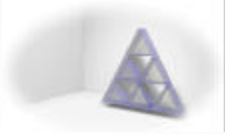
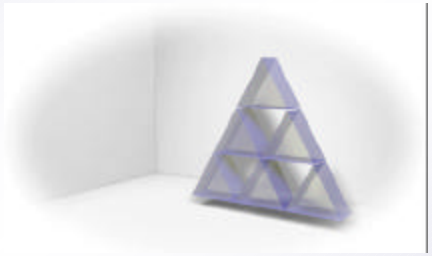


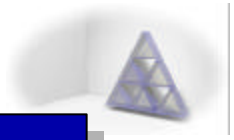
Business Modeling and UML
Reality vs. Hype



Prepared For

MN Government
Information Technology Symposium
December 6, 2000

Advanced Strategies, Inc.



Who Is Here Today?

How many of you are:

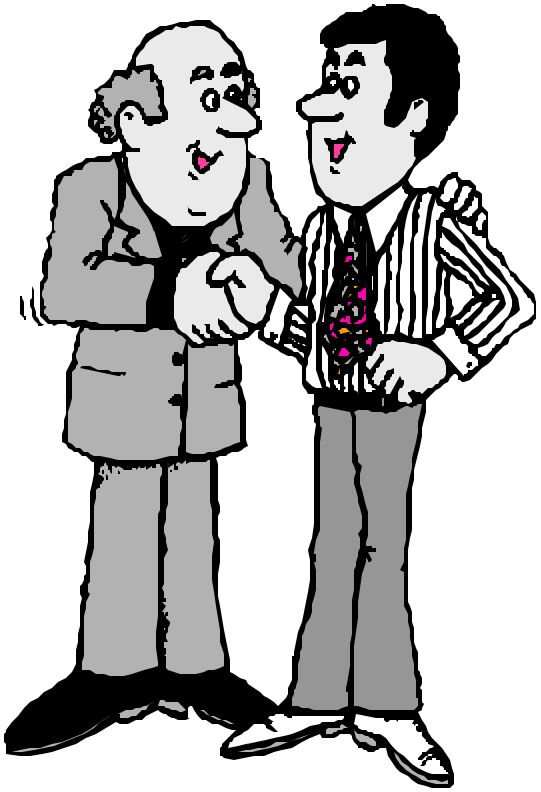
(a) currently … or (b) thinking about …

- Doing Business Modeling?
- Doing Object-Oriented Programming?
- Using UML?

Introduction

Introduction

- Keys to this Session
- UML Buzz
- Assumptions
- Advanced Strategies
- Premises of this Session
- Operant Objectives
- Agenda
- Administrative Items



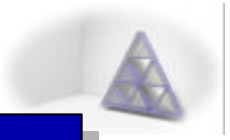
Keys to this Session

Biggest Complaints from Past Sessions:

1. There were no handouts
2. The presentation didn't follow the brochure description
3. At the end, I didn't have a sense of what the key message was
4. It didn't provide me with the information I need to move forward: resources, contacts, action steps

Handouts

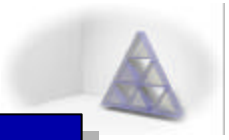
- You have them!
- They are also posted on the symposium web site



Agenda
(same as brochure)

"Business Modeling and UML – Hype vs. Reality"

- Introduction
- What is Business Modeling? What is UML?
- UML Strengths and Weaknesses
- Comparison of "Traditional" Business Modeling Approaches and UML Approaches
- How Business Models Transform into System Design Models
- Case Study: MN Dept of Commerce – IDEA Project
- Conclusion



Key Messages

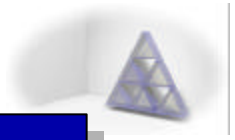
- Business modeling is crucial. We need to do it as well as we possibly can.
- UML is like everything else – it is useful, but no silver bullet.
- Parts of UML can be effectively used in business modeling, but it will not do the whole job.
- Work is currently being done to try to make UML more effective for business modeling
- When choosing approaches, there are always trade-offs.
- Think “evolution”, not “revolution”.

Resources & Action Steps

At the end of the presentation we will discuss specific:

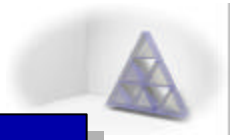
- Books
- Articles
- Web sites
- Seminars/Training
- Tools
- Vendors
- Contacts

(The information is also in your handouts)



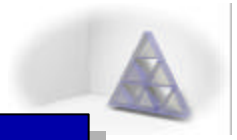
UML Buzz

What are you hearing about UML?



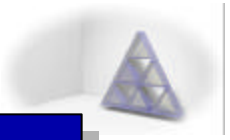
Some Pro-UML Buzz
(reality or hype?)

- UML has become the modeling standard
- UML diagrams are state-of-the-art and superior to other types of diagrams
- All modern languages are object-oriented, so all new projects will be object-oriented, so we better be using UML
- We are using Visual Basic, so we need to use UML
- UML is a new way of modeling - anything other than UML is old and obsolete
- UML is a complete set of modeling notation – nothing else is needed
- UML is user-friendly



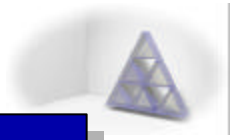
Some Anti-UML Buzz
(reality or hype?)

- UML is not user-friendly
- UML is missing some key functionality
- UML is just the latest passing fad and not worth taking seriously
- Unless you are doing object-oriented programming, UML isn't useful
- UML is nothing but repackaged things that we have been doing for years



Some Final UML Buzz
(reality or hype?)

- Everybody but me is using UML!
- If I don't learn UML I will fall hopelessly behind!



Assumptions

About what is going on at our workplace:

- Many people are using object-oriented enabled languages and development environments (VB, C++, etc.)
- Much of the work runs the spectrum from OO to procedural to a hybrid of the two. Most is probably a hybrid.

and

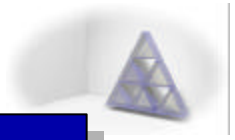
- We are all trying to figure out how to do our job better.
- Our work is not simple.

Assumptions

- About what we want to hear, and often do hear at a symposium:

★ Is this the thing that will finally allow me to:
  - ★ Get rid of my problems?
  - ★ Have more fun at my job?
  - ★ Go home earlier?
  - ★ Make more money?

Assumption – it is never true!



Assumptions

About past silver-bullets. Remember:

- COBOL
- Case Tools
- Client/Server
- Imaging
- Data Warehousing
- ERP (Enterprise Resource Planning) systems
- E-commerce
- (etc., etc., etc.)

Assumptions

Stages of new technology

- "Promise" - this looks good
- "Hope" - this seems to work
- "Confidence" - this really does work
- "Fear" - I might be left behind
- "Commitment" - I am in the game now
- "Concern" - there seem to be some problems
- "Depression" - this isn't easy, and now we are invested
- "Perspective" - it has strengths and weaknesses
  - we should proceed accordingly

Assumptions

These don’t mean the same thing:

- State-of-the-art
- Latest
- Most promise
- Most popular

- And, early on, it is hard to separate a fad from what is really an improvement

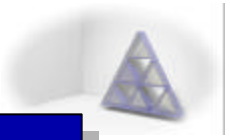
Assumptions

Evolution vs. Revolution

- Evolution - expand and add
  - has a good chance of success

- Revolution - throw out and replace
  - has a much smaller chance of success

(we have to be careful before we throw things away)



Advanced Strategies – Who are we?

- We are not:
  - OO experts
  - UML experts
  - Early adapters of UML (or of anything)
- We are:
  - Methodology experts
  - Business modeling experts
  - Heavy users of diagram notation
    - We have a favorite notation set
    - We are more interested in results than notation
    - We use all kinds (including UML), depending on who we are working with
  - Keenly interested in improvements

Advanced Strategies – Why are we here?

- We have worked successfully, for years, with many state agencies doing business modeling
- We spend a lot of time researching and trying out modeling approaches
- We were asked for our opinion on this topic

And, speaking of opinion …

- Much of the briefing today is our opinion
- Opinion is always debatable – we could be wrong!

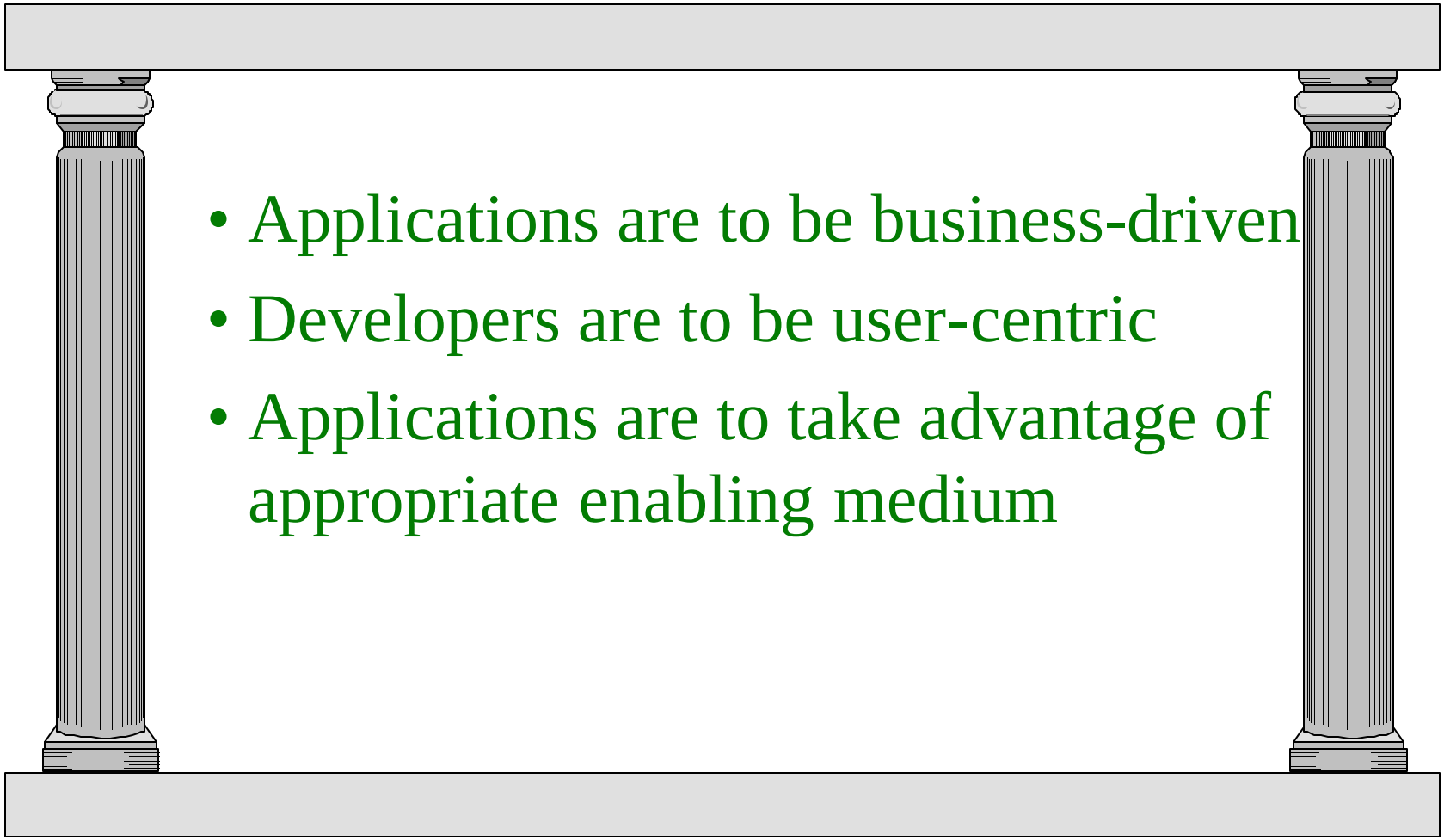
- We will try to look at both sides of the issues.

An Opinion

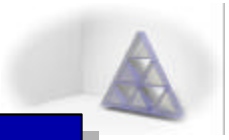
An opinion of ours (and an assumption of this session):

- If something will improve what we do now
  - adopt it
- If something might be useful in the future
  - track it, experiment with it, see how it develops

Three Basic Premises



- Applications are to be business-driven
- Developers are to be user-centric
- Applications are to take advantage of appropriate enabling medium



What We Will Not Be Doing

- We will not discuss whether or not object-orientation is the way to go
- We will primarily look at business modeling, not system design and implementation
  - I.e. we will not be discussing how to use UML to build object-oriented systems
- This is not a UML sales pitch
- This is not an anti-UML sales pitch

Administrative Items

- Breaks – one in the AM and one in the PM
- Lunch -
- Something not clear, have a question, if I say something stupid, or I'm not making sense...
  - Please Speak Up
- Introduction of the Team
- We will proceed informally

Operant Objectives

- At the end of this session, you should expect to leave with:

✓ A sense of what business modeling is about

✓ A sense of what UML is about

✓ An appreciation about the ways UML can currently be used in business modeling

✓ An idea about how to proceed from here

✘ You will not leave with business modeling or UML skills

Any Questions?

"Business Modeling and UML – Hype vs. Reality"

Covered:

- Introduction

Still to Come:

- What is Business Modeling? What is UML?
- UML Strengths and Weaknesses
- Comparison of "Traditional" Business Modeling Approaches and UML Approaches
- How Business Models Transform into System Design Models
- Case Study: MN Dept of Commerce – IDEA Project
- Conclusion

What is Business Modeling?
What is UML?

The Situation …

- Business modeling initially evolved independent of UML
- UML initially evolved independent of business modeling

- Now they are meeting!
- What are the implications?

What is Business Modeling?

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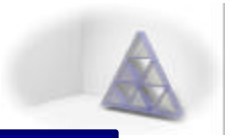
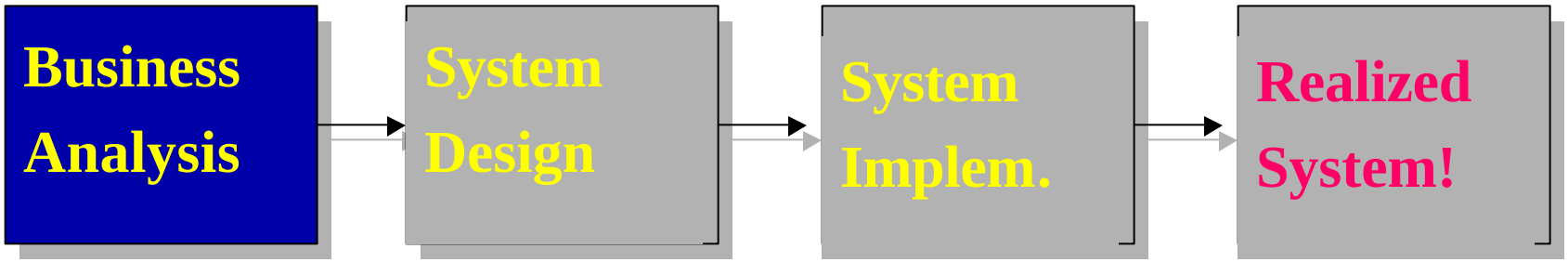


What is Business Analysis?

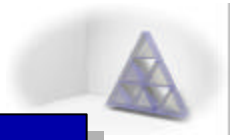
- "Analysis is the study of a problem, prior to taking some action…" - *Tom DeMarco*
- It identifies "what" a solution will do, not "how" it will do it.
- It involves discovering business considerations and documenting selected business possibilities.

Business Modeling

---------- Methods ----------



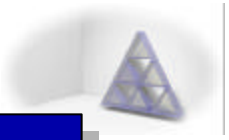
Techniques	Techniques	Techniques
Instruments	Instruments	Instruments
Tools	Tools	Tools



Methods

- Method - the process you follow
  - the products you produce
- Examples
  - RUP: Rational Unified Process (Rational)
  - The ICONIX Unified Object Modeling Approach (Rosenberg)
  - RPM: Recommended Process and Models (Larman)
  - OPEN: OO Process, Environment and Notation
  - XP: Extreme Programming

  - (Many others. Named & unnamed, formal & informal)



Methods

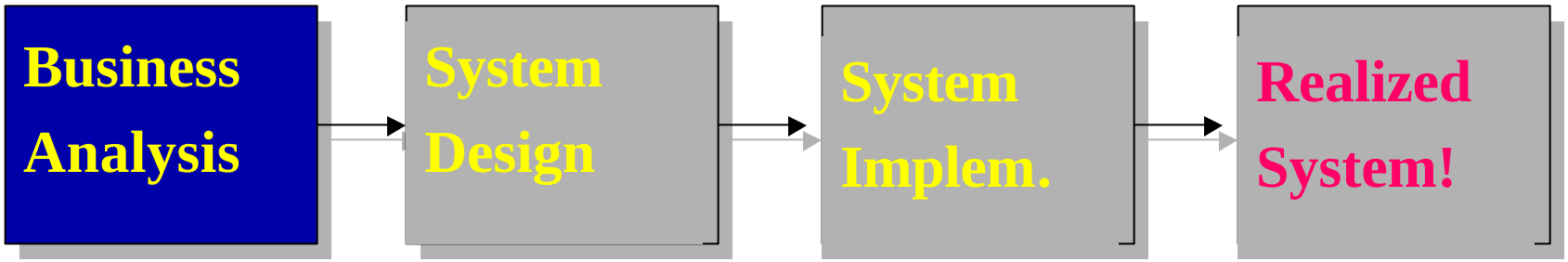
- There is one UML-related topic that everyone agrees upon:

  There is NO set process on how to employ UML!

- Some see this as a good thing …
- But it does present a problem if you want to start using UML

Business Modeling

Methods



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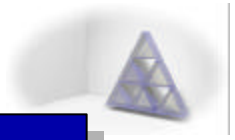


Techniques

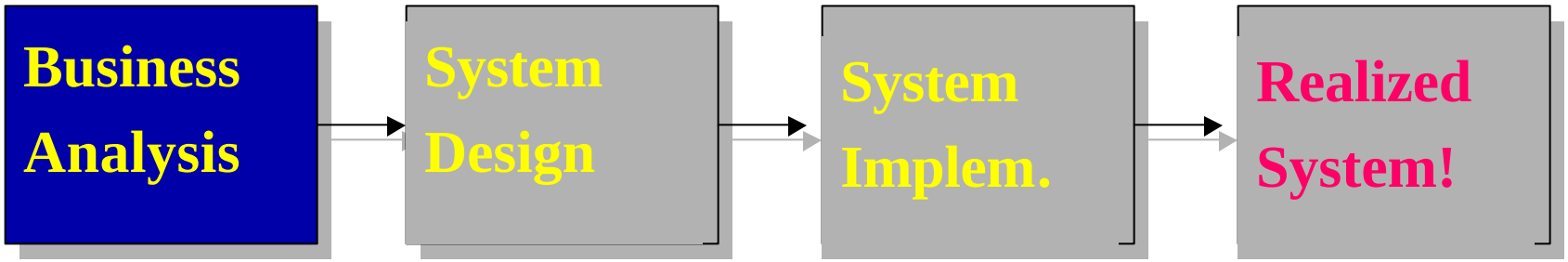
- Technique – a specific approach used to perform a specific function

- Examples
  - Business Modeling
  - Object Modeling
  - Process Modeling
  - Testing

  - (Many others. Named & unnamed, formal & informal)

Business Modeling

Methods



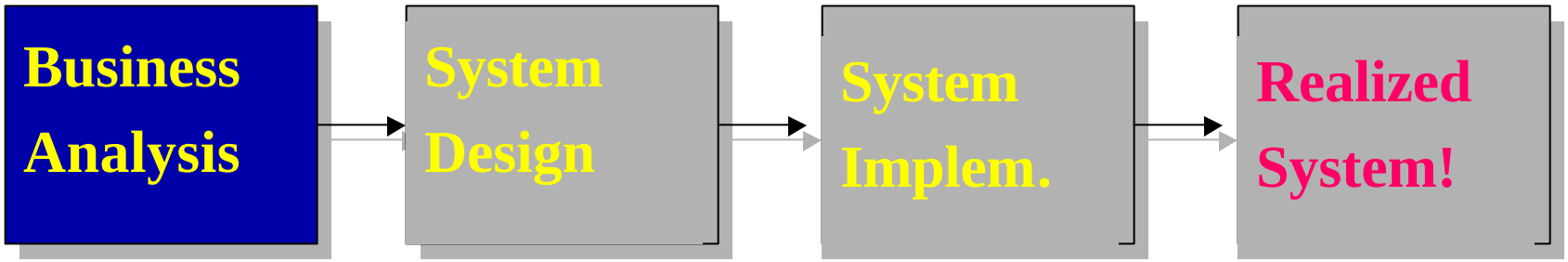
Techniques	Techniques	Techniques
Instruments	Instruments	Instruments
Tools	Tools	Tools

Instruments

- Instrument – a visual aid used to capture information, driving the process toward a work product, and embodying the work product when we are done.
- Examples
  - Class Diagram (UML)
  - Sequence Diagram (UML)
  - Entity-Relationship Diagram
  - Flow Charts
  - (Many others)

Business Modeling

Methods



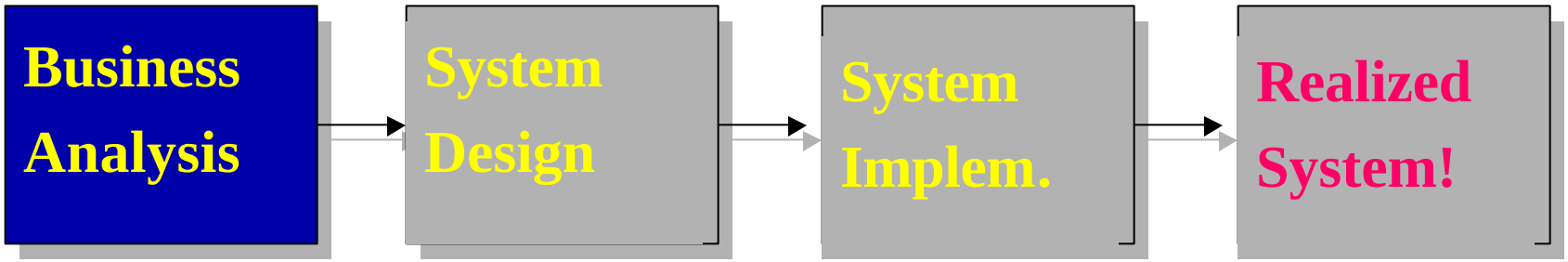
Techniques	Techniques	Techniques
Instruments	Instruments	Instruments
Tools	Tools	Tools

Tools

- Tool – apparatus used to perform an operation (and increase productivity)
- Examples
  - Pencil and paper
  - WORD
  - Visio
  - ERwin
  - Rational Rose
  - (Many others)

Business Modeling

---------- Methods ----------



Techniques	Techniques	Techniques
Instruments	Instruments	Instruments
Tools	Tools	Tools

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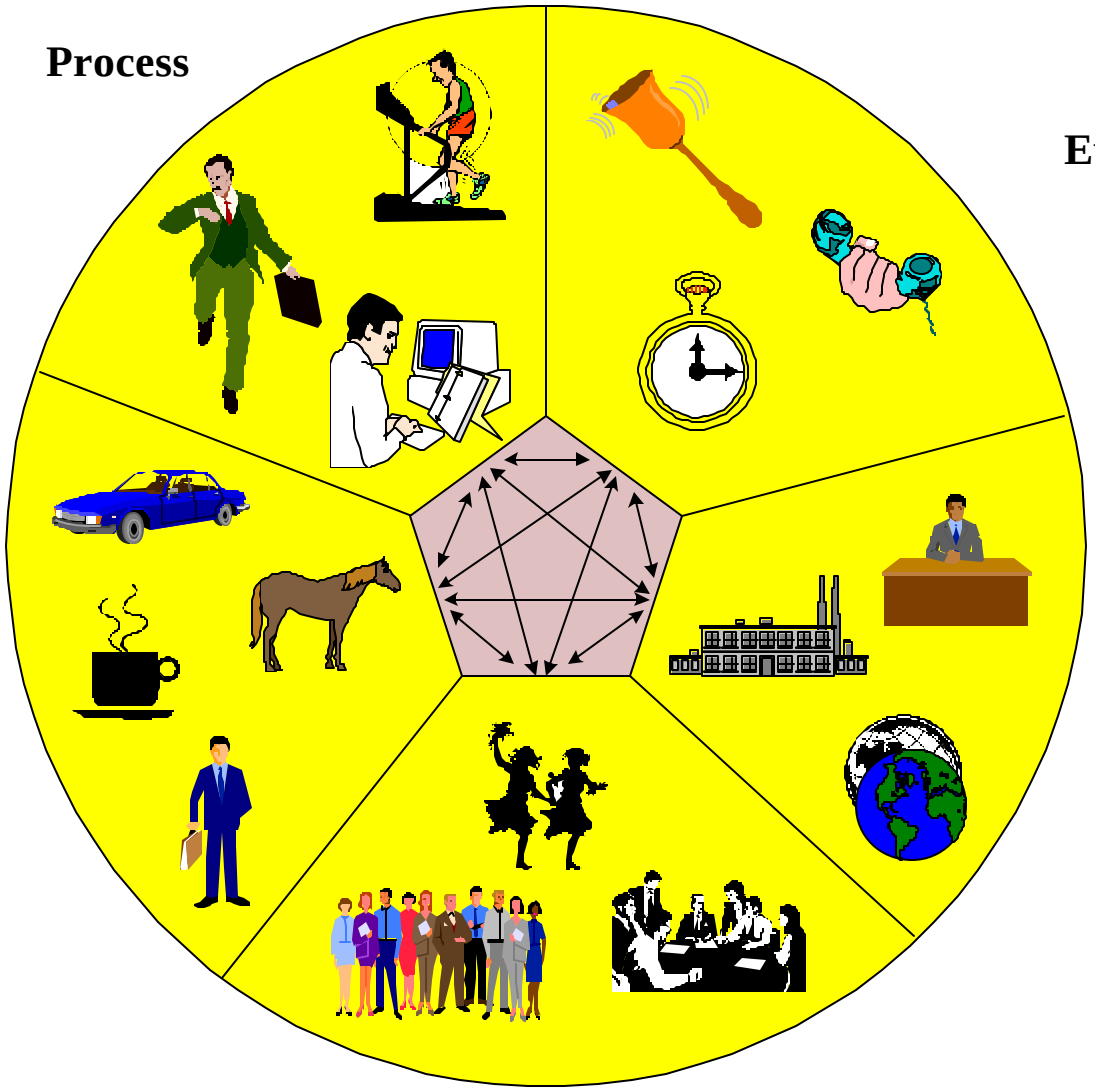
Business Aspects



Business Aspects = Threads

- Object “What”
- Process “How”
- Event “When”
- Location “Where”
- Socio-Political “Who”

plus

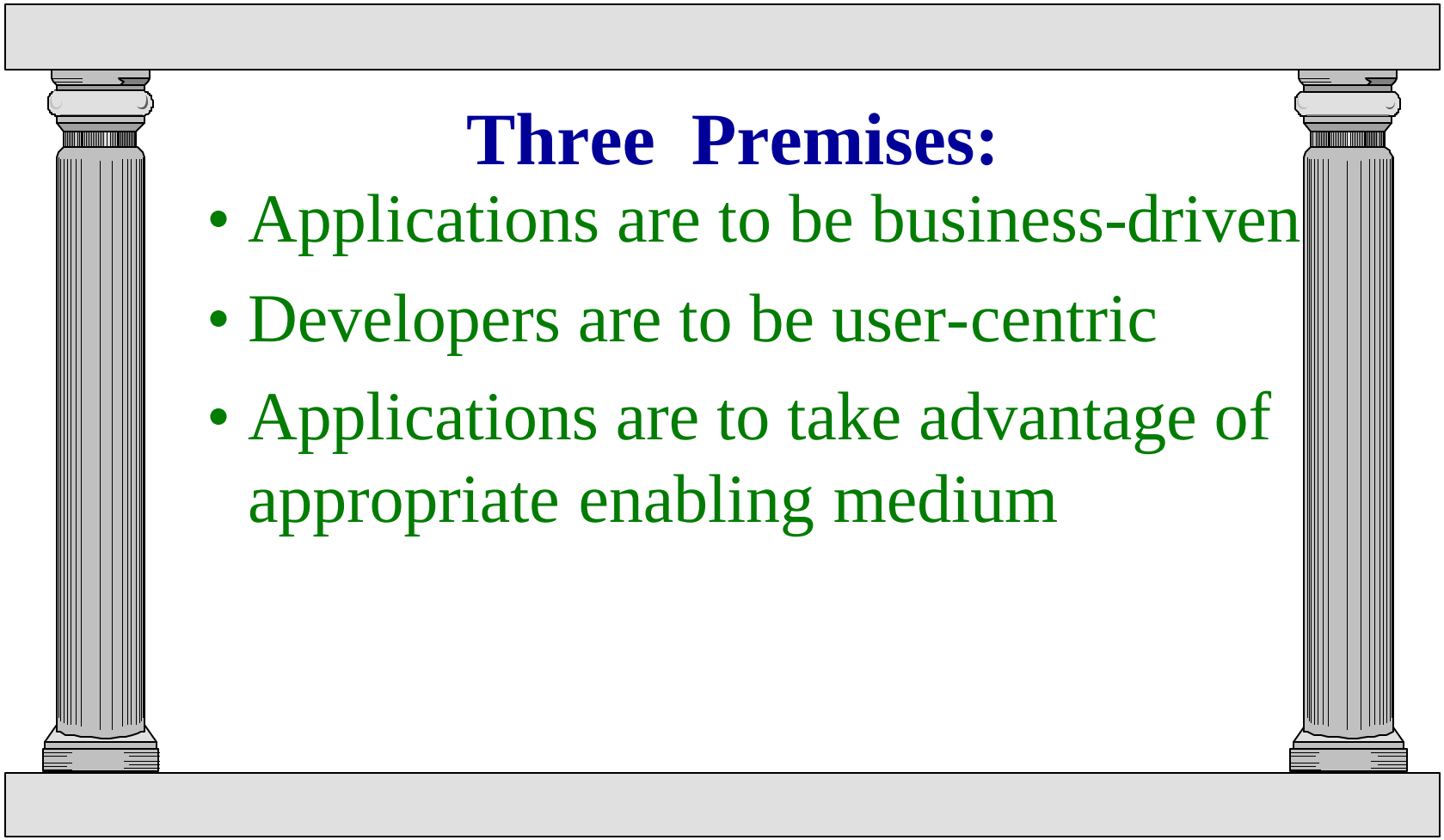
- Enabling Medium

Disciplines and Threads

	Business Analysis	System Design	System Implementation
• Object	?	?	?
• Process	?	?	?
• Event	?	?	?
• Location	?	?	?
• Socio-Political	?	?	?
• Enabling Medium	?	?	?

- A question we all have to deal with:
  - What methods techniques, instruments, and tools do we use?

Analysis that Meets these Premises



Three Premises:

- Applications are to be business-driven
- Developers are to be user-centric
- Applications are to take advantage of appropriate enabling medium

Keys to Analysis

- Speaking the language of business
- Documenting your discoveries in a way that:
  - Is meaningful to the business users
  - Can be verified by the business users
  - Can be transformed in design
- Maximize the value of the users time
  - Move quickly
  - Only have to cover things once
  - “Feel good” that the outputs will be used

Business Analysis

- One definition:

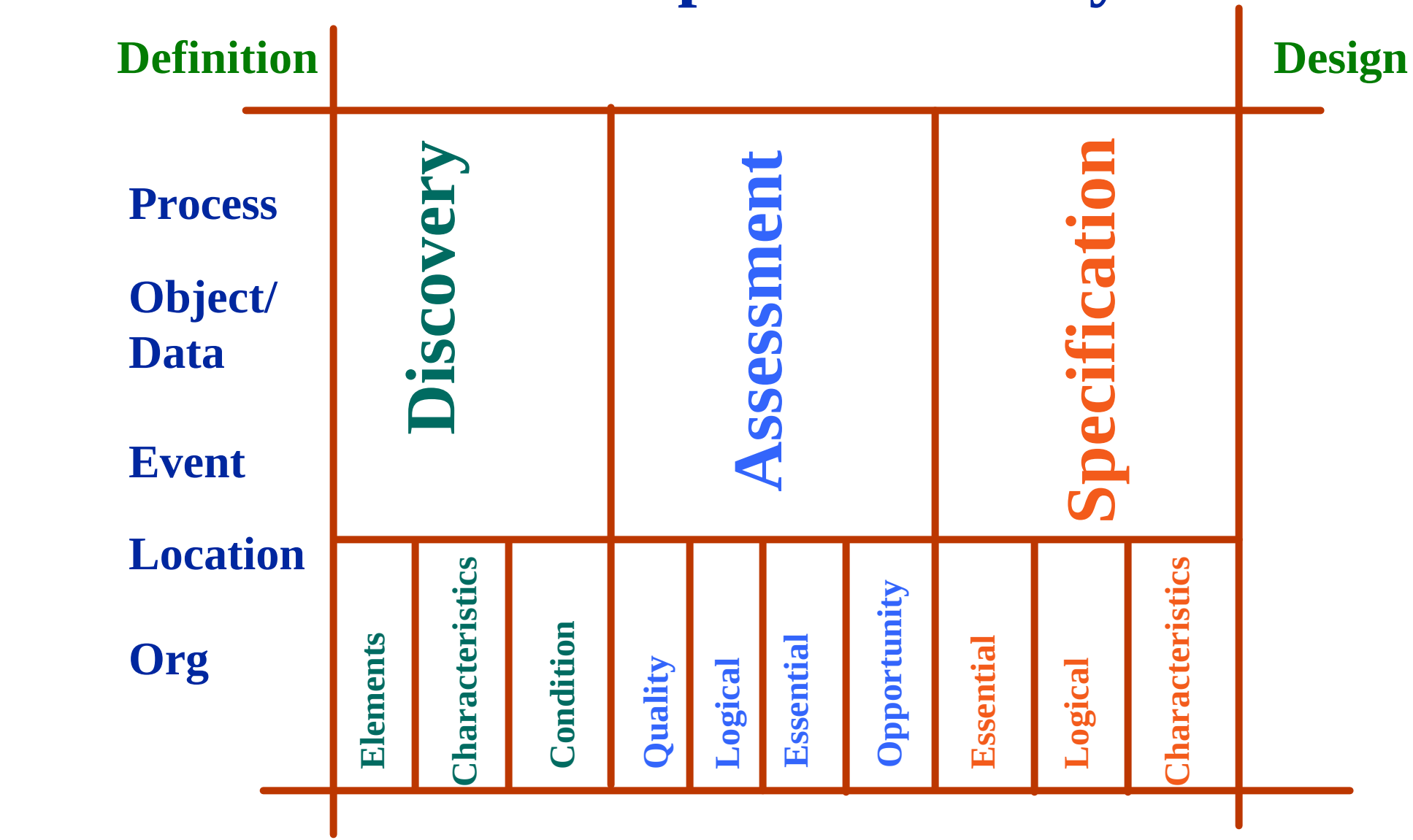
  Determining the requirements for your system

- A broader definition:

  Determining the requirements for your business, including:

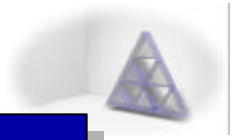
  – Systems
  – People and manual components
  – Appropriate technology solutions in all areas

Sub-Disciplines of Analysis



One Important Assumption

- We are focusing on applications that support significant Business Functions (Processes)
  - The Business of Government
  - E.g.: Program administration, accounting functions, service delivery functions
- This is a distinct class of applications, different from utilities, tools, or single activity applications
  - E.g.: Do-list manager, Sort routine, e-mail

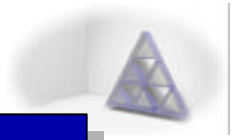


OO Analysis?

- OO is an important design strategy
- OO is not meaningful to business people

- Good analysis does not presume a solution
- We do not wish to prejudice the solution, prior to understanding the problem.
  - In fact, the “solution” may not require automation at all.
  - Remember our assumption

What is UML?



UML (Unified Modeling Language)

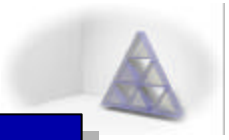
- Is
  - A set of instruments
- Is not:
  - A method
  - A technique
  - A tool

UML – an evolving definition

- "UML is a language used to specify, visualize, and document the artifacts of an object-oriented system under development." (Terry Quatrani) - 1997

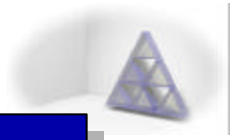
- "The UML is a standard language for writing software blueprints. The UML may be used to visualize, specify, construct, and document the artifacts of a software-intensive system." (Booch, Rumbaugh, Jacobson) - 1999

- "The Unified Modeling Language (UML) is a language for specifying, visualizing, constructing, and documenting the artifacts of software systems, as well as for business modeling and other non-software systems." (Rational) - 2000



UML

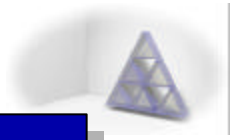
- What is it?
  - A notation for modeling systems (and business?) using OO concepts.
- History
  - Prior to 1994
  - 1994, Jim Rumbaugh joined Grady Booch with Rational Software
  - 1995, Ivar Jacobson joined and Unified Method 0.8 developed
  - 1996, 3 amigos worked under name of Unified Modeling Language (UML)
  - 1997, Rational release v1.0 of UML as their proposition to the OMG (Object Management Group) standardization task force as their proposal.
  - Current version is 1.3 (UML 2.0 expected mid-2002)
- Also
  - Contribution by consortium of vendors (Microsoft, HP, Oracle, IBM, others)
  - Open standard. Not a proprietary language.



What Qualifies as OO?

Usually some combination of these things:

- Use of an OO enabled language
  - Visual Basic and C++ are the most common
- OO constructs employed
  - Encapsulation
  - Inheritance
  - Polymorphism
- Reuse attempt
  - Assembly from base components
  - Purchase of pre-existing components



UML Diagram Types

UML Views	UML Diagrams
Static View	Class Diagram
State Machine View	Statechart Diagram
Activity View	Activity Diagram
Use Case View	Use Case (and Diagram)
Interaction View	Sequence Diagram
	Collaboration Diagram
Physical View	Component Diagram
	Deployment Diagram
Model Mgt View	Package Diagram

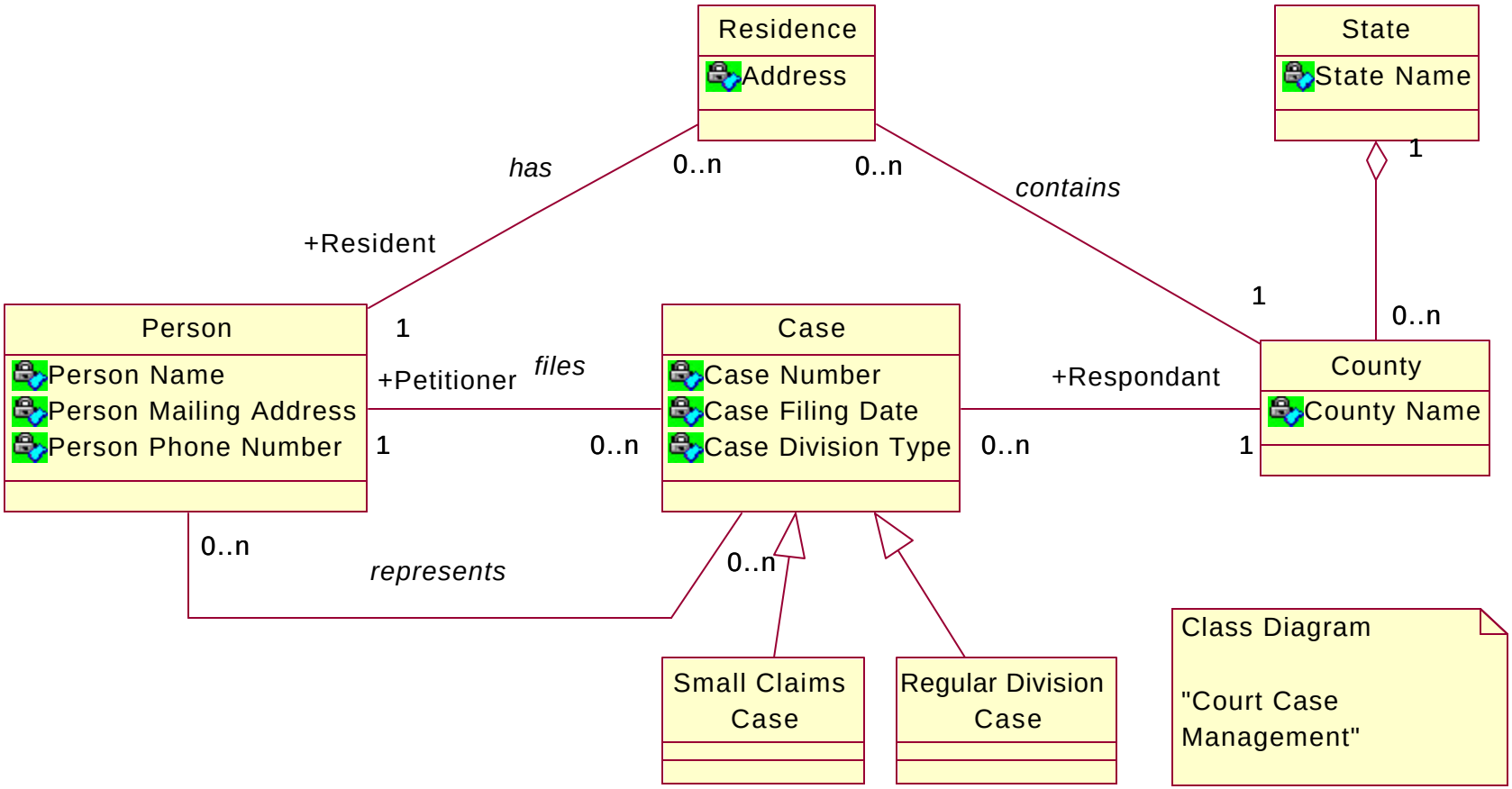
Diagram Examples

- We will look at an example of each kind of UML diagram
- Our business will be a court (with apologies to the MN Tax Court)
- The examples are small, just to show the intent of the diagrams

Class Diagram

- Shows a collection of declarative (static) model elements
- Includes:
  - Types of things (with attributes, operations)
  - Associations
- Use in Business Modeling:
  - Domain classes (real world business things)
- Use in System Design:
  - OO classes (system things)

Class Diagram



(Note: Classes, Attributes, Associations, Roles, Multiplicity, Generalization, Aggregation)

Class Diagram

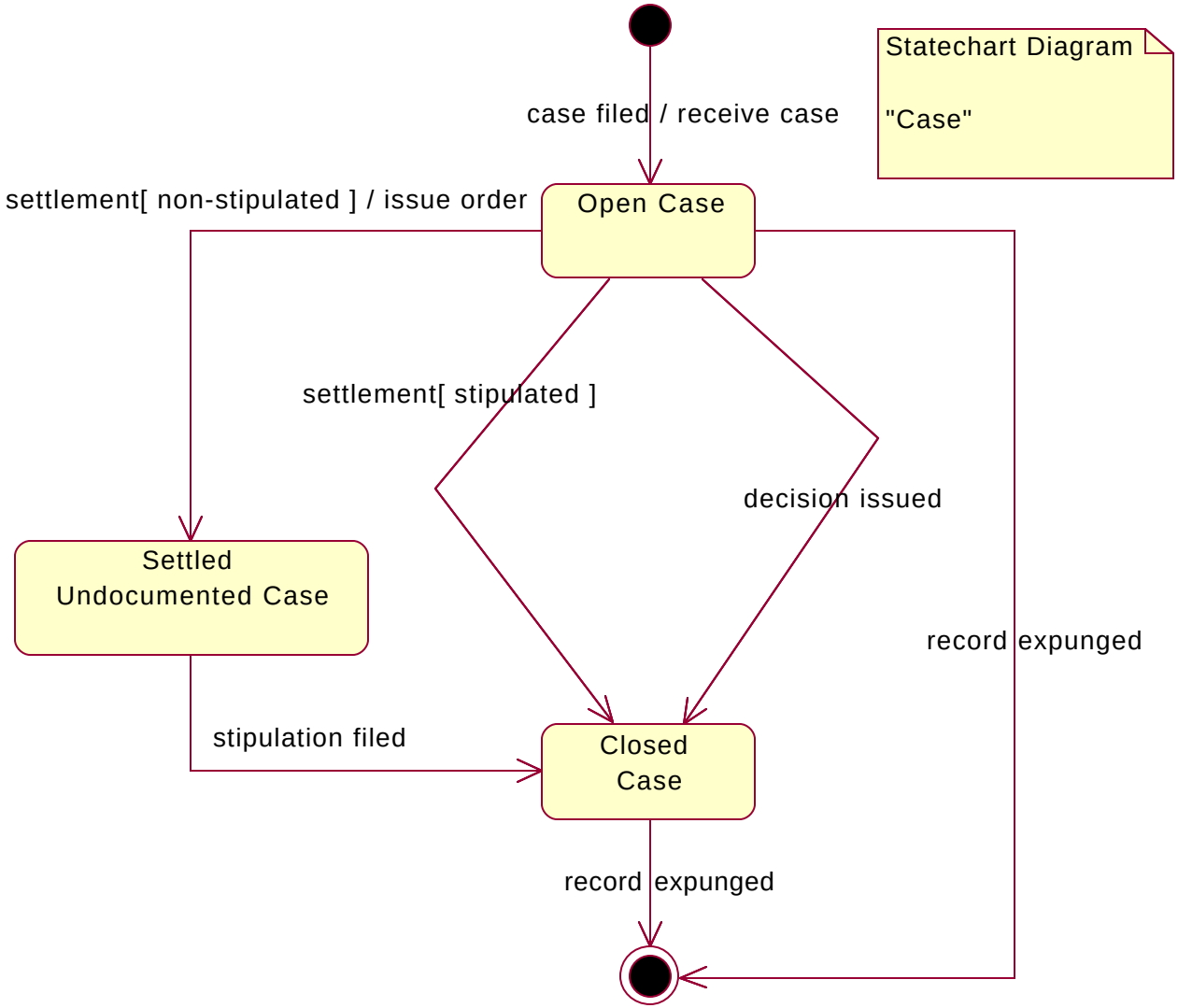
One more thing:

- Class diagrams can show operations or methods.
- This is what OO design is all about, but ..
- I would not recommend it during business analysis
  - It is not intuitive to business people
  - It prematurely implies a design strategy

Statechart Diagram

- Shows the sequences of states that an object goes through in response to events during its life, together with its responsive actions
- Includes:
  - States - State Transition
  - Events - Activities (and actions)
- Use in Business Modeling:
  - States of real world business objects
- Use in System Design:
  - States of system objects

Statechart Diagram

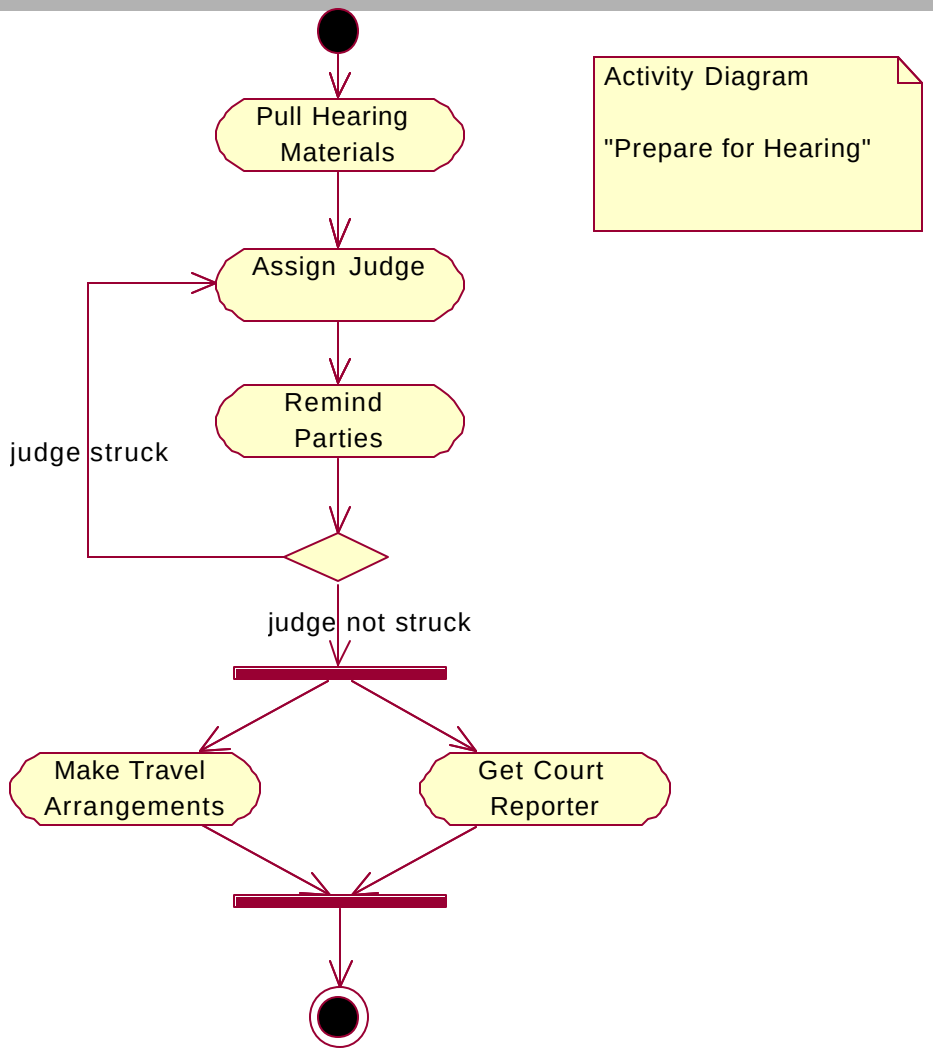


(Note: States, Initial/Final, Transitions, Events, Guards, Activities)

Activity Diagram

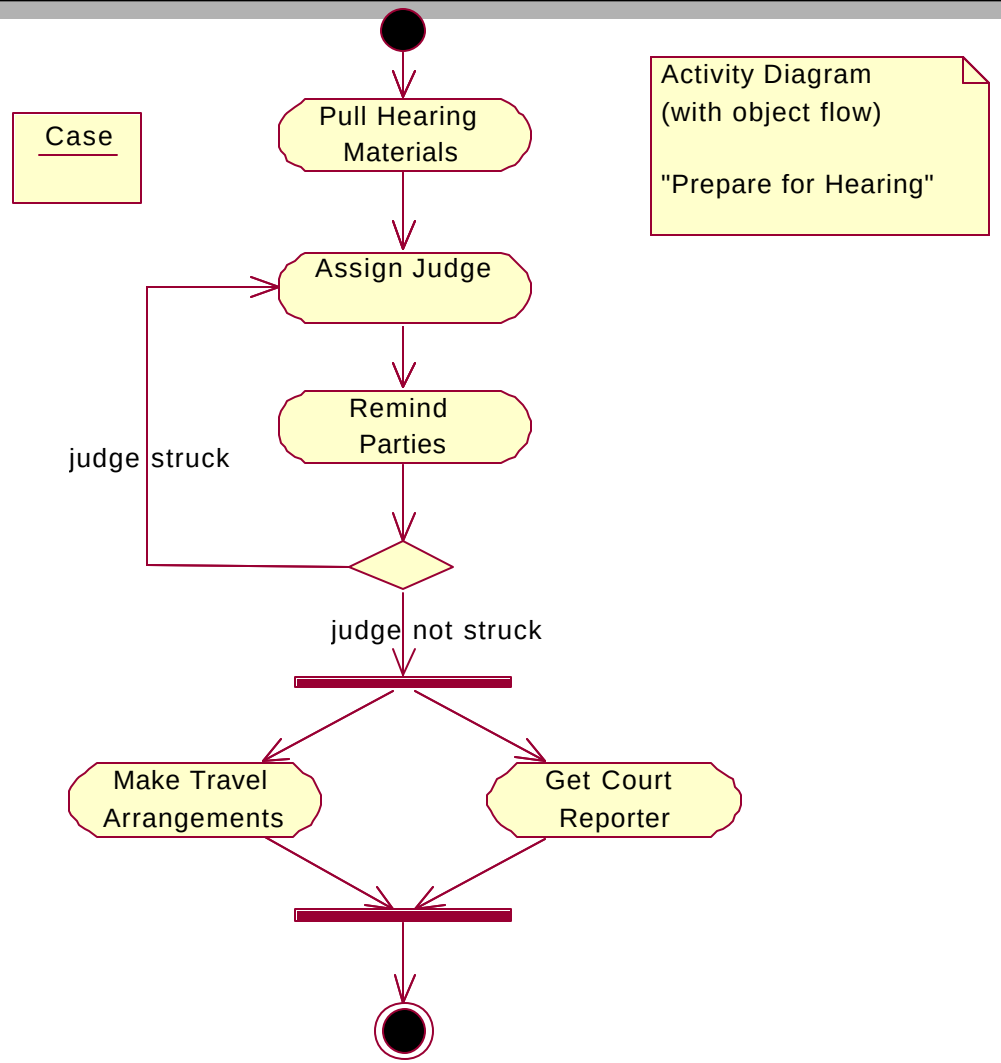
- Shows a procedure or a workflow
- Includes:
  - Activities
  - Flow (sequence)
  - Flow (object)
- Use in Business Modeling:
  - Real world business processes
- Use in System Design:
  - System logic flow

Activity Diagram



(Note: Activities, Initial/Final, Sequence Flow, Decisions, Concurrency/Synchronization)

Activity Diagram

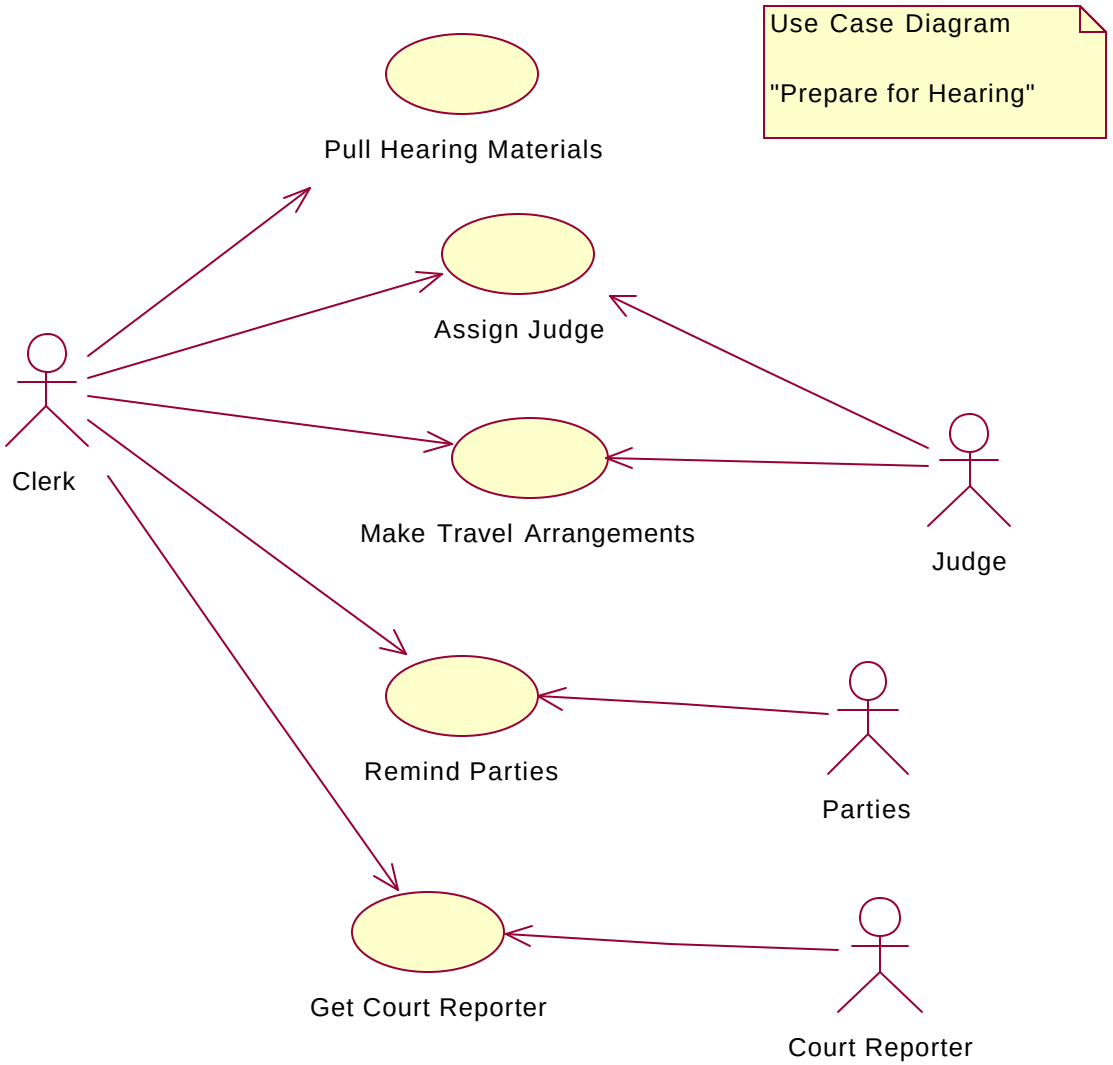


(Note: Object Flow – which needs dashed lines with arrow heads!)

Use Cases (and diagrams)

- Shows the sequences of actions that a system can perform by interacting with outside actors
- Includes:
  - Use Cases (with scenario of actions)
  - Actors
- Use in Business Modeling:
  - Real world business processes (and “who”)
- Use in System Design:
  - Interaction between system and actor

Use Case Diagram



(Note: Use cases, Actors, Interfaces)

Use Case (page 1 of 3)

USE CASE

- **ID:** 2
- **Name:** Assign Judge

CHARACTERISTIC INFORMATION

- **Goal in Context**: To match a judge with a case hearing
- **Preconditions:** The case must be ready for a hearing
- **Success End Condition**: A judge is assigned to the hearing
- **Actors:** Clerk, Judge
- **Trigger**: Mondays at 10:00 AM

Use Case (page 2 of 3)

MAIN SUCCESS SCENARIO

1. Clerk checks log to see which judge is up next
2. Clerk evaluates case to make sure the judge is OK for this case (assumes clerk has historic knowledge)
3. Clerk checks judges schedule to make sure there are no conflicts
4. Clerk calls the judge for agreement on assignment
5. Clerk makes assignment

EXTENSIONS

2a. Judges is not OK, due to conflict of interest, history with petitioner, etc.

2a1. Revert to step 1.

3a. Judge has conflict

3a1. Reschedule conflicting event

3a2. Revert to step 1.

4a. Judge does not want assignment

4a2. Revert to step 1.

Use Case (page 3 of 3)

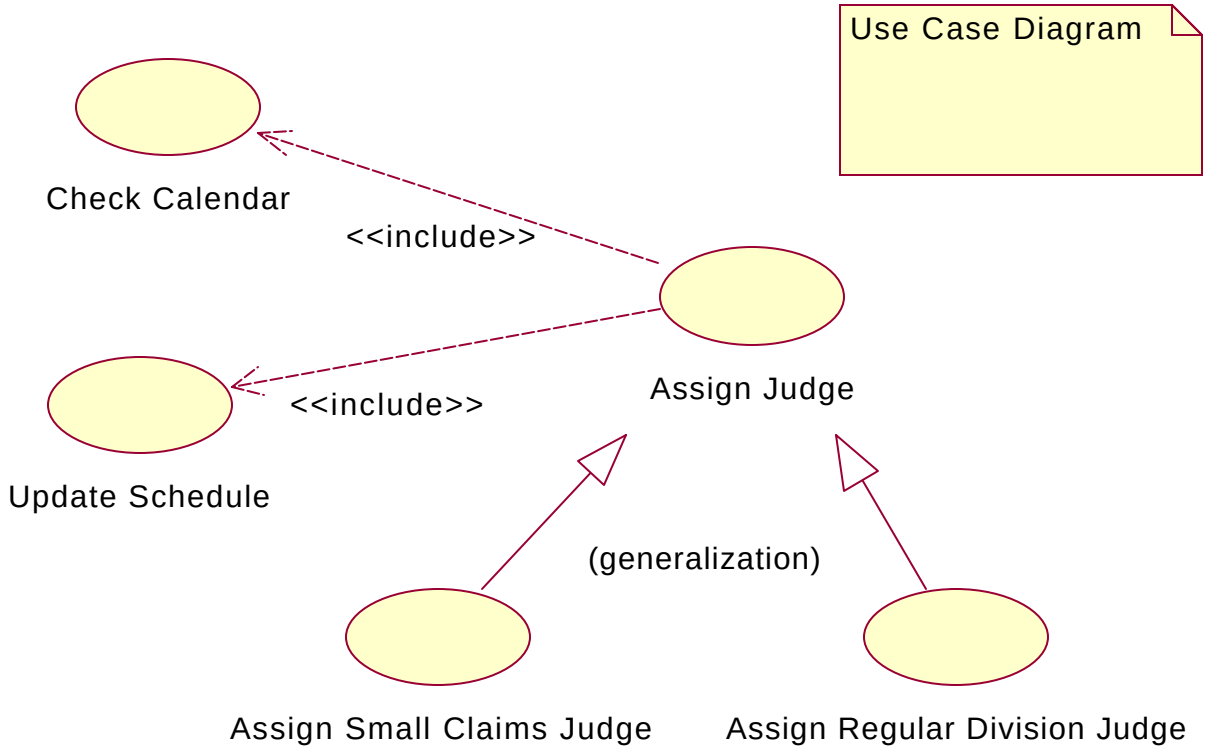
VARIATIONS

4. Contact can be via: phone, email, or drop in

RELATED INFORMATION

- **Frequency**: 10 per week
- **Stakeholders and Interests:**
  - The petitioner – get an unbiased judge for the hearing
  - The judge – get appropriate assignments and a reasonable schedule
- **Business Rules:**
  - A petitioner cannot see the same judge for two consecutive cases
  - A judge cannot have more than 4 hearings on a single day

Use Case Diagram



(Note: Generalization, Includes. Extends is not shown)

Sequence Diagram

- Shows object interactions arranged in time sequence
- Includes:
  - Objects
  - Messages exchanged
- Use in Business Modeling:
  - Specify behavior of a business use case
  - (opinion: may not be business-friendly)
- Use in System Design:
  - Specify behavior of a system use case - methods

Sequence Diagram

Sequence Diagram
(business model)

"Assign Judge"

1. Clerk checks log to see which judge is up next

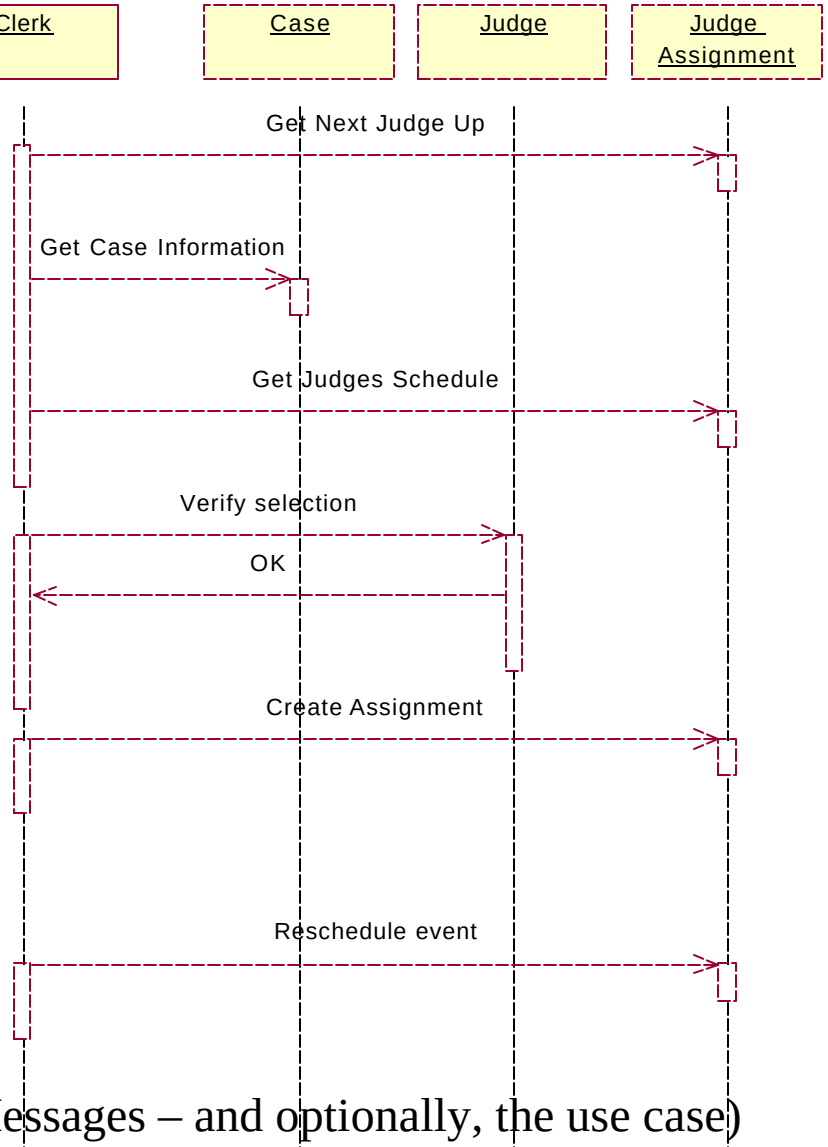
2. Clerk evaluates case to make sure judge is OK for this case (assumes clerk has historic knowledge)

3. Clerk checks judges schedule to make sure there are no conflicts

4. Clerk calls judge for agreement on assignment

5. Clerk makes assignment

EXTENSIONS
3a. Judge has conflict
3a1. Reschedule conflicting event
3a2. Revert to step 1



(Note: Objects, Lifelines, Messages – and optionally, the use case)

Sequence Diagram

Sequence Diagram
(system design)

"Assign Judge"

1. Clerk checks log to see which judge is up next

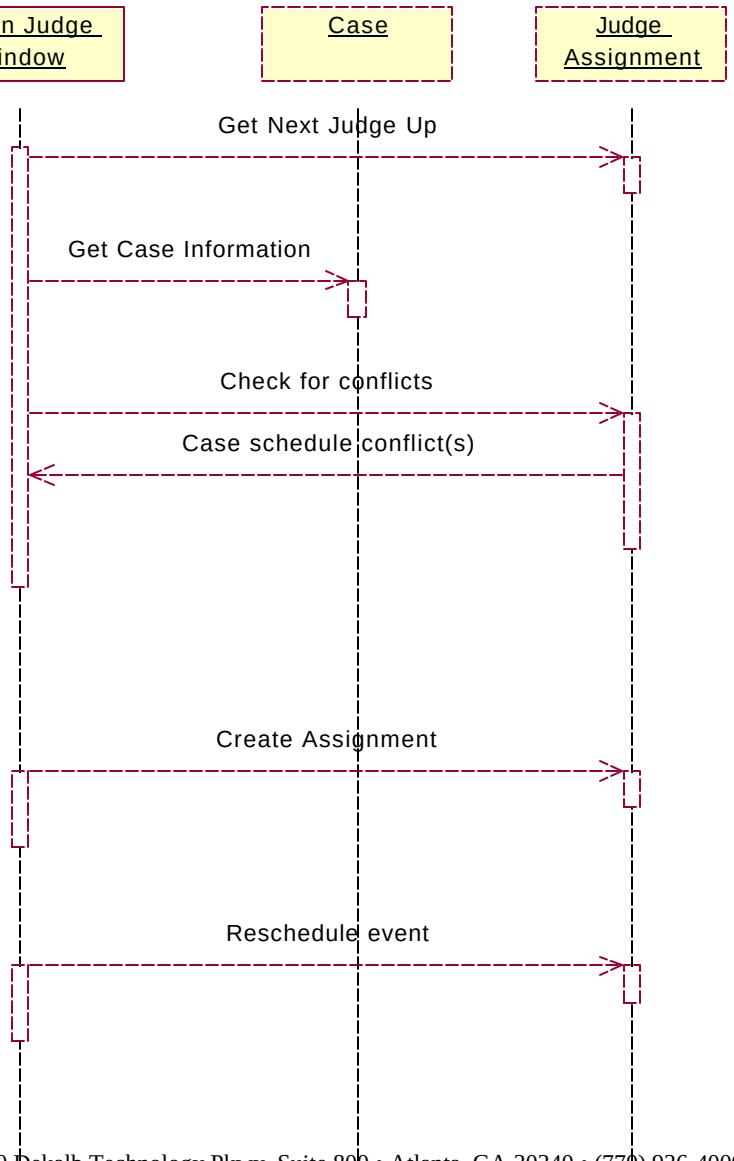
2. Clerk evaluates case to make sure judge is OK for this case (assumes clerk has historic knowledge)

3. Clerk checks judges schedule to make sure there are no conflicts

4. Clerk calls judge for agreement on assignment (manual process)

5. Clerk makes assignment

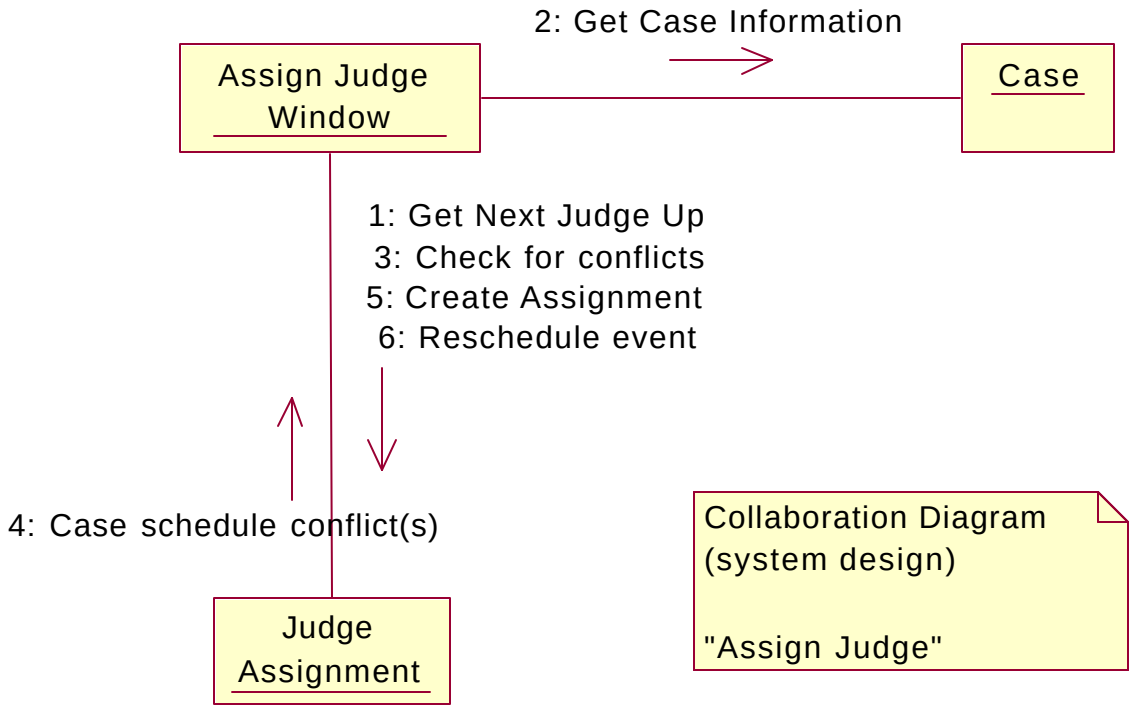
EXTENSIONS
3a. Judge has conflict
3a1. Reschedule conflicting event
3a2. Revert to step 1



Collaboration Diagram

- Shows object interactions organized around roles
- The same info as Sequence Diagrams, except viewed with the class structure, and without the timing
- Includes:
  - Objects
  - Messages exchanged
- Use in Business Modeling:
  - Specify behavior of a business use case
  - (opinion: may not be business-friendly)
- Use in System Design:
  - Specify behavior of a system use case - methods

Collaboration Diagram

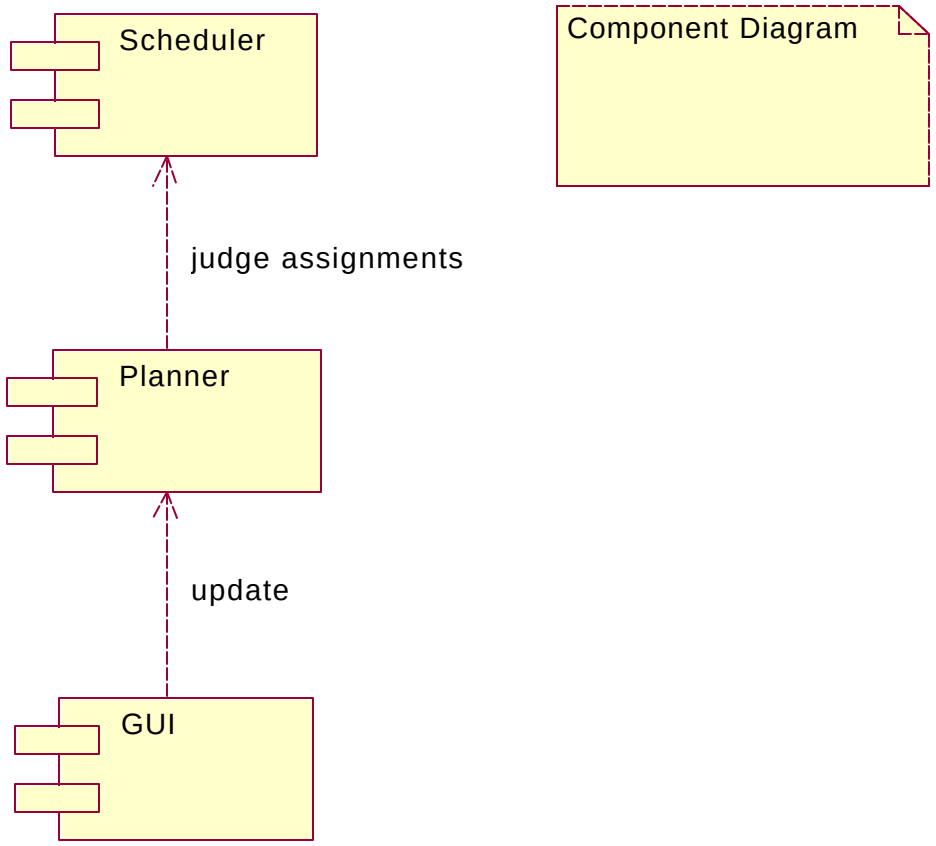


(Note: Objects, Messages)

Component Diagram

- Shows the organization and dependencies among component types
- Component – a physical unit of implementation with well-defined interfaces that is intended to be used as a replaceable part of a system.
- Includes:
  - Components - Interfaces
  - Dependencies
- Use in Business Modeling: (none)
- Use in System Design: (see top)

Component Diagram

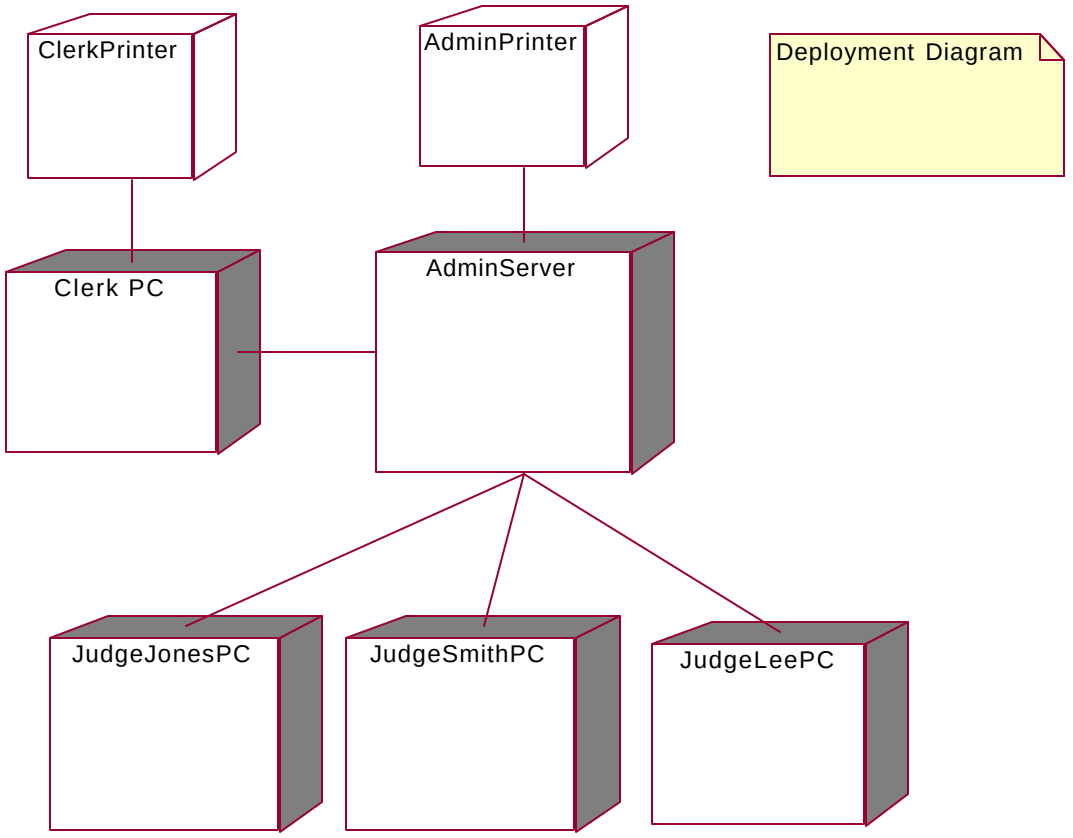


(Note: Components, Dependencies. Interfaces not shown)

Deployment Diagram

- Shows the physical arrangement of run-time computational resources, such as computers and their interconnections
- Contains:
  - Nodes (Processors and Devices)
  - Components (can be shown within nodes)
  - Objects (can be shown within nodes)
- Use in Business Modeling: (none)
- Use in System Design: (see top)

Deployment Diagram

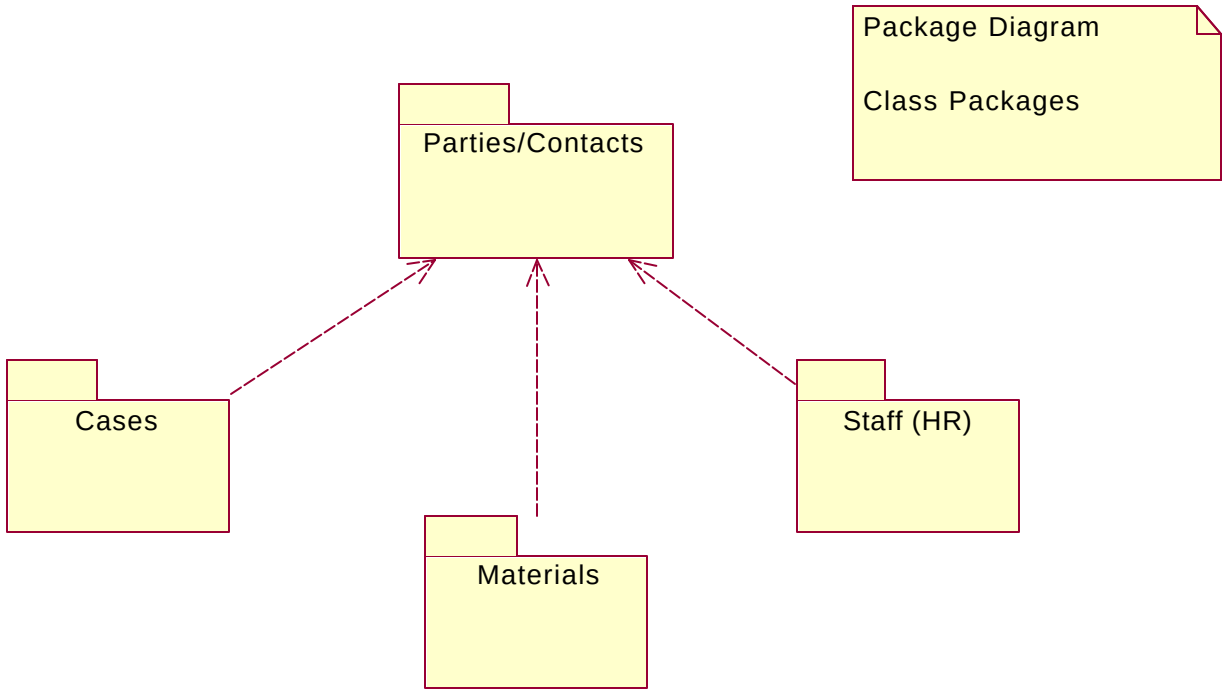


(Note: Processors, Devices, Connections. Components and Objects within nodes are not shown)

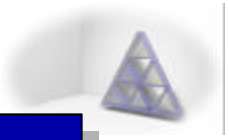
Package Diagram

- Shows organization of model elements
- Includes:
  - Packages
  - Dependencies
- Use in Business Modeling:
  - Organize business model elements
- Use in System Design:
  - Organize system model elements

Package Diagram

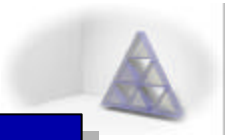


(Note: Packages, Dependencies)



UML Extensions

- Stereotype
  - Definition of new UML component based on existing component
  - Ex: “Process” is a stereotyped “Activity”
- Tagged Value
  - Definition of new piece of info for a UML element
  - Consists of a tag and a value
  - Ex: For a Class, tag = version, value = 1.0
- Constraint
  - Rules/restrictions applied to UML models
  - Ex: No Case Award larger than $1,000,000



Review - UML Diagram Types

UML Views	UML Diagrams
Static View	Class Diagram
State Machine View	Statechart Diagram
Activity View	Activity Diagram
Use Case View	Use Case (and Diagram)
Interaction View	Sequence Diagram
	Collaboration Diagram
Physical View	Component Diagram
	Deployment Diagram
Model Mgt View	Package Diagram

Any Questions?

"Business Modeling and UML – Hype vs. Reality"

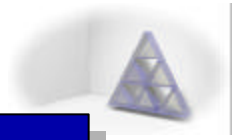
Covered:

- Introduction
- What is Business Modeling? What is UML?

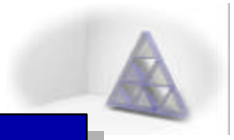
Still to Come:

- UML Strengths and Weaknesses
- Comparison of "Traditional" Business Modeling Approaches and UML Approaches
- How Business Models Transform into System Design Models
- Case Study: MN Dept of Commerce – IDEA Project
- Conclusion

UML Strengths and Weaknesses

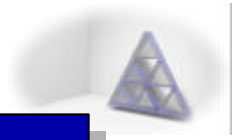


UML Strengths



UML Weaknesses

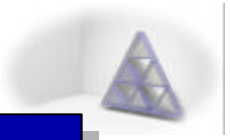
A Few Viewpoints



One More Viewpoint

- "UML is like Microsoft. You might love or you might hate it, but you WILL use it!" (an OO software designer friend of mine)

Is this true? ….



Who is Pushing UML?

Biggest promoters:

- Book sellers
- Training vendors
- Tool vendors
- OO Programmers

Slowest promoters:

- Data modelers
- Business modelers

Any Questions?

"Business Modeling and UML – Hype vs. Reality"

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- Introduction
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- UML Strengths and Weaknesses

Still to Come:

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- Case Study: MN Dept of Commerce – IDEA Project
- Conclusion

Comparison of "Traditional" Business Modeling Approaches and UML Approaches

What are "Traditional" Business Modeling Approaches?

- Ones that we (and others) have been using and advancing over the past 15-20 years.

- The expressed goals:
  - Ease of communication with business people
  - Ability to transform into system design models

For Business Modeling Purposes, We Will Compare …

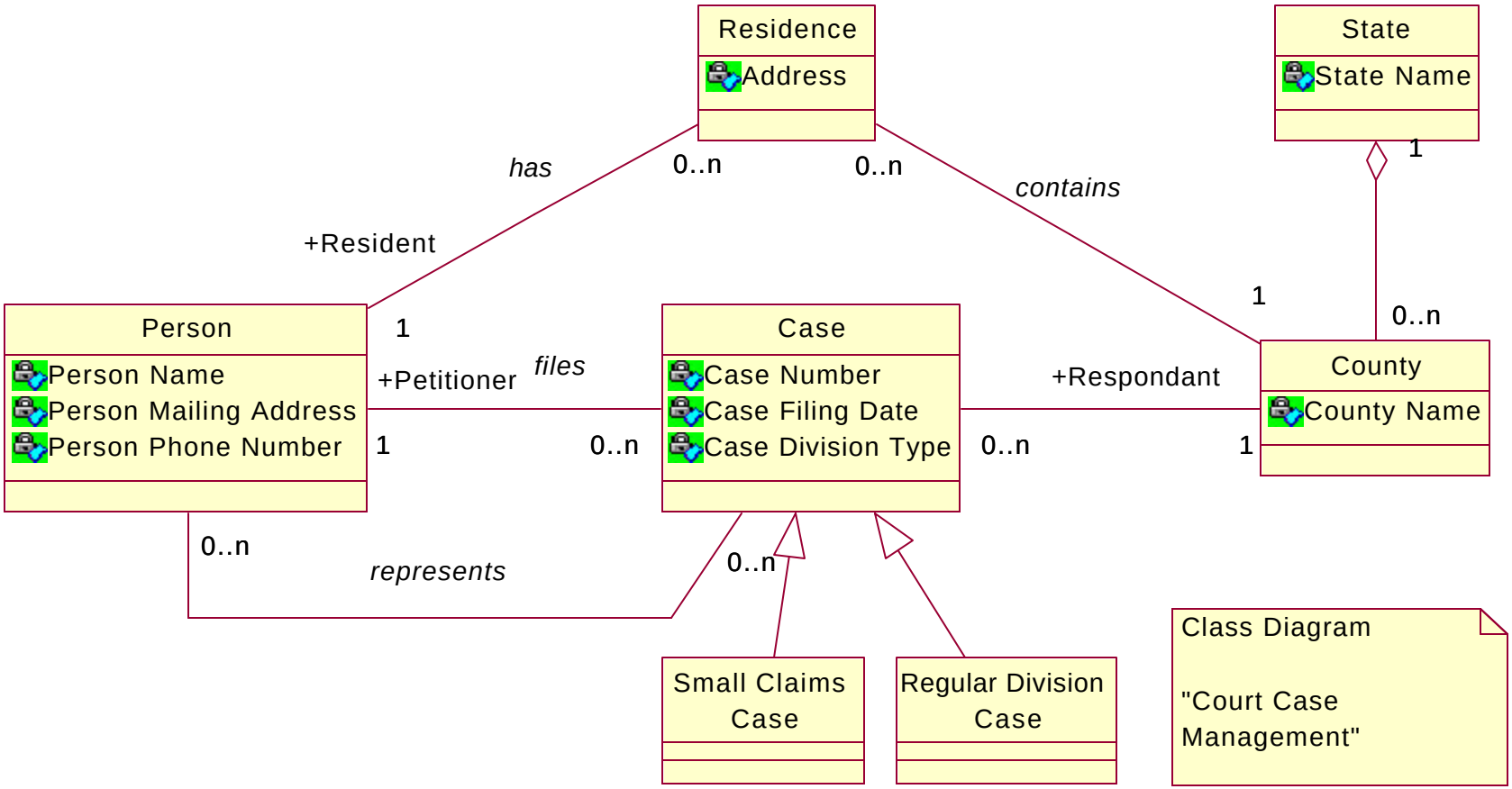
- UML Class Diagrams vs. Entity-Relationship Diagrams
- UML Activity Diagrams vs. Data Flow Diagrams
- UML Use Cases vs. Data Flow Diagrams
- UML Activity Diagrams vs. Flow Charts
- UML Statechart Diagrams vs.other State Diagrams
- UML ? vs. Location Diagrams
- UML ? Vs. Socio-Political Matrices

And briefly look at some

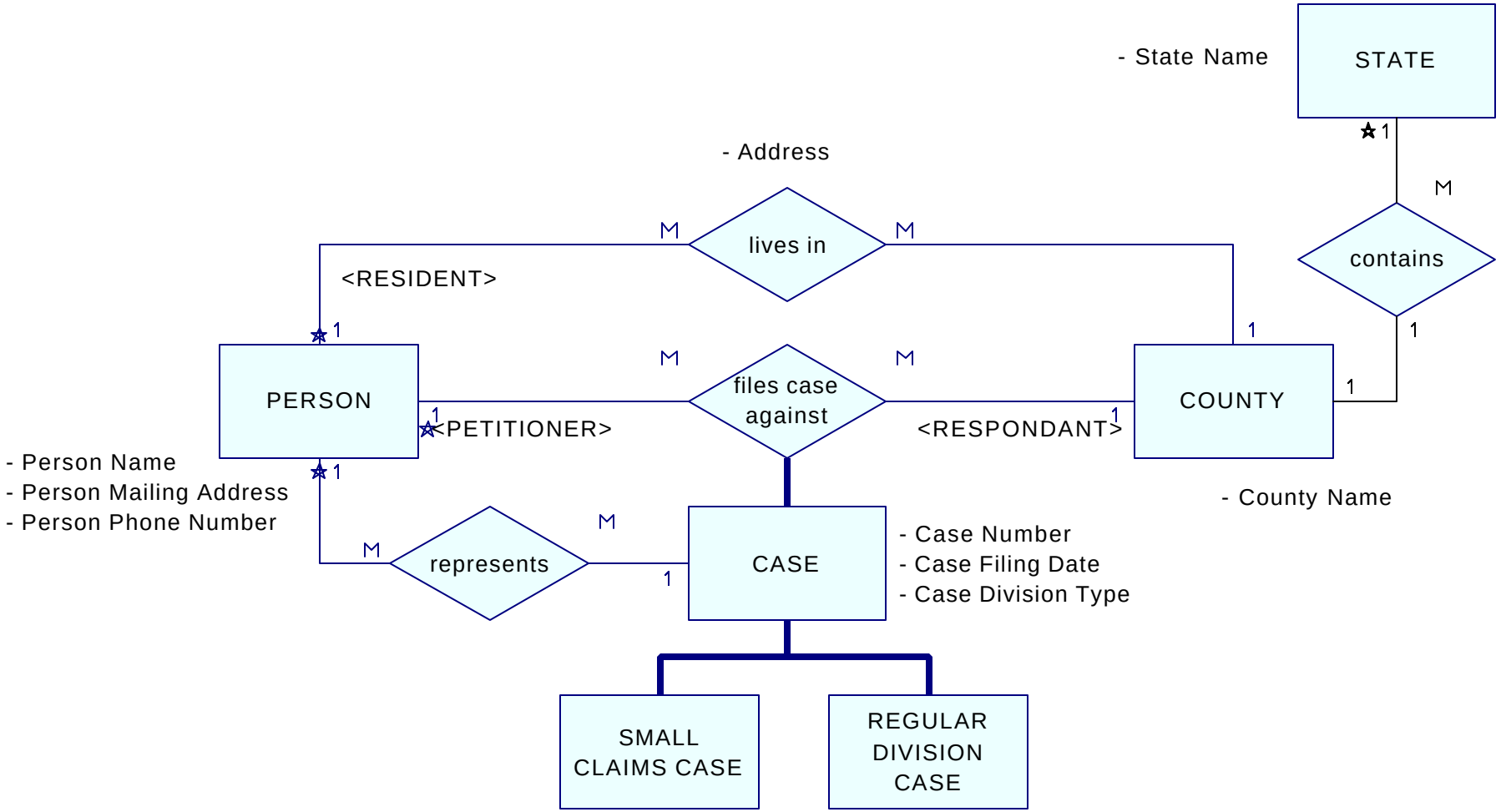
- UML Extensions for business modeling

UML Class Diagrams
vs.
Entity-Relationship Diagrams

Class Diagram



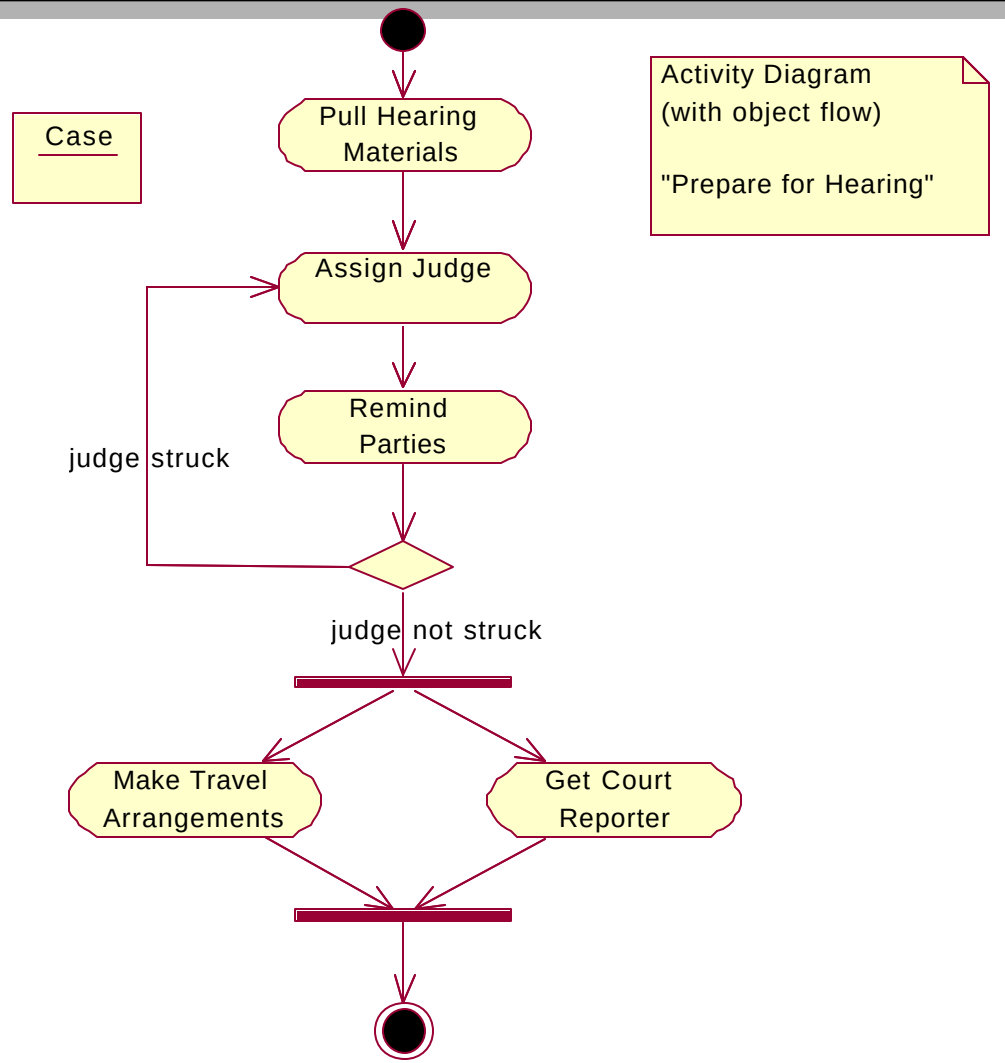
Entity-Relationship Diagram (Chen style)



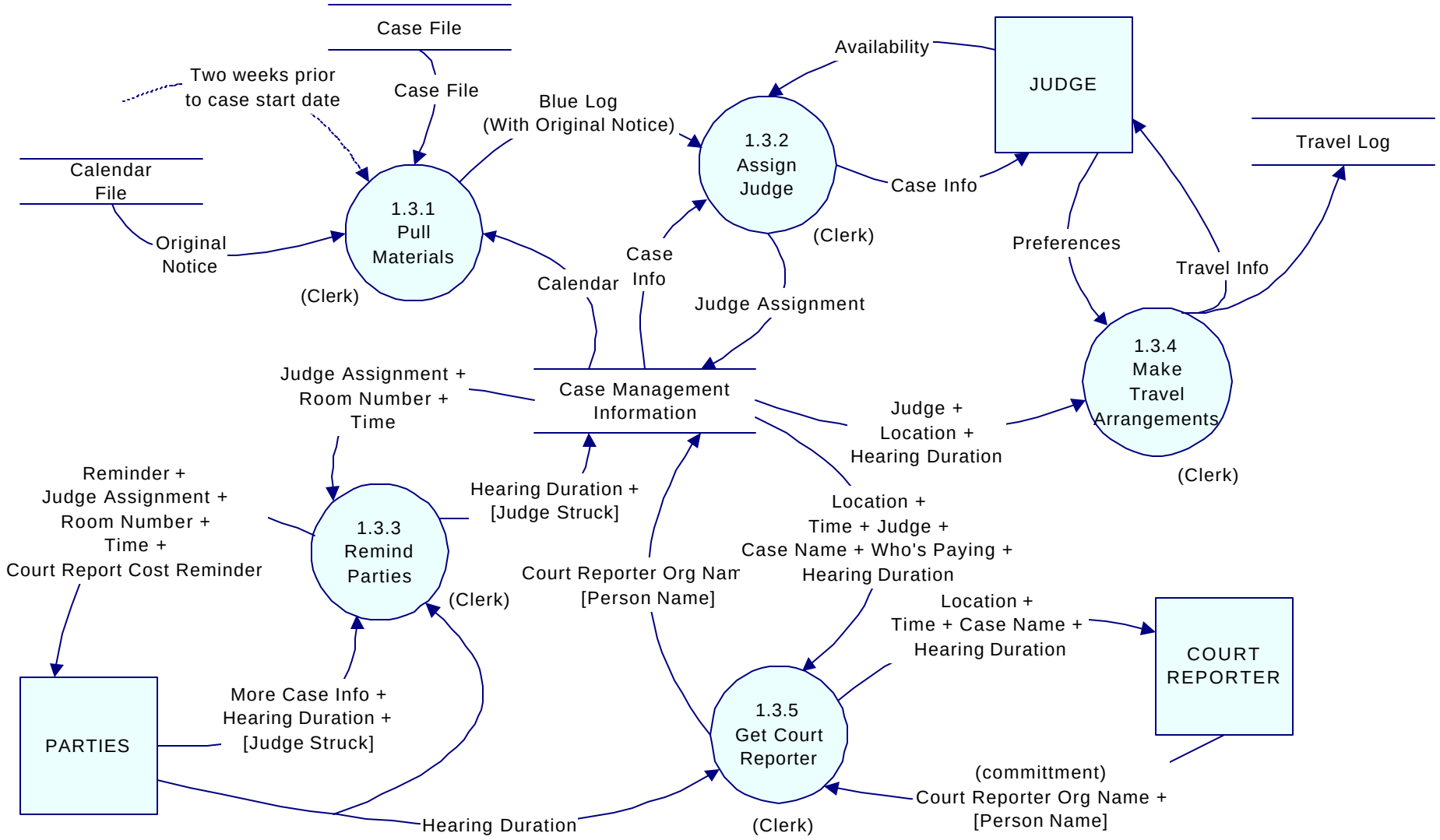
Some Business Model Considerations
Class vs. Chen ERD

UML Activity Diagrams
vs.
Data Flow Diagrams

Activity Diagram



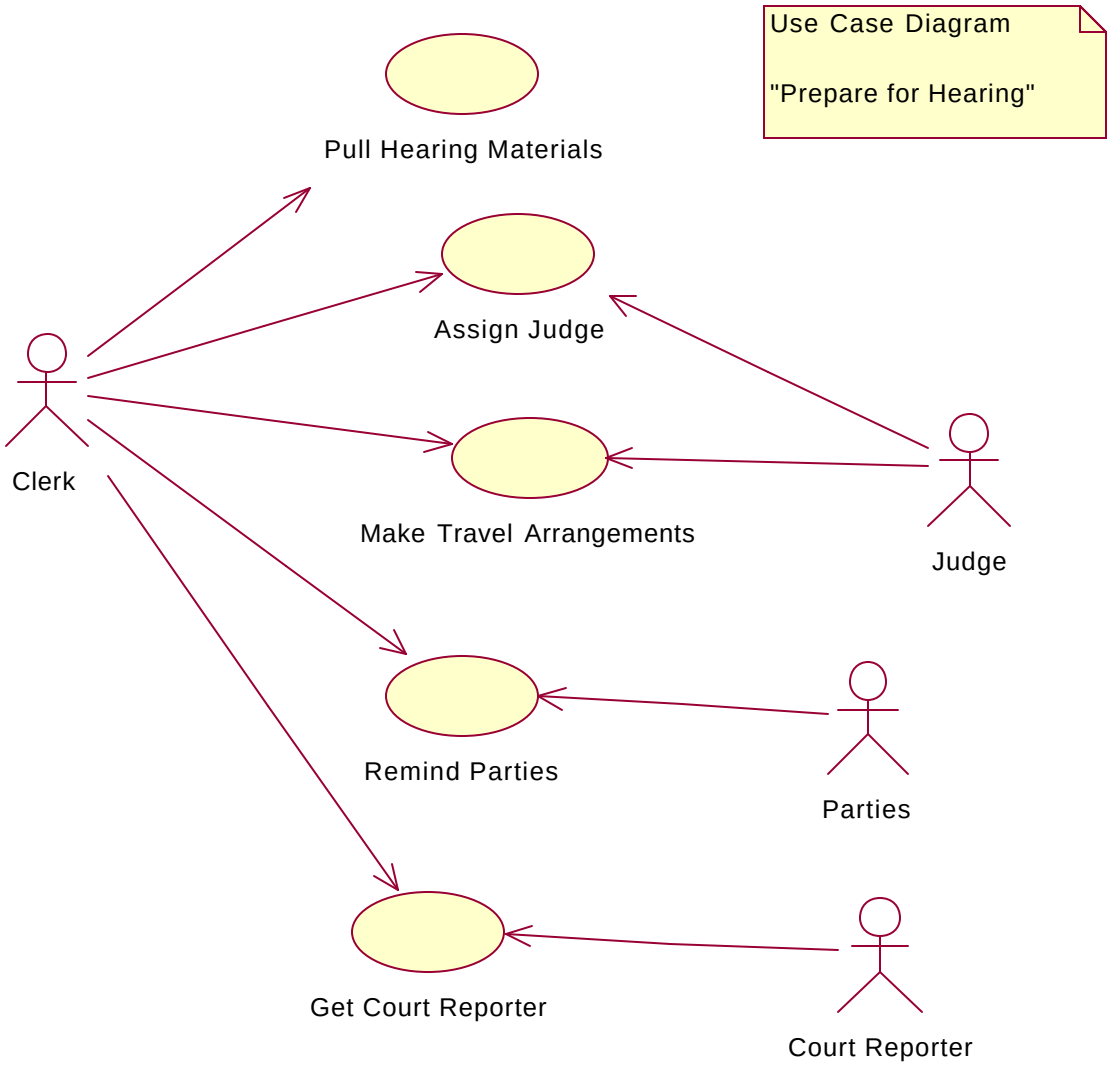
Data Flow Diagram



Some Business Model Considerations
Activity vs. DFD

UML Use Cases
vs.
Data Flow Diagrams

Use Case Diagram



(Note: Use cases, Actors, Interfaces)

Use Case (page 1 of 3)

USE CASE

- **ID:** 2
- **Name:** Assign Judge

CHARACTERISTIC INFORMATION

- **Goal in Context**: To match a judge with a case hearing
- **Preconditions:** The case must be ready for a hearing
- **Success End Condition**: A judge is assigned to the hearing
- **Actors:** Clerk, Judge
- **Trigger**: Mondays at 10:00 AM

Use Case (page 2 of 3)

MAIN SUCCESS SCENARIO

1. Clerk checks log to see which judge is up next
2. Clerk evaluates case to make sure the judge is OK for this case (assumes clerk has historic knowledge)
3. Clerk checks judges schedule to make sure there are no conflicts
4. Clerk calls the judge for agreement on assignment
5. Clerk makes assignment

EXTENSIONS

2a. Judges is not OK, due to conflict of interest, history with petitioner, etc.

2a1. Revert to step 1.

3a. Judge has conflict

3a1. Reschedule conflicting event

3a2. Revert to step 1.

4a. Judge does not want assignment

4a2. Revert to step 1.

Use Case (page 3 of 3)

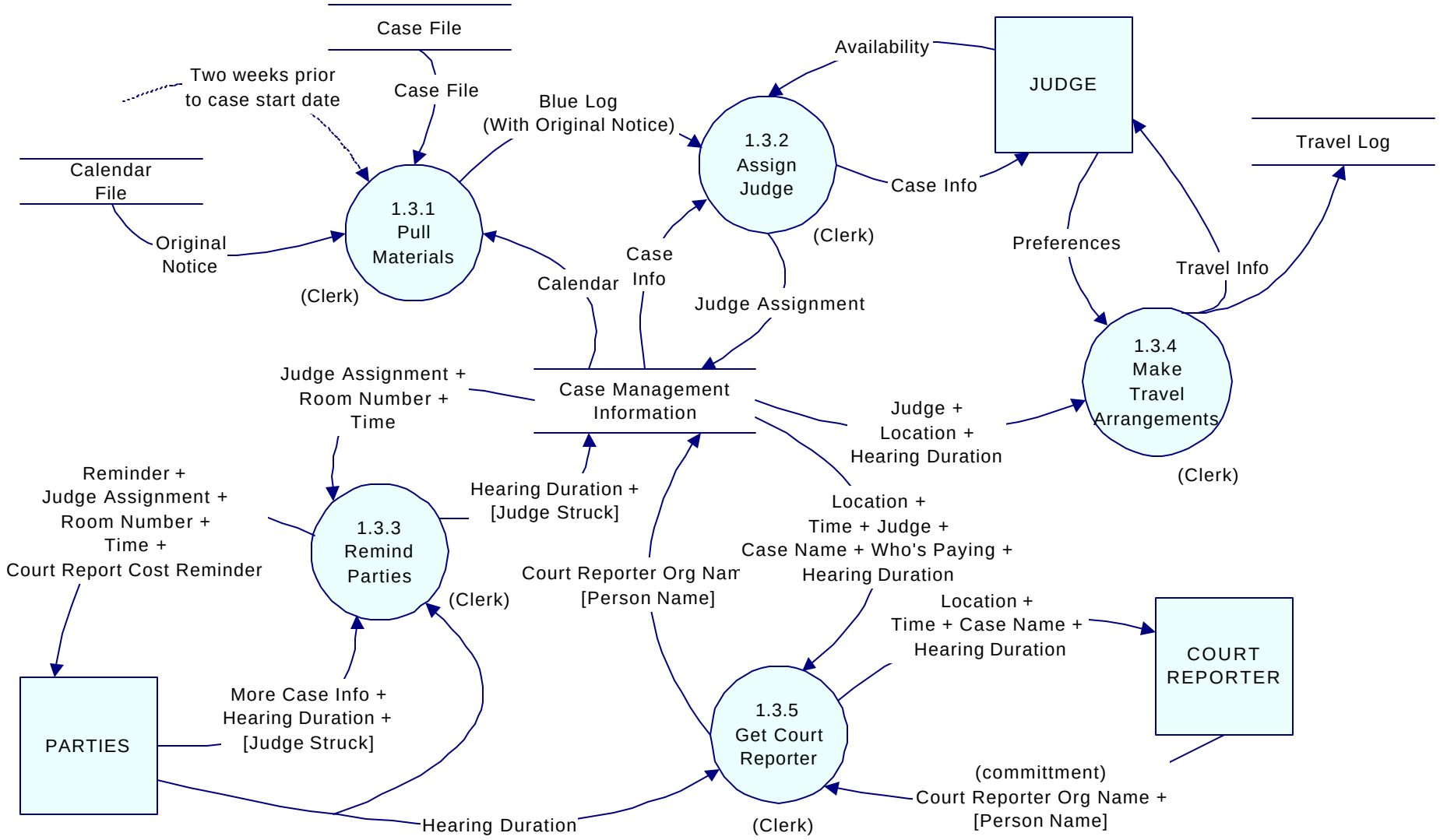
VARIATIONS

4. Contact can be via: phone, email, or drop in

RELATED INFORMATION

- **Frequency**: 10 per week
- **Stakeholders and Interests:**
  - The petitioner – get an unbiased judge for the hearing
  - The judge – get appropriate assignments and a reasonable schedule
- **Business Rules:**
  - A petitioner cannot see the same judge for two consecutive cases
  - A judge cannot have more than 4 hearings on a single day

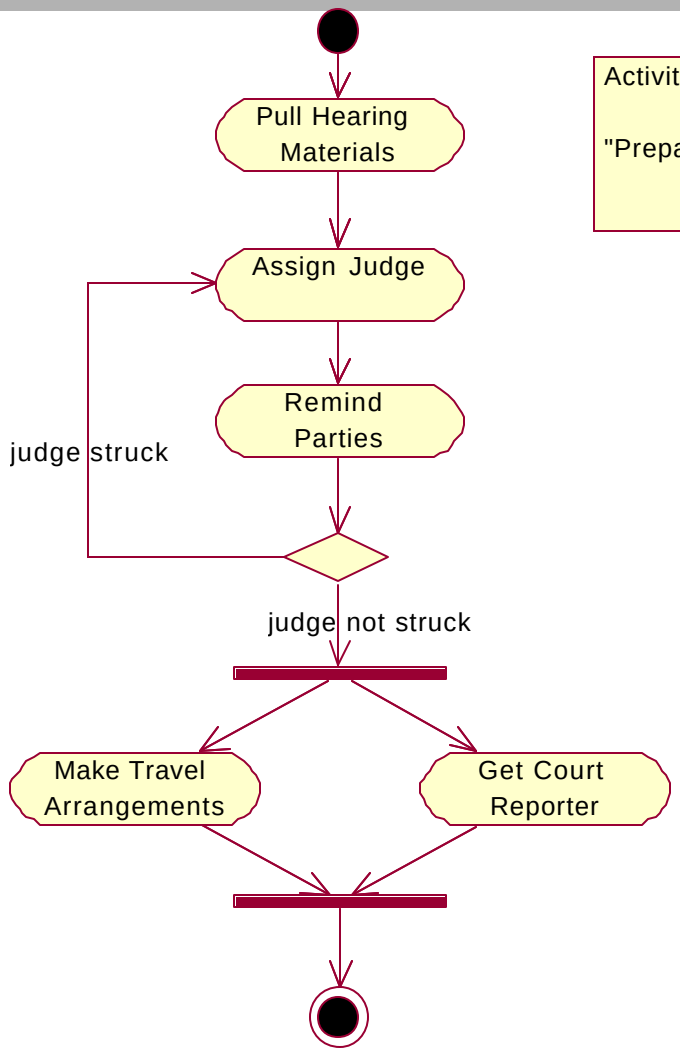
Data Flow Diagram



Some Business Model Considerations
Use Case vs. DFD

UML Activity Diagrams
vs.
Flow Charts

Activity Diagram



Activity Diagram

"Prepare for Hearing"

An Activity Diagram IS a flow chart!

Some Business Model Considerations
Activity vs. Flow Chart

Activity Diagram

- Shows concurrency

Flow Chart:

- No particular advantage

Structured English:

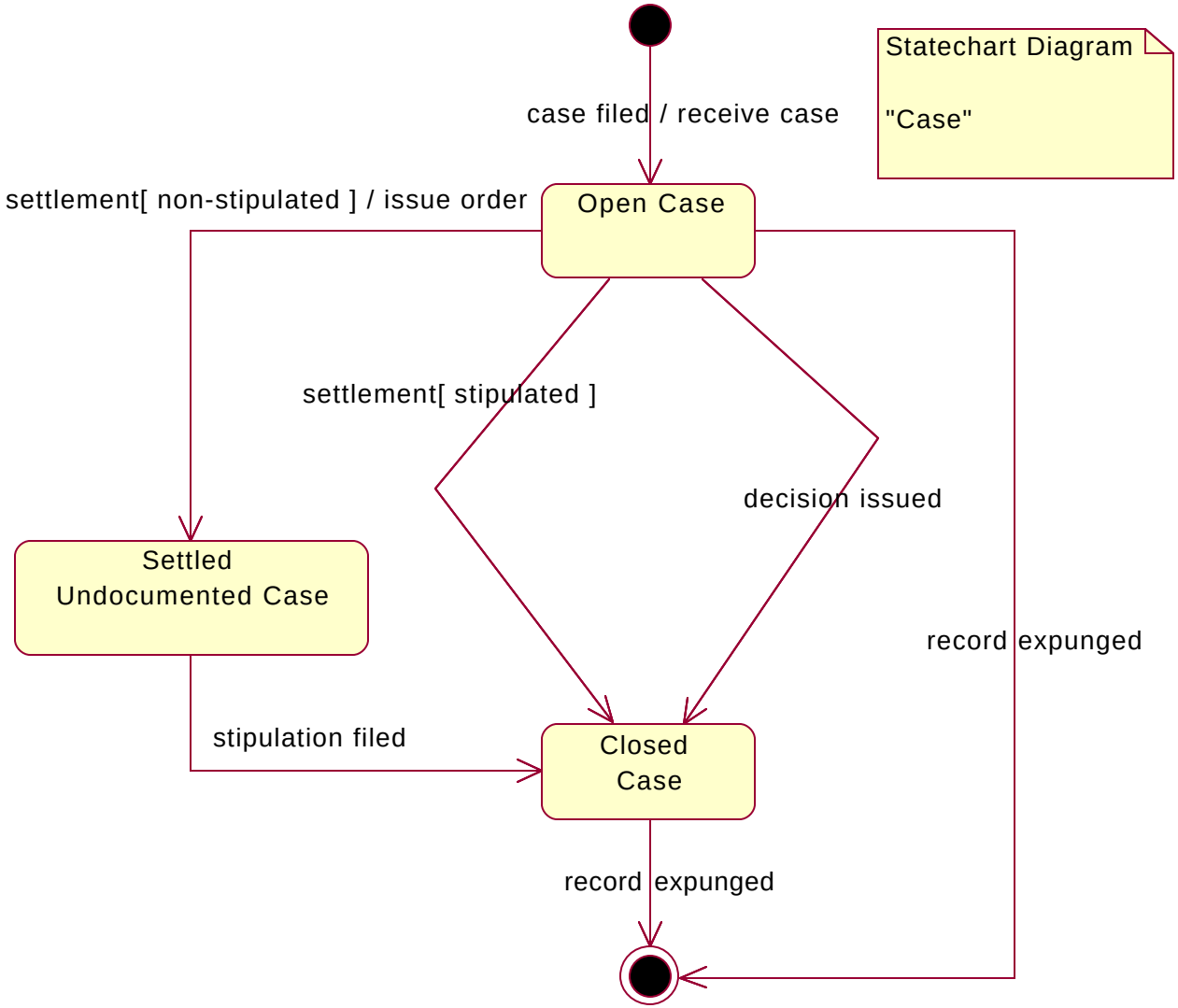
- Works well for some people

Nassi-Shneiderman Diagram:

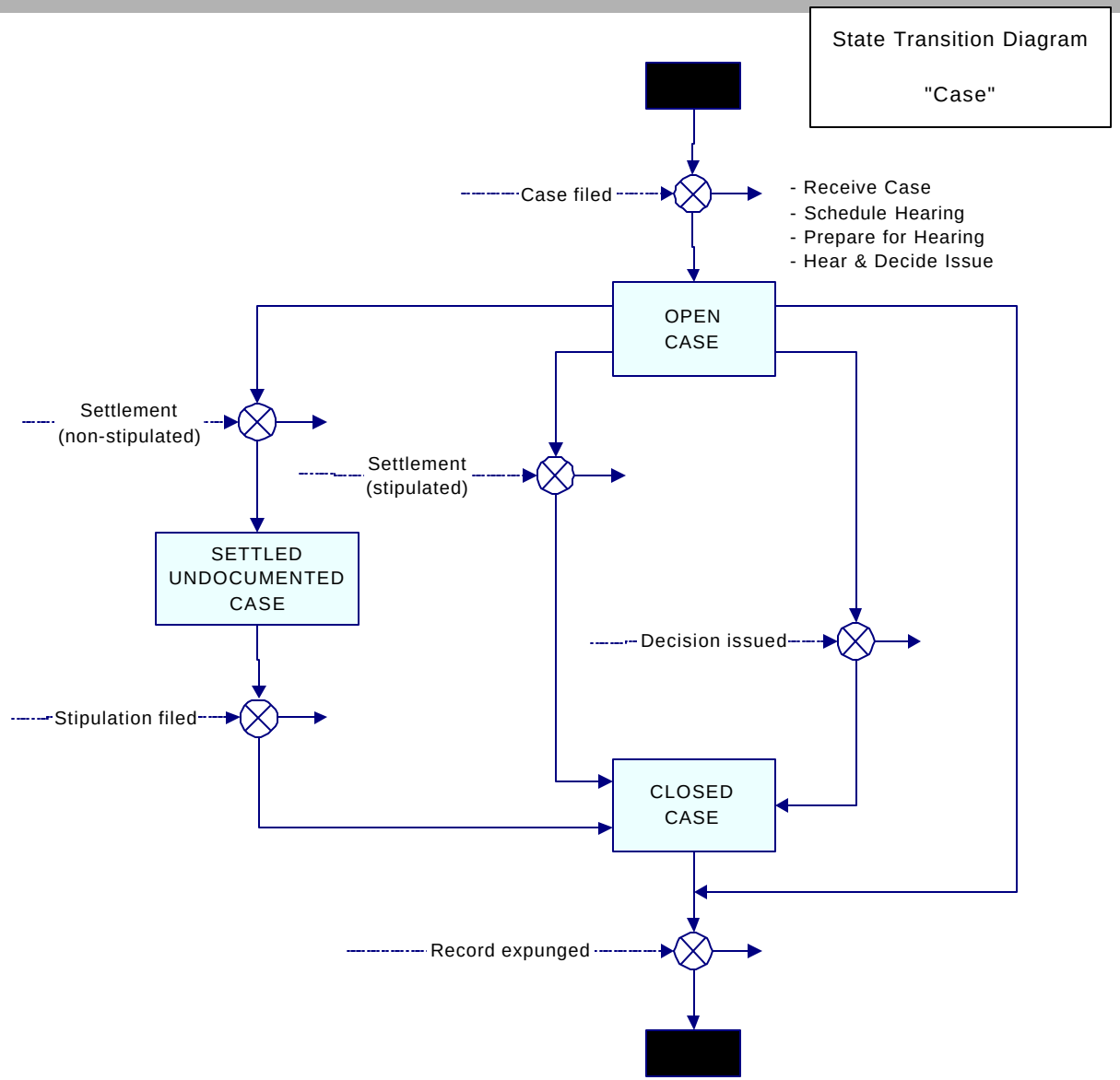
- Allows only well-structured logic (nice for specification, maybe not for discovery)

UML Statechart Diagrams
vs.
other State Diagrams

Statechart Diagram



State Transition Diagram



Some Business Model Considerations
Statechart vs. other State

Statechart

- Similar notation to Activity Diagram
  - Activity diagram is a type of State Machine

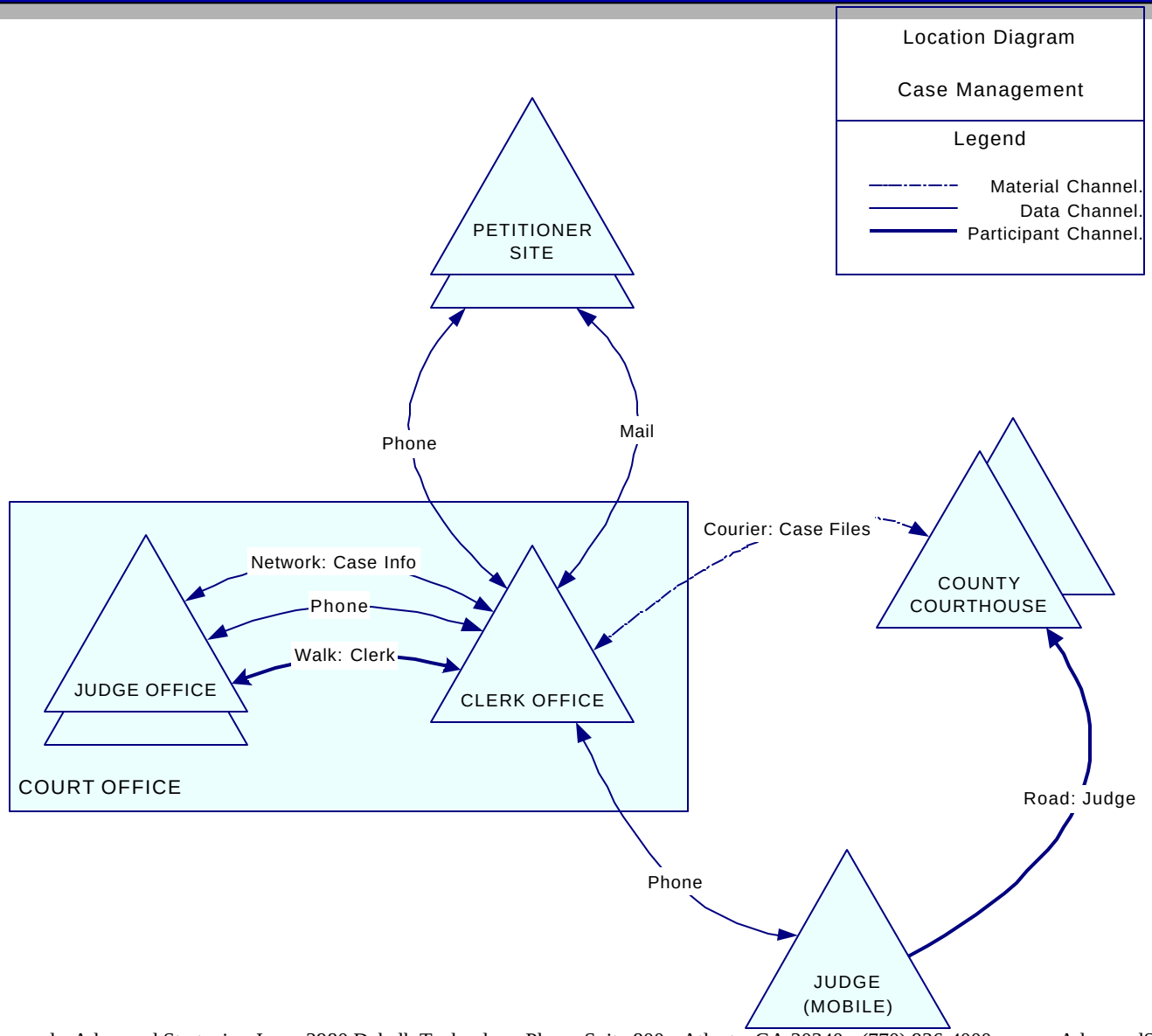
State Transition Diagram:

- Allows graphic emphasis on process clustering

(Not much difference between these)

UML ?
vs.
Location Diagrams

Location Diagram



Some Business Model Considerations
UML ? Vs. Location Diagrams

UML

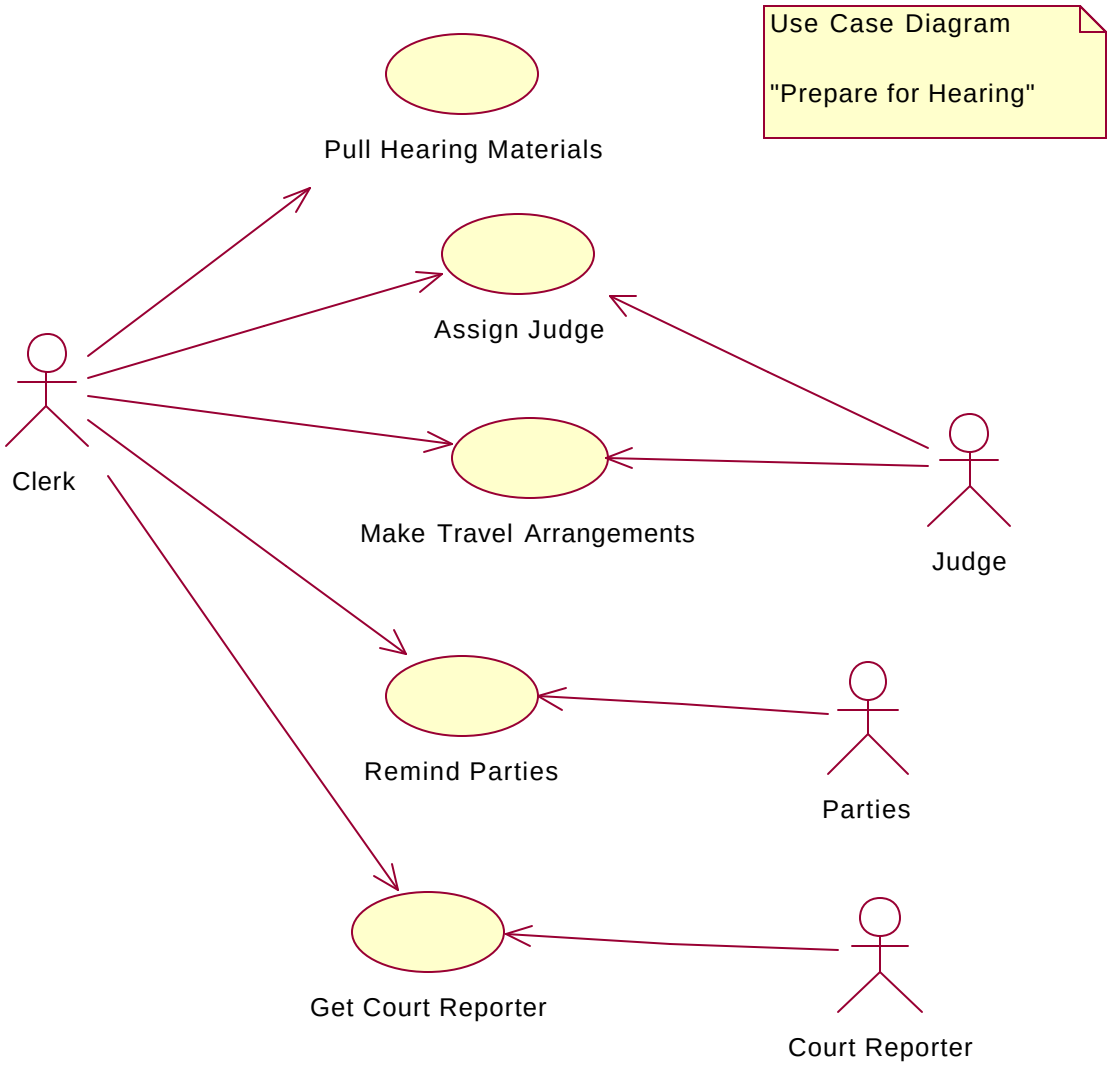
- Extensions might be able to show locations

Location Diagram:

- Allows study of where business is taking place
- Sometimes is of minimal importance
- Sometimes is of critical importance

UML Use Cases
vs.
Socio-Political Matrices

Use Case Diagram



Socio-Political Matrix

	Clerk	Judges	Petitioners	Attorneys
Type of Involvement	Performance + expertise + support	Expertise + some Performance	low performance	low performance
Literacy				
General	High	med-high	low-high	low
Subject Area	High	High	Low	Medium-High
Technical	Medium	Low	Low	Low
Frequency of Use	Very high, many times daily	Daily	Infrequently	Some - Frequently Most - Infrequently
Type of Use	navigation; inquiry; data entry	Inquiry (checking, verifying); occasional update;	Inquiry	Inquiry
Cultural Considerations	flexible; people oriented; open to new systems;	Demand excellence, skeptical to new systems	May not have a favorable attitude toward the whole process	Will be upset if they can't get fast status to case status
Stand to Gain	program consistency; automation of tedious functions; more efficient; tools to better organize work; tracking of various things	tools to better organize work; better schedules	better access to case status	better access to case status
Stand to Lose	flexibility; time (if data entry takes more time than is saved); time if response time is slow; expertise (at least for six months adjustment period)	Flexibility,aversion to changes in the way things are done;	nothing	nothing
Notes				

Some Business Model Considerations
Use Case vs. Socio-Political Matrix

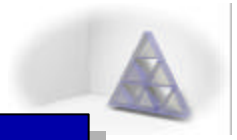
Use Cases

- This information can be kept as text description for actors

Socio-Political Matrix:

- Allows side-by-side discovery and verification

UML Extensions for Business Modeling



Recent UML Business Modeling Work

- Chris Marshal, uses stereotypes to define:
  - Processes (circles)
  - Entities (rectangles)
  - Organizations (hexagons)
  - Purpose (triangles)
  - Information flow (dashed line with arrow head)
- Erikson & Penker, use stereotypes to define:
  - Processes (arrow-like boxes), used with regular control flow and object flow.
- Both have books listed in the bibliography

Any Questions?

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Covered:

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- Comparison of "Traditional" Business Modeling Approaches and UML Approaches

Still to Come:

- How Business Models Transform into System Design Models
- Case Study: MN Dept of Commerce – IDEA Project
- Conclusion

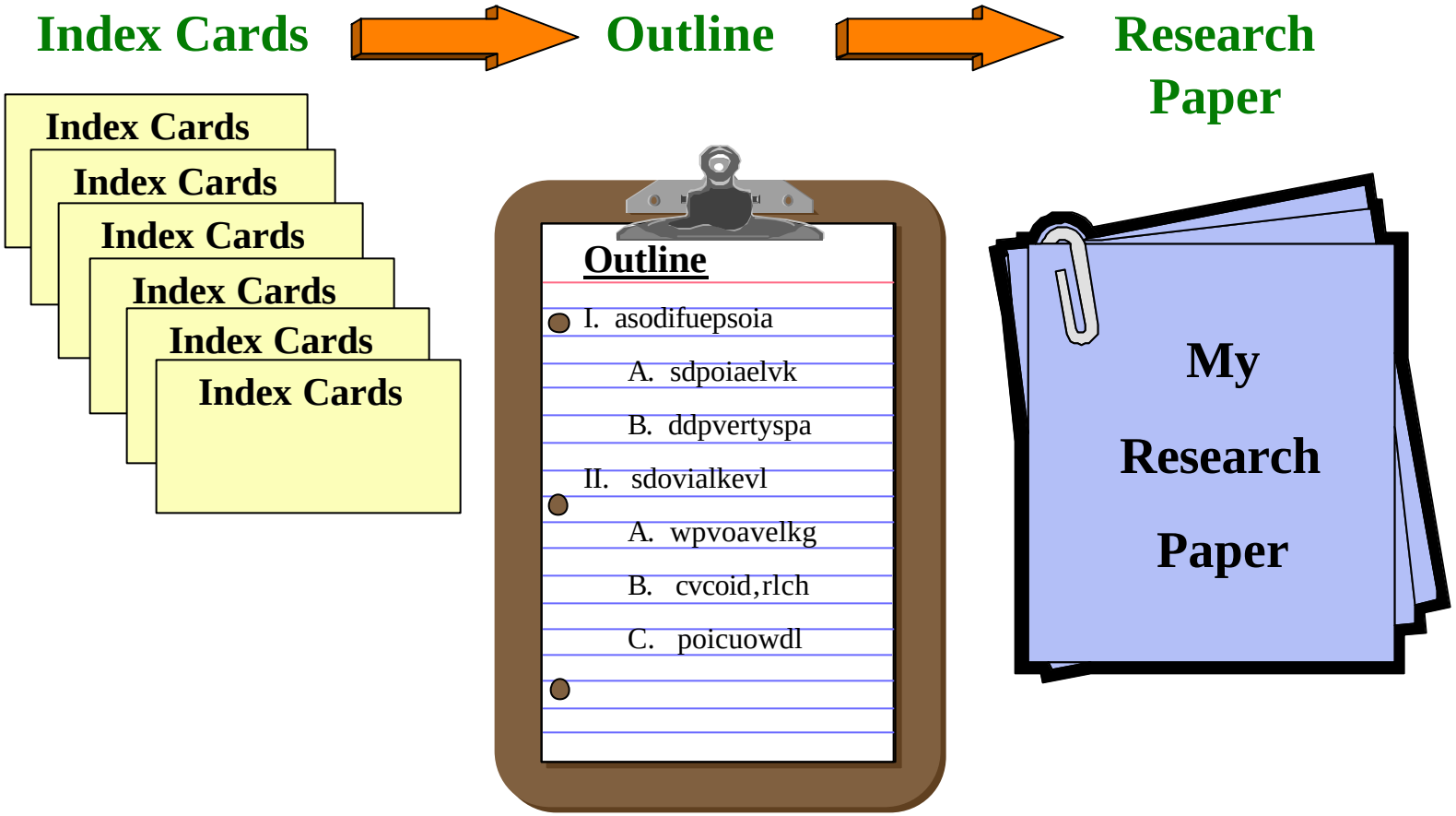
How Business Models Transform Into System Design Models

Transformation

- Transformation – deriving new model components from old model components, one at a time, based on some transformation criteria

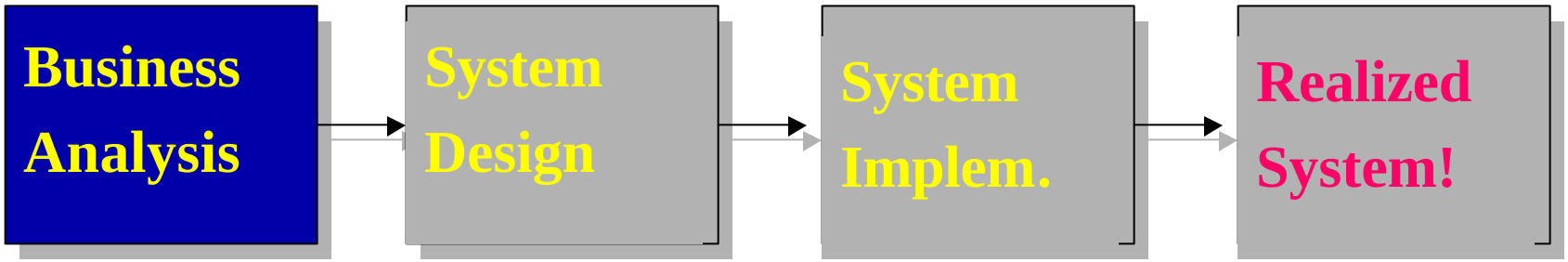
- Can be business model to business model
  - Ex: Current physical process to current logical process
  - Ex: Current business event to new business event
- Can be business model to design model (our interest now)
  - Ex: New business to new system design
- Can be design model to design model
  - Ex: Structural database design to detailed database design

Work Product Transformation



Model Transformation

---------- Methods ----------



Techniques	Techniques	Techniques
Instruments	Instruments	Instruments
Tools	Tools	Tools

Disciplines and Threads

	Business Analysis	System Design	System Implementation
• Object	?	?	?
• Process	?	?	?
• Event	?	?	?
• Location	?	?	?
• Socio-Political	?	?	?
• Enabling Medium	?	?	?

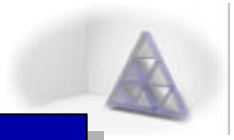
- The questions now:
  - What models to build? And, how do they transform?

Transformation

- Transformation vs. Education
  - Transformation models are advanced rigorously (ideally)
  - Education models teach, and the advancement is creative
  - Education models don't have to be as rigorous

- Transformation vs. Iteration
  - Transformation changes the purpose
  - Iteration advances the same purpose

- Might involve changing, adding, or deleting things



Transformation

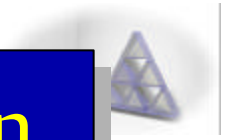
- Transformation depends on Method!
  - Designing a program? Reengineering a business?
  - What process are you following?
  - What products are you developing?

- There is no single UML method
- There is no single “traditional” method

- So – we will proceed with some general ways the models might be used …… simple and still complicated!

Trad. Analysis – Trad. Design

OO/UML Analysis – OO/UML Design



Trad. Analysis – Hybrid Design

Any Questions?

"Business Modeling and UML – Hype vs. Reality"

Covered:

- Introduction
- What is Business Modeling? What is UML?
- UML Strengths and Weaknesses
- Comparison of "Traditional" Business Modeling Approaches and UML Approaches
- How Business Models Transform into System Design Models

Still to Come:

- Case Study: MN Dept of Commerce – IDEA Project
- Conclusion

Case Study: MN Department of Commerce IDEA Project (Mark Ouska)

Any Questions?

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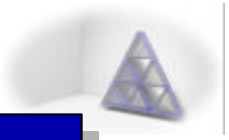
Conclusion

Keys to this Session

Biggest Complaints from Past Sessions:

1. There were no handouts
2. The presentation didn't follow the brochure description
3. At the end, I didn't have a sense of what the key message was
4. It didn't provide me with the information I need to move forward: resources, contacts, action steps



Key Messages

- Business modeling is crucial. We need to do it as well as we possibly can.
- UML is like everything else – it is useful, but no silver bullet.
- Parts of UML can be effectively used in business modeling, but it will not do the whole job.
- Work is currently being done to try to make UML more effective for business modeling
- When choosing approaches, there are always trade-offs.
- Think “evolution”, not “revolution”.

Resources & Action Steps

Now we will discuss specific:

- Books
- Articles
- Web sites
- Seminars/Training
- Tools
- Vendors
- Contacts

(The information is also in your handouts)

Books

Intro to UML

- Fowler, Martin with Scott, Kendall; UML Distilled. Applying the Standard Object Modeling Language; Addison-Wesley, 1997

Intro to UML and Method

- Rosenberg, Doug with Scott, Kendall; Use Case Driven Object Modeling with UML. A Practical Approach; Addison-Wesley, 1999

Comprehensive UML Coverage

- Rumbaugh, Jacobson, Booch; The Unified Modeling Language Reference Manual; Addison-Wesley, 1999
- Booch, Rumbaugh, Jacobson; The Unified Modeling Language User Guide; Addison-Wesley, 1999
- Jacobson, Booch, Rumbaugh; The Unified Software Development Process; Addison-Wesley, 1999

Books

UML and Business Modeling

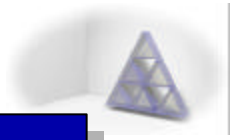
- Marshal, Chris; Enterprise Modeling with UML. Designing Successful Software Through Business Analysis; Addison-Wesley, 2000
- Eriksson, Hans-Erik and Pender, Magnus; Business Modeling with UML: Business Patterns at Work, Wiley & Sons, 1999

Intro to UML and Patterns

- Larman, Craig; Applying UML and Patterns, An Introduction to Object-Oriented Analysis and Design; Prentice Hall, 1998

Use Cases

- Cockburn, Alexander; Writing Effective Use Cases; Addison-Wesley, 2001



Articles

- Software Development Magazine, March 1998, or
- www.sdmagazine.com - UML Design Center - Focus on UML
  - "How the UML Models Fit Together" by Scott W. Ambler
  - "UML Applied: Nine Tips to Incorporate UML into your Project" by Doug Rosenberg
  - "Why Use the UML?" by Martin Fowler
- For a non-enthusiastic view of OO Analysis: www.tdan.com/i007ht04.htm
  - Object Orientation and Information Engineering: The Analysis Process by David Hay

Web Sites

General information about UML

- OMG (Object Management Group) www.omg.org

General information about UML, and Rational products

- Rational www.rational.com

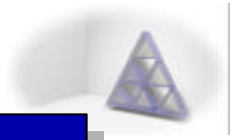
Articles on business modeling

- Rose Architect Magazine
  www.rational.com/rosearchitect/mag/archives/fall99/index.html

Use Case Templates

- http://members.aol.com/acockburn/

Seminars/Training



Tools

- Visio
  - With Visio 2000: File – New – Choose Drawing Type – Software - UML Model Diagram
  - 7 Diagrams are supported
- Rational Rose
  - Can get an evaluation copy from the Rational web site
  - Good for 30 days
- Many other CASE and drawing tools support UML

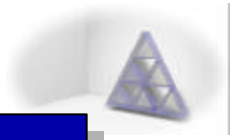
Vendors

- About 10 “Rational partners” from MN are listed in the Rational web site.

- I have no idea about their skills and experience – so, this is not a recommendation, simply information

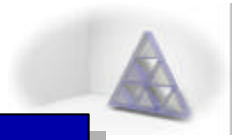
Contacts

- John Schroeder – Advanced Strategies
  - Email jschroeder@advstr.com



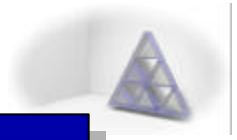
UML Buzz

So what is the conclusion about all the UML Buzz?



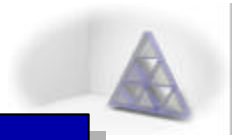
Some Pro-UML Buzz
(reality or hype?)

- UML has become the modeling standard
- UML diagrams are state-of-the-art and superior to other types of diagrams
- All modern languages are object-oriented, so all new projects will be object-oriented, so we better be using UML
- We are using Visual Basic, so we need to use UML
- UML is a new way of modeling - anything other than UML is old and obsolete
- UML is a complete set of modeling notation – nothing else is needed
- UML is user-friendly



Some Anti-UML Buzz
(reality or hype?)

- UML is not user-friendly
- UML is missing some key functionality
- UML is just the latest passing fad and not worth taking seriously
- Unless you are doing object-oriented programming, UML isn't useful
- UML is nothing but repackaged things that we have been doing for years



Some Final UML Buzz
(reality or hype?)

- Everybody but me is using UML!
- If I don't learn UML I will fall hopelessly behind!

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Still to Come: …….

Finally, remember:

People...

Not Tools

Not Techniques

Not Methodologies

....Build Applications