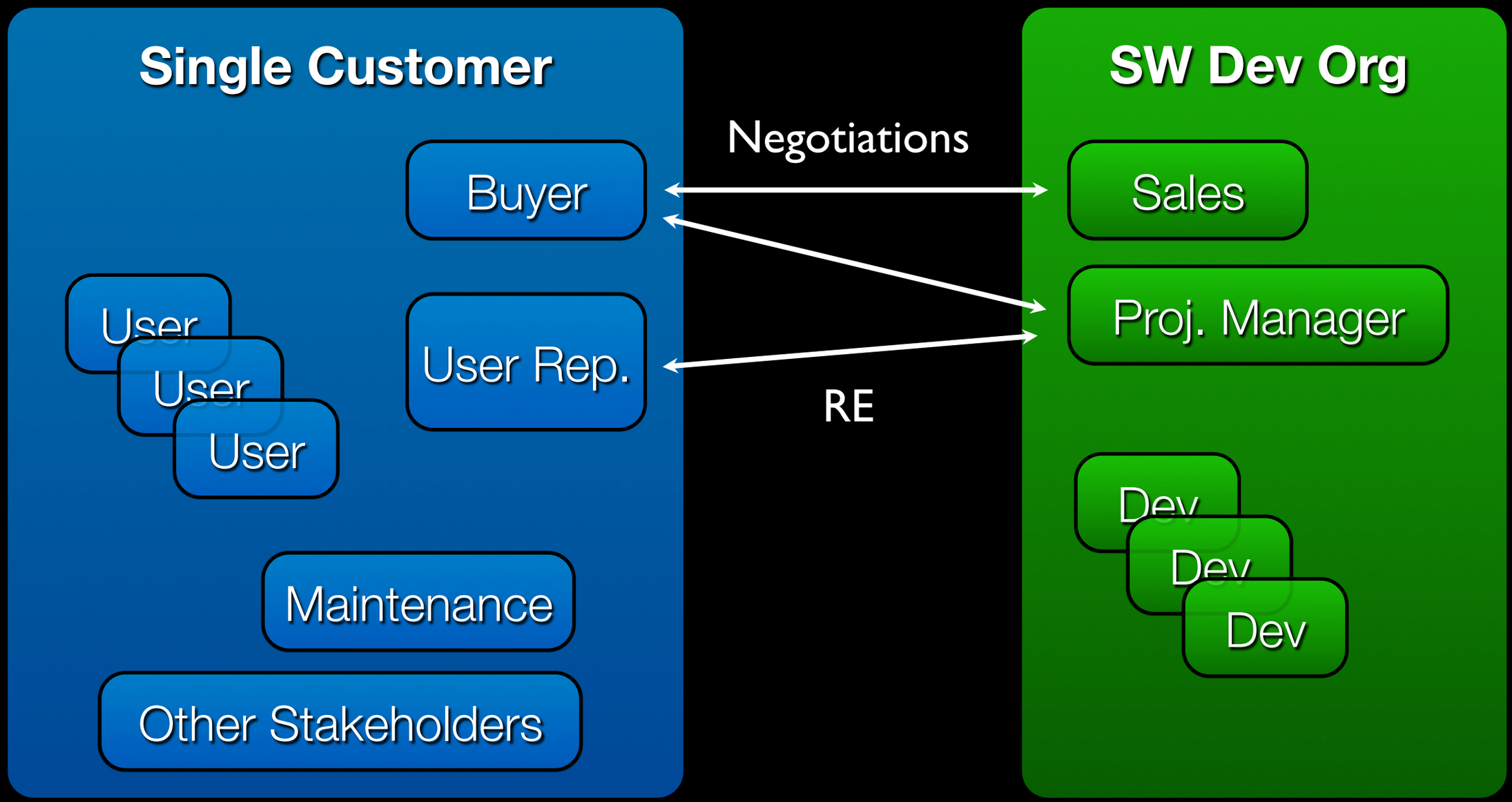
Market Driven RE

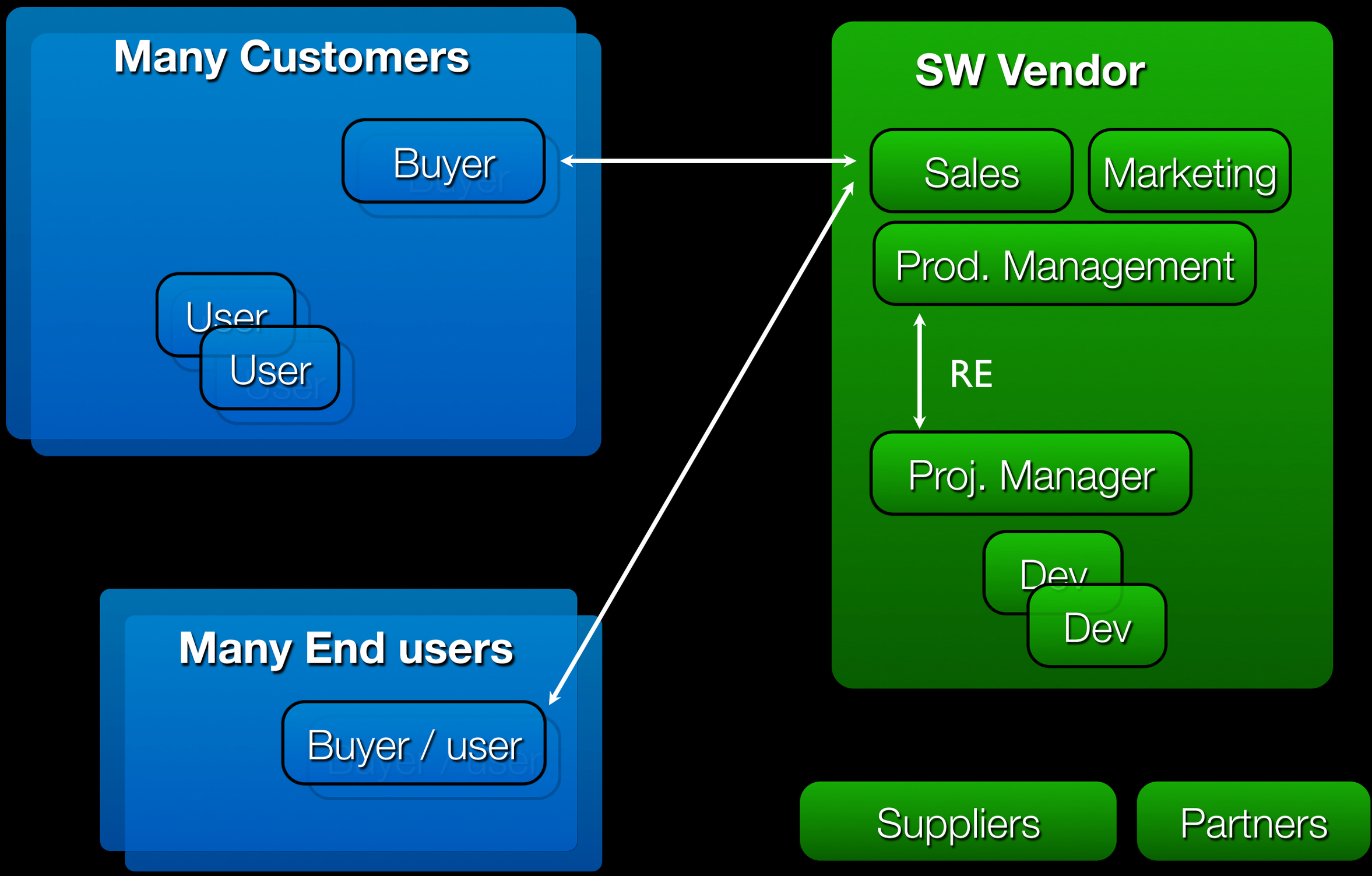
Lecture 9, DAT230, Requirements Engineering
Robert Feldt, 2011-10-04

Slides based on [Gorschek2006, Khurum2009]

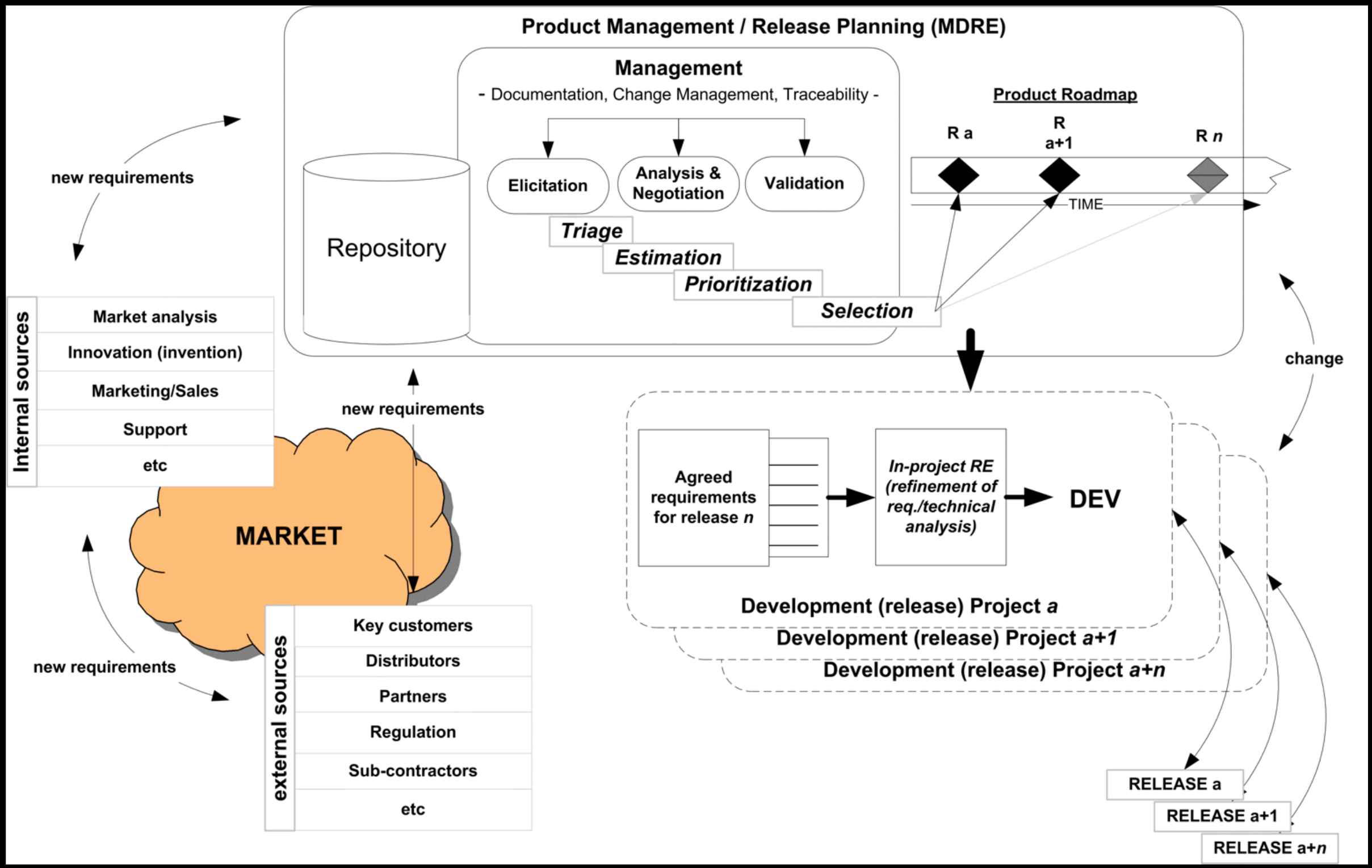
Recap Bespoke RE



Recap MDRE

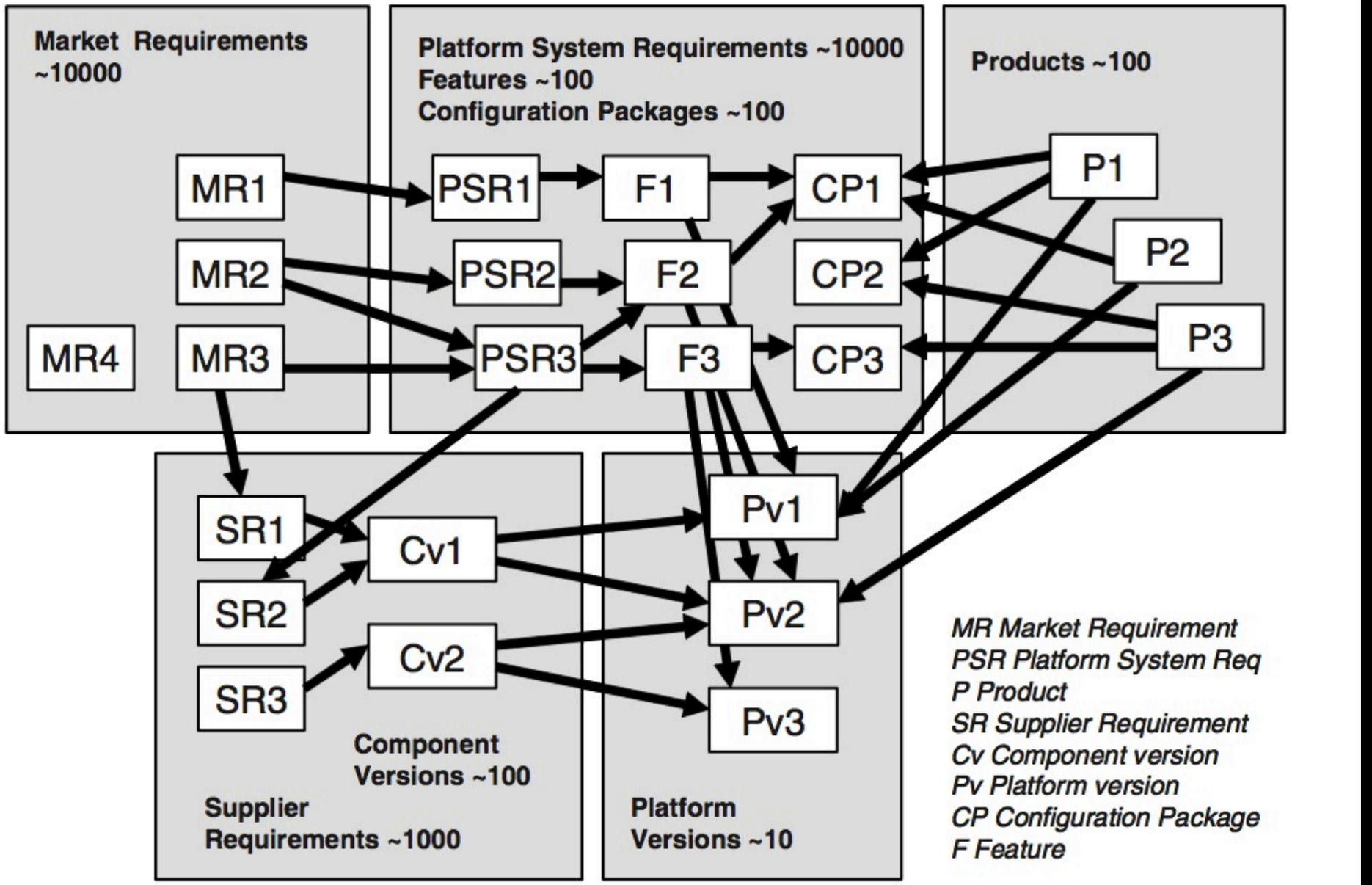

Many Customers
Buyer
User
User
Many End users
Buyer / user
SW Vendor
Sales
Marketing
Prod. Management
RE
Proj. Manager
Dev
Dev
Suppliers
Partners

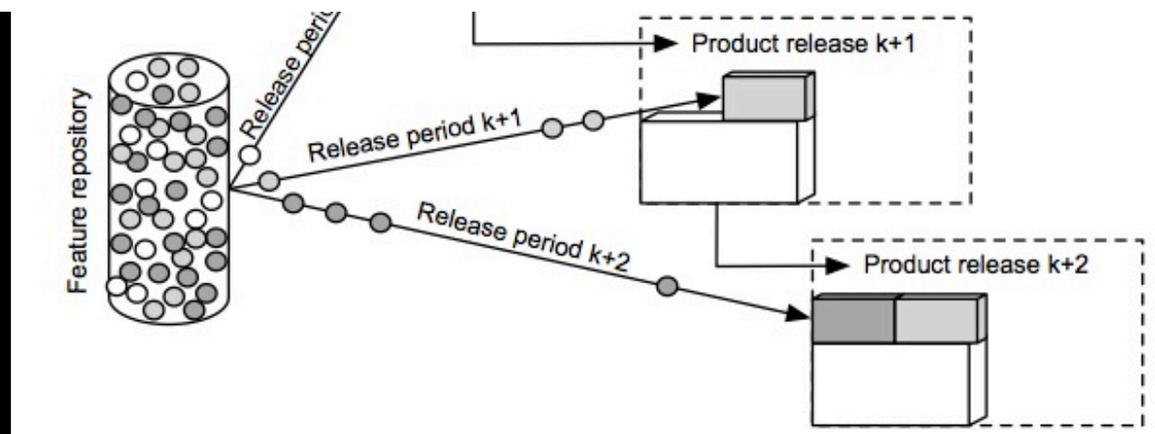
MDRE [Gorschek2006, Khurum2009]



	Customer-specific RE	MDRE
Initiation	RE process is initiated and terminated based on a development project	RE process is continuous, projects are initiated as needed
Objective	Fulfillment of a contract and compliance to the requirements specification	Deliver the right product at the right time
Success	Customer satisfaction and user acceptance	Determined by sales, market share, and product reviews
Life cycle	First development, then maintenance. Often one major release	Long series of releases and the product is undergoing continuous evolution
Domain knowledge	Supplier and customer can cooperate to ensure that the domain is understood	Supplier has to be domain experts, or having internal experts
Elicitation	Collects information from one customer	Innovation of new requirements and market analysis
Specification	More formal	Less formal
Negotiation	Negotiation and conflict resolution	Focused on prioritization, cost estimation, and release planning
Validation	Continuously through the contract	Delayed until late stage in the development

- Communi
- Requireme
- Constant f
- Inventing r
  - Trading
- Requireme
- Release pl





Industry Environment

Influences

- Competition
- Standards
- Regulation
- Trends

Sources

- Market analysis
- Marketing/sales
- Segment analysis
- Support
- Focus groups
- Management
- Surveys
- Experts
- Developers
- Competitor analysis
- History

Stakeholders

- Competitors
- Distributors
- Suppliers
- Partners
- End users

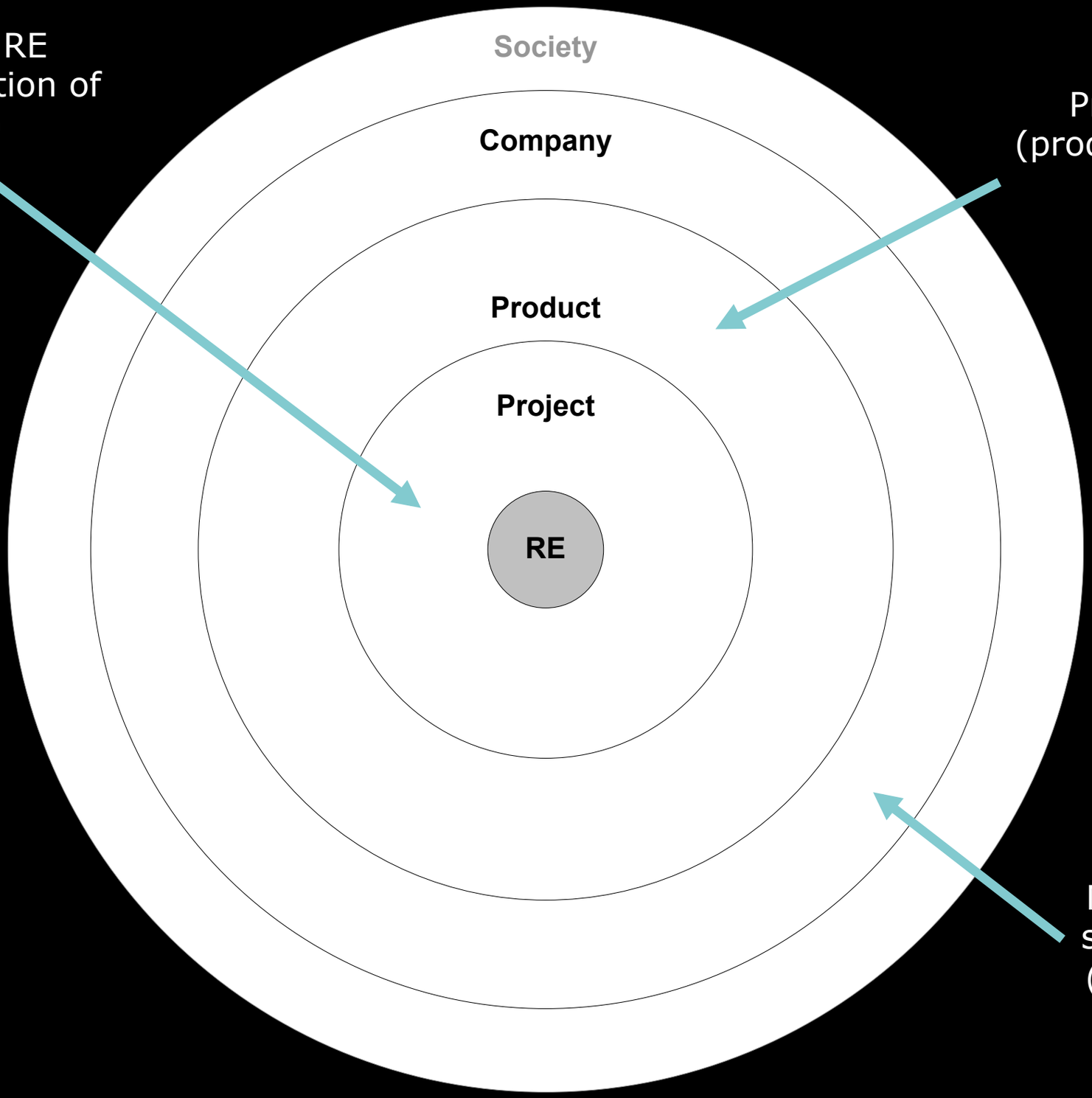
Industry Environment 2

- Large amount of information, data, requests, wishes, goals and requirements coming in all the time…
  - Limited only by when we choose to do cut-off
  - Multiple levels of abstraction and refinement
  - Traceability and access to requirement sources vary largely – e.g. getting hold of more information regarding req.
- Multiple projects for each product
- Multiple products for each company

multiple perspectives of RE

Project centered RE
(as a part of realization of requirements)

Product planning
(product management)



Management and strategic planning (Product Portfolio planning)

Project Perspective

- Delivered to a project:
  - A package of requirements
  - They are specified, initially analyzed and prioritized!
  - Project planning : estimations, initial analysis and risk analysis

Project Perspective (2)

- Manage requirements (V&V, refinement, update, risk analysis)
- Assure testability
- Assure that the end-result (e.g. software) of the project reflects the requirements allocated to the project
- Assure requirements: Inspections, reviews
- Dependencies
- Assure end-result is in accordance with requirements: System test, acceptance tests, inspections, reviews

Product Perspective

- Delivered to a product planning activity:
  - Company strategies
  - All product relevant requirements/ ideas/ data/ goals/ wishes

Product Perspective (2)

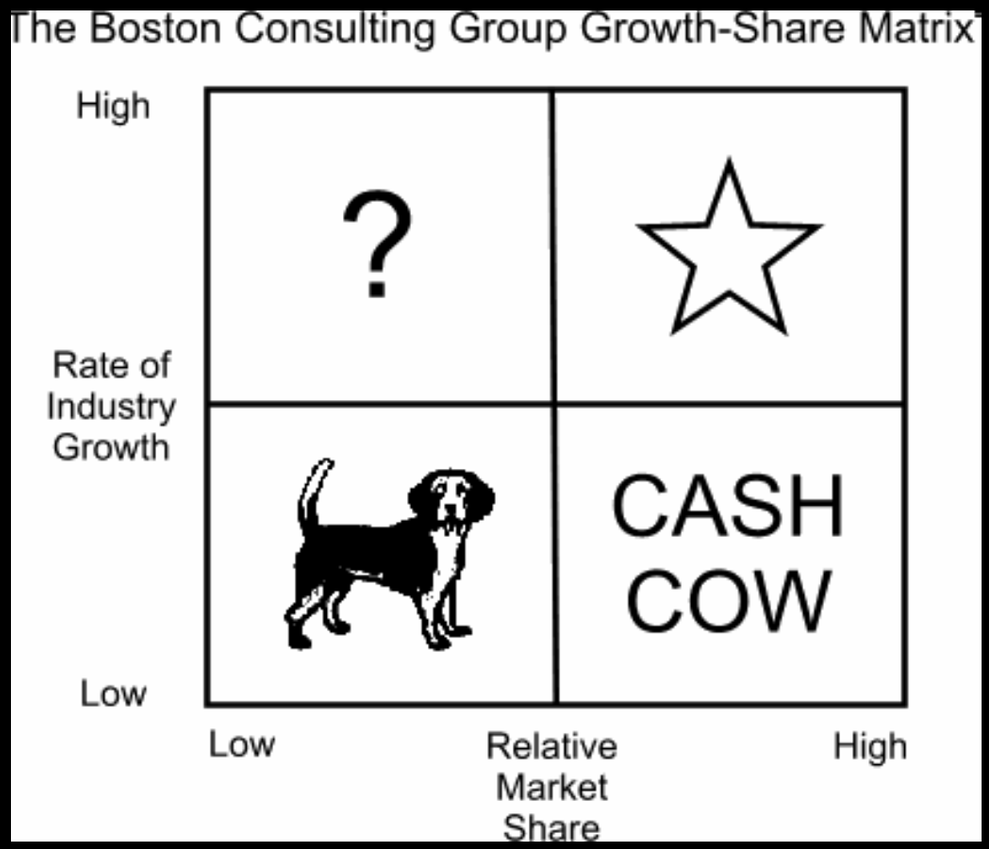
- Explicit formulation of product strategies
- Create framework for requirements selection
- Initial sorting of requirements – e.g. with regards to product strategies
- Prioritization (multiple levels – multiple perspectives)
- Dependencies (initial)
- Package requirements with regards to coupling and cohesion
- Make initial estimations on req. and packages for project planning activities
- Send packages to development projects for further refinement and realization
- Measure how well the requirements selection process works

Product Perspective (3)

- Product planning success measurements (wrt requirements):
  - GAP Analysis
  - Customer Value Analysis
  - Internal Value Analysis
    - Does the product generate revenue in accordance with estimations?

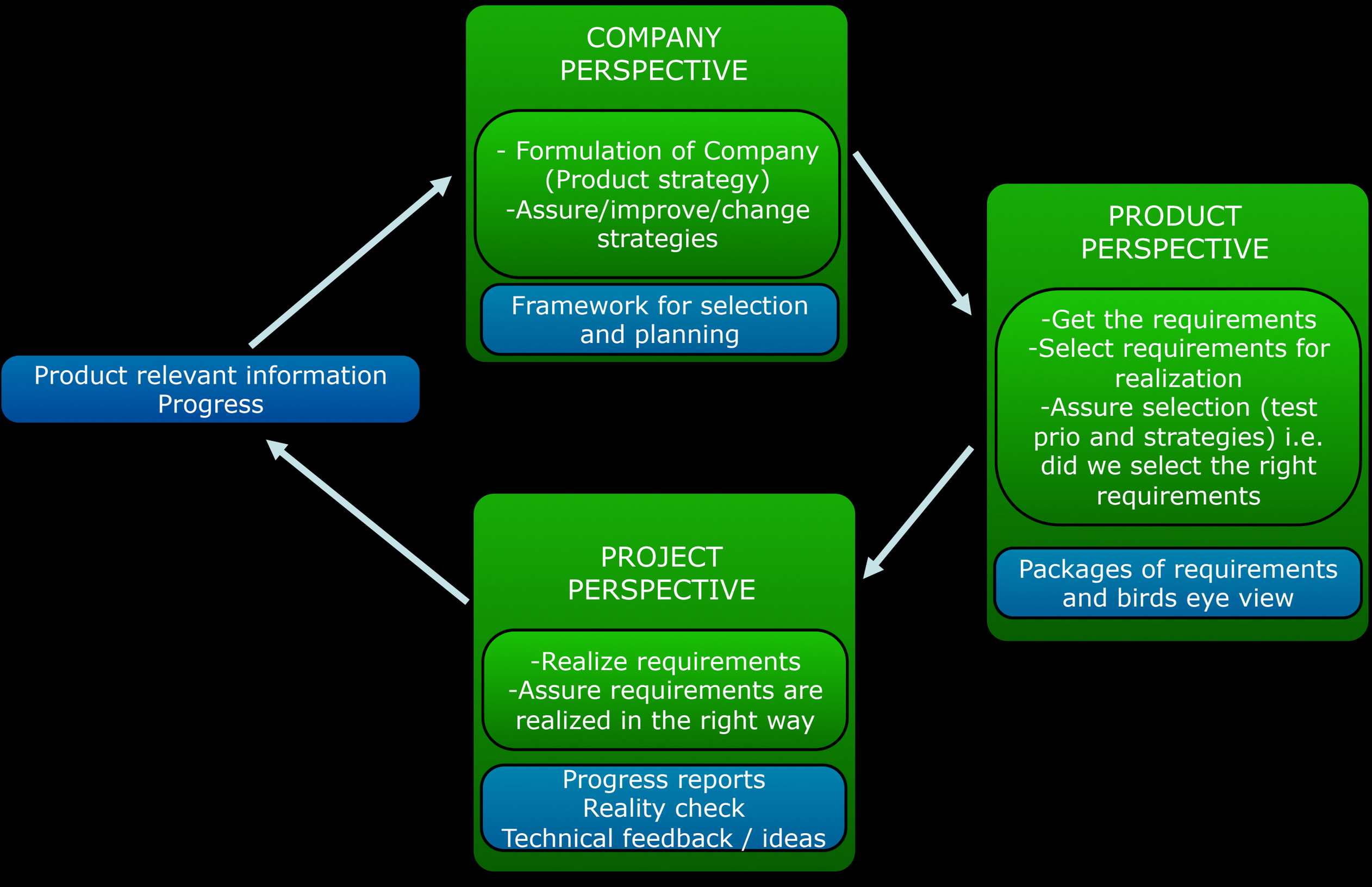
Company Perspective

- Delivered to a company portfolio planning activity:
  - Management relevant decision support data (from development and product management, marketing, support etc)
  - Input from efforts on Product Management (e.g. GAP analysis, CVA, IVA etc)



- Output is:
  - Explicit formulation of Company Strategies
  - Product strategies
  - Strategic development plans with regards to several products (new, old… etc)
  - Tools used: Bubble diagrams

Overview


COMPANY PERSPECTIVE
- Formulation of Company (Product strategy)
-Assure/improve/change strategies
Framework for selection and planning
PRODUCT PERSPECTIVE
-Get the requirements
-Select requirements for realization
-Assure selection (test prio and strategies) i.e. did we select the right requirements
Packages of requirements and birds eye view
PROJECT PERSPECTIVE
-Realize requirements
-Assure requirements are realized in the right way
Progress reports
Reality check
Technical feedback / ideas
Product relevant information
Progress

1. Requirement Overload

- Large amounts of requirements: Threat and opportunity
- MDRE process needs to be able to handle large amounts of data continuously.
- Overload can decrease quality if not handled correctly

2. Abstraction Levels

- Goal like requirements e.g. marketing channels, to detailed technical solution proposals from technically adapt customers.
- Requirements come in the raw form. MDRE process needs to take this into consideration as it influences all aspects of later processing, whether it be early triage, analysis and refinement, estimation, prioritization and ultimately selection.
- Process should be flexible enough to handle multiple types of requirements.

3. Requirements Dependencies

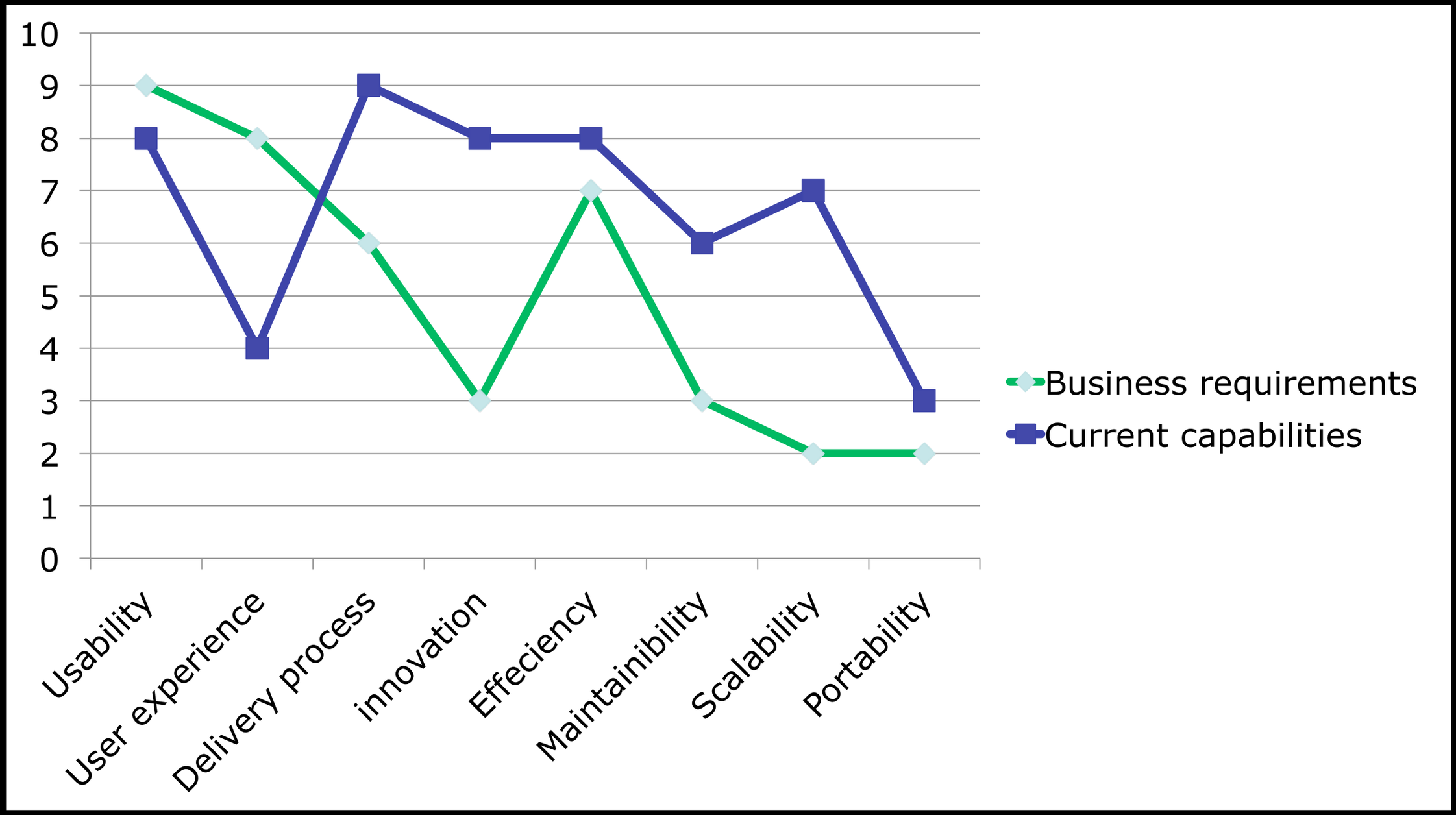
- Influence primarily requirements selection and release planning.
- MDRE process needs to enable professionals to take dependencies into account when handling large amounts of requirements.
- An important type of dependencies involves value-based dependencies, directly related to customer value and development cost.

4. Selection / Release Planning

- Factors
  - Fixed Releases (time-to-market)
  - Estimation: Crucial
  - Prioritization
- Good-enough requirements for estimation and prioritization (the consequence of a specific requirement needs to be known).
- This applies for prioritization in order to better be able to compare. similar abstraction level in addition to giving a good-enough view of what they imply.

5. Gap between Market and Product

- Positive gaps
- Negative gaps



6. Market Pull / Technology Push

- Types of requirements
  - Creating innovations (technology-push)
  - Requests/whishes/needs in the market environment (market-pull).
- Need to be balanced: use of product strategies (roadmaps) in requirement selection

Requirement Analysis

- Following early triage
- Implementation costs and resources are estimated. Mostly ad-hoc estimation.
- Time to market fixed.
  - Quality often sacrificed.
- Value based dependencies, directly related to customer value and development cost important.

Requirement Prioritization

- Objective: prioritization for requirements selection for release planning.
- Success:
  - Outperforming competitors in the market
  - Delivering a high perceived benefit to customers. From this perspective customer satisfaction is central
  - Optimally customers (and potential customers) should perform prioritizations.

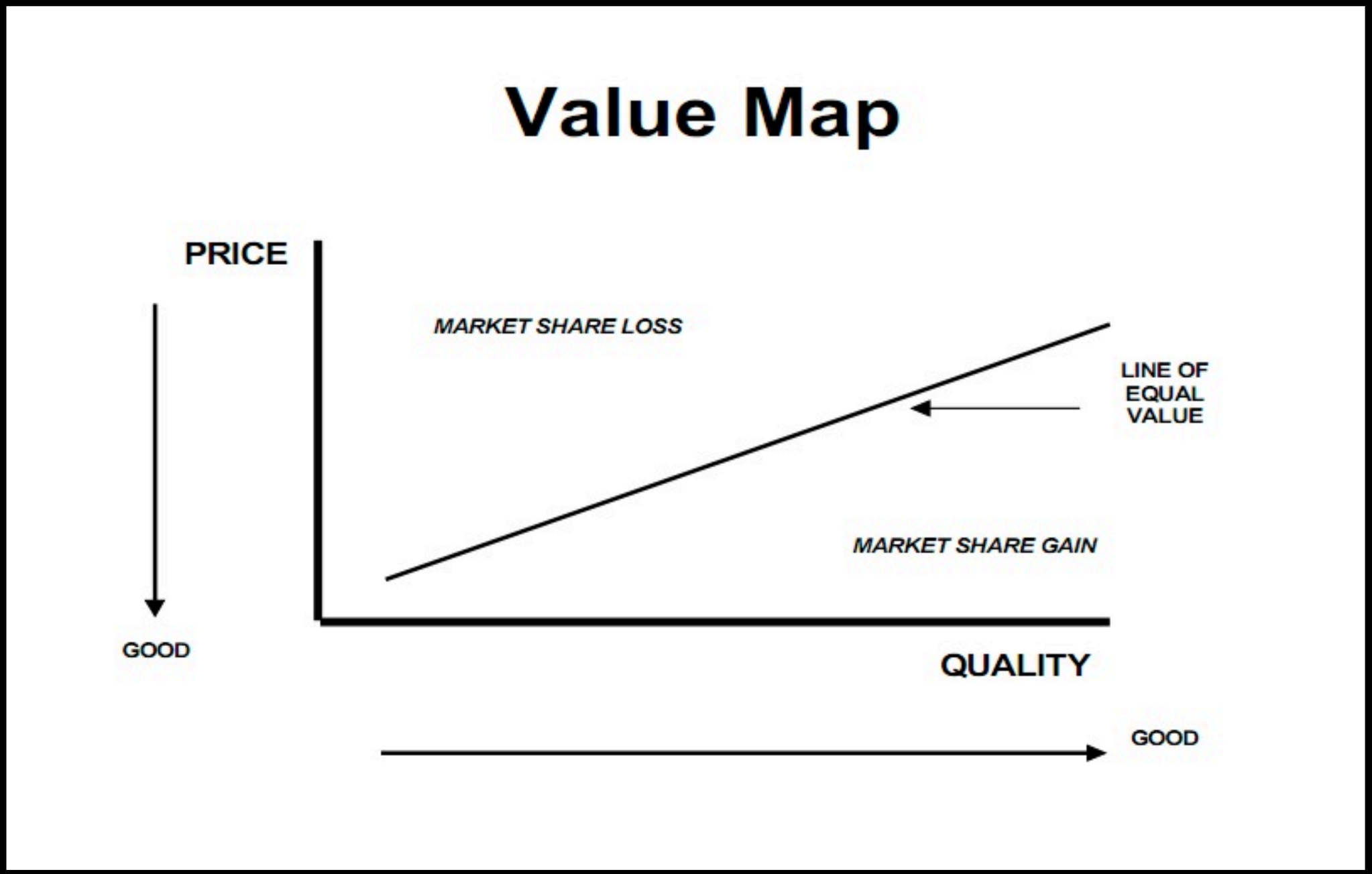
Requirement Prioritization

- Internal considerations regarding
  - Technical aspects (e.g. architecture and maintainability)
  - Business aspects (e.g. strategic decisions regarding focusing on new market-segments)
  - Implementation aspects (e.g. dependencies)
- Several methods for attaining requirement priority exist, including the 100-point method, and the planning-game. [Scalability may be a problem]

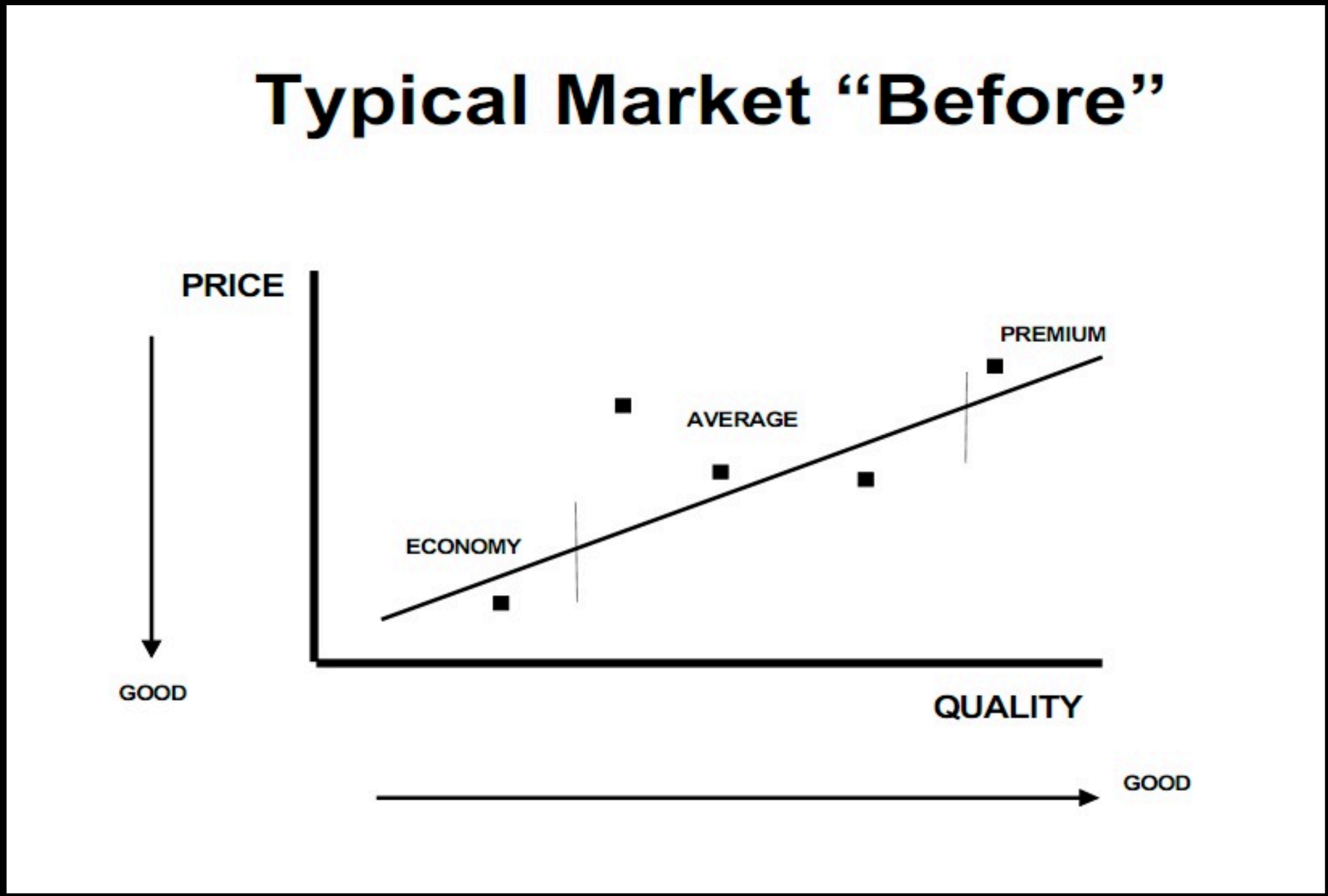
Req. Selection (Release Planning)

- Use of roadmap to specify:
  - Themes of a certain product release (e.g. a theme could be offering a certain type of functionality, concentrating on improving quality, security and so on)
  - Restrictions (e.g. what are the restrictions in terms of risk, time, resources available, internal technical considerations and so on)
  - Goals (what are the overall product goals, and what are the goals for every release)
  - Milestones (for releases and goals)
- Balance technology-push and market-pull

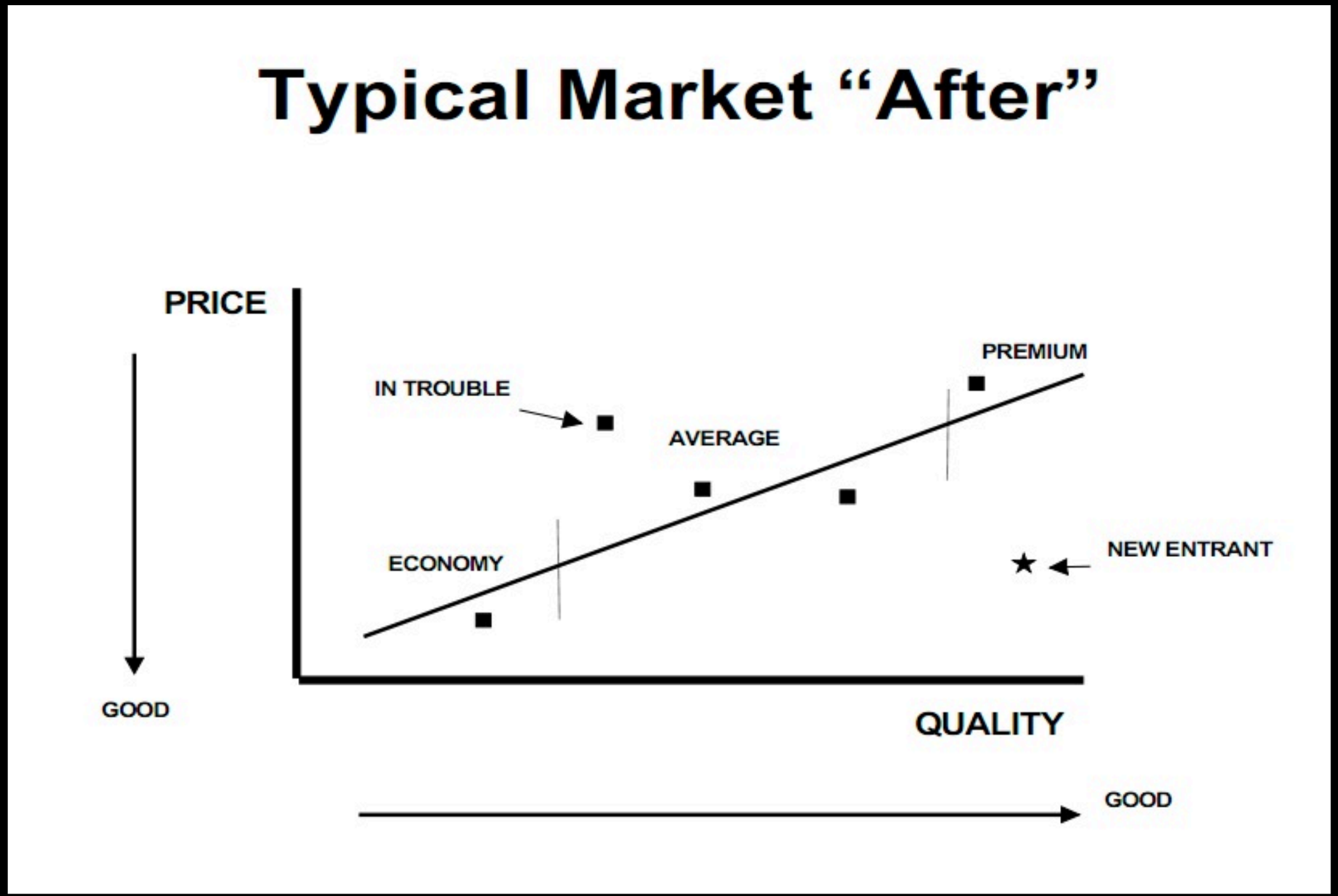
Customer Value Analysis



Customer Value Analysis



Customer Value Analysis



QUPER Quality Model

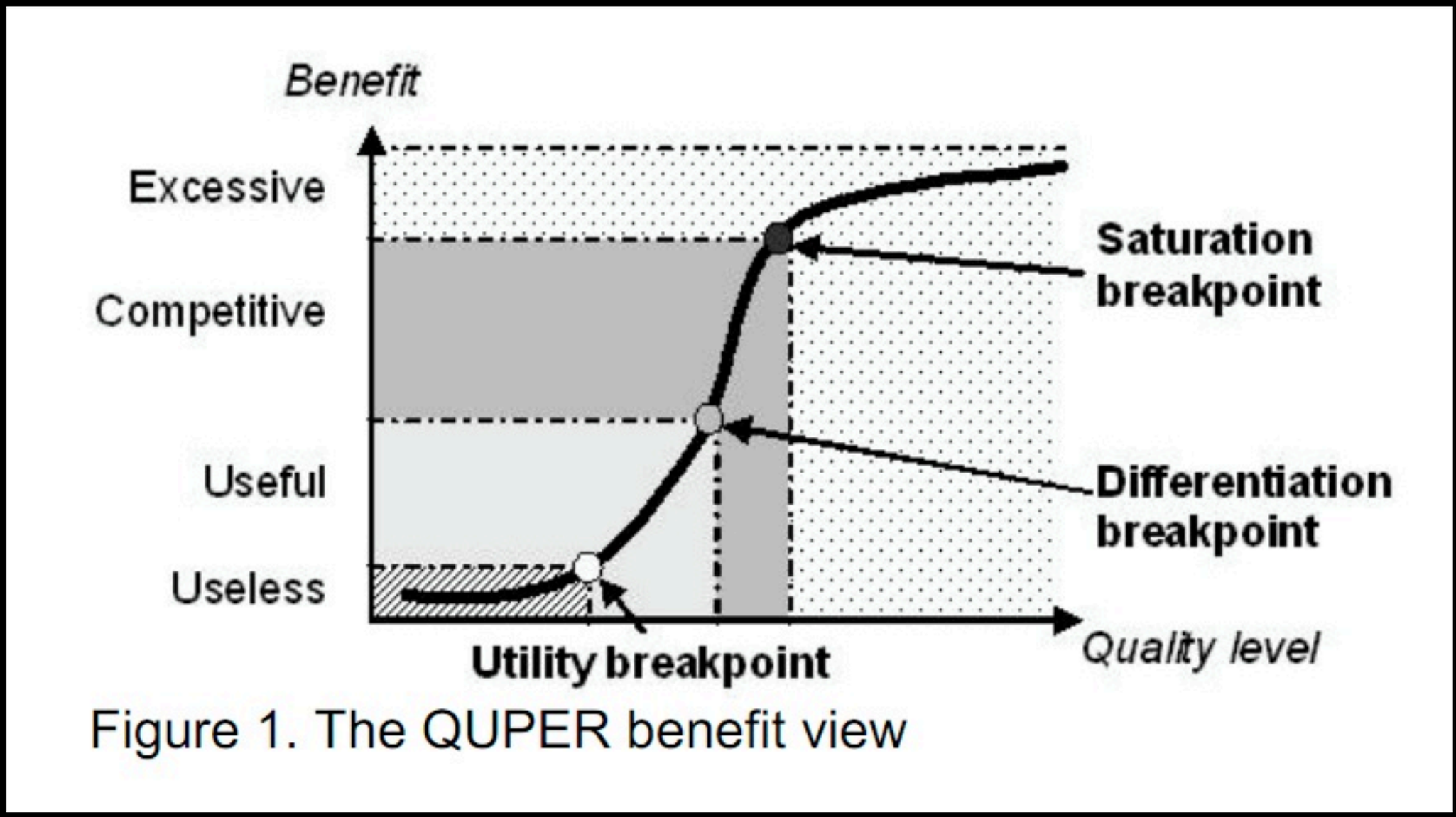


Figure 1. The QUPER benefit view

[Regnell2008]

QUPER Quality Model

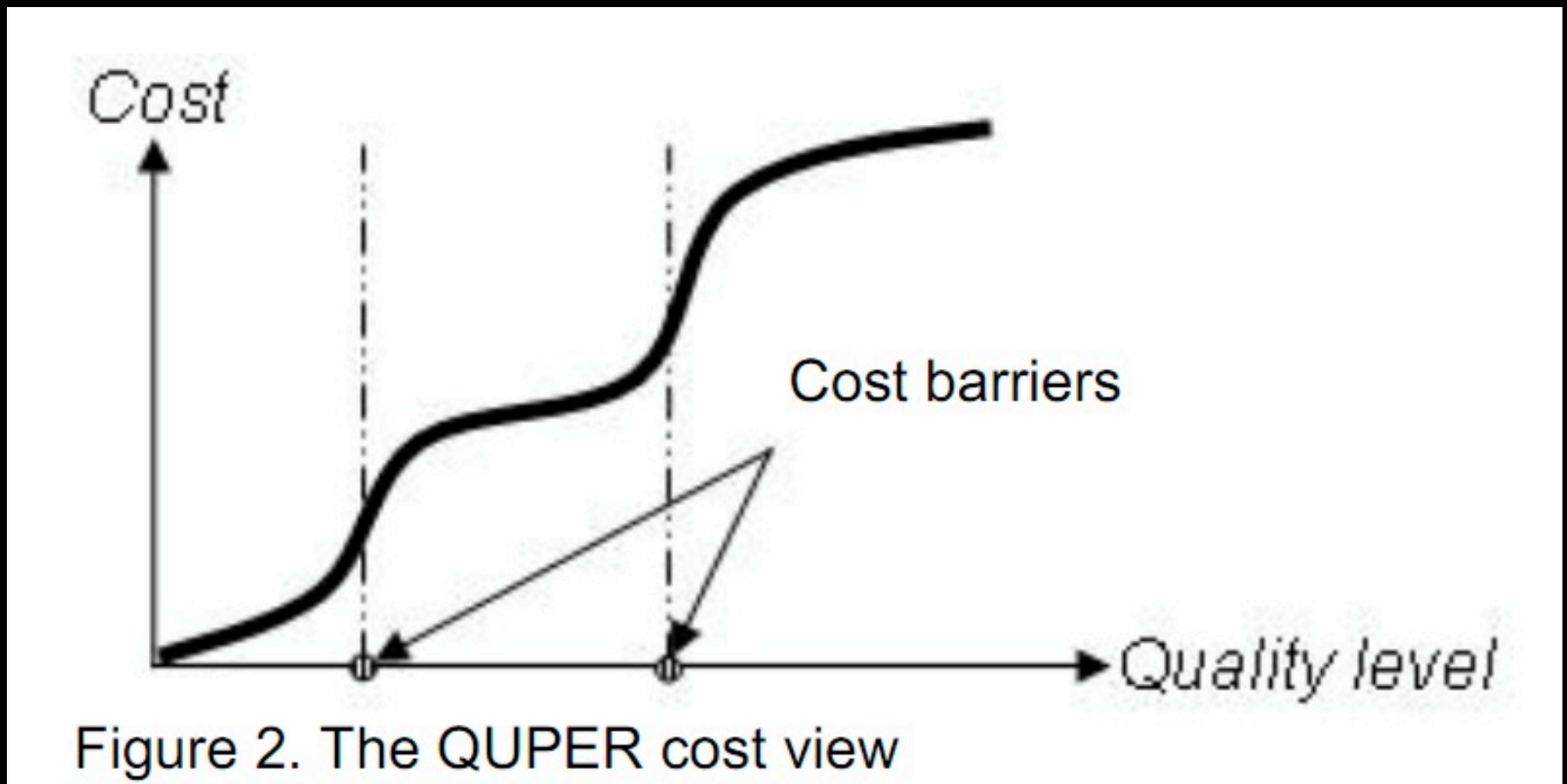


Figure 2. The QUPER cost view

[Regnell2008]

QUPER Quality Model

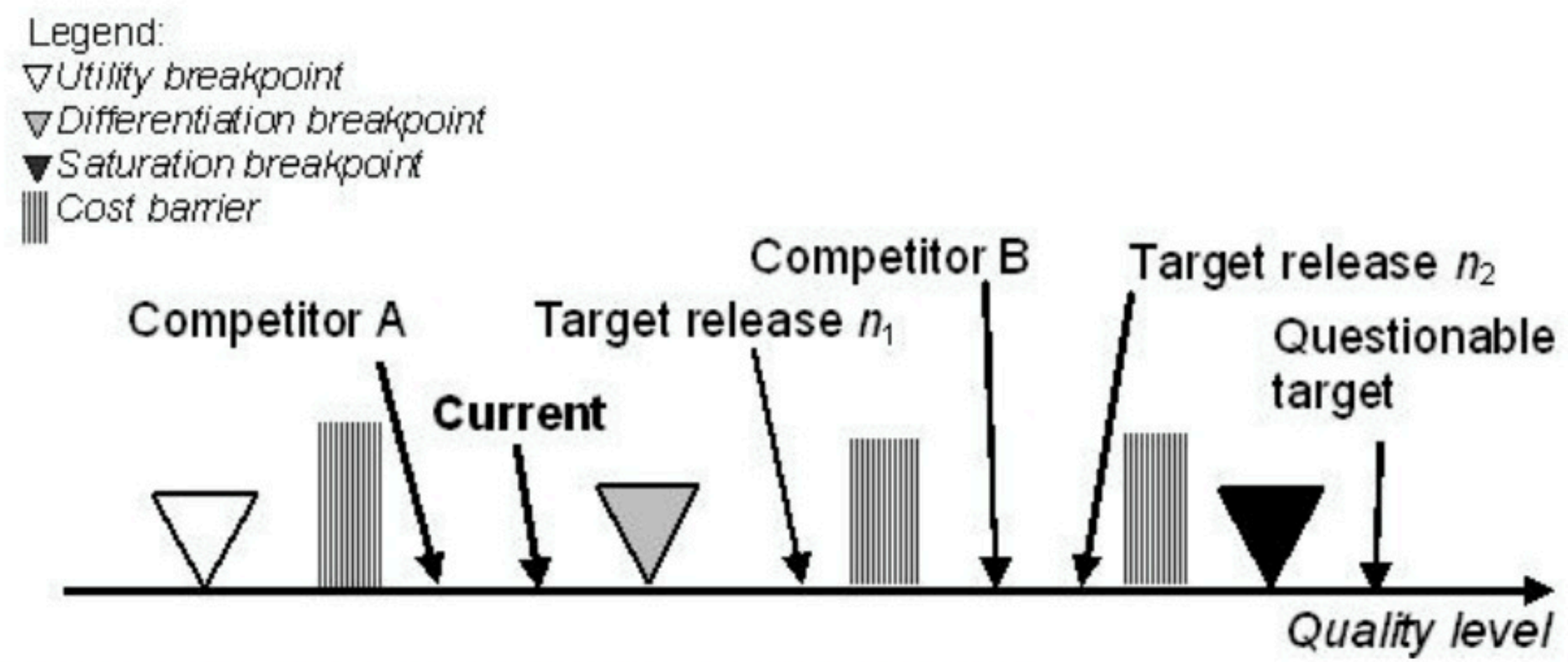


Figure 3. The QUPER roadmap view

[Regnell2008]

References

[Khurum2009] Mahvish Khurum, ”Bespoke and MDRE”, *Lecture slides for Requirements Engineering course at BTH, Sweden, 2009*

[Gorschek2006] Gorschek T., “Requirements Engineering Supporting Technical Product Management”, Blekinge Institute of Technology doctoral dissertation series, 1653-2090 ; 2006:01, Karlskrona, 2006

[Regnell2008] Regnell, B. and Svensson, R.B. and Olsson, T., ” Supporting roadmapping of quality requirements”, IEEE SW, 2008.