RE Activities, Bespoke RE, Stakeholders

Lecture 2, DAT230, Requirements Engineering
Robert Feldt, 2010-09-01

Notes about course

- Don’t look at course schedule in PingPong etc; it is not correct!
- NO exercises this week; starts next week
- Individual assignment 1 up on Thursday: complete it then
- Slides and videos on course site within 1-2 days
- Start reading and studying! Quick pace the first 3 weeks to prep you for group assignment

Recap from yesterday

Recap

- Software Engineering is more than technology
- RE in particular: human-centered => multi-disciplinary
- RE mistakes very costly
- No matter which process: Requirements still key
- Engineers focus on solutions - RE on problem domain
  - Constant “battle” - never enough time/resources
- RE is more than writing requirements
- Req = desired, observable characteristic
- Types: Functional, Quality/NFR, Dev Constraints

Basic concepts and activities

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Software Engineering Body of Knowledge

2004 Version

Executive Editors

Alain Abran, École de technologie supérieure

James W. Moore, The MITRE Corp.

Editors

Pierre Bourque, École de technologie supérieure

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Rational
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SWEBOK

Purpose: Consensus definition of what SE is and is not

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Guide to the Software Engineering Body of Knowledge (SWEBOK)

Get the 2004 SWEBOK Guide

» HTML (free)
» PDF
» Book

SWEBOK News

Editors Picked for SWEBOK Guide Update

2 July 2010 - Volunteer editors have been selected to oversee the updating of specific knowledge areas for the IEEE Computer Society's Guide to the Software Engineering Body of Knowledge.

Click Here

SWEBOK Guide Set for 2010 Refresh

Volunteers are gearing up to refresh the *Guide to the Software Engineering Body of Knowledge*—SWEBOK—intending to add new knowledge areas (KAs) and to revise others.

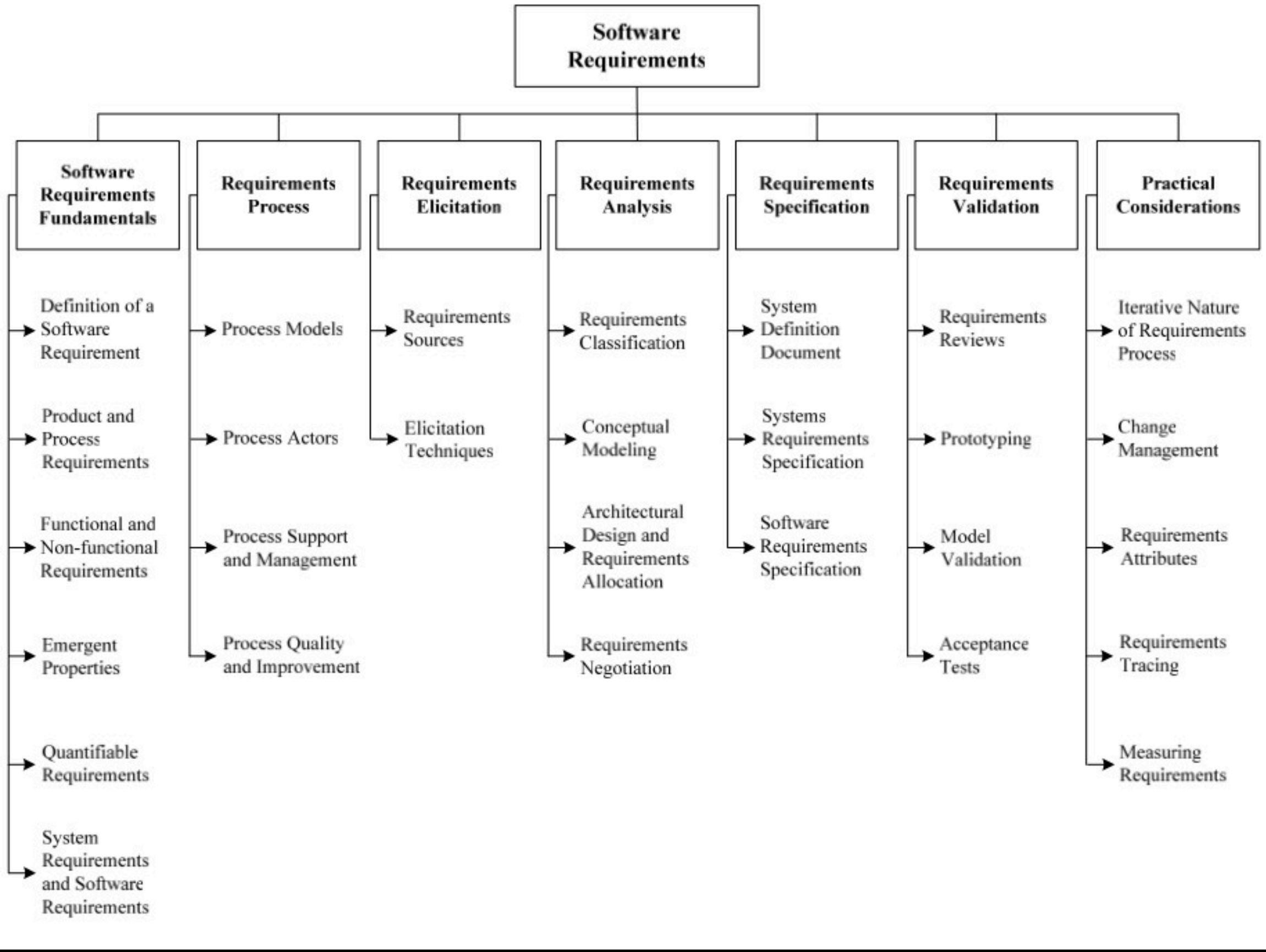
Developed concurrently, the SWEBOK Guide, the Software Engineering 2004 (SE2004) curriculum guide, and the Certified Software Development Professional (CSDP) certification each provided a characterization of the discipline of software engineering. Despite nearly independent development, the three instruments agreed to a remarkable extent. The primary purpose of the current revision of the SWEBOK Guide is to perfect the correspondence between the three items, notably by adding a KA on professional practices—a subject currently covered by the CSDP—and adding "foundation" KAs on related subjects that software engineers learn about during their undergraduate education—subjects currently covered by SE2004.

Table 1 The SWEBOK Knowledge Areas (KAs)

Software requirements
Software design
Software construction
Software testing
Software maintenance
Software configuration management
Software engineering management
Software engineering process
Software engineering tools and methods
Software quality

Guide to the Software Engineering Body of Knowledge
2004 Version

- Software Requirements
  - Software Requirements Fundamentals
  - Requirements Process
  - Requirements Elicitation
  - Requirements Analysis
  - Requirements Specification
  - Requirements Validation
  - Practical Considerations
- Software Design
  - Software Design Fundamentals
  - Key Issues in Software Design
  - Software Structure and Architecture
  - Software Design Quality Analysis and Evaluation
  - Software Design Notations
  - Software Design Strategies and Methods
- Software Construction
  - Software Construction Fundamentals
  - Managing Construction
  - Practical Considerations
- Software Testing
  - Sofware Testing Fundamentals
  - Test Levels
  - Test Techniques
  - Test Related Measures
  - Test Process
- Software Maintenance
  - Software Maintenance Fundamentals
  - Key Issues in Software Maintenance
  - Maintenance Process
  - Techniques for Maintenance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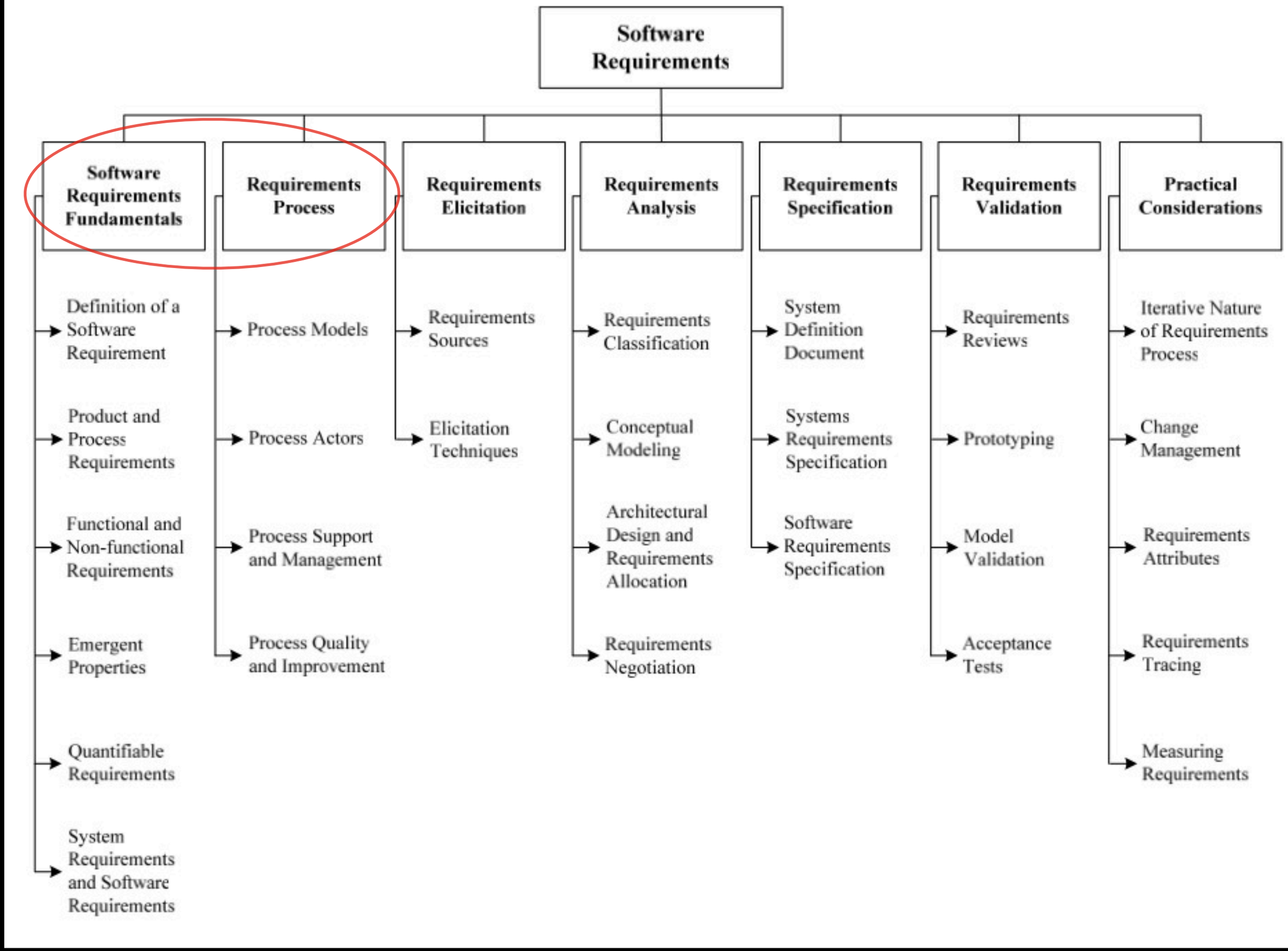
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Reqs have unique identifier for configuration control and management throughout lifecycle

SWEBOK KA1.1.2 Product & Process Reqs

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Process Req = development constraint

SWEBOK KA1.1.2 Product & Process Reqs

Product Req = req on software to be developed

Process Req = development constraint

SWEBOK KA1.1.3 FR & NFR

Functional Req describes functions of SW

Non-Functional Reqs constrain the solution (also called Constraints or Quality Reqs)

SWEBOK KA1.1.4 Emergent Properties

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Some reqs represent Emergent Properties

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EPs cannot be satisfied by single component, determined by how all components interoperate

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"The call center software must increase the center's throughput by 20%"

SWEBOK KA1.1.5 Quantifiable

Reqs stated clearly, unambiguously & quantitatively

Should not rely on subjective judgment

"The software shall be reliable"

"The probability of a fatal error during one hour of operation should be less than 10^-8"

"The software should be user-friendly"

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SWEBOK KA1.1.6 System & Software Reqs

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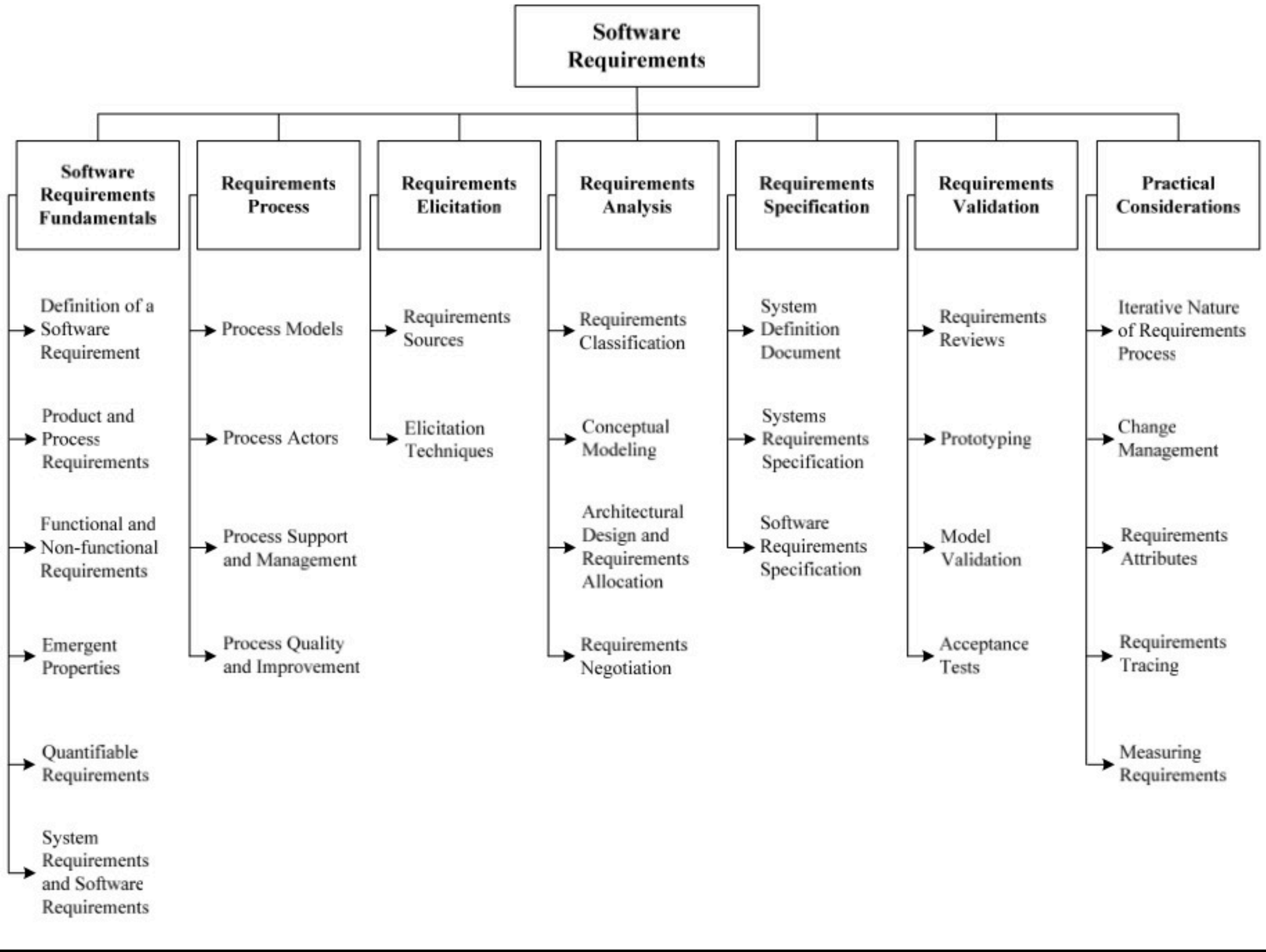
System reqs are for the system as a whole

A system with software components has software requirements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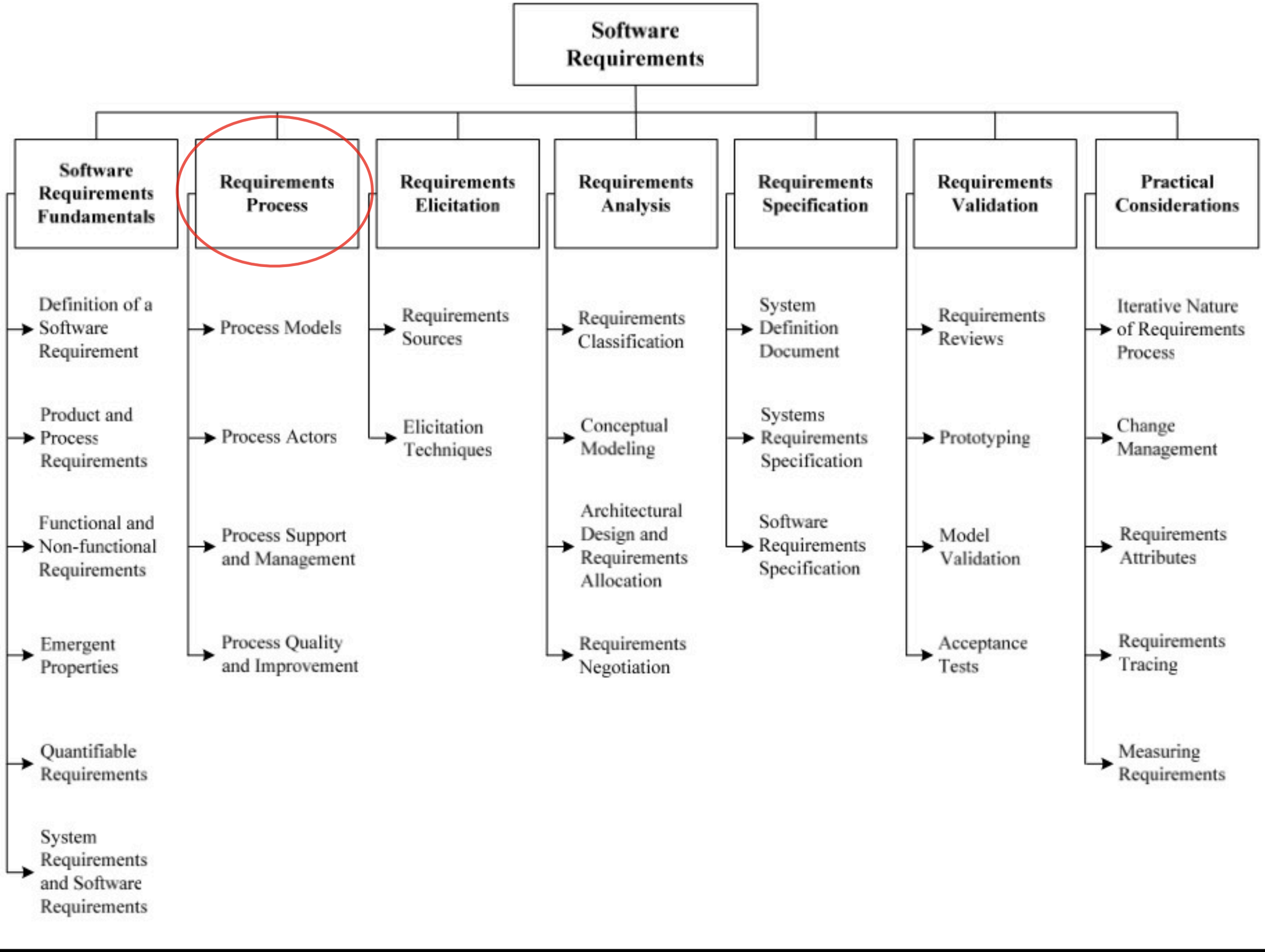
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Req Process needs adaptation to organization and project context

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Req Process configuration manages all reqs

Req Process needs adaptation to organization and project context

Req Process includes input activities like marketing and feasability studies

SWEBOK KA1.2.2 Process Actors

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Req specialist must mediate between domain of stakeholder and that of SE

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SW Engs job to negotiate trade-offs; not all stakeholders can be perfectly satisfied

SWEBOK KA1.2.3 Process Support & Mngmnt

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Link to other SE Management KA

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SWEBOK KA1.2.4 Process Q & Improvement

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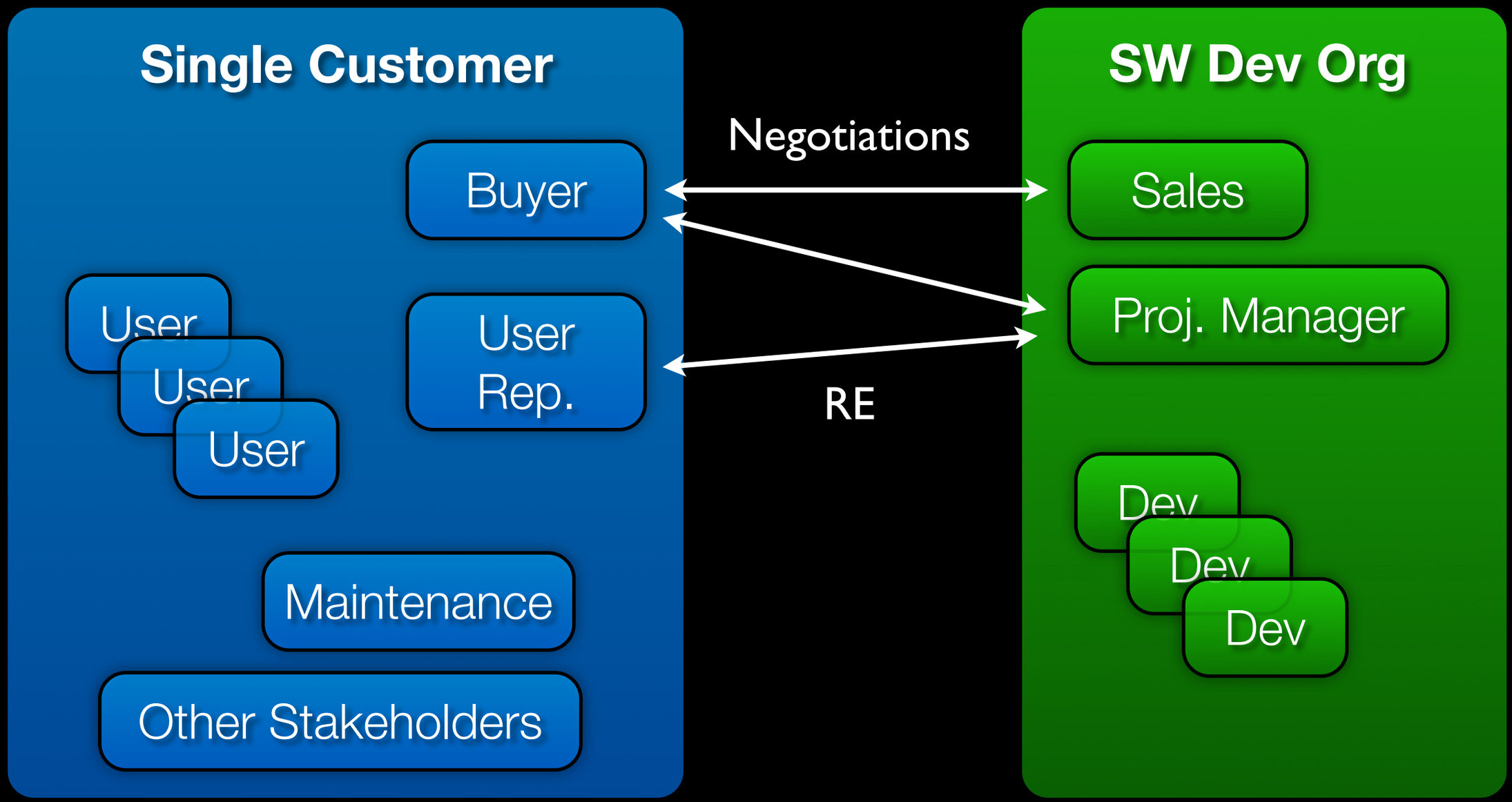
Link to other SE Management KA

SWEBOK KA1.2.4 Process Q & Improvement

Link to SE Quality KA & SE Process KA

Bespoke Software Development



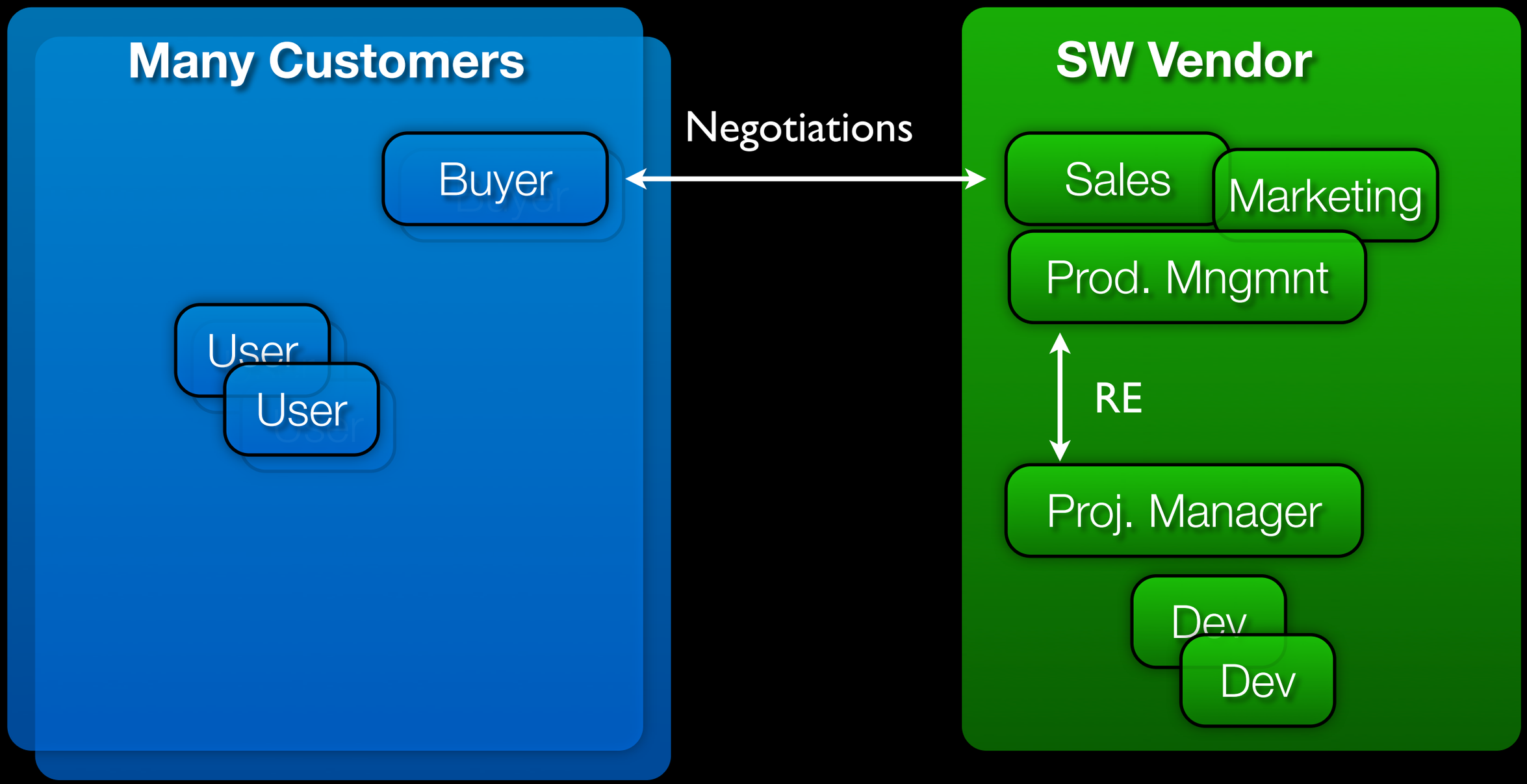
Bespoke Software Development

- Also known as: Custom/Traditional Software Development
- RE primarily startup activity
  - Pre-study/Feasibility study, Contract
  - SW Req Specification (SRS)
  - Changes require negotiations
- Project focus (RE, Analysis, Design, Impl, V&V, Release)
- Domain knowledge from customers/users
- Success = contractual fulfillment & customer satisfaction

Bespoke Software Development - RE steps

1. Customer states need in general terms in Request for Proposals (RFP)
2. Dev company creates proposal = approach, prelim requirements, schedule, budget
3. Customer selects best proposal
4. Dev company prepares SRS & presents
5. Changes => prioritization & negotiations
6. Budget/Schedule problems => prioritization & negotiations

Market-Driven Software Development



Market-Driven Software Development

- Many potential customers (companies and/or end users)
- No “negotiation”, rather elicitation, evaluation, prediction, innovation
- Domain expertise primarily internally
- Success = Sales volume, ROI, Market share, growth

MD Software Development - RE steps

1. Decide what business you are in
2. Select a target market
3. Market research to determine size, competitors, customers, pains/needs, market message
4. Draft high-level features in Market Req Doc (MRD) = desired price, intro date, prioritization
5. Test MRD on potential customers
6. Detailed SRS written
7. Change => internal triage/re-prioritize
8. Budget/Schedule problems => internal triage/re-prioritize

Stakeholder Identification

[Sharp1999]

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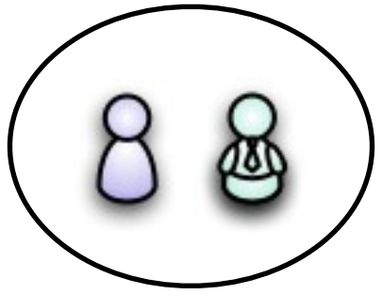

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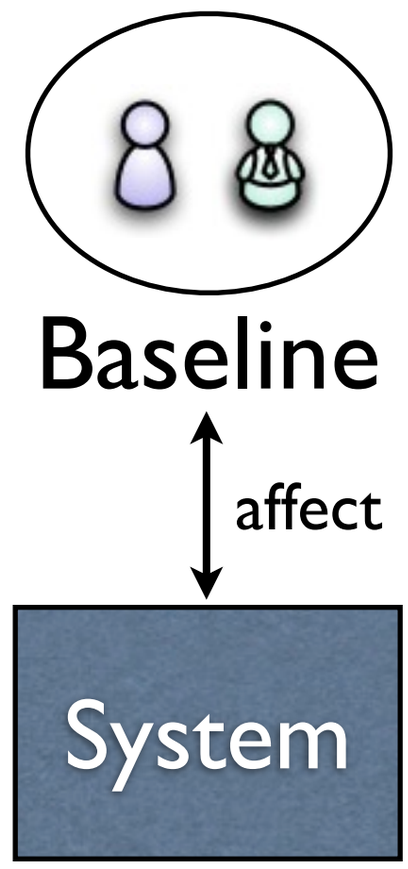

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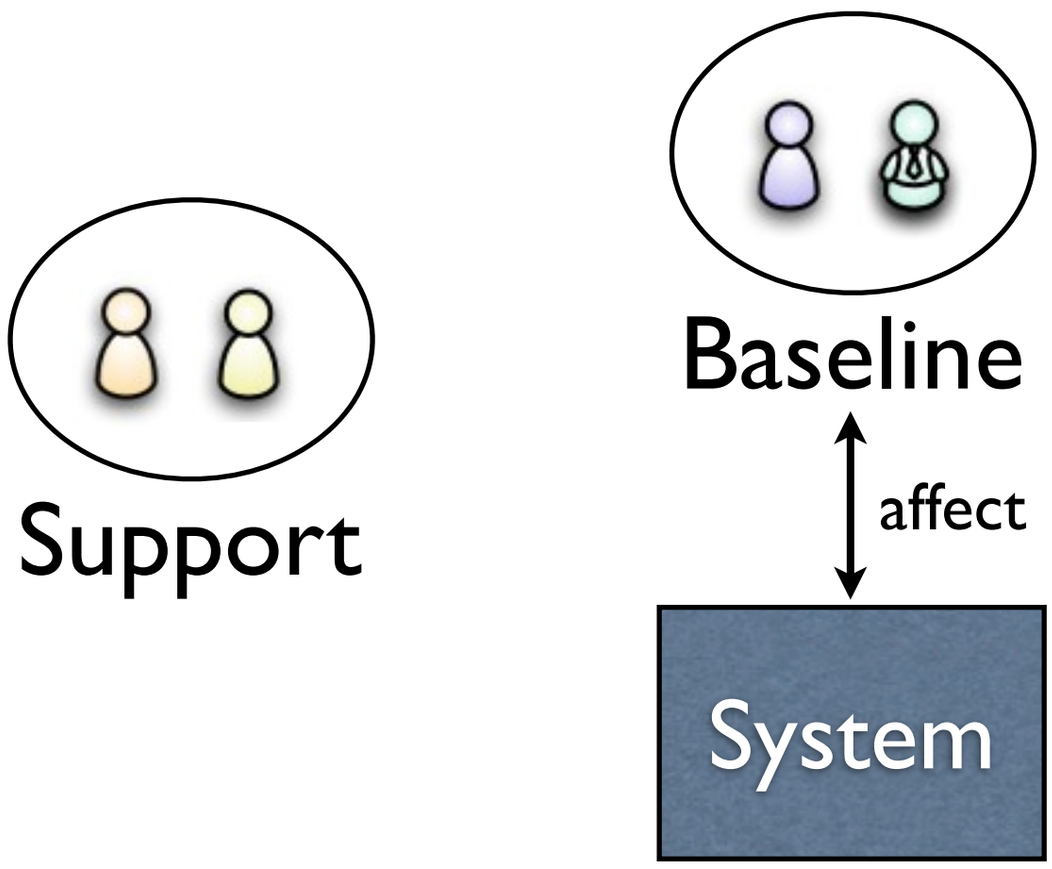

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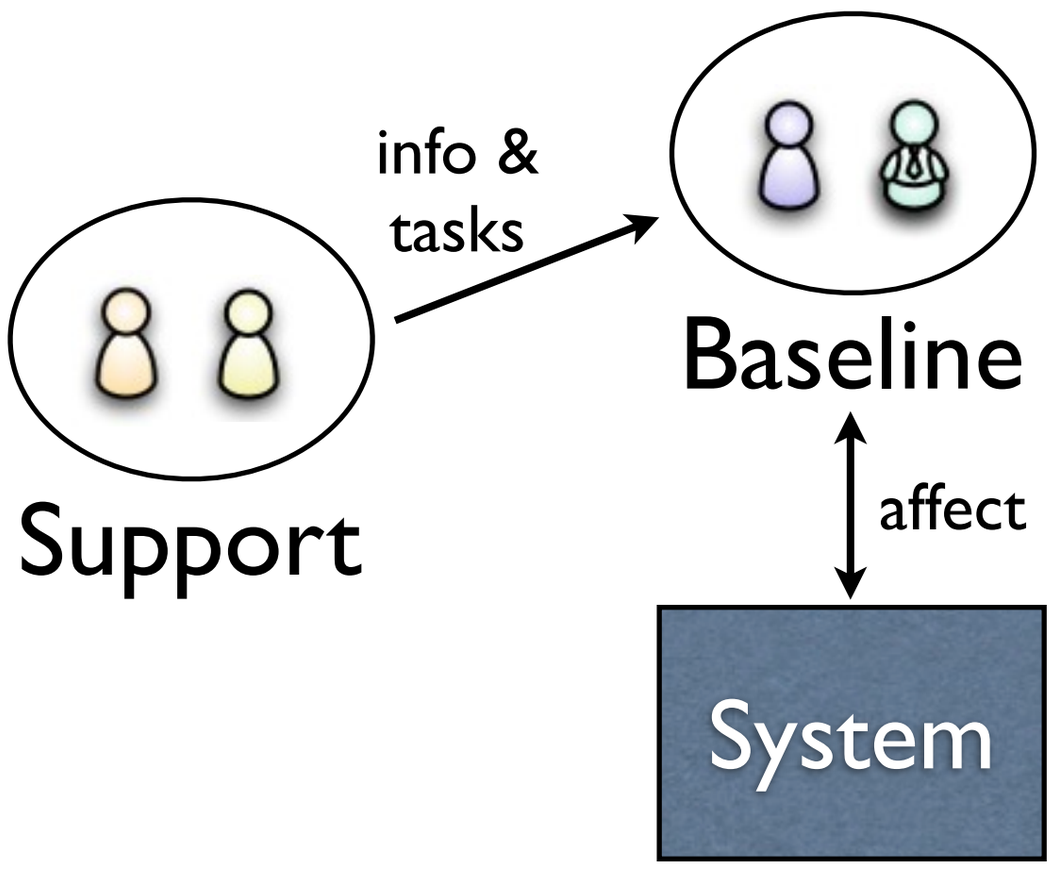

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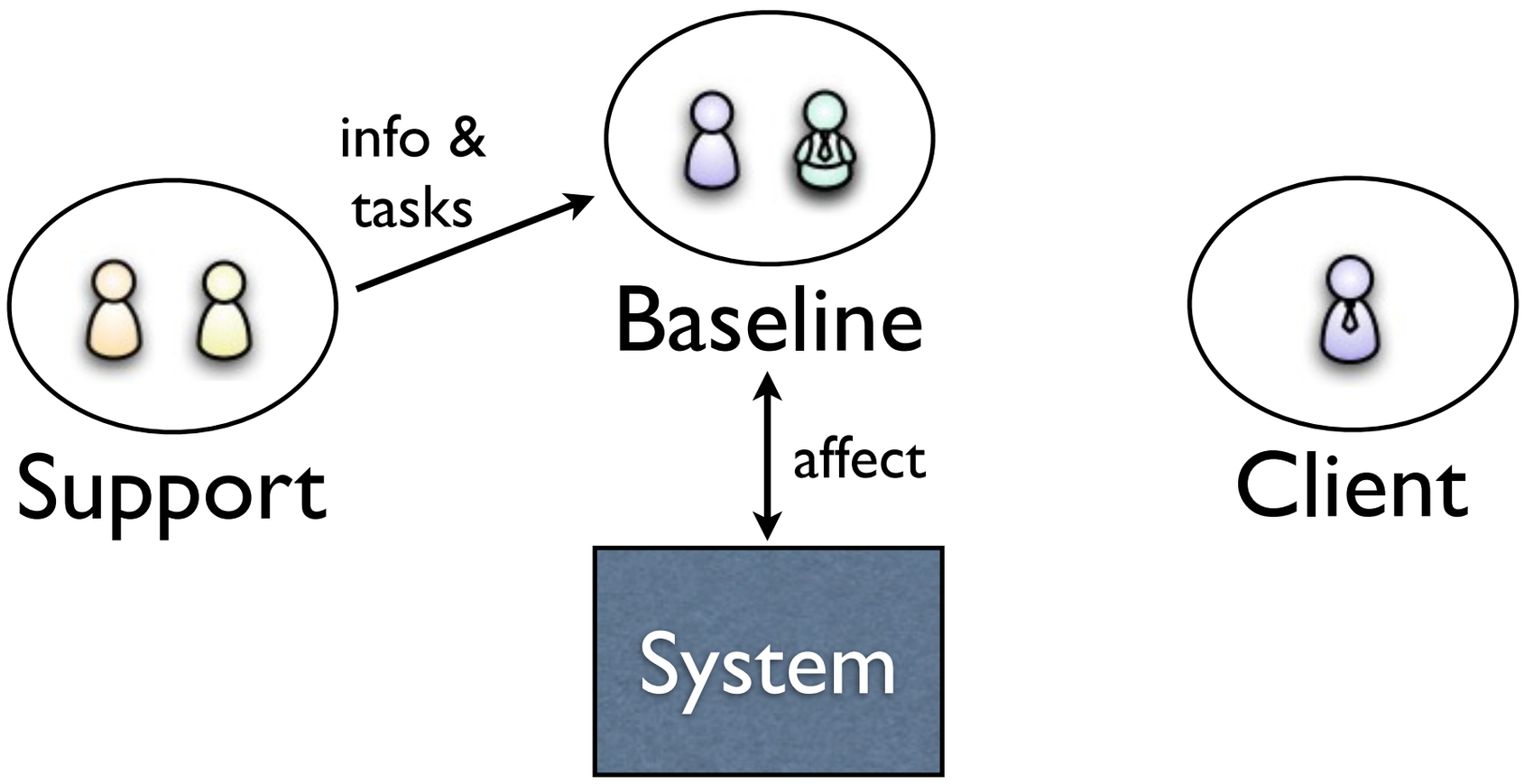

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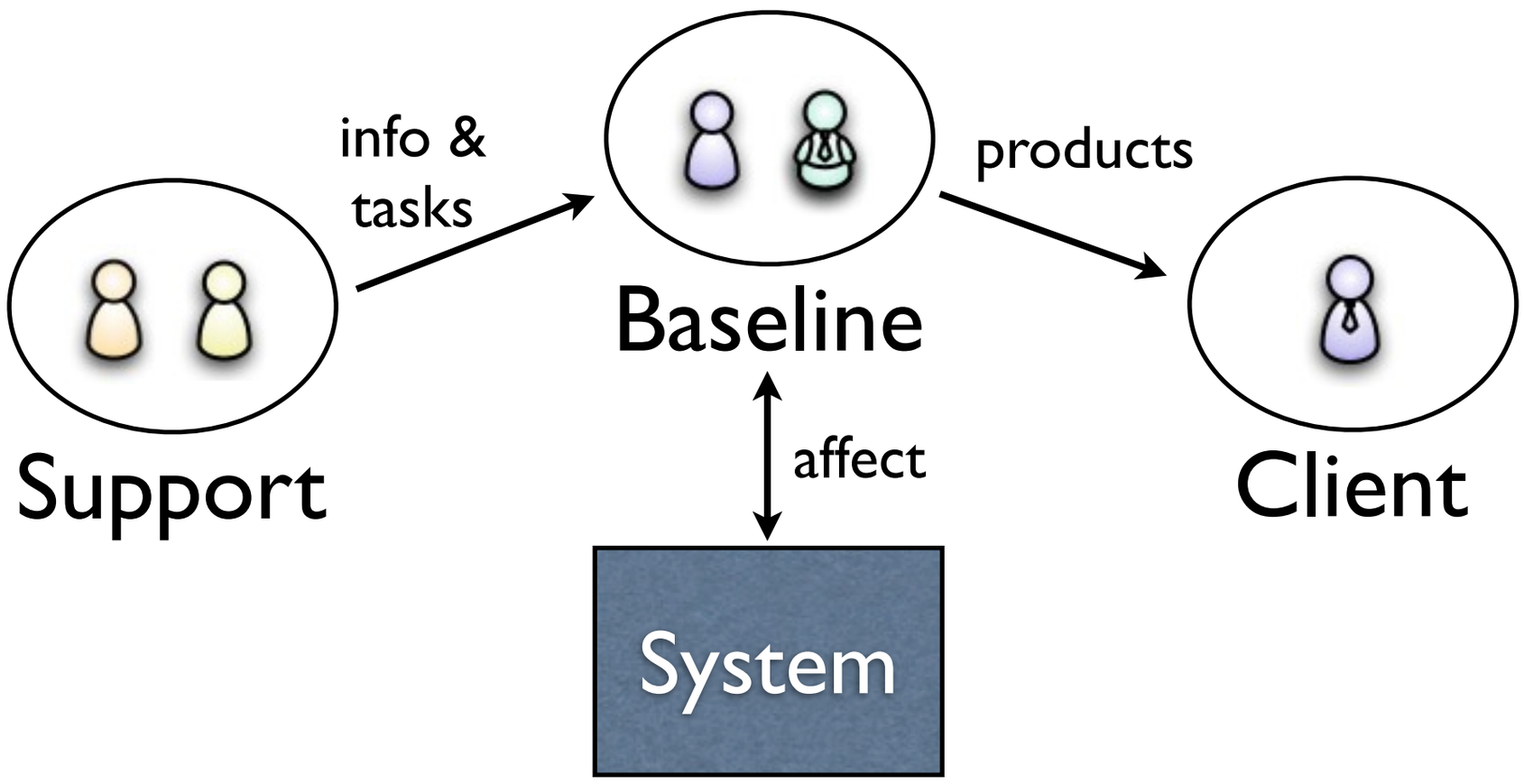

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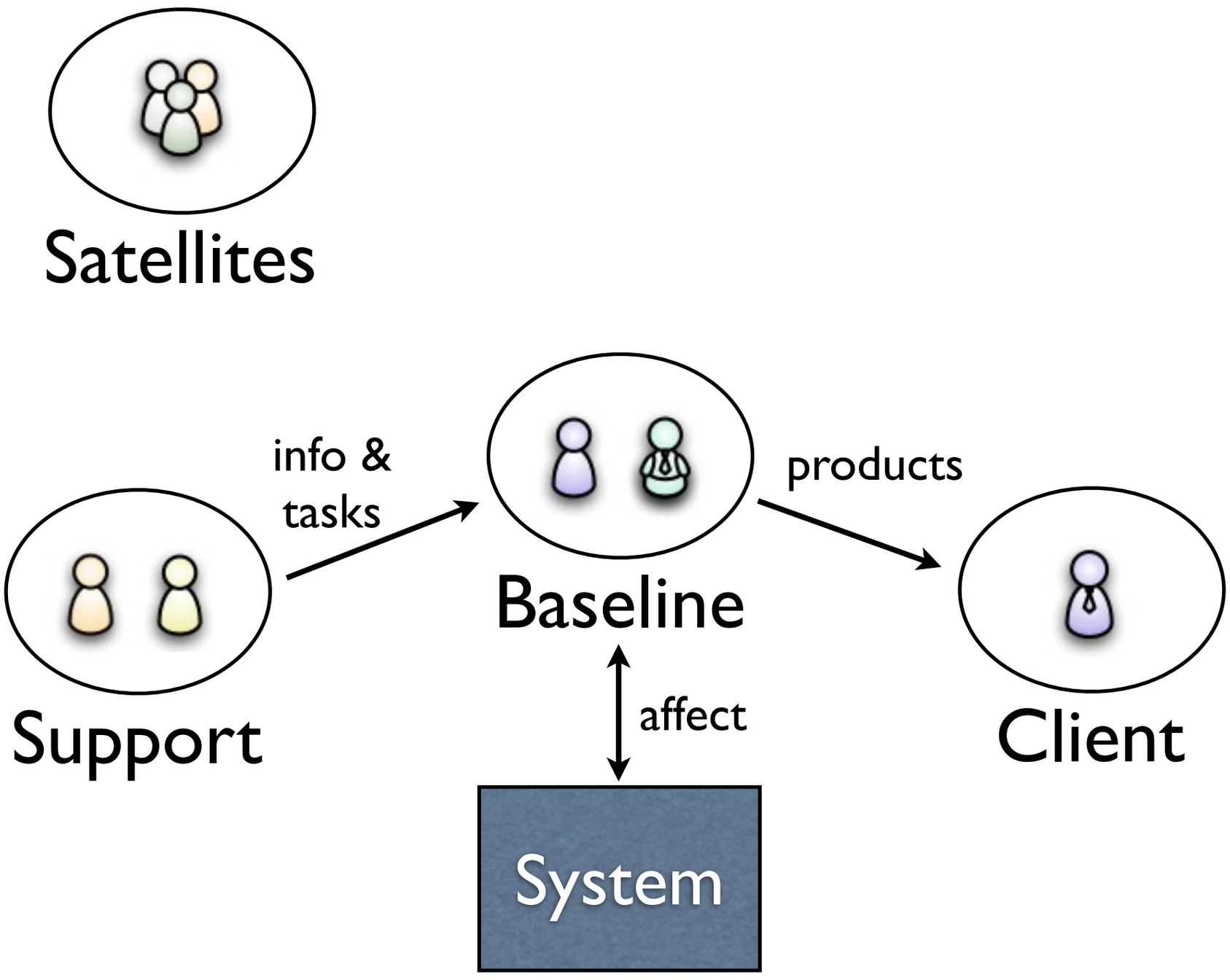

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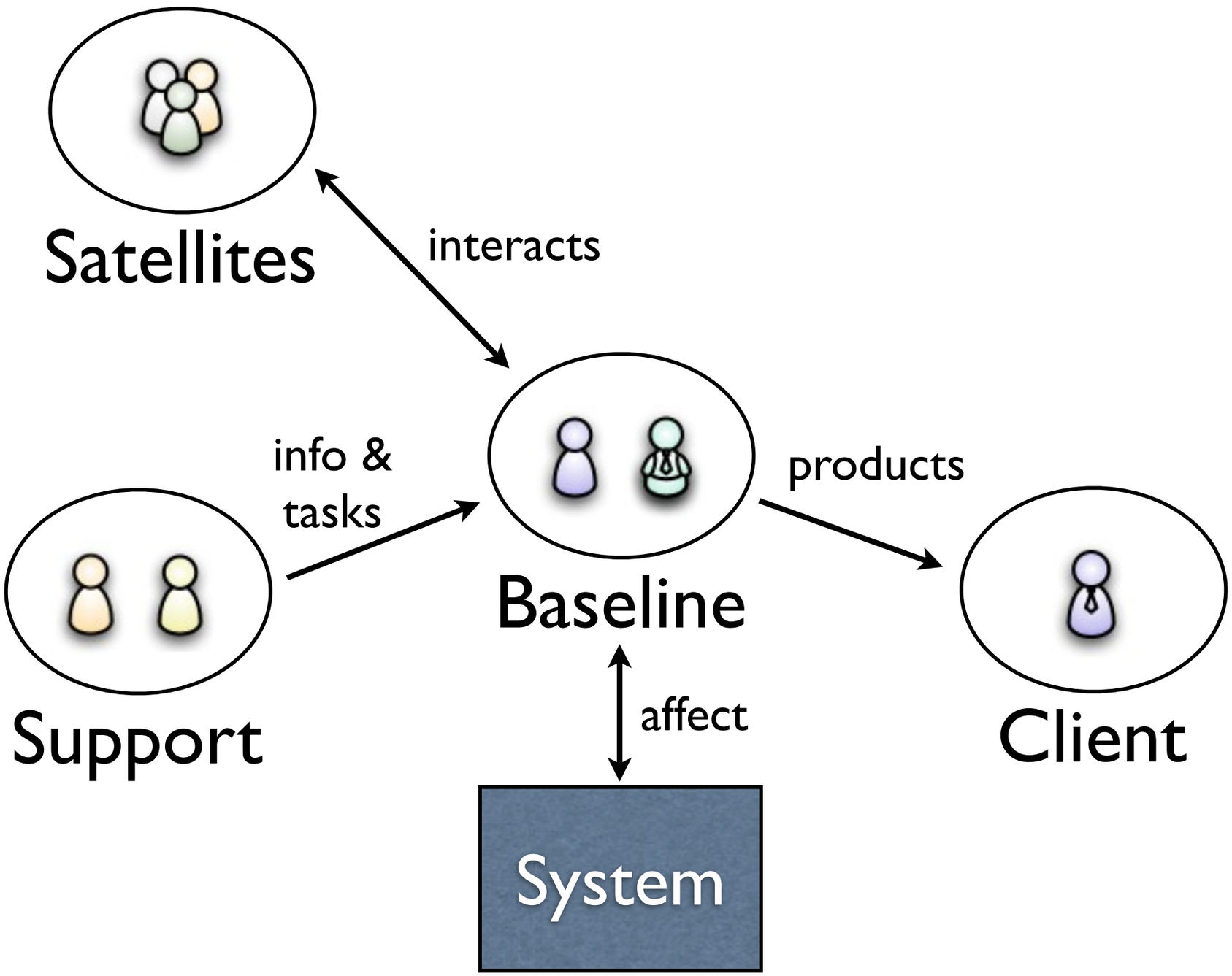

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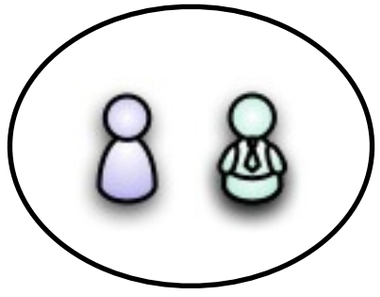

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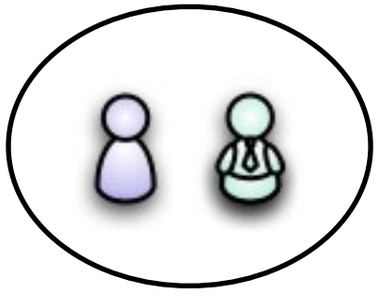

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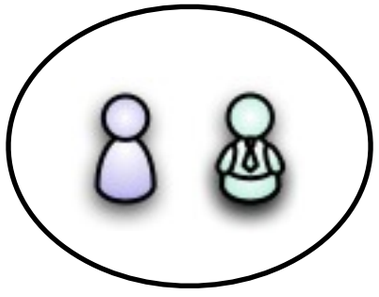
Developers - develop the SW



Baseline

Legislators - constrains the SW

Decision-makers - takes decisions

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Frequent users, occasional users,
future & past users, users of products from sw

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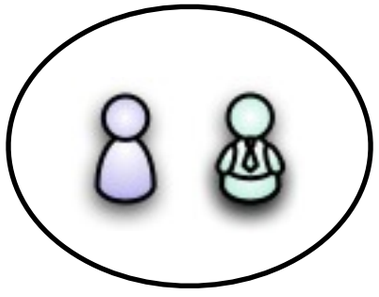

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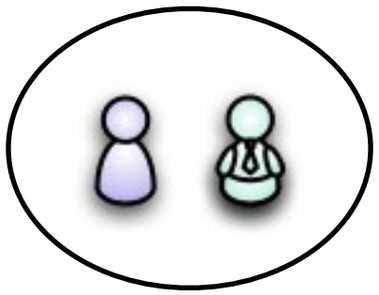
Maintainers, Trainers, Project managers



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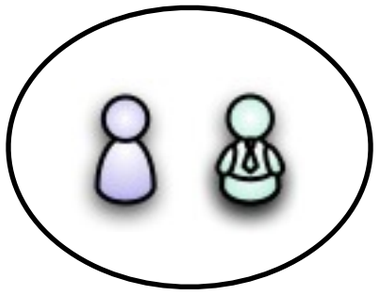

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Government, Community, Trade unions,
Legal representatives, Standard bodies (ISO, IEEE),
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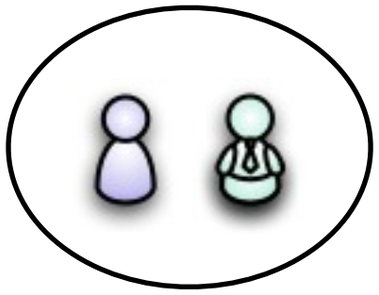

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Decision-makers - takes decisions

Dev & user managers,
Financial managers/controllers

Stakeholder Identification

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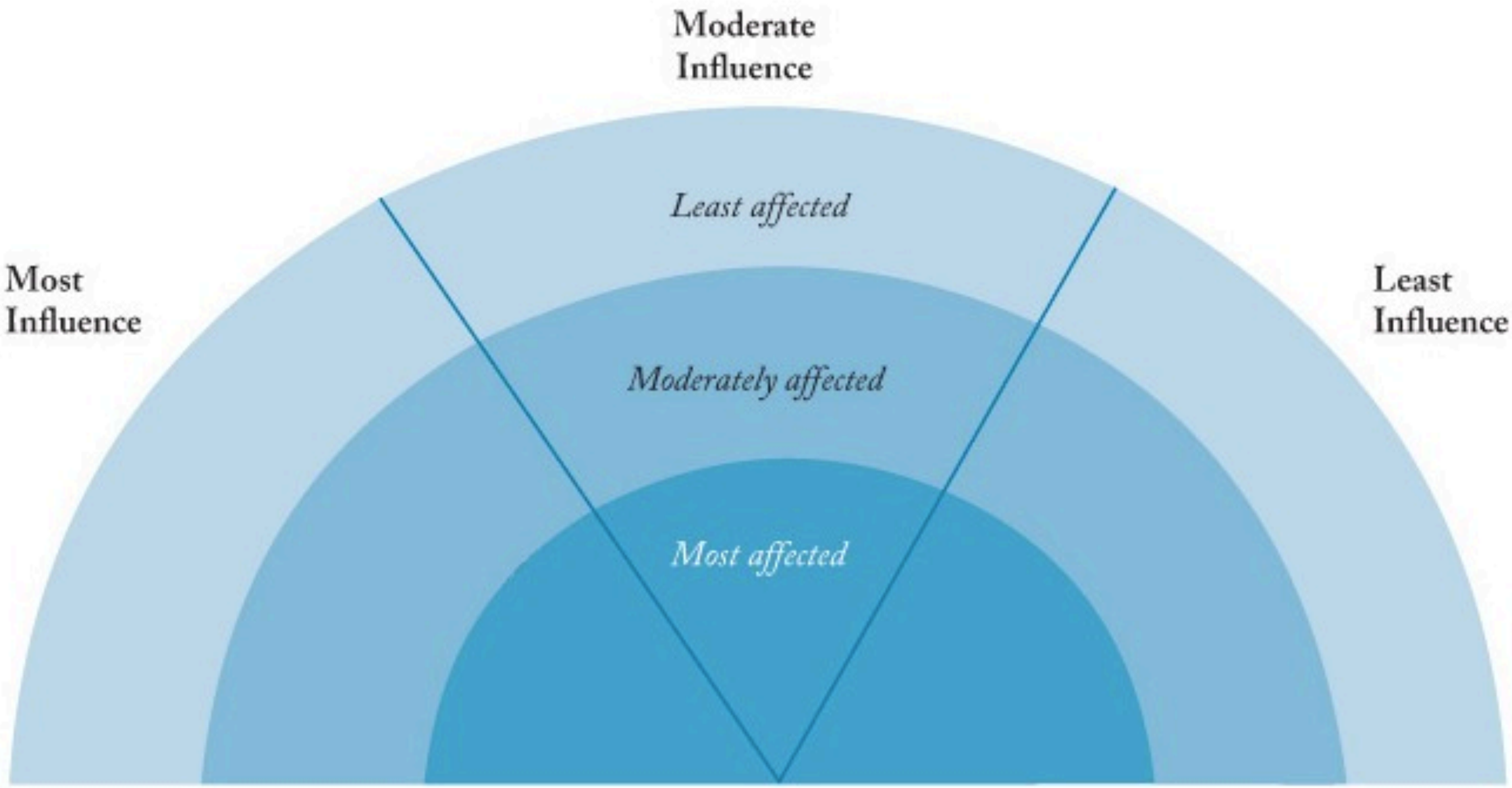
1. Identify all relevant groups of baseline stakeholders
2. Identify all relevant roles within each baseline group
3. For each baseline role:
    1. Who supplies information to this role? Who performs supporting tasks? => Support stakeholders
    2. Who processes or inspects products from this role? => Client
    3. Who interacts with this role in other ways? => Satellite
4. Repeat 3 above for newly found stakeholders
5. Consider relations between identified stakeholders: "in charge of", "supports", "is crucial to", "provides info for", ...

Stakeholder Analysis

- Who are the stakeholders?
- Do we have access to them?
- What are their expectations and interests?
- What are their influence and role in project?

Stakeholder Analysis



Rainbow diagram

Stakeholder Analysis

- Expectations and interests
  - Personal: Work or Family focus, Job satisfaction, Org satisfaction, Improving knowledge, Sufficient appreciation, Workload/Responsibility
  - Social: Peer recognition, Cover incompetence, Sponsorships, Undermining, On the move, Power hierarchies
  - Material: Money, Tools, Office, Travels