
Get “Focused” Before Data Modeling

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Some Background

- **Advanced Strategies**
 - **Founded 1988 – 15 years of data modeling**
 - **Also do other business modeling,**
 - **Airlines, banks, manufacturing, insurance, automotive, telecommunications, utilities, government, etc.**

- **Steve Farrell**
 - **15 years with Advanced Strategies**
 - **Almost 20 years of data modeling**
 - **Also do other business modeling,**

What I Look for in a Symposium Session

- **New information,**
- **In an area that I care about,**
- **That expands my conceptual understanding,**
- **And that provides something practical that I can apply right away**

What I Hope We Have in This Session

- **New information: Tips to help stay on track**
- **In an area that we care about: Data modeling**
- **Conceptual: Definition before analysis**
- **Practical: Template to try out**

A couple of points about this discussion ...

- **“Data Modeling” means:**
 - Business analysis
 - Business object modeling / Conceptual data modeling
- **Deliverable = ERD + text**
 - Using a modified Chen style diagram
 - Notation is not significant for this discussion
- **Information gathering processes:**
 - JAD Sessions (assumed)
 - Interviews
- **Most examples used are from government projects**
 - The information is not confidential

The Analyst/Designer's Job

“... demonstrates the ability and inclination to tolerate chaos, ambiguity, and lack of knowledge and to function effectively in spite of them.”

Position description for Senior Analyst/Designer at a major software company.

What is one way to deal with chaos, ambiguity and lack of knowledge?

The Basic Premise

**Always have a
complete, clear, accurate, and agreed-upon
“Focus Statement”
before you begin data modeling.**

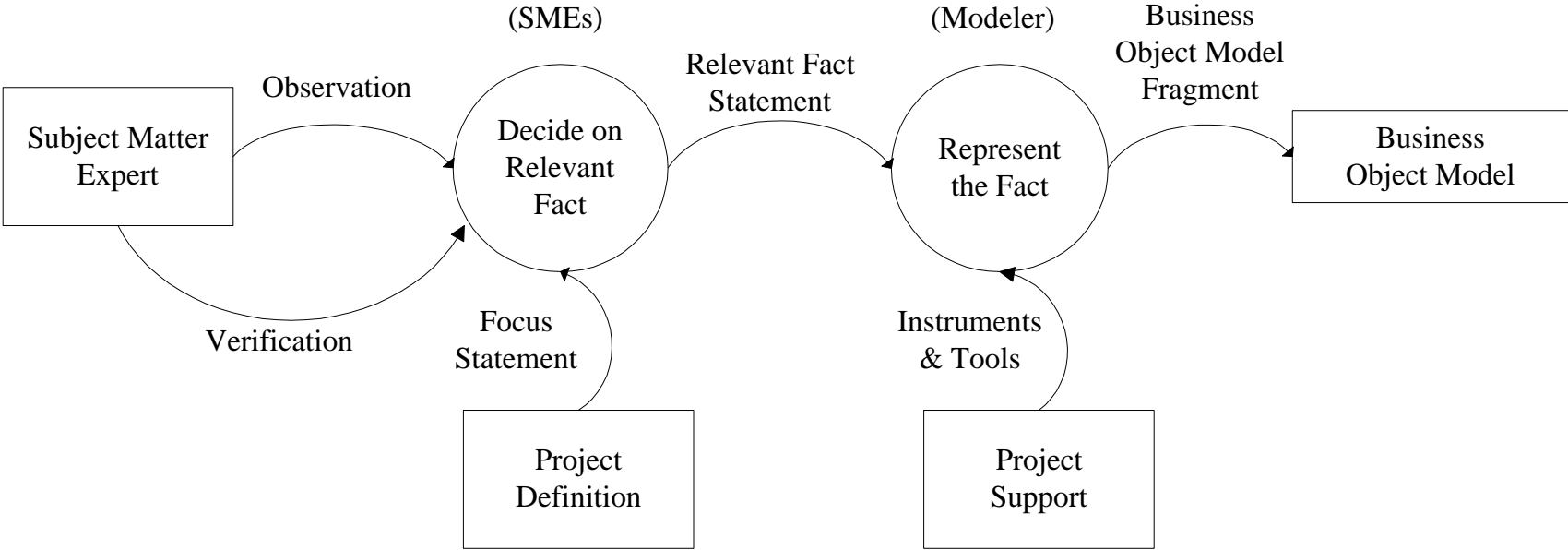
So ...

What is a Focus Statement?

- **A description of what should be studied, by whom, and at what level.**
- **It helps answer the questions:**
 - **Should we be spending our time on this topic?**
 - **Are we the right people to be doing this?**
- **It is the primary tool for controlling “run away” expansions of an effort.**

Basic Approach to Business Modeling

ER3-4.vsd



Keys:

Focus statement

Modeling skills

- - - - - JAD Facilitation skills - - - - -

How this “Focus Statement” Evolved

- 1. Started with a simple scope statement (1980s)**
 - 2. Had a problem hitting the target**
 - 3. Added something to address the problem**
 - 4. Next project – used the new scope statement, and went back to number 2**
- This went on for about 10 years**
 - It has been stable now for many years,**
 - ... although it can/should be tailored a bit for each new project**

Focus Statement

Basic components

- **Scope**
- **Perspectives**
- **Depth**
- **Universality**
- **Scope of Integration**

Focus Statement – a simple example

- **Scope**

Order processing, from receipt of a call from a customer until the fulfilled order has been turned over for shipping.

- **Perspectives**

- **Merchandising managers**
- **Order takers**
- **Customers placing the orders**

- **Depth**

Sufficient detail to assess the cost and feasibility of an application (as opposed to actually develop the application)

- **Universality**

Ability to handle all types of orders for any merchandise that are anticipated over the next three years that are placed at any of our North American centers.

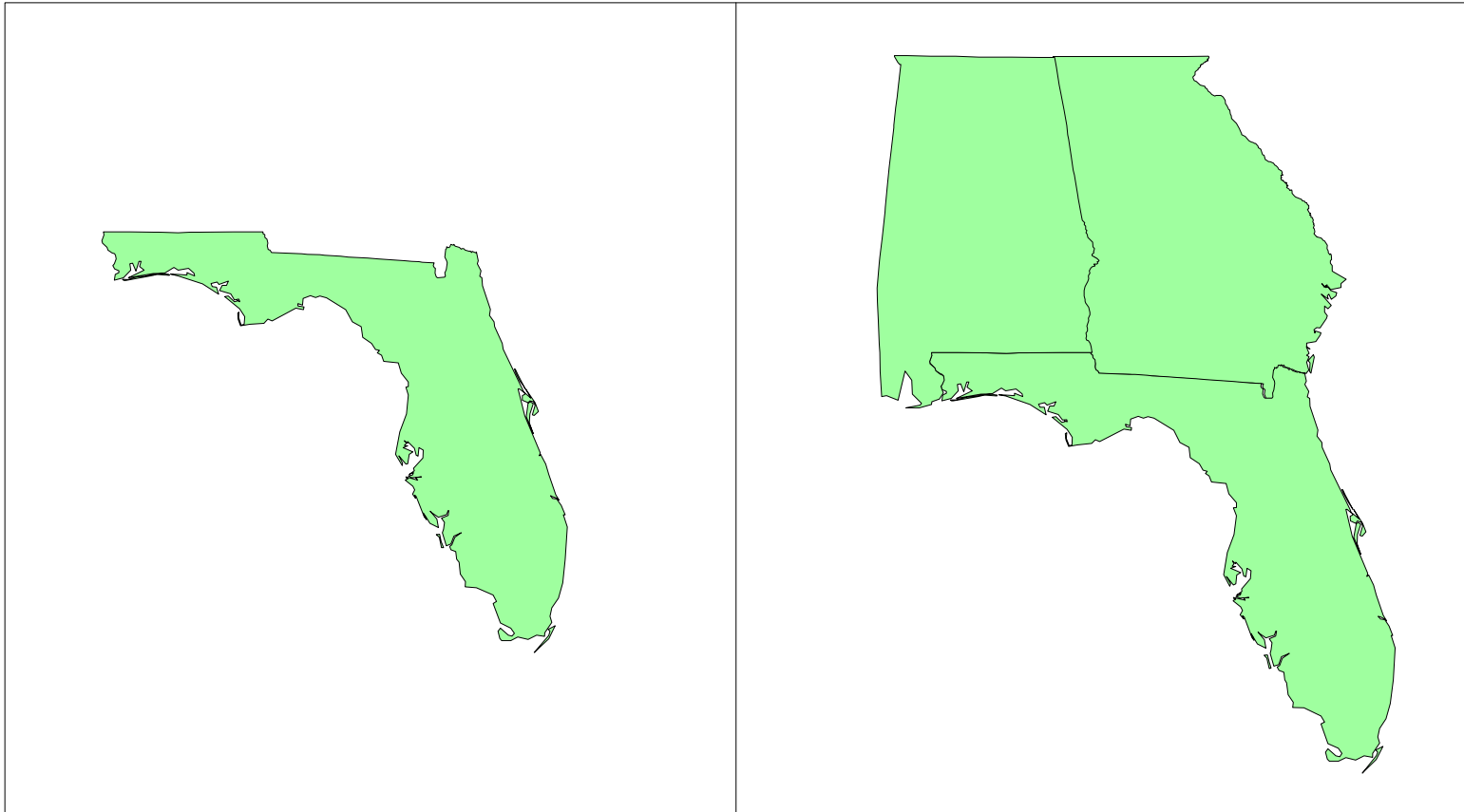
- **Scope of Integration**

- **The Workforce Employment Initiative**
- **The Marketing Data Warehouse**
- **The Accounts Receivable Application**

Why is this Important?

- **Without a focus statement, you risk:**
 - Not knowing what to study
 - Not knowing who to talk to
 - Not being able to convince managers that certain business people need to spend time on the modeling effort
 - Wasting time on irrelevant pursuits
 - Not having a point of reference when someone tries to expand the effort
 - Not knowing when you are done
- **From a data modeler at a major construction company:**
 - “The focus statement is my shield”

Scope



Which map is better?

Scope

The portion of the business that is covered by the modeling effort

Uses:

- Helps size the effort – how many sessions will be needed?**
- Keeps session discussions on relevant topics**
- Provides modeling completion criteria**

Scope – potential problems

- **You don't study a relevant area**
 - The model is insufficient
- **You study areas that are not relevant**
 - Wasted time
 - Unnecessarily clutters up your model
 - Further wasted effort down-stream (design, build, use)
- **Waste time continually discussing, debating, and wondering about what is relevant.**

Scope – a common pattern

(we will see other similar patterns in a moment)

- **Breadth: (process)**
- **From: (event)**
- **To: (event)**
- **Including: (whatever, not exhaustive)**
- **Excluding: (whatever, not exhaustive)**

Scope – *an example*

(MN Tax Court – Case Management Project)

- **Breadth: Resolve a tax dispute**
- **From: Filing of a petition**
- **To: Final disposition of the case**
- **Including:**
 - Appeals
 - Printing of court decisions
- **Excluding:**
 - Requests for filing information

Scope – other patterns

- **Breadth: (functions, data subject areas, locations, organizations, etc.)**
- **From: (event) – may or may not be useful**
- **To: (event) – may or may not be useful**
- **Including: (whatever, not exhaustive)**
- **Excluding: (whatever, not exhaustive)**

Scope – *another example*

(Vehicle manufacturer data warehouse project)

1. Vehicles (*object / data subject area*)

From: First transaction with a customer

To: Scrapped or junked.

Including:

- All vehicles sold by our dealers, regardless of make
- All of our vehicles, regardless of who has them

Excluding

- Unsold new vehicles on dealer lot
- Boats and airplanes

2. People (*object / data subject area*)

3. Etc.

Scope – *another example*

(MN Pollution Control Agency project)

Breadth: Upper Mississippi River Basin (*location*)

From: The confluence of the Rum River

To: All points upstream

Including: Water

- **Including:** lakes, rivers, streams
- **Excluding:** wetlands, ditches, ground water

Excluding: Land, Air

(nested including/excluding)

Scope – *another example*

(MN Dept of Children, Families, and Learning)

- **Breadth: Provide child care support**
- **From:**
 - When a family applies for service, or
 - When a family adds their name to a waiting list
- **To:**
 - Family is determined to be ineligible, or
 - Family voluntarily leaves the program

(statements can be complex or simple – whatever it takes)

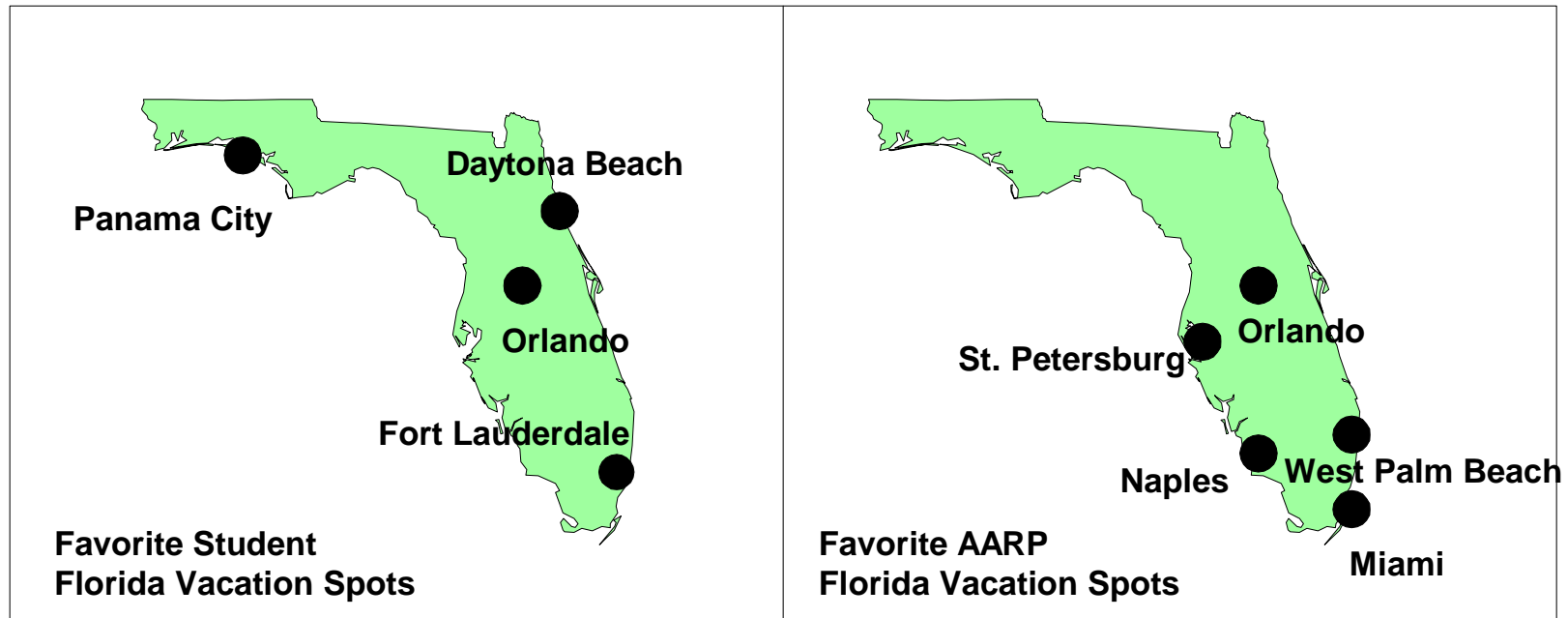
Scope – *another example*

(Calvert County, MD Public Safety project)

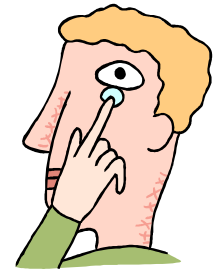
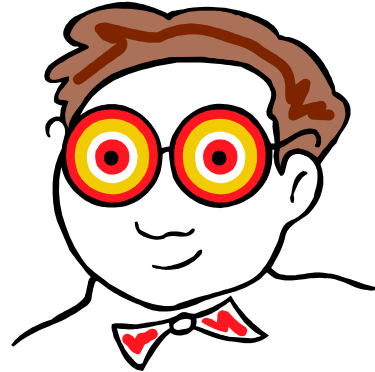
- **911 Calls**
 - **From:** Receipt of call
 - **To:** Units complete dispatched assignment
- **Criminal Investigation**
 - **From:** Report of incident
 - **To:** Arrest
- **Care for Prisoner**
 - **From:** Beginning of booking process
 - **To:** End of release process
- **(8 more)**

(Can have any number of these statements)

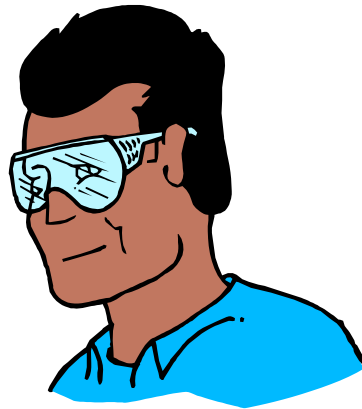
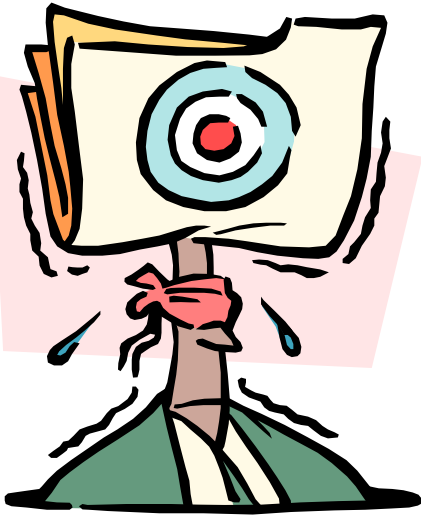
Perspectives



Which map is better?



Perspectives



Perspectives



The individuals or classes of individuals whose points of view should be reflected in the model.

Uses:

- **Determines who should participate in the information-gathering process**
- **Helps determine what questions should be asked**
- **For each fact stated, helps determine:**
 - **Is it true? Do we care? What shall we call it?**
- **Provides modeling completion criteria**

Perspectives - considerations

Perspectives needed are:

- Normally a subset of the project “stakeholders”

Perspectives can be:

- Directly involved in the information gathering
- Represented by someone else
(but be very careful with this)

Perspectives – can be stated as:

- **Defined Groups**
 - Organizations (Wal-Mart, IRS, ...)
 - Org units (Marketing, Accounting, ...)
 - Job titles (Warehouse Clerk, Sales Rep, ...)
- **Roles**
 - (Customer, Applicant, Interviewer, ...)
- **Specific positions**
 - (VP of Sales, Store 52 Lead Supervisor, ...)
- **Specific individuals**
 - (Sue Jones, Fred Smith, ...)

Perspectives – potential problems

- **You miss certain points of view**
 - The model is insufficient
 - The model doesn't “speak” to a group that has stake in the effort
 - (Often it is the customer's perspective)
- **You incorporate unnecessary points of view**
 - Wasted time
 - Confusion from irrelevant model components and terminology

Perspectives – *an example*

(MN Tax Court – Case Management Project)

Perspectives:

- Judges
- Attorneys
- Court Clerk
- Legislators
- District Courts
- Supreme Court

Perspectives – *an example*

(National Cancer Institute SEER project)

(Surveillance, Epidemiology, and End Results)

Perspectives

- **SEER management**
- **SEER program staff**
- **SEER principle investigators**
- **Hospitals / Medical facilities**
- **Researchers**
- **SEER Epidemiologists**
- **Legislators – State and Federal**
- **Patients**
- **(26 total)**

Emphasis

Primary

Primary

Primary

Secondary

Secondary

Secondary

No

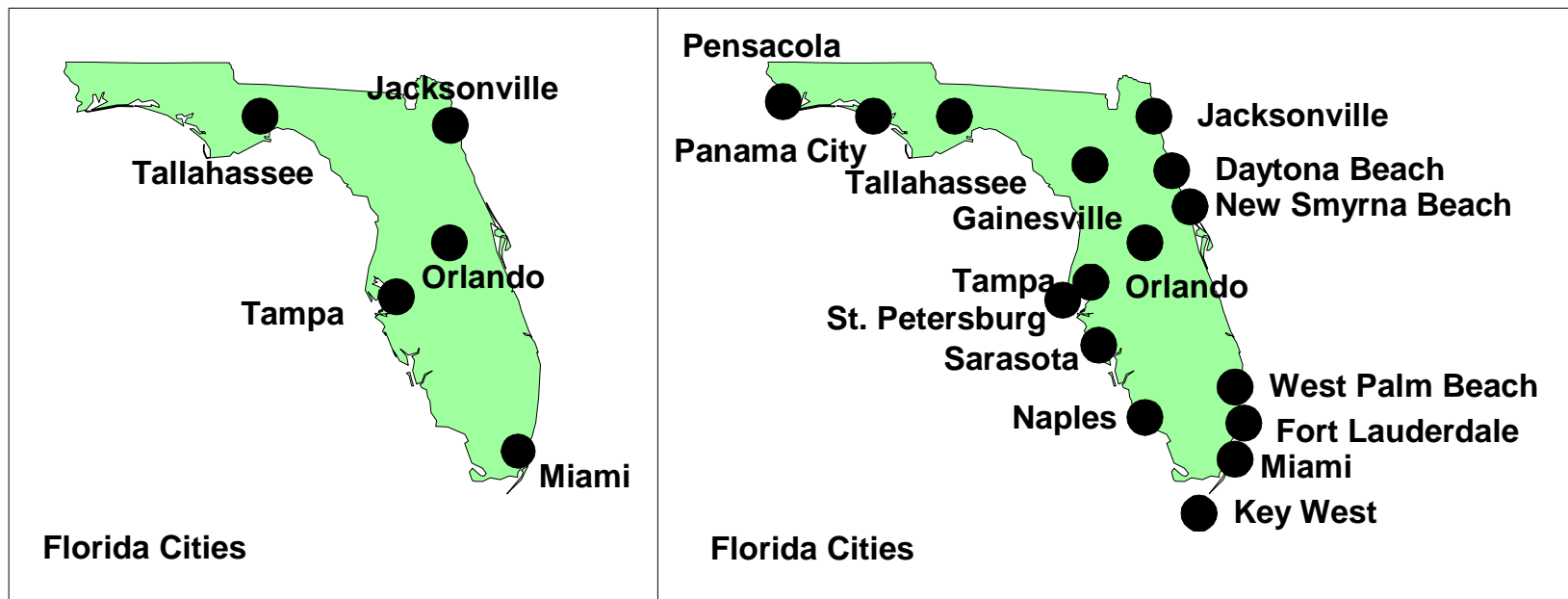
No

(normally just a list – sometimes “emphasis” is useful)

Perspectives – project stories

- **Electric utility – the engineers and the linemen**
- **County building permits – the developers**
- **State DNR – are people part of an ecosystem?**

Depth



Which map is better?

Depth

How much detail of the business must be explored to produce the appropriate deliverables.

Uses:

- Determines how much detail should be planned for in the modeling sessions**
- Determines how much probing is required during information gathering and the amount of precision reflected in the model**

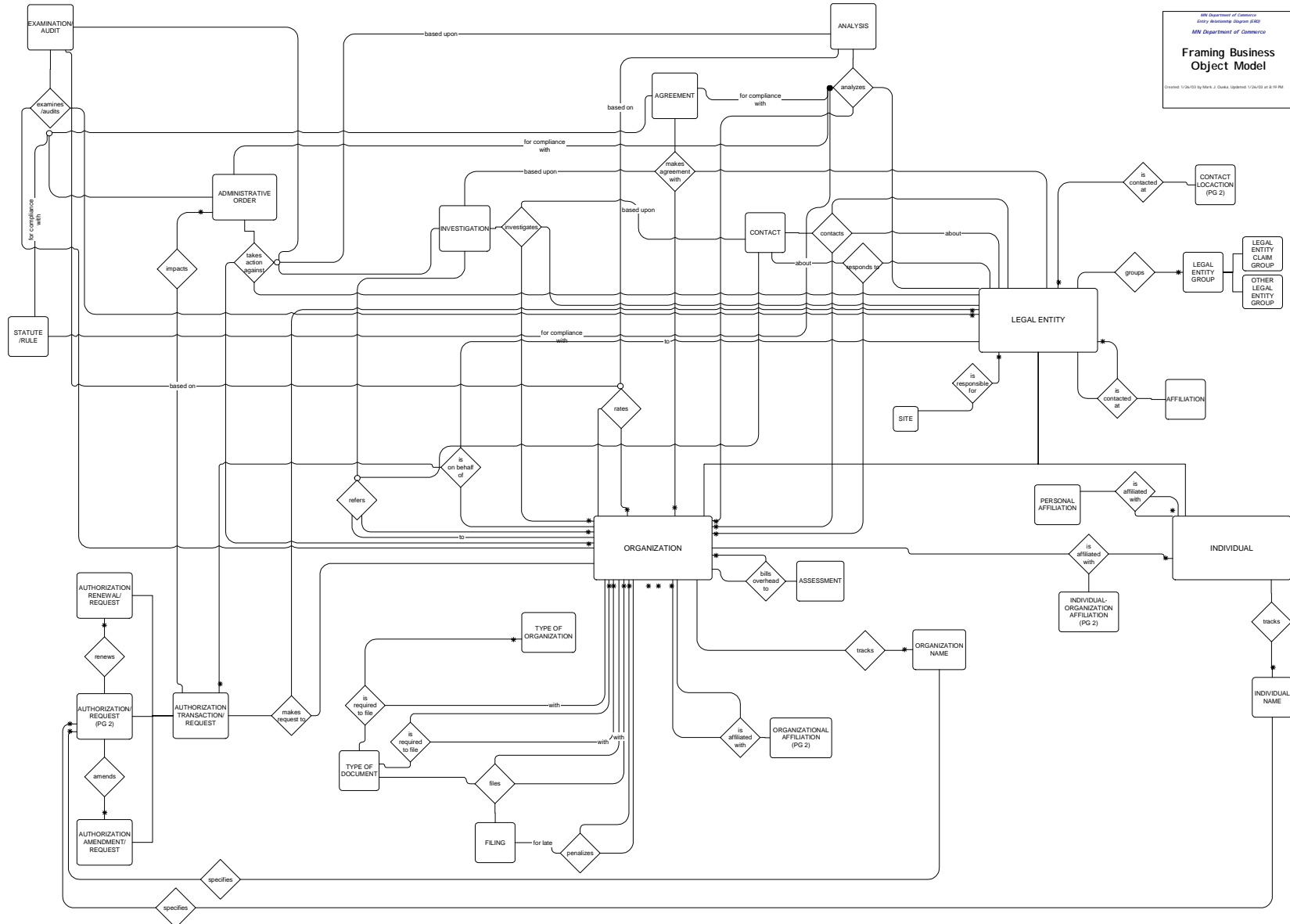
Depth

Common levels of detail are:

- **“Framing”**
 - Enough for more accurate scoping, planning, start of iterative development, enterprise modeling, etc.
- **“Mid-detail”**
 - Enough to evaluate commercial software packages
- **“Full detail”**
 - Complete business information requirements for database design

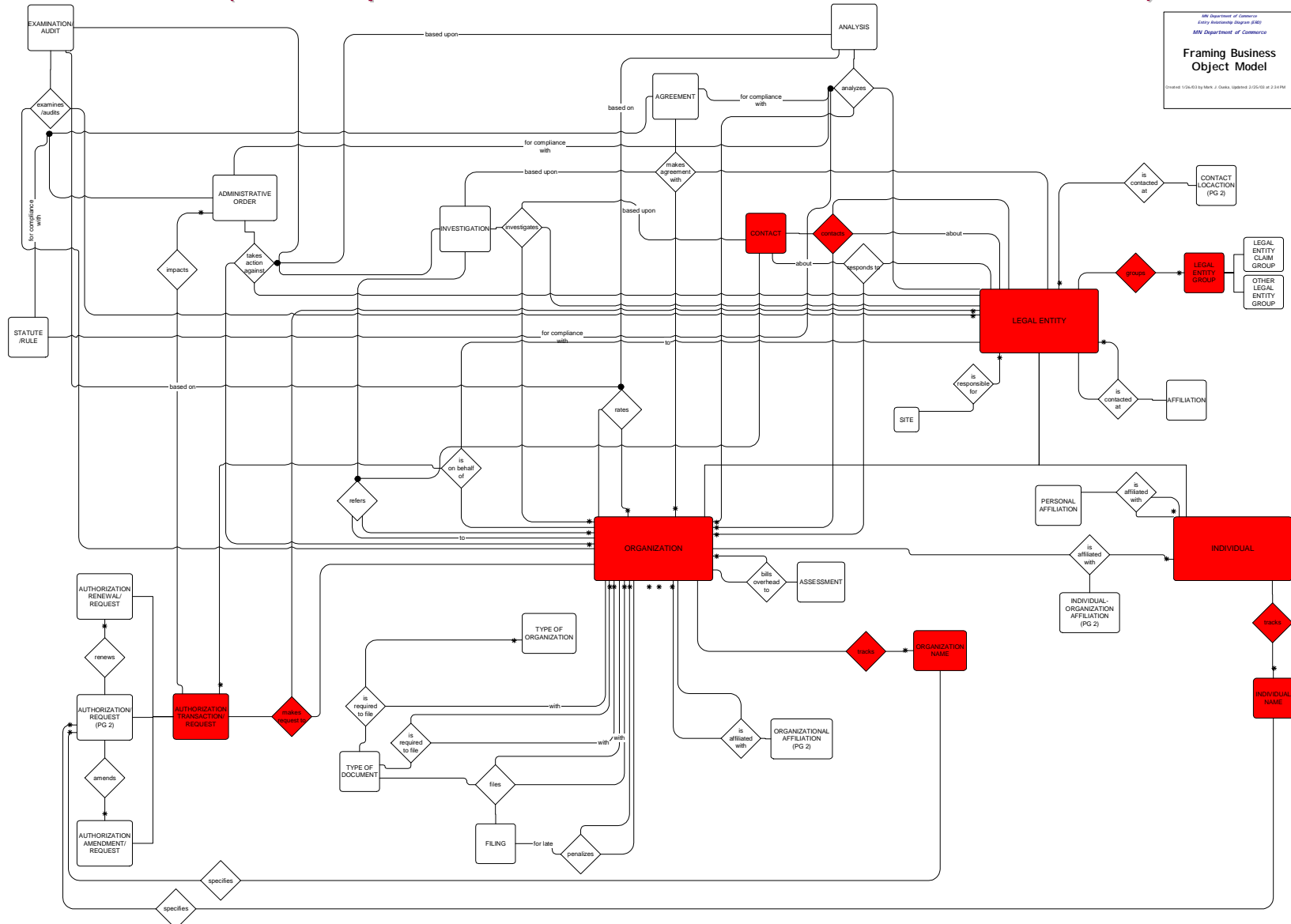
Framing Model – framing depth

(MN Dept of Commerce, scope = 12 divisions)



Framing Model – framing depth

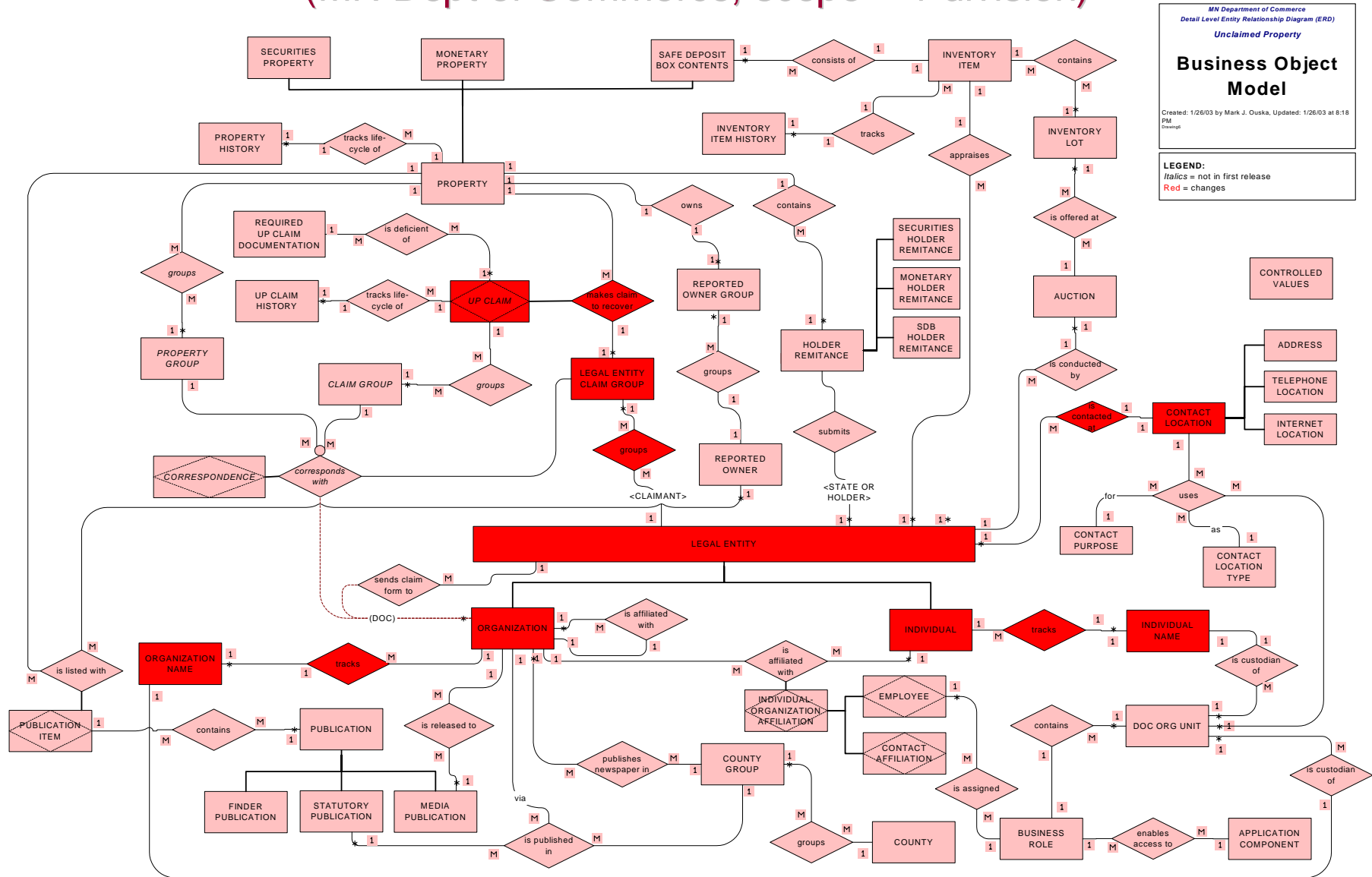
(MN Dept of Commerce, first division to drill down)



MN Department of Commerce
Every Minnesota Program Starts Here
MN Department of Commerce
Framing Business Object Model
Created: 12/16/13 by Mark J. Dulka, Updated: 2/25/15 at 2:14 PM

Full Detail Model – full depth

(MN Dept of Commerce, scope = 1 division)



Depth – potential problems

- **You collect & model too much detail**
 - A waste of time
 - More difficult to see the “big picture”
- **You don't collect enough detail**
 - The model is insufficient
 - Burden on DBAs (or someone) to complete the business analysis

Depth – *examples* (from various projects)

Depth:

Full detail. The model will be a complete statement of the business information requirements.

Depth:

Limited depth. Must be sufficient to see the entire scope and assure that later projects fit together seamlessly.

Depth:

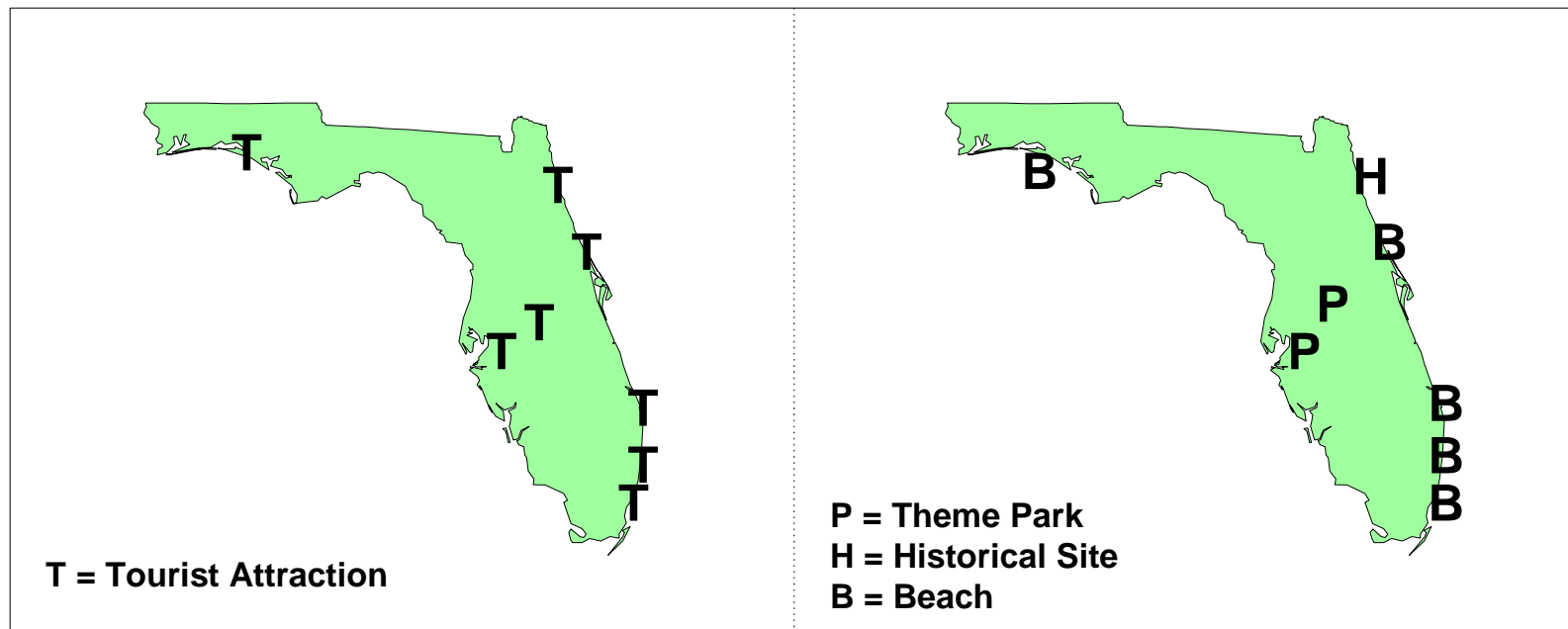
- 1. Framing for the whole scope (Dept of Commerce)**
- 2. Full detail for the first increment (Unclaimed Property)**

Depth:

For the June 30, 2003 breadth, analysis (and subsequent design, etc.) will be at a detailed level – detail sufficient to deliver a working product.

For the full 6 yr breadth, analysis will be at a framing level – detail sufficient to give direction for future more detailed efforts.

Universality



Which map is better?

Universality

How generic (accommodating) the model needs to be.

Uses:

- **Determines how much time should be spent attempting to find generalized model representations**
- **Affects how things are named and defined.**

For example – are you sitting on:

- **A portable chair?**
- **A chair?**
- **A furniture piece?**
- **An item?**

Universality – potential problems

- **Your model is not generic enough**
 - The model handles the immediate need, but is not suitable for future extension
- **Your model is too generic**
 - Wasted time
 - Lack of clarity (unable to “see” the specifics)

Universality – a pattern

- **Problem set: (how wide a class of problems?)**
- **Deployment**
 - **Organizational: (org units, enterprises, ..)**
 - **Geopolitical: (states, regions, countries, cultures, etc.)**
- **Time**
 - **Stable: (anticipate future needs and accommodate)**
 - **Extensible: (anticipate future needs and provide hooks)**
 - **Life Span: (document future needs if they come up, but don't spend time discussing them)**

Universality – *an example*

(Calvert County, MD Building Permit project)

- **Problem set:**
 - Specific to this county's permitting requirements
- **Deployment**
 - **Organizational:** Calvert County, State of Maryland Environmental Health Dept, Soil Conservation District, Fire Marshall.
 - **Geopolitical:** local
- **Time**
 - **Stable:** 1 year
 - **Extensible:** 3 years
 - **Life Span:** 5 years

Universality – *an example*

- **Anticipated business changes**
 - We will include any changes we feel will happen within the next 12 months (July 1, 1999)
 - We will consider any changes we feel will happen within the next 2 years (July 1, 2000)
 - Any anticipated changes after 2 years will be considered at a later time.

(A more spelled-out “Time” statement)

Universality – *an example*

(Software company - configuration management)

Problem set:

- **Software products**
- **Documentation products**
- **Purchased software products**

(A more generic “Problem set” than originally anticipated)

Universality – problem set story

(Government agency – Licensing application)

Problem set – Licensing

Deployment – Across all agencies

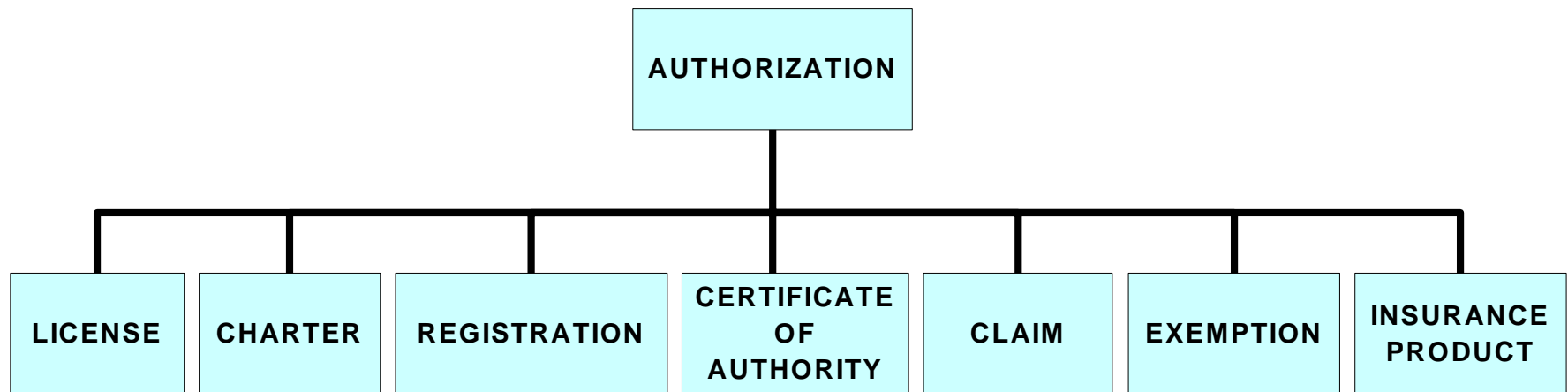
Original agency – deals with “licenses”

**Other agencies – deal with “charters”,
“registrations”, etc.**

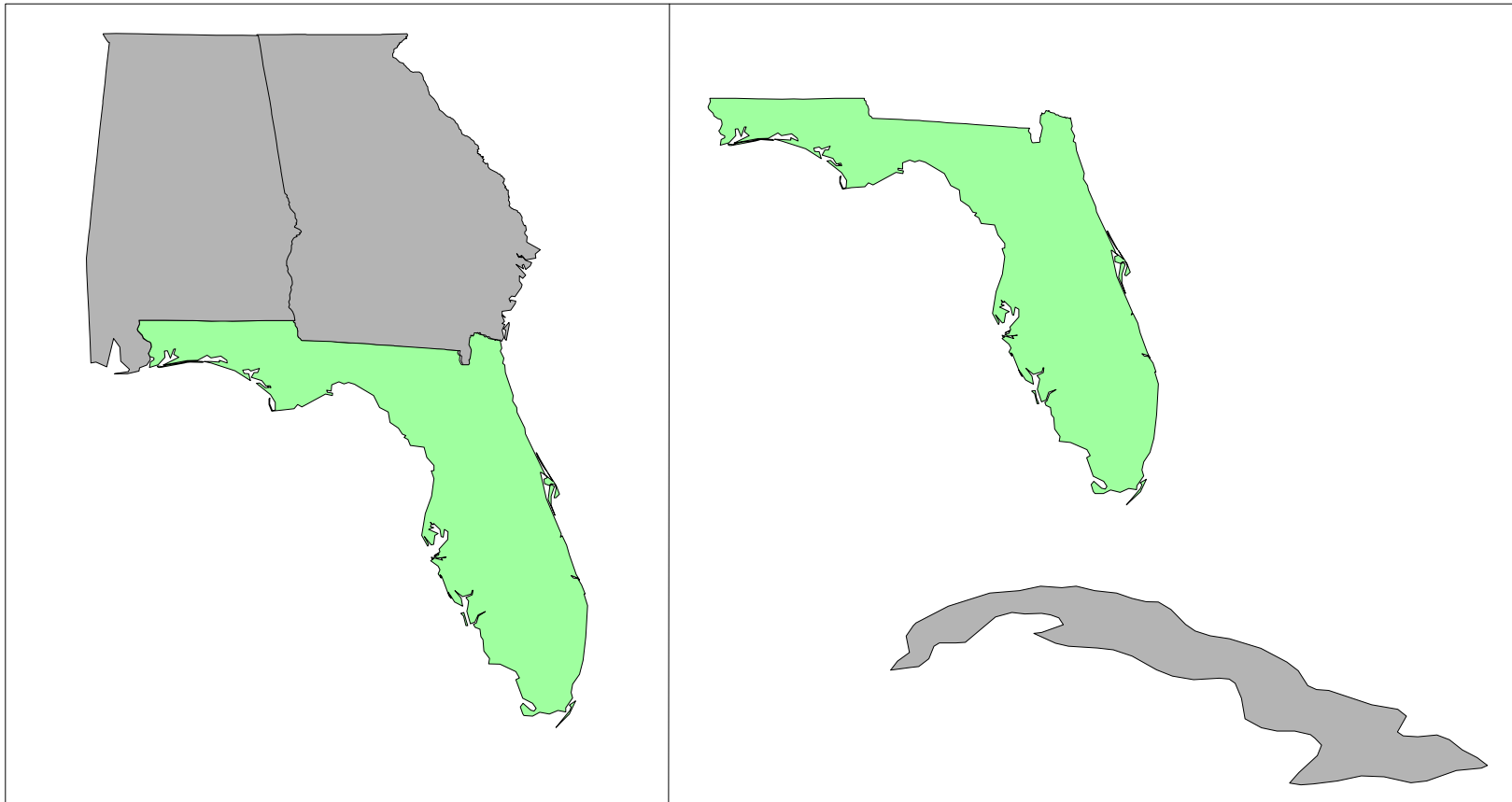
Cross-agency generalization:

All are “Authorizations”

Universality – “Authorization”



Scope of Integration



Which map is better?

Scope of Integration

What other business initiatives or systems this effort should investigate interfacing with, being compatible with, or coordinating with.

Uses:

- **Provides touch points to be considered**
- **Encourages common concepts and terminology for future integration**

Typical things (internal or external) include:

- **Other data modeling efforts**
- **Application development projects**
- **Strategic planning efforts**
- **Key organizational information providers/recipients**

Scope of Integration

To determine what should be included in your Scope of Integration, estimate the following:

- Probability of future integration**
- When integration might occur**
- Risk of ignoring this area**

Scope of Integration – potential problems

- **You miss integration points**
 - **The model is insufficient**
 - **You miss a chance to synch-up concepts and terminology**

- **You study too many integration points**
(Not usually a problem)
 - **Wasted time**
 - **Clutter**

Scope of Integration – *an example*

(MN Tax Court – Case Management Project)

- **Scope: Resolve a tax dispute**
- **Scope of Integration:**
 - County court systems
 - Supreme court system
 - WestLaw (publishing company)

(“external” to the effort, “external” to the organization)

Scope of Integration – *an example*

(A recent accounting project)

- **Scope:** (A/P, A/R, Taxes, etc.)
- **Scope of Integration:**
 - Sales
 - Property Management
 - Procurement data warehouse project

(“external” to the effort, “internal” to the organization)

Focus Statement

Review: Basic components

- **Scope**
- **Perspectives**
- **Depth**
- **Universality**
- **Scope of Integration**

How to Develop a Focus Statement

- **We are doing “business” modeling**
- **Definition, as well as analysis, should be “business-driven”**
- **Content:**
 - **Should be provided by the business people**
 - **Should reflect a variety of perspectives**
- **Facilitation:**
 - **Is usually by a business analyst (data modeler or other)**

How to Develop a Focus Statement

- Tips -

- **Tools:**
 - Electronic template and projector, or
 - Easel pad (following your template)
- **Don't skip any of the sections**
- **Don't belabor this.**

How much time will this take?

- 1 day of data modeling = 15 min of focus
 - 3 weeks of data modeling = 2 hrs of focus
 - 6 months of data modeling = 1 day of focus
- (+/-)

How to Use a Focus Statement

- Tips -

- **Keep it posted during your modeling sessions.**
- **If a question arises, stop and refer to it.**
- **Periodically review it to make sure focus is being maintained.**

- **This is a living document. Plan on updates.**
 - **Anything may be subject to a new decision**
 - **Anything may be clarified**
 - **“Including”s and “excluding”s will be added**
 - **When a decision is made, write it down in the Focus Statement!**

A Template

**Word document can be downloaded:
www.advstr.com**

How to Use This Template

- **Use it, as is**
- **Adjust it for a specific project (as we discussed)**
- **Add any new general areas that you discover (and please let me know...)**
- **Use it for other types of business modeling:**
 - **Business process modeling**
 - **Business event modeling**
 - **Business location modeling**
 - **Business organizational modeling**

Remember:

Focus can Change between Project Phases

- **It is common to have one focus for an initial modeling phase and another for a later phase**
- **Common Pattern**
 - **Phase 1**
 - **Scope: Wide**
 - **Depth: Shallow**
 - **Perspectives: Big-picture people**
 - **Phase 2**
 - **Scope: Narrow**
 - **Depth: Full**
 - **Perspectives: Experts/practitioners**

Earlier we said:
“Definition before Analysis”

Focus is one just one part of a full Definition

A “Project Definition” contains:

- **Intentions**
 - Business goals/objectives, expected project contributions, etc.
- **Values**
 - Beliefs that guide the effort – speed, quality, cost, etc.
- **Focus**
 - Scope, perspectives, detail, universality, scope of integration
- **Context**
 - Environmental constraints, freedoms, directions, assumptions, obstacles, risks, opportunities, etc.

Focus is one just one part of a full Definition

You want to:

- **Achieve your Intentions,**
- **Without compromising your Values,**
- **While keeping your Focus,**
- **And operating effectively within your Context.**

Focus is one just one part of a full Definition

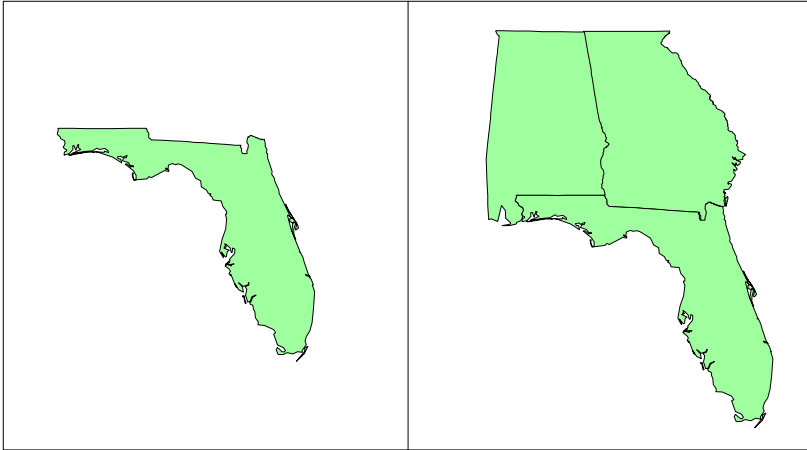
Ideal plan:

- **Create a full Project Definition at the start of your project**
- **Review/adjust the Focus Statement at the start of your data modeling effort**
- **The data modeling focus shouldn't be larger, but it could be smaller**

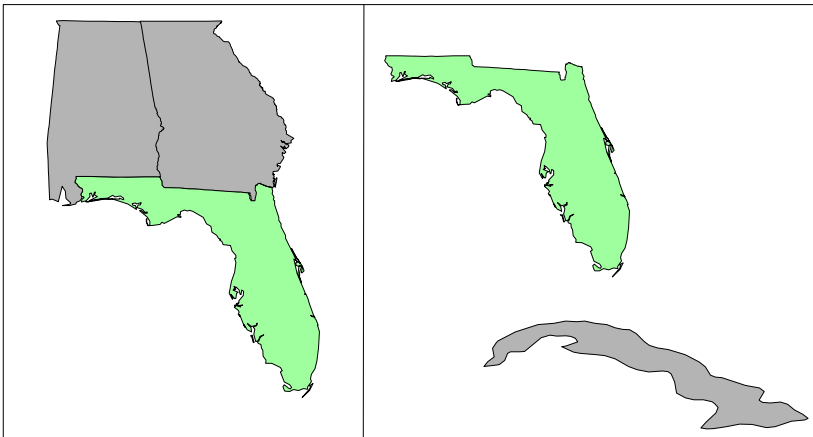
In Conclusion

- **Before** you start modeling ...
- **Ask the right questions** ...
- **To make sure** ...

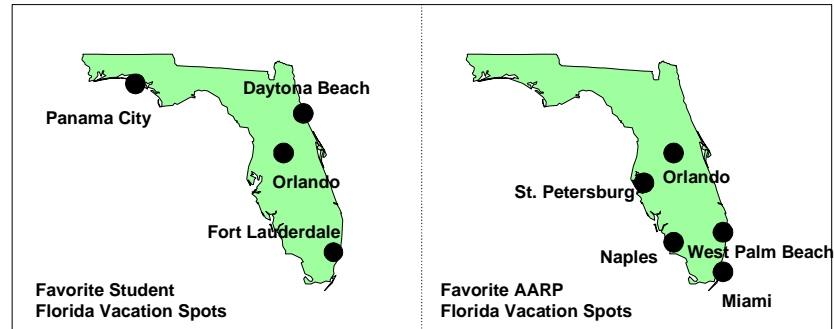
You get the map that you want



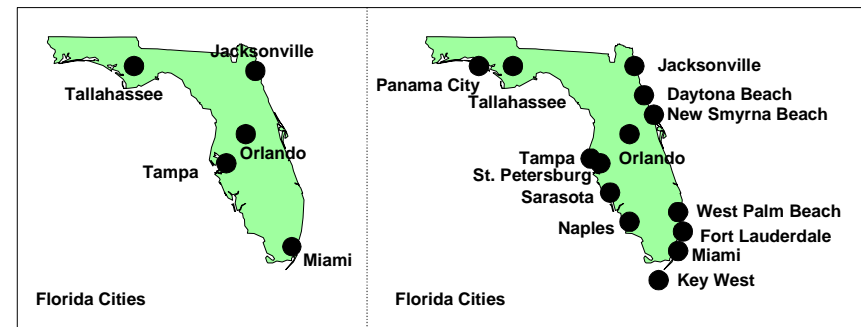
Scope?



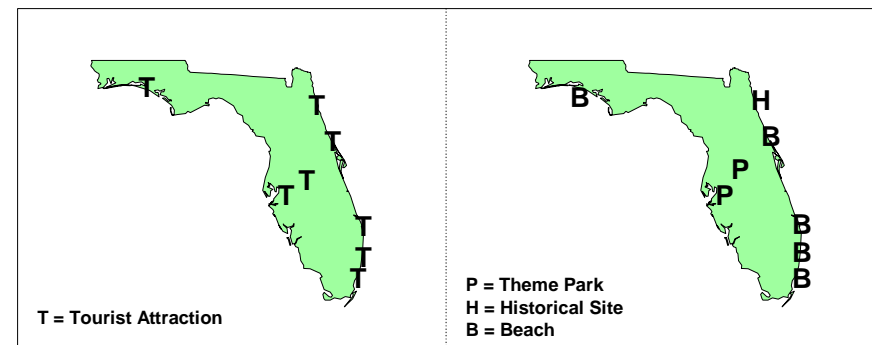
Scope of Integration?



Perspective?



Depth?



Universality?

Good Luck

Keep Focused!

