CS360
Business Information Systems
Analysis and Modeling

Reports and Queries
Use Cases define Queries

Charter Scheduling
Charter Billing
Charter Payments

Customer
Boat Owner
Captain

UML Symbols:
- Actor
- System Boundary
- Use Case
- Association
Class Diagram defines Entities

UML Notation

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Cardinality</th>
<th>Class Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Only one</td>
<td>Specialization</td>
</tr>
<tr>
<td>1..*</td>
<td>One or more</td>
<td></td>
</tr>
<tr>
<td>0..*</td>
<td>Zero or more</td>
<td></td>
</tr>
</tbody>
</table>

Composition
Sequence Diagrams define Transactions

[Diagram of Sequence Diagram showing a scheduling use case with interactions between Charter, Customer, Boat, and Captain roles.]
User Targeted Design

* Information detail needs to match the decision needs of the user receiving
Windows on Business Classes

- Business classes contain entities in the design, specify business information used in operations, management and strategy support
- Queries and reports are the vehicles for extracting and presenting that information to users
- Every business class needs a means of presenting its contents to the user (analyst)
- Reports are windows predicted by user and analyst at system design
- Inquiries are windows that could not be predicted but are necessary to function
- Design must provide for both “window” types
Management and strategy decision inputs are derived from various operational data stores minimizing the quantity, maximizing the content.
Information Security

* Need to know as defined by client must be supported to protect company information
Report Content Design

“What you want, When you want it”!

Timing
- periodic (business cycle based)
- on-demand (“ad hoc” requirement)

Content
- prescribed (consistent every time)
- query (subject based by request)
- inquiry (unanticipated, dynamic content)

Media
- hardcopy (formal, legal, “sophisticated”)
- soft copy (real time, as needed, transient)
Inquiry Support

* Reports are usually predictable and “built-in”

* Ad hoc inquiry support requires “query” and “formatting” tools at the users' command
  * Most DBMS systems support end user inquiry capability
  * SQL (structured query language)
  * QBE (query by example)
  * Many support report “ wizards” based on data dictionary file definitions

* Ad hoc inquiry tools may be “ canned” but they require explicit user documentation and tutorial or training as part of the system plan
Output Design Steps

1. List the system outputs identified in the USD and Use Cases
2. Add to this list one potential report for each master file in the ERD or business class in the class diagram
3. Add to this list one potential activity report for each type of transaction found in the Use Cases
4. Review the user specifications for additional prescribed outputs
5. Evaluate the likelihood of periodic and media requirements for each report
6. Design a consistent look and feel for hardcopy and soft copy reports
7. Coordinate the look and feel standards with the client
8. Eliminate any output which are satisfied by existing input forms
9. Prototype each report using a drawing or 4GL authoring tool
10. These prototypes require client review and addition to project directory
11. Based on report technologies and complexity estimate resource needs
12. Update the data dictionary to include all these outputs