CSAP

Domain Driven Design
and
Soft Systems Methodology
for
Information Systems in Tourism Industry

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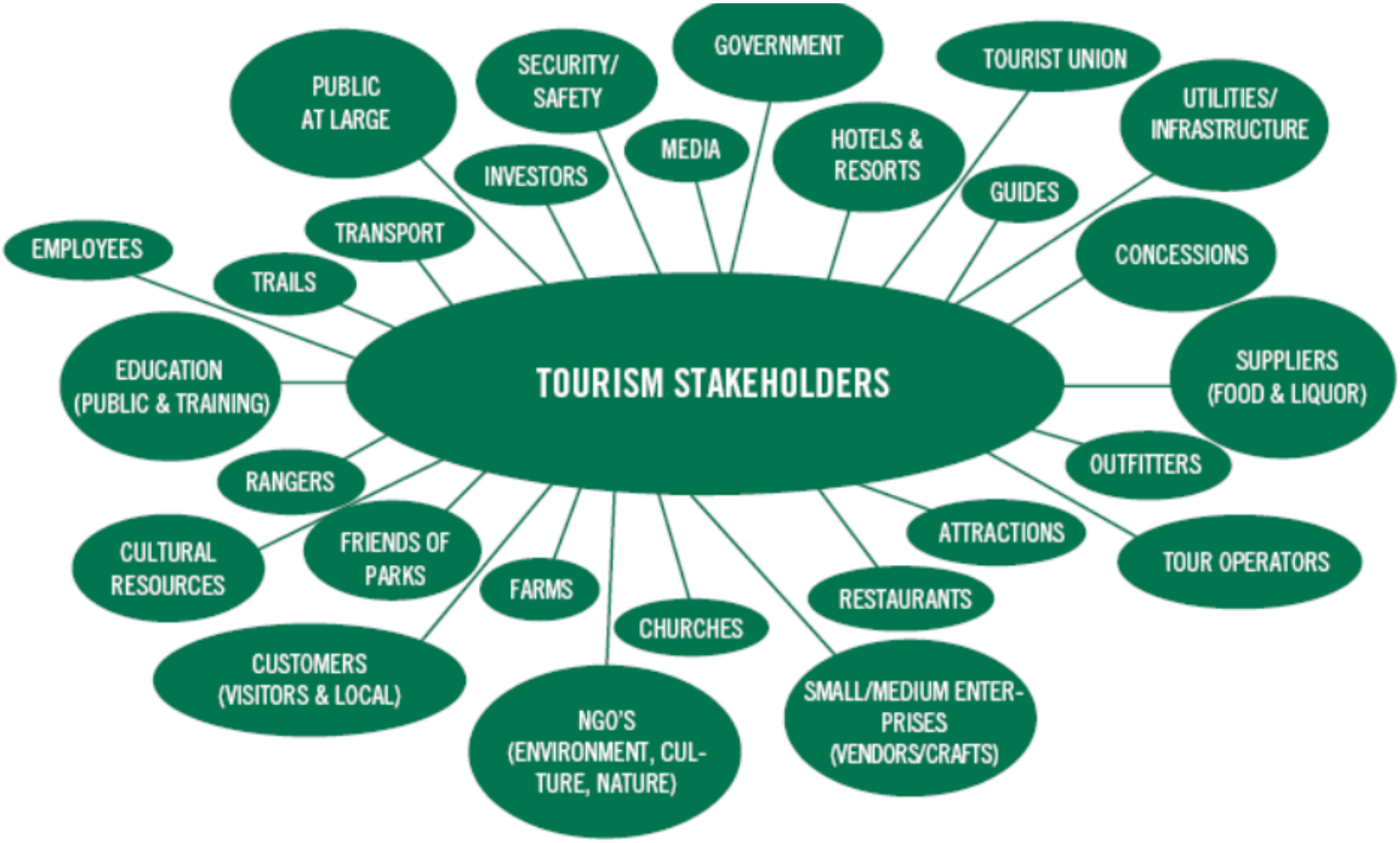
Purpose and Content

How to bring together the Customer (Domain Expert) and the S/W Expert

- Domain Driven Design
- Soft Systems Methodology
- Modeling
- DCSYM
- Examples from the tourism sector

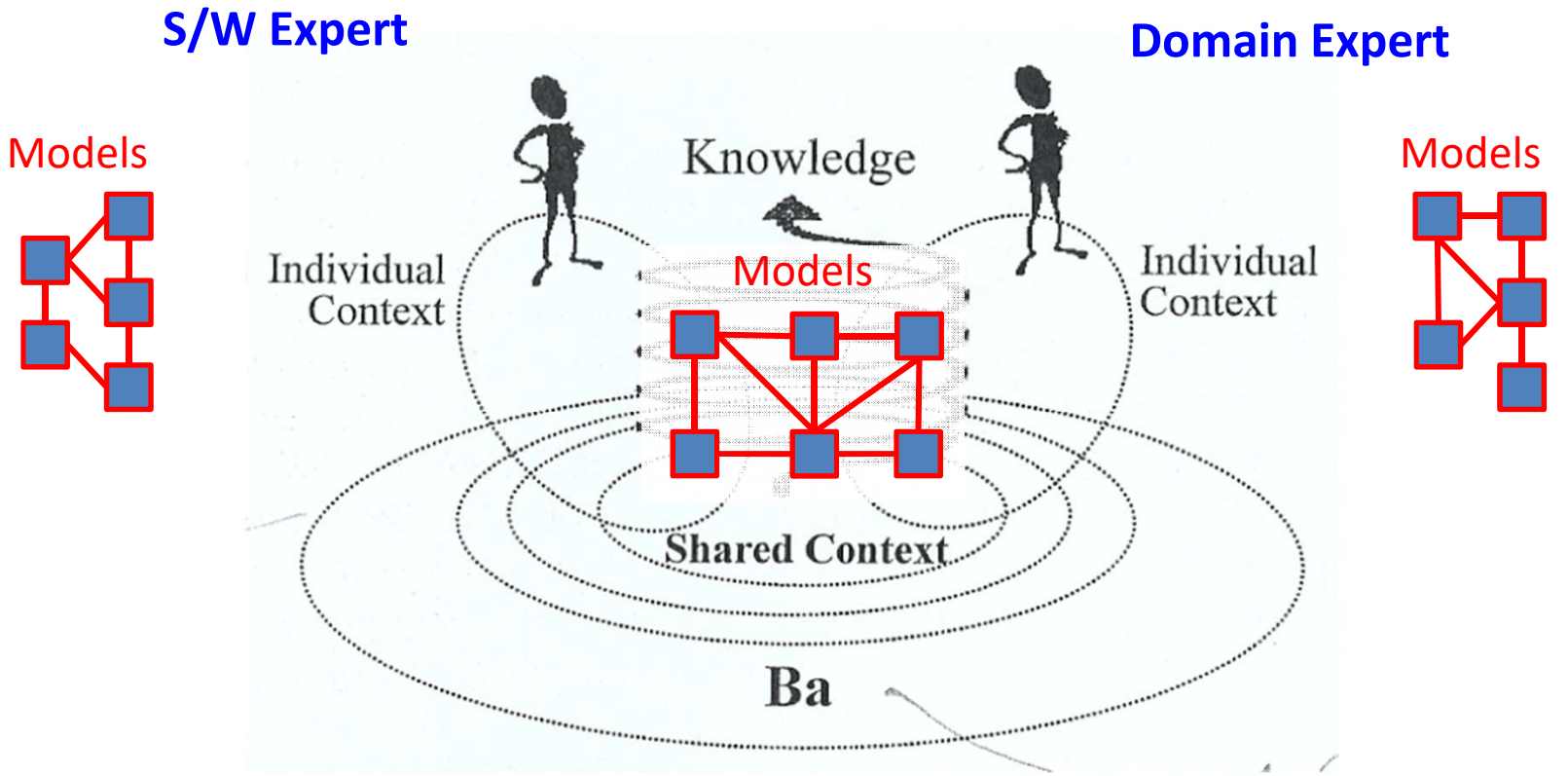
Tourism Stakeholders



Tourism Stakeholders (Gutierrez et al., 2005)

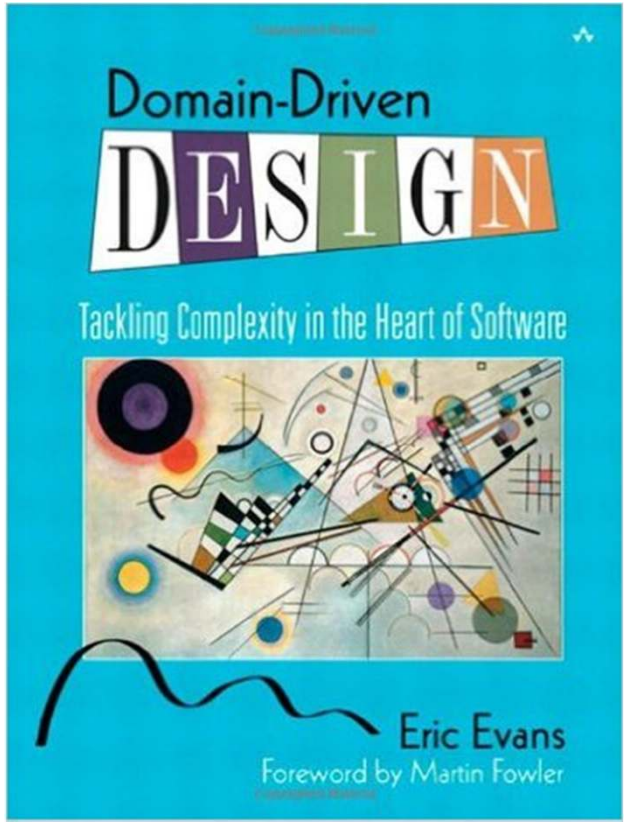
Sharing Knowledge

(building common models – perception)



"Ba" as shared context in motion (Nonaka and Konno, 1998)

Domain Driven Design



Introduced by Eric Evans (2004) as an approach to the development of complex software

The idea:

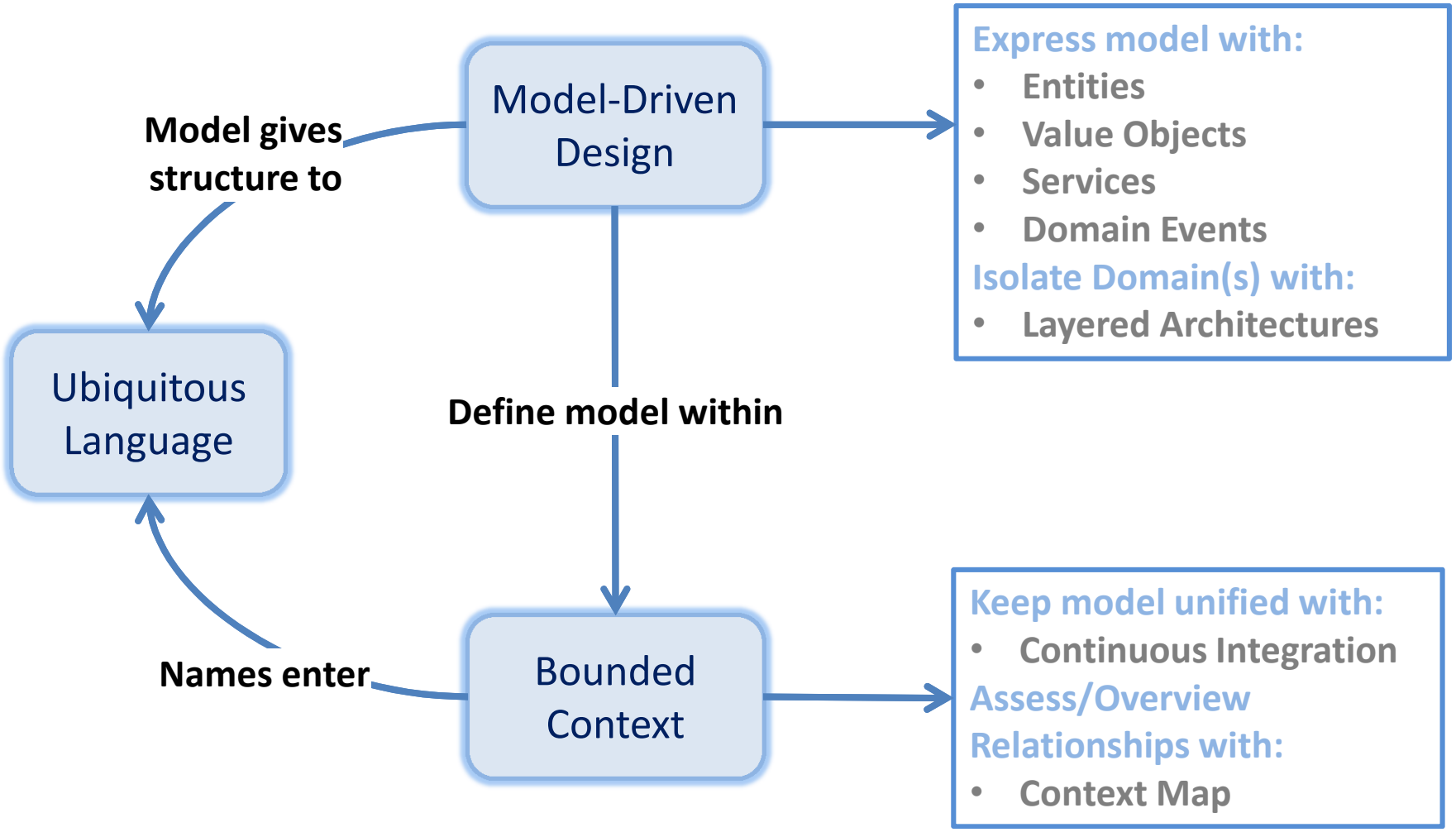
- Start focusing on the core domain and domain logic
- Base the design on model(s) of the domain
- Initiate a creative collaboration between technical and domain experts
- Iteratively refine a conceptual model of the domain and the related problems

Domain Driven Design :: Key Concepts *

Domain	A sphere of knowledge, influence, or activity. The subject area to which the user applies a program is the domain of the software.
Model	A system of abstractions that describes selected aspects of a domain and can be used to solve problems related to that domain.
Ubiquitous Language	A language structured around the domain model and used by all team members within a bounded context to connect all the activities of the team with the software.
Context	The setting in which a word or statement appears that determines its meaning. Statements about a model can only be understood in a context.
Bounded Context	A description of a boundary (typically a subsystem, or the work of a particular team) within which a particular model is defined and applicable.

* Eric Evans, Domain-Driven Design Reference - Definitions and Pattern Summaries (2015)

Domain Driven Design :: Overview *



* Eric Evans, Domain-Driven Design Reference - Definitions and Pattern Summaries (2015)

Domain Driven Design :: Summary *

1) Focus on the core domain.

2) Explore models in a creative collaboration of domain practitioners and software practitioners.

3) Speak a ubiquitous language within an explicitly bounded context.

* Eric Evans, Domain-Driven Design Reference - Definitions and Pattern Summaries (2015)

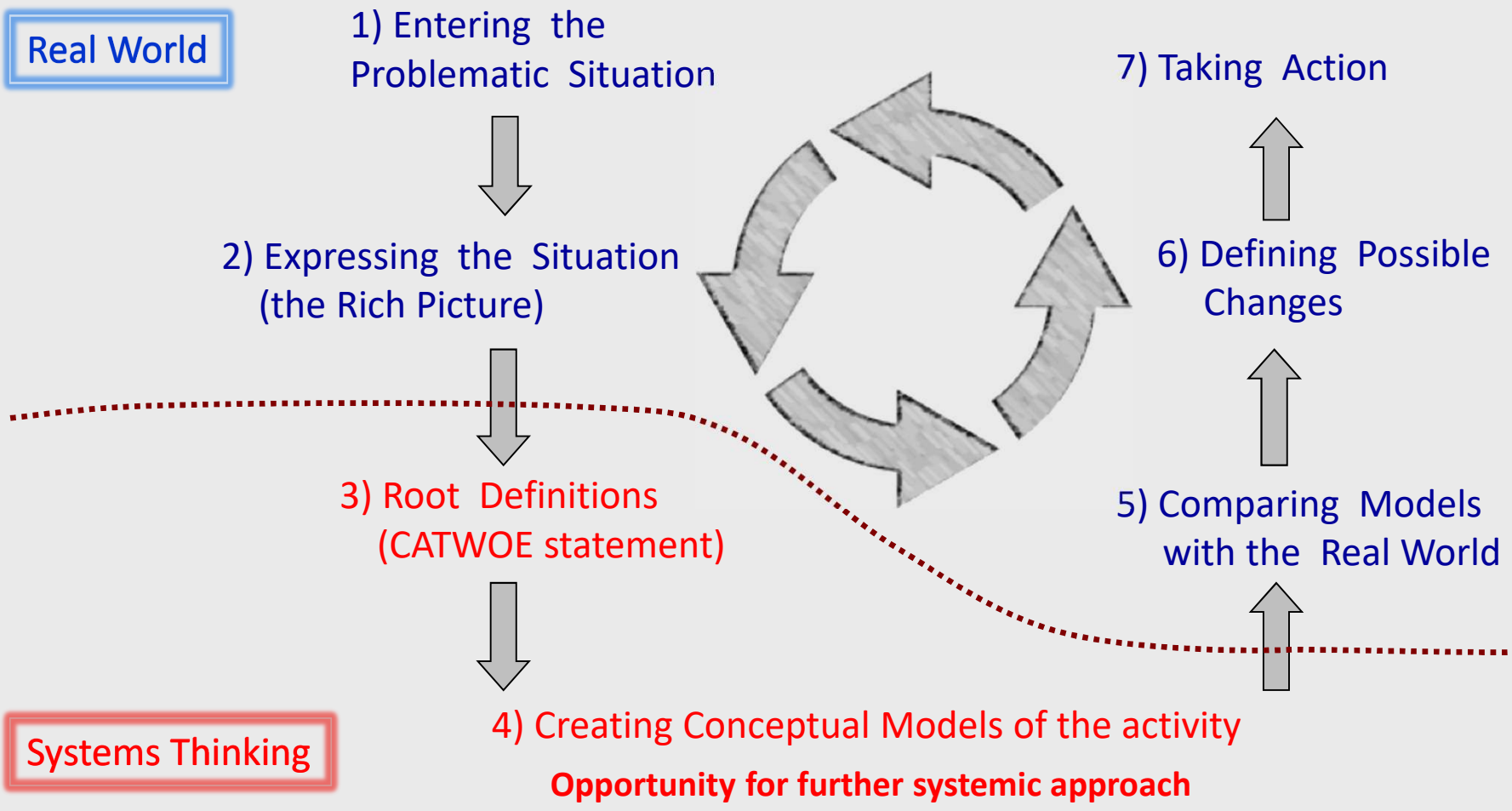
Soft Systems Methodology

Soft Systems: Systems in which people are involved

Problems:

- The real world is complex and messy
- Need to intervene in ill-structured problem situations
- Our goal is not clear
- The purposeful activity is not clear
- Different perceptions
- Need to create order out of the mess
- Need to create a common perception

Soft Systems Methodology *



* Checkland P. Systems Thinking, Systems Practice (1999)

Root Definitions - CATWOE statement *

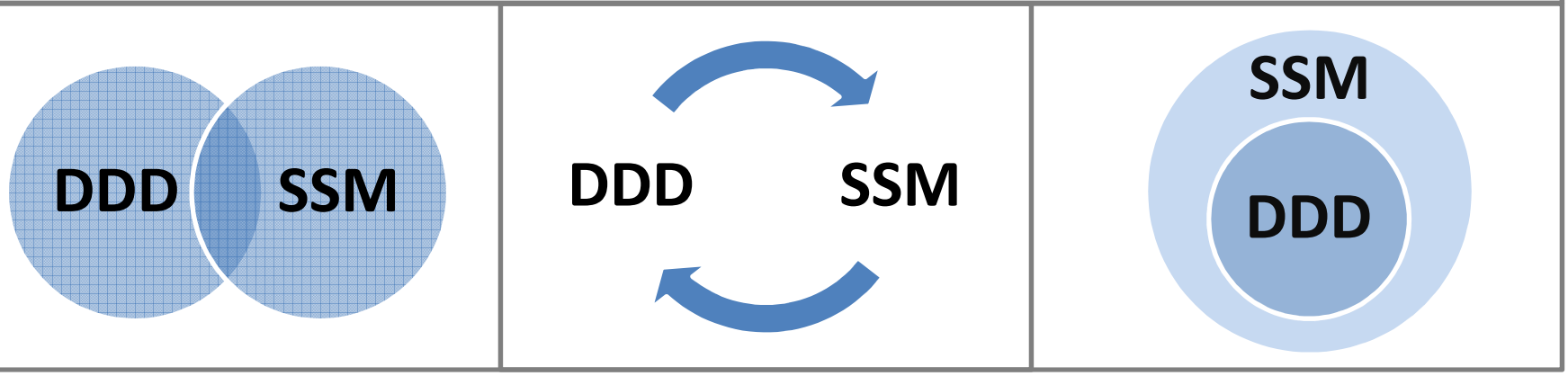
C	Customers	The individual(s) who receive the output from the transformation (positive or negative)
A	Actors	Those individuals who would DO the activities of the transformation
T	Transformation	The purposeful activity expressed as a transformation of input to output
W	Weltanschauung	World view - The belief that makes sense of the root definition
O	Owner	The wider system decision maker who is concerned with the performance of the system
E	Environmental constraints	The key constrains outside the system boundary that are significant to the system

* Burge Hughes Walsh (2015)

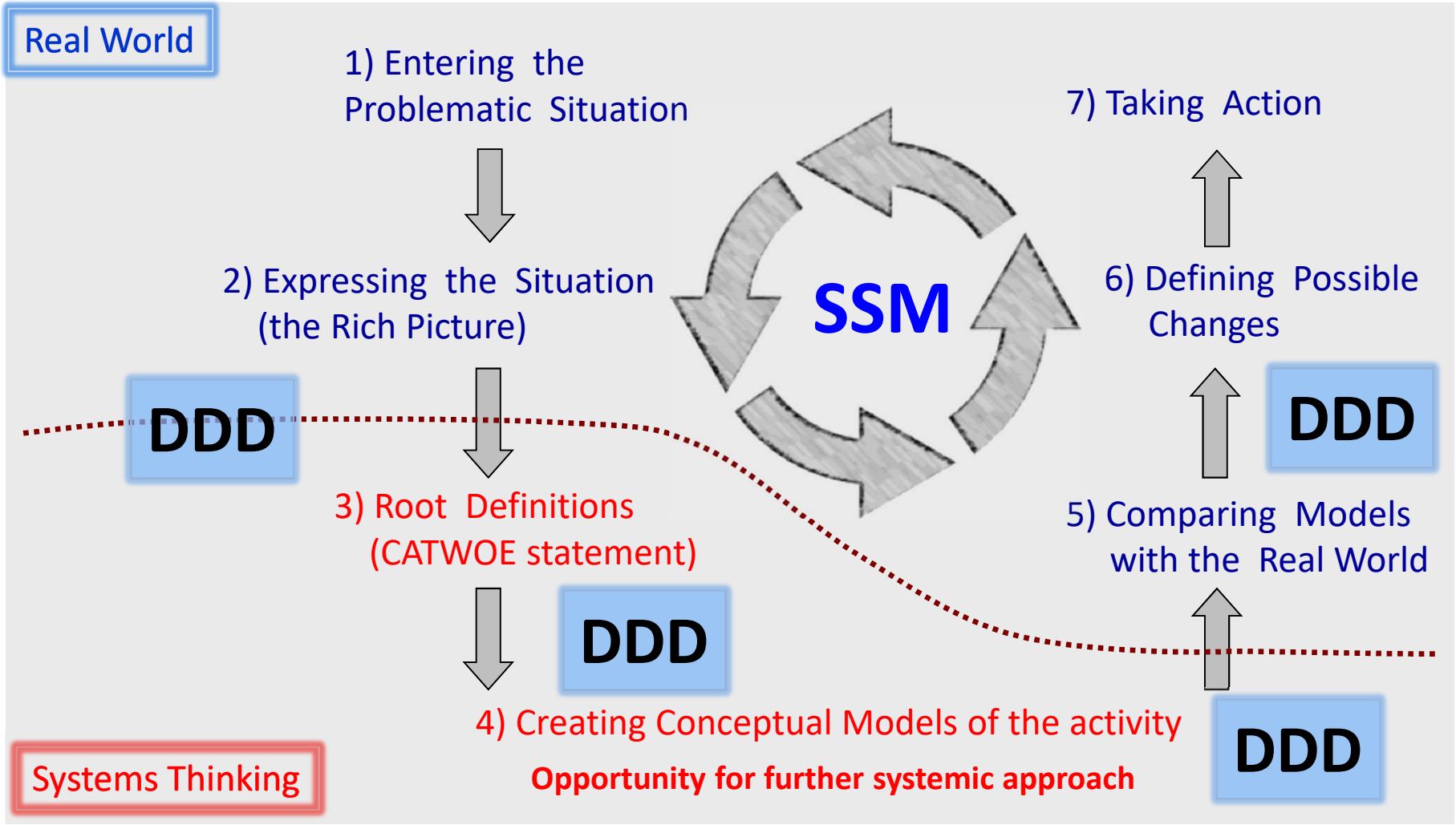
Combining DDD & SSM

DDD	SSM
Domain	The Problematic Situation
Collaboration	Collaboration
Ubiquitous Language	Root definitions
Context, Bounded Context	Fundamental in the systemic approach
Conceptual model of the domain	Conceptual Models of the activity

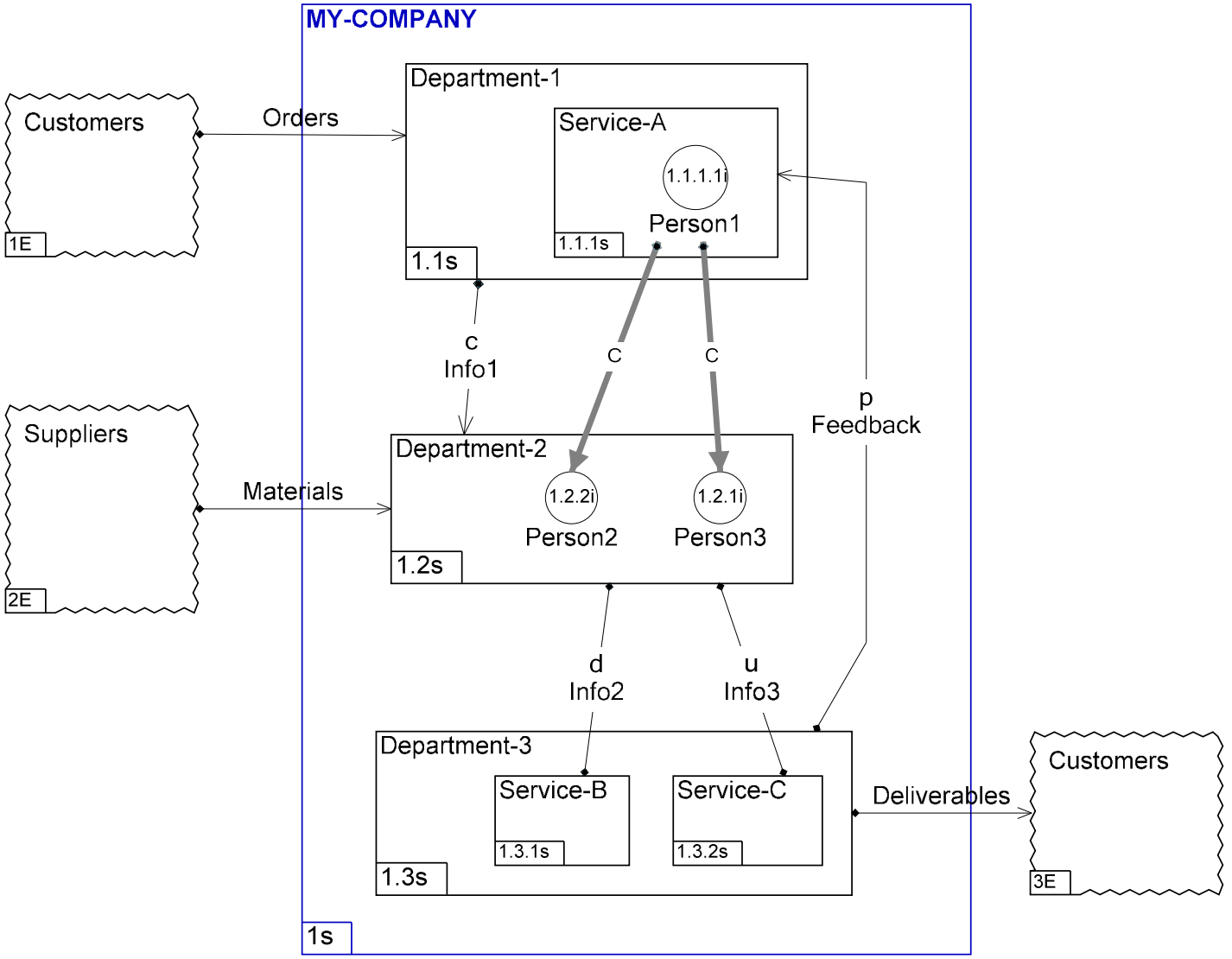
- **DDD implementation through SSM**
- **SSM as the framework for implementing DDD**



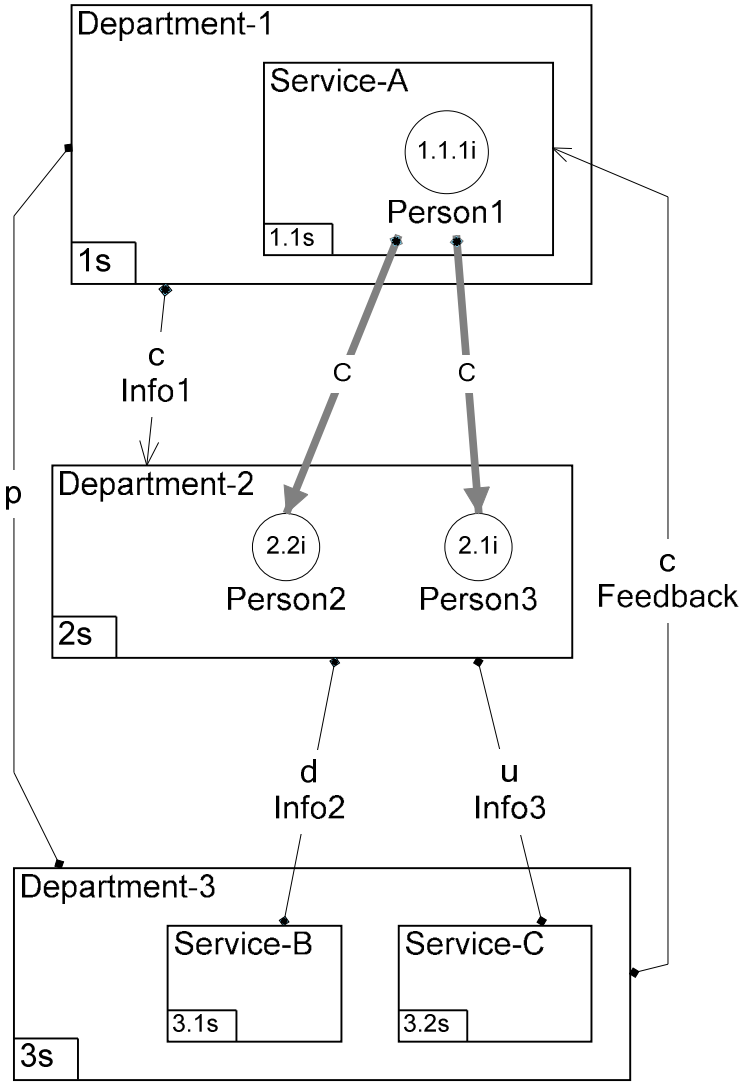
DDD in the SSM Life Cycle



Design & Control Systemic Methodology (DCSYM)



DCSYM Symbols



System

Individual

c

communication

C

CONTROL

Relations types		
c	**C**	communication
g	**G**	general interaction or influence
u	**U**	purposeful action
p	**P**	potential conflict
d	**D**	distorted communication
δ	**Δ**	distorted purposeful communication

Example : Hotel Management System

SSM - CATWOE

C	Customers	Hotel customers groups (modern, old-fashioned, tourists, corporate…). Hotel Depts employees (Front Office, Reservations, Housekeeping , Rerstaurant/Bar, Food & Beverage warehouse, SPA, Events, Management...), IT Dept, Hotel Management (Finance, Reporting, CRM…), Partners, Tour operators…
A	Actors	IT partner, IT Dept, Change leading group
T	Transformation	The actual work in the form: Input → Process → Output What will be the changes in Input-Process-Output ? Changes in Front Office, Reservations, Housekeeping, etc… etc…
W	Worldview	Hotel viability in the competitive market (the impact of the change)
O	Owner	The hotel management
E	Environmental constraints	The hotel size and category. Internet capabilities, banking restrictions

Example : Hotel Management System

DDD - Ubiquitous language *
within an explicitly bounded context

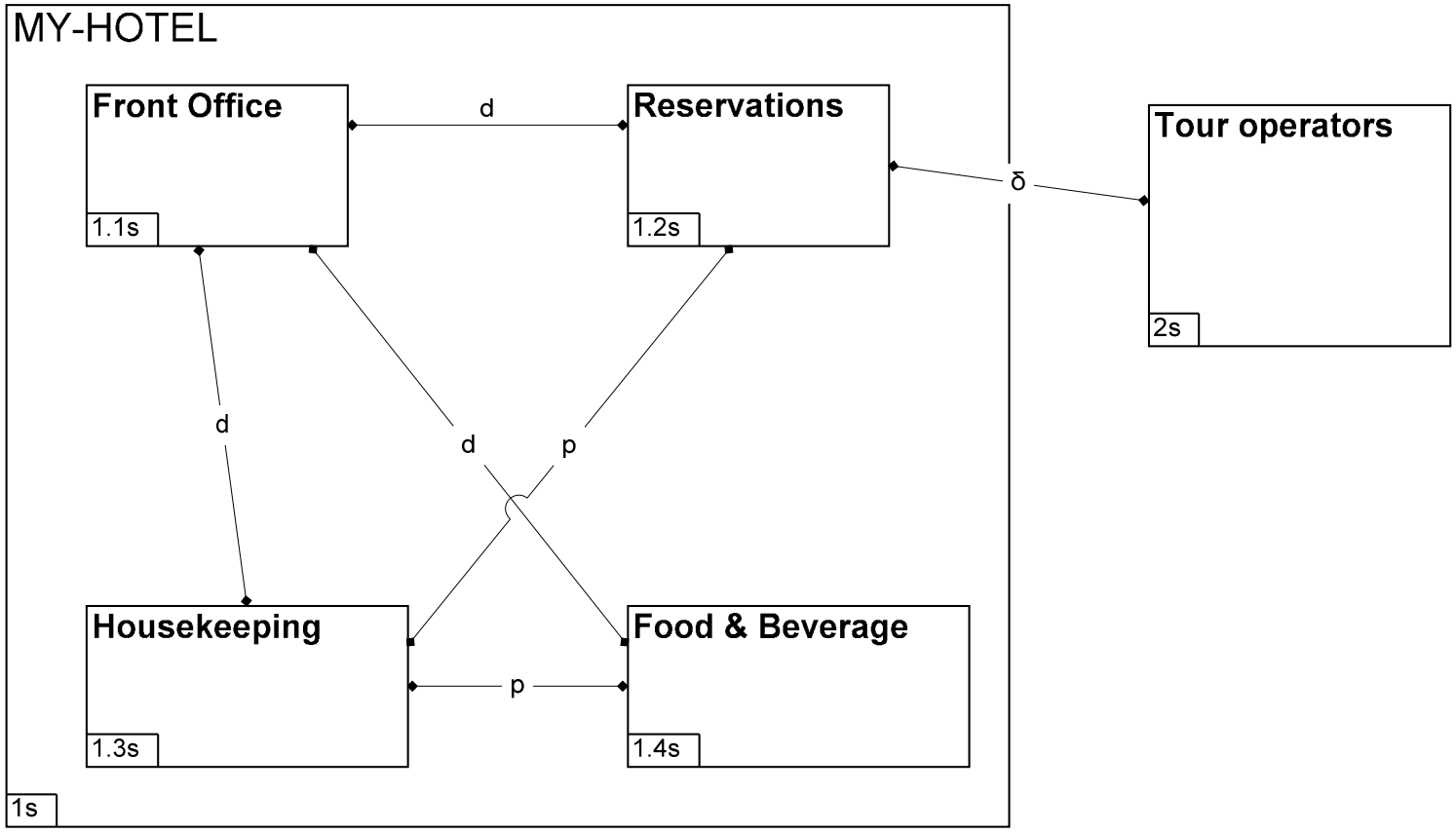
The word TELEPHONE

Context	Meaning
Reception	Customer's or partners phone number
Technical Dept.	The phone device
Finance	The communications (telephone) bill

* Rodrigo Caldas, Software Engineer, London

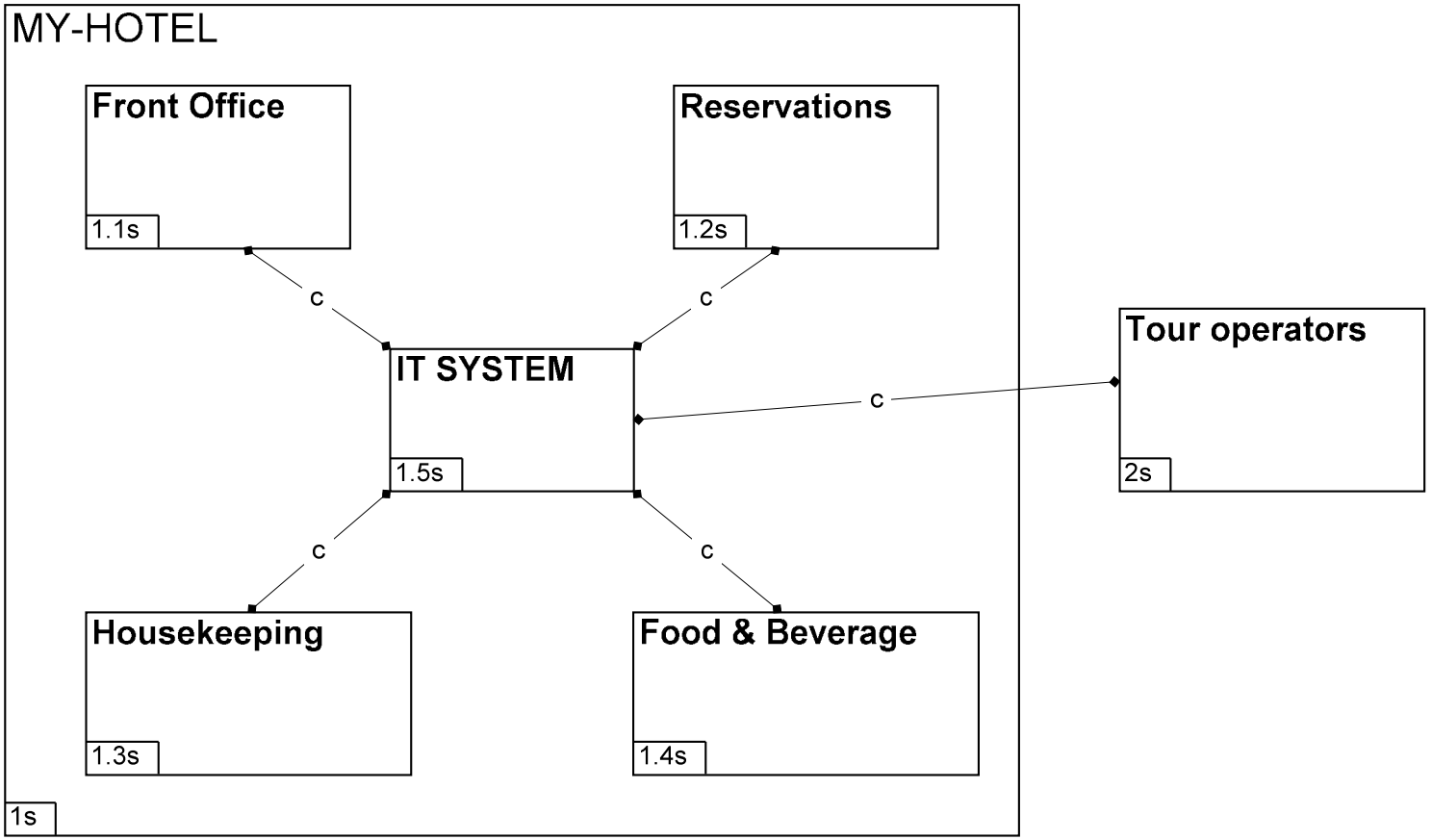
Example : Hotel Management System

DCSYM/SSM: The whole system before HOTEL ERP System



Example : Hotel Management System

DCSYM/SSM: The whole system after HOTEL ERP System



Conclusions

- Design starting from models
- Collaboration between technical experts and domain experts
- Domain Driven Design
- Soft Systems Methodology
- CATWOE statement
- DCSYM for modeling

Thank you

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