

Dynamic Modeling

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A presentation at OOAD workshop at VJTI,
Matunga Oct 18:3:15-4:00 pm

Modeling: Why?



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Modeling: Why?

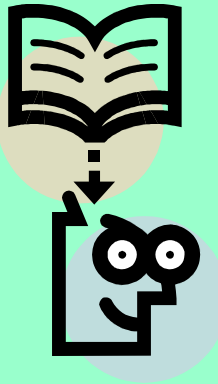
Concepts to Realization

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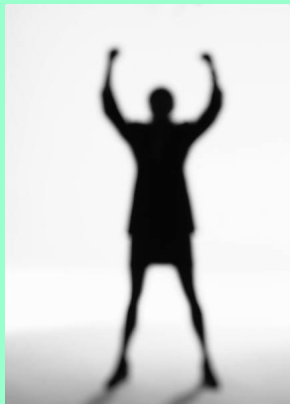
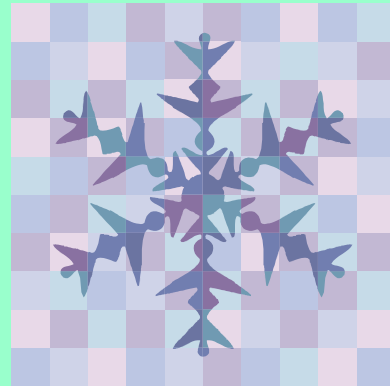
Modeling: What?

Need to Model Different
aspects of/for the
software to be built

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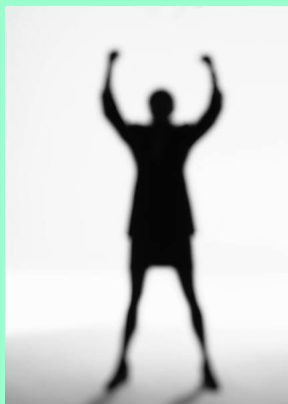
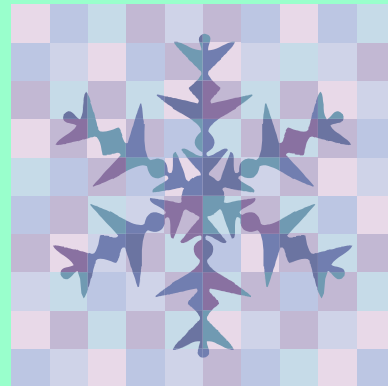
Modeling: What?



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Conceptual
ideas

Modeling: What?

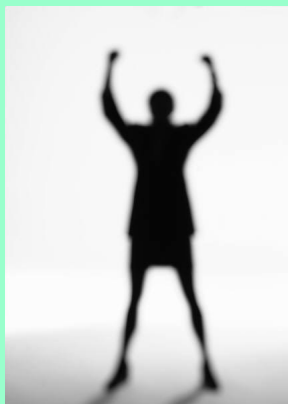
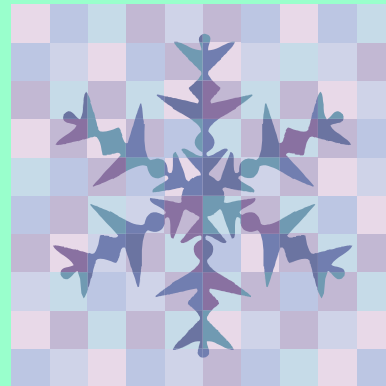


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Conceptual
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Modeling: What?

End goals



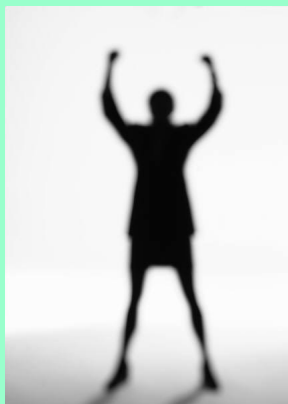
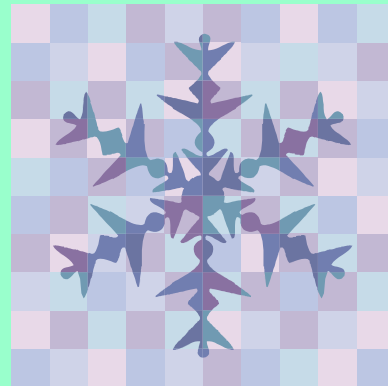
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User interfaces



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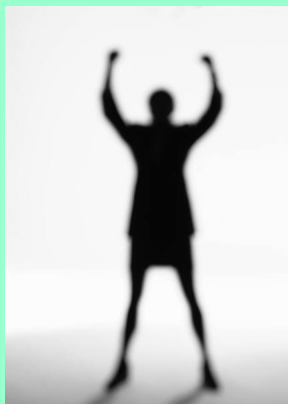
Conceptual
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Product
Implementation
Models



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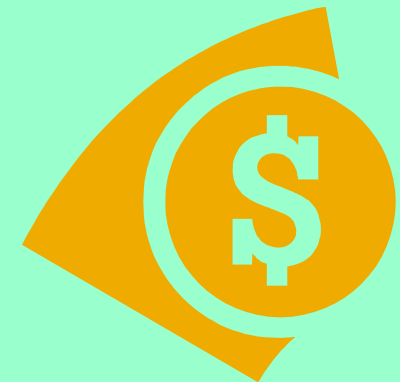
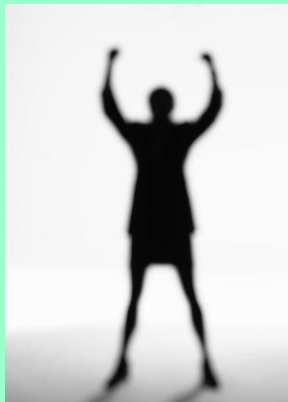
Modeling: What?

End goals

User interfaces

Product
Implementation
Models

Deployment
Models, N/W,
Architecture



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Man month



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Man month



Financial
Model

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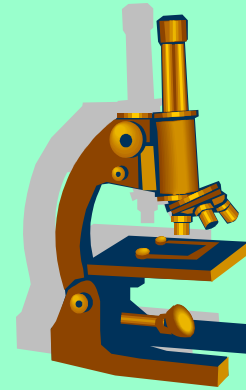
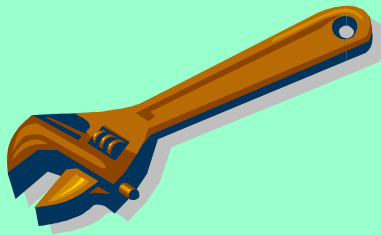
Man month

The software
development
process

Financial
Model

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Modeling

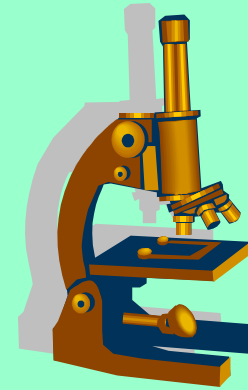


HOW?

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Modeling

Modeling tools



HOW?

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Modeling

Modeling tools

Microscopic views
&
Iterative Refinement



HOW?

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Modeling

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Microscopic views
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Documentation

HOW?

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Product Models



Structure



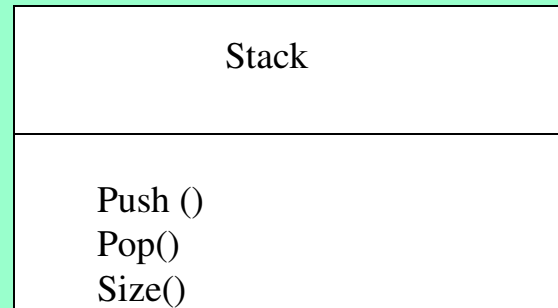
Dynamics

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Structural (Static) Modeling

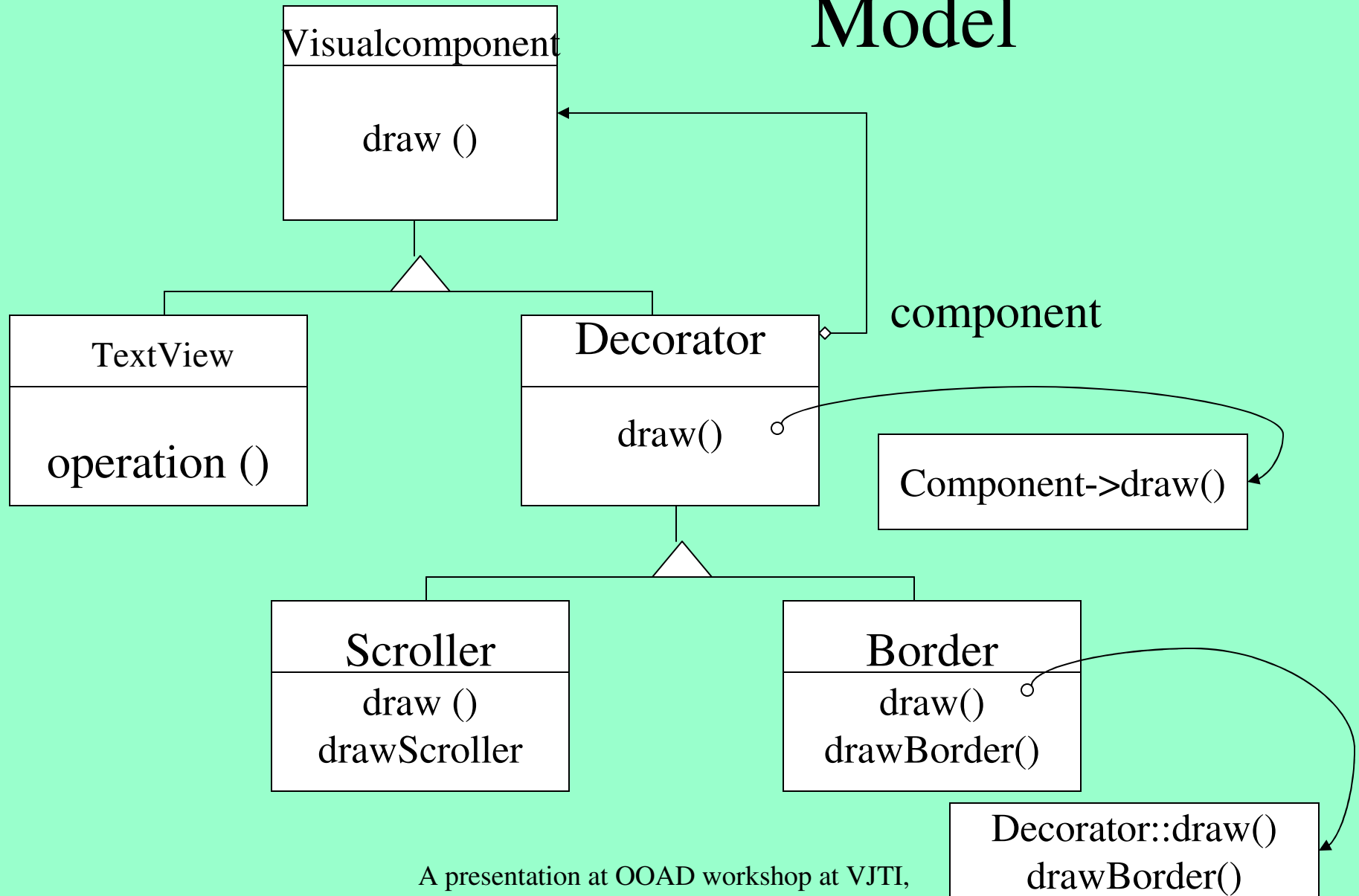
- Class diagrams
- Object Diagrams
- Deployment Diagram
- File directory hierarchy
- Component Package diagrams
- Entity Relationship

A Static Model



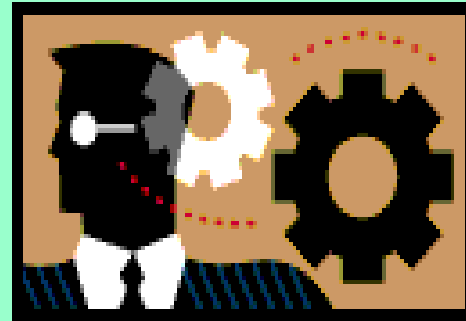
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Another Static Model



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Dynamic Modeling

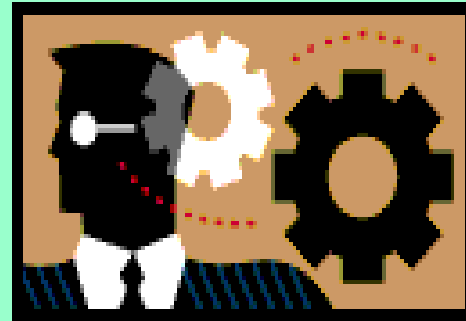


what aspects to model?

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Dynamic Modeling

How does the group collaborate?



what aspects to model?

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Dynamic Modeling

How does the group collaborate?

How does the individual respond?

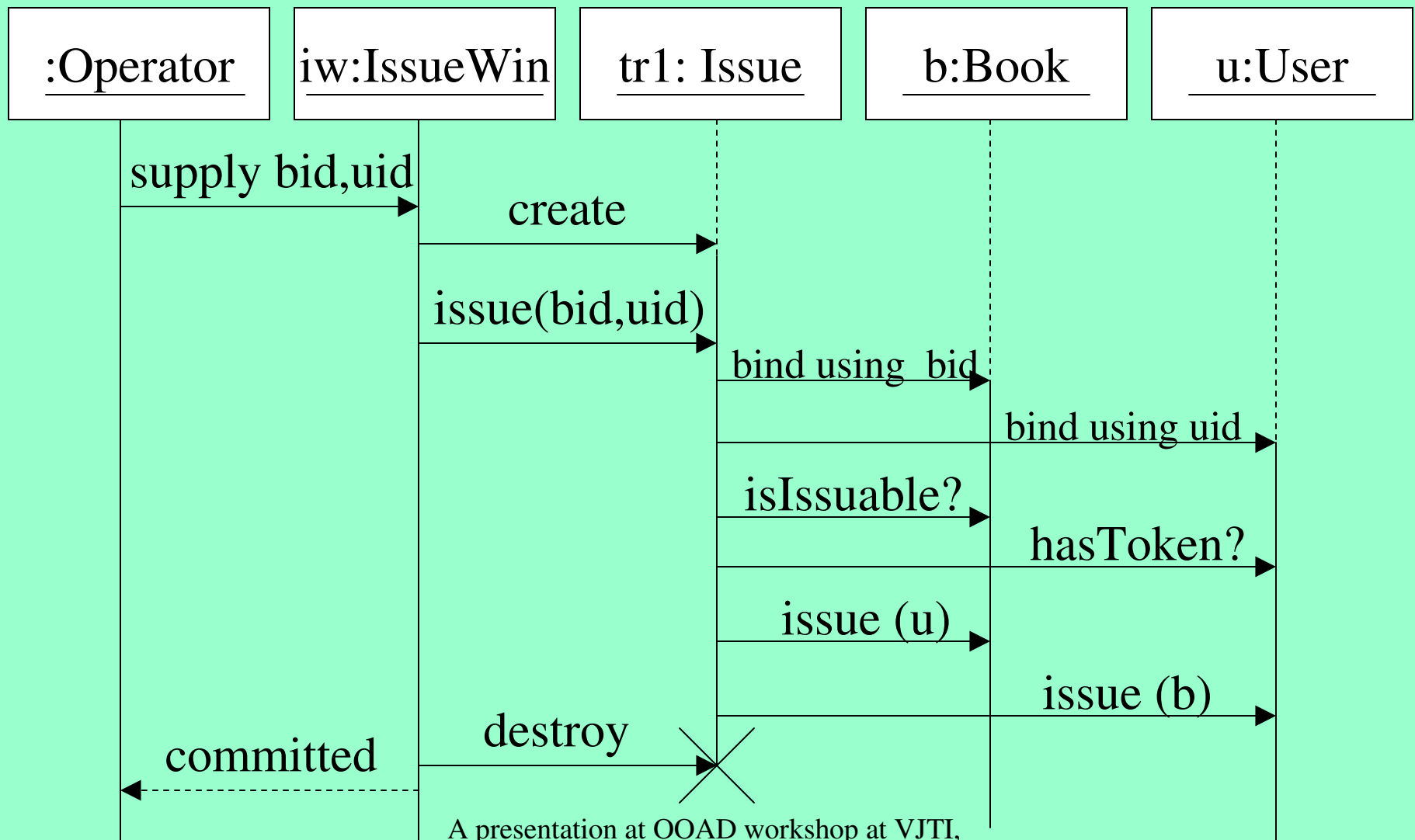
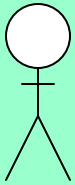
what aspects to model?

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What happens amongst the objects?

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Interaction Diagram: *Item issue use case*



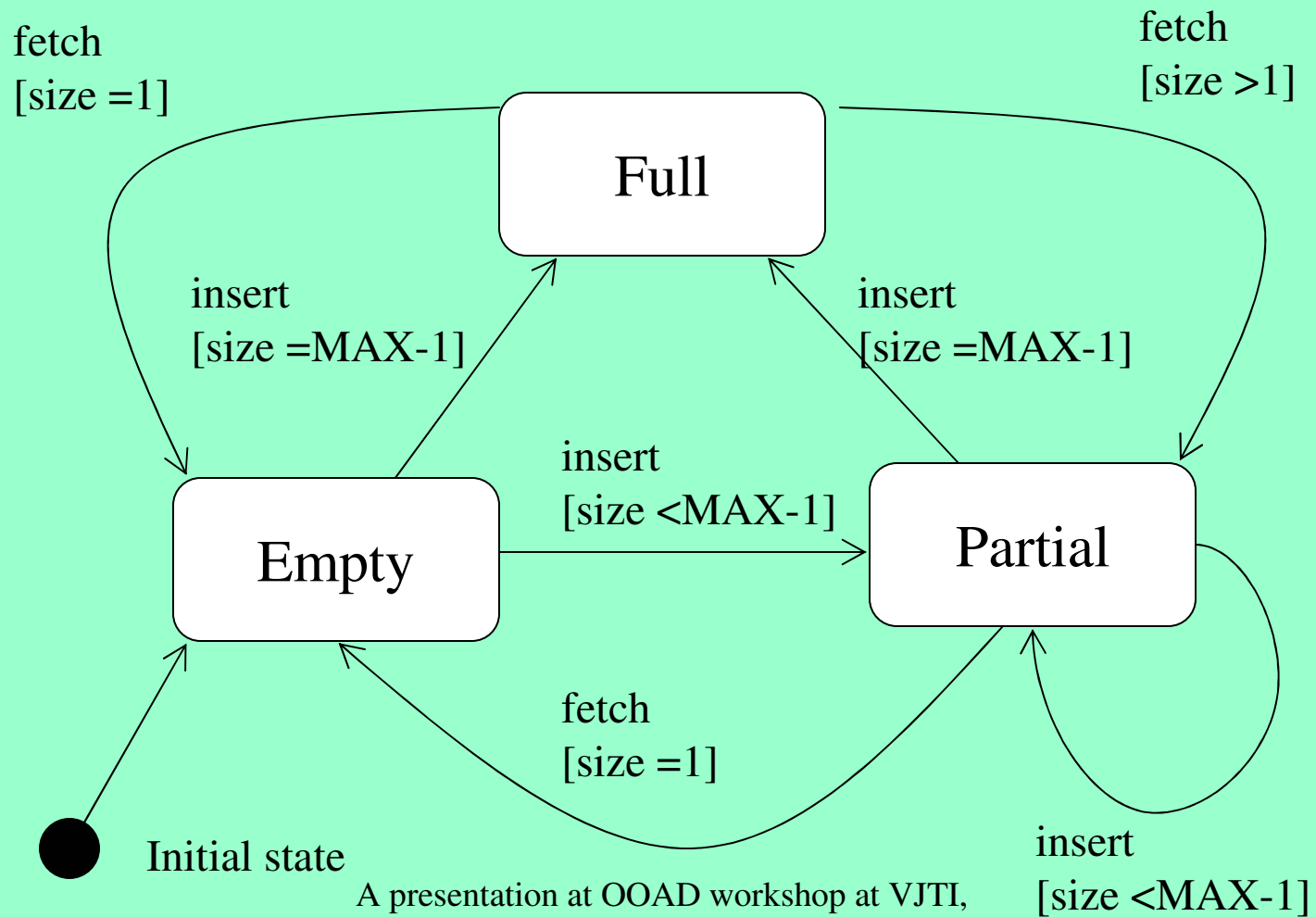
Traceability

- Trace every use case through sequence diagrams
- Every object represented in sequence diagram is traced to static model
- Every message in interaction diagram is traced to an interclass connection in class diagram

What happens inside an object?

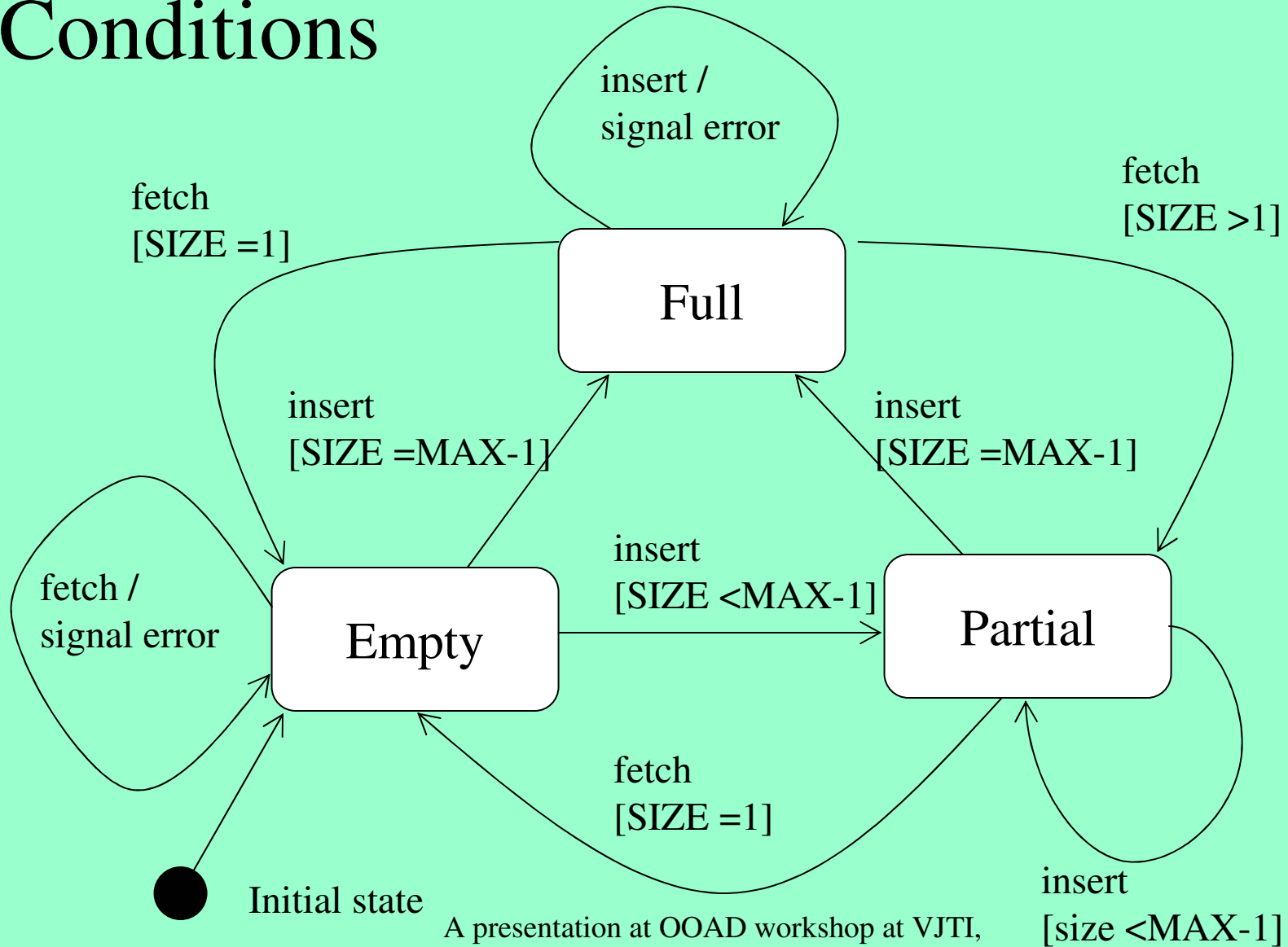
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A State Machine



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Including Error Conditions

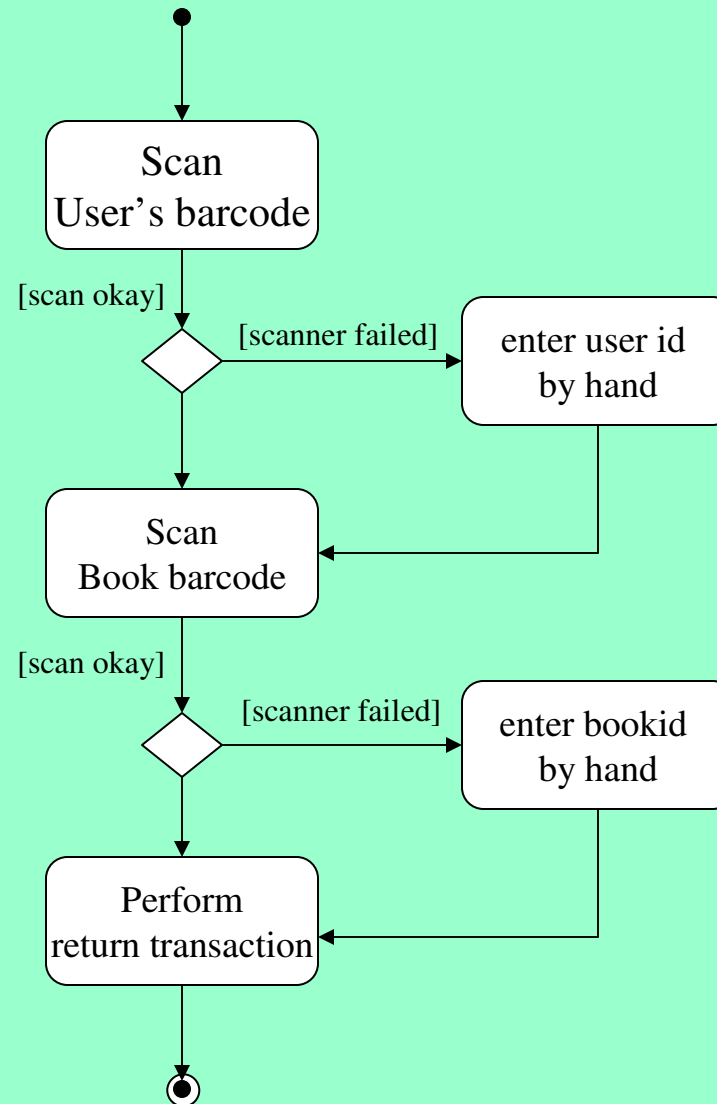


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Traceability

- Trace every incoming message to an object as transitions
- Object changes its state in response to a member function invoked on it
- After the state is changed, the response to subsequent invocations depends on the new state

Activity Diagram



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Traceability

- More than one use case may be involved in an activity diagram
- Classes involved in implementing activities must be present in class diagrams
- An activity may get expanded to a sequence diagram

Summarizing Dynamic Modeling..

- Realizing Exported functionality
 - Message sequences (inter-object)
 - Message collaborations (interobject+static structure)
- Class level behavior
 - State machines
- Dependencies and flow
 - Activity model