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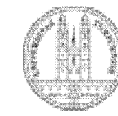
Software Product Management

Dialogue with Stakeholders and Development

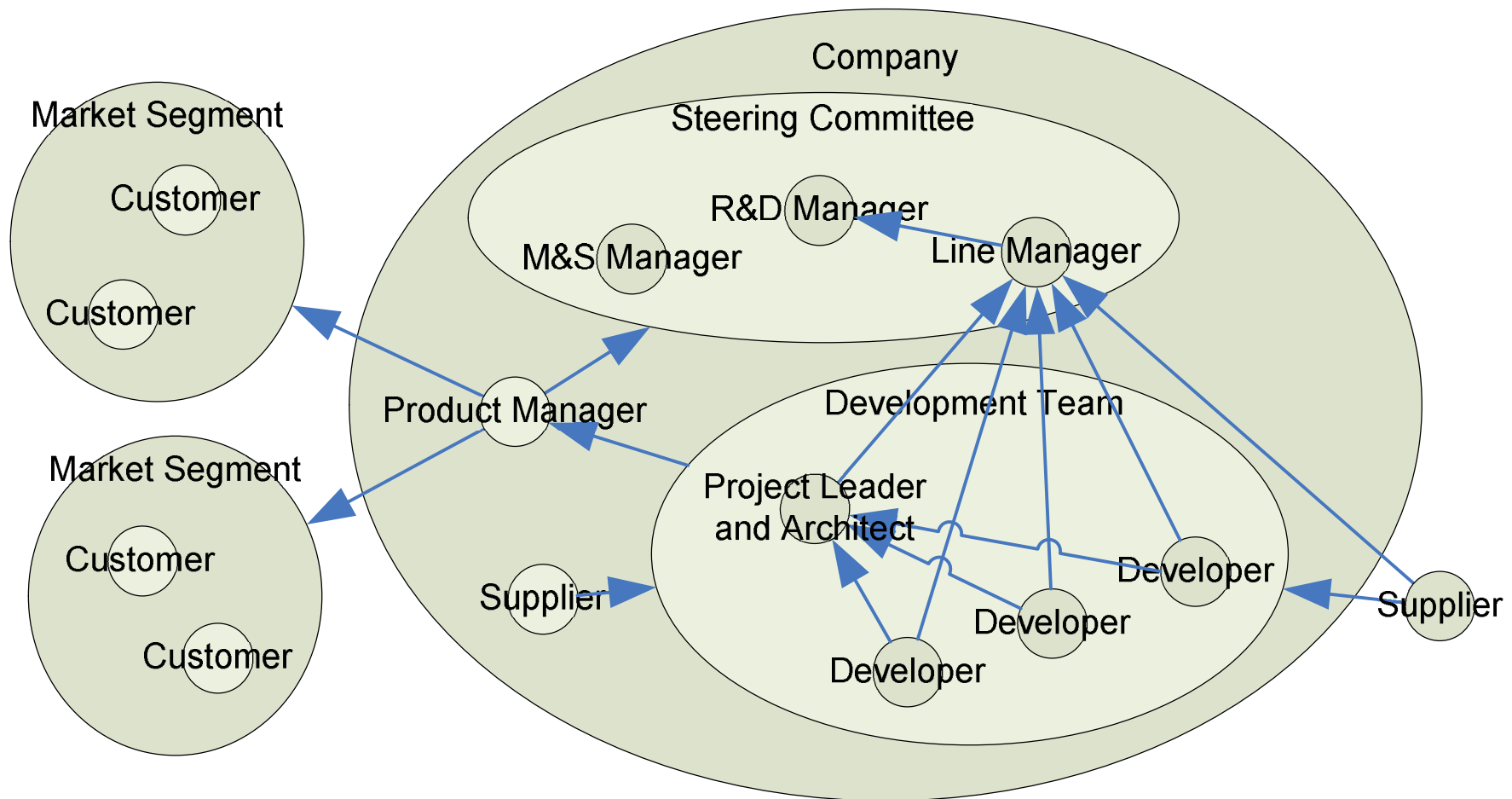
Nov 16, 2010

Samuel Fricker
(fricker@ifi.uzh.ch)

Simplified and Stylized SPM Context



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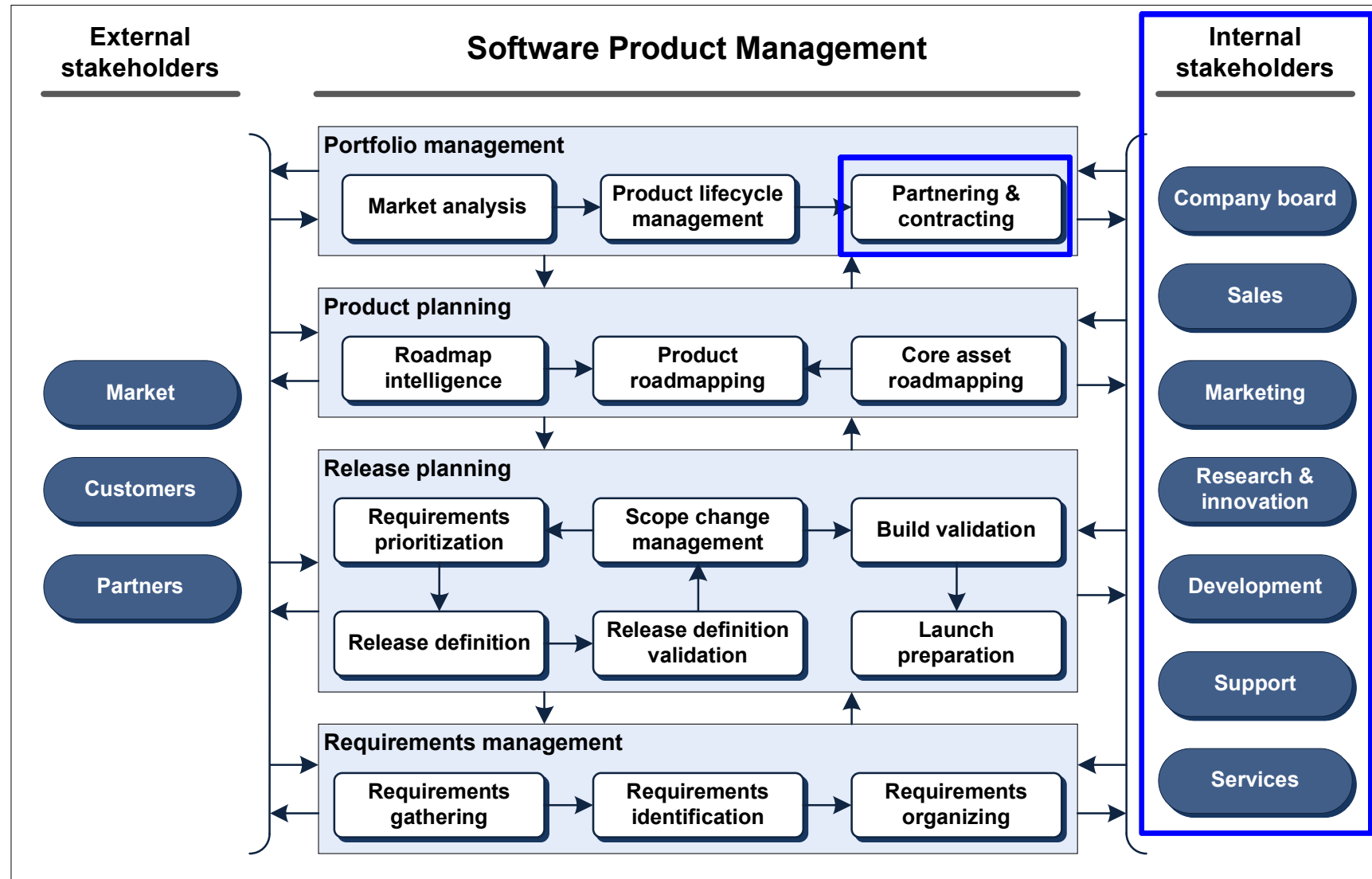
Focus



	Market Analysis	Product Analysis	Product Strategy	Product Planning	Development	Marketing	Sales and Distribution	Support and Services
Often on corporate level			Portfolio Management	Resource Allocation	Resource Allocation	Marketing Strategy and Plan	Sales Strategy and Plan	
Product (family) level	Market Research Market Sizing Market Problems Technology Assessment Competitive Analysis	Product Performance Customer Satisfaction Win/loss Analysis Opportunities	Positioning Delivery Model Pricing Model Pricing Business Case Make or buy Ecosystem Legal terms Protection of Intellectual Property	Roadmap Release Plan Requirements Management Functional Specification	Project Plan Technical Specification Project Requirements Management Implementation Quality Assurance Technology Innovation	Launch Plan Customer Analysis Partner Management Operational Marketing Material	Channel Preparation Operational Sales Operational Distribution Material	Customer Support Technical Support Marketing Support Sales Support Services Preparation Operational Services Provision



Focus





Contents

Learning Objectives

- Understand application of Win-Win negotiations to software product management
 - Release negotiations
 - Requirements communication

Agenda

- Win-Win Negotiation Basics
 - Bargaining
 - Integrative Negotiation
 - Pareto Analysis of Release Plans
- Requirements Communication
 - Handshaking with Implementation Proposals



Case Study: Selling a Piano

When shopping for a used piano, Orvel Ray answered a newspaper ad. The piano was a beautiful upright in a massive walnut cabinet. The seller was asking \$1,000, and it would have been a bargain at that price, but Orvel had received a \$700 tax refund and had set this windfall as the limit that he could afford to invest. He searched for a negotiating advantage.

He was able to deduce several facts from the surroundings. The piano was in a furnished basement, which also contained a set of drums and an upright acoustic bass. Obviously the seller was a serious musician, who probably played jazz. There had to be a compelling reason for selling such a beautiful instrument.

Orvel asked the first, obvious question, "Are you buying a new piano?"

The seller hesitated. "Well, I don't know yet. See, we're moving to North Carolina, and it would be very expensive to ship this piano clear across the country."

"Did they say how much extra it would cost?" Orvel queried.

"They said an extra \$300 or so."

"When do you have to decide?"

"The packers are coming this afternoon."

Now Orvel knew where the seller was vulnerable. He could ship the piano cross-country, or sell it for \$700 and still break even. Or he could hold out for his asking price and take his chances. "Here's what I can do: I can give you \$700 in cash, right now," Orvel said as he took seven \$100 bills out of his pocket and spread them on the keyboard. "And I can have a truck and three of my friends here to move it out of your way by noon today."

The seller hesitated, then picked up the money. "Well, I suppose that would work. I can always buy a new piano when we get settled."

Orvel left before the seller could reconsider. By the time the group returned with the truck, the seller had received three other offers at his asking price, but because he had accepted the cash, he had to tell them that the piano had already been sold.

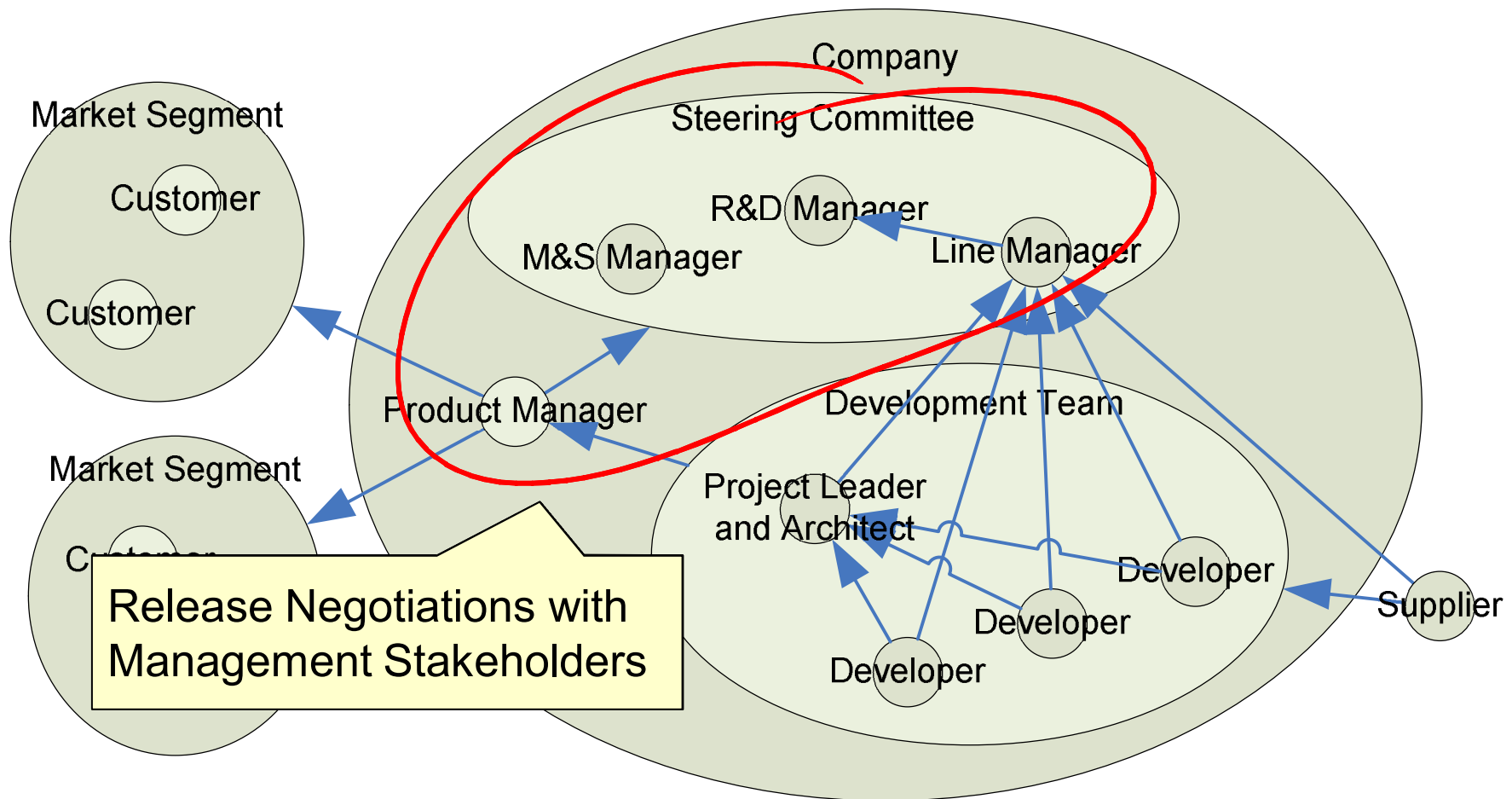
If the seller had not volunteered the information about the packers coming that afternoon, Orvel might not have been able to negotiate the price.

Source: From J. C. Levinson, M. S. A. Smith, and O. R. Wilson, *Guerrilla Negotiating* (New York: John Wiley, 1999), pp. 15–16.

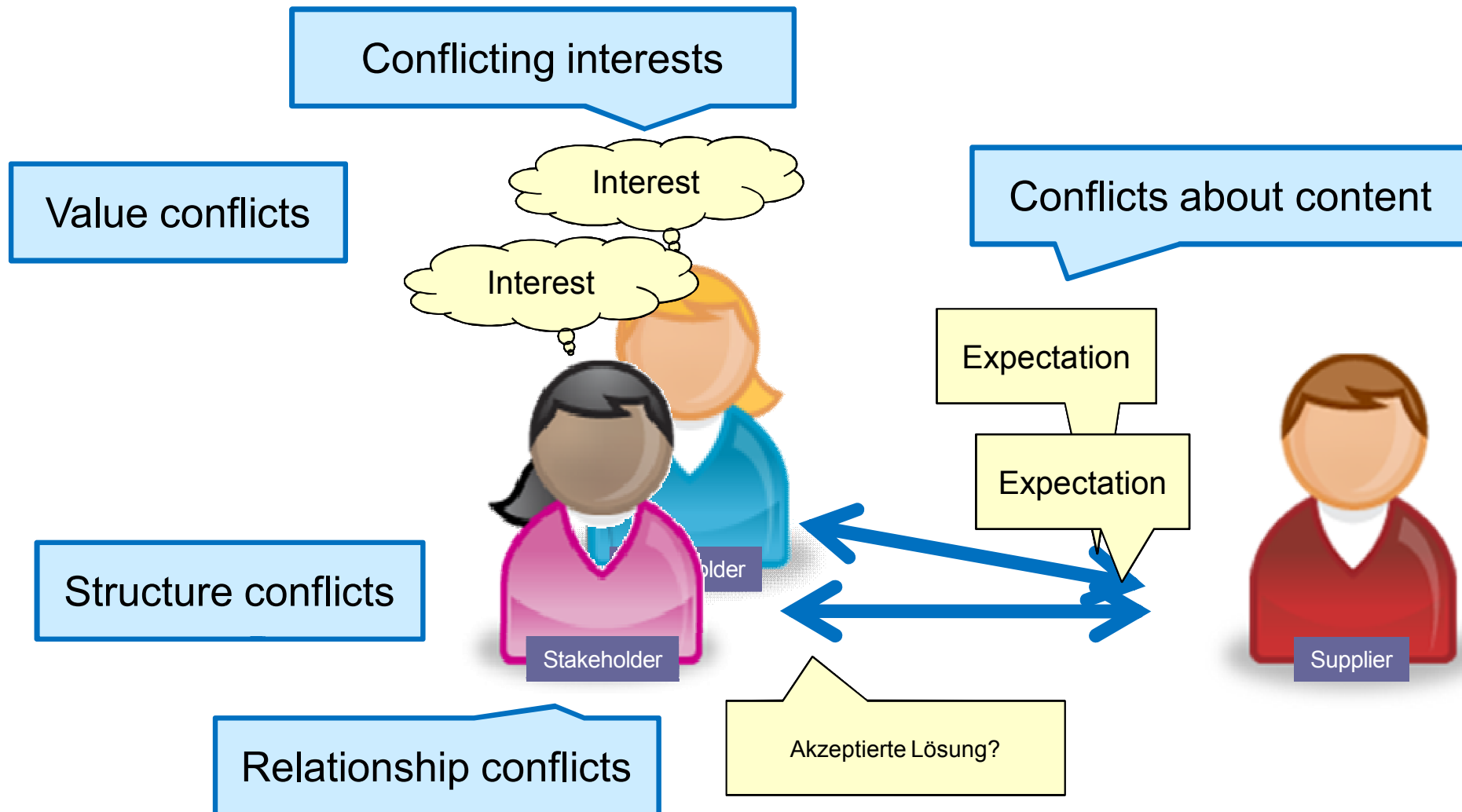
Simplified and Stylized SPM Context



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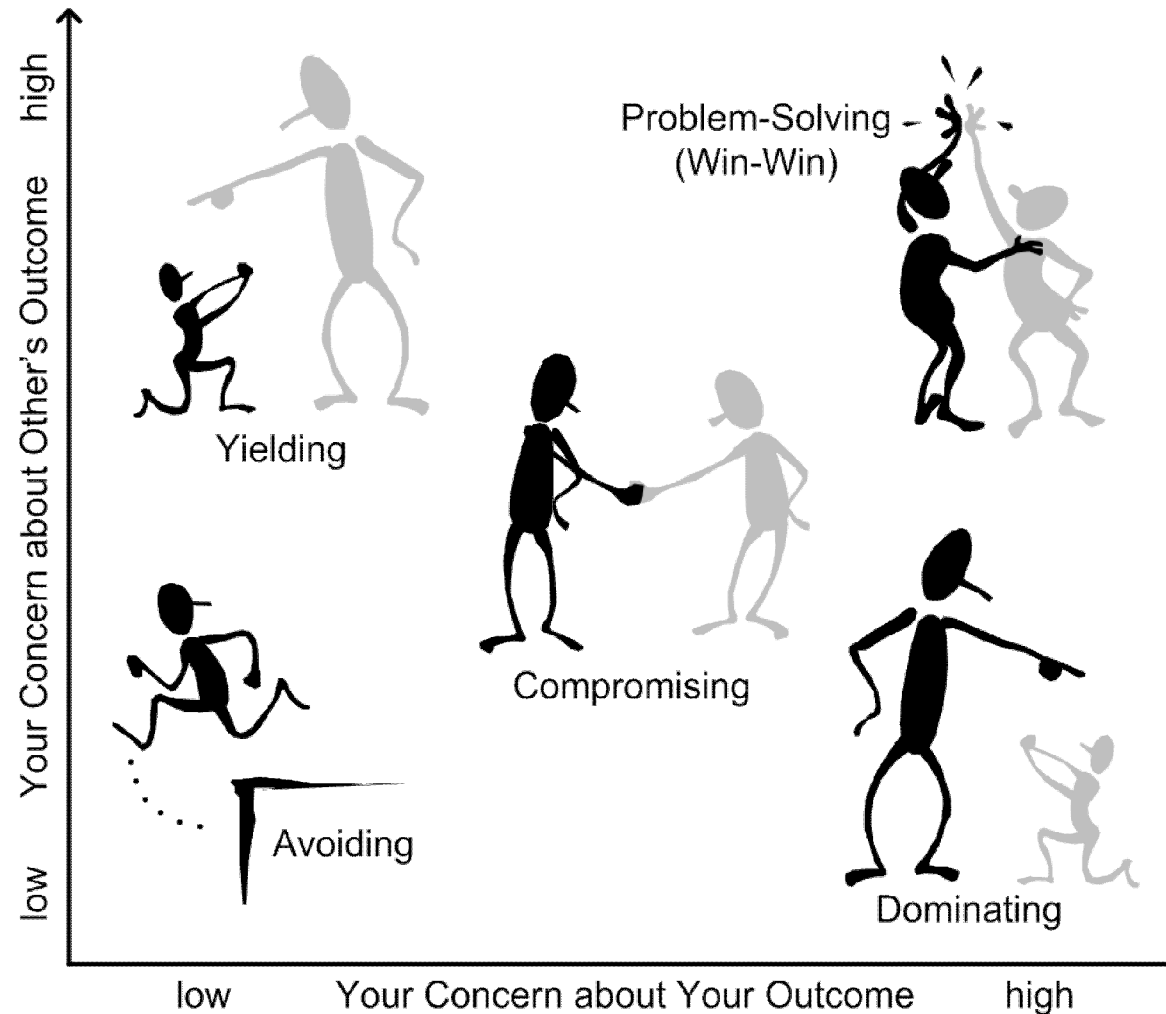
Conflicts



Basic Options for Resolving Conflicts



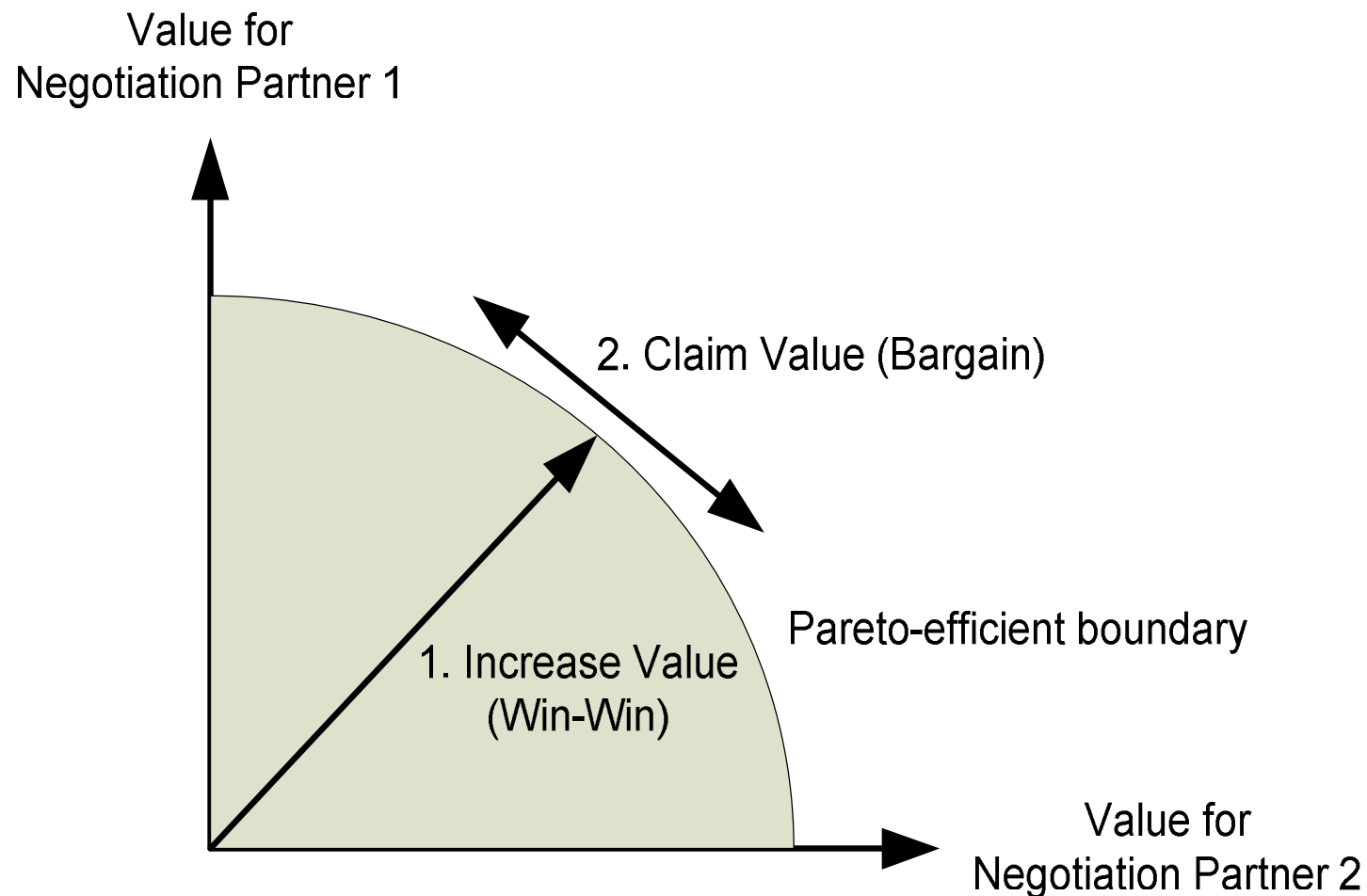
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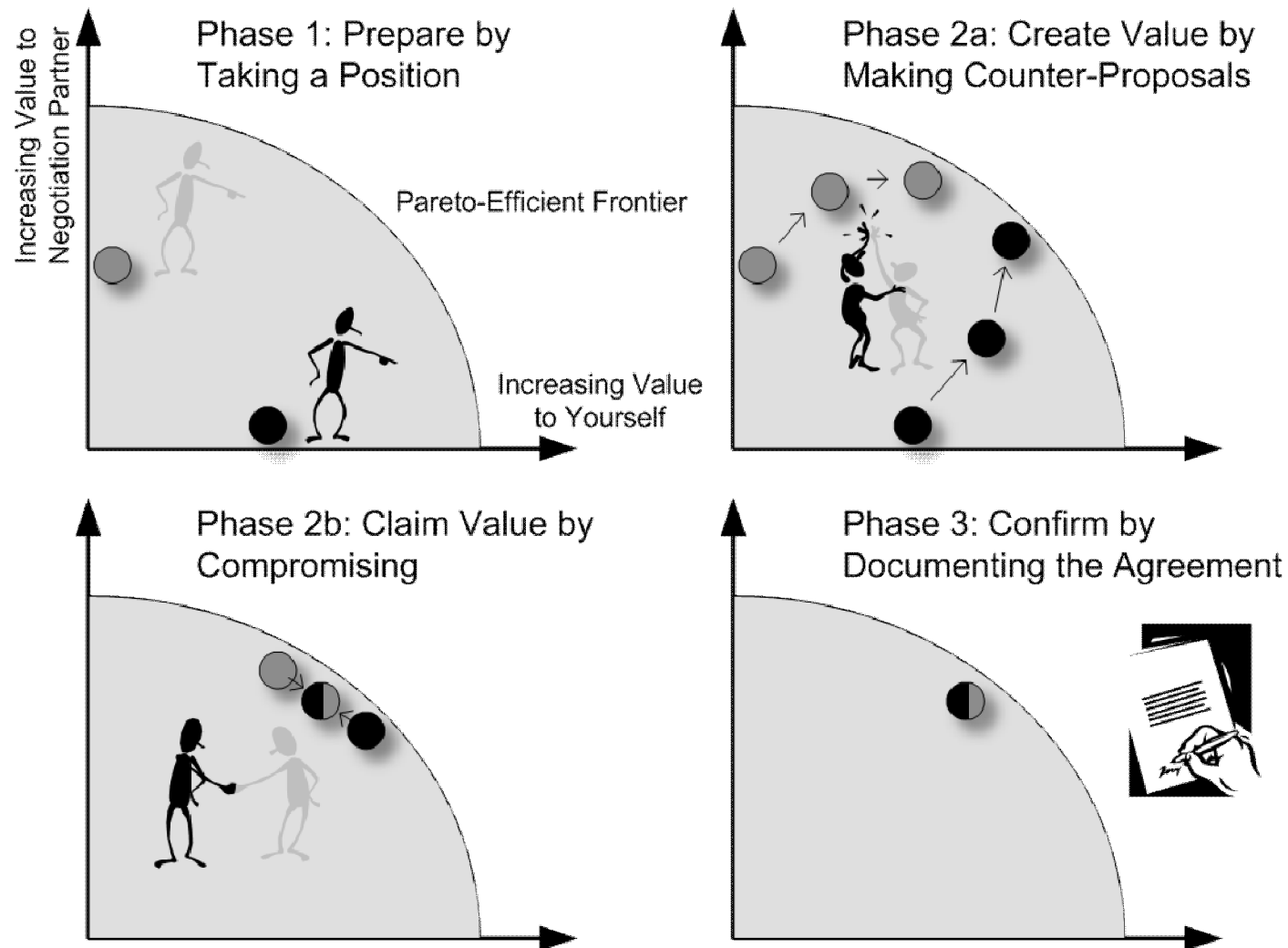
Goodness of an Agreement: Pareto Analysis



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WinWin Negotiation Process

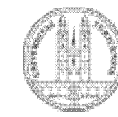




WinWin Negotiation Principles

BATNA = Best Alternative
To a Negotiated Agreement

- Prepare yourself
 - Know and share your aspirations
 - Know and hide your BATNA and reservation point
 - Elicit aspirations, BATNAs and reservations points
- Create value
 - Build trust, share information, adjust negotiation issues
 - Invent creative solutions
 - Capitalize on differing preferences, timing, risk attitudes...
- Claim value
 - Improve BATNA
 - Anchor negotiation in area of aspirations
 - Follow a planned sequence of concessions



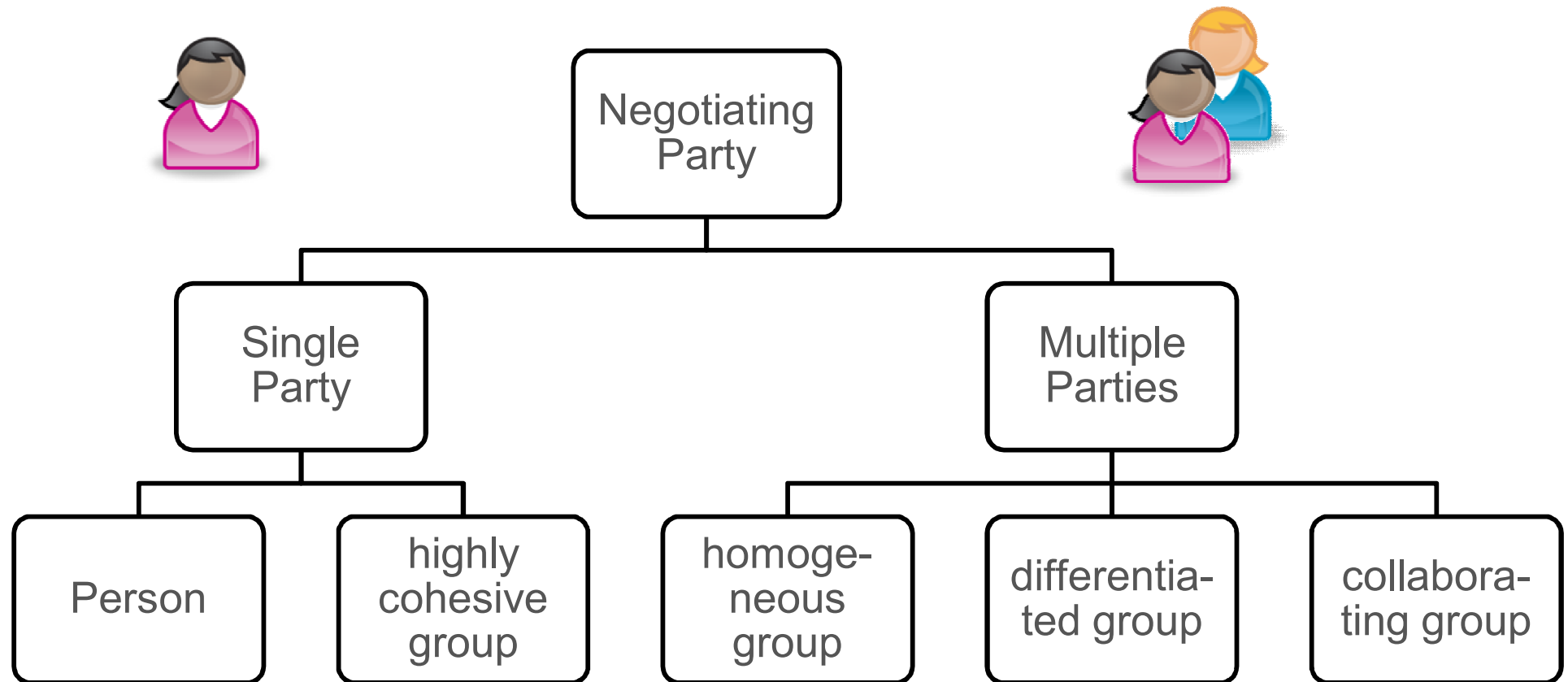
Basic Negotiation Tactics

Tactic	Explanation
Constituent	Use peripheral players that have an indirect stake in the outcome to exert pressure on the other side.
Select	Stick to the party with the most promising outcome.
Coalition	Exert influence on outcomes by collaborating with a minimal but sufficient number of partners.
Principal Agent	Use an experienced agent to prepare or to run the negotiations on behalf of yourself.
Team Negotiation	Prepare and run the negotiations as a team to increase creativity and control of the negotiation.
Intergroup Negotiation	Control the conflicts that naturally appear in the confrontation of two or more groups.

Choosing the Right Negotiation Tactics



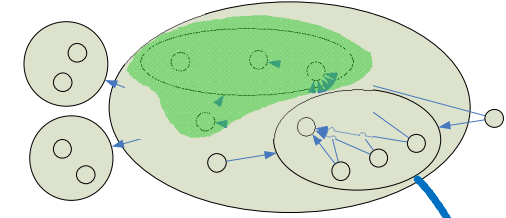
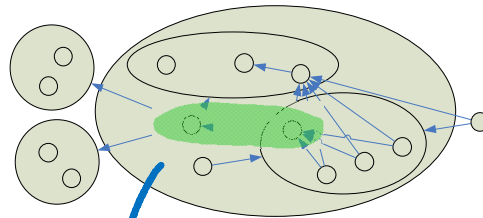
- Who am I? Who are the others?



Ego-centric Perspective: Negotiation Tactics



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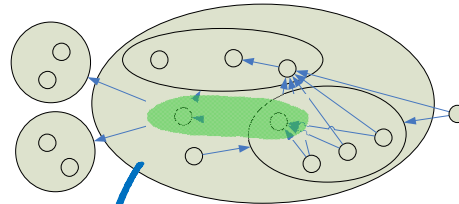


			Partner(s)			
			Single Party	Multiple Parties		
				Homogeneous	Differentiated	Collaborating
Yourself	Single Party		Constituent	Constituent	Select	Coalition
	Multiple Parties	Homogeneous	Principal Agent, Constituent	Principal Agent, Constituent	Principal Agent, Select	Principal Agent, Coalition
		Differentiated	act as single party			
		Collaborating	Principal Agent, Team Negotiation, Constituent	Principal Agent, Constituent	Principal Agent, Select	Coalition, Intergroup Negotiation

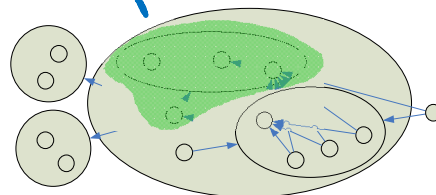
Birds-Eye Perspective: Negotiation Methods



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			Supplier			
			Single Party	Multiple Parties		
				Homogeneous	Differentiated	Collaborating
Customer	Single Party		Handshaking	Plug-In Architectures	COTS Selection	Team Problem Solving
	Multiple Parties	Homogeneous	MD-RE	Standardization	Survival of the Fittest	New Product Development
		Differentiated	Domain RE	Socialist Markets	Competitive Markets	Product Line Engineering
		Collaborating	VORD	Governance	Voting, Consensus...	EasyWinWin





Concluding Negotiations

- Agreement: Convince
 - Dialogue based on information, arguments, and opinions
- Compromise: „Fairness“
 - Find yourself in the middle, get as much as you need, or get your invested share
- Voting: Democracy
 - Chose the alternative with most votes
- The boss is always right: Escalation
 - More powerful party (boss or court) decides
- Plus-minus-interesting: acceptable consequences
 - Evaluate all positive and negative consequences of each alternative
- Decision matrix: justified decision
 - Define and use criteria to evaluate and select from alternatives



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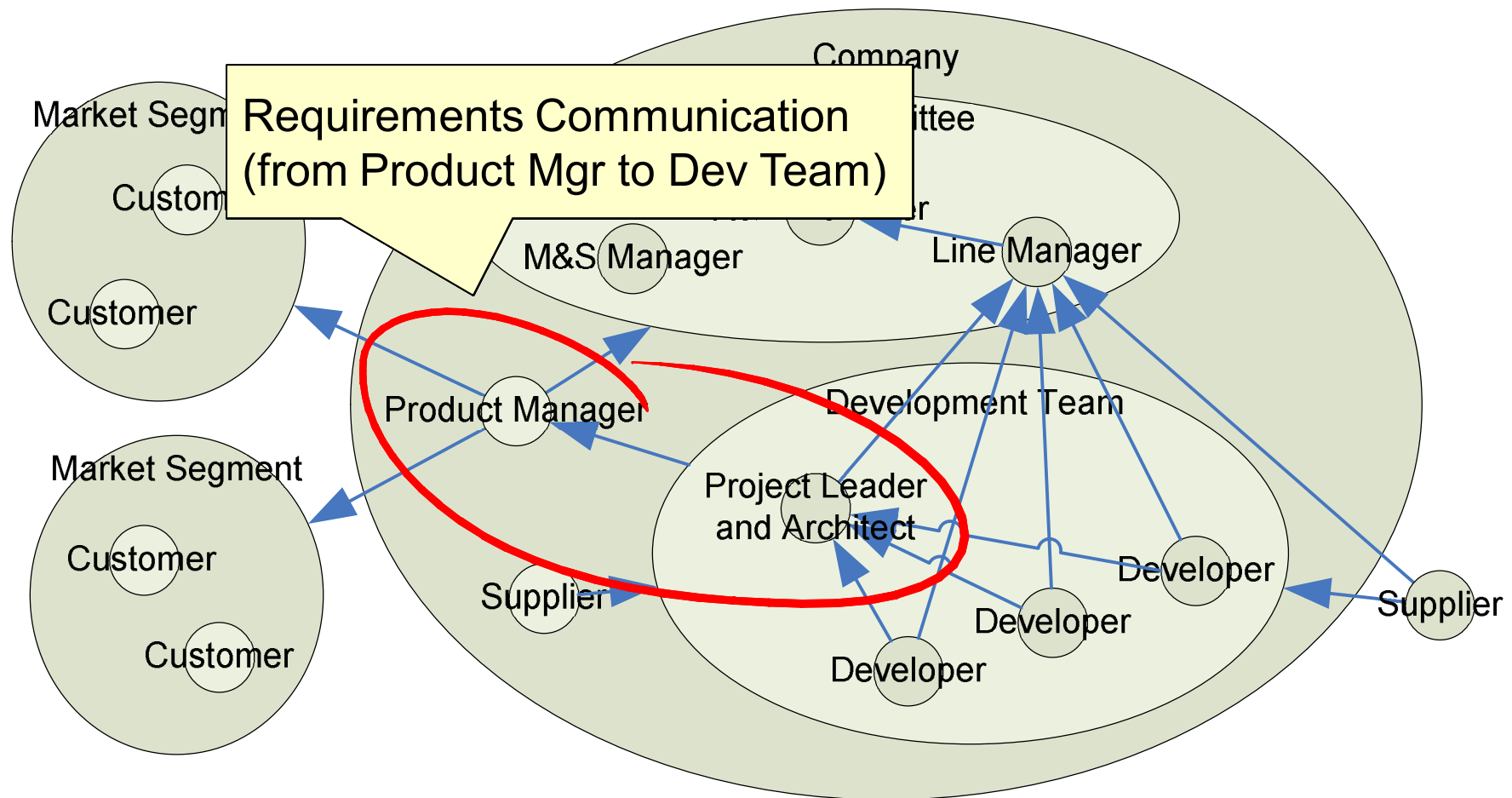
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Simplified and Stylized Structure of Product Development



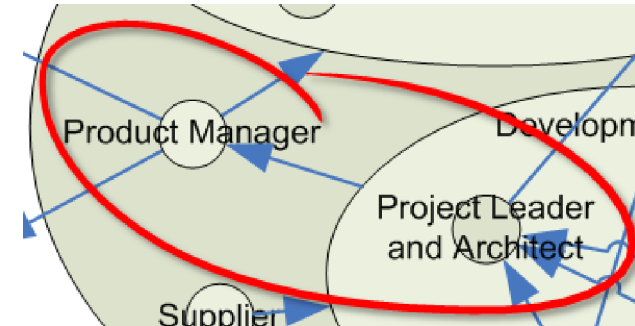
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Requirements Communication Defined



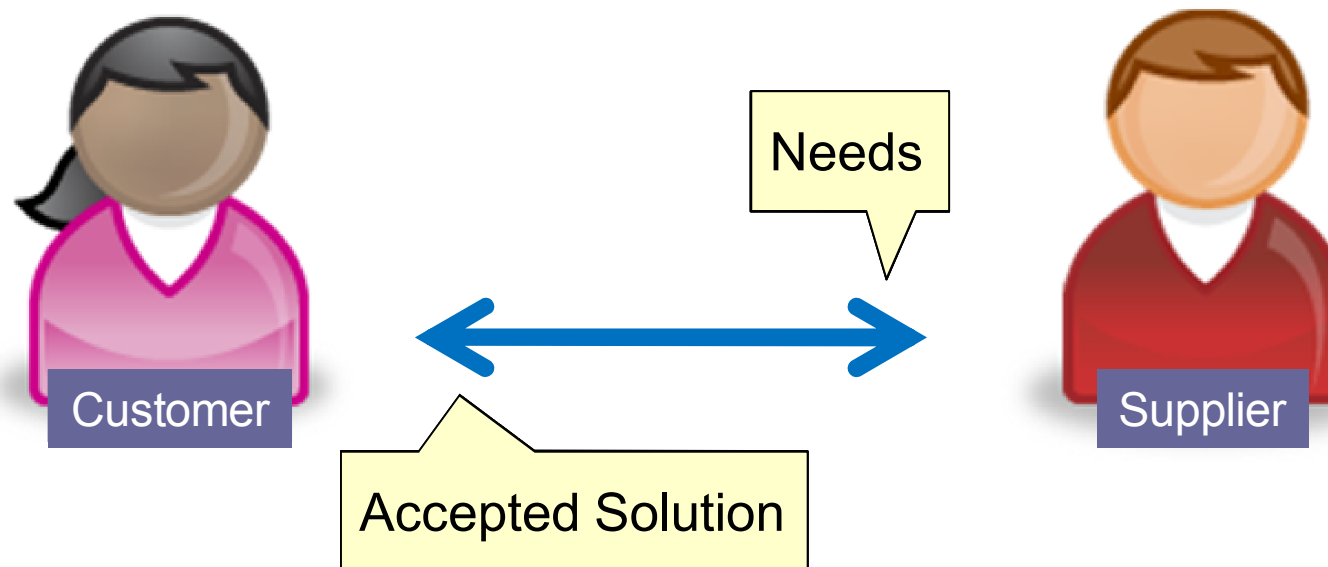
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Requirements communication
is the process of conveying needs
from a **given customer**
to a **given supplier**
that enables the supplier to implement
a **solution that is accepted** by the customer.



Requirements Communication





Project Milestone „Agree on Requirements“

- Project Customer:
 - How do I assure that the project team delivers an acceptable solution, already with the first attempt?
- Project Team (Supplier):
 - How do I get the needed inputs for architecting and designing an accepted solution, even if requirements are of low-quality or not even existing?
- Steering Committee:
 - How long is it going to take?
How much do we need to invest?

Project Milestone „Agree on Requirements“



- Project Customer:

- How do I assure that the project team delivers an acceptable solution that meets the customer's needs?

- Project Development

- How do we ensure that the project team has the necessary resources and skills to deliver the solution?

- Steer

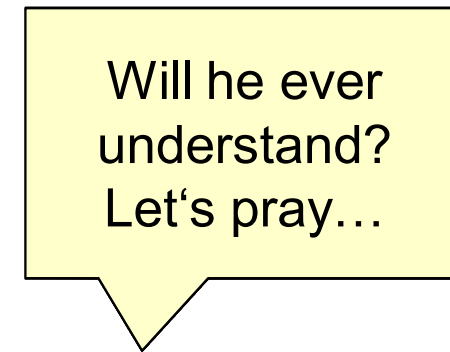
- How long is it going to take?
How much do we need to invest?

The interface between
marketing and development
is the most critical in terms of
challenges and criticality for success!

Push: High-Quality Requirements Specification



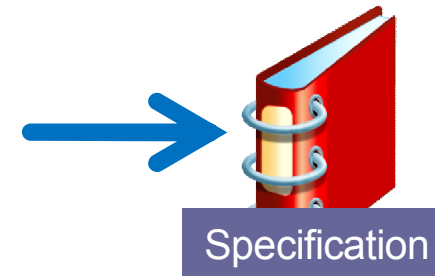
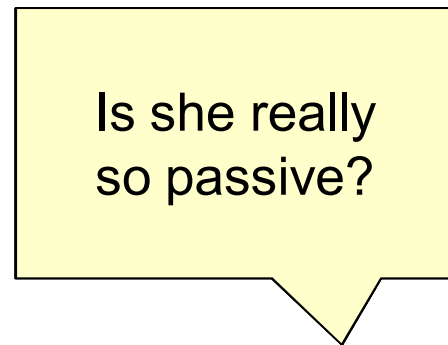
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Pull: Requirements Elicitation and Validation



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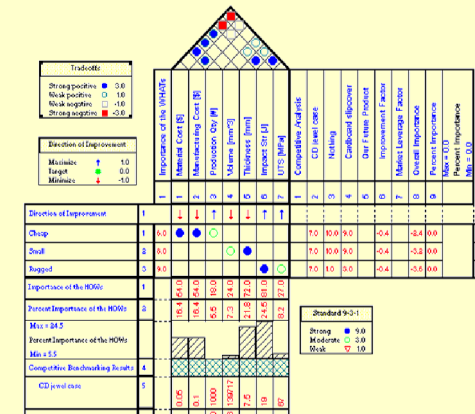
Proactive Balanced: QFD, Easy-WinWin



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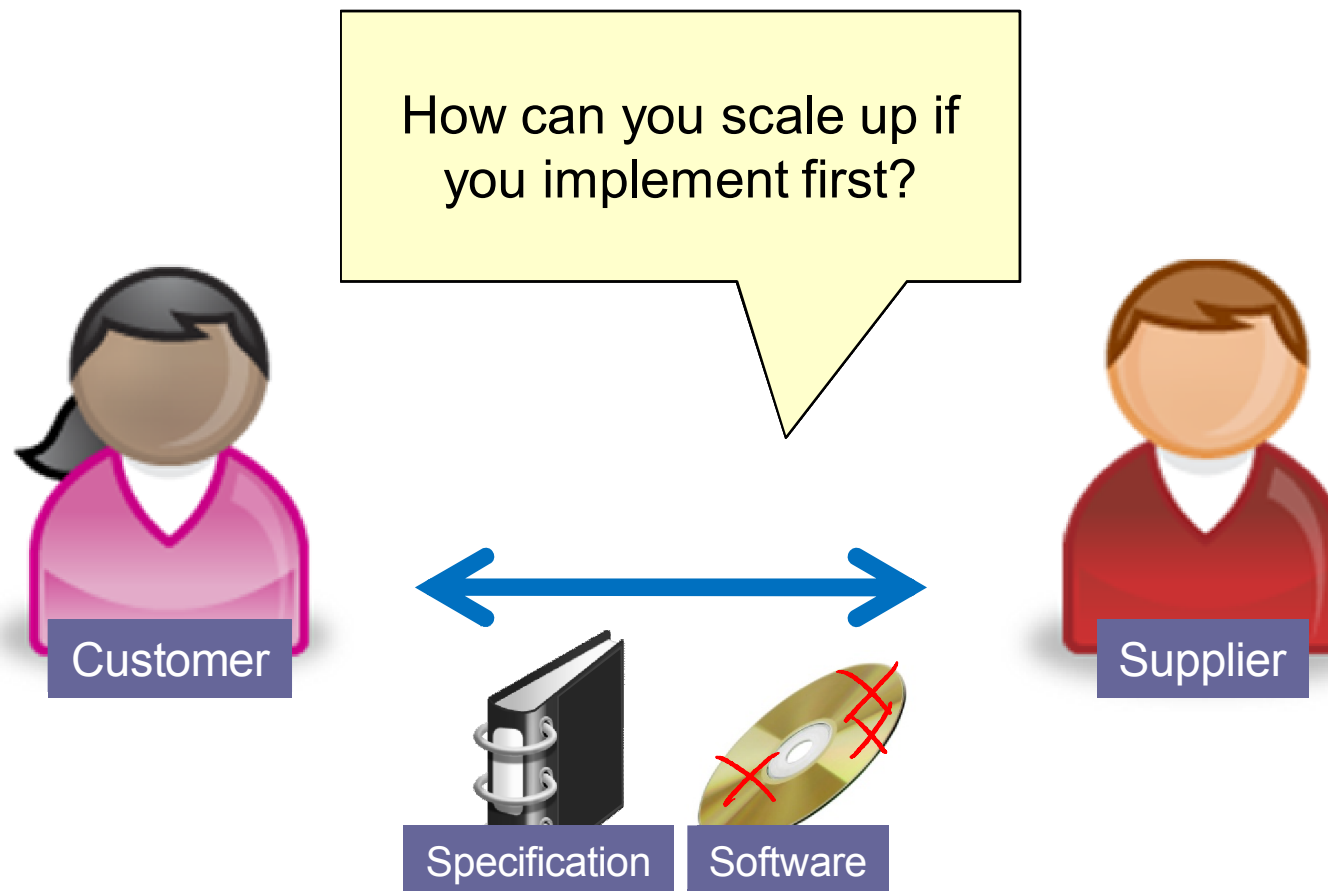
Do things really need
to be so complicated?



Reactive Balanced: Agile Development



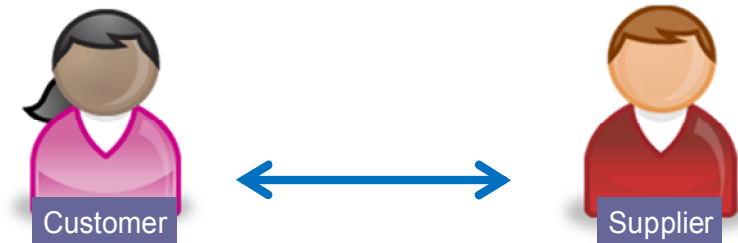
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Expectations on Requirements Communication



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Requirements communication should:

- allow both customer and supplier to be **proactive**,
- be **agile** (simple, flexible, and incremental),
- allow to **agree on requirements before implementation**.

pragmatic requirements
communication



Pragmatic Maxim

“[...] to ascertain the meaning of an intellectual conception one should consider what **practical consequences** might conceivably result [...] and the sum of these consequences will constitute the entire **meaning of the conception**.”

Charles Sanders Peirce (1905)

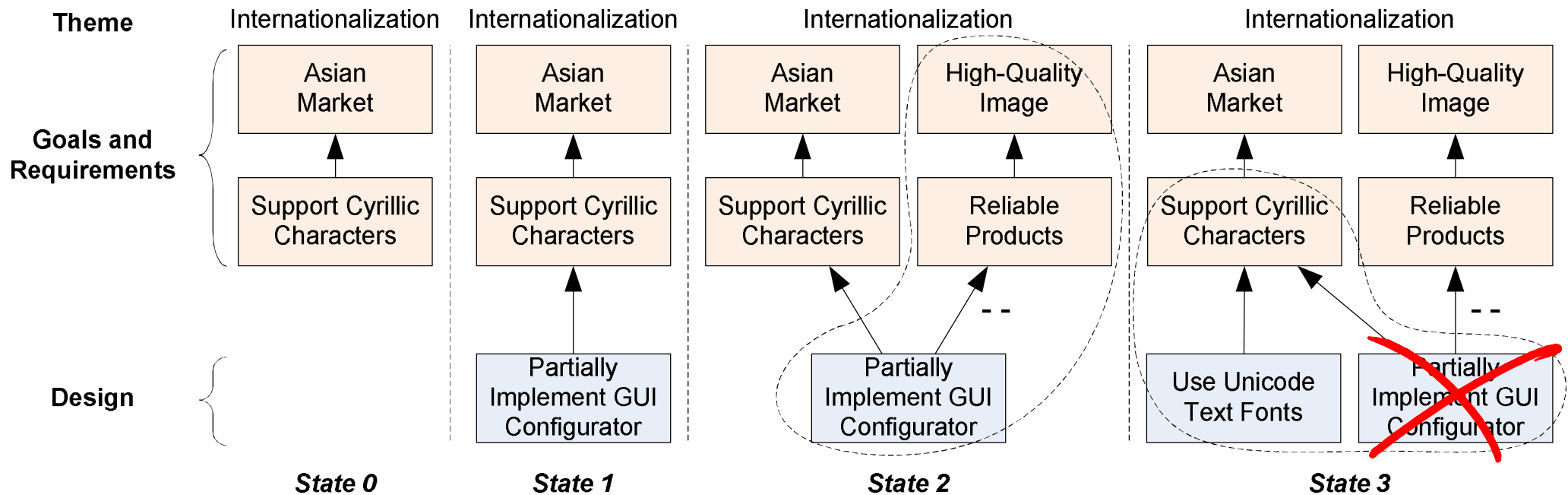
Interpretation for Requirements Communication:

- The **meaning of requirements** is visible in the **design** that results from interpreting these requirements.
- **Ambiguity** can be reduced by **choosing the right design** from all possible alternatives.

Formation of a Customer-Supplier Agreement



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Interdependency of Requirements and Design



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Questions

- How much does understanding of requirements influence design?
- How much does understanding of design influence requirements?
- How can requirements understanding be measured?

Operation (ABB and University of Zurich)

- PO1: product manager specifies requirements
- HO: product manager hands requirements off to development
- PO2: development performs requirements and system analysis
- NE: both review implementation proposals
- CO: both document negotiation results

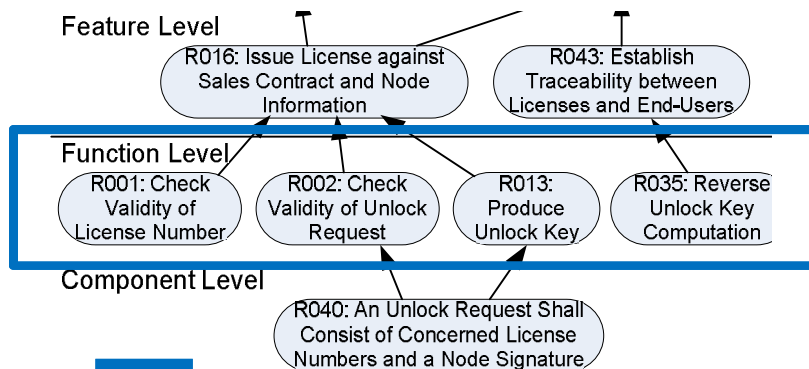


Research-Enabling Concepts: Formalized Implementation Proposals

Product Manager:

Goal-Oriented Requirements Catalogue

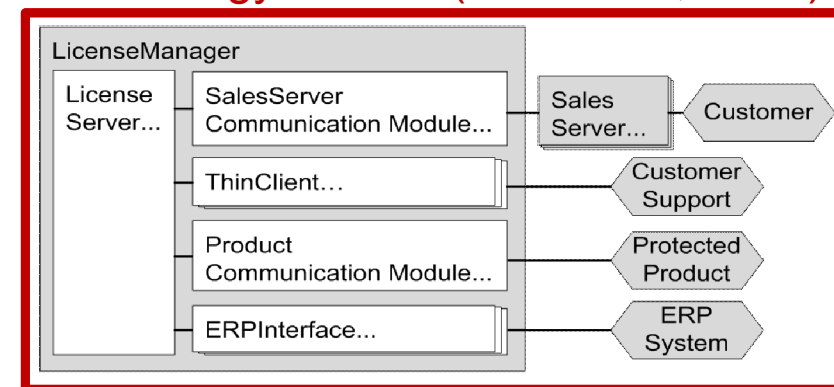
Technology: RAM (Gorschek, Wohlin, 2006)



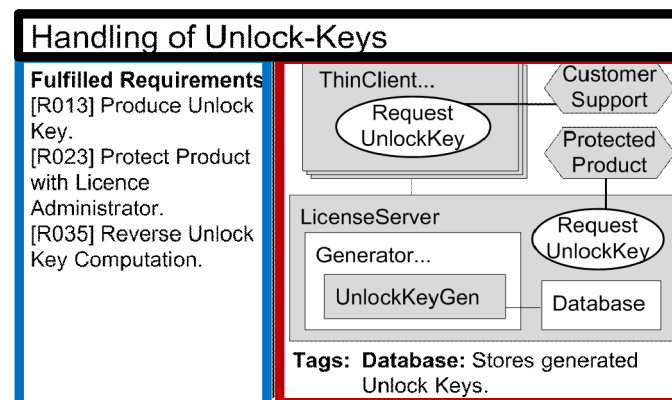
Architect:

Solution-Oriented System Specification

Technology: ADORA (Glinz et al, 2002)



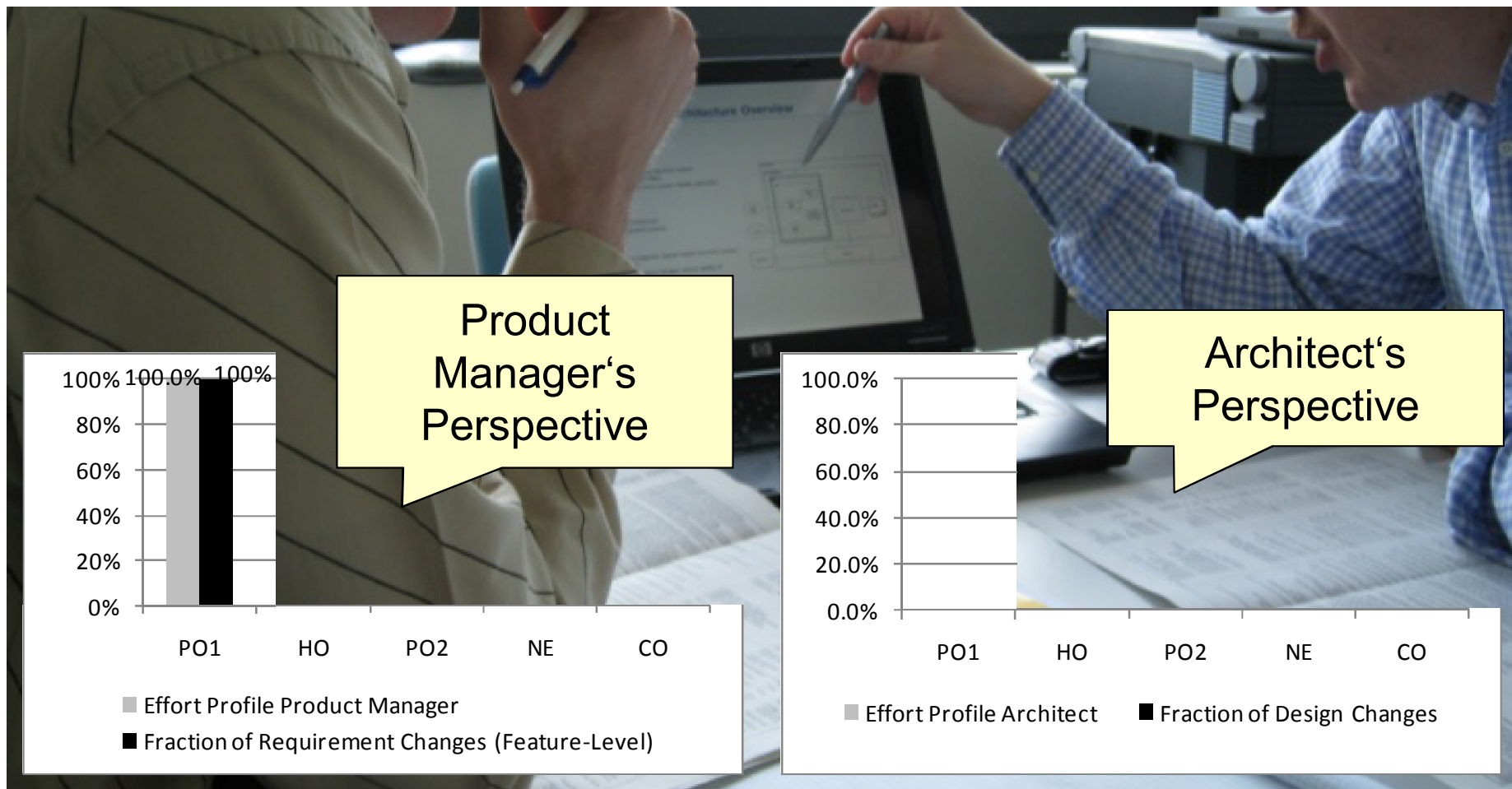
Dialogue between **Product Manager** and **Architect**:
Implementation Proposals



Positioning 1: Product Manager Specifies Requirements



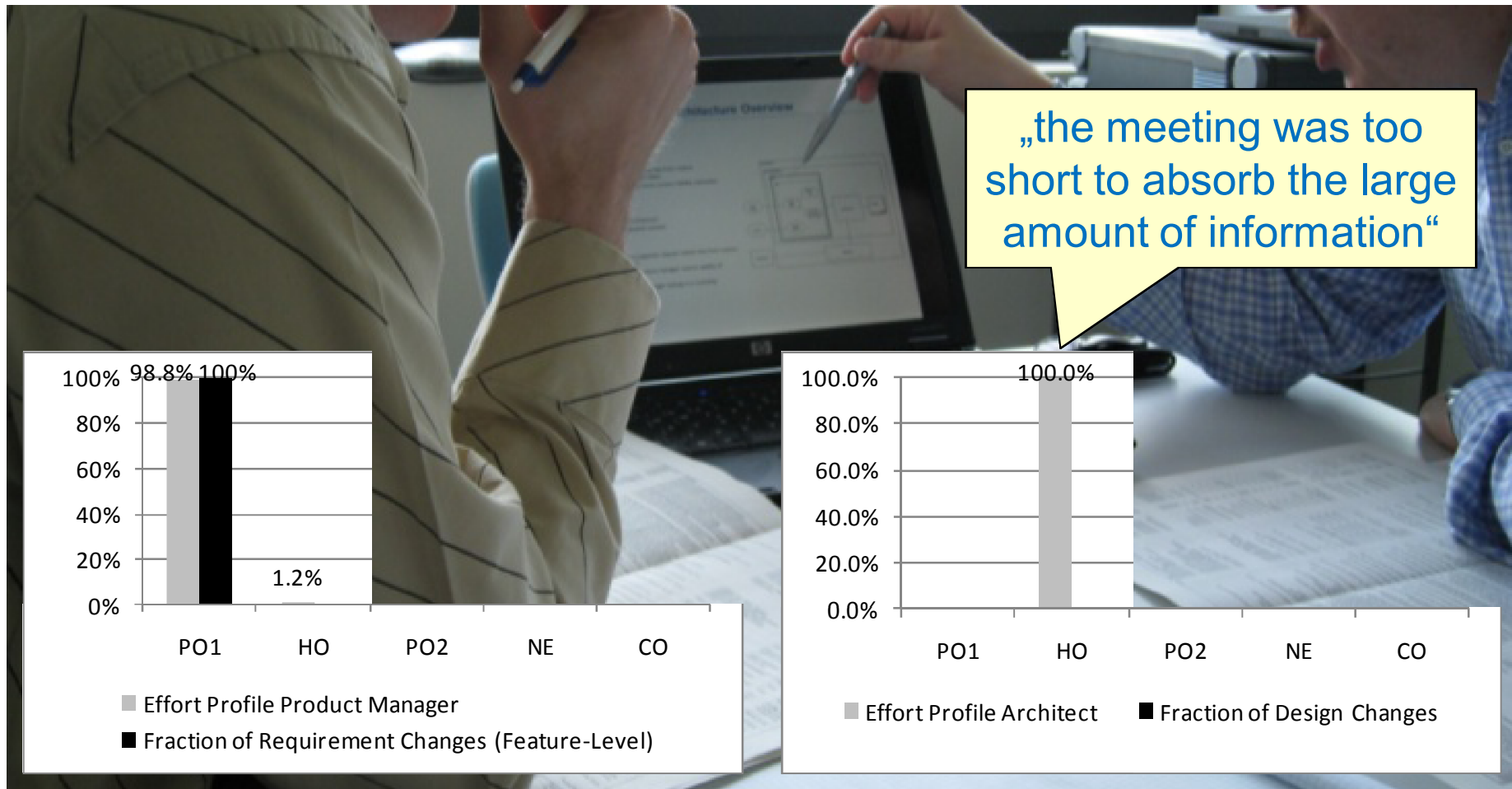
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Hand-Off: Product Manager Hands Requirements Off



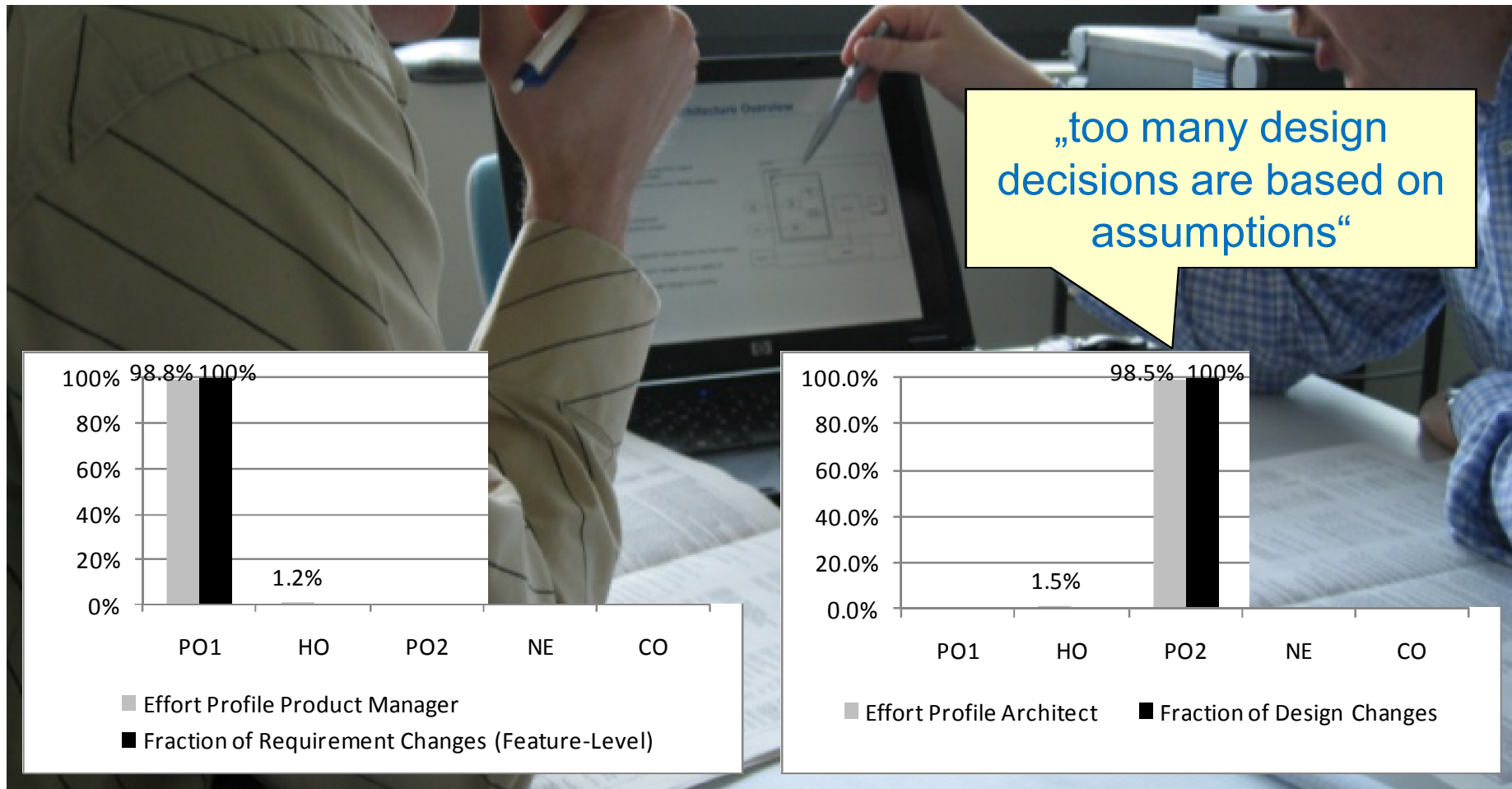
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Positioning 2: Architect Performs Analysis



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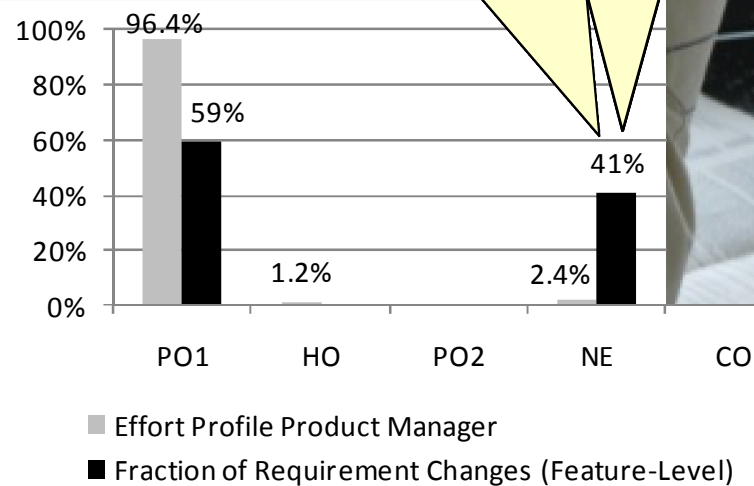




Negotiation: Both Review Implementation Proposals

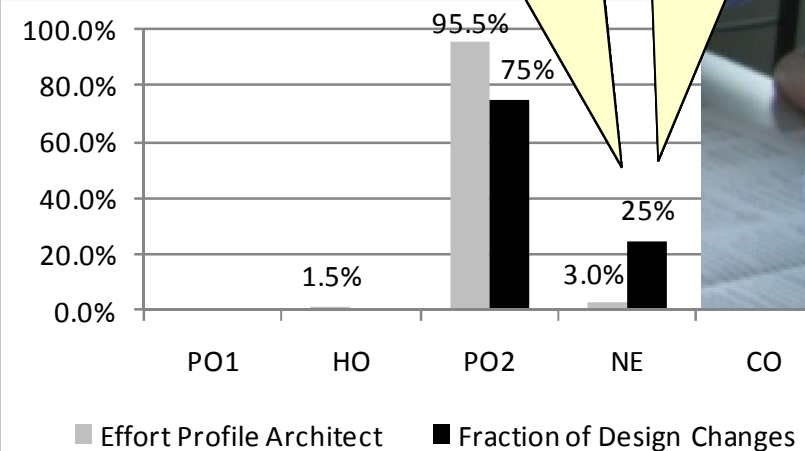
Example: „Yes, but you should add here a thin client to allow adapting the software to local customs.“

Effect of proposed design on requirements



„I understand the requirements just good enough to implement an accepted solution.“

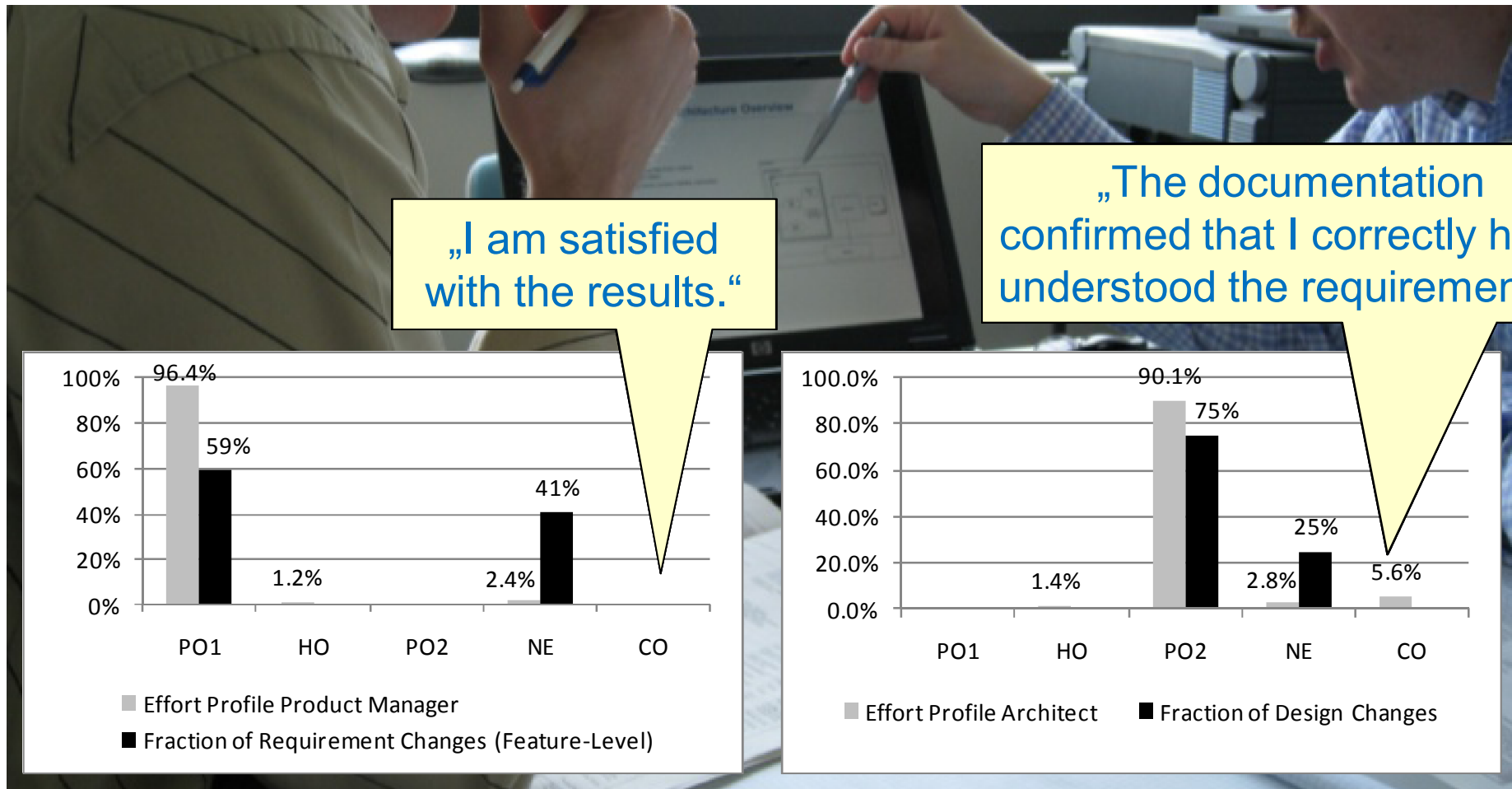
Effect of improved requirements



Confirmation: Both Parties Document Negotiation Results



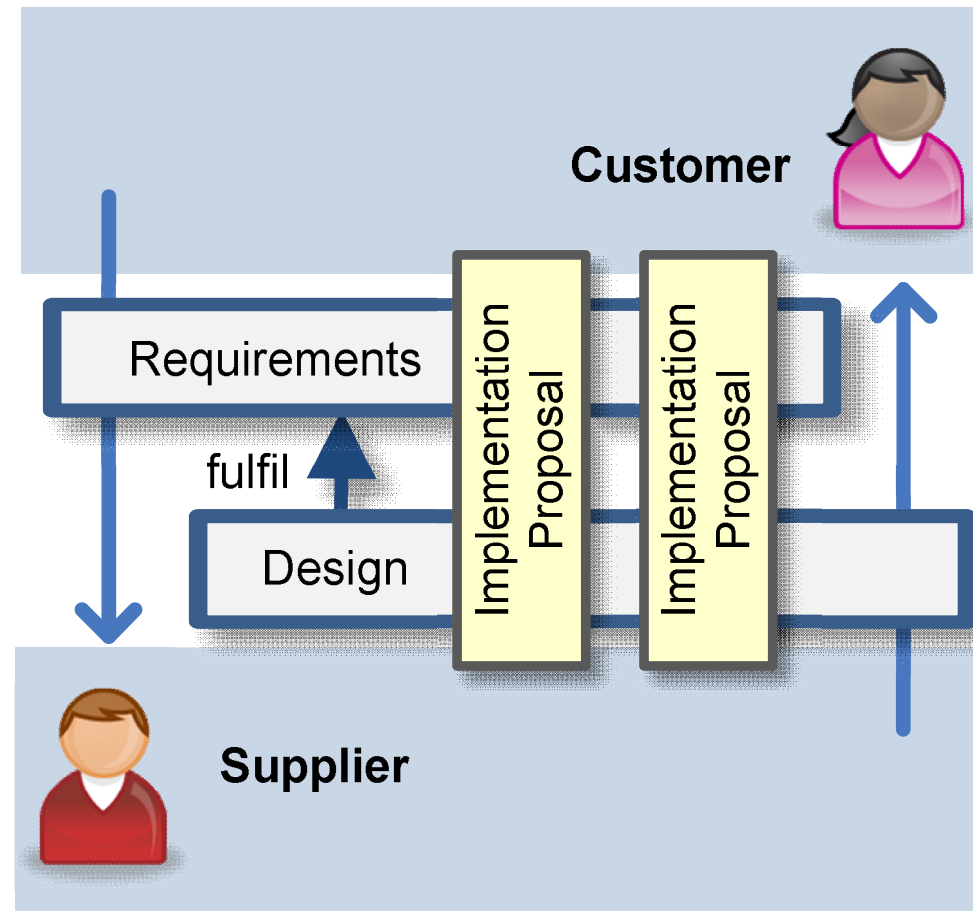
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Handshaking with Implementation Proposals



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Requirements and Solution Specifications



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Requirements Specification

- ...
- **Mobile Client**
 - Datentransfer manuell anstossen
 - Automatischer Datentransfer ein/ausschalten
 - Zeitintervall für automatischen Datentransfer einstellen
 - Anmelden
 - Sprache ändern
 - Verwendbarkeit bei Extrembedingungen
 - Erweiterbarkeit
 - Konfigurierbarkeit
 - Portierbarkeit
 - Lernbarkeit
 - Sicherheit
- **Schneeprofil**
 - Erfassen eines Schneeprofiles
 - ...
- ...

Solution Architecture and Design

- **Systemarchitektur**
- **Softwarearchitektur (Client)**
 - Übersicht auf die Komponenten
 - Das Eventsystem
 - Application API
 - User Interface API
 - Configuration API
 - Event Manager
 - Data Store
 - Transaction API
- **Softwarearchitektur (Server)**
 - Übersicht auf die Komponenten
 - Response API
 - Request API
- **Detaillentwurf (Client)**
 - ...



Implementation Proposals: Coarse-Grained Traceability

Theme:
Schneeprofilerfassung

Requirements Specification

- ...
- **Mobile Client**
 - Datentransfer manuell anstossen
 - Automatischer Datentransfer ein/ausschalten
 - Zeitintervall für automatischen Datentransfer einstellen
 - Anmelden
 - Sprache ändern
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 - [Lernbarkeit](#)
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- **Schneeprofil**
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 - ...
- ...

Architecture Specification

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- **Detaillentwurf (Client)**
 - ...

Implementation Proposal „Schneeprofil erfassen“

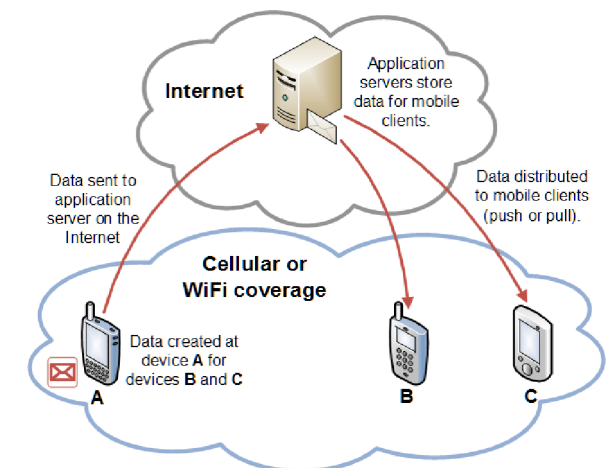
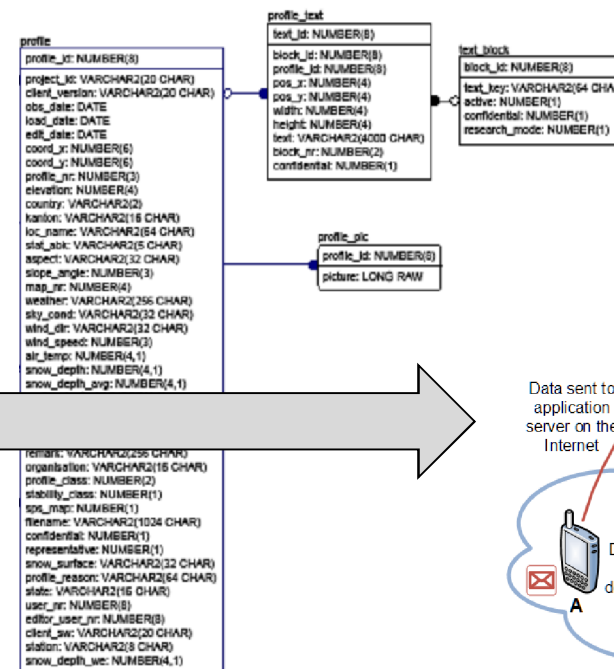
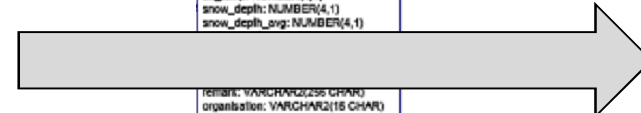
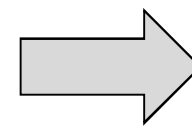
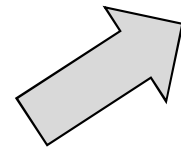


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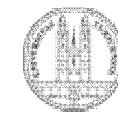


- Requirements:
 - Erfassen eines Schneeprofiles
 - Verwendbarkeit bei Extrembedingungen
 - Konfigurierbarkeit
 - Lernbarkeit

- Design:
 - UserInterface API
 - JavaME Umgebung
 - konfigurationsbasierte Generierung der Formulare
 - Configuration API
 - Schneeprofildefinition
 - Data Store
 - Buffer für Synchronisation mit Server



Implementation Proposal „Schneeprofil erfassen“



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- Requirements:

Implementation proposal template description

Attribute group	Attribute	Description
Basic attributes	Title	The theme addressed by the implementation proposal—a product feature, an important solution part or subsystem, or a development increment.
	Requirements	The requirements addressed by the implementation proposal. What does the proposed design imply for the customer?
	Design	The design proposed to address the requirements. What parts and functionality of the solution must be created or modified? What structure, style, and rules will be followed? What technologies will be used? What are the interfaces?
Negotiation support	Assumptions	Interpretation of the requirements in terms of preconditions that make the design meaningful.
	Impact	Impact of the design for the customer, supplier, and other stakeholders in terms of advantages, limitations, and risks.
	Dismissed alternatives	Alternative designs to address the requirements. How was each design investigated, and why was each alternative dismissed?
	Open issues	Actions required by the customer to progress with the negotiations—for example, confirm the proposal or provide more information.
Planning support	Scope	Parts of the solution that the design affects.
	Necessary activities	Activities needed to realize the design—the inputs for effort estimation and project planning.
	Effort estimate	Estimated effort to realize the design with arguments for why the supplier believes the estimate is correct.

confidential: NUMBER(1)
representative: NUMBER(1)
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profile_reason: VARCHAR2(64 CHAR)
slide: VARCHAR2(16 CHAR)
created: DATE

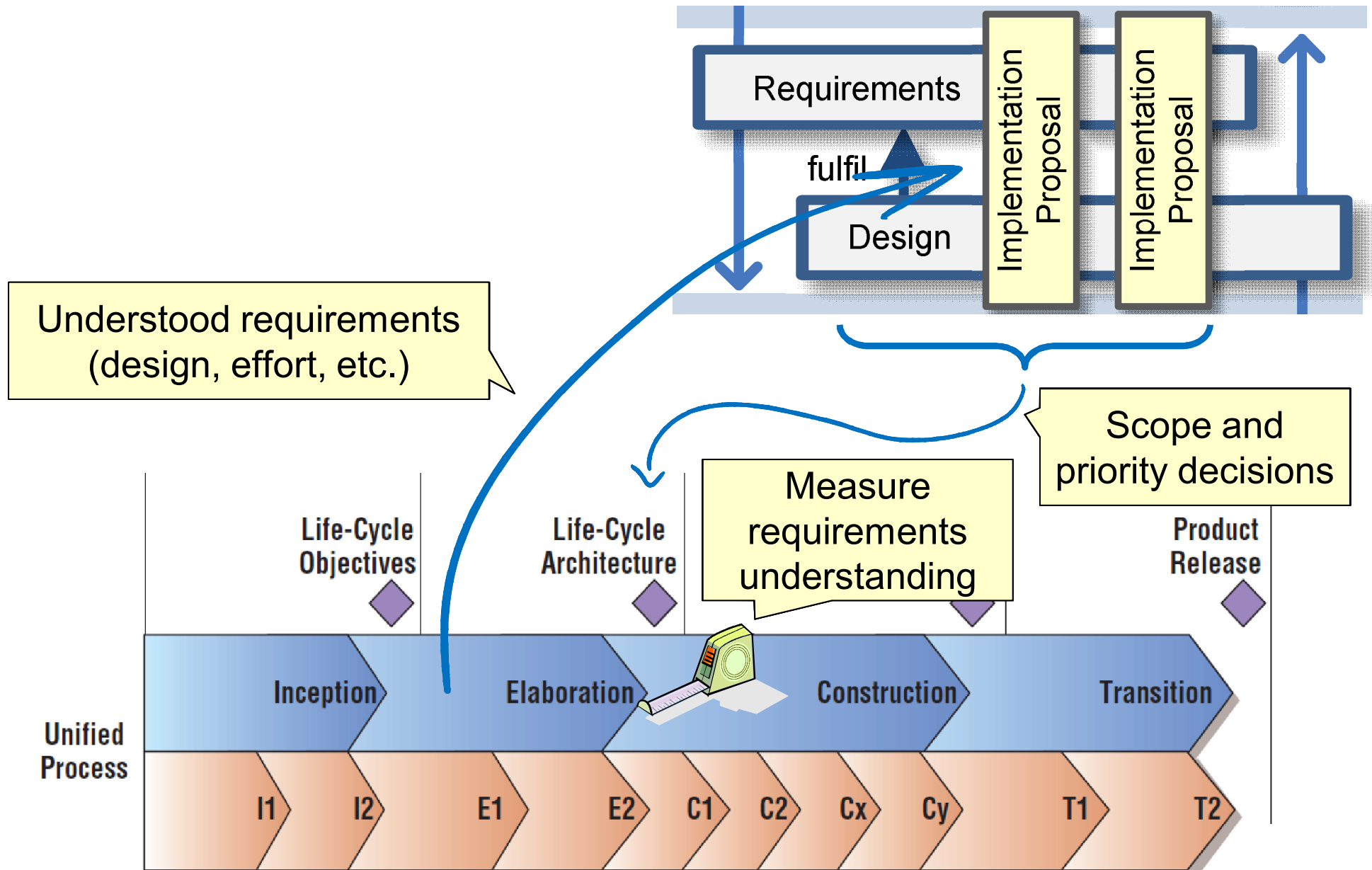
Data created at device A for devices B and C



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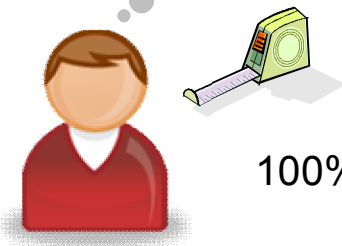
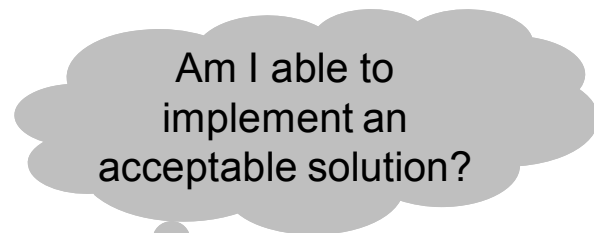
Use of Implementation Proposals



Measurements

Subjective
Self-Evaluation

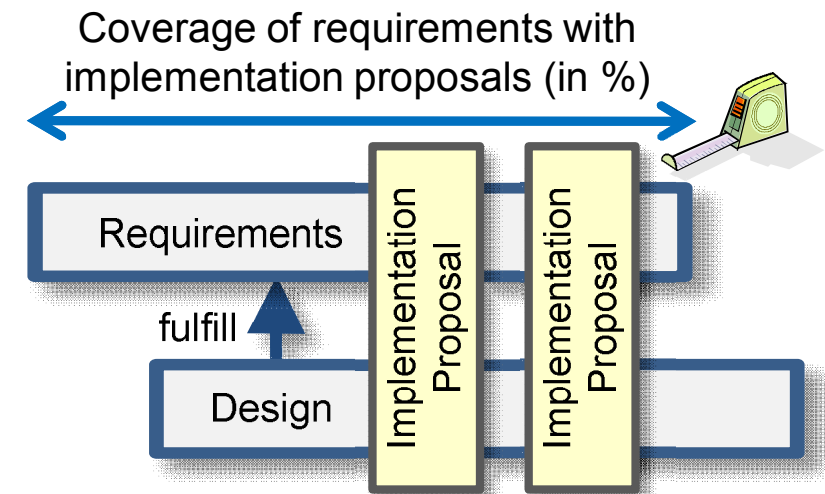
Exec-Ability
(Ability to Execute)



100%: perfectly able to deliver an accepted solution
60%: good-enough
0%: not able to deliver an accepted solution

Repeatable

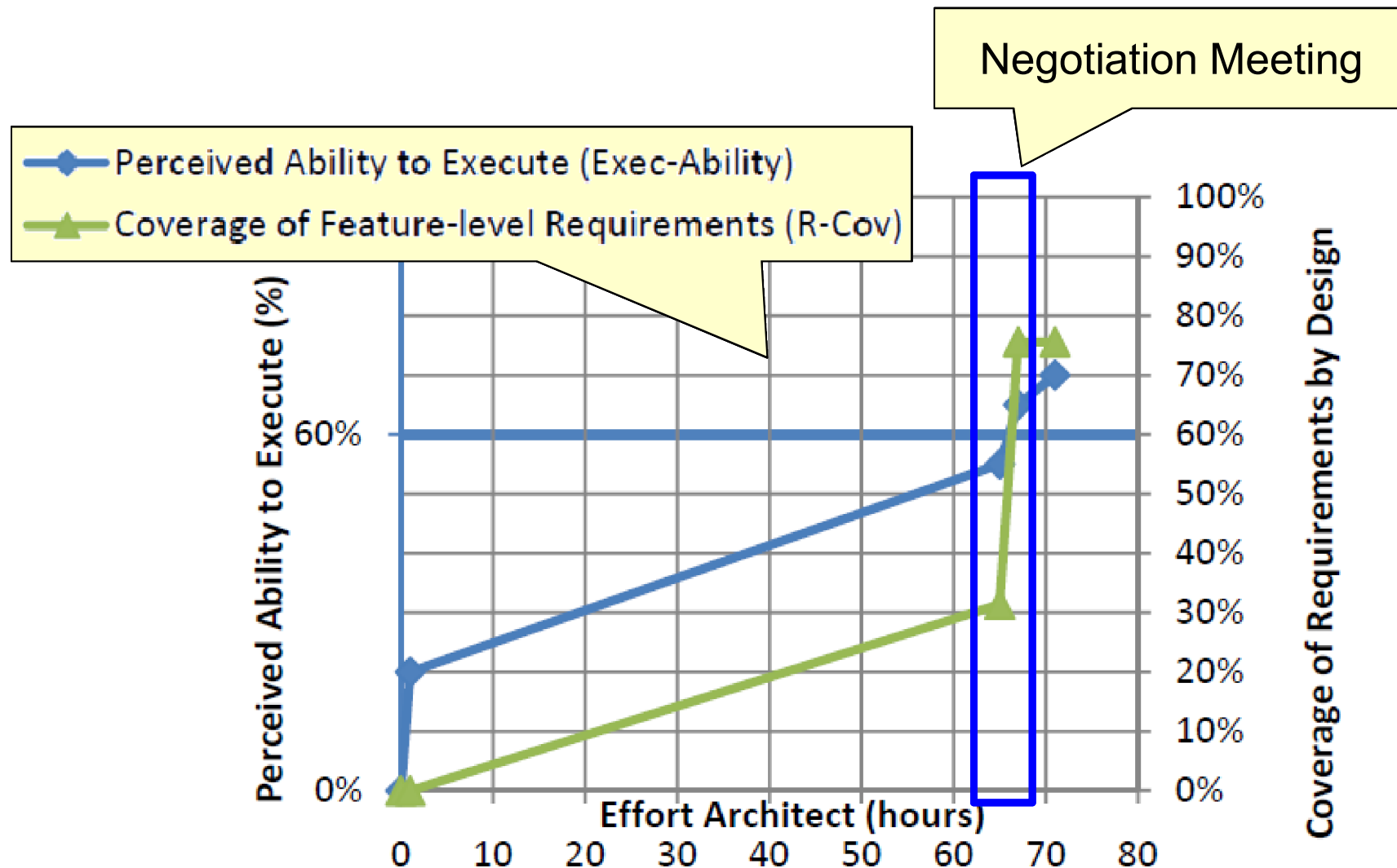
R-Cov
(Requirements Coverage)

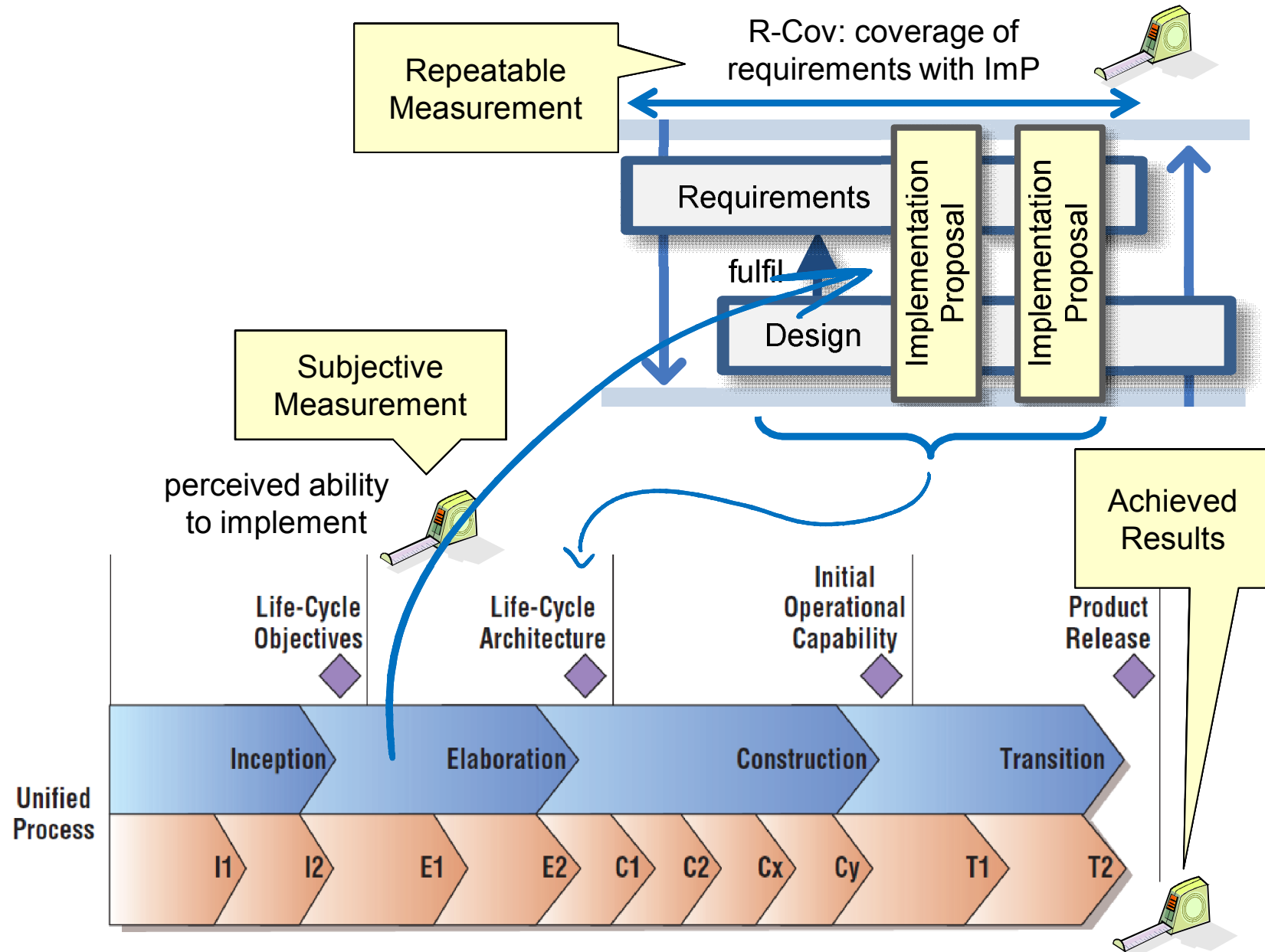


Evolution of Perceived and Measured Requirements Understanding



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Industrial Evaluation

Questions

- Does handshaking work in practice?
- How does handshaking compare with requirements hand-over?
- How sustainable is handshaking?

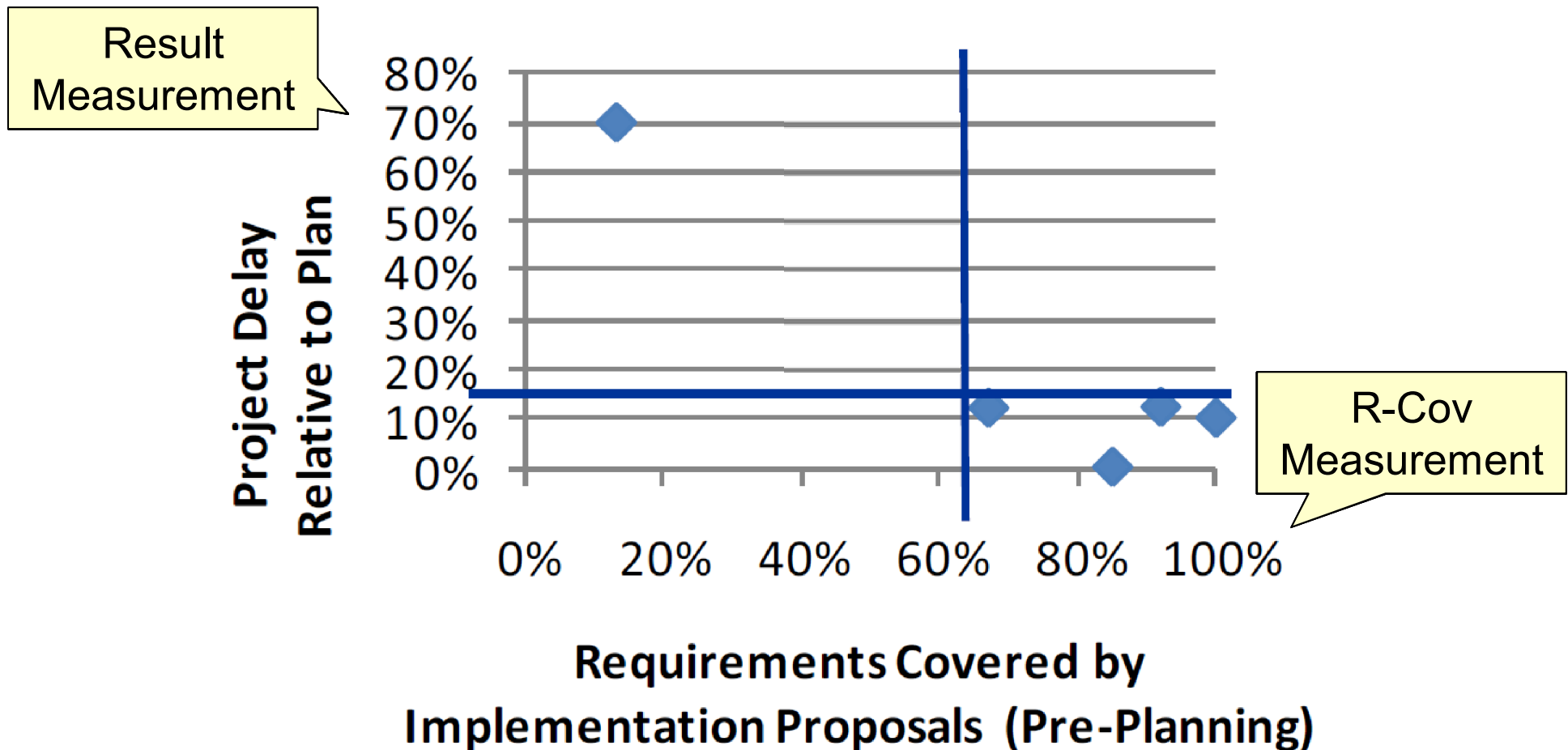
Operation (10 projects at ABB and Danaher Motion)

- Introduce and train handshaking to product management and development organization
- Prepare measurement system
- Let practitioners perform handshaking
- Measure handshaking effects
- Reflect with practitioners on lessons-learned

Correlation of R-Cov with Project Planning Accuracy (5 Projects)



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Lessons Learned (10 Projects)

Strengths

- “Enforced” improvement of requirements.
- Improved identification, analysis, and selection of alternatives.
- Deep, agreed requirements understanding.
- More information for decision-making and better defense of effort estimates.

Limitations

- Some requirements could not be communicated because they have not sufficiently been justified.
- Authoring implementation proposals requires domain knowledge.
- Requirements understandability for external people not improved.



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 - Release negotiations
 - Requirements communication

Agenda

- Win-Win Negotiation Basics
 - Bargaining
 - Integrative Negotiation
 - Pareto Analysis of Release Plans
- Requirements Communication
 - Handshaking with Implementation Proposals