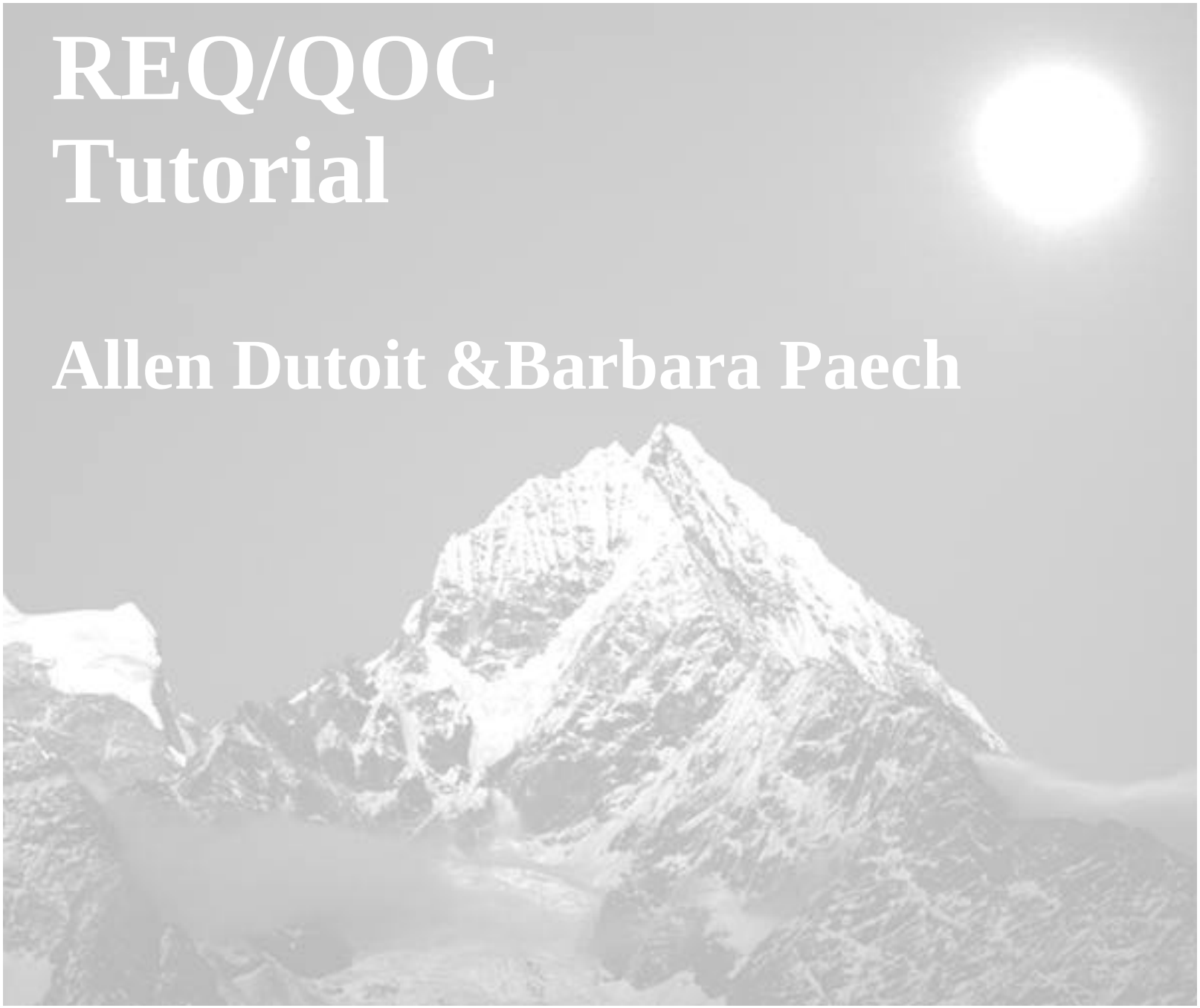
Object-Oriented Software Engineering
Conquering Complex and Changing Systems

REQ/QOC Tutorial

Allen Dutoit &Barbara Paech



Preliminaries

For everybody:

- Today:
  - **REQ/QOC tutorial**
- Next week
  - **Thursday: Configuration Management lecture**
  - **Friday: TogetherJ tutorial**

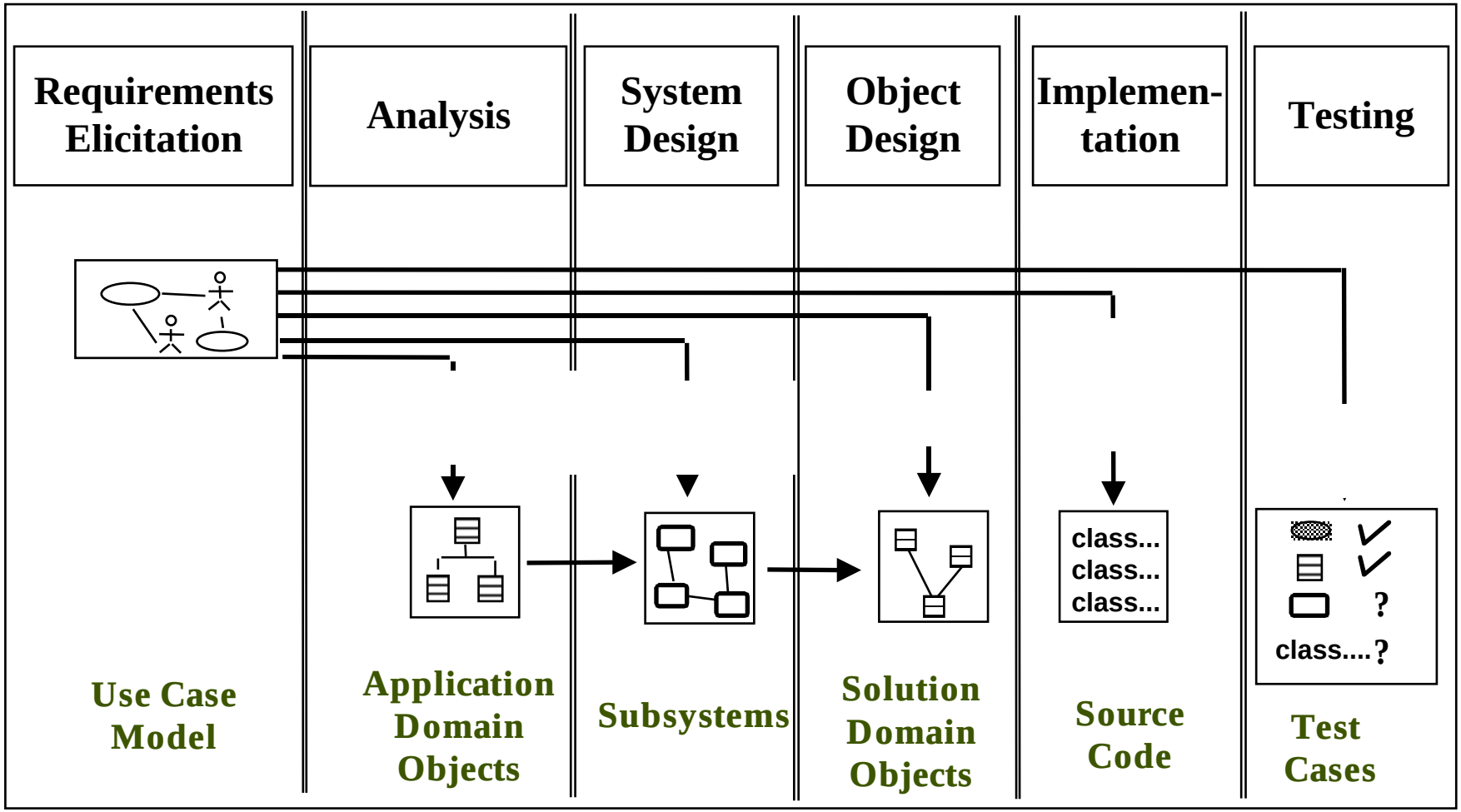
For STARS students:

- Today:
  - **Post your GUI Mockup in PowerPoint or HTML on the Bboard**
  - **Post the name of the presenter for Monday's review**
- Monday
  - **GUI Mockup review (5-10 minutes for each team).**

Tutorial outline

- Requirements engineering
  - **Summary from last 2 lectures**
- Requirements engineering process for STARS
  - **Elicitation & review with REQ/QOC**
  - **Analysis with TogetherJ**
- SuperMarket example
- REQ/QOC
  - **Requirements elicitation**
  - **Review & collaboration**
- Summary & next steps

Requirements Engineering Summary



Requirements specification

A requirements specification includes 3 descriptions:

Requirements Elicitation:

System specification (use case model)

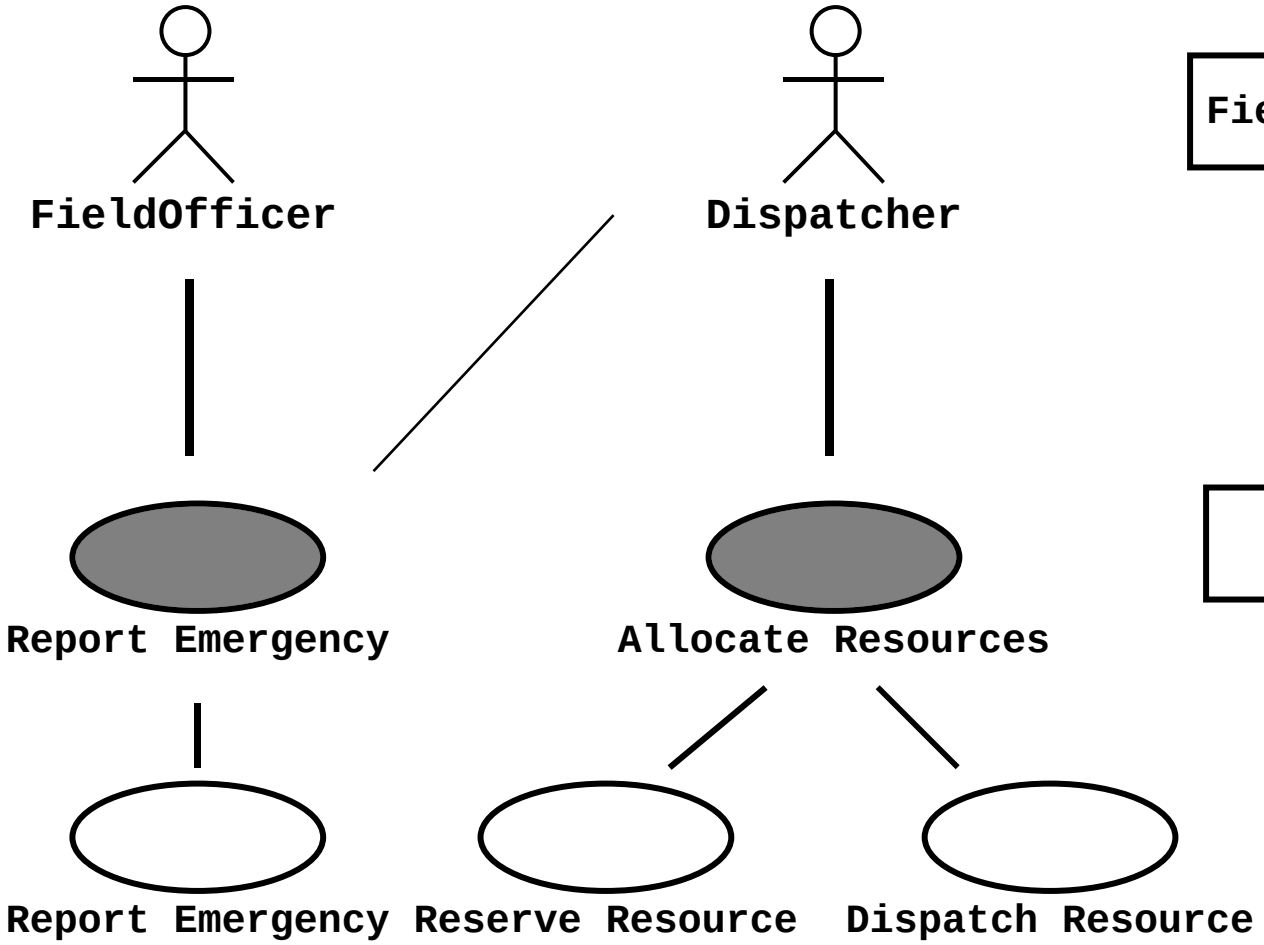
- *Requirements:* What do users do?
- *Interactions:* How do users use the system to accomplish their work?

Analysis:

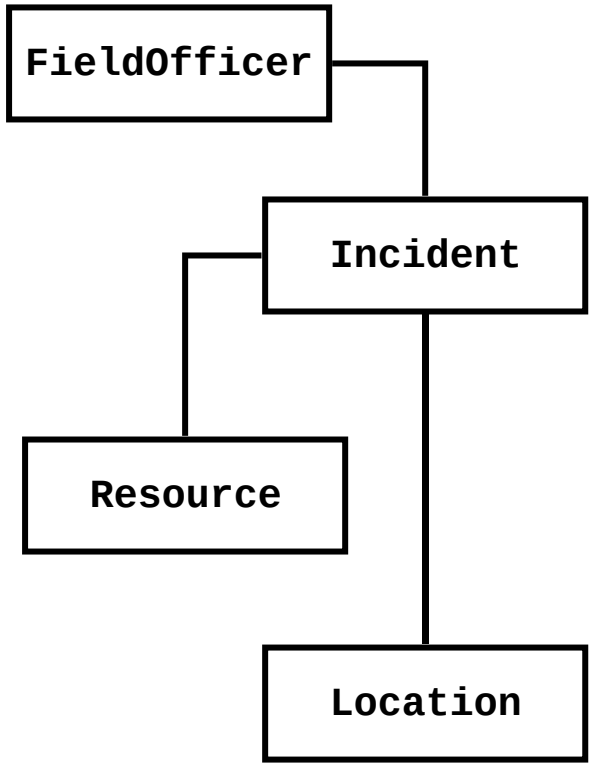
Requirements analysis model (object model) → ♦ *Specification:* What does the system do?

Requirements specification (continued)

System specification



Requirements analysis model



Requirements elicitation activities

- Define the boundary of the system:
  - **Identify and describe actors**
- Define the needs of the user
  - **Describe one or more user tasks per actor**
- Describe the interactions between the actors and the system
  - **Describe one or more use cases per user task**
  - **Exceptions & nonfunctional constraints**
- Describe the functionality of the system
  - **Identify all services needed to realize the use cases**
  - **Each use case uses one or more services**
  - **Each service can be used by one or more use cases**
- Review the system specification with the client

Process for STARS (1)

- REQ/QOC for the requirements specification
  - **Web-based tool**
  - **Actors, User Tasks, Use Cases, & Services**
  - **Constraints & Glossary**

- REQ/QOC for review and negotiation
  - **Questions, Options, Criteria, Assessments**
  - **Discussion**
  - **What's new, what's revised, conflict detection**

- TogetherJ for Analysis (class diagram)

Process for STARS (2)

Instructors/coaches

7.11 RAD v.0 from coaches

- **Actors & user tasks**

Teams

Before 17.11

- **Questions to coaches**

17.11 RAD v.1 due

- **Add'l user tasks**
- **Use cases, Services, Constraints**
- **Glossary**

20.11 Requirements review

21.11 Questions from coaches

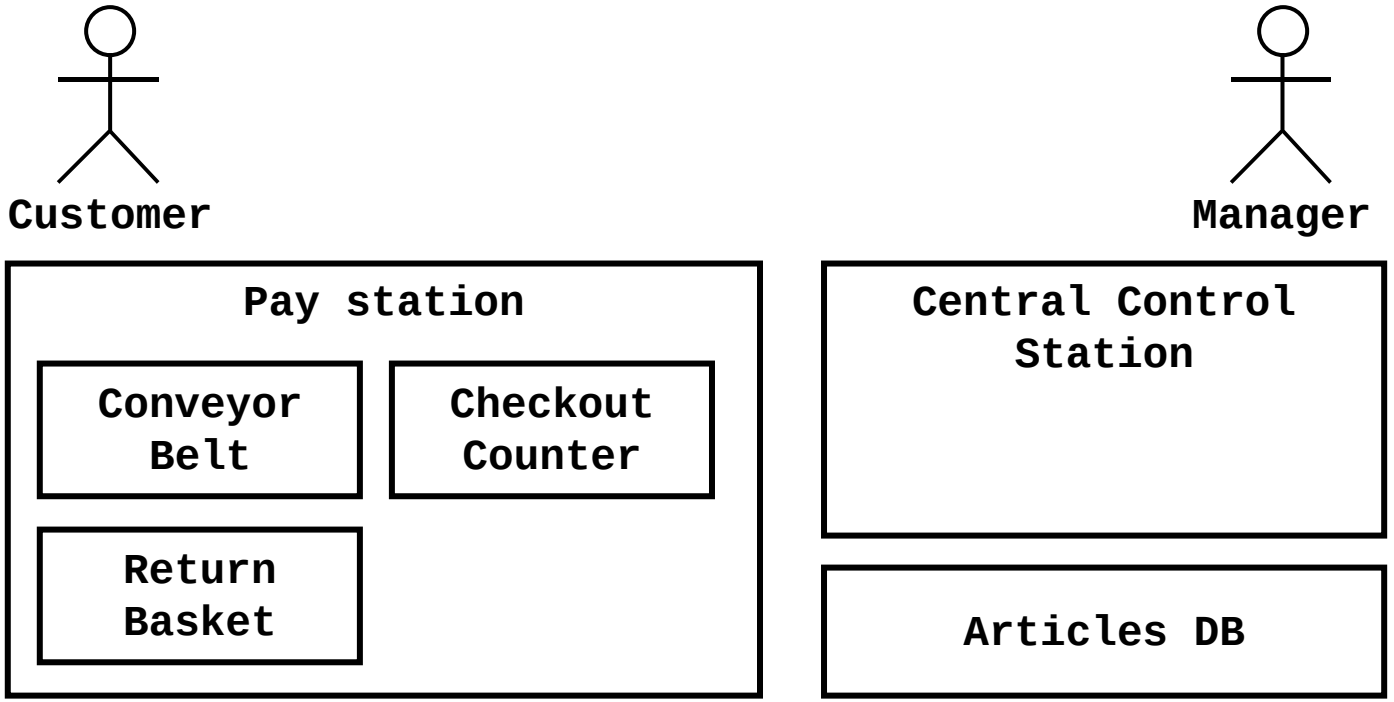
24.11 RAD v.2 due

- **Options, assessments**
- **Decisions**
- **Revised requirements elements**
- ***Analysis (TogetherJ)***

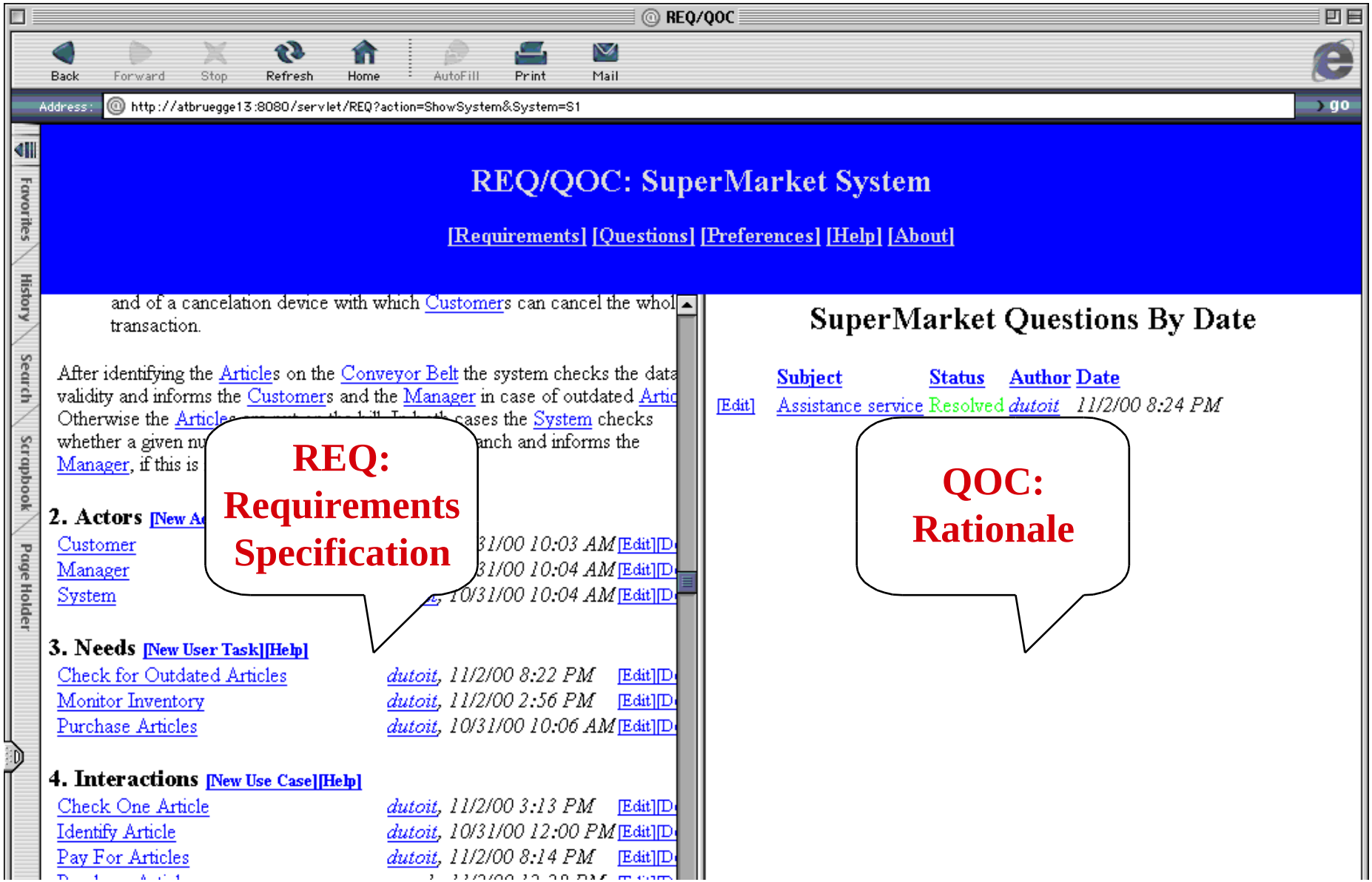
27.11 More questions ...

SuperMarket: Problem statement

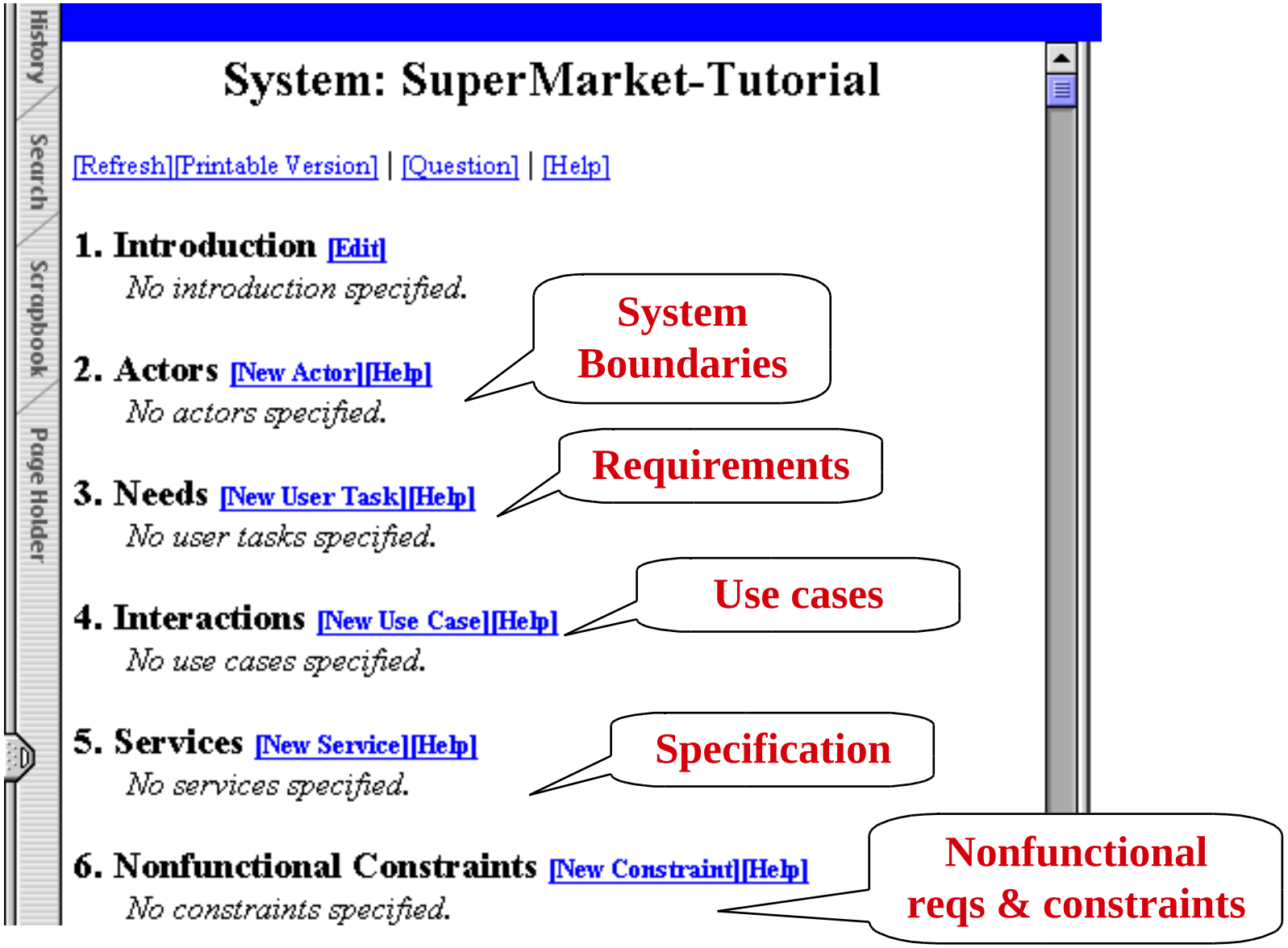
- Food vendor needs new pay system:
  - **Articles can be purchased by customers**
  - **Manager can monitor inventory**
  - **System periodically checks for outdated articles**



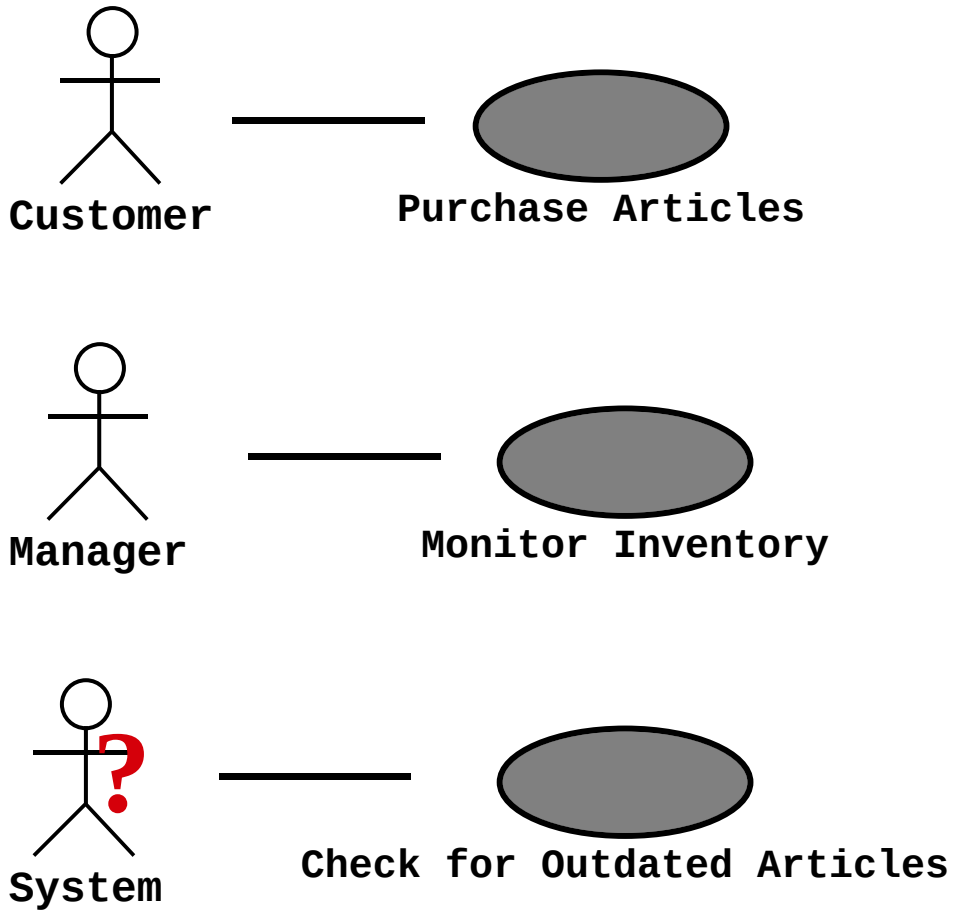
REQ/QOC: Overview



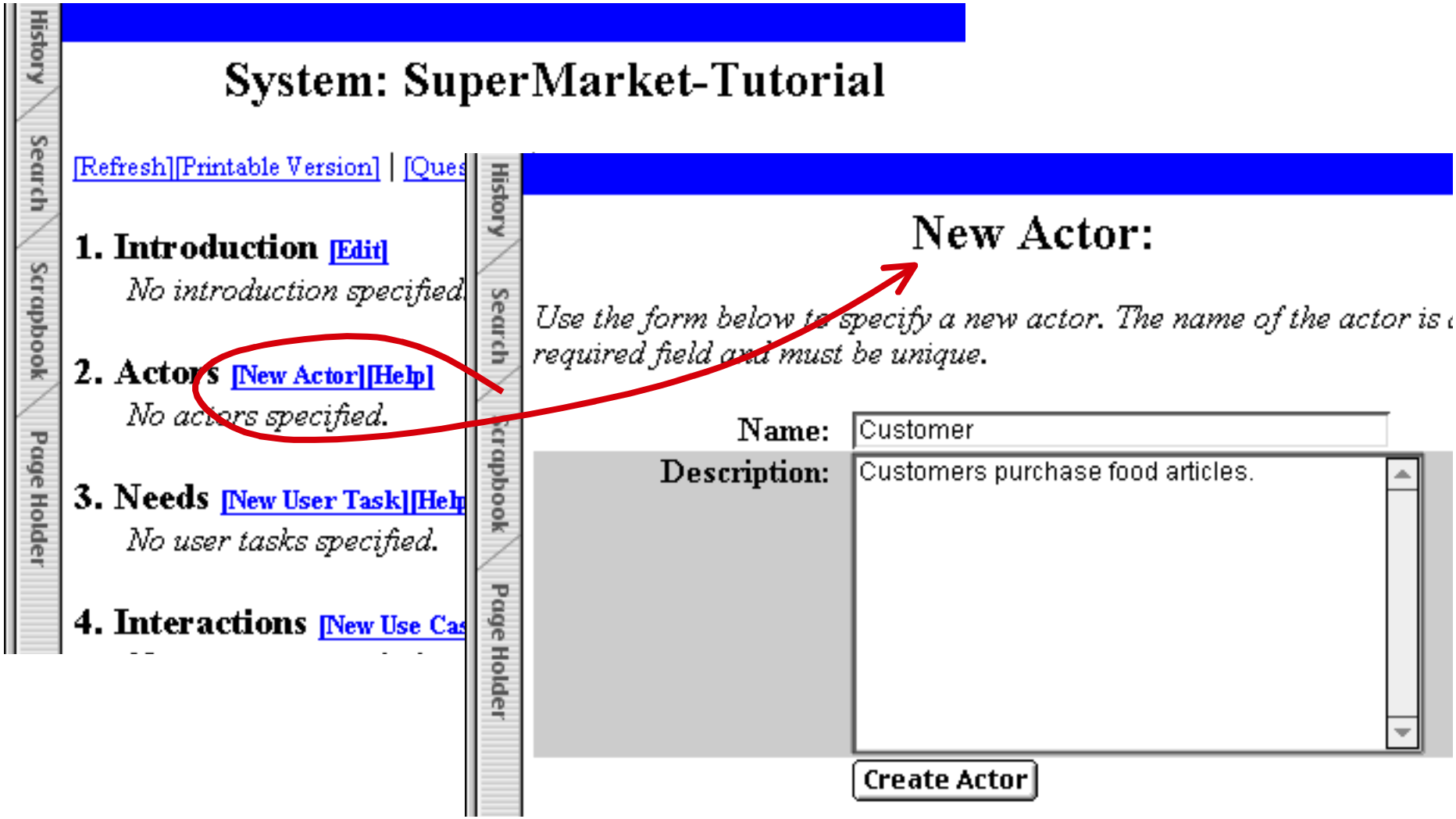
REQ/QOC: Overview (2)



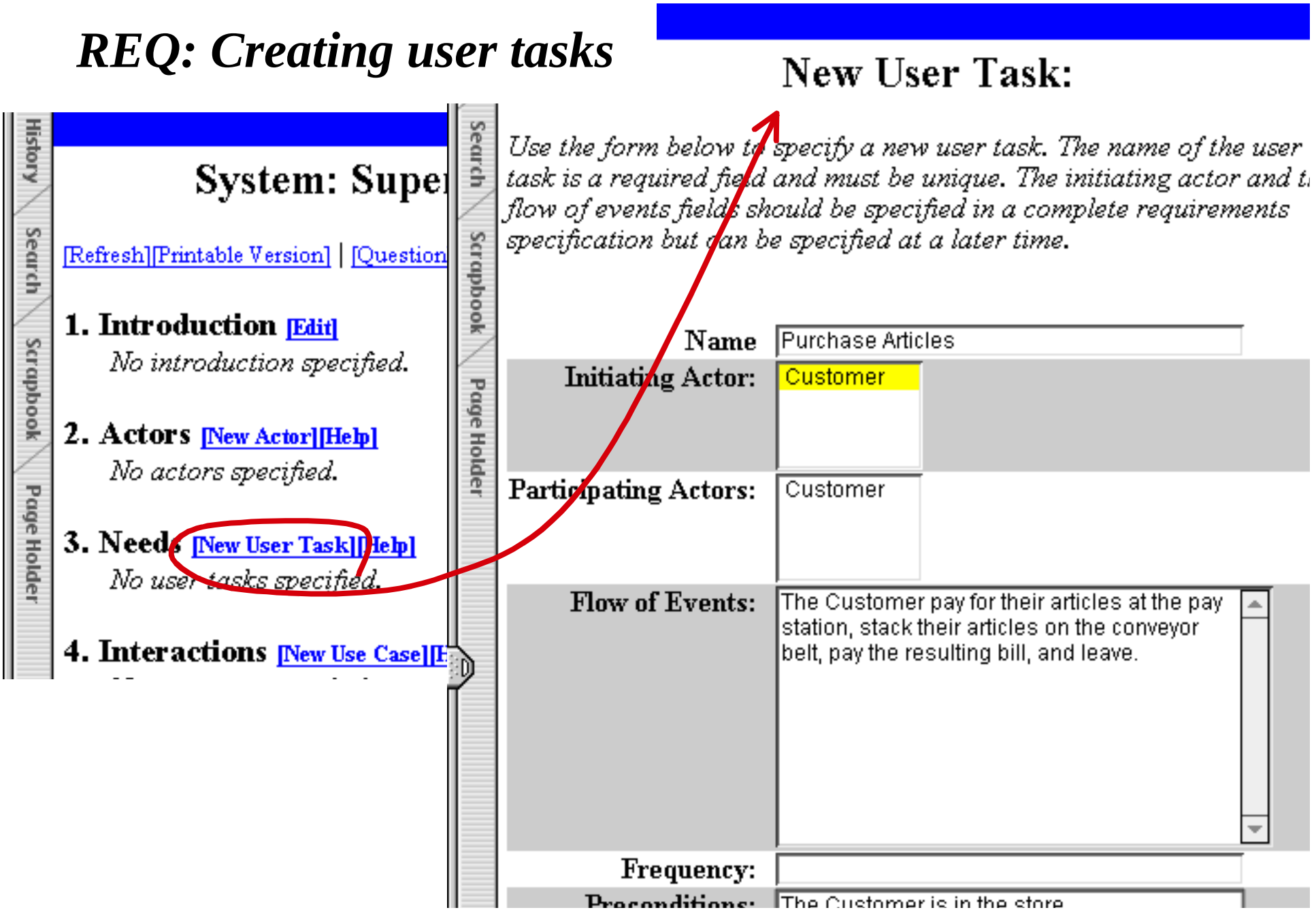
SuperMarket: Identifying Actors & User Tasks



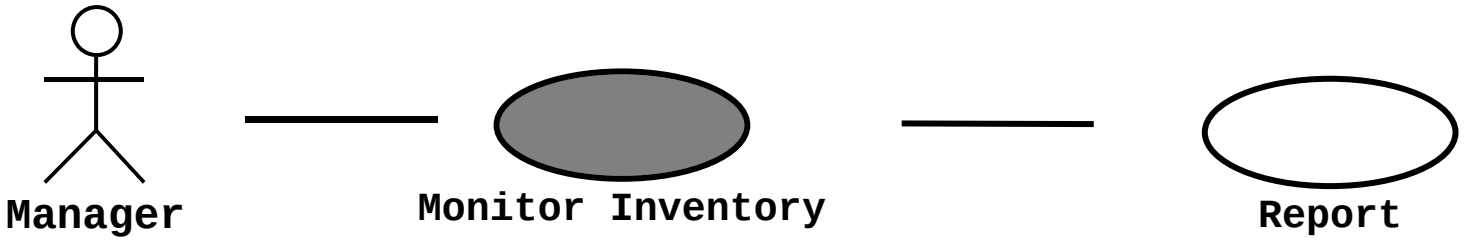
REQ: Creating actors



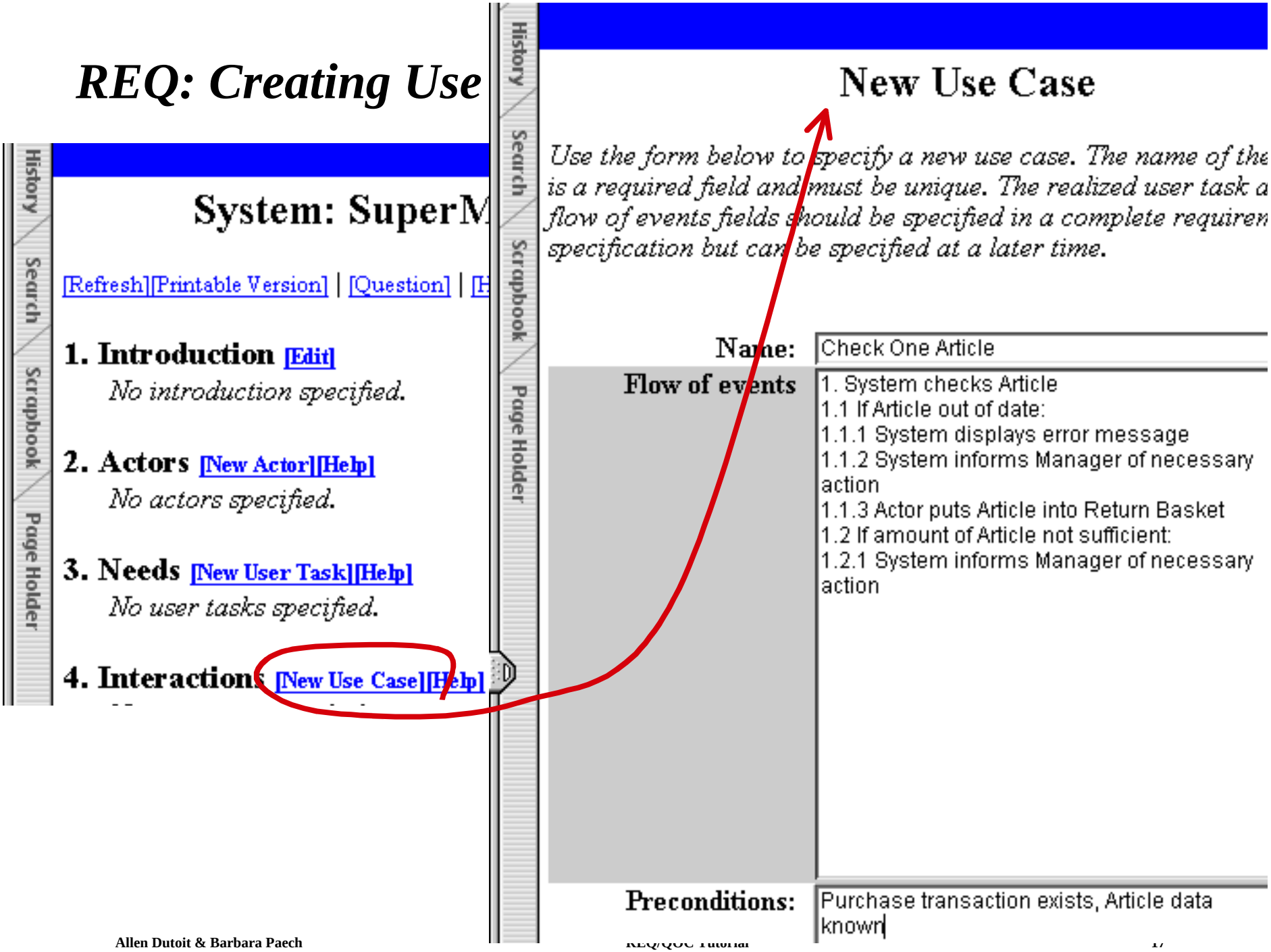
REQ: Creating user tasks



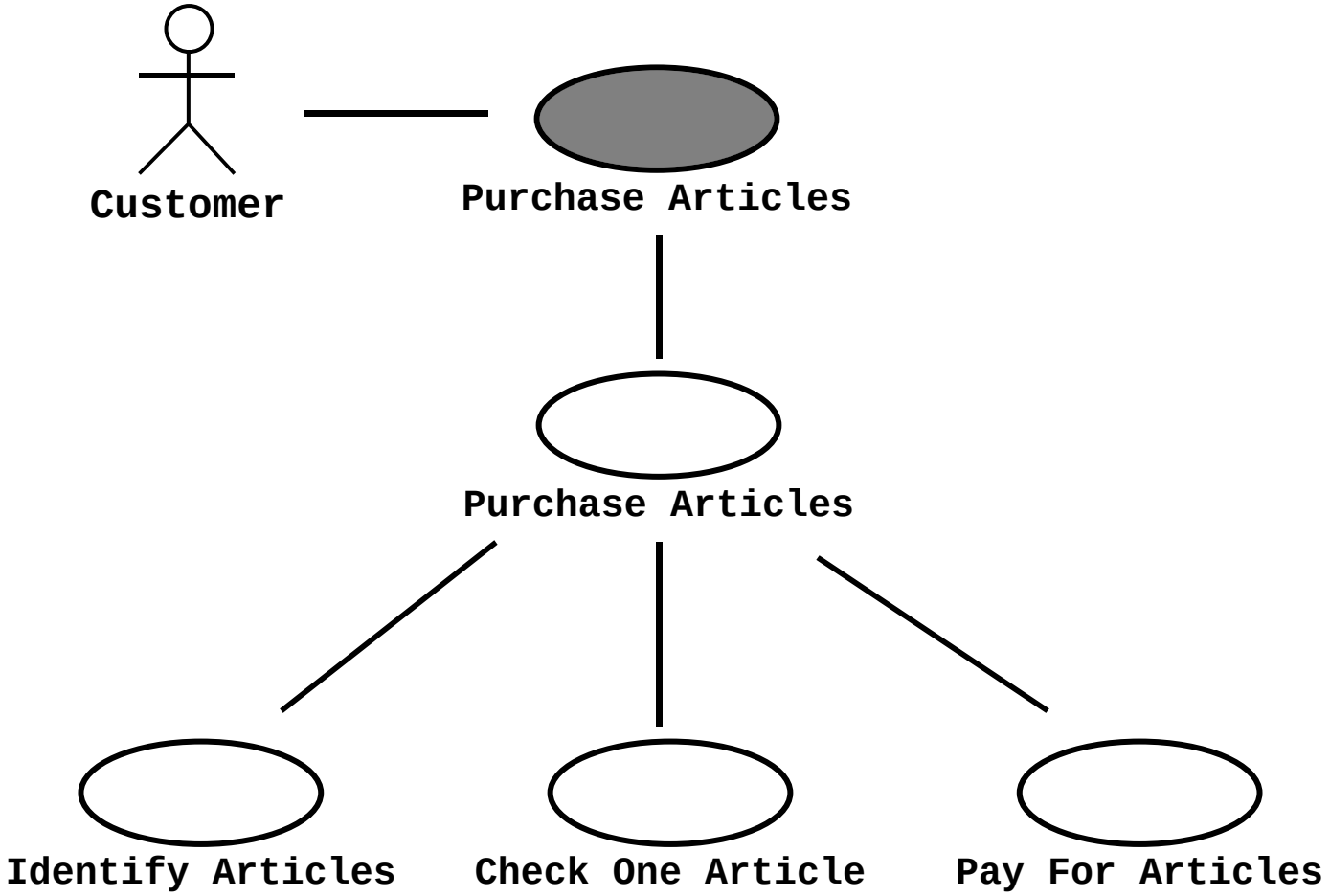
SuperMarket: Identifying Use Cases



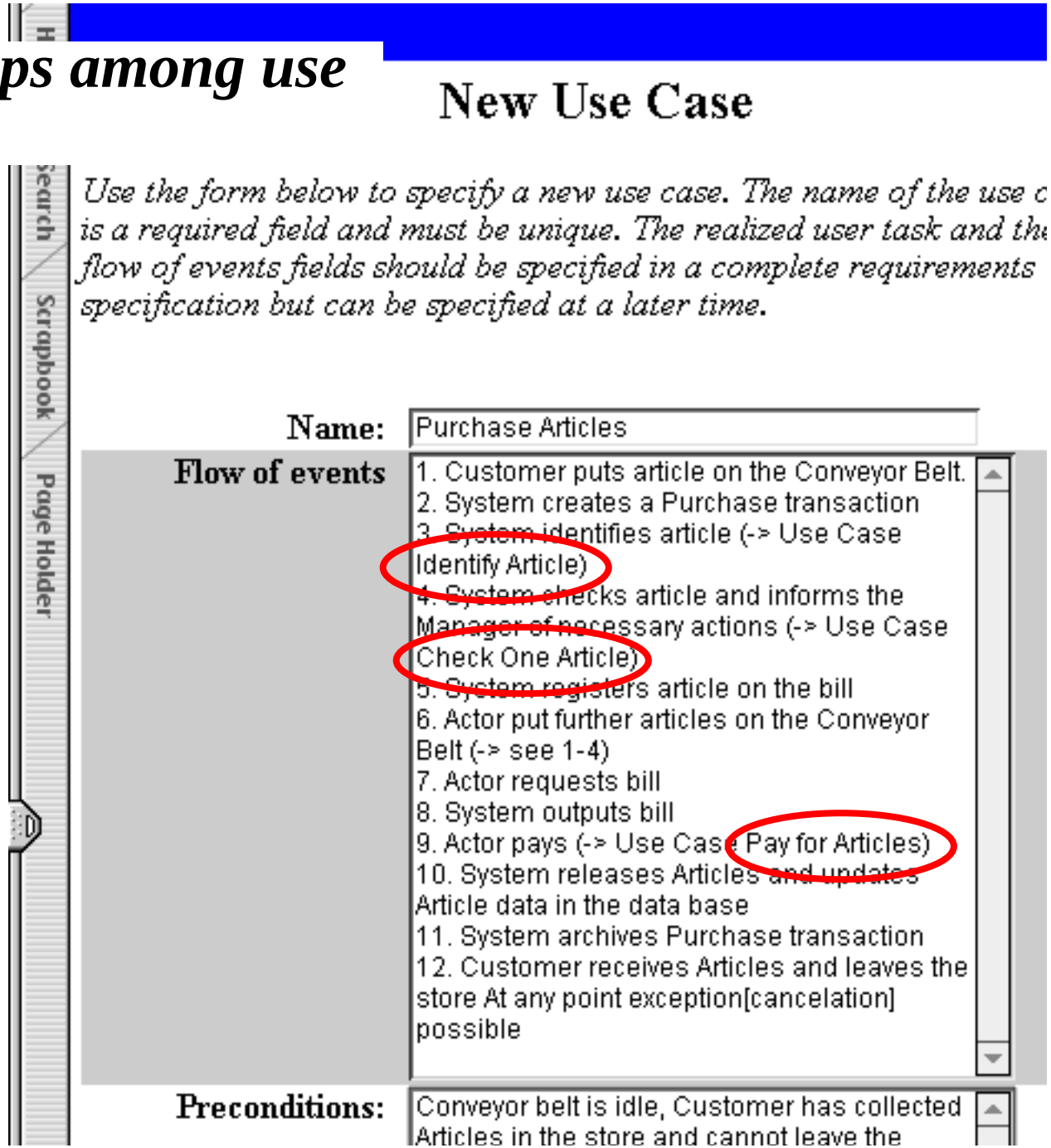
REQ: Creating Use



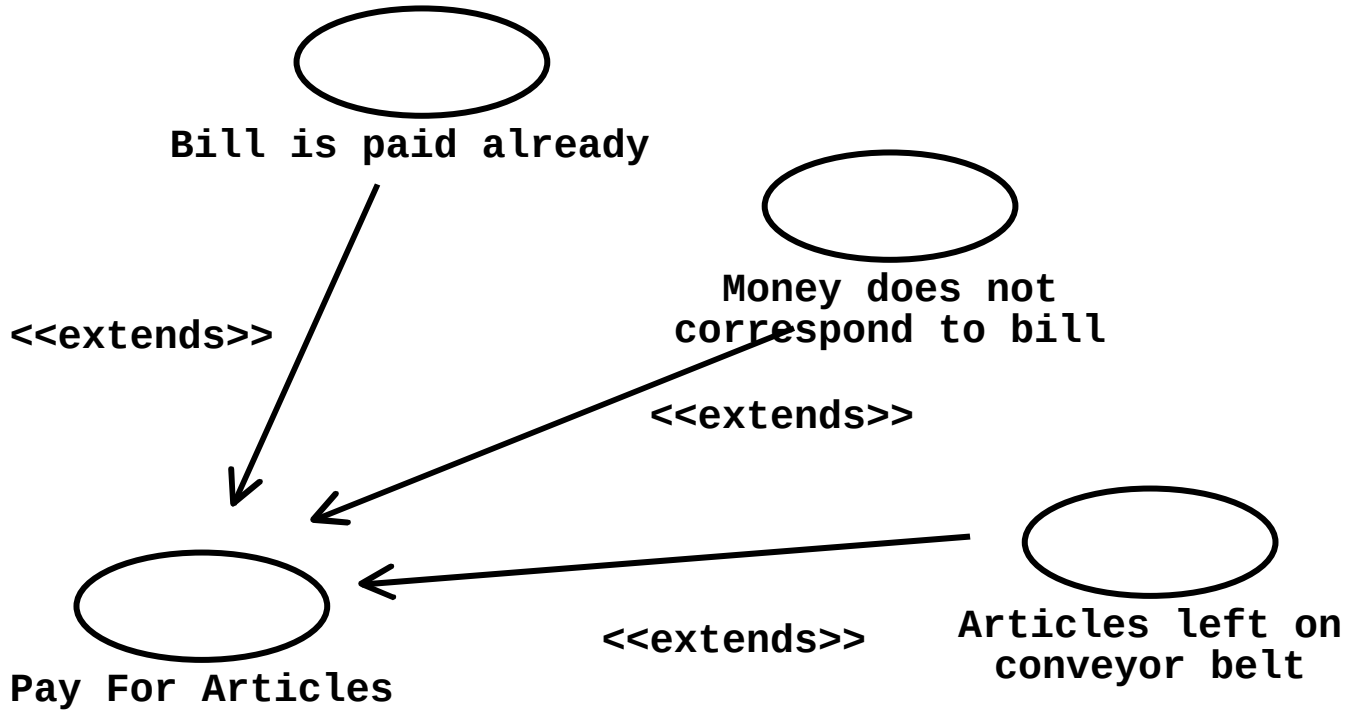
SuperMarket: Refining Use Cases



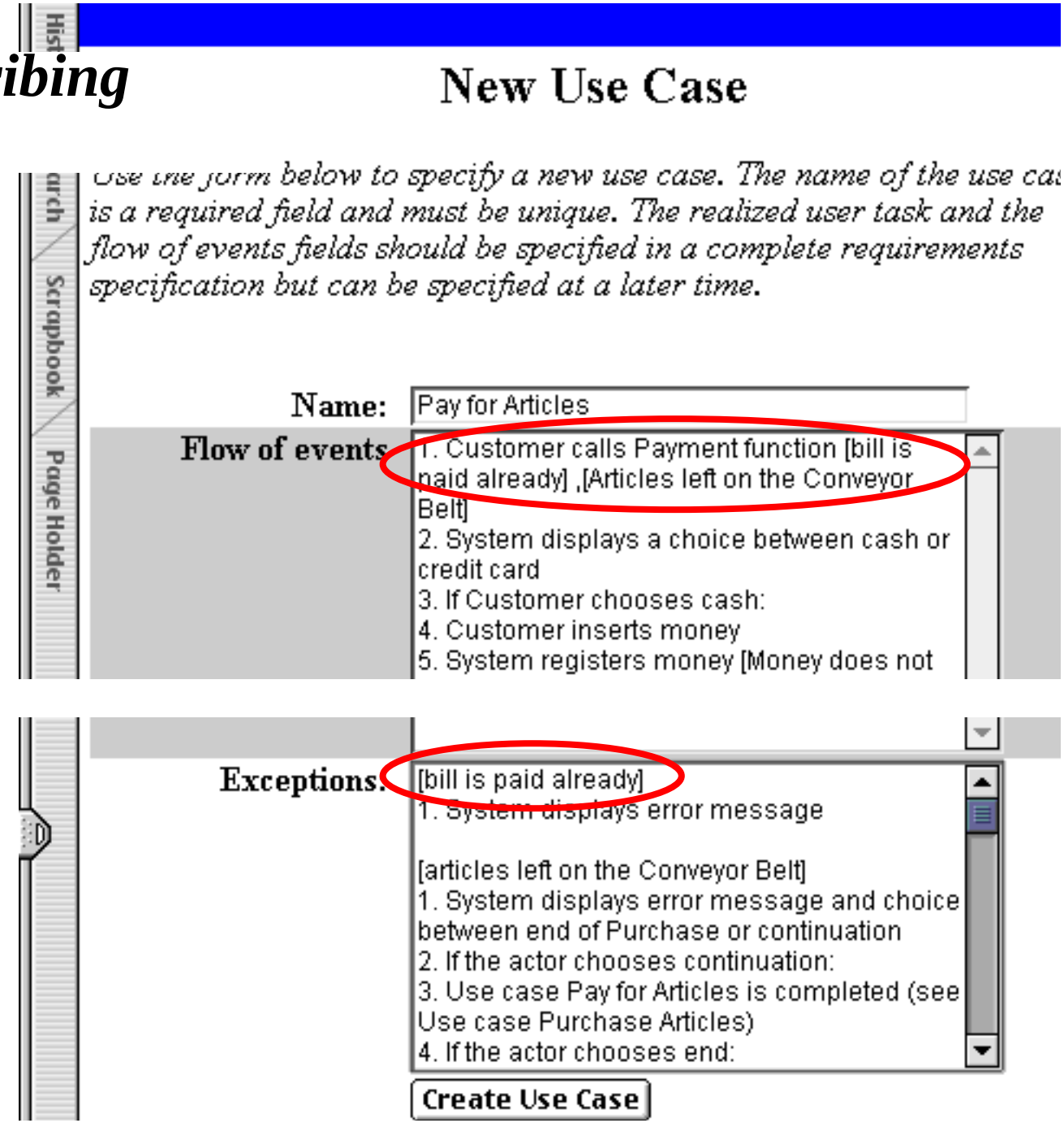
REQ: Relationships among use cases



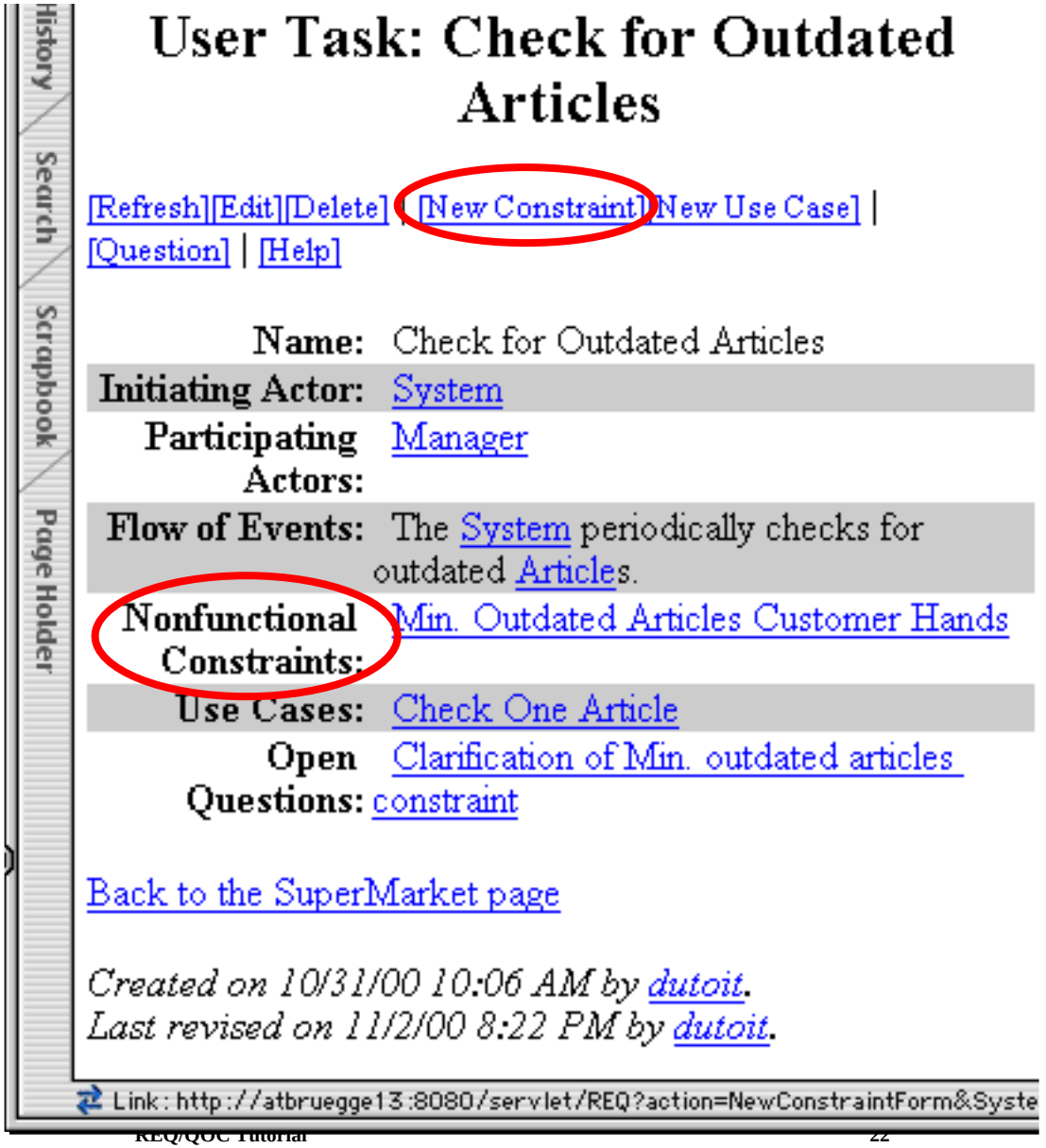
SuperMarket: Identifying Exceptions



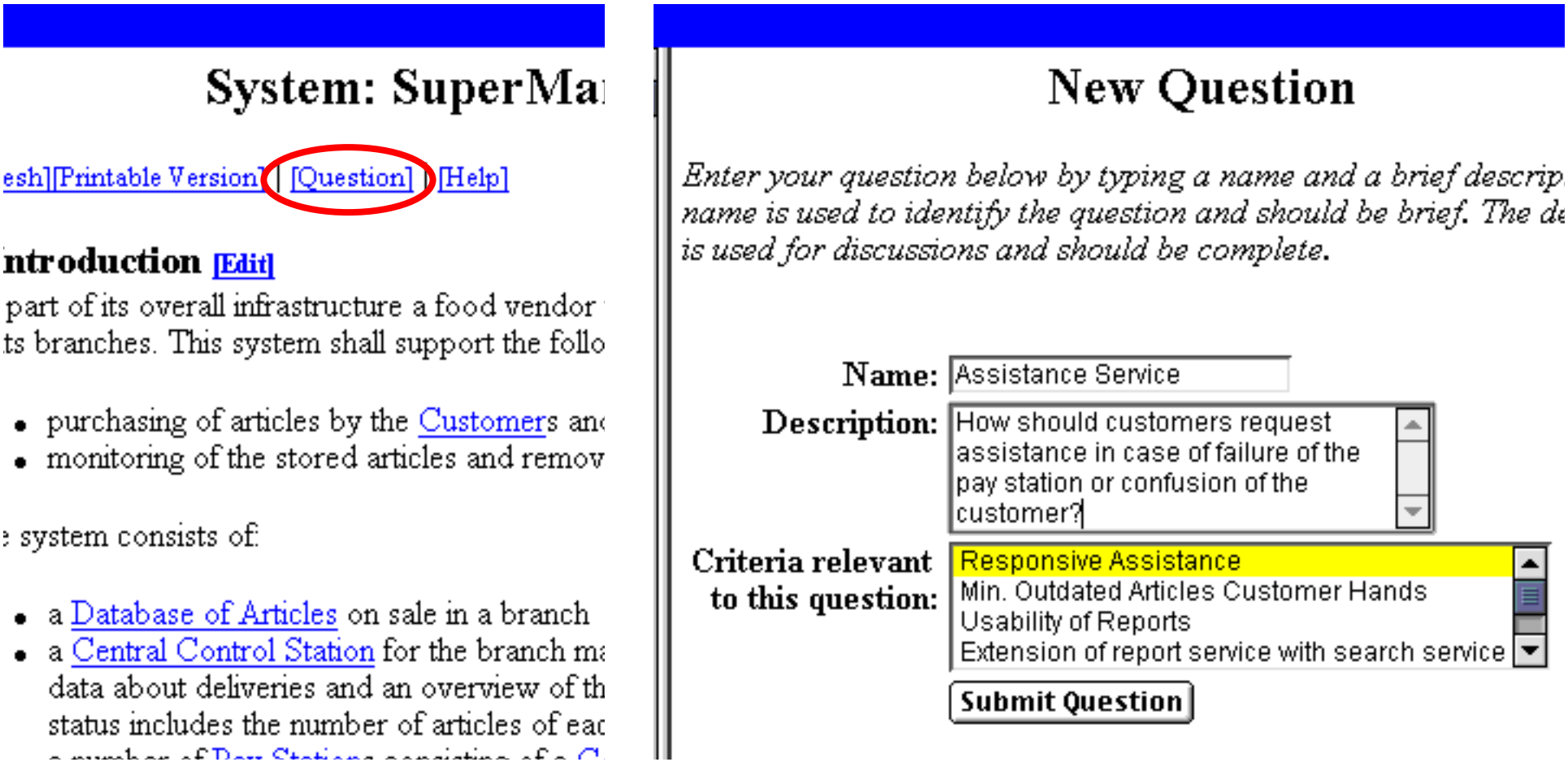
REQ: Describing exceptions



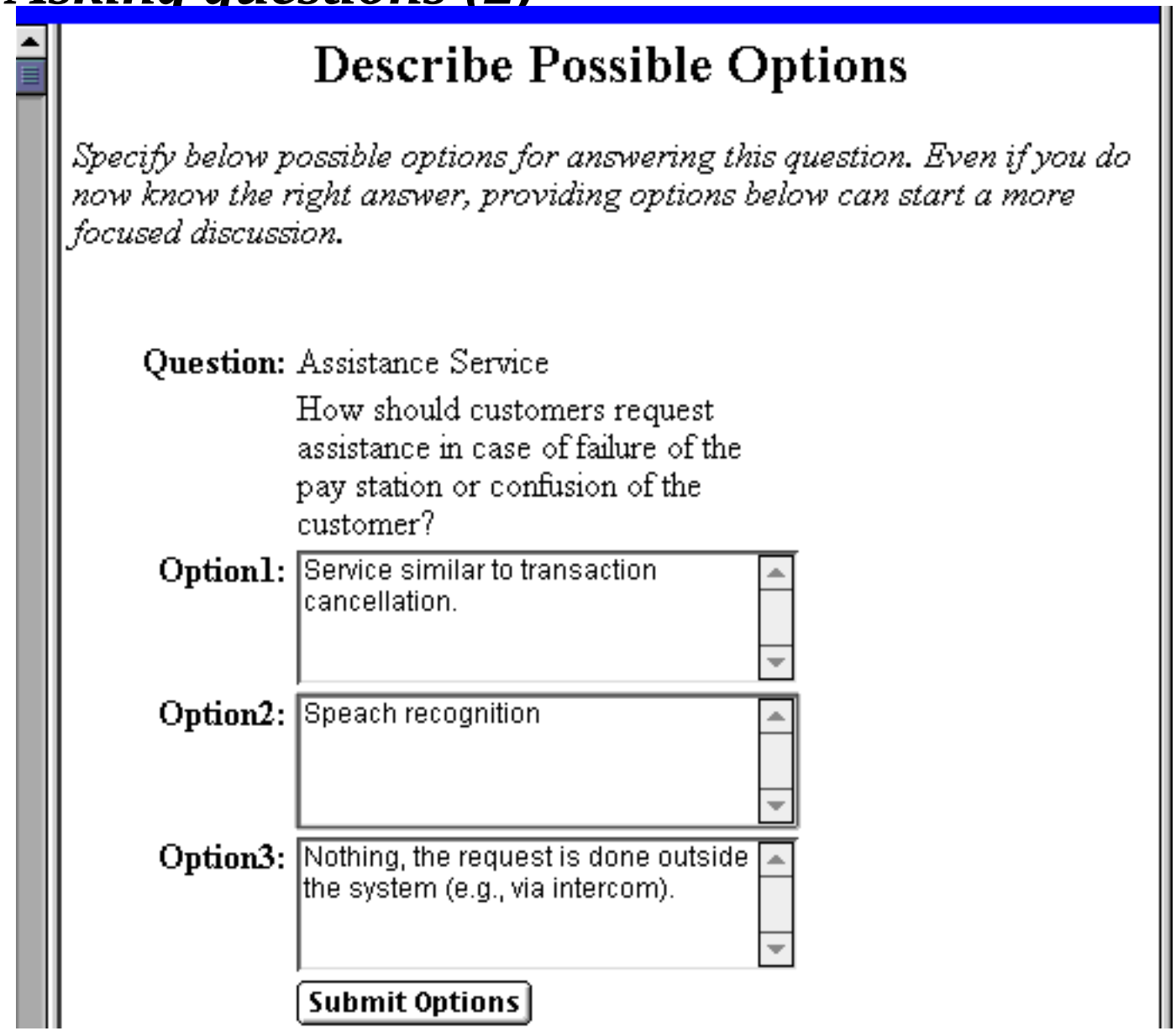
SuperMarket: Specifying constraints



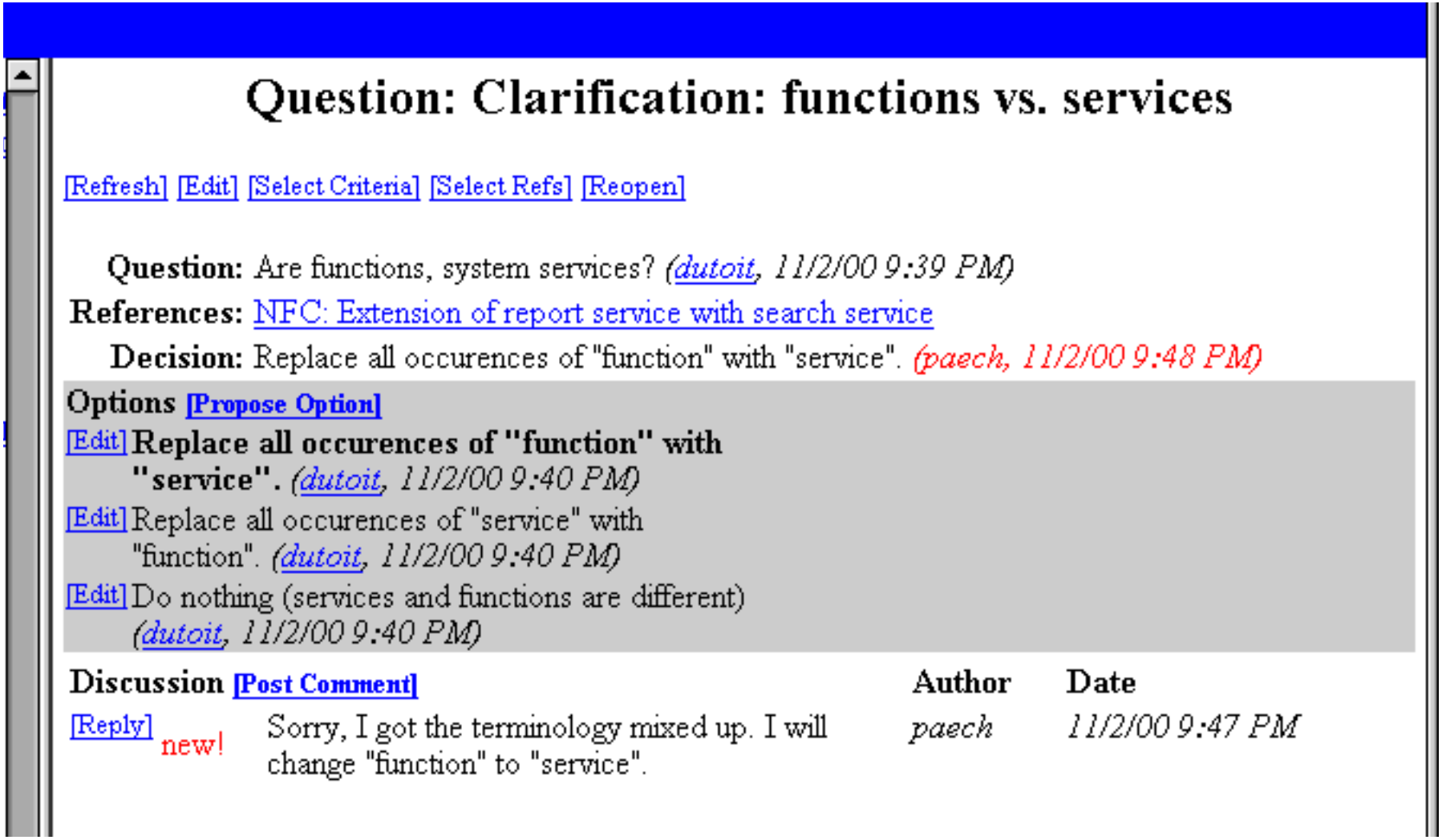
QOC Asking questions (1)



QOC: Asking questions (2)



QOC: Resolving questions



Question: Clarification: functions vs. services

[Refresh] [Edit] [Select Criteria] [Select Refs] [Reopen]

Question: Are functions, system services? *(dutoit, 11/2/00 9:39 PM)*

References: NFC: Extension of report service with search service

Decision: Replace all occurences of "function" with "service". *(paech, 11/2/00 9:48 PM)*

Options **[Propose Option]**

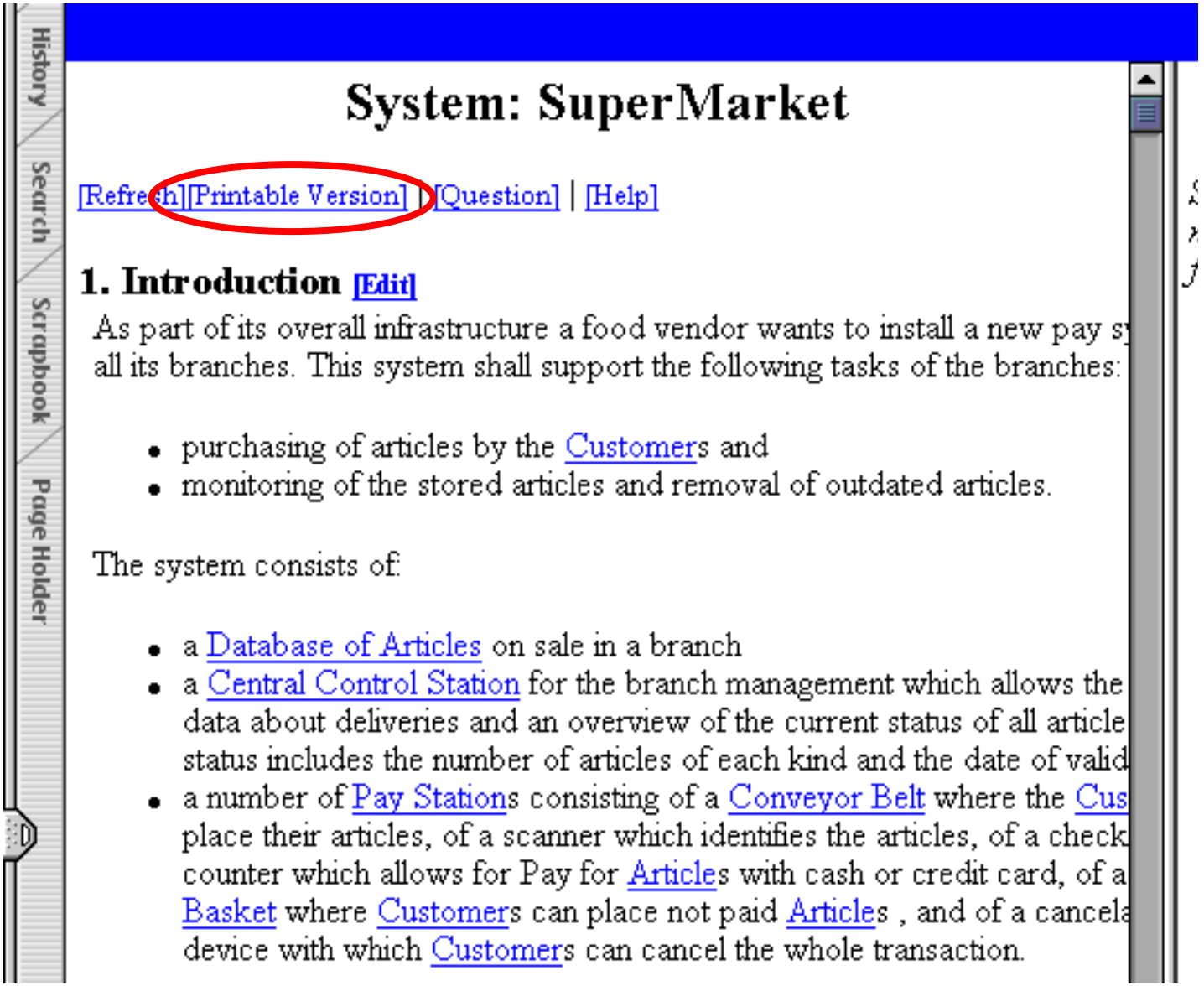
[Edit] **Replace all occurences of "function" with "service".** *(dutoit, 11/2/00 9:40 PM)*

[Edit] Replace all occurences of "service" with "function". *(dutoit, 11/2/00 9:40 PM)*

[Edit] Do nothing (services and functions are different) *(dutoit, 11/2/00 9:40 PM)*

Discussion **[Post Comment]**		**Author**	**Date**
[Reply] new!	Sorry, I got the terminology mixed up. I will change "function" to "service".	*paech*	*11/2/00 9:47 PM*

REQ: Exporting the requirements specification



Summary

- Requirements elicitation focuses on defining the system from the user's point of view.
- RE is a collaborative activity.

- REQ/QOC is a tool for supporting RE and collaboration:
  - **Definition of requirements specification**
  - **questions about the requirements elements**
  - **Discussion, negotiation, and resolution of questions**
  - **Finding out what others have done**
- More about QOC in 2 weeks.
- STARS deadlines
  - **RAD v.1 17.11**
  - **RAD v.2 24.11**

Credits

Definition & Realization of REQ/QOC:

- *Daniela Ahlisch, Kagan Aksit, Allen Dutoit, Barbara Paech*

Testing and Feedback

- *Andreas Braun, Bernd Brügge, Günter Teubner*