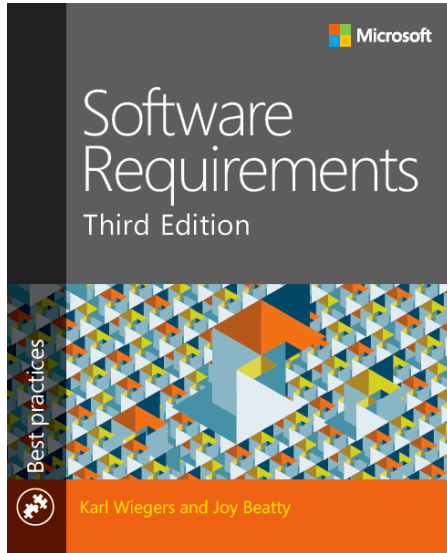
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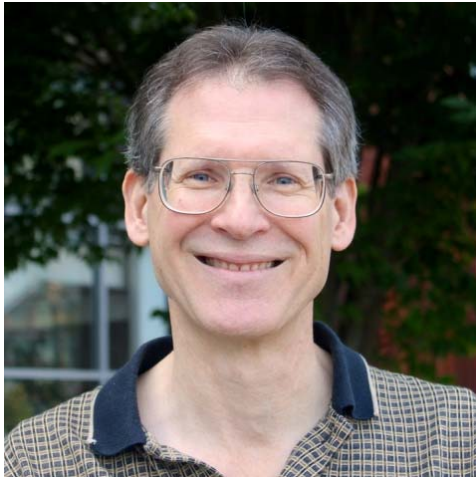
Source Book



Software Requirements, 3rd Edition
by Karl Wieggers and Joy Beatty
(Microsoft Press, 2013)

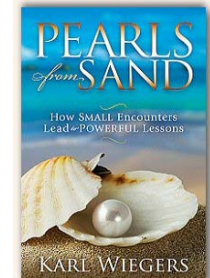
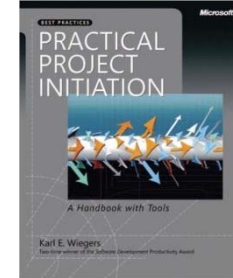
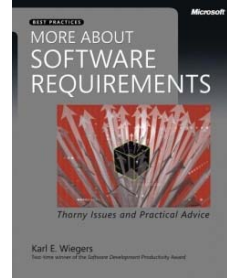
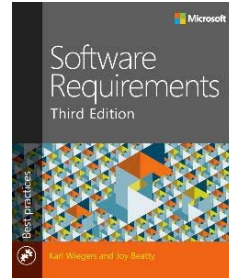
tinyurl.com/reqs3

Featured Speaker



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Agenda

- **Why reuse requirements?**
- **Dimensions of requirements reuse**
- **What information to reuse**
- **Common reuse scenarios**
- **Making requirements reusable**
- **Reuse barriers and success factors**
- **Getting started**

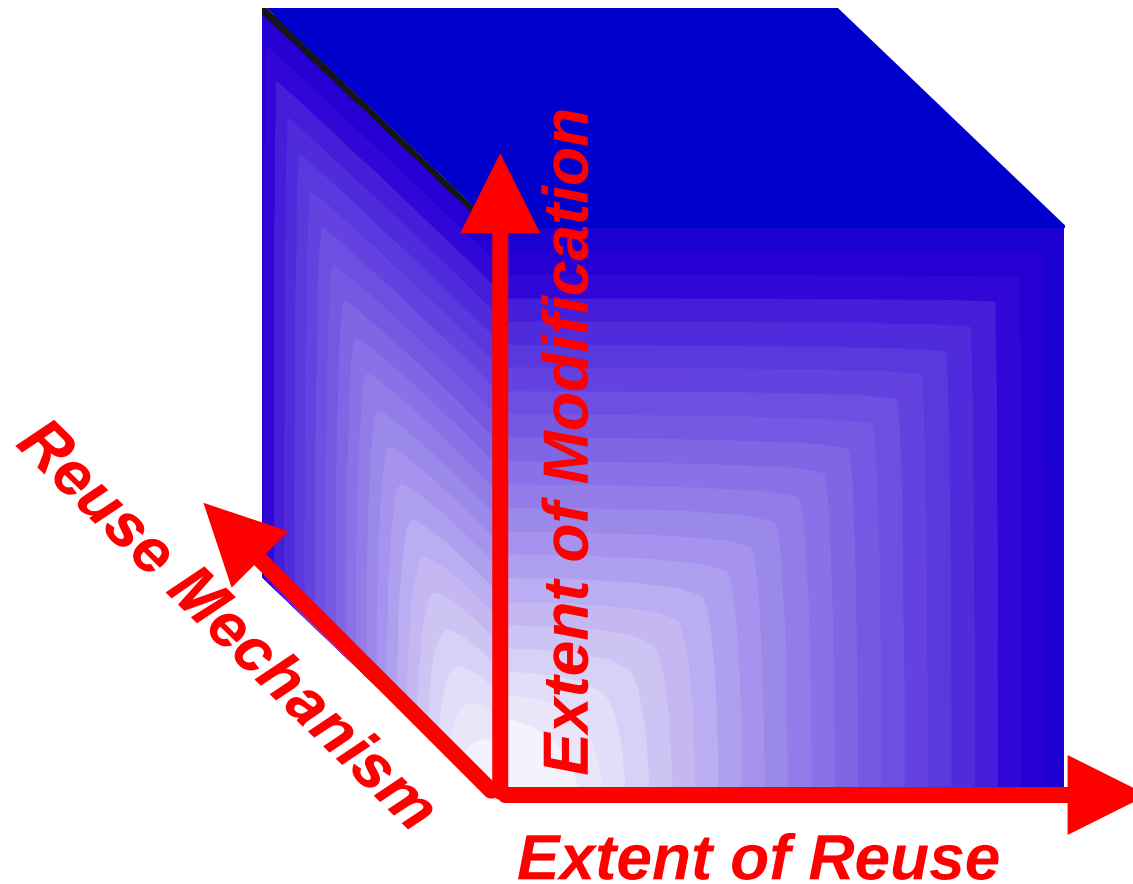


Why Reuse Requirements?

- Higher team productivity
- Faster delivery
- Lower development costs
- Functional consistency across and within applications
 - smaller learning curve
 - less frustration
- Fewer defects
- Reduced rework



Dimensions of Requirements Reuse



Dimension #1: Extent of Reuse

Set of requirements + design, code, and test elements

Set of requirements + associated design elements

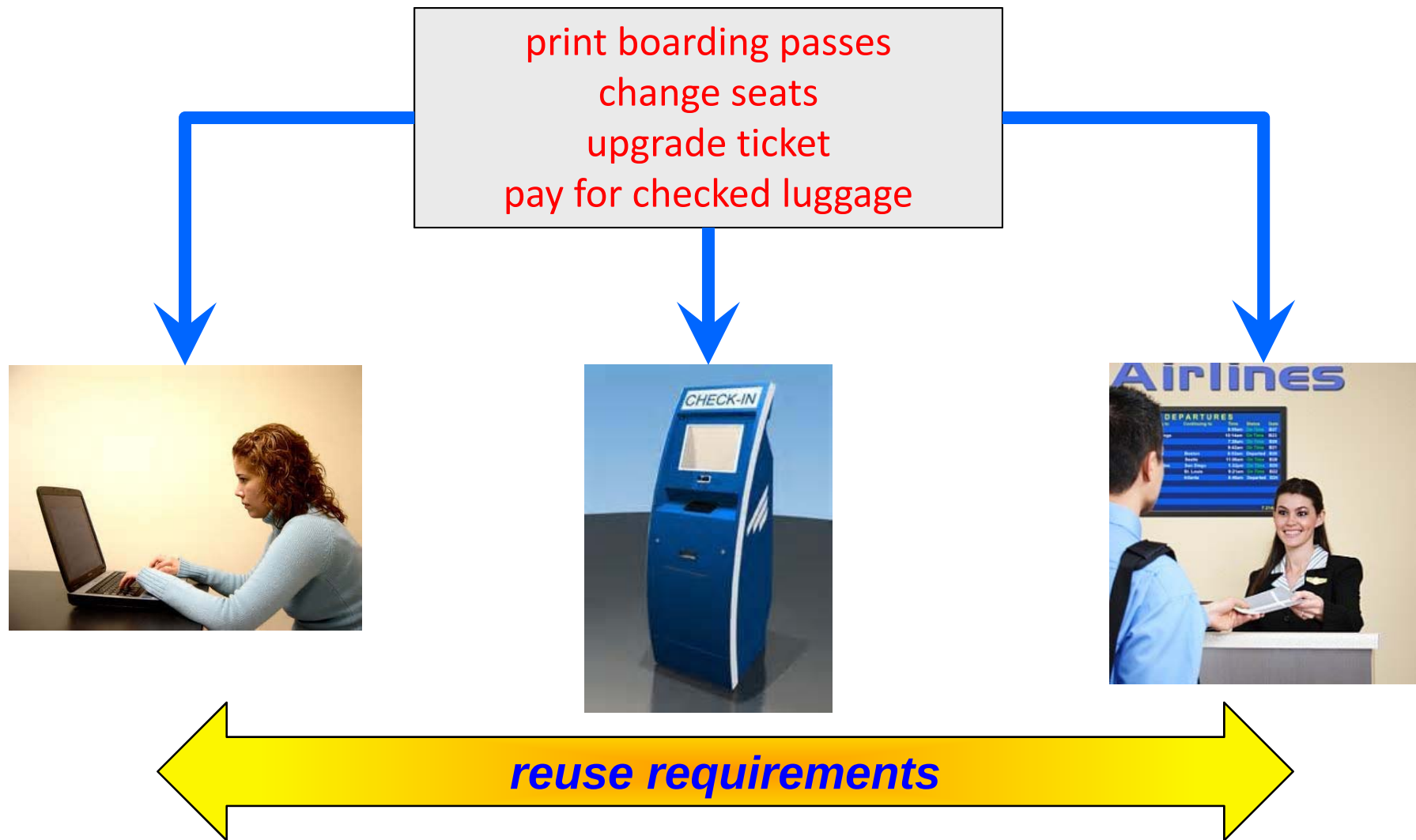
Set of related requirements

Requirement + attributes, context, associated info

Requirement + attributes

Individual requirement statement

A Reuse Example: Flight Check-in



Dimension #2: Extent of Modification

- **None**
- **Associated requirement attributes**
 - priority, rationale, origin, etc.
- **Requirement statement itself**
- **Related information**
 - tests, design constraints, data definitions...

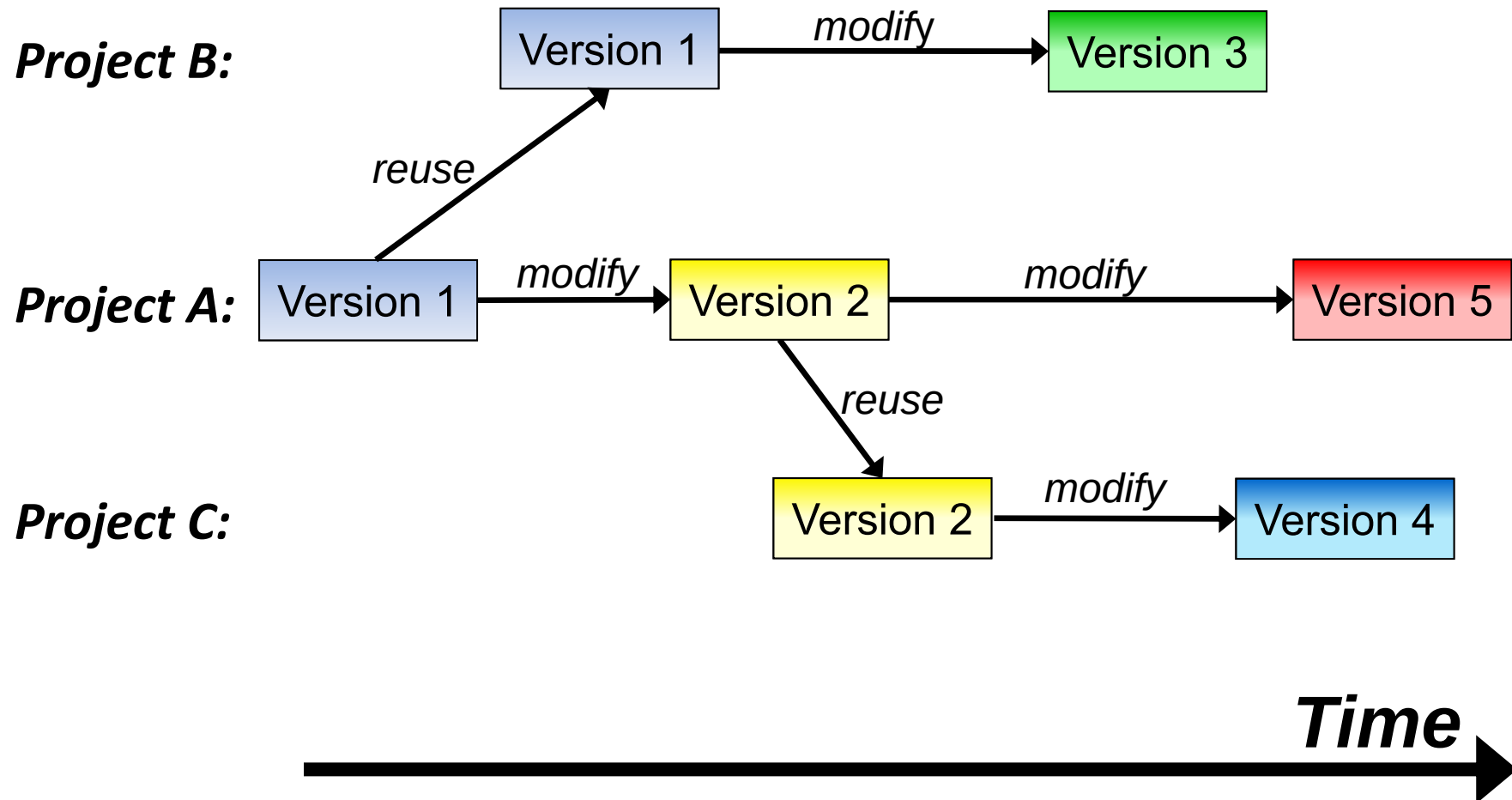


Dimension #3: Reuse Mechanism

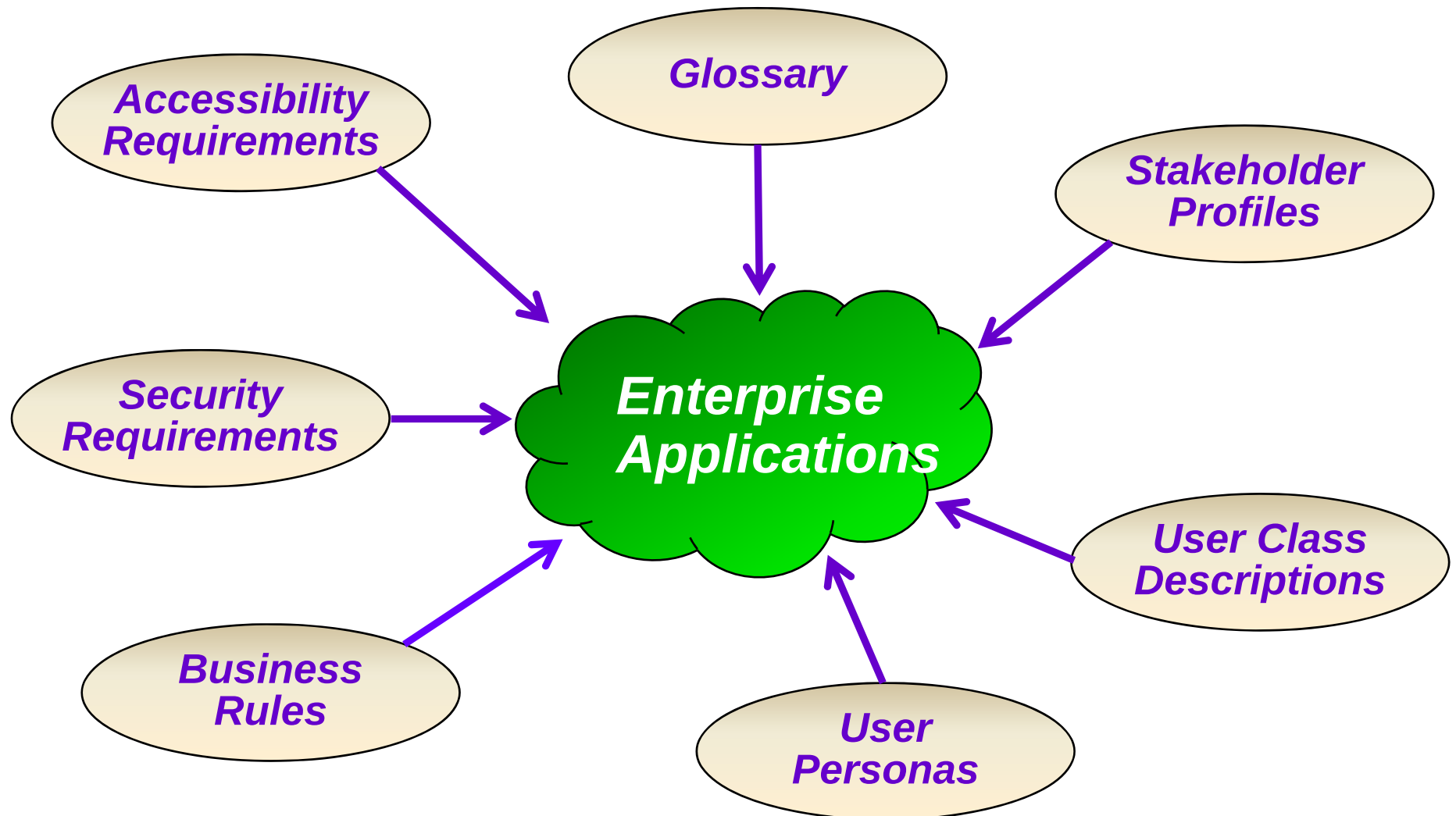
- **Copy-and-paste**
 - from another specification
 - from a library of reusable requirements
- **Refer to an original source**
 - word processor's cross-reference function
 - pointer (hyperlink, trace link) to the original



Reuse by Reference in an RM Tool



Widely Reusable Requirements Assets



Reusable Requirements Assets by Scope

<i>Scope of reuse</i>	<i>Potentially reusable requirements assets</i>	
Within a product or application	• user requirements • functional requirements	• performance reqs • usability requirements
Across a product line	• business objectives • business process models • context diagrams • compliance requirements • data models & definitions	• user requirements • core features • usability requirements • acceptance tests
Across a business domain	• business process models • user requirements • data models & definitions • compliance requirements	• product features • acceptance tests • security requirements
Within an OS or platform	• constraints • interfaces	

Reusing Sets of Requirements Information

- **Functionality plus exceptions and acceptance tests**
- **Compliance-related business rules**
 - Sarbanes–Oxley
 - other regulatory constraints by industry
 - organization policy-focused directives
- **Symmetrical user functions, such as undo/redo**
- **Data objects and their attributes and validations**
- **Related operations to perform on data objects**
 - create, read, update, and delete

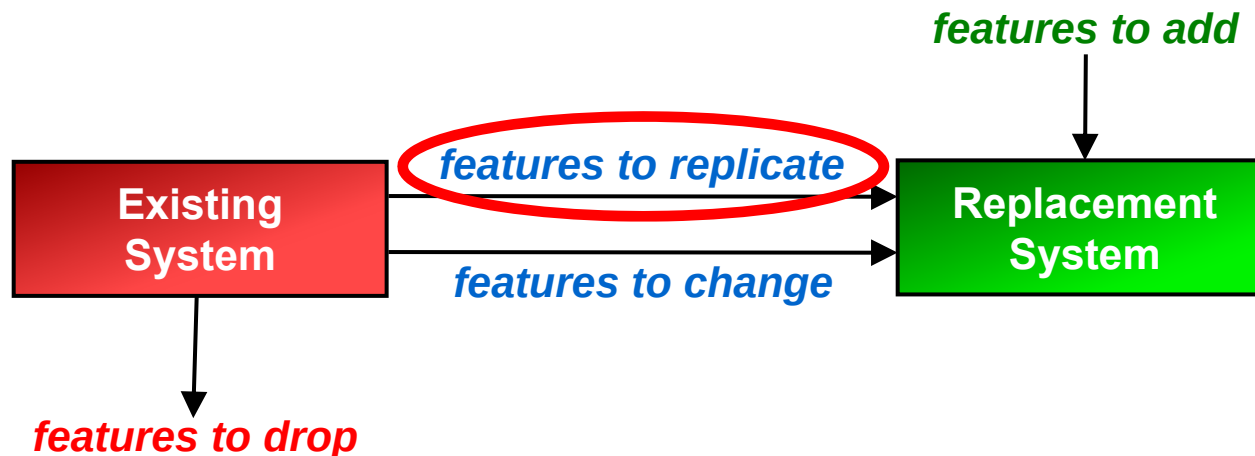
Common Reuse Scenarios

■ Software product lines

- look for features that are common, optional, or variants
- look for full “drag-along” reuse opportunities

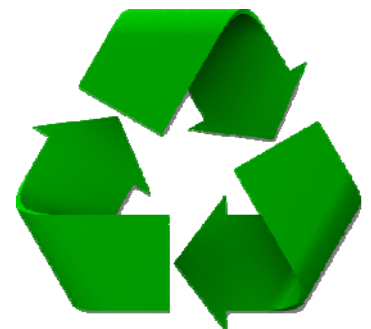
■ Reengineered and replacement systems

- might need to reverse-engineer requirements
- look for business rules to reuse

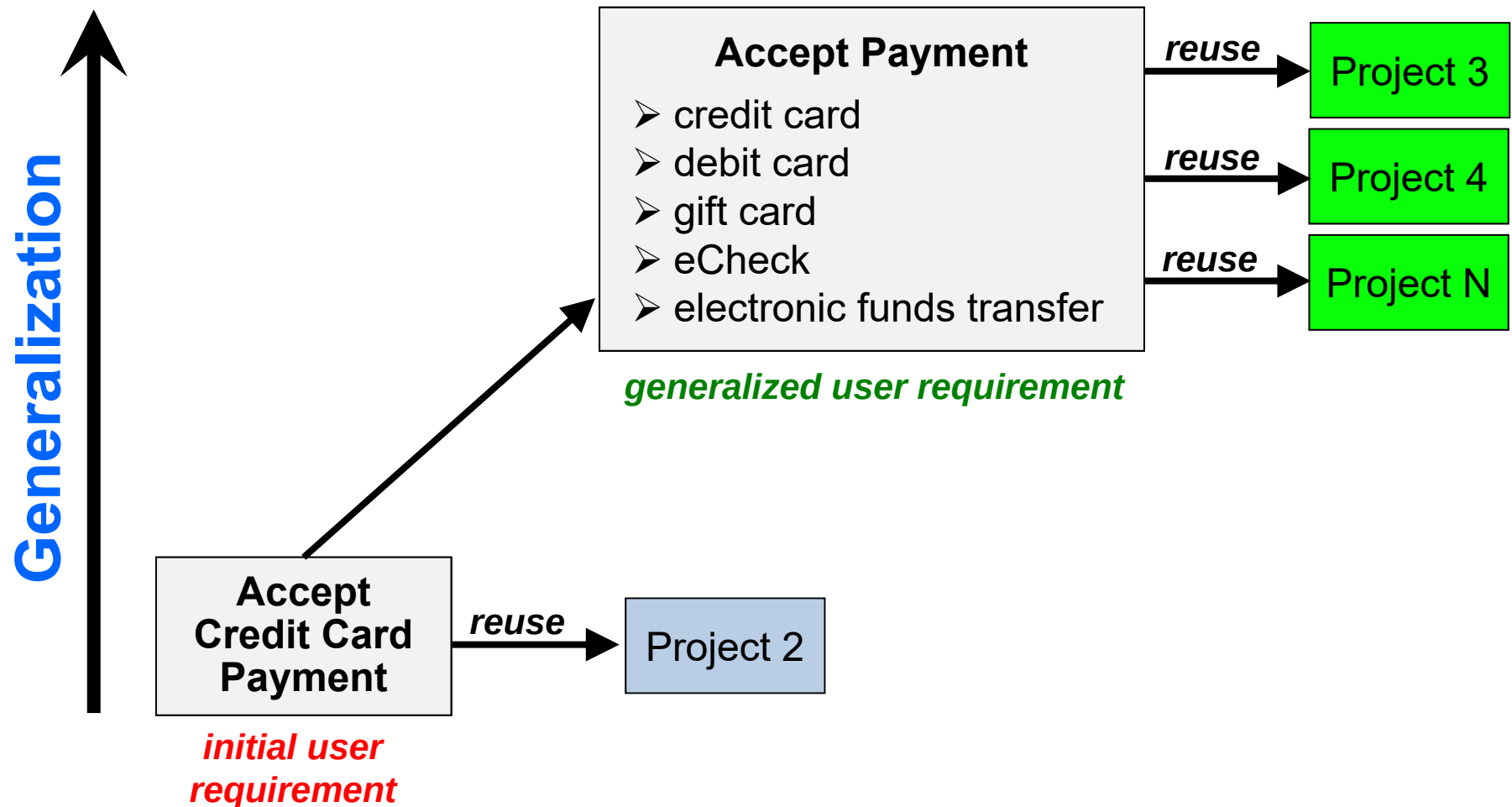


Making Requirements Reusable

- Document the requirements!
- Write high-quality requirements
- Write requirements according to a pattern
 - includes guidance, list of contents, template, examples, extra requirements
 - See Stephen Withall's *Software Requirement Patterns*
- Choose right scope of applicability
- Choose right level of abstraction



Generalizing Requirements for Reuse



Barriers to Requirements Reuse

*ownership of
intellectual property*

*missing or low-
quality requirements*

*NIH and NAH
syndromes*

*tight coupling
with project type*



*variations in
writing style*

*inconsistent
organization*

Requirements Reuse Success Factors

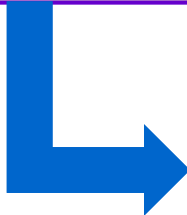
- **Write good requirements**
- **Establish a repository of reusable requirements**
 - metadata with keywords to aid searching
 - responsibility of an “enterprise BA”
- **Document requirements links and dependencies**
- **Establish common terminology and definitions**
- **Create a culture that values reuse**



Getting Started with Requirements Reuse

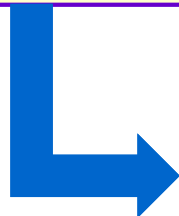
1. Examine

your current project to simplify the requirements problem by reusing existing knowledge



2. Analyze

your current project for requirements that are potentially reusable



3. Think About

what information to store with requirements to enhance their reusability

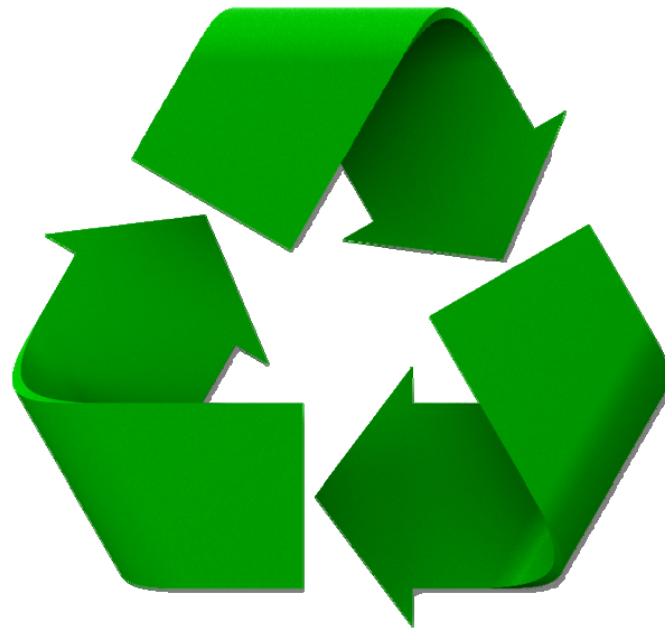


4. Select

a repository for reusable requirements

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REDUCE, REUSE, RECYCLE



Q & A

