

An Introduction to The Bridge

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The Problem:

- Bridging the gap between user requirements and GUI design
 - ◆ How do we turn our understanding of users into successful systems?

A Solution: The Bridge

- A comprehensive methodology for
 - ◆ understanding user needs
 - ◆ identifying users' conceptual building blocks for their tasks
 - ◆ building GUI prototypes from the building blocks
 - ◆ testing the results with actual users
- Originally developed at Bellcore

A Solution: The Bridge

- It's fast
 - ◆ You can create and test a prototype in as little as three days

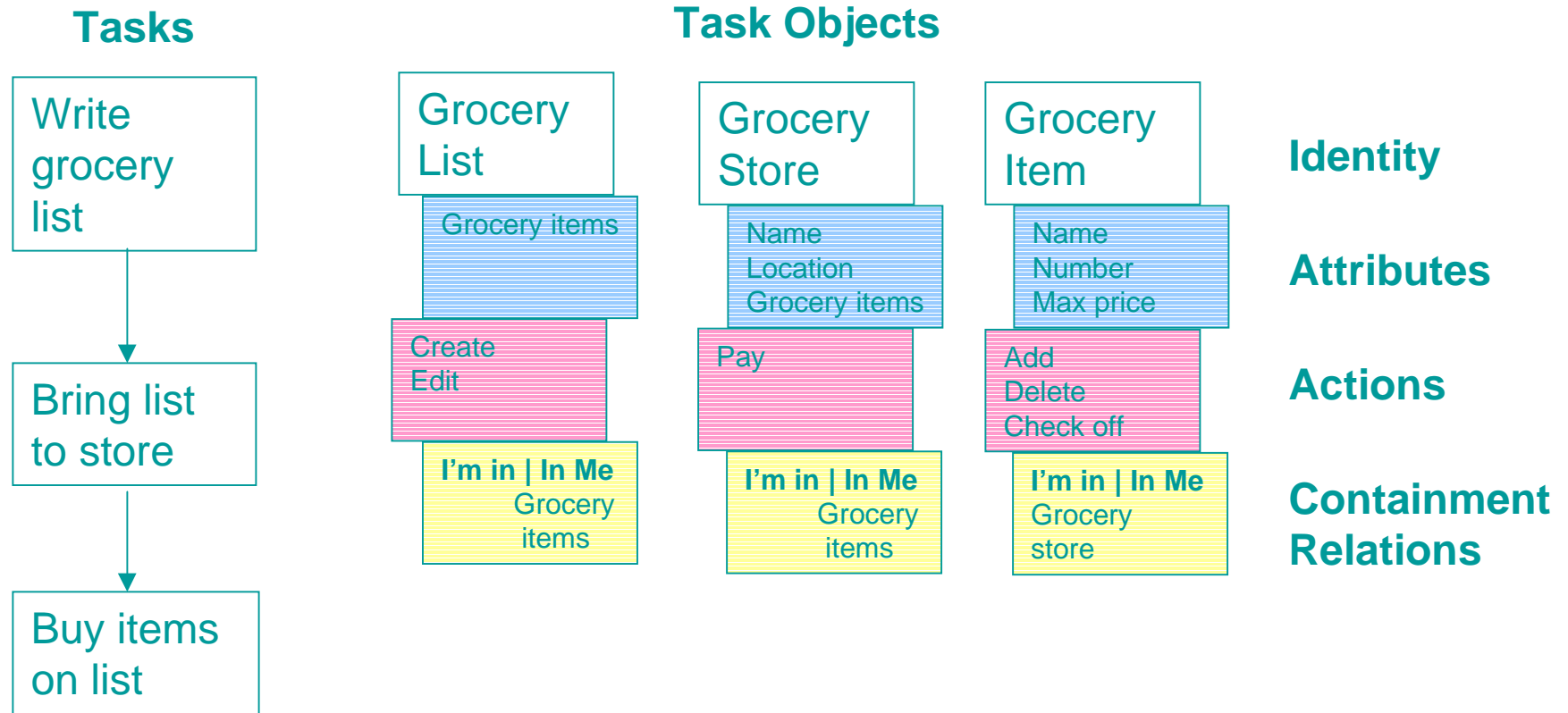
The Bridge Is

- A participatory design method
 - ◆ Users, designers, and implementers are equal partners
 - ◆ Continuous communication among stakeholders accelerates design
 - ◆ Users and other stakeholders contribute their unique expertise
 - ◆ Stakeholders gain a shared understanding of design goals, opportunities, and constraints

The Bridge Is

- An object-oriented design method
 - ◆ Derives *task objects* – objects that support user tasks and make sense to users – from user tasks and uses them as building blocks
 - ◆ Task objects have attributes, actions, and containment relationships, as in object-oriented programming

Deriving Task Objects from Tasks



The Bridge Is

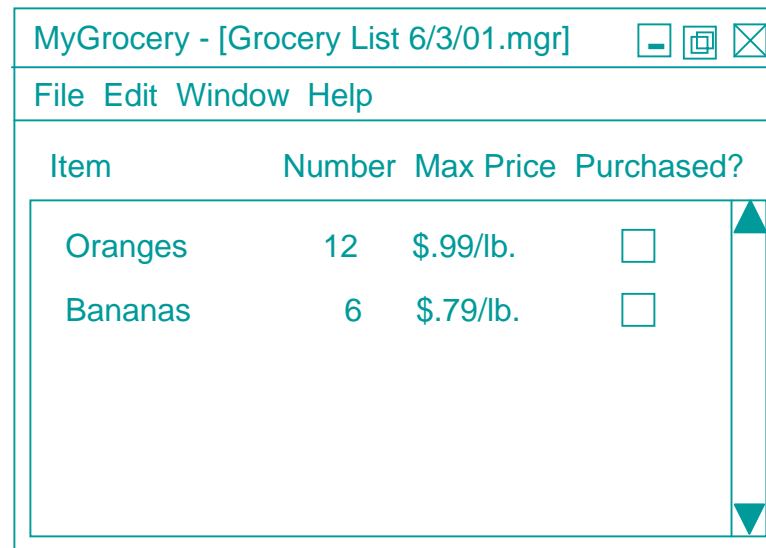
- An object-oriented design method
 - ◆ To build a prototype, task objects are mapped directly to corresponding GUI objects using an object-oriented GUI style guide. This is the bridge between requirements and implementation.

Mapping Task Objects to GUI Objects

Task Objects



GUI Objects

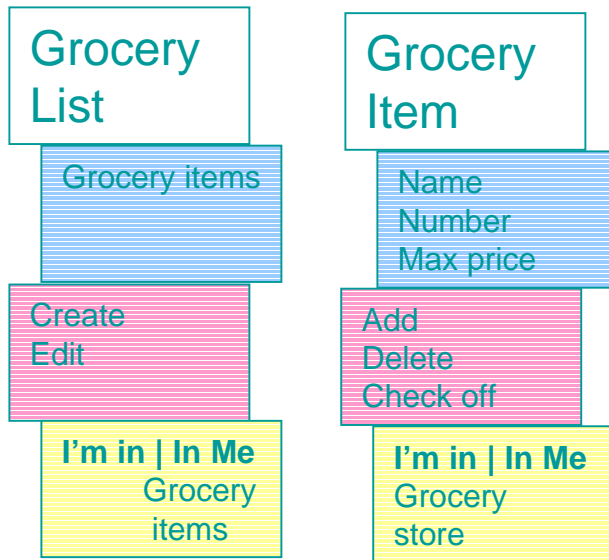


The Bridge Is

- Multiplatform
 - ◆ Task flows and task objects are defined independently of their implementation on a particular platform
 - ◆ Task objects can be mapped to GUI objects on any platform for which there are suitable GUI style rules

Mapping Task Objects for Multiple Platforms

Task Objects



Microsoft Windows

MyGrocery - [Grocery List 6/3/01.mgr]			
File Edit Window Help			
Item	Number	Max Price	Purchased?
Oranges	12	\$.99/lb.	<input type="checkbox"/>
Bananas	6	\$.79/lb.	<input type="checkbox"/>

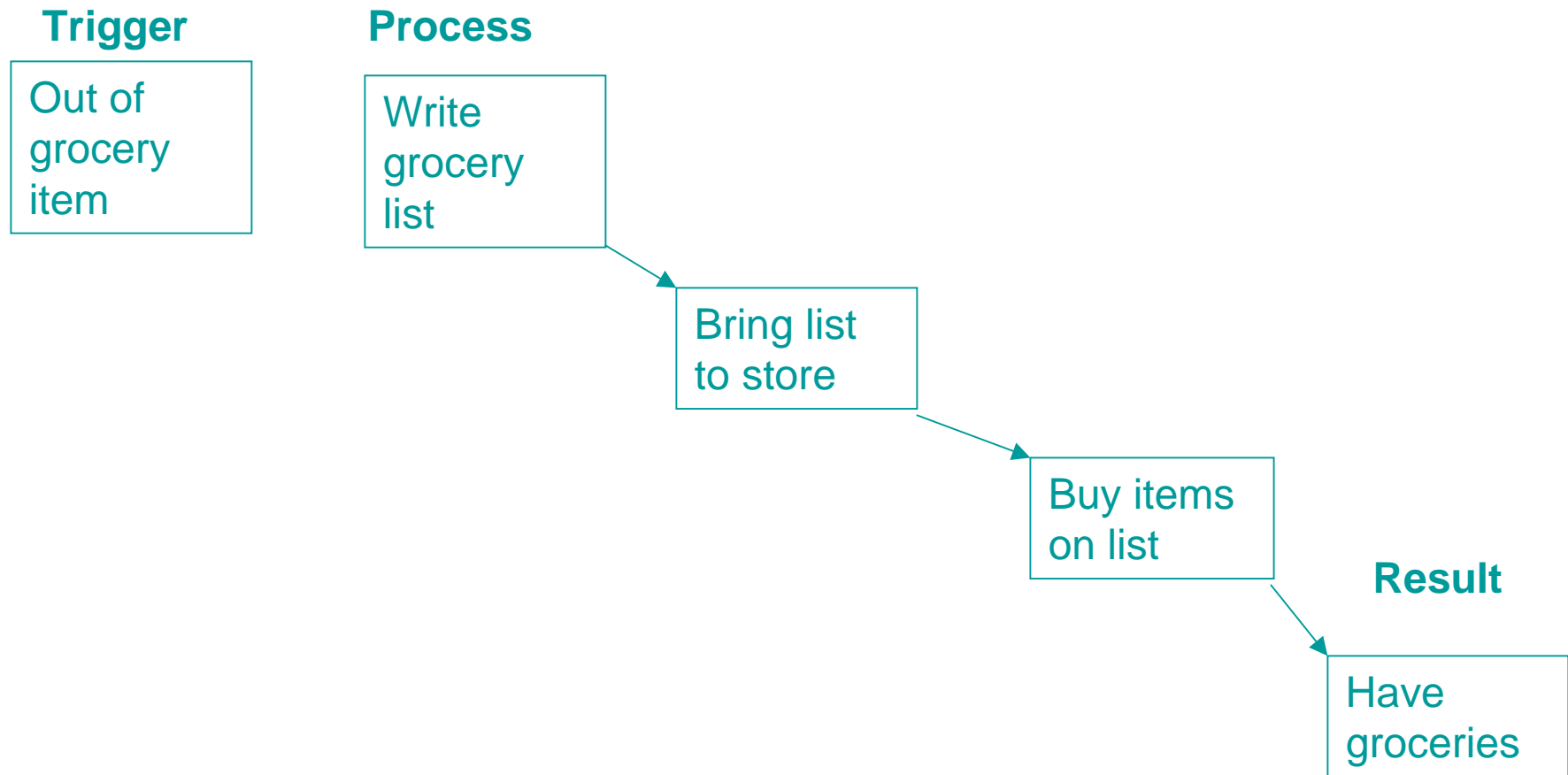
Web

MyGrocery.com List - Netscape				
File Edit View Go Communicator Help				
Add Item				
Item	Number	Max Price	Purchase	Delete
Oranges	12	\$.99/lb.	<input type="checkbox"/>	<input type="checkbox"/>
Bananas	6	\$.79/lb.	<input type="checkbox"/>	<input type="checkbox"/>

Parts of The Bridge

- Part 1: Task analysis – understand user needs
 - ◆ Describe current tasks as task flows
 - ◆ Begin with high-level Current Big Picture task flow
 - ◆ Identify trigger and result of task flow

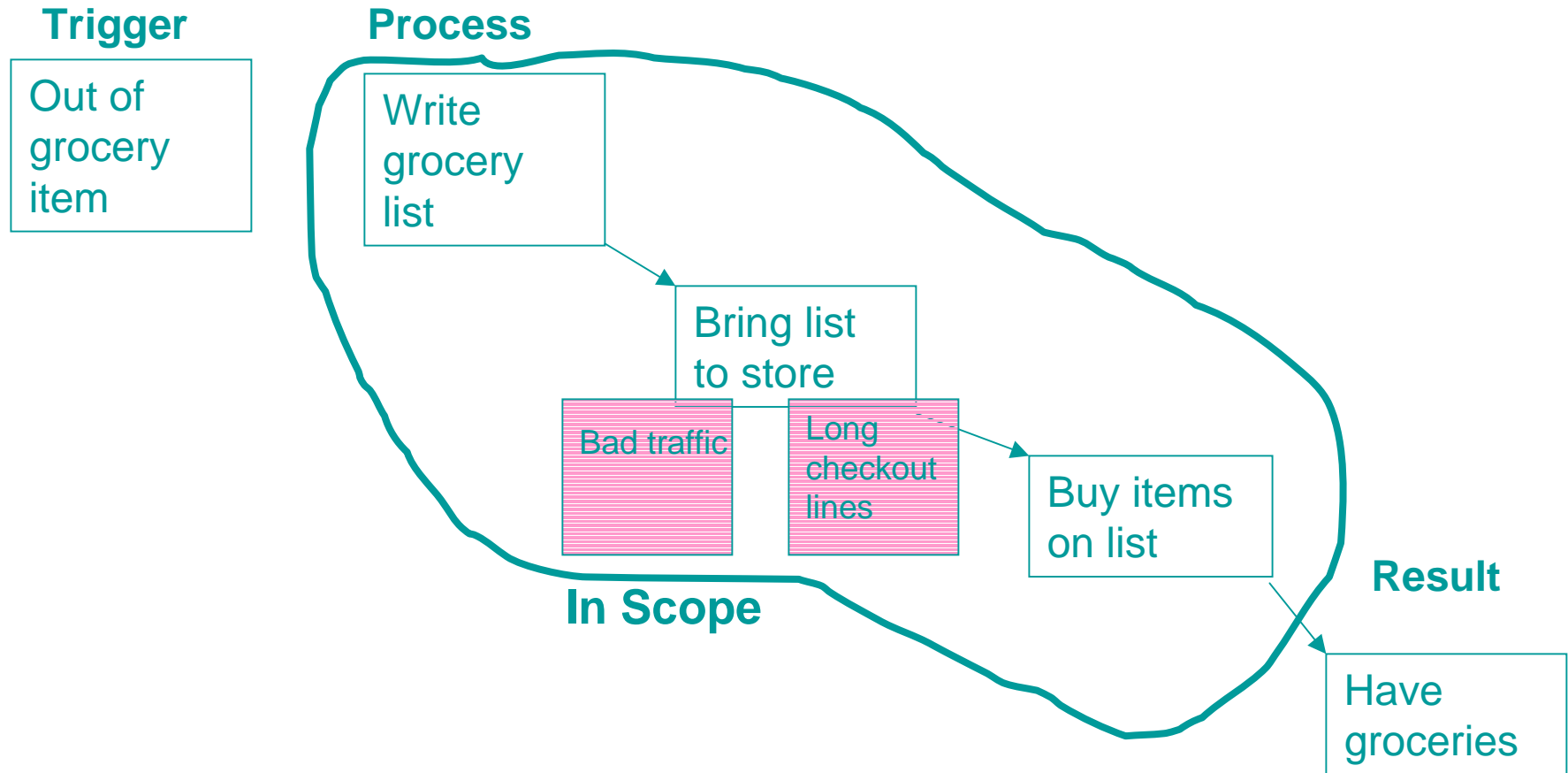
Example: Current Big Picture Task Flow



Parts of The Bridge

- Part 1: Task analysis (continued)
 - ◆ Identify problems associated with tasks
 - ◆ Scoping: Agree on what parts to address in this design session

Example: Scoped Big Picture Task Flow



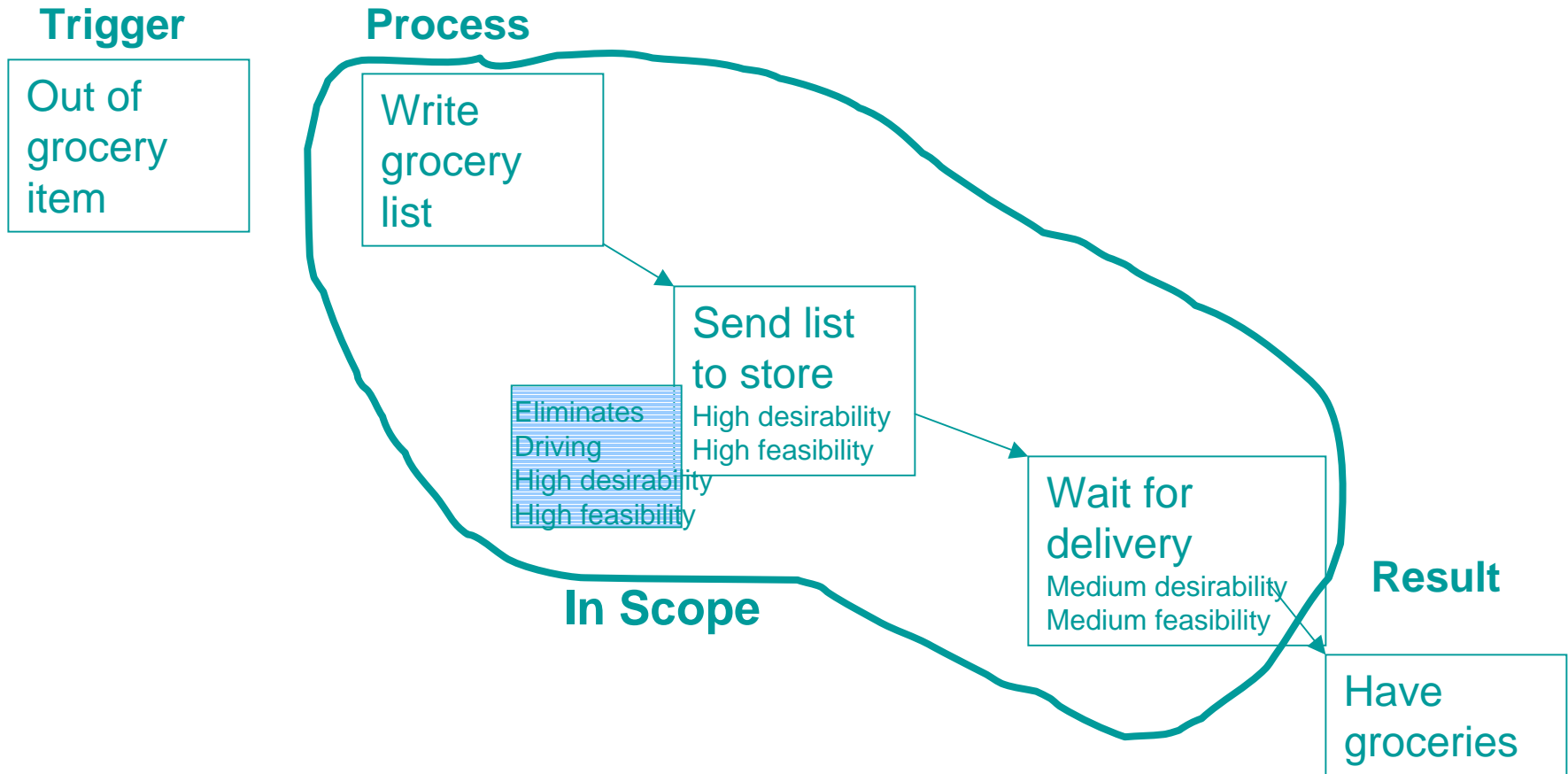
Parts of The Bridge

- Part 1: Task analysis (continued)
 - ◆ Next, describe current task flows in moderate detail
 - ◆ Identify problems associated with tasks
 - ◆ For each problem, agree on priority (high, medium, or low) for solving it
 - ◆ Scoping: Agree on what parts to address in this design session

Parts of The Bridge

- Part 1: Task analysis (continued)
 - ◆ Brainstorm “blue sky” ideal task flow that addresses the problems of current tasks
 - ◆ No criticism during brainstorming
 - ◆ Consider radical solutions without regard for feasibility
 - ◆ After brainstorming, agree on the desirability and feasibility (high, medium, or low) of each part

Example: Blue Sky Task Flow



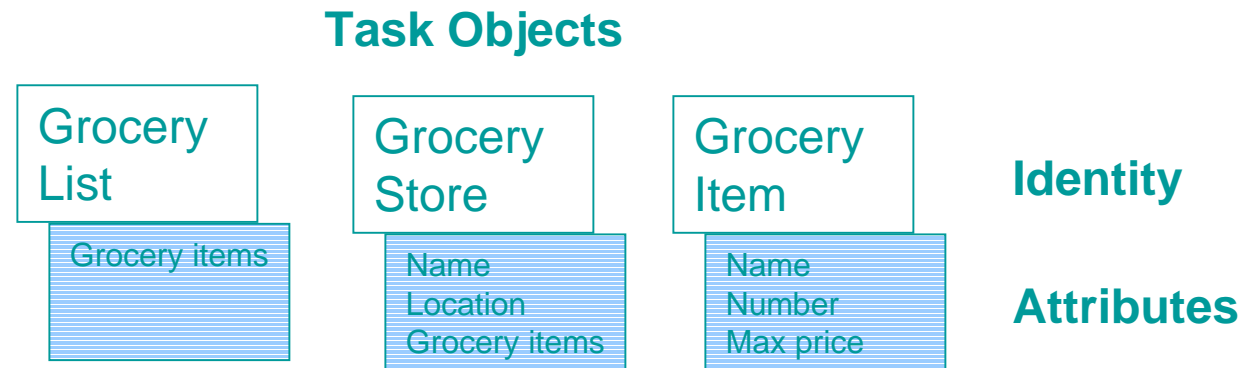
Parts of The Bridge

- Part 1: Task analysis (continued)
 - ◆ Construct realistic task flows for the new system with as many desirable features of the ideal tasks as possible
 - ◆ After creating each task flow, agree on what is in scope for this design session

Parts of The Bridge

- Part 2: Task object design – identify users' conceptual building blocks
 - ◆ Write down all nouns that appear in the realistic task flows
 - ◆ For each noun, write down its attributes: properties, such as its name, and any objects it contains
 - ◆ Some nouns will emerge as task objects users need to work with, others as properties of objects

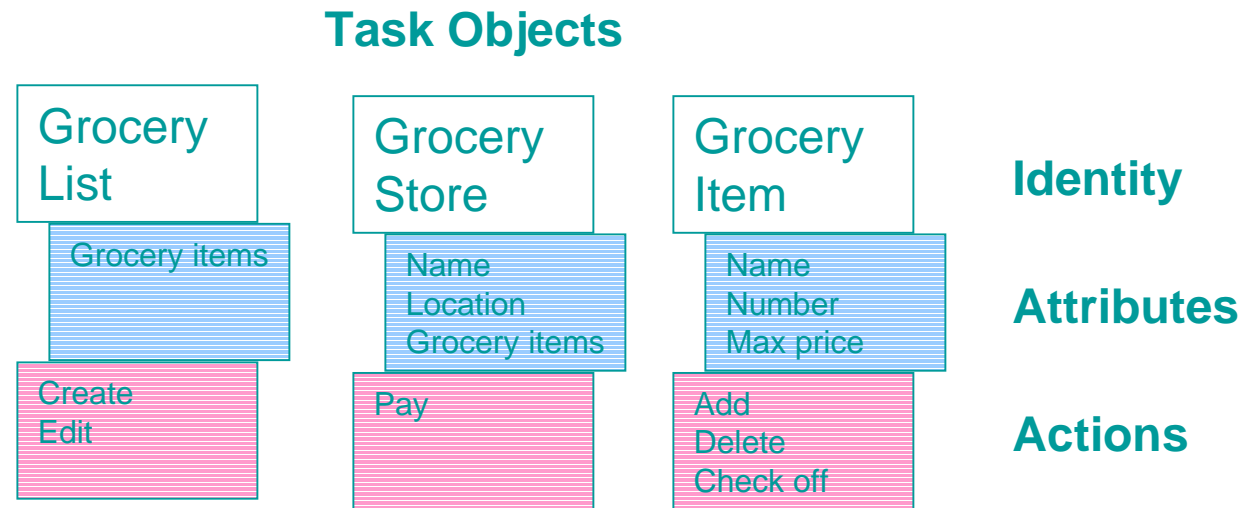
Identifying Attributes of Task Objects



Parts of The Bridge

- Part 2: Task object design (continued)
 - ◆ For each object, identify actions that users (not the computer) perform on the object, such as copy, print, or delete

Identifying Actions Performed on Task Objects



Parts of The Bridge

- Part 2: Task object design (continued)
 - ◆ For each object, identify any other objects it's contained in (parent objects) and any objects it contains (child objects)

Identifying Parent and Child Objects of Task Objects



Parts of The Bridge

- Part 2: Task object design (continued)
 - ◆ Usability test the objects by using them to perform the tasks in the realistic task flow

Parts of The Bridge

- Part 3: Mapping task objects to GUI objects – build a prototype
 - ◆ Use style rules for the mapping, such as
 - ◆ A task object is a conceptual unit, so put it in its own window
 - ◆ Put the object's actions in the window's menu bar and tool bars
 - ◆ Put the object's attributes in the client area of the window

Parts of The Bridge

- Part 3: Mapping task objects to GUI objects (continued)
 - ◆ Usability test the prototype by using it to perform the tasks in the realistic task flow

For More Information

- Dayton, T., McFarland, A., and Kramer, J., “Bridging user needs to object oriented GUI prototype via task object design,” in Larry E. Wood (ed.) *User Interface Design: Bridging the Gap from User Requirements to Design*, Boca Raton: CRC Press, 1988, pp. 15-56
 - ◆ The most complete description of The Bridge
- Muller, M.J., Hallewell Haslwanter, J., and Dayton, T., “Participatory practices in the software lifecycle,” in M. Helander, P. Prabhu, and T. Landauer (eds.), *Handbook of Human-Computer Interaction*, 2nd edition, Amsterdam: North-Holland, 1997, pp. 255-297
 - ◆ A list of 61 PANDA (participatory analysis, design, and assessment) methods. The Bridge is listed as “Workshop for O-O GUI Designing from User Needs”
- McFarland, A., and Dayton, T., *Design guide for multiplatform graphical user interfaces*, Issue 3, LP-R13. Piscataway, NJ: Bellcore, 1995
 - ◆ An object-oriented GUI style guide for Microsoft Windows, CUA, CDE, and Motif
- Kramer, J., Noronha, S., and Bardon, D., “Designing object oriented e-commerce web sites”, IBM, 2001
http://www-3.ibm.com/ibm/easy/eou_ext.nsf/Publish/1826
 - ◆ Describes object oriented GUI design methods for web commerce