OOT Model for Web Testing

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Web Testing

- Web testing is.....
  - Well, testing web apps.
  - Important. Many projects in 838M
- Paper has super value.
- Three brand new perspectives
  - For the price of one paper

What's the big deal ?

- Object Oriented. We love objects.
  - Web app = Objects + Relationships.
- Behavioral.
  - Navigation between objects.
- Structural.
  - Control and data flow in app.

So ?

- Automatic Systematic Testing
- Structural as well as Behavioral
- Object Oriented = Many Objects
  - Each object its own tests. Use OO testing.
- Ripple Effect in Regression Testing.
  - Only object modified and those it affects.

Existing Stuff

- ER model used for Design
- WOOM for Development
- Web-Composition using XML
- If XML, why not UML ?

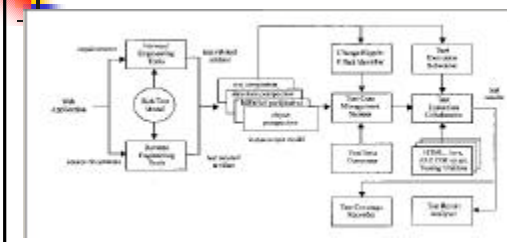
- This paper extends *traditional testing.*

The Test Methodology

- Get instance model from
  - Forward Engineering
    - From Requirement Specs
  - Reverse Engineering
    - Analyze source documents from Implementation
- Gives both Structure and Behavior.

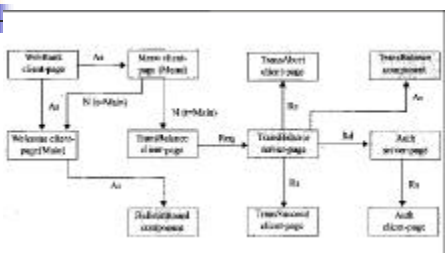
Fancy Names Used

- Change Ripple Effect Identifier
- Test Execution Scheduler
- Test Case Management System
- Test Data Composer
- Test Coverage Recorder
- Test Result Analyzer



The Object Perspective

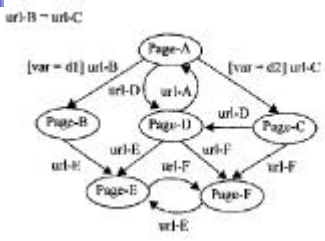
- An Object Relationship Diagram
- Client pages, Server pages, Components.
- (V,E,L), where L is the set (V x V x E)
- New relationships for *navigation*
  - Apart from routine OO stuff
- Request, Response, Navigation, Redirect.



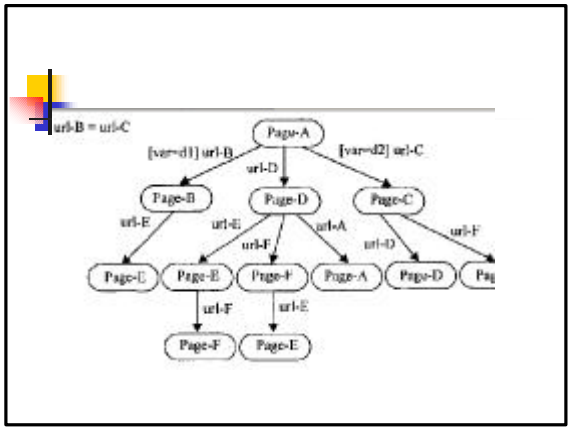
Use ?

The Behavioral Perspective

- Page Navigation Diagram (PND)
  - FSM. Pages = States. Hyperlinks = trans.
  - Constructed from ORD.
  - Iterative Algorithm for creation.
  - Dynamic Pages, handled by guards.
  - Create ST from PND.
    - Use to generate test cases. Whew !!!

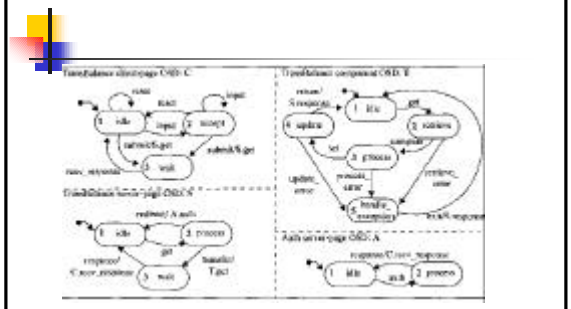


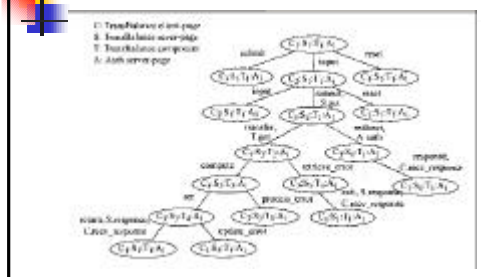
Example PND



Behavioral Persp. Contd.

- Object State Diagrams (OSD)
  - Dynamic State (e.g user choices)
  - Use Hierarchical Composed Synchronized Communicating Finite State Machines
    - Mercy please !!!
  - Compute the COSD Graph. Generate Tree.
    - Given tree, get test cases.





Structural Perspective

- Web apps horribly complex.
  - Whither structure ?
- Block Branch Diagrams (BBD)
  - Traditional testing for each function
- Functional Cluster Diagrams (FCD)
  - Used to model inter-procedural structure.

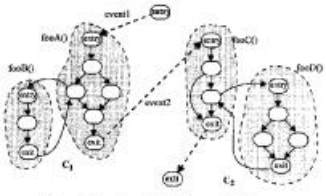


Figure 7. A function cluster diagram of a Web page.

And...

- Constraints
  - Typically due to security
- Specify as first order predicate logic
  - Example: Inactivity exceeded some time, Log user off.

Big picture

- Modeling web apps from three perspectives
- Once this is done, can generate test cases

Using WWW blah blah blah...

- As usual, the web is important.
- Client compliance to standards
- HTML. Levels 0,1,2,3,
  - In practice, nobody conforms.
  - Develop their own extensions.
  - “This site is best viewed with Netscape 9.8765”

So ?

- WWW test pattern
- Active Tests
- Passive Tests

FINALLY.....

Moral of the story

Give the Devil its due
Use Microsoft PowerPoint

Merci Beacoup !