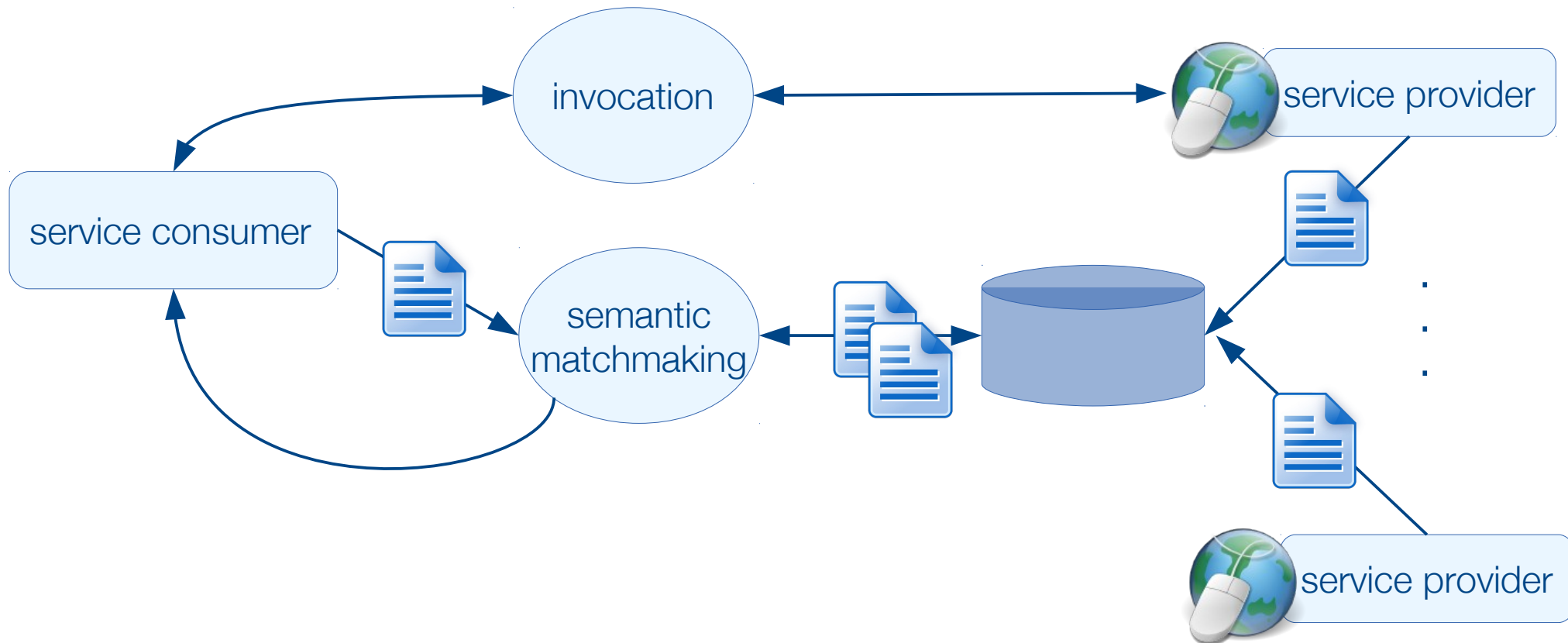


A User-Centered Methodology for the Evaluation of (Semantic) Web Service Discovery and Selection

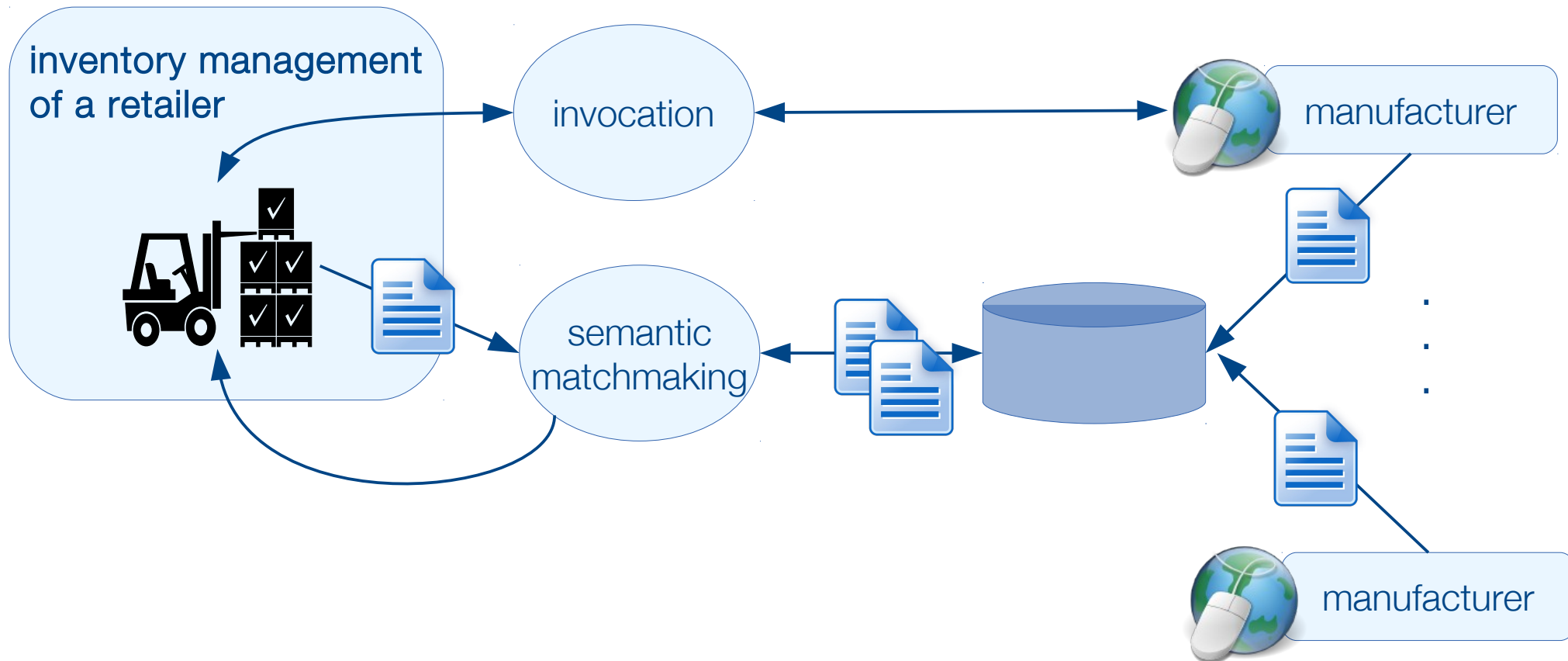
Friederike Klan, Birgitta König-Ries

friederike.klan|birgitta.koenig-ries@uni-jena.de

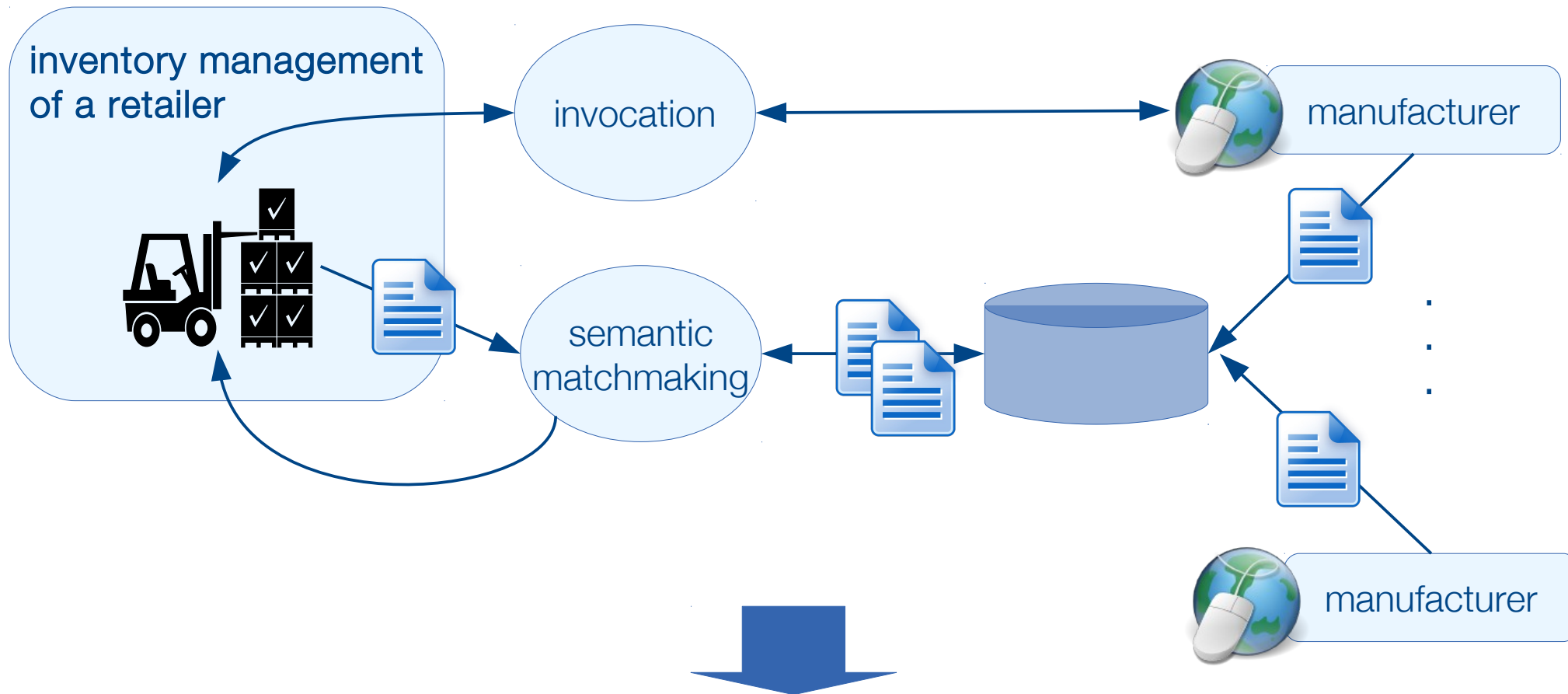
Service Oriented Architectures



Web Service Discovery and Selection – B2B Scenario

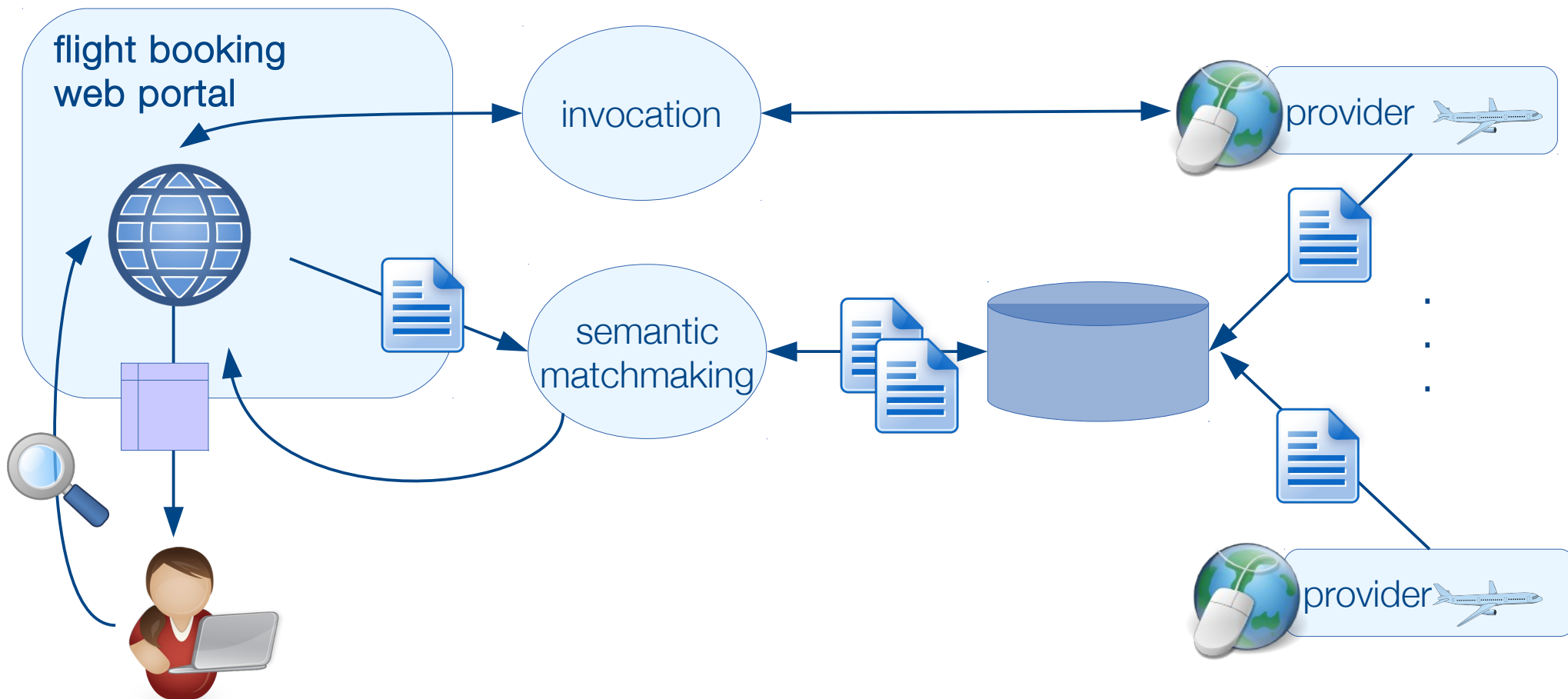


Web Service Discovery and Selection – B2B Scenario

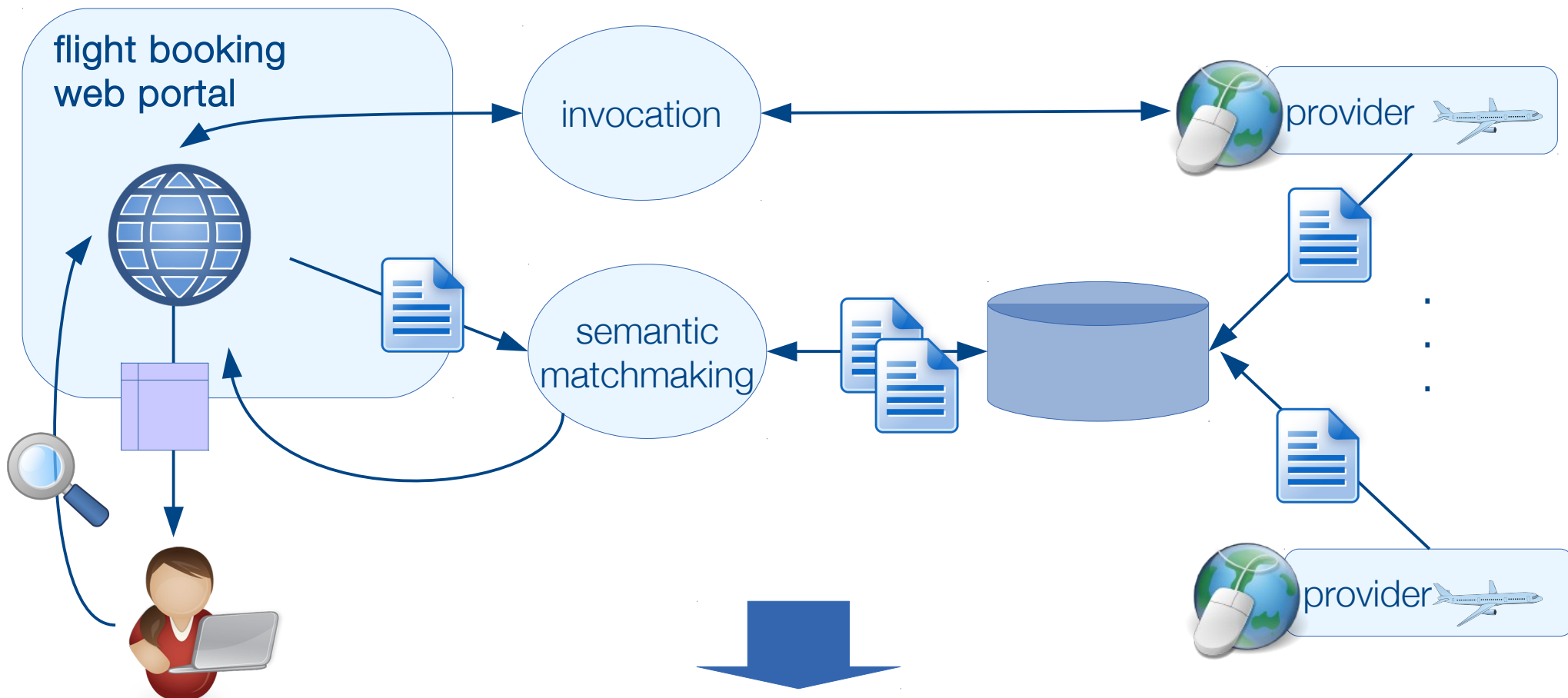


- service requirements known in advance
- automatic selection by a machine

Web Service Discovery and Selection – B2C Scenario



Web Service Discovery and Selection – B2C Scenario



- service requirements NOT known in advance
- manual selection by a human

Changed System Requirements

- service requirements NOT known in advance

R1 interactive and incremental requirements elicitation

R5 maintain accurate requirements model

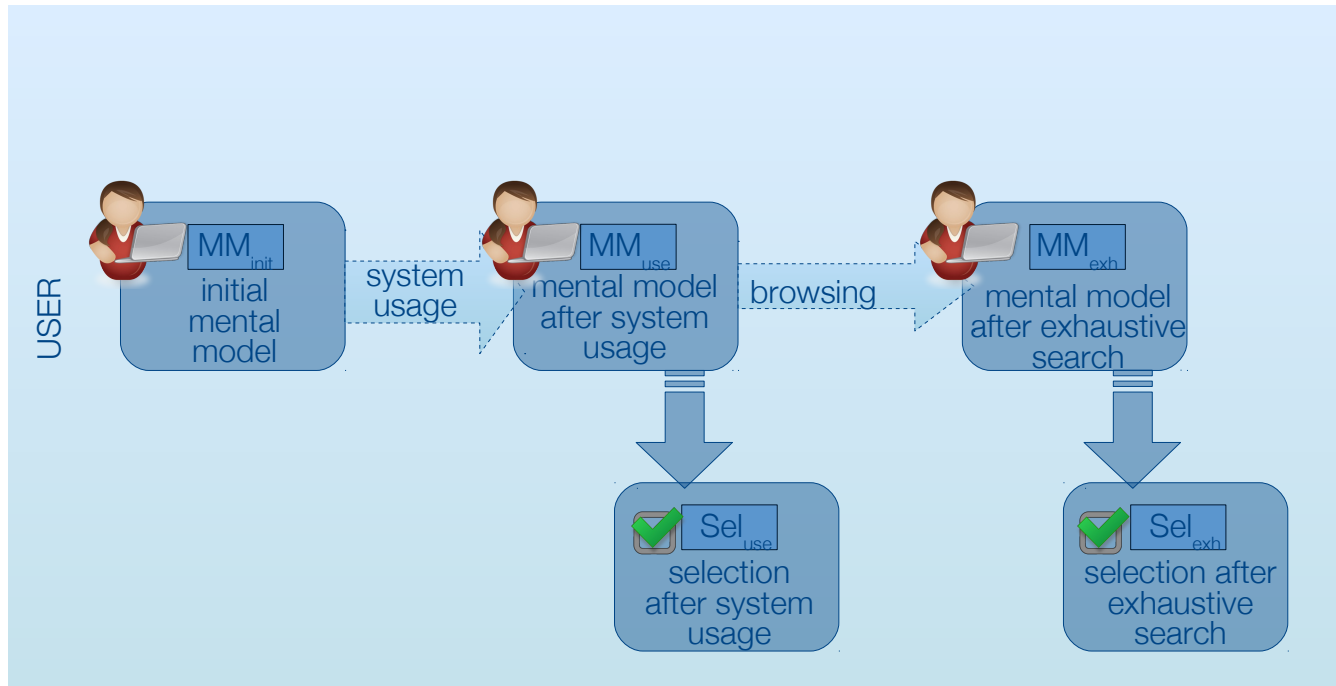
- manual selection by a human

R2 provide incentives for requirements construction and encourage to make tradeoffs

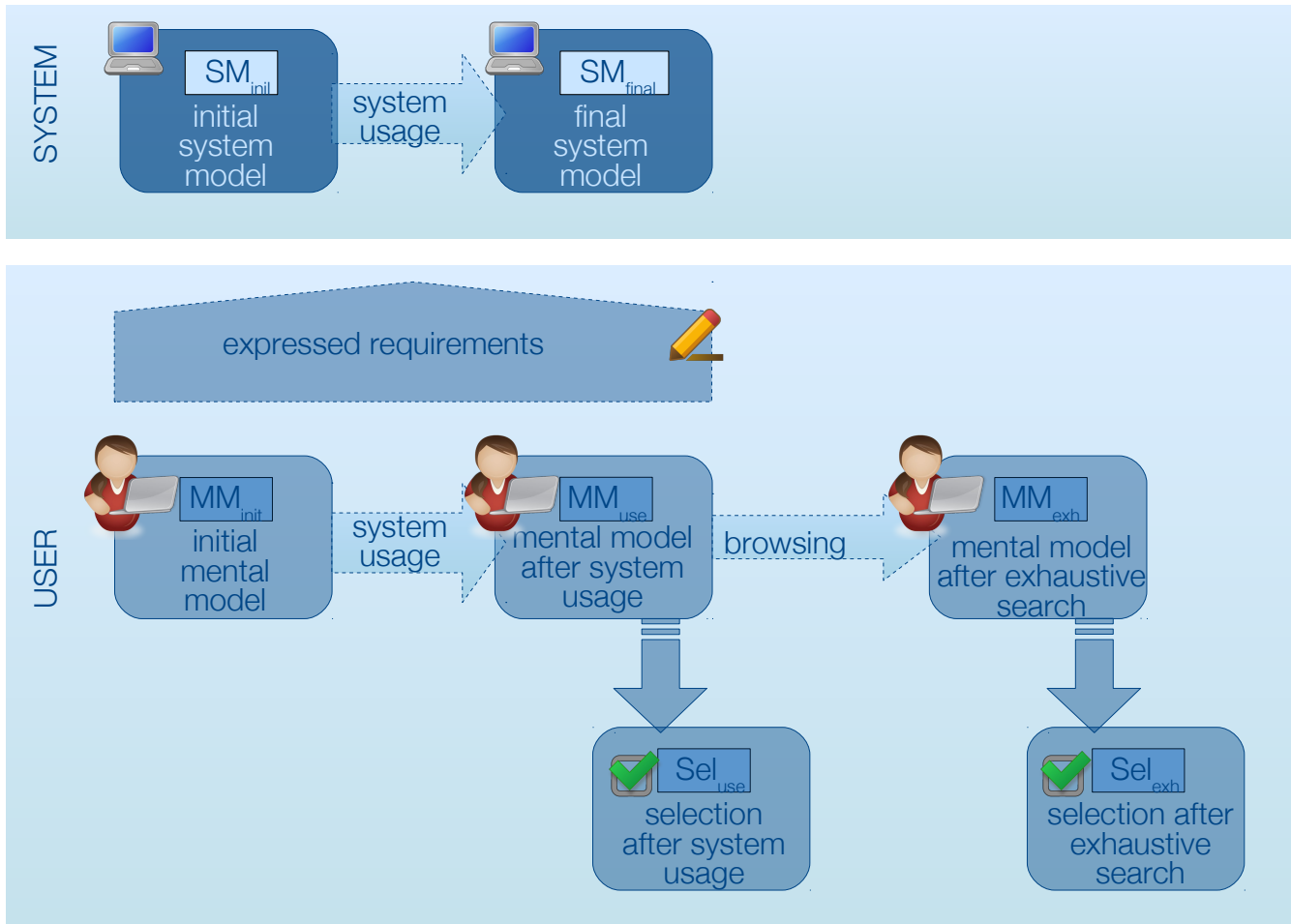
R3 educate about relevant service alternatives

R4 avoid inconsistent selection decisions

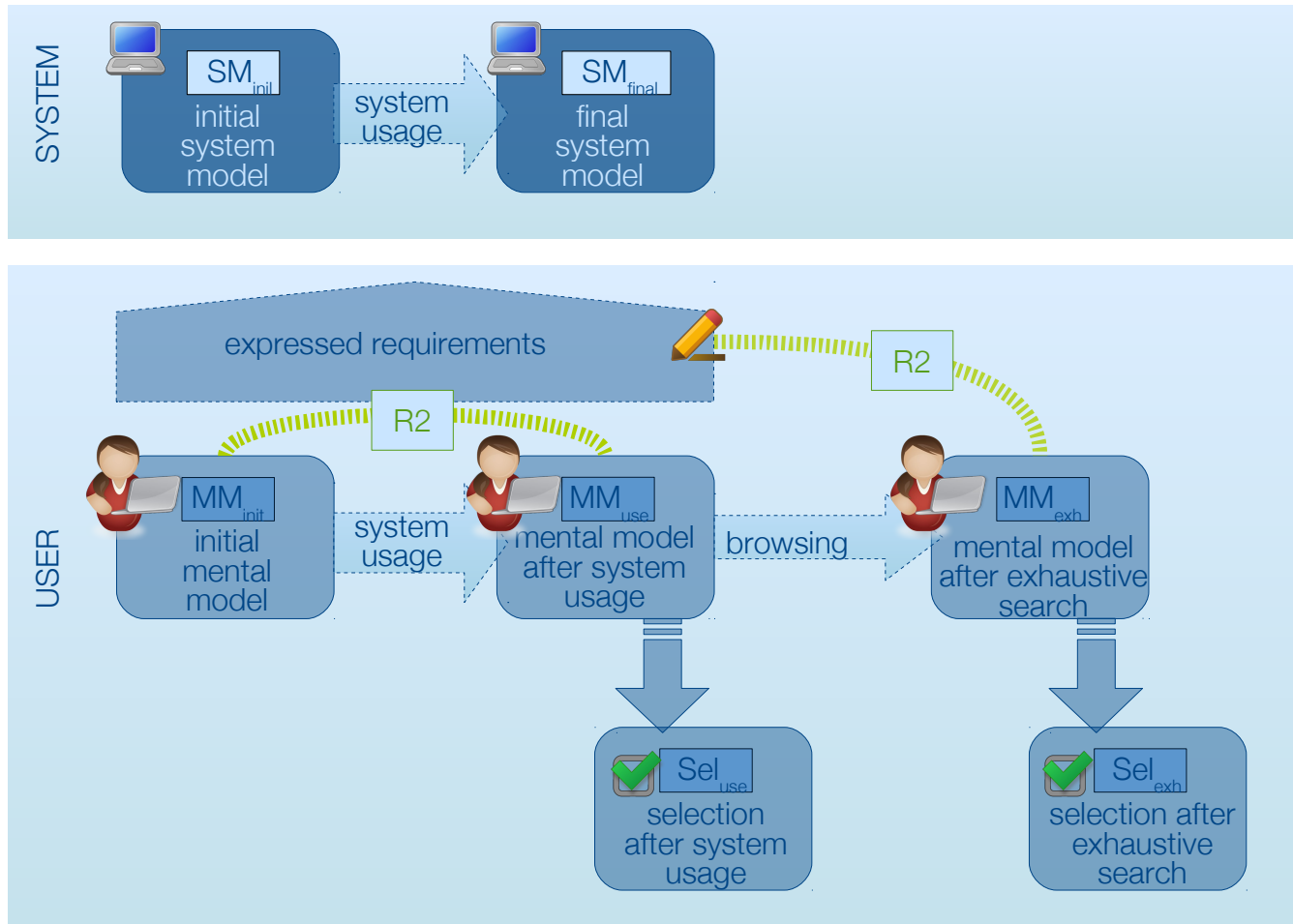
Evaluation Methodology



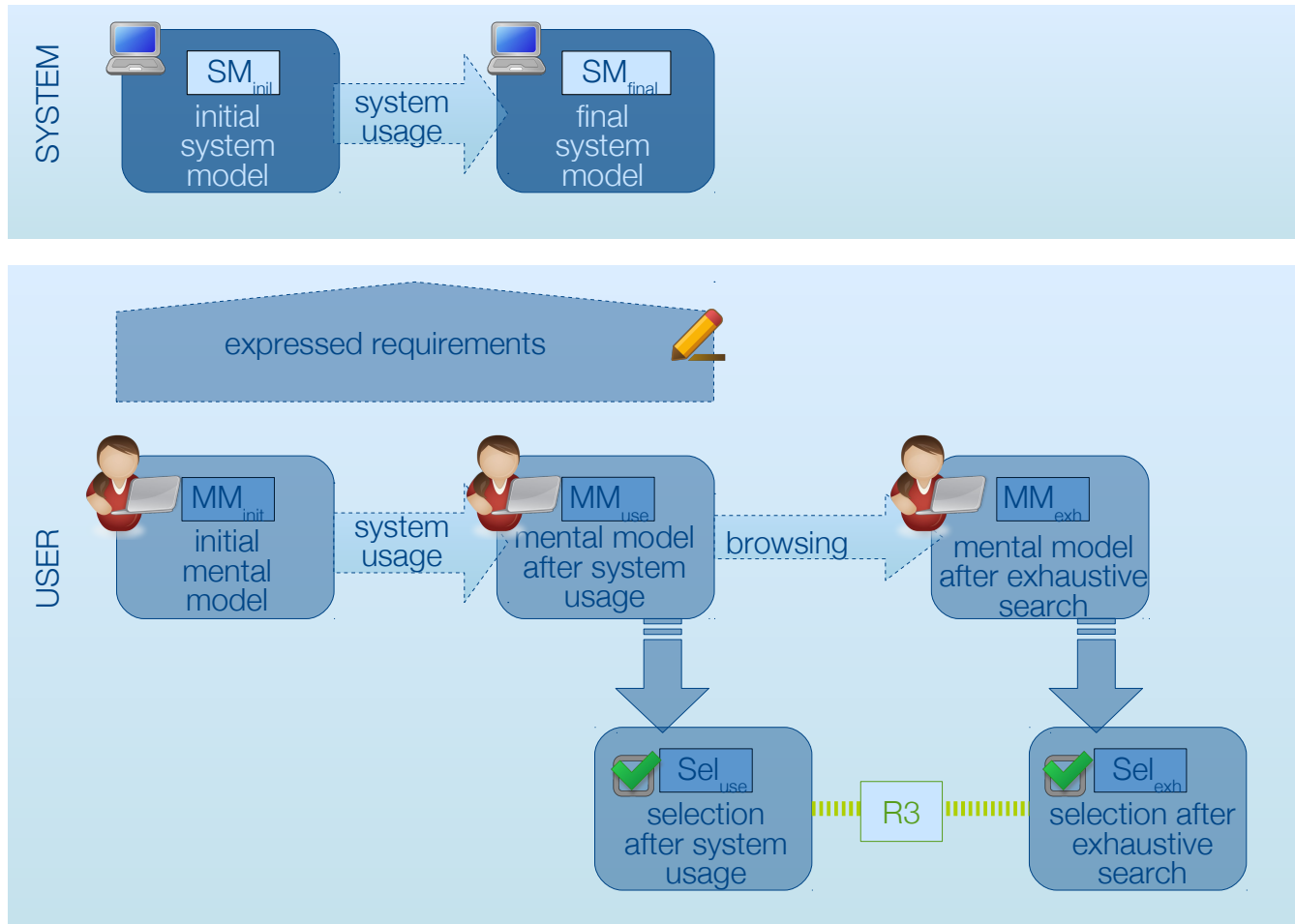
Evaluation Methodology



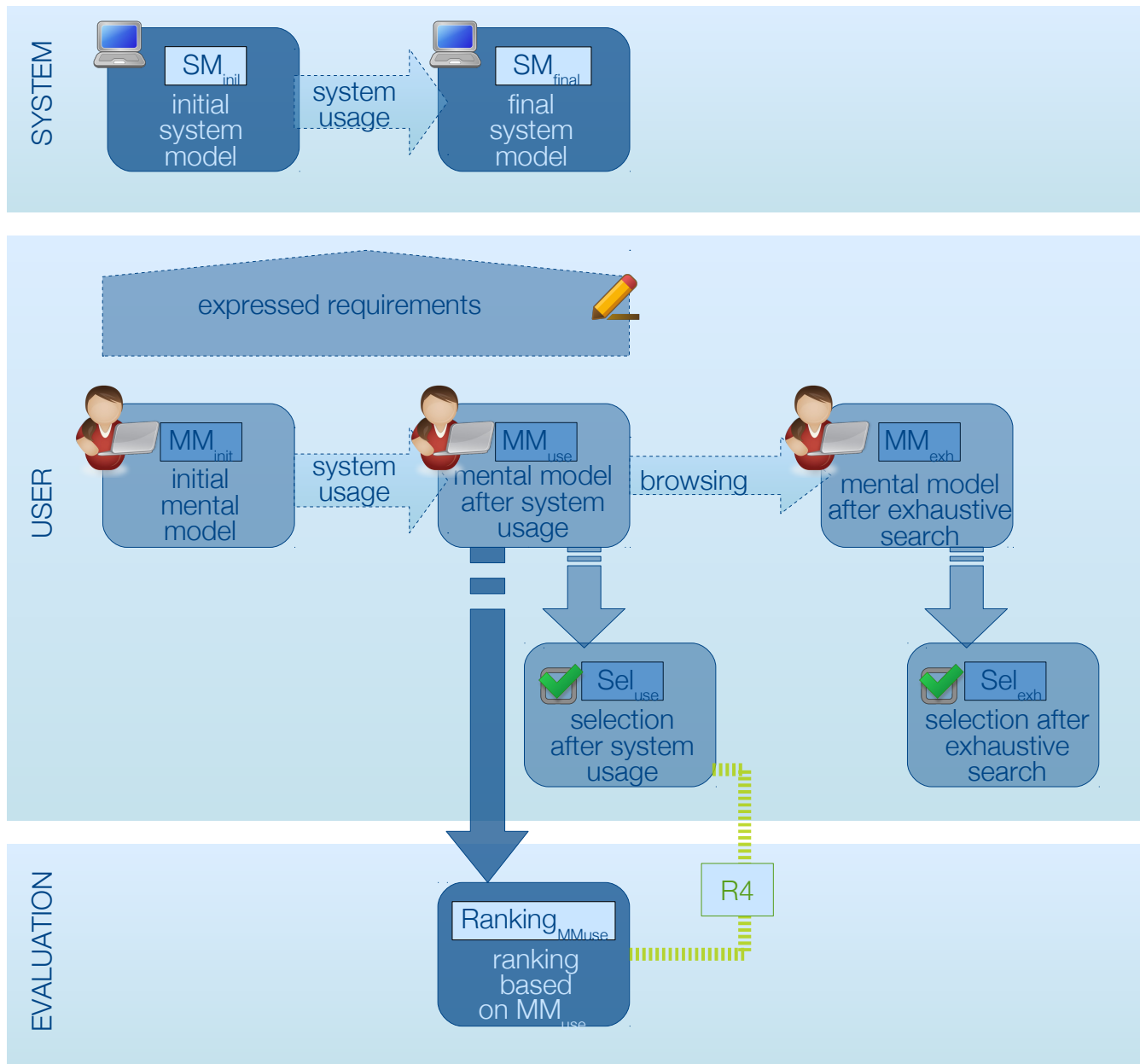
Verifying Requirements – Requirements Construction (R2)



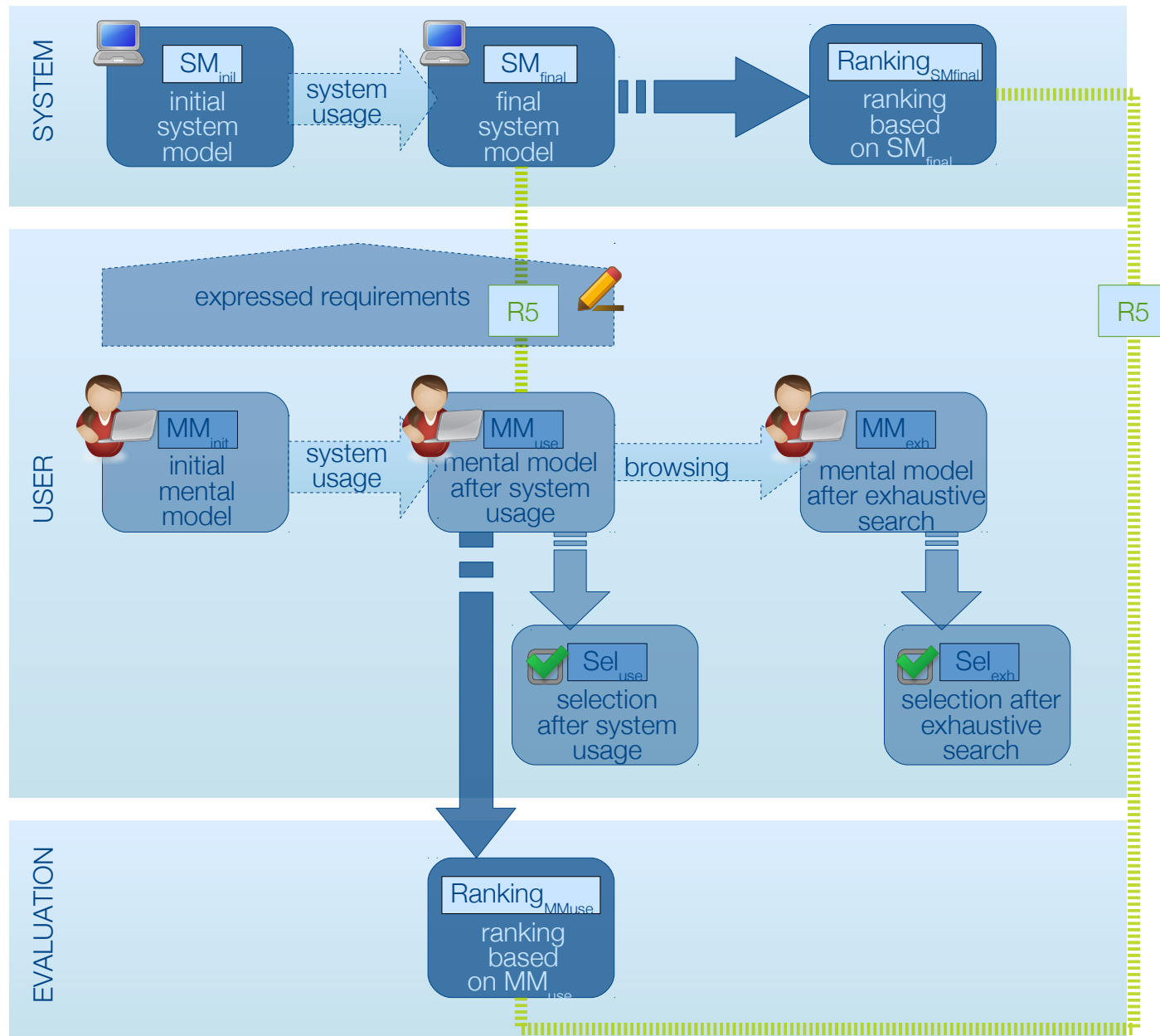
Verifying Requirements – Service Alternatives (R3)



Verifying Requirements – Consistent Selection (R4)



Verifying Requirements – Accurate Model (R5)



Conversational Service Selection

add service attributes

refine service attributes

service	EFFECT	entity	from	to	carrier	departure	price
service1	Owned	Transportation Ticket	Jena	Paris	Train	12.09.2012 10:38	156EUR
service2	Owned	Transportation Ticket	Jena	Paris	RailAndFly	12.09.2012 10:50	571EUR
service4	Owned	Transportation Ticket	Jena	Paris	RailAndFly	12.09.2012 11:50	571EUR
service5	Owned	Transportation Ticket	Jena	Paris	RailAndFly	12.09.2012 12:20	less ▾
service6	Owned	Transportation Ticket	Jena	Paris	Train	12.09.2012 12:38	156EUR
			...				

Available attributes ...

- airline (49%)
- trip duration (100%)
- intermediate hops (82%)

Available subtypes ...

- carrier → Train (46%)
- RailAndFly (49%)
- Bus (5%)

Tradeoff opportunities ...

- trip duration ↑ # intermediate hops >1 (82%)
- trip duration ↑, departure ↓ (70%)
- airline!=Lufthansa (100%)

91% of the offers fulfill your requirements.

compromise requirements

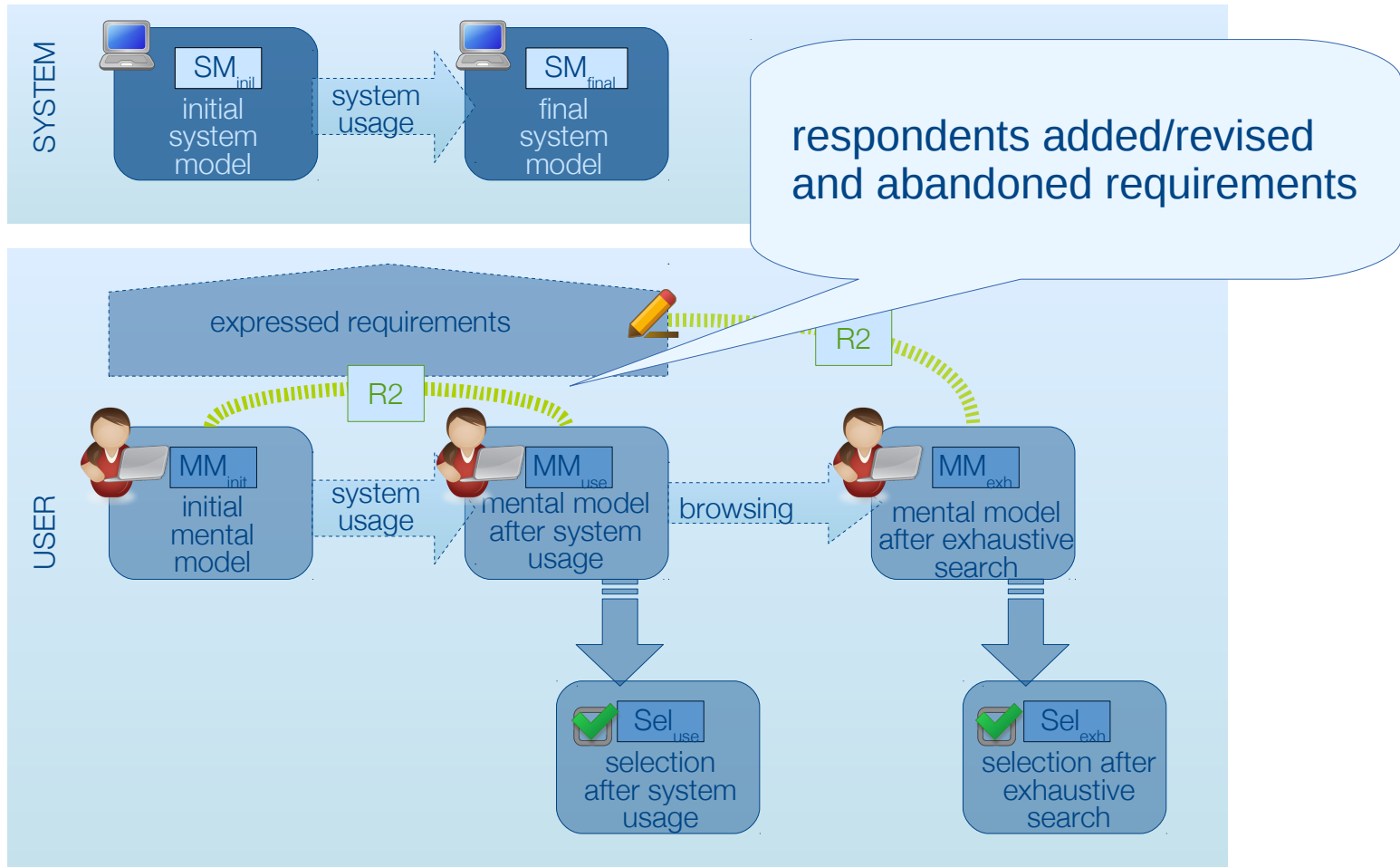
Case Study – Evaluation Setting

- study participants
 - 10 test users (6 males, 4 females, age 25 – 58 years)
 - 9 experience with online purchasing
 - 2 of them familiar with Web Services
- service offers
 - generated from structured information about computer items
 - from 8 categories (desktop PC, notebook, e-book reader, ...)
- participants had to choose from 200 services of one category

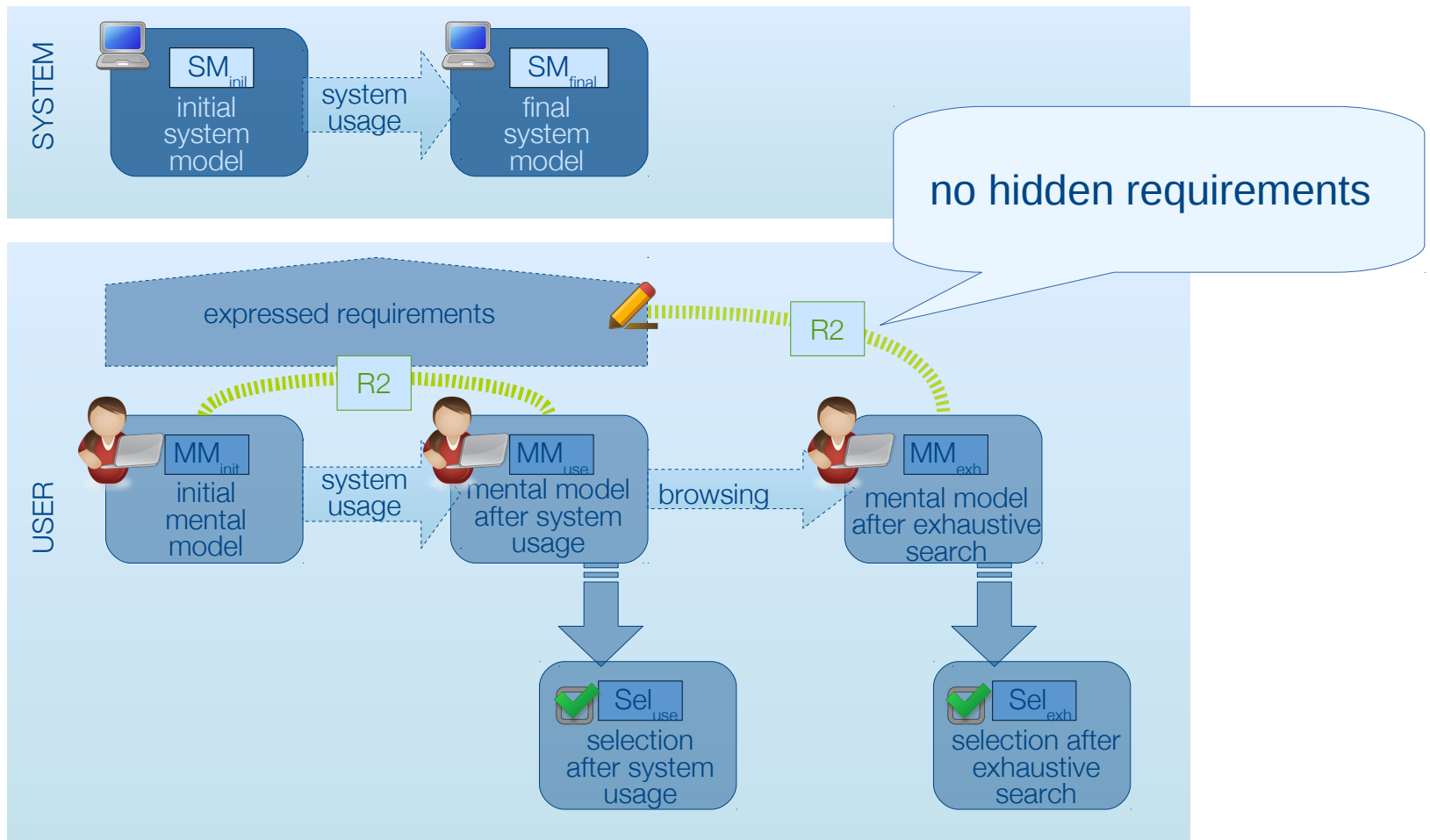
Case Study – Assessing Service Requirements

- asked participants
 - to indicate service aspects that are important to them
 - specify their requirements on these aspects and
 - to weight the indicated service aspects against each other
- put no restrictions
 - on type of these requirements or
 - the way of specifying them

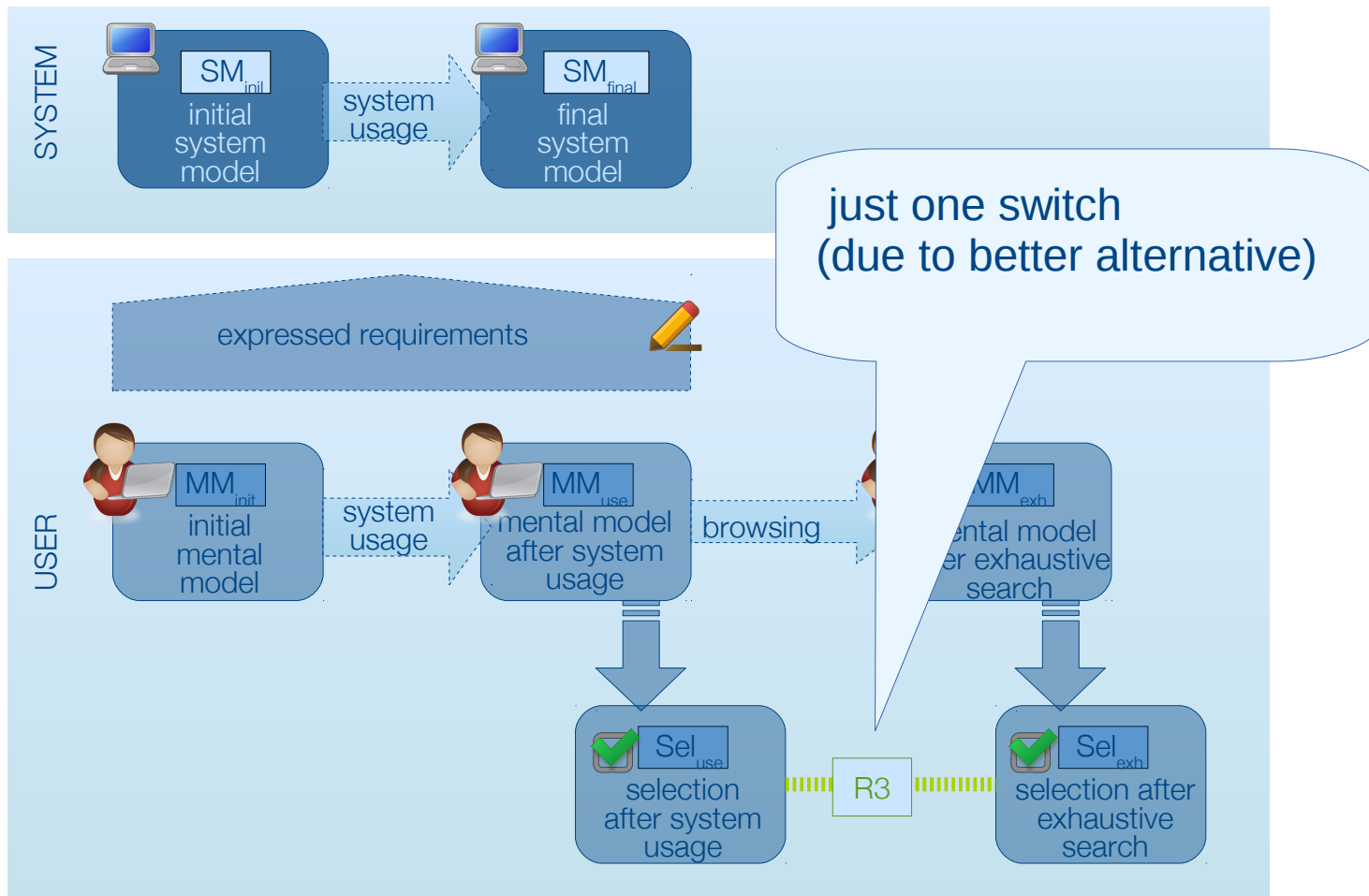
Selected Results – Requirements Construction (R2)



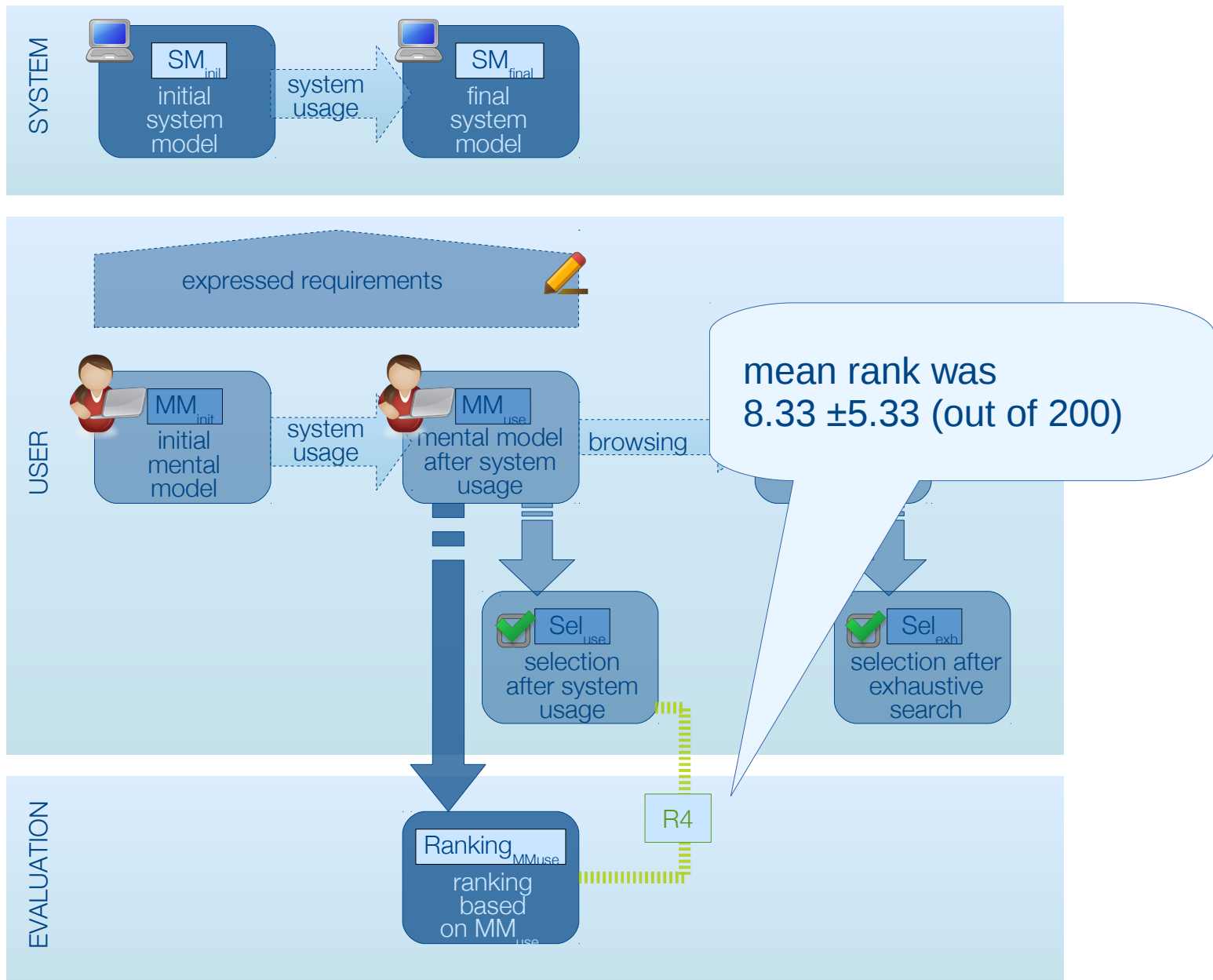
Selected Results – Requirements Construction (R2)



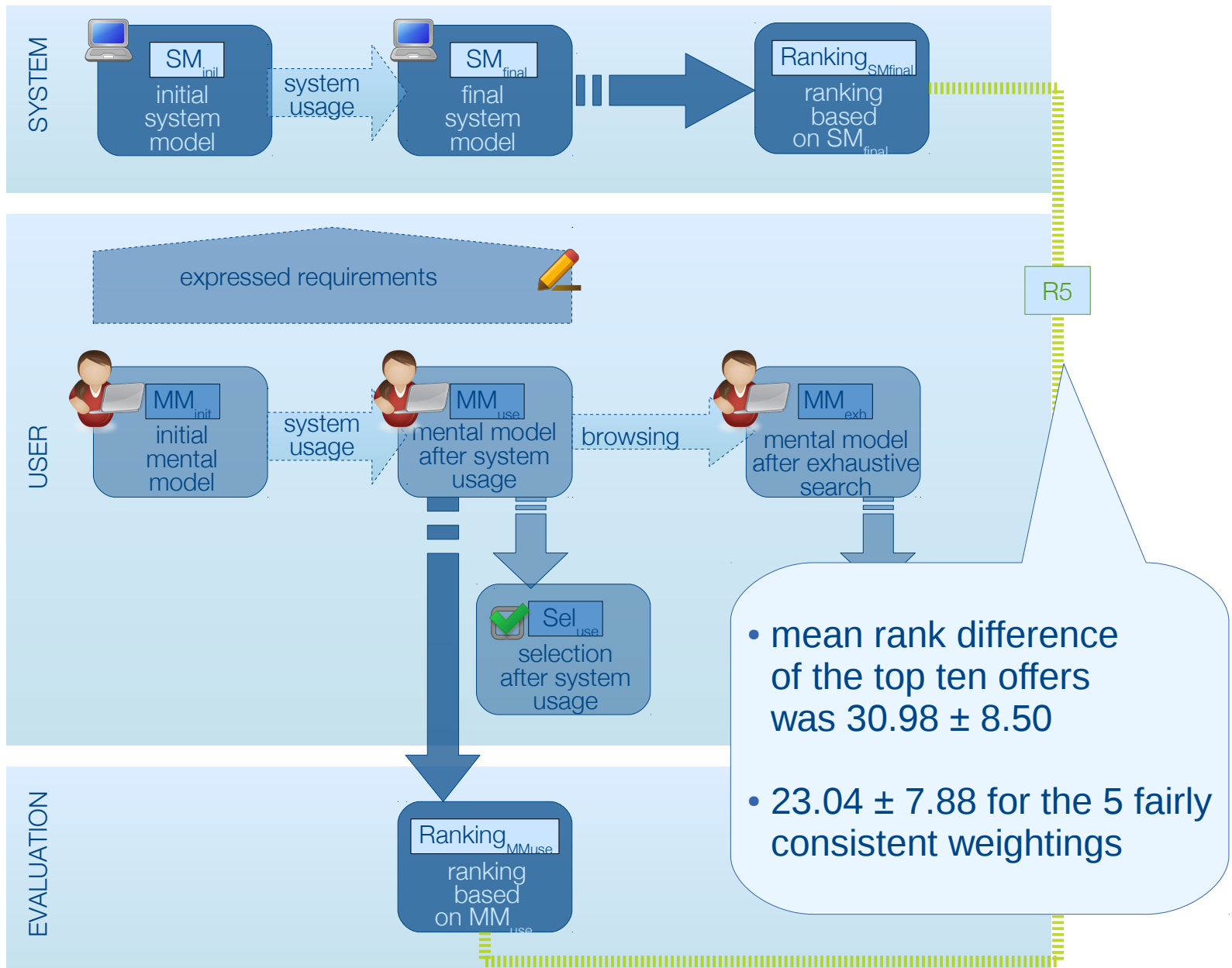
Selected Results – Service Alternatives (R3)



Selected Results – Consistent Selection (R4)



Selected Results – Accurate Model (R5)



Summary

- identified requirements to service selection in B2C scenarios
- presented a user-centered evaluation methodology w.r.t. these requirements
- case study demonstrated feasibility and appropriateness of the suggested approach