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**A Case-Driven Methodology for Applying
the MNM Service Model**

M. Garschhammer, R. Hauck, H.-G. Hegering,
B. Kempter, I. Radisic, H. Roelle, H. Schmidt

Presenter: Harald Roelle

MNM

TEAM

MUNICH NETWORK MANAGEMENT TEAM

Department of Informatics, University of Munich

Email: roelle@informatik.uni-muenchen.de

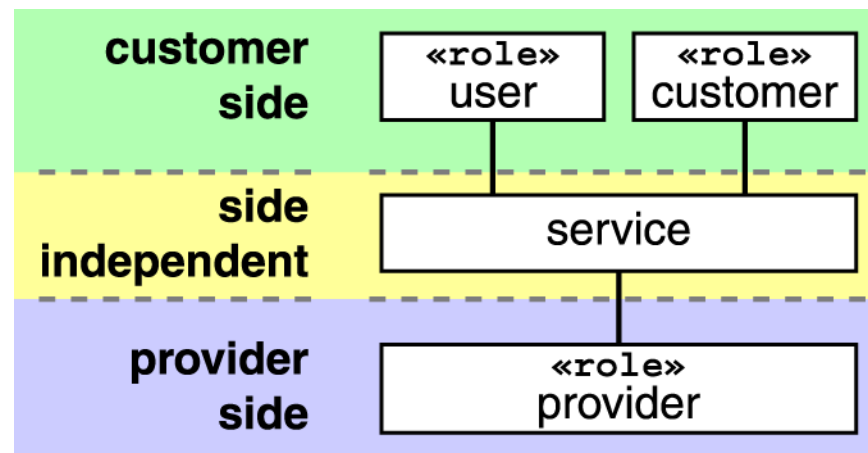
Motivation

- MNM Service Model
 - Customer-oriented conceptual meta model
 - Defines common view and terminology
 - Immediately useable for theoretical studies
 - Applicable for all kinds of concrete scenarios
- Applying the model includes
 - Identifying and collecting relevant information
 - Deriving concrete classes in appropriate order
 - In-detail specification of classes
- But: By now no guidelines available
 - Reasonable order of steps
 - Adequate information representation

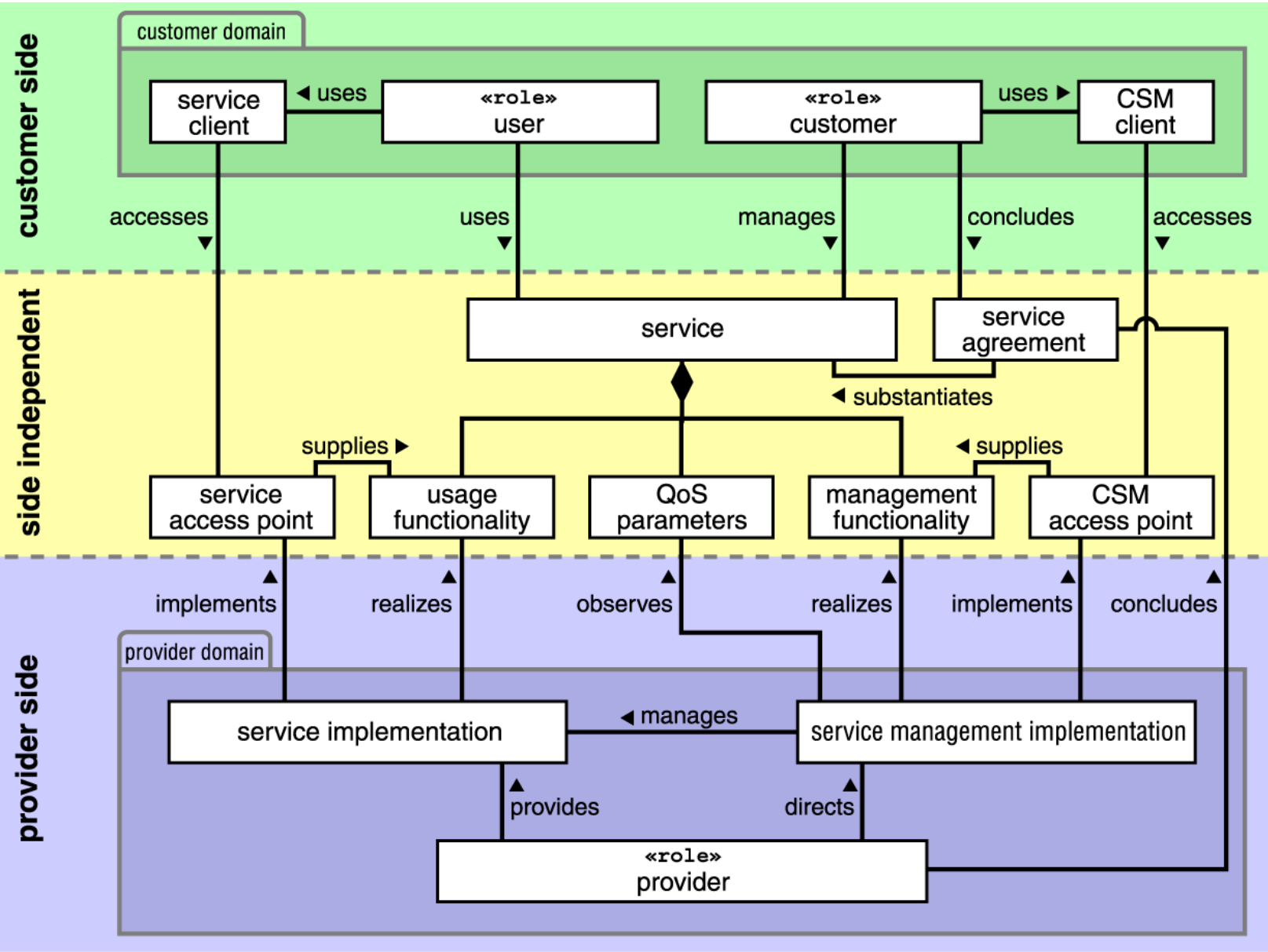
⇒ Methodology for easier model application needed

MNM Service Model: Basic Service Model

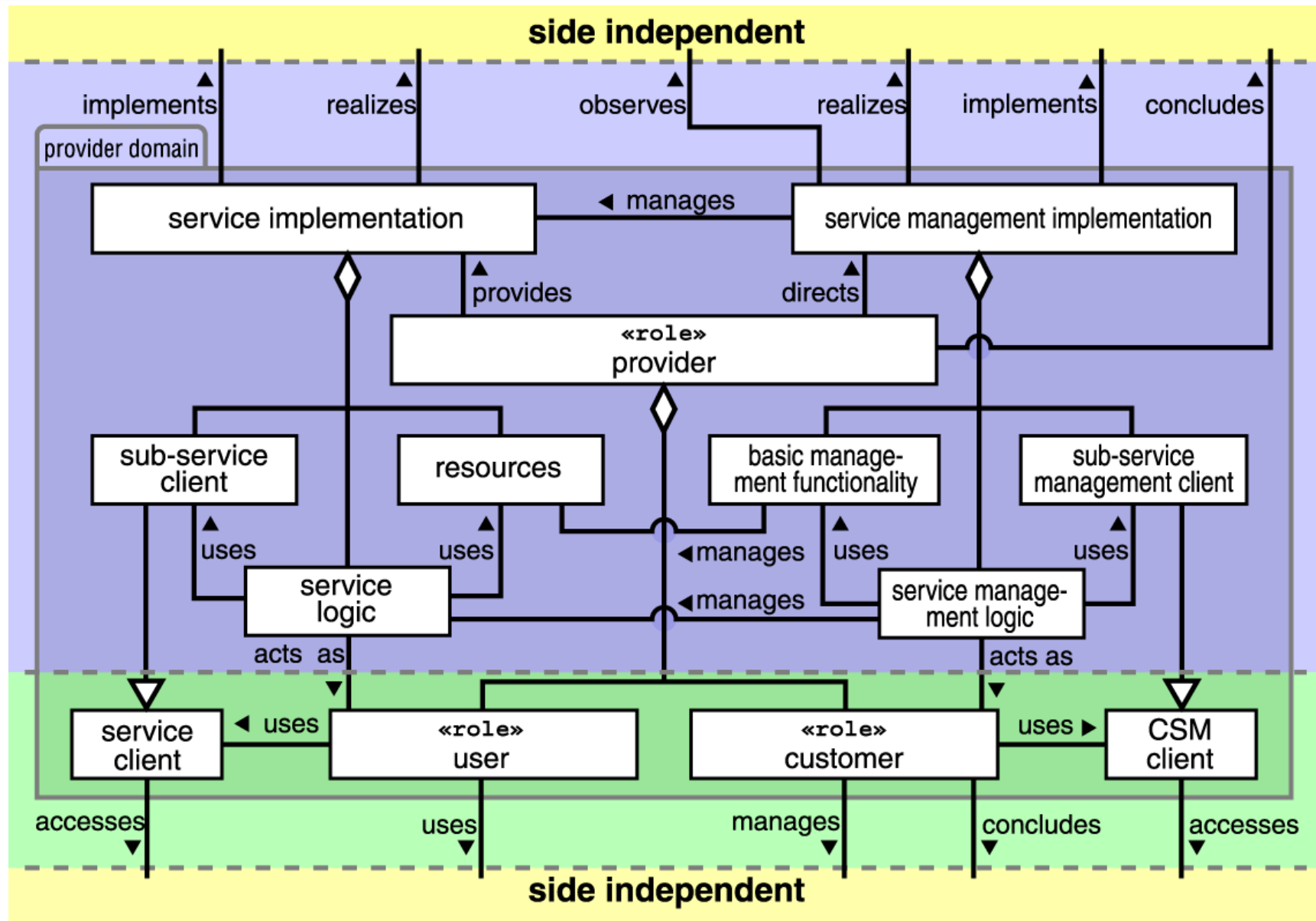
- Gives overview over the service environment
- Specifies:
 - Roles of participating entities
 - Participating services
- Separates service from customer and provider side
- Recursive application shows hierarchies



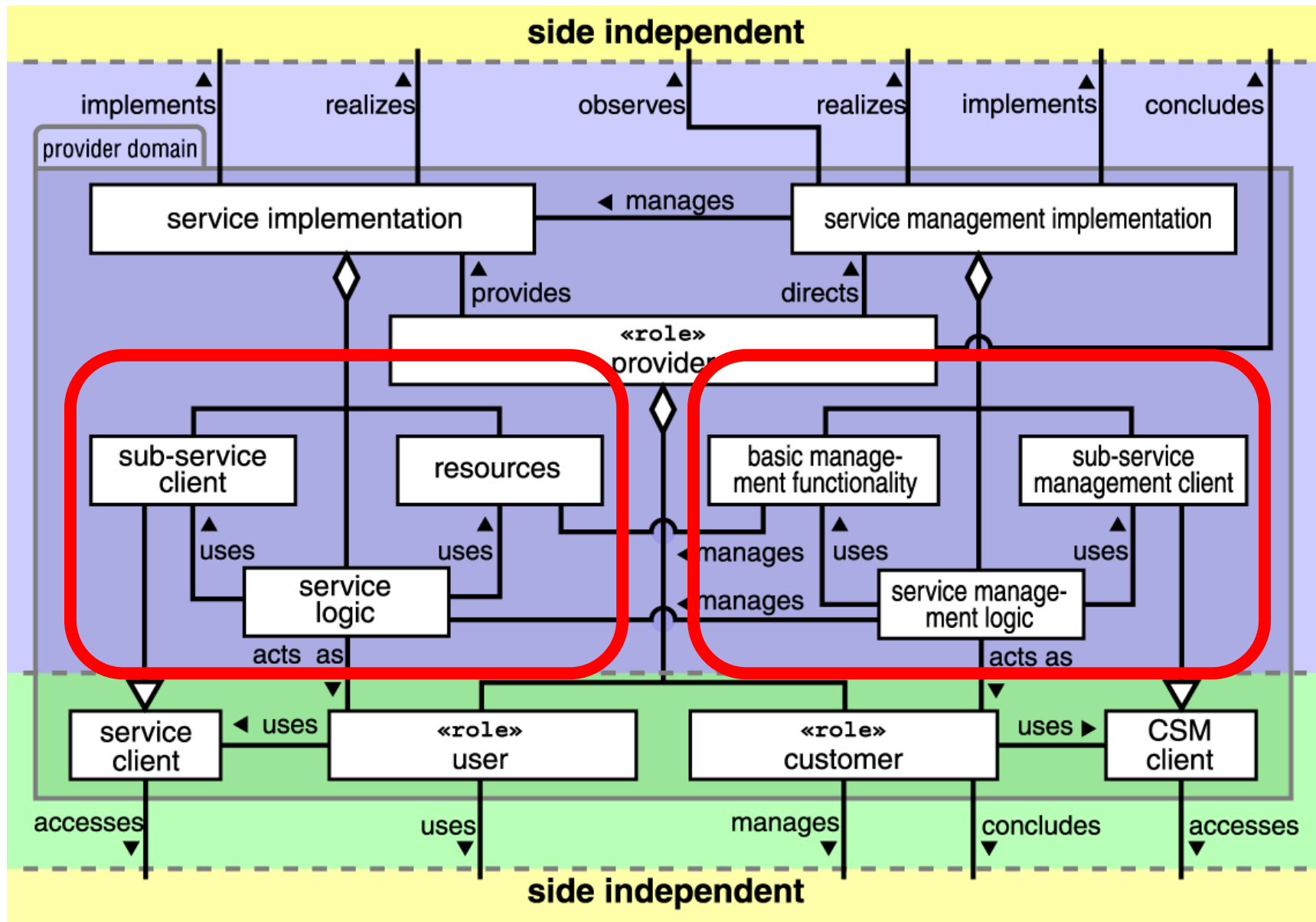
MNM Service Model: Service View



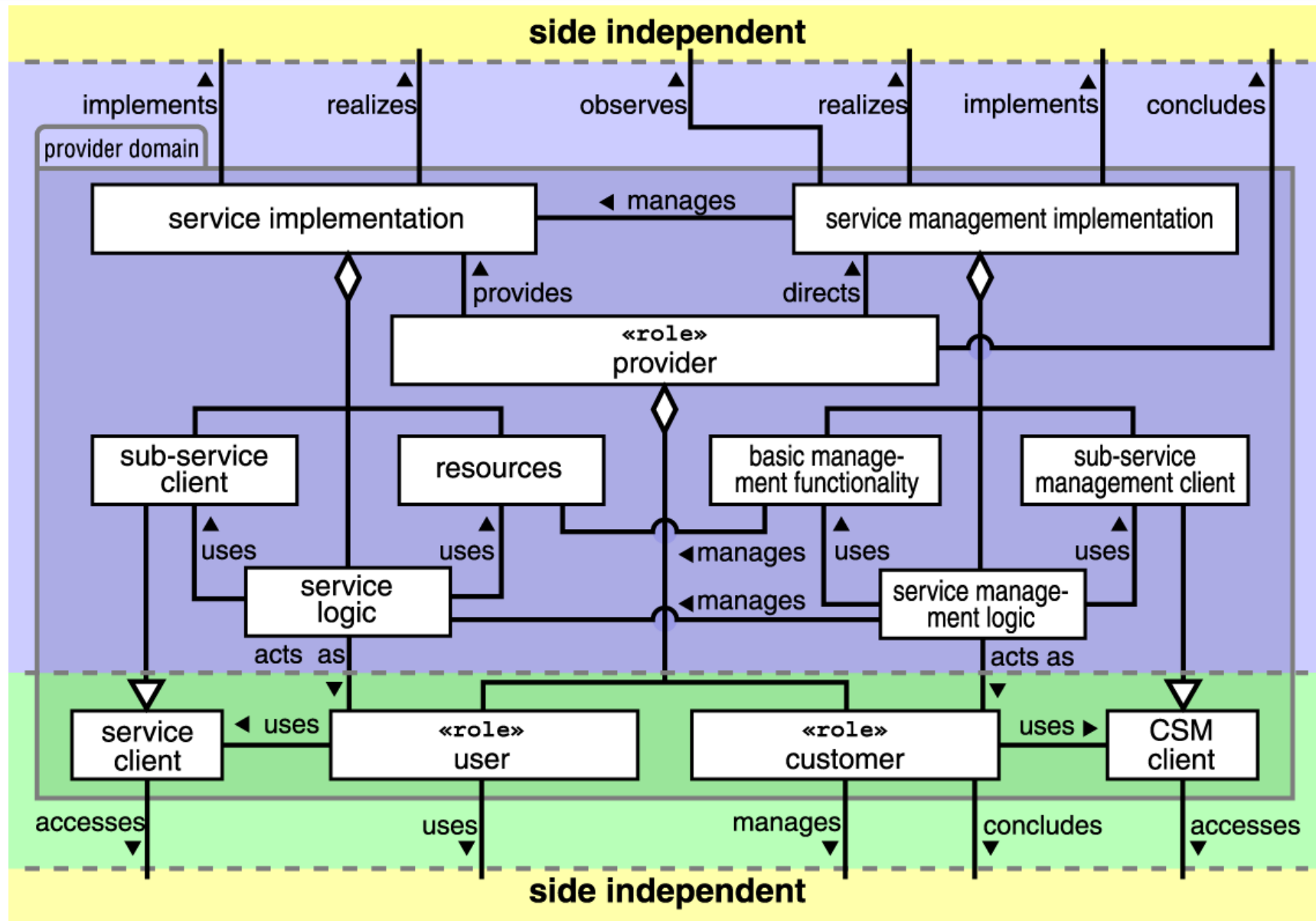
MNM Service Model: Realization View



MNM Service Model: Realization View



MNM Service Model: Realization View

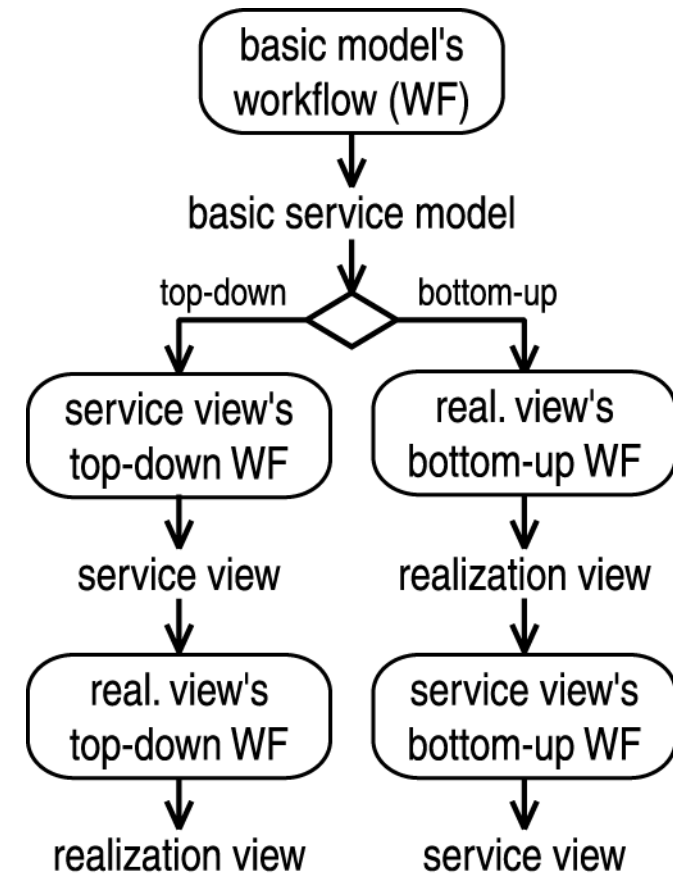


Basic Modeling Cases

- **Reverse engineering:**
 - Gain formal description of existing service infrastructures
 - Demanded for internal restructuring or outsourcing decisions
- **Bid invitation:**
 - Future customer requests offers from providers
 - Unambiguous and complete specification needed
 - Independence from realization for comparable offers
- **Offering:**
 - Offer new services to potential customers
 - Presenting only customer relevant parts
 - Specifying in a customer understandable way
- Modeling cases form basis for methodology

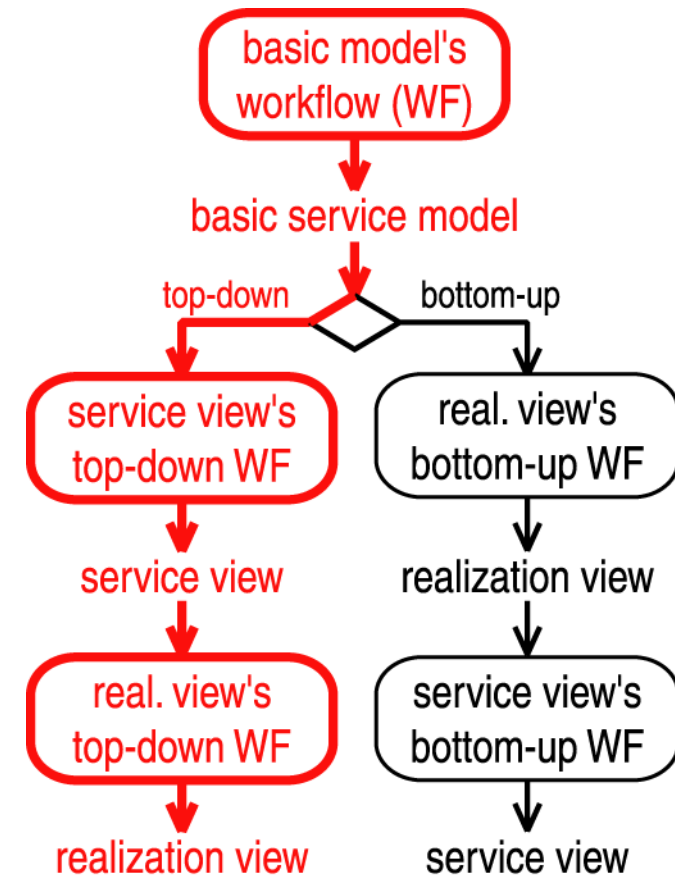
Methodology: Overview

- Inspired by software engineering
- Workflow based
- Actions deliver objects step-by-step
- Artifacts
 - Input/output of actions
 - Used for in-detail specification of objects
 - Deliver structuring and refinement
- Two basic processes
 - Top-down: bid invitation
 - Bottom-up: reverse engineering
 - Both: offering



Methodology: Overview

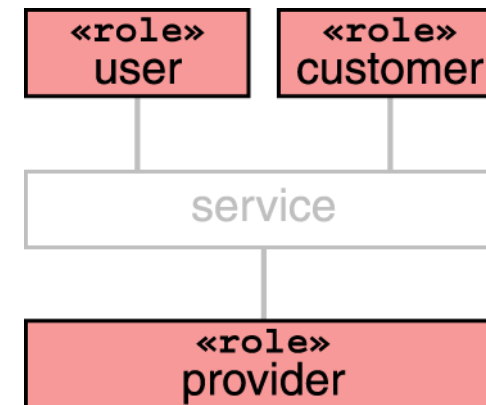
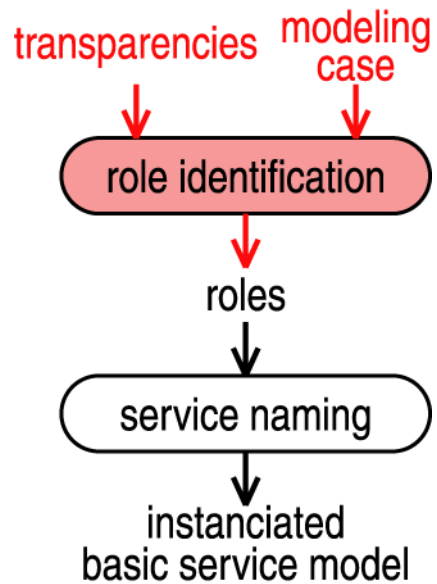
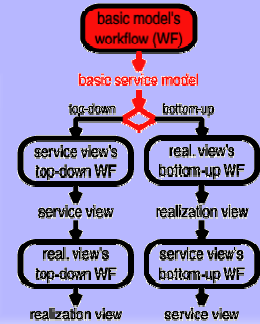
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Basic Service Model's Workflow

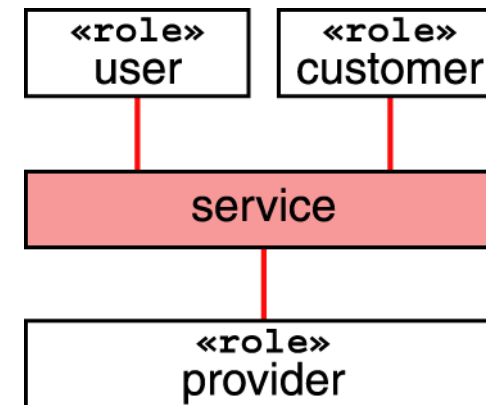
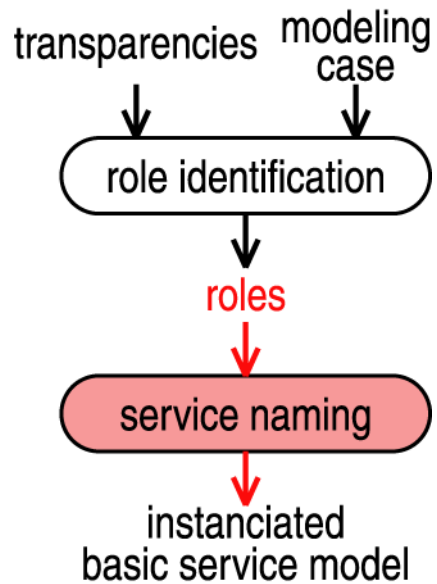
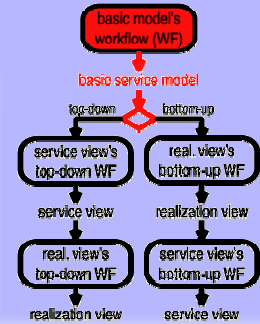
- Role identification

- Transparencies define depth of modeling
- Modeling case influences availability of information



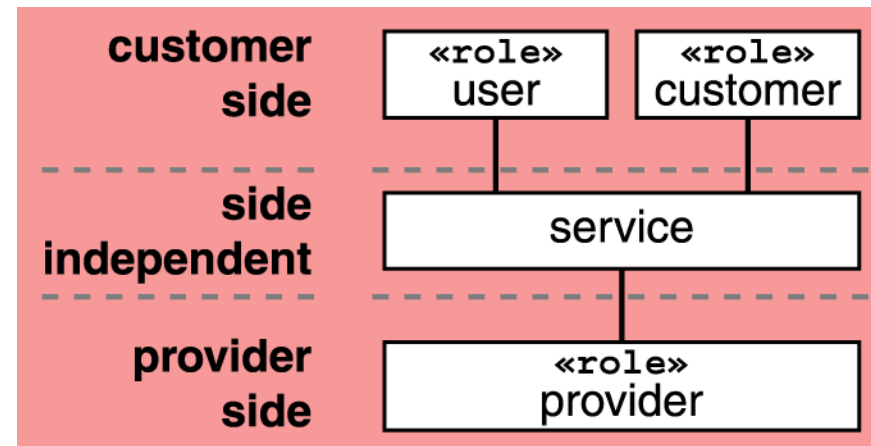
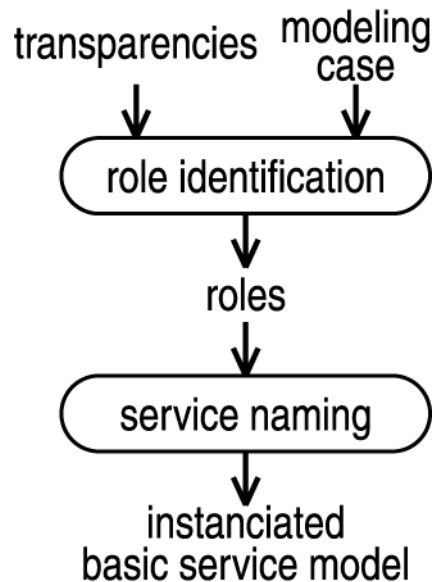
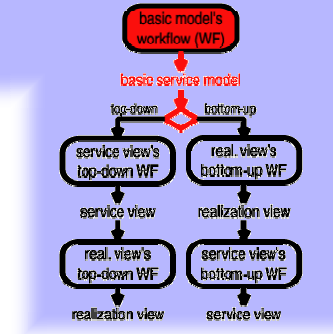
Basic Service Model's Workflow

- Service naming
 - Naming of all identified services
 - Associations between roles and services



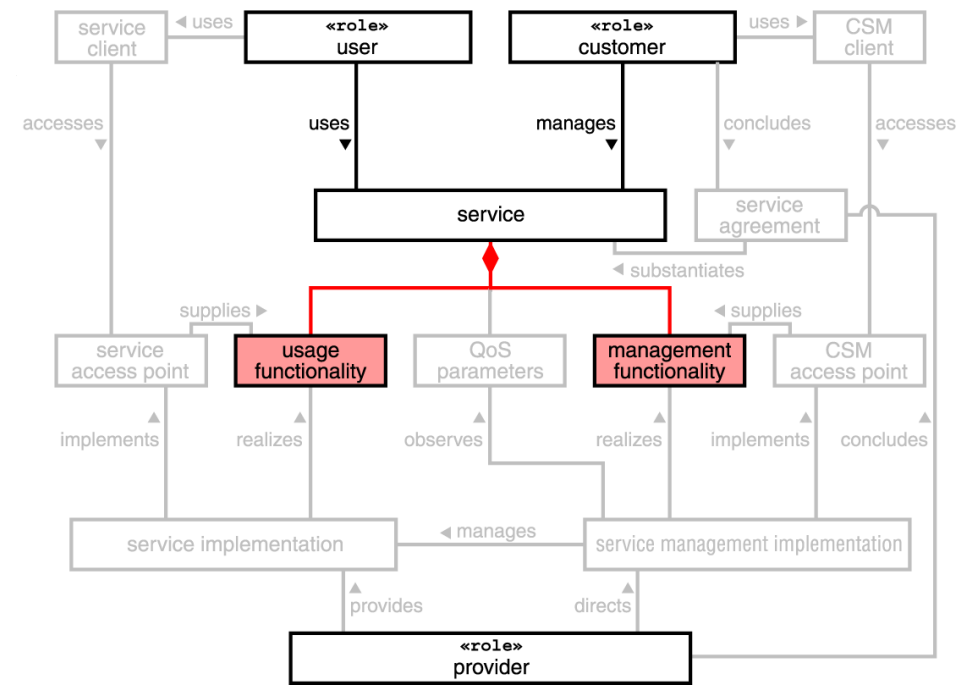
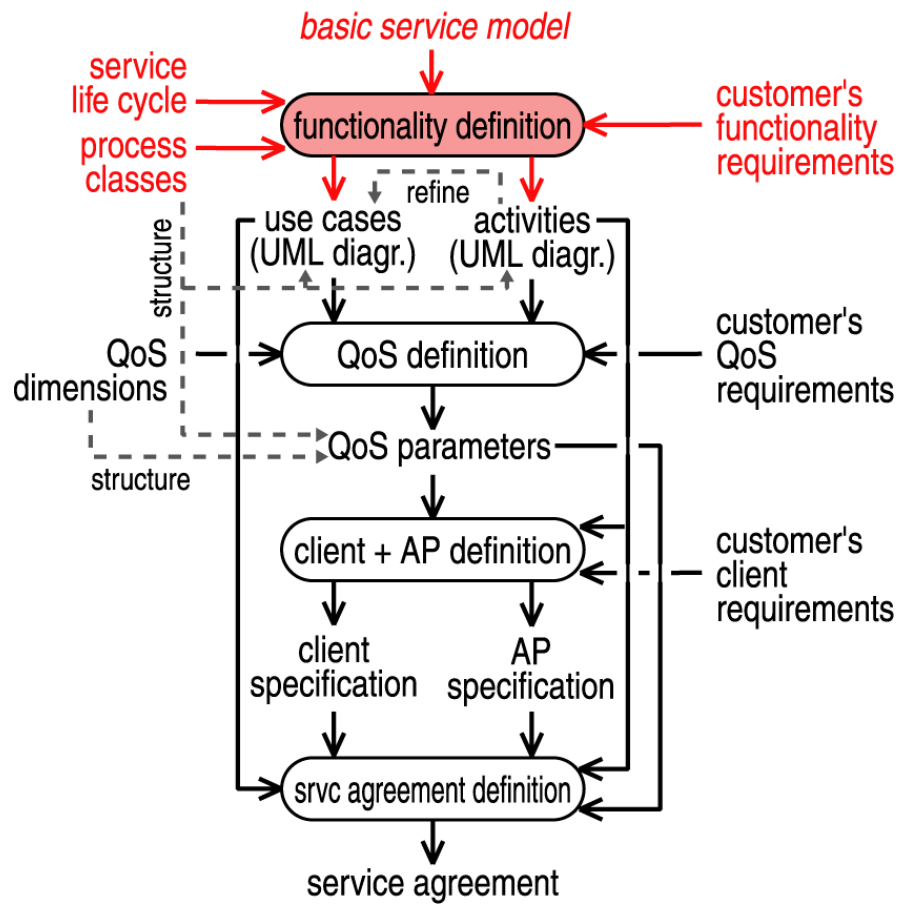
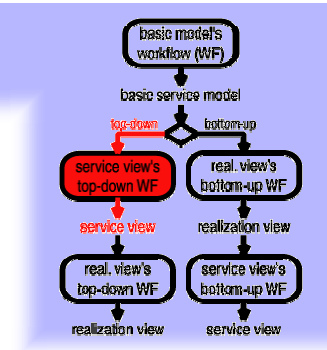
Basic Service Model's Workflow

- Finished deriving Basic Service Model
- Next in top-down process: Service View



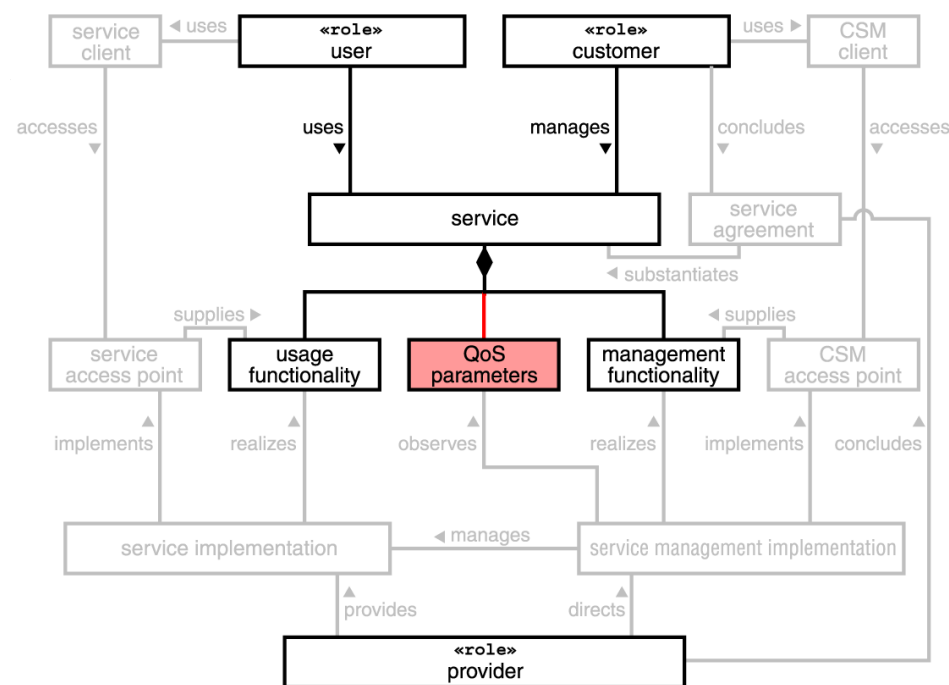
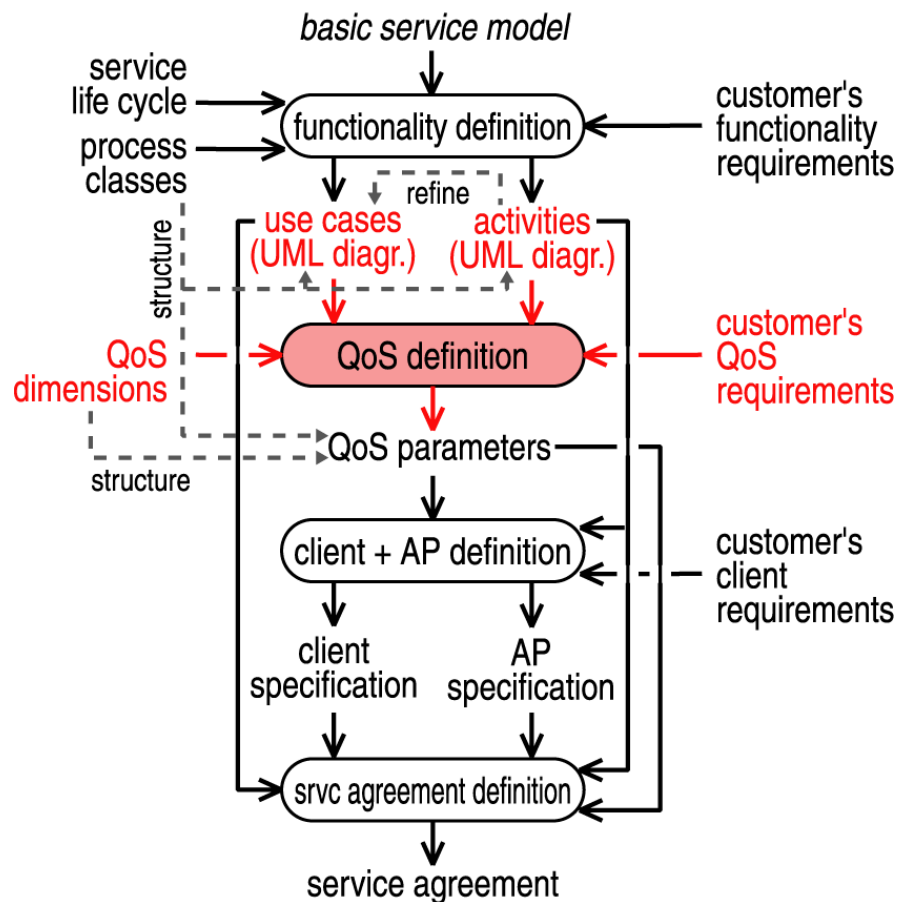
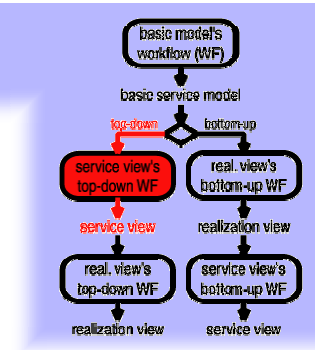
Service View's Top-Down Workflow

- **Functionality definition:**
 - Defines usage and management functionality
 - Use cases refined by activity diagrams



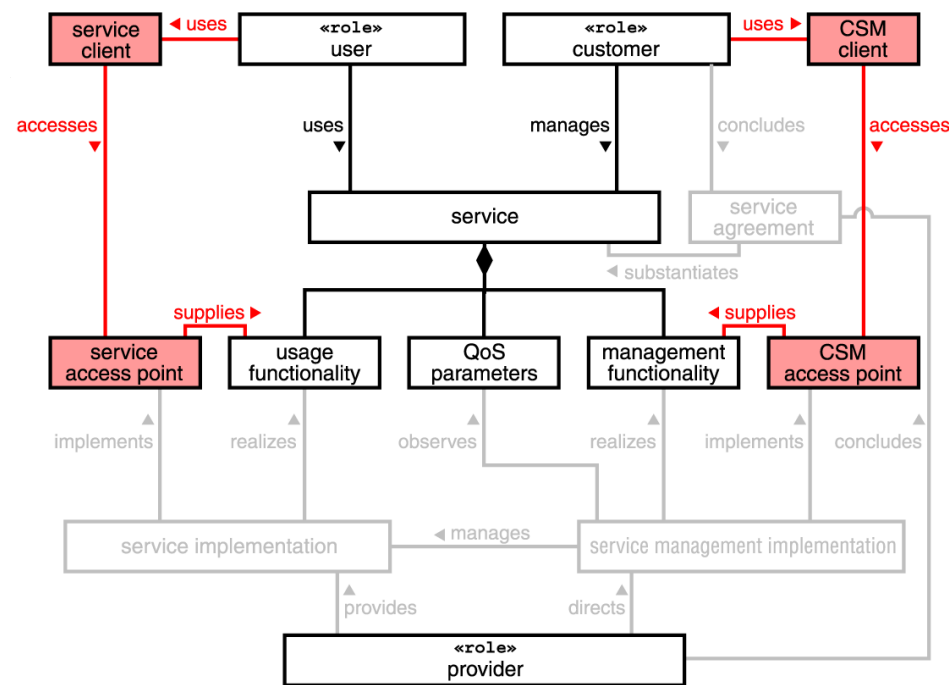
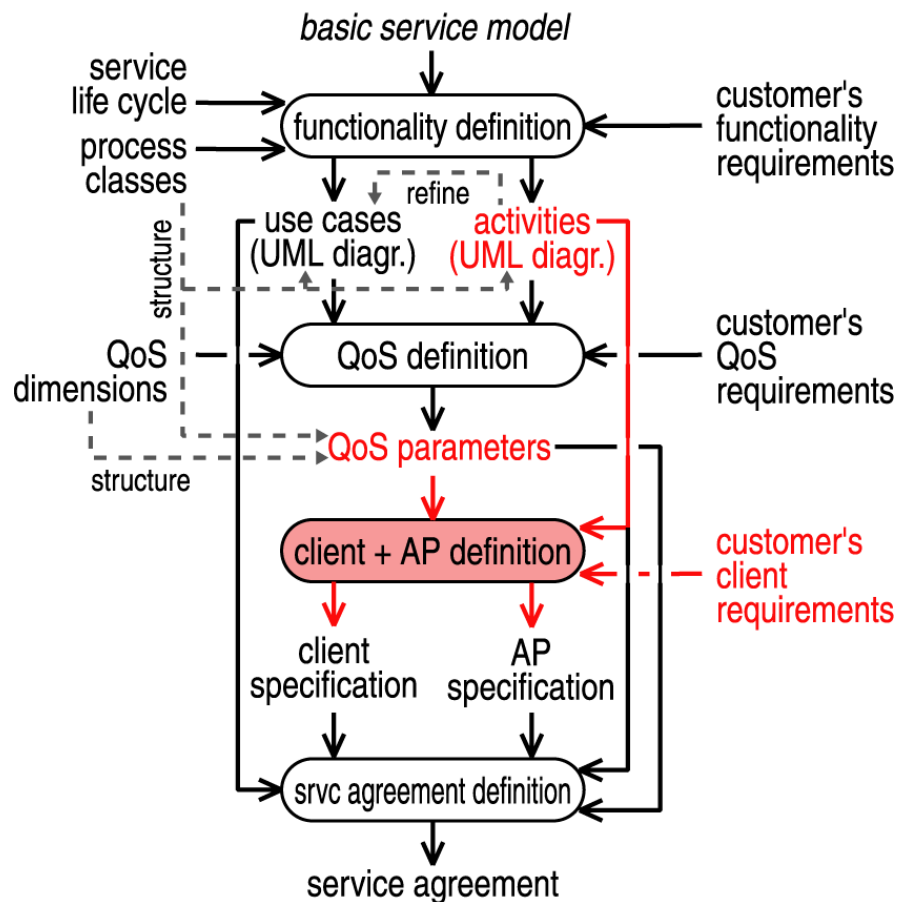
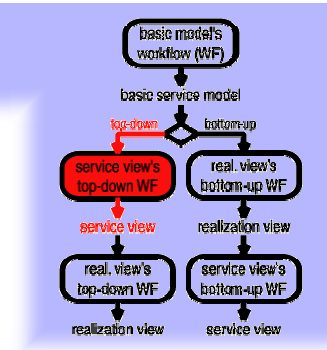
Service View's Top-Down Workflow

- QoS definition:
 - Begin/end of activities as reference points
 - QoS dimensions: duration, capacity, correctness



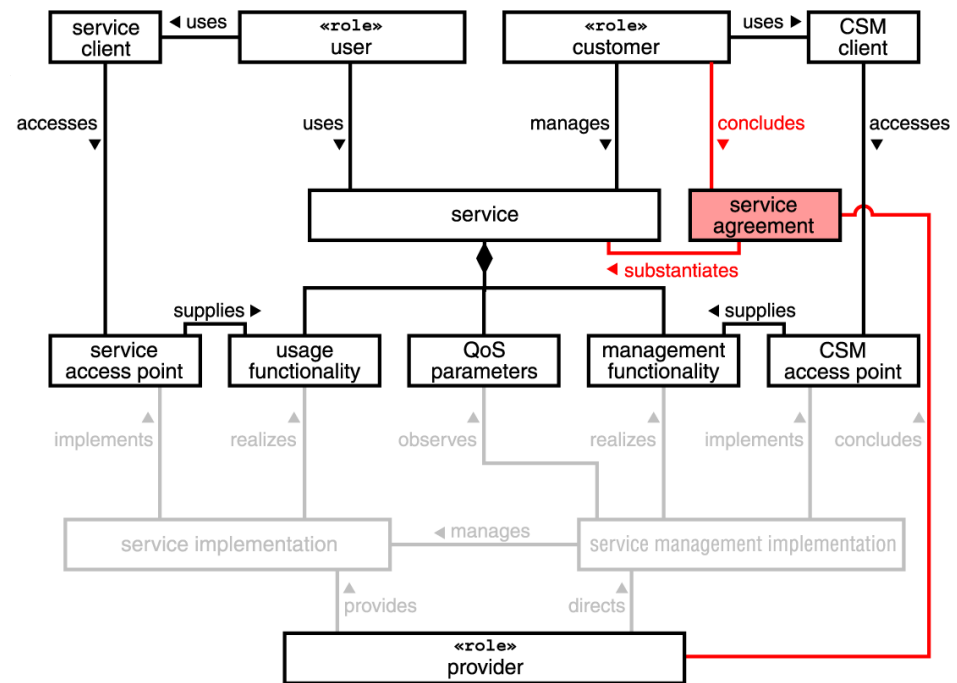
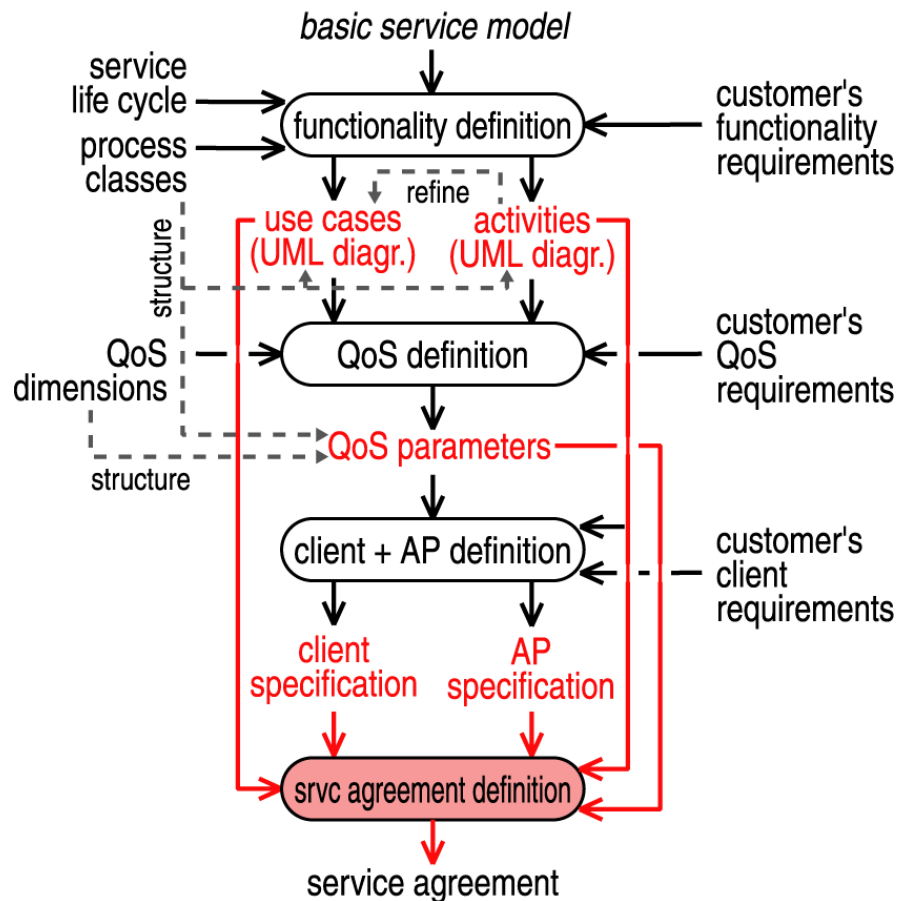
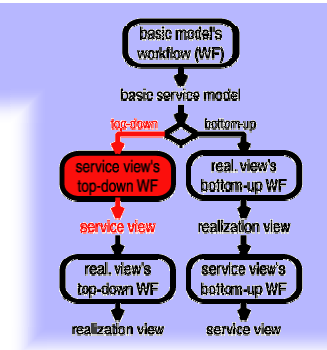
Service View's Top-Down Workflow

- Client and access point (AP) definition
 - Ability to fulfill QoS parameters
 - Access points must match corresponding clients



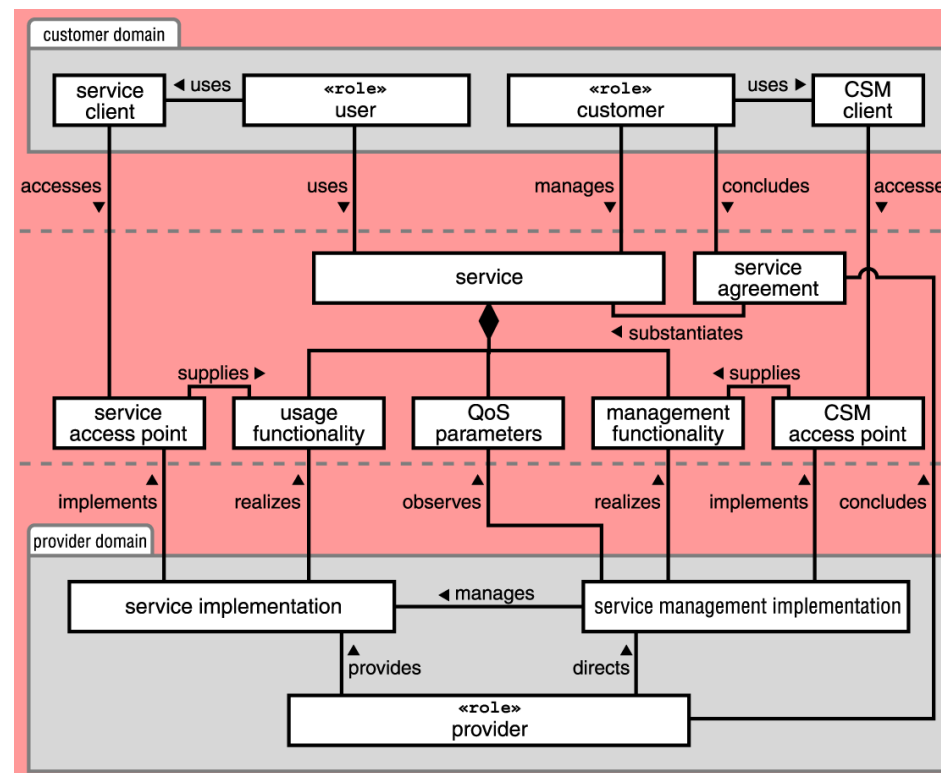
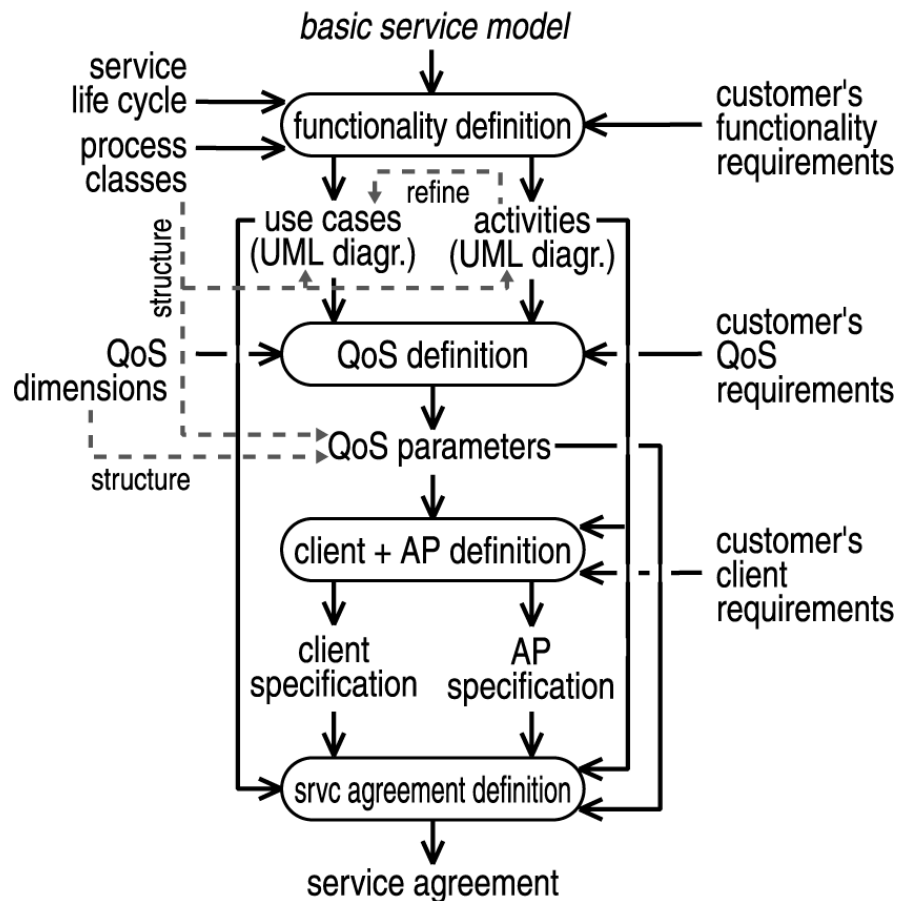
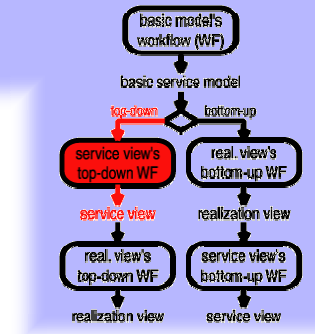
Service View's Top-Down Workflow

- Service agreement definition
 - Include information from all artifacts
 - Specify concrete boundaries



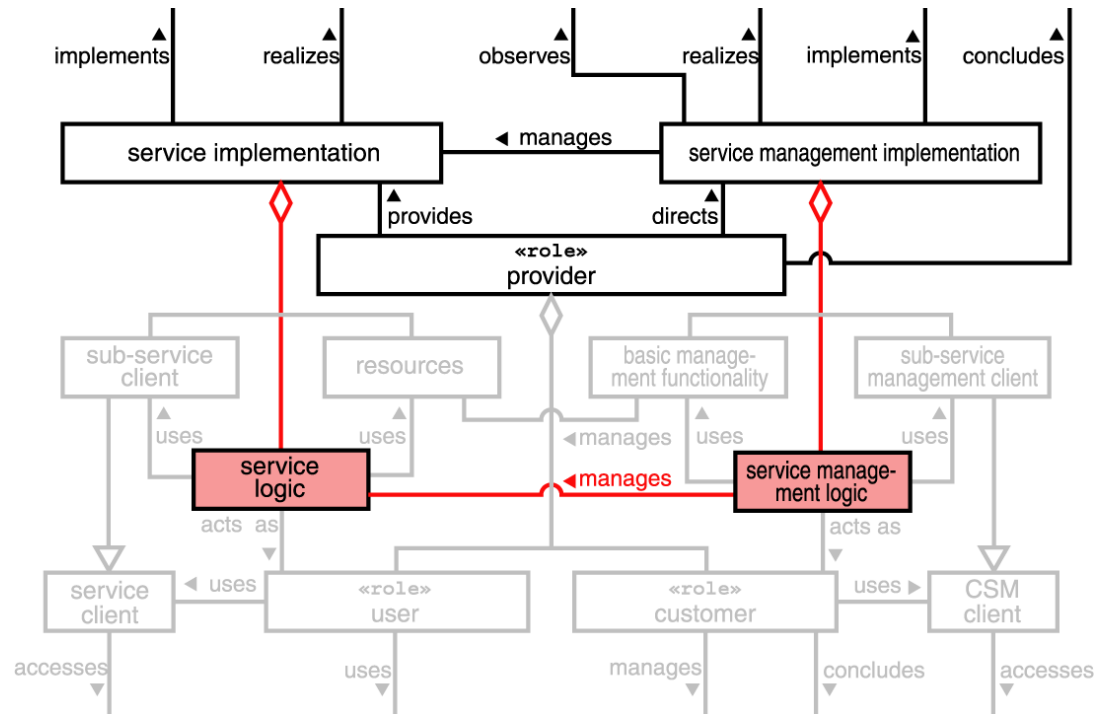
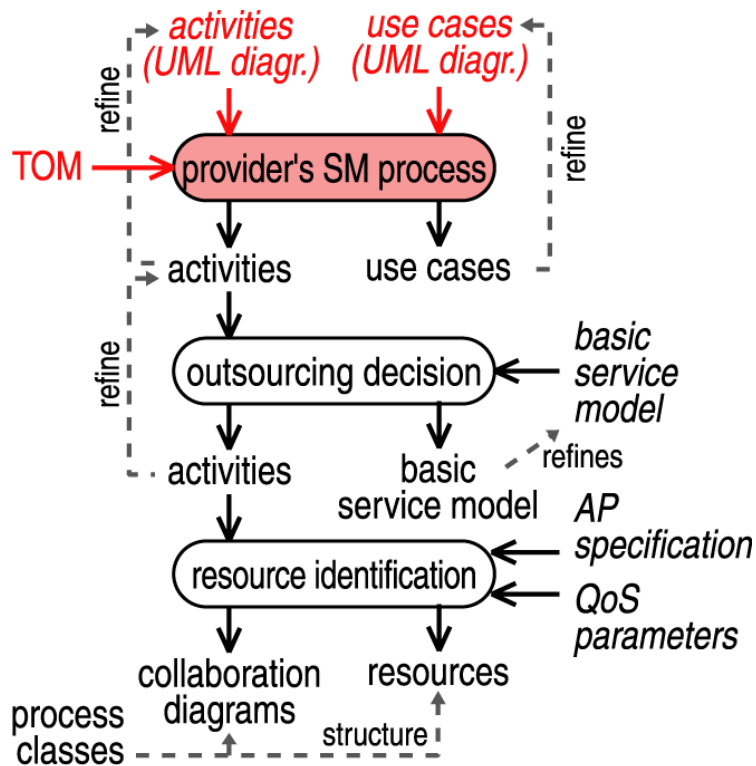
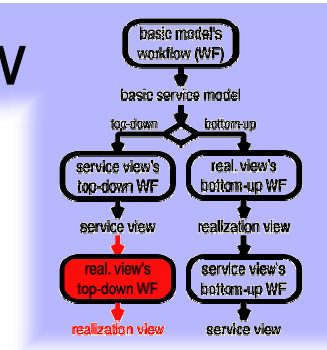
Service View's Top-Down Workflow

- Finished deriving Service View
- Next: Realization View



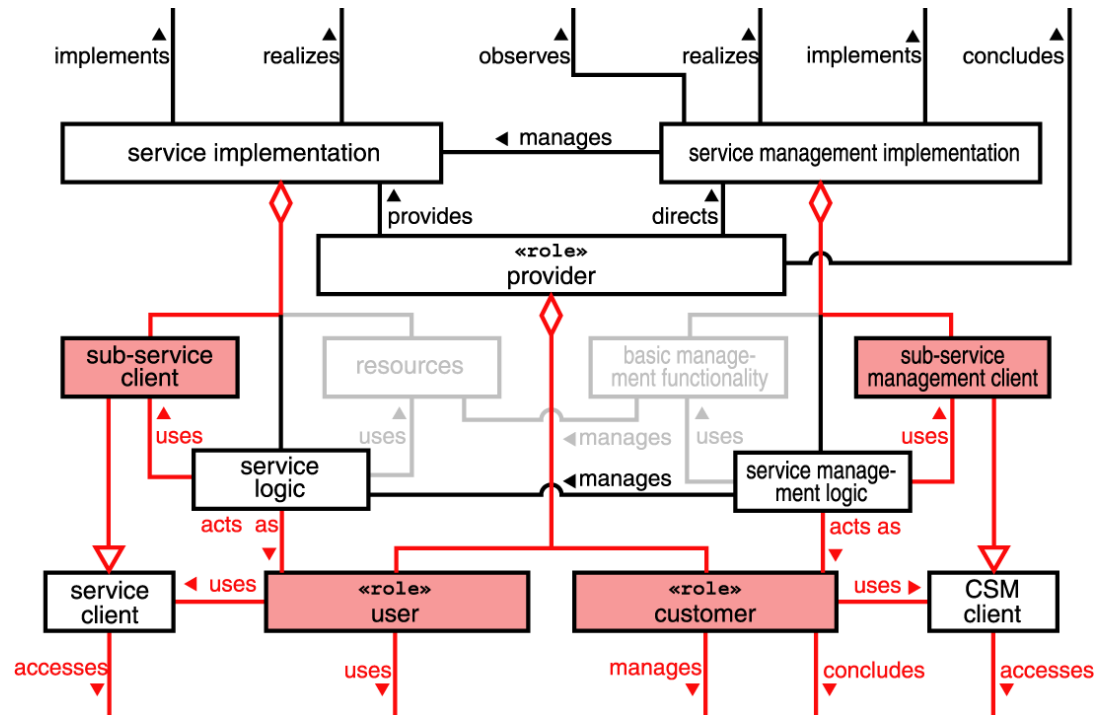
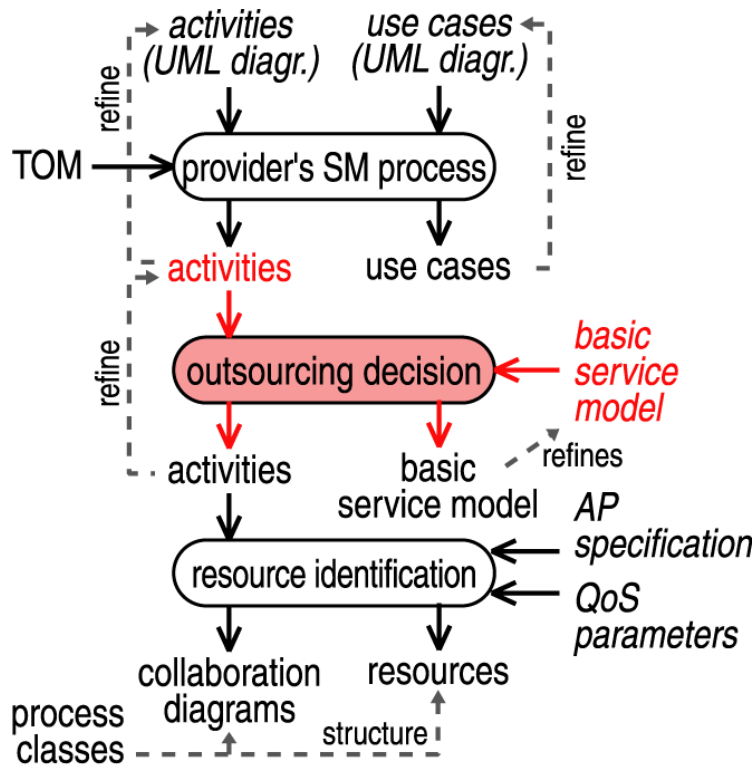
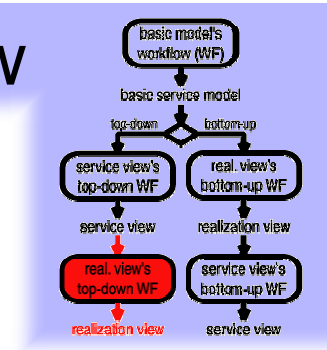
Realization View's Top-Down Workflow

- Provider's service management (SM) process
 - TOM / ITIL as structured starting points
 - Activities and use cases extended by internal processes



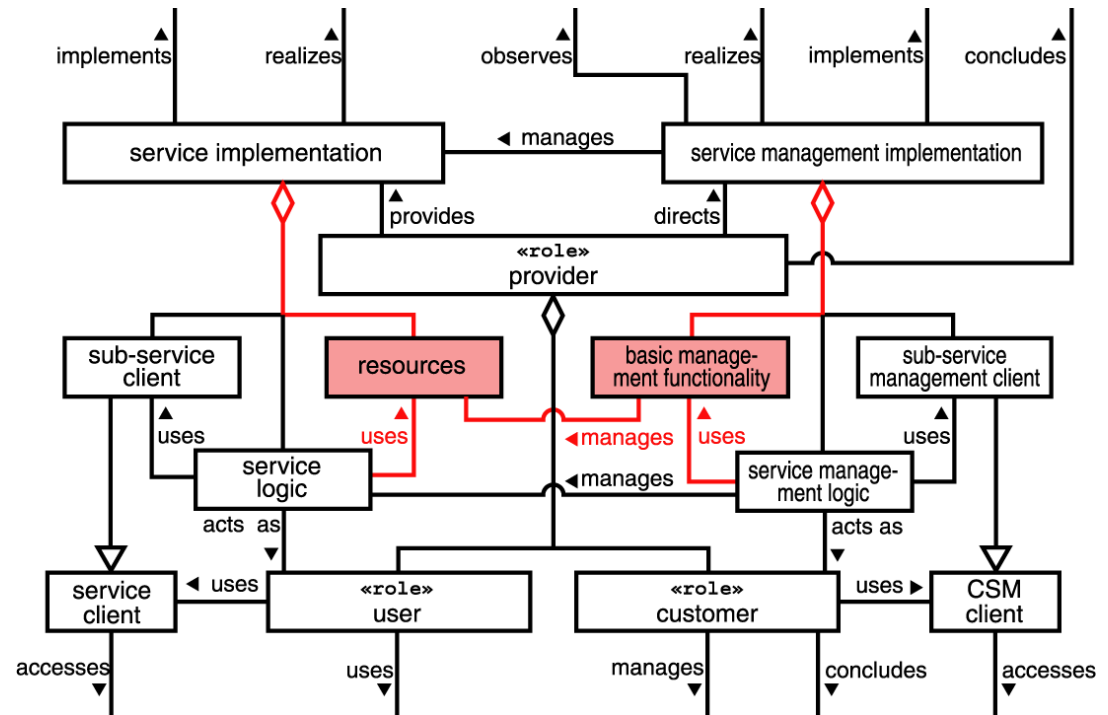
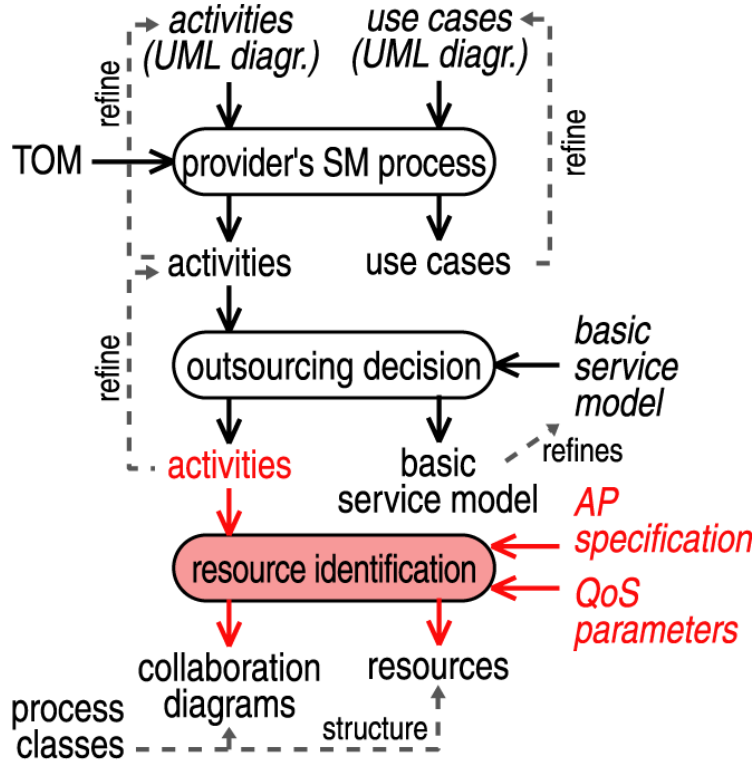
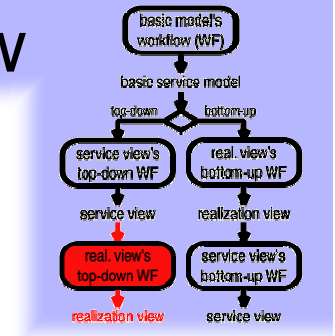
Realization View's Top-Down Workflow

- Outsourcing decision
 - Every process marked as either internal or outsourced
 - Former Basic Service Model refined/extended



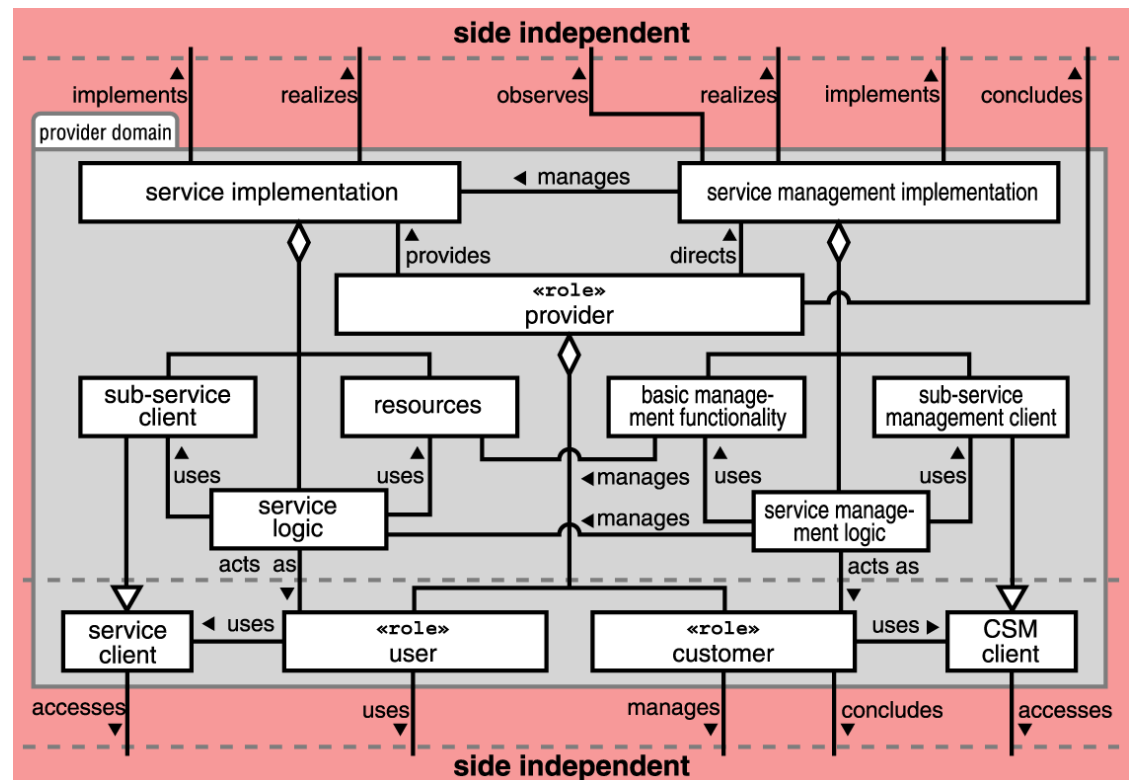
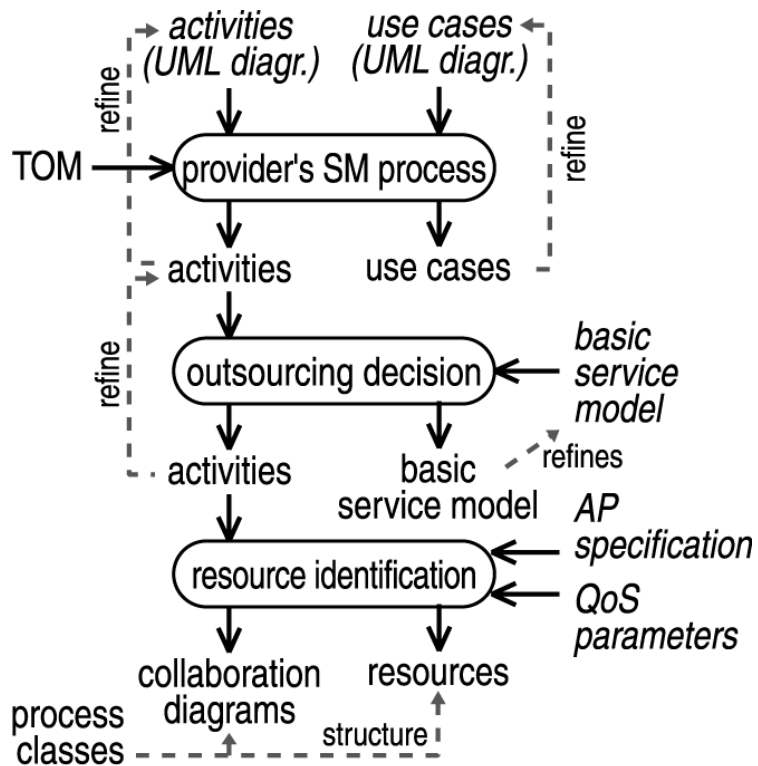
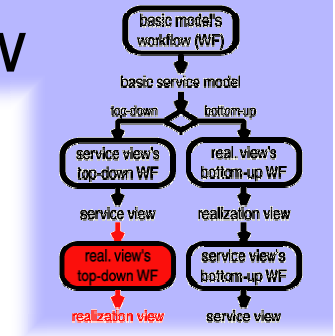
Realization View's Top-Down Workflow

- Resource and basic management functionality identification
 - Analysis of every single internal activity
 - Logics extended by collaboration diagrams modelling interactions



Realization View's Top-Down Workflow

- Finished deriving Realization View
- Finished applying whole MNM Service Model to specific scenario



Conclusion

- Basic modeling cases identified:
 - Reverse engineering
 - Bid invitation
 - Offering
- Modeling case determines basic decisions
- Methodology
 - Simplifies model application in all modeling cases
 - Delivers step-by-step guidelines
 - Artifacts for in-detail class specification
 - Ensures comparable results
- Creation of all views supported
- MNM Service Model with methodology serve as a checklist in all modeling cases

Current Work

- Development of integrated tool support
 - Incorporates workflow and document management component
 - Implementation by extension of existing CASE tool
- Design Patterns for model application
 - Underlines relations to software engineering
 - Similarities in structures were found
 - Rapid model application
 - Delivers design decision support
- Investigations on impact of context-awareness
 - Modeling of mobile service scenarios
 - Basis for automatic service composition