

Concept Modelling – *What It Is And Why It Matters*

And a bit on why
Business Process matters too

A seminar developed and presented for asn bank by
Adept Events and Clariteq Systems Consulting

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Presenter background...



Alec Sharp, Clariteq Systems Consulting – asharp@clariteq.com

- 45 years global experience as an independent consultant:
 - Business Process Change
 - Application Requirements Specification
 - **Data Modelling and Management** *My roots!*
 - Facilitation & Organisational Change
 - Project Recovery

Process

Business Process Modelling

Application

Use Case Modelling

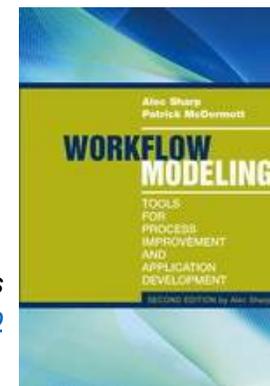
Service Specification

Data

Concept Modelling

- Awarded DAMA's global Professional Achievement Award for contributions to "human-friendly" data modelling
- Author of "Workflow Modeling"
 - best-selling book on process modelling & improvement
 - second edition – a complete re-write

Check out the nice reviews
on Amazon - <http://amzn.to/dHun1o>



Clariteq – small, husband & wife company, global clients

ABB (ASEA Brown Boveri)
Aflac
American Honda
AMP (Australia Mutual Provident)
BackOffice Associates
Bank of Finland
Bellrock
Booking.com
Brisbane City Council (Australia)
Canadian Natural Resources Ltd.
City of Seattle
Civica UK
Clearwater Paper
Corvias
Dell
DHL Express
Dutch National Bank
Elisa
Ericsson
Essity
Eurojust (European Justice Comm.)
European Central Bank
Fortum
Gofore
Helse Vest - Norway
HM Land Registry - UK
Home Depot
Idaho Transportation Dept.
Intel
ISO New England

asn

ING Bank
JP Morgan
Kal Tire
KONE
LGM Financial Services
Liberty Mutual
Livestock Improvement Corp.
MacDonald Dettwiler
Manitoba Public Insurance
Marathon Pipe Line
Microsoft
Ministry of Defence - UK
Ministry of Defence - NL
Ministry of the Interior - Slovakia
MTS Allstream
Nexen
Novo Nordisk
Nusenda Credit Union
OP Bank
Partner Reinsurance
Ritchie Brothers
Phillip Morris
Roche Diagnostics/Pharmaceuticals
Salt River Project
Saudi Aramco
Serco
Shell
Sparta Consulting
State Street Bank
SunGard

SVB (NL)
Synchron
Sysdoc
Talent Base
Teck
The MUSIC Group
The Seattle Times
UK Government
University Med Ctr Groningen
YIT(FI)
Washington Gas & Light

– Higher Education –
Carnegie Mellon University
Cornell University
Douglas College
Gonzaga University
Humboldt State University
The Jackson Laboratory
The Ohio State University
Portland State University
Salt Lake Community College
Southern NH University
University of Arkansas
University of British Columbia
University of the Fraser Valley
University of Maryland
University of Utah
University of Washington
Utah Valley University



Always start with terminology

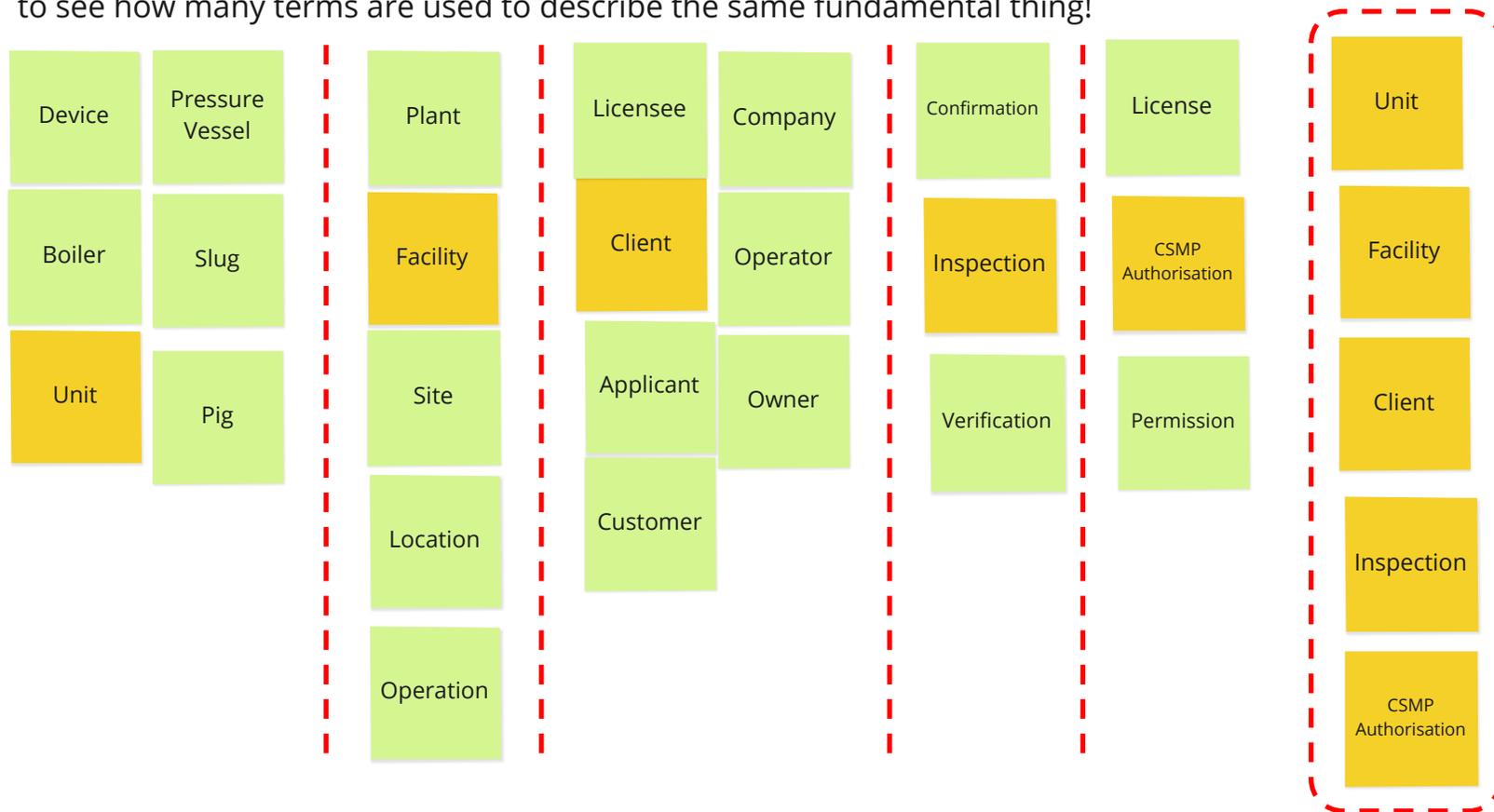
From one-on-one interviews with 8-10 key stakeholders we gathered ~200 terms related to CSMP (Client Safety Management Program) – "anything that went by a name."
Here are 24 that met the criteria to be a "thing"– the candidate *Entities*.

Device	Client	Unit	Location	Company	Site
Applicant	Pressure Vessel	Operator	Owner	Boiler	Licensee
Slug	Operation	Verification	Customer	Plant	Inspection
Pig	Facility	Permission	Authorisation	License	Confirmation

Identify synonyms and select a term for the initiative

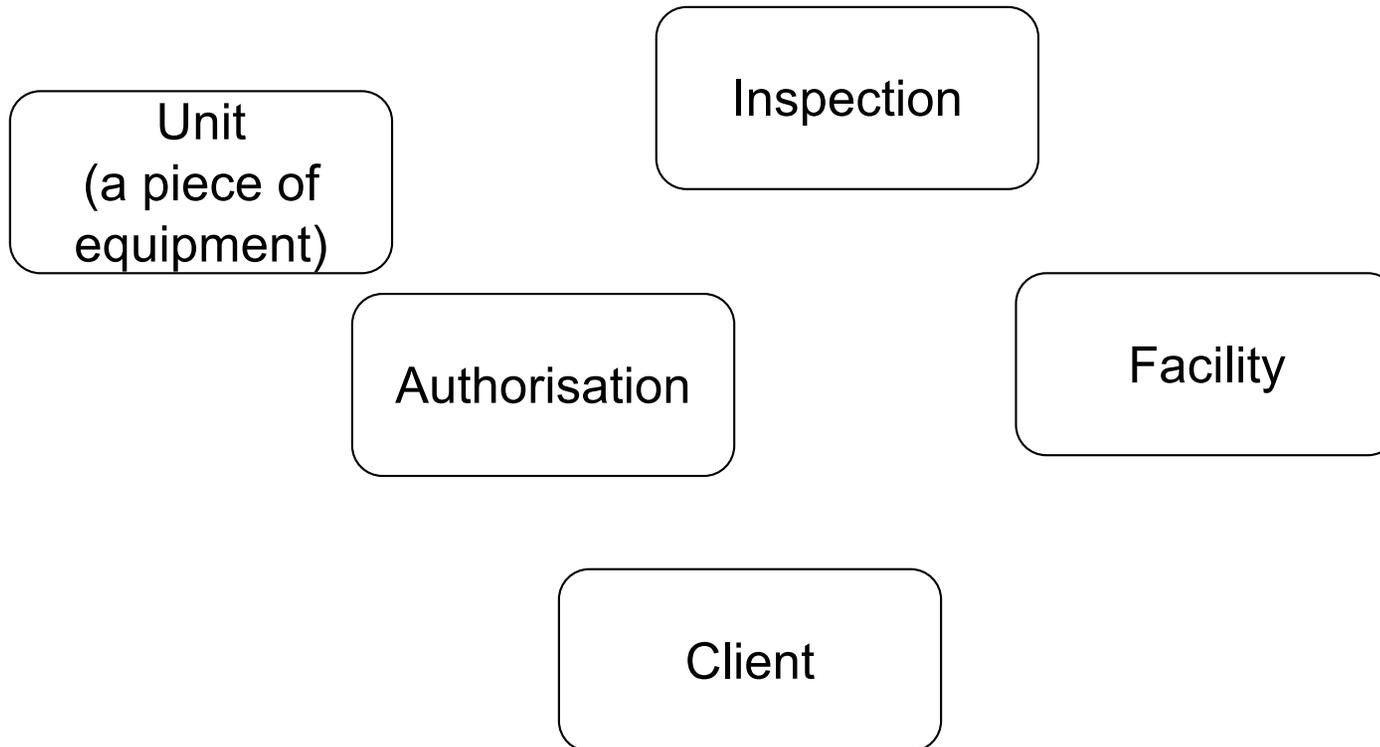
Terminology analysis (continued):

Let's arrange these terms into columns of synonyms. It's always a surprise for the business to see how many terms are used to describe the same fundamental thing!



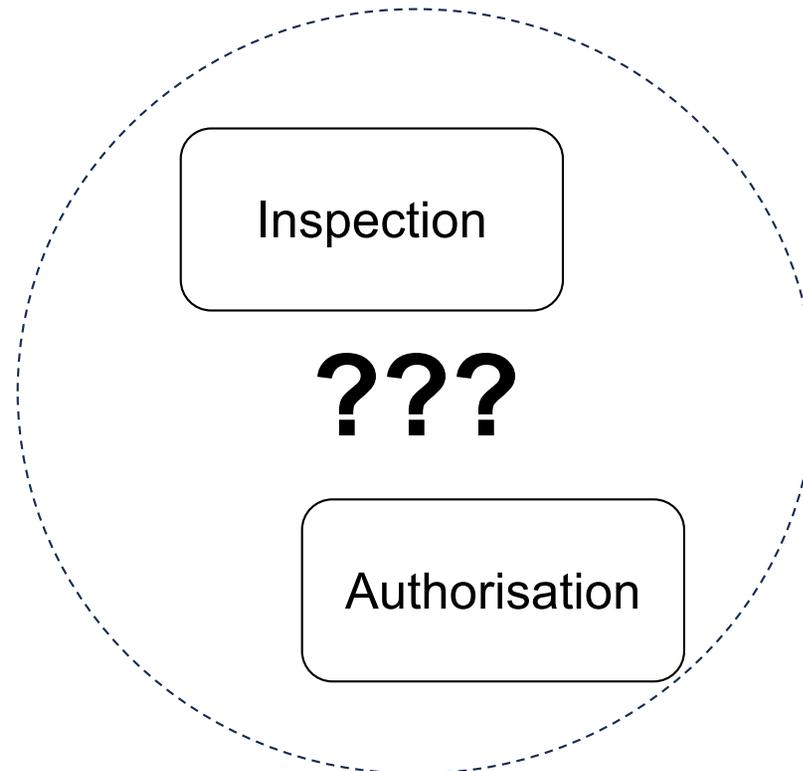
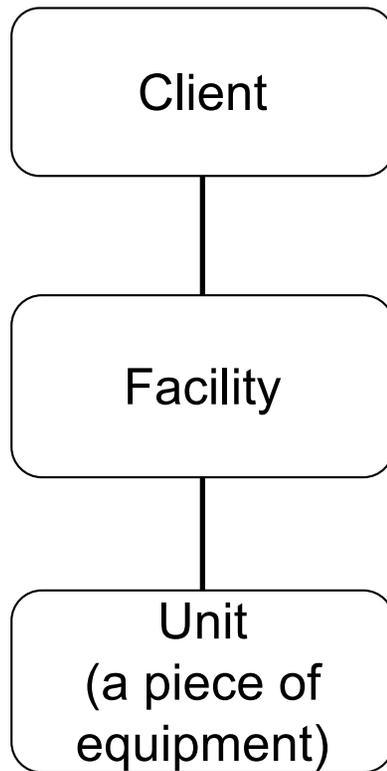
Concept Model - what are the "things" we care about?

At a regulatory agency, the "things were:



Concept Model - what do we inspect and authorise?

Organising the things:



What is a Concept Model? (Business Object Model, Domain Model...)

- A description of a business in terms of
 - **things** it needs to maintain records of – *Entities*
 - **facts about those things** – *Relationships & Attributes*
 - **policies & rules governing those things and facts**
- Models a view of the **real world**, not a technical design (therefore, stable and flexible)
- Can be comprehended by mere mortals (at least initially)

“Things” first,
data later!

Narrative component

Student definition:

A Student is any person who has been admitted to the University, has accepted, and has enrolled in a course within a designated time. Faculty and staff members may also be Students

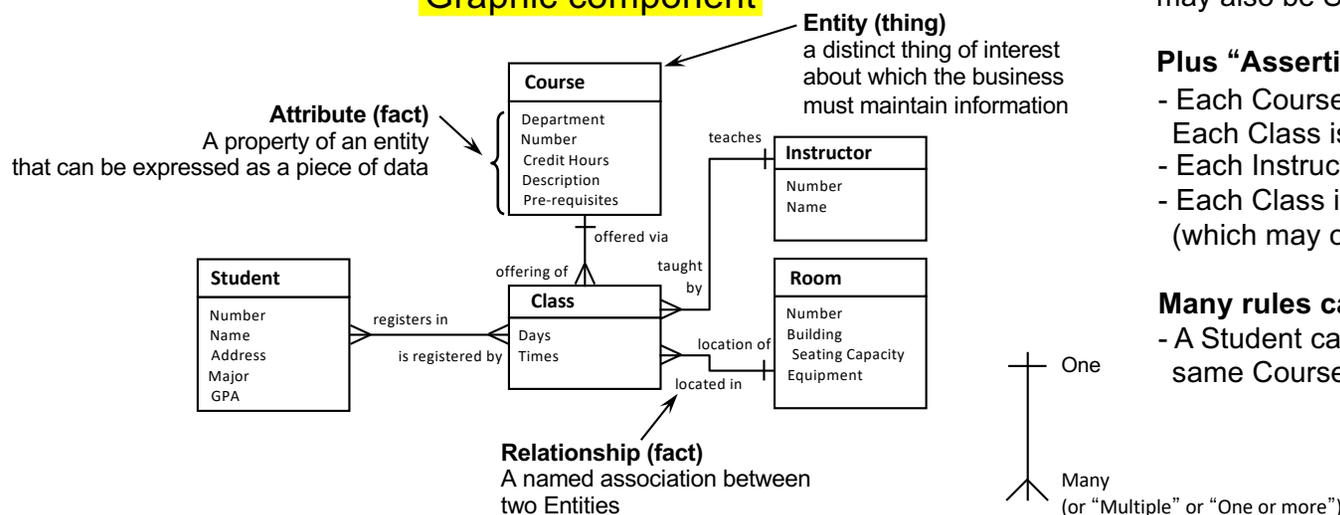
Plus “Assertions” (policies & rules)

- Each Course is offered through one or more Classes
- Each Class is an offering of a single, specific Course
- Each Instructor teaches one or more Classes
- Each Class is taught by one Instructor (which may or may not be true...)

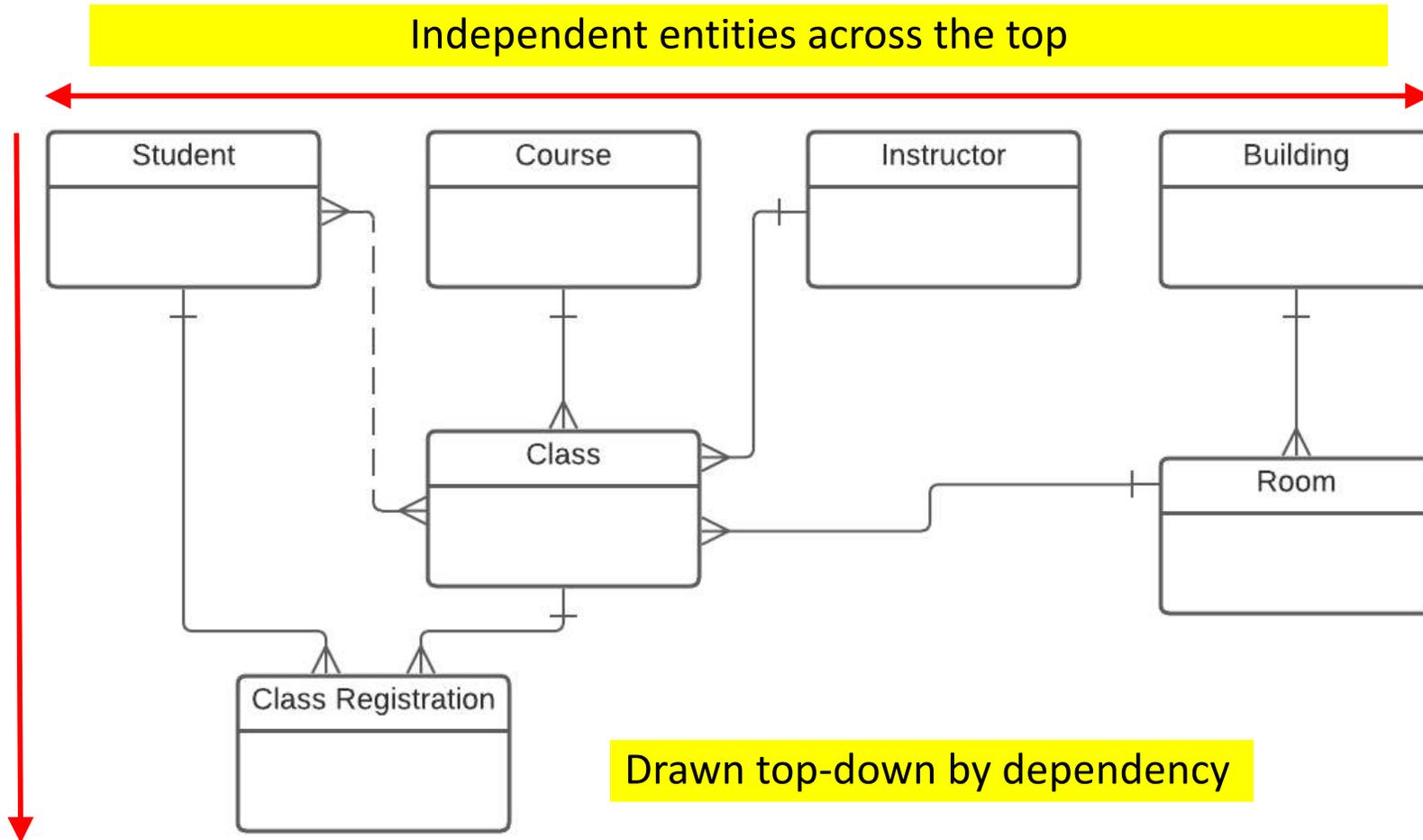
Many rules can't be shown on the diagram...

- A Student can not register in two Classes of the same Course in the same Academic Term

Graphic component



A better looking version of the model on the previous slide



Seems simple, but Data Modelling fell out of favour

In general,
"technical data people"
can make "data"
far too difficult

Confusion between
data modelling and
database design...

*"Help –
everyone hates our
data model!"*

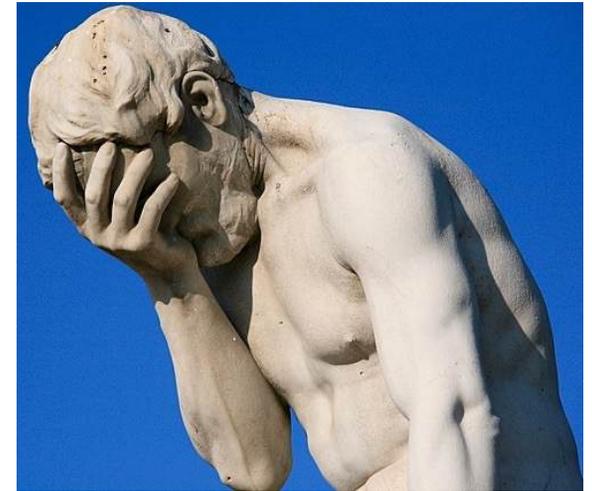


Data Modelling – fell out of favour, but things are getting better!

The need seems obvious, but...

"We don't need data modelling because..."

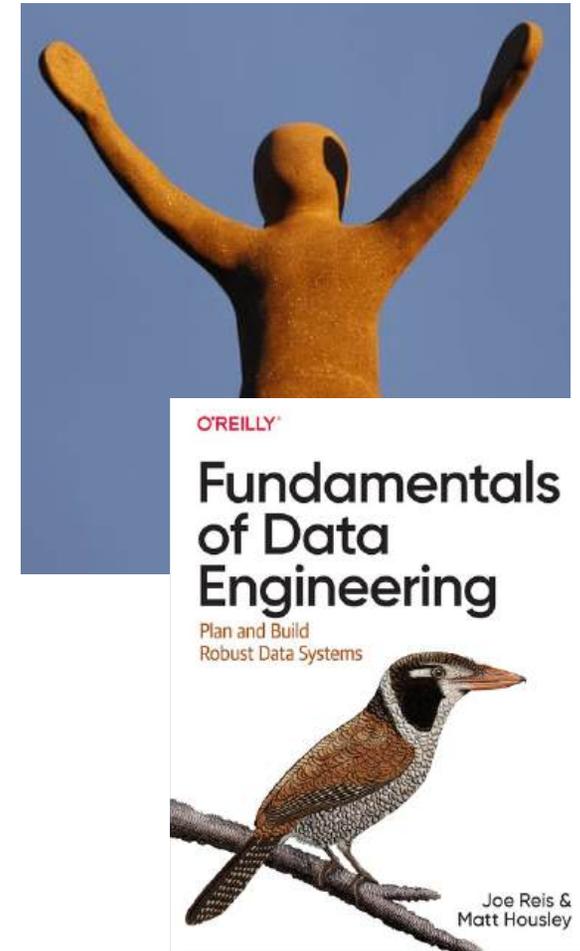
- "We're going Client-Server!" (~1986)
- Agile ("We'll refactor rehacktor as necessary!")
- Packaged software / COTS
("The vendor has this all figured out!")
- Big Data and IoT ("It's schema-less!")
- Data Science/Analytics
("The algos will discover all the connections!")
- Data Lake, Data Mesh, Data Lakehouse, ...
("Fill it and they will come!")
- ...and many other Silver Bullets that will *Save The Day!*
(Chat GPT, Gen AI, LLM, ...?)



Concept Modelling / Data Modelling – cause for optimism

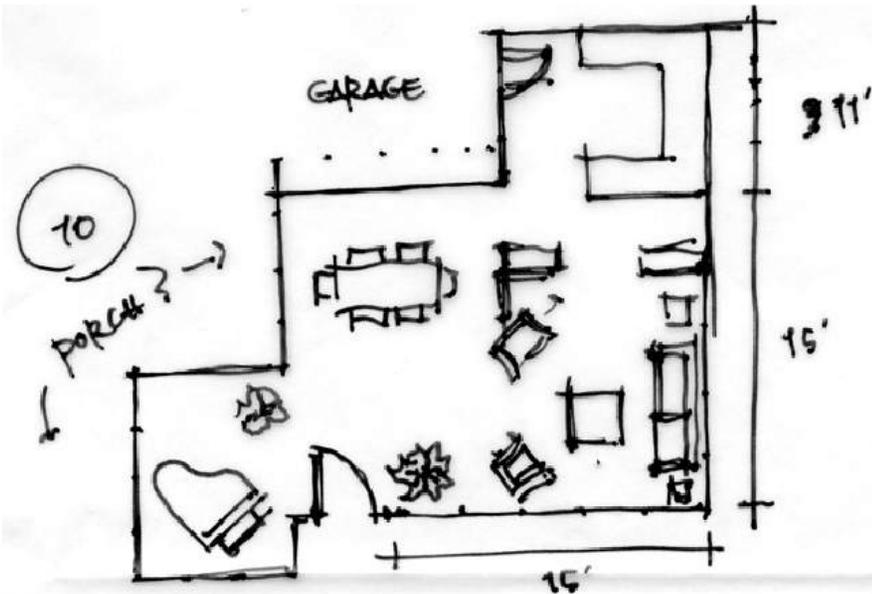
And then, starting ~ 5 years ago:

- One of the world's largest tech companies asked "Could you build a 'Data Modelling for Data Scientists' class?"
- At a public workshop, a data pro said "We aren't building a *Data Lake*, we're building a *Data Swamp!*"
- At Big Data London 2024 & 2025, Concept Modelling was the hot topic
- Joe Reis, "Mr. Data Engineering," is writing a book on Data Modelling for Data Engineering – *I'll be on his podcast soon.*



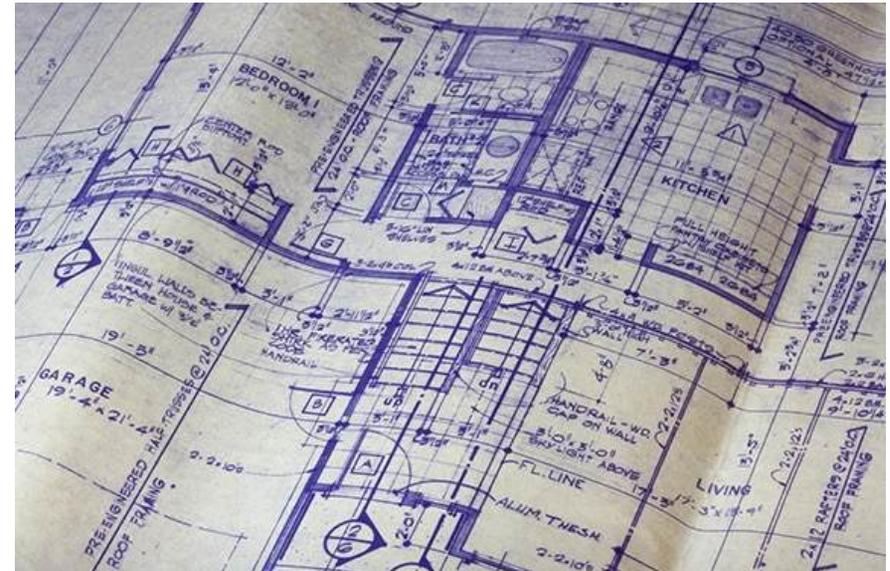
An analogy for Conceptual and Logical models

A Concept Model is like a sketch of a floor plan



Easy to understand, and provides enough detail for the homeowner to decide if the layout will work for them.

A Logical Data Model is like construction blueprints

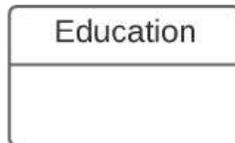


Requires specialised skills to interpret and provides enough detail (along with other design views and callouts) for the builder to construct the building.

A simple example – Concept Modelling to clarify the process

Analyst struggles to model “Evaluate Education” – timing disconnects, 1:M and M:1 connections within the process, token changes, ...

A few minutes of Concept Modelling showed two distinct tokens and processes. “Education” was a “mushy noun.”

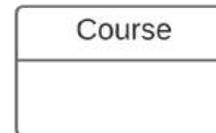


Processes:
Evaluate Education???

Not a good entity name, therefore not a good noun in a "verb - noun" process name.

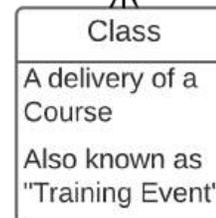
- It's not a *singular noun* we can imagine *single instances* of.
- "What is *an* education?" or "What is a *single* education" doesn't sound quite right.

WELD 101
Introduction to
Overhead Welding



Processes:
Develop Course
Evaluate Course
Retire Course

WELD 101
Nov 07-09 2017
MPL Main Campus
Room T-2114

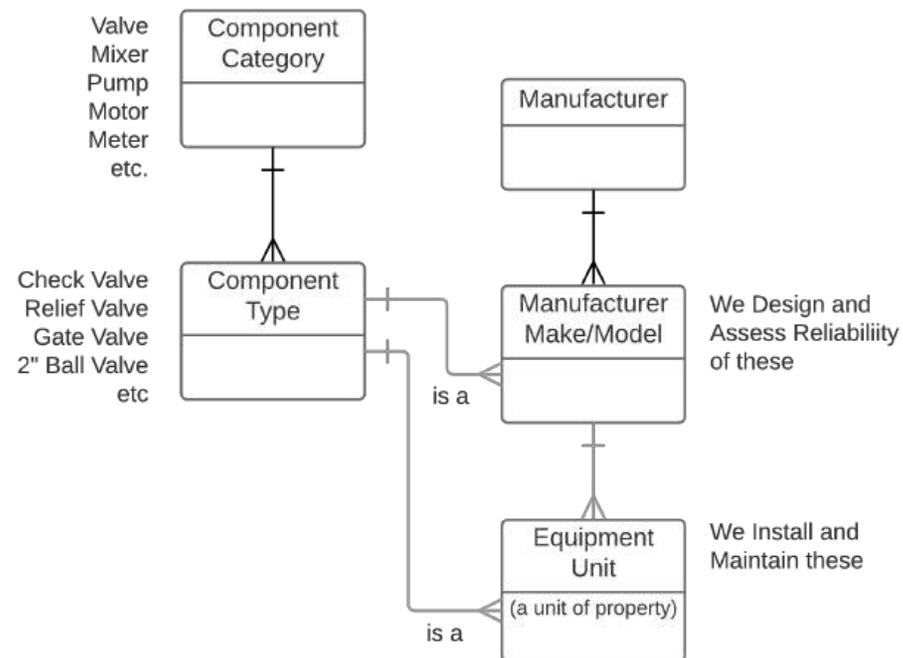


Processes:
Schedule Class
Enrol Participant in Class
Conduct Class
Evaluate Class

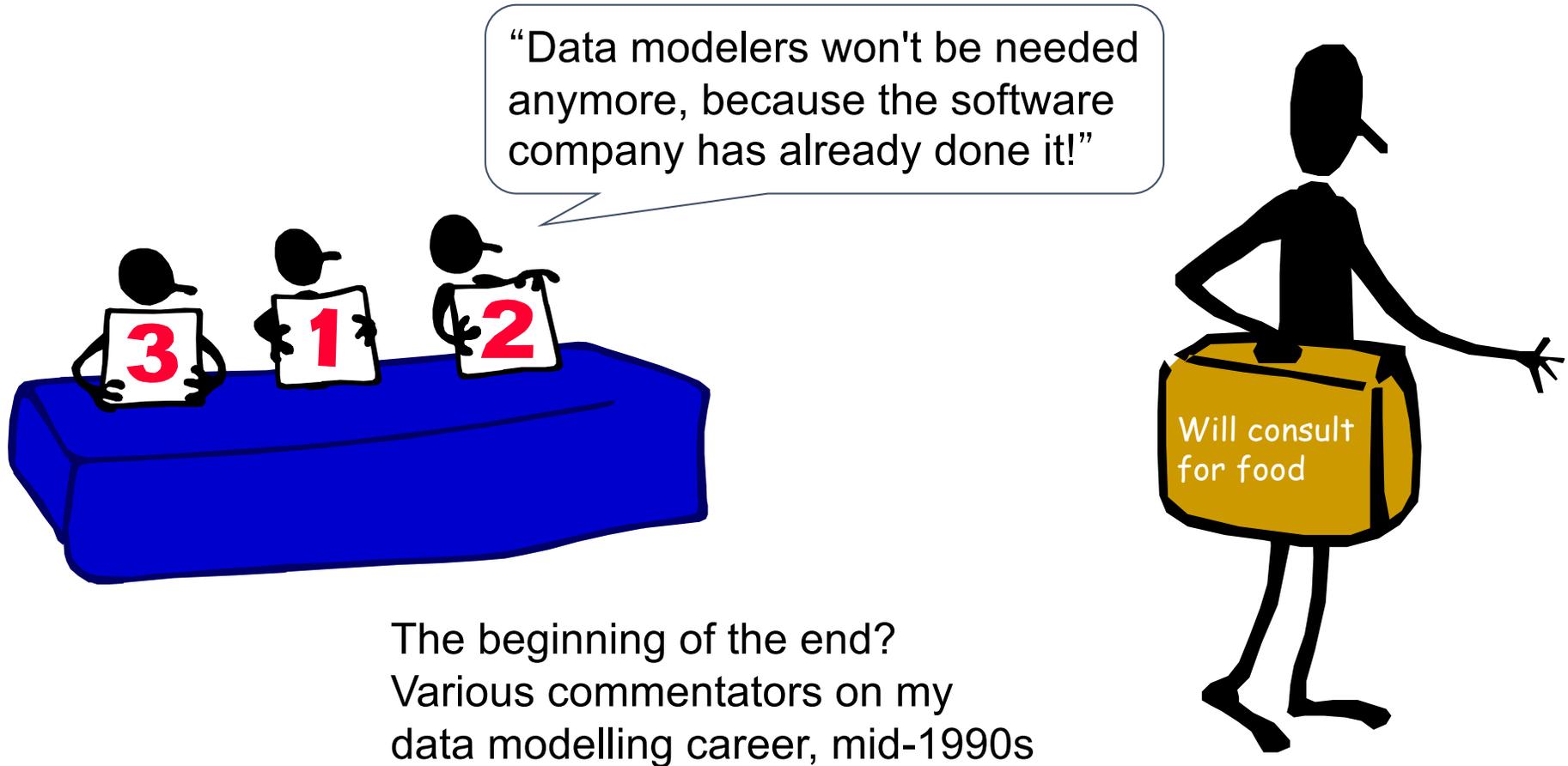
Another simple example– Concept Modelling to clarify the process

A session to model the “Design Component” process at a pipeline operator is going in circles. Concept Modelling clarifies the company doesn't actually “design components,” they:

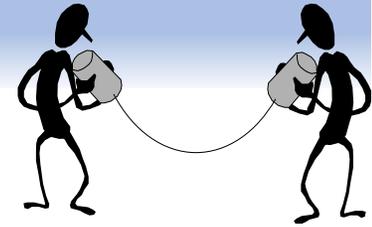
- Develop Component Type Specifications
- Approve Manufacturer Make/Model (“AML”)



Data modelling – many detractors over the years (but it's where I start!)



Redemption, via a SAP implementation



The client...

Could you come on over and do that thing you do?

That entity data stuff with the boxes and lines

We're implementing something called SAP. Our CEO told us to!

When you did this with our Work Order Management system, we all felt we understood our business better than we ever had.

They say it's a terrible idea, a waste of time, and will you *please stay home!*

Alec...

I guess.
What thing in particular?

Oh, data modelling.
Sure - what's the project?

Ah... sounds familiar.
How can I help?

Nice. And what do your SAP consultants say about me coming out?

I'm on my way.

SAP – using DM for ERP configuration

The problem:

- Application selected by decree
- Desire to understand as-is business to map to package and decide on configuration options
- Client felt they were being coerced by integrator

The approach:

- Team of 7 builds 45 entity *concept model* over two days
- Identify “what's good, what's not good” about current model, and revise
- Use this on configuration activities with concept model as an overall map

The key points:

- ***Client-initiated, not IT***
- Now a global showcase account
- Client – “More value from those two days than anything else we did!”
- Me – “I'm not irrelevant!”

Vendor
Country
Plant
Plant Location
Equipment Item & Type
PO, PO Line Item
Req, Req Line Item
Release, Release Line Item
Work Definition, WD Item
etc. etc. etc.

Case study: “Why do we hate this application?”

Evaluation

Client conducts **feature-based** evaluation of system to track job applicants. SuperApp 1.0 is selected.

Configuration

Client spends >10x the purchase price modifying SuperApp to match their business needs.

Realisation

Nobody likes the system, including the federal regulator, who is getting the required info.

Salvation

Vendor announces SuperApp 2.0, which has a cool new UX and a host of new features.

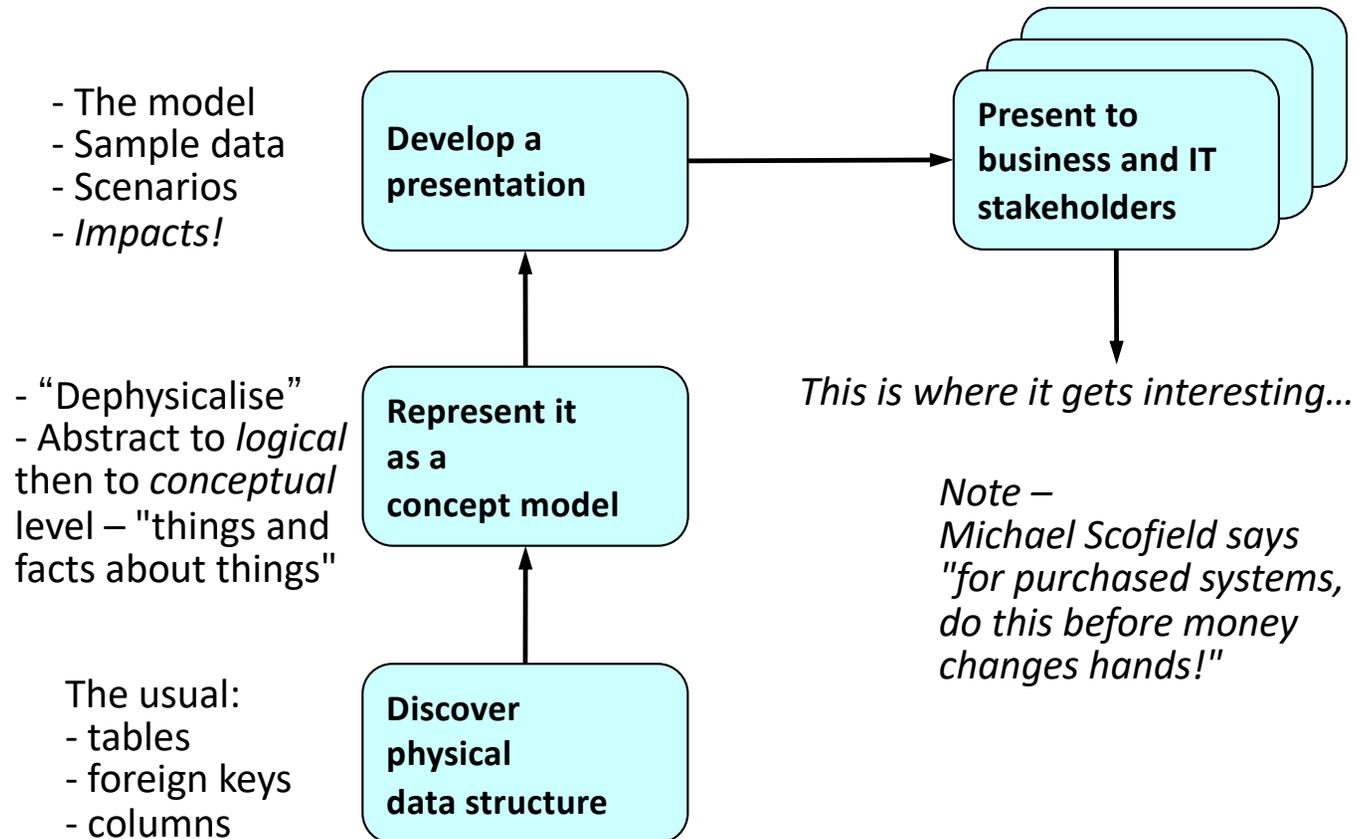
Desperation

“If we go to SuperApp 2.0, we'll lose our massive investment in customisation! We need a ~~scapegoat!~~”

A bald, Canadian consultant

“Stop me if you've heard this one...”

Overview of a typical reverse-engineering effort

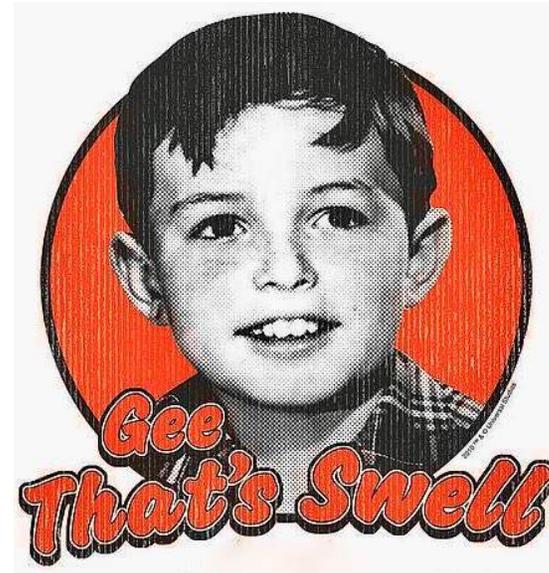


Show the business, possible reactions



"Oh, nooooo...."

- Horror
- "OMG, now I understand..."
- Glum acceptance, sorrow, shock & awe...

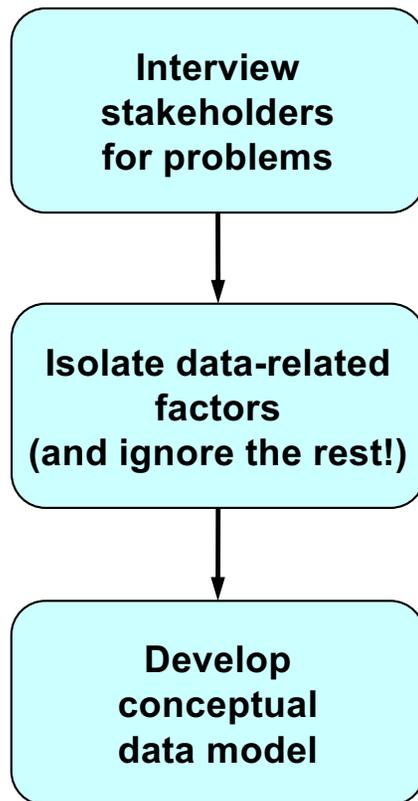


"Gee, that's swell!"

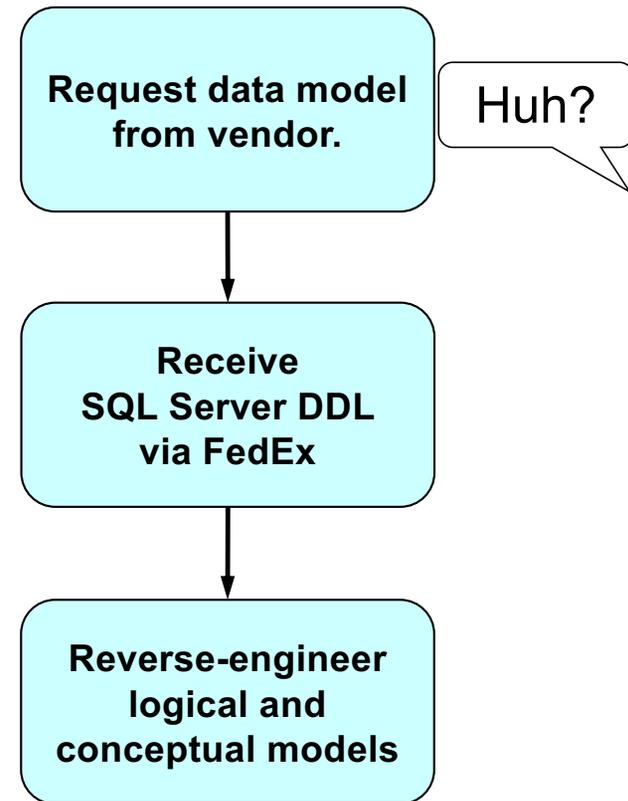
- Retain it – "It's better than we realised!" & adapt us – *to it*
- Adapt it – *to us*
- Abandon it

The approach – two parallel streams

Understand the business



Understand SuperApp



At the presentation...

How you see the world...



Drawn,
not projected

"World view"
not "data model"

How SuperApp sees the world...

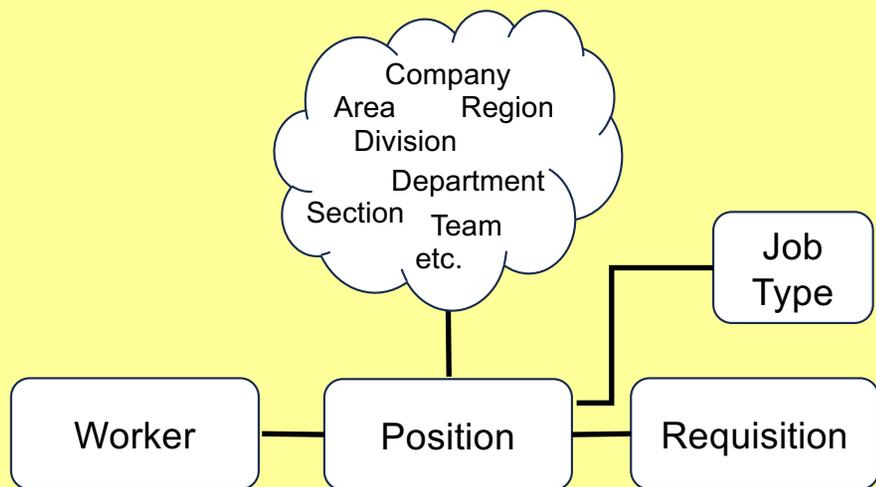


Training manager:
*"That's the clearest description
of what we do I've ever seen.
Can we get that for our
orientation material?"*

HR director:
"This has been a revelation!"

At the presentation...

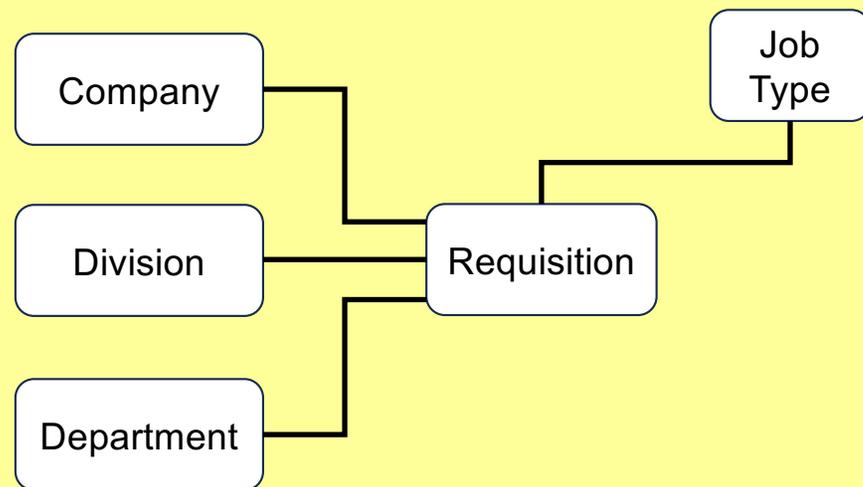
How *you* see the world...



Your world view:

- Company breaks into Divisions into Department, Sections, Teams, Squads, and so on (there are several types of Organisation Units)
- Each Position contained in exactly one Co, Div, or Dept (or Org Unit)
- Each Position is classified into one “HR approved” Job Type
- Each Position is typically filled by one Worker at a time, but may be more than one at a time
- Each Requisition is for one Position
- **One Hire per Requisition!**

How *SuperApp* sees the world...



HR director:
“This has been a revelation!”

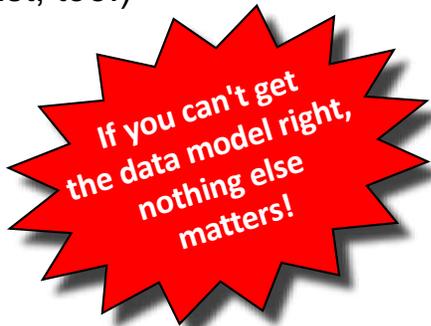
SuperApp's world view:

- Unrelated Co, Div, Dept. (and only those)
- Requisition specifies Co, Div, Dept. (no checking of “parent”)
- **Omigod – that's why so many Requisitions are invalid!**
- Requisition is for a Job Type
- **No “Position” concept, no limit on Hires per Req.**

Influencing the vendor

The approach for assessing app and negotiating with the vendor:

- Classify issues into 3 tier framework
- Assign severity
- Focus *only* on “High” severity Data Management issues
- Discuss desired changes with vendor (and have a nice weekend on the East Coast, too!)



Vendor chooses to ignore requests. Company name is now owned by two guys in a garage somewhere overseas.

Presentation / Reporting	
Severity	Description
H	
H	
M	
M	
M	
M	
L	
L	
Business Rules / Logic	
Severity	Description
H	
H	
H	
M	
M	
L	
L	
Data Management	
Severity	Description
H	
H	
H	
M	
M	
L	
L	

Retrospective

The senior IT manager involved in this project said “I usually think consultants are a waste of space, but this was great – you really delivered value.”

This was a very successful consulting engagement, even though the outcome was abandoning SuperApp.

Without my involvement,
they would never have considered inspecting the underlying data models.

Bottom-up Concept Modelling with top-level executives

Client: mid-size credit union (a "member-owned bank") in US southwest

- BI team wants to improve modelling of complex *operational* data – schedule in-house delivery of our *Business-Oriented Data Modelling Masterclass*
- BI team invites Chief Strategy Officer (CSO) to attend Day 1
- In-class example shows how important terms and definitions are
- The example – one of the world's largest credit card issuers responds to competitor's goals.
- *CSO is impressed!*



"What is a Customer?" at the credit card issuer

Competitor: "We will have 1 billion customers by the year ____."

Credit Card Issuer CEO (Famously aggressive and competitive): "We'll have more!"

- CEO, later: "But how many Customers do we have now?"
- IT folks try to answer the question by counting Customers
- Answers start coming in – varying by *orders of magnitude!*
- CEO was unimpressed:
"IT, you have a \$330M annual budget
and you can't tell me how many Customers we have?!"
- IT (bravely) pushes back –
"It's not an *IT* problem, it's a *business* problem.
There's no definition of a *Customer*."
- **Note** – CEO was impressed by the pushback and the
first Data Resource Management group was formed
- The exercise – what were people counting?



Counting customers

Corporation/
Enterprise

Corporate
Account

Statuses
(active,
inactive, ...)

Card

Person

Using a
Name & Address match
– good luck with that!

Account-
holder

Personal
Account

Cardholder

Merchant

Imprint
Machine /
PINpad

CSO, to Steve, the BI lead: "Hey, Steve, do we know how many *Members* we have?"

Steve: "Not even close..."

CSO: "We need to get the Leadership Team together and do some of this stuff."

Preparation –

- Schedule three sessions, Mon-Tue-Wed, 08:30 – 14:30. *Not Full Days!!!*
- *Virtual* first, *in-person* later
- Via email, we gave a "homework assignment"
 - Please spend ~10 minutes listing terms you use daily.
 - Please identify information you need but can't get, or don't trust it
 - No right or wrong – goal is familiarity with your terminology
- The text of our email...

Before the session, it would be very helpful if everyone could do two things:

- Spend up to 10 minutes or so listing any terms that come to mind that you use on a frequent basis. Each item in your list could be the name of something you need to track, a fact about a thing, a spreadsheet, a report, a metric, a system, a database, or anything else that comes to mind. I'm hoping everyone can list thirty or forty things. There is no "right or wrong" – this helps me learn the language and provides clues to what the most critical terms might be.
- Think of one to three examples of information you'd like to be able to get, but either you can't, or you're not sure how accurate it is. For instance, at a US university last week, a Vice-Provost said she would like to know "How many non-resident, tenure-track Faculty do we have." Of course, this means agreeing what is meant by "Faculty," "tenure-track," and "non-resident." (I've done a LOT of work in higher education and can promise you there is not agreement on what those terms mean.)

That's the whole point of our sessions next week. :-)

Some had little to say, others had lots

- What do we consider a Member in reporting?
- What do we consider an Account in reporting?
- How do we determine how many members we have? Is it based on number of individual memberships or unique SSN?

General Terms

- Member
- Membership
- Individual
- Account
- Services
- Co-borrower
- Primary
- Joint
- Pay off
- FIS (Clientlink)
- Co – op (Springboard)
- DMI
- Past due
- Total due

Member Solutions Terms

- Carmpro (collections system)
- ARM (recovery system in Carmpro)
- Promise to Pay (PTP)
- Payment by interval i.e by hour or day
- Call by interval i.e. by hour or day
- Balances saved by interval i.e by hour or day
- Charge off
- Repossession
- Penny loan
- Workout loan
- Fixed Payment Plan
- Loan Extension
- Bankruptcy by chapter 7,11,13
- Delinquency
- Delinquency rate
- 60 day + delinquency rate
- Charge off rate
- Net Charge off rate
- Recovery
- Recovery rate
- Forced closed
- Lexis nexis
- Credit bureau /credit report
- Skip tracing
- Net flow rate
- Leading edge rate
- Roll rate

All were useful

Terms:

- Household income
- Member growth
- Loan originations per member
- Average relationship balance
- Average relationship account
- Fee income per member
- Net income per member
- Marketing expense per member
- Member trends
- Market segmentation
- Mobile/Online banking penetration
- Member investment products
- Member retirement products
- Lending market overview (credit card, mortgage, auto, home equity)
- Benchmarking
- Payment information (how cards are used)

Examples:

- Product/Service adoption based on campaigns
- Track acceptance rates on promotions
- Tracking the new member sales path (similar to what we are doing with the organic growth project)

I went through all the "homework" and selected ~40 terms that qualified as "things" (or entities, or business objects, or classes, or...)

Present 40 potential "things" from "homework"

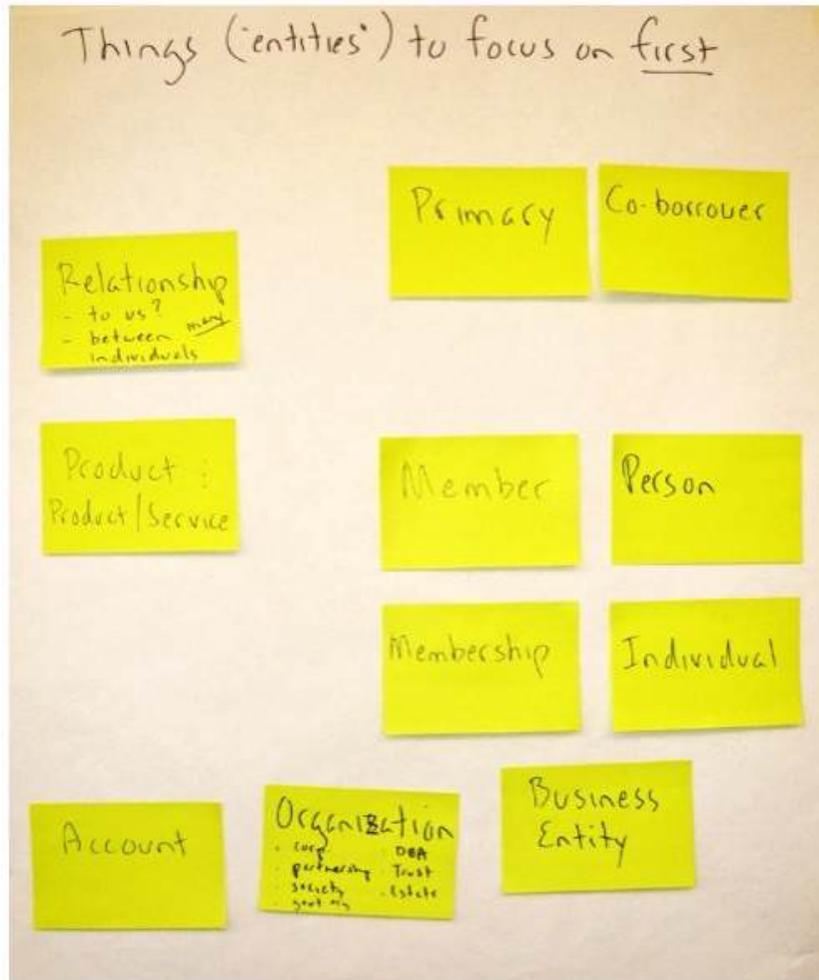
More than enough to work with – here are 30:



They added more...

"Wow – you actually *did* something with our homework!"

And now we have a plan!



They decided
on Monday we will focus on –

- Member
- Membership
- Person
- Individual
- Account
- Organisation
- Business Entity
- Primary
- Co-Borrower
- Relationship
- Product
- Product/Service

1 – building a "Member" definition...

Member has rights

Anomalies, sources of confusion, differences

- status - only those in good standing?
- legal vs. natural
- ownership of account. (the primary)
 - a member who opened the account (it's under their SSN)
 - vs
 - joint members.
- Bylaw definition:
 - tied to ownership of primary ~~&~~ savings account
 - \$5 on deposit.
 - primary and joint are members
 - OR
 - just the primary owner of the account

A Member is a Party (Person or Organisation) that is the primary on at least one ^{Membership} Savings Account that maintains a minimum balance of ~~\$5.00~~. Currently, this is what we do operationally. Should say "primary or joint [←] on at least..." Members have rights. It's not what we do for voting, but we should

- a Member has voting privileges
- only Members can hold an IRA - a TaxID is needed.

[insert Tom's quote here
NCUA bylaws on member's rights]

... which is different than "Membership"

A Membership is ~~an umbrella~~ a mechanism (an umbrella) via which one or more Accounts are managed, one of which must be a Savings Account with a minimum balance of \$5.00 per Member.

- Why would a Member want multiple ~~relationships~~? Memberships.
 - sequester certain types of financial activities (e.g., kids' education)
 - not be exposed
 - ...
- Various Party Roles can play a role in a Membership - Member, Customer, and ... ? ?

... which is different than "Customer"

A Customer (a "guest") ^{non-Member} have privileges
is a Party able to use the Products and Services of [redacted]
a customer can jointly borrow.
• may have ownership of an Account including decision-making authority,
m - where the decision ^{could be} to close an account, thereby eliminating the ^{primary} Member's status
- this could raise legal challenges, but it cuts both ways - if the primary is going delinquent, the joint may want to ^{limit} ~~sever~~ (relinquish) their exposure by closing the account (and increase our confusion)
• we ^{reduce} ~~minimize~~ our exposure by disclosing all of this.

... which is different than "Party"

Party 1/

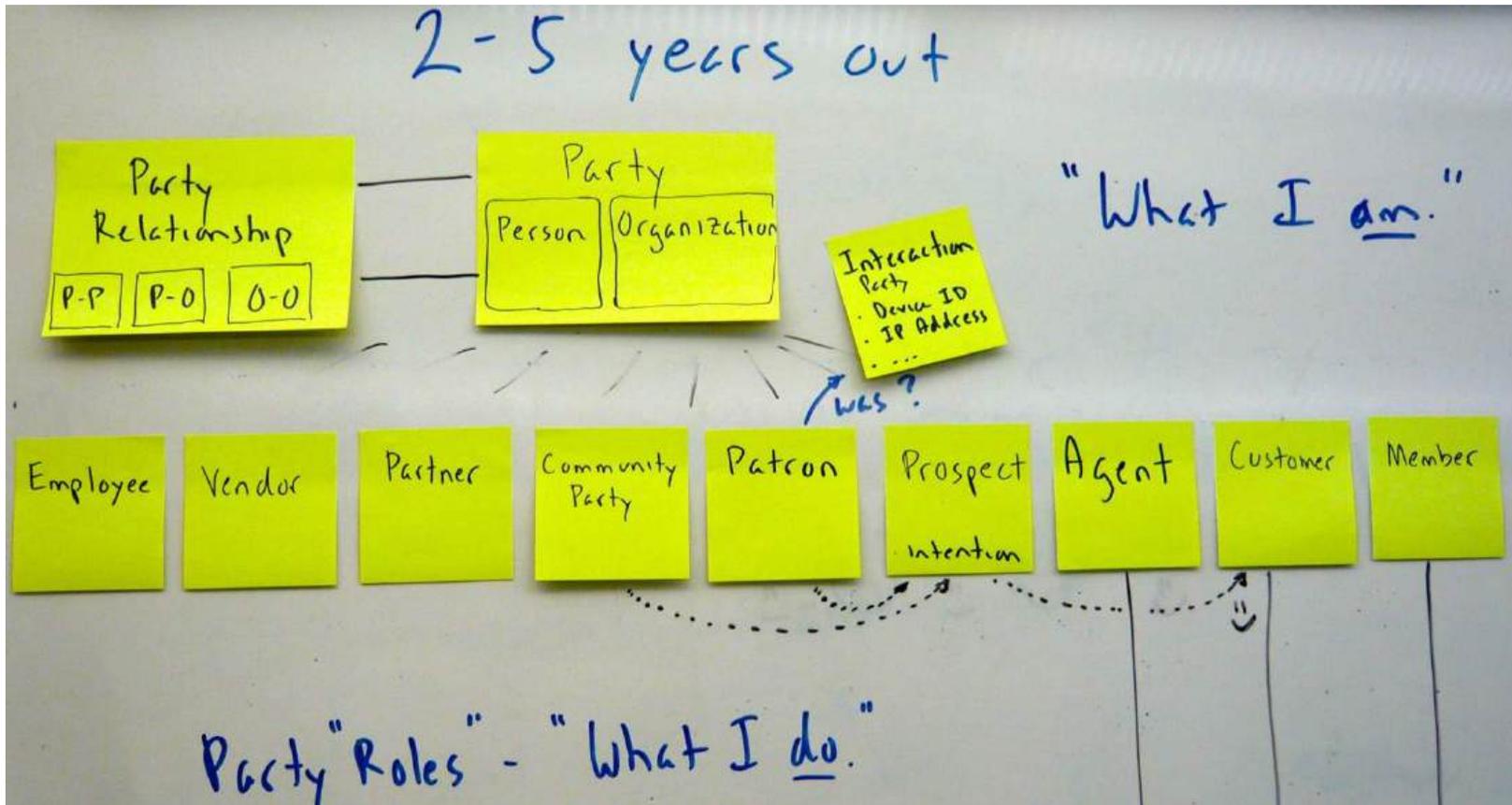
A Party is a legal entity (Person or Organisation) of interest to [redacted] because we have a relationship to them

- relationship is not necessarily an active financial relationship - the Party could be a Member, Customer, Employee, Partner, Community Person, etc. These are the "roles" a Party can play.

but not at [redacted] (minus)

- In law, a party has legal standing and can enter into agreements or contracts, assume obligations, etc
- Full list - an Association, corporation, partnership, proprietorship, trust, or individual.
- may be known as an Individual within XP2

Parties and Roles



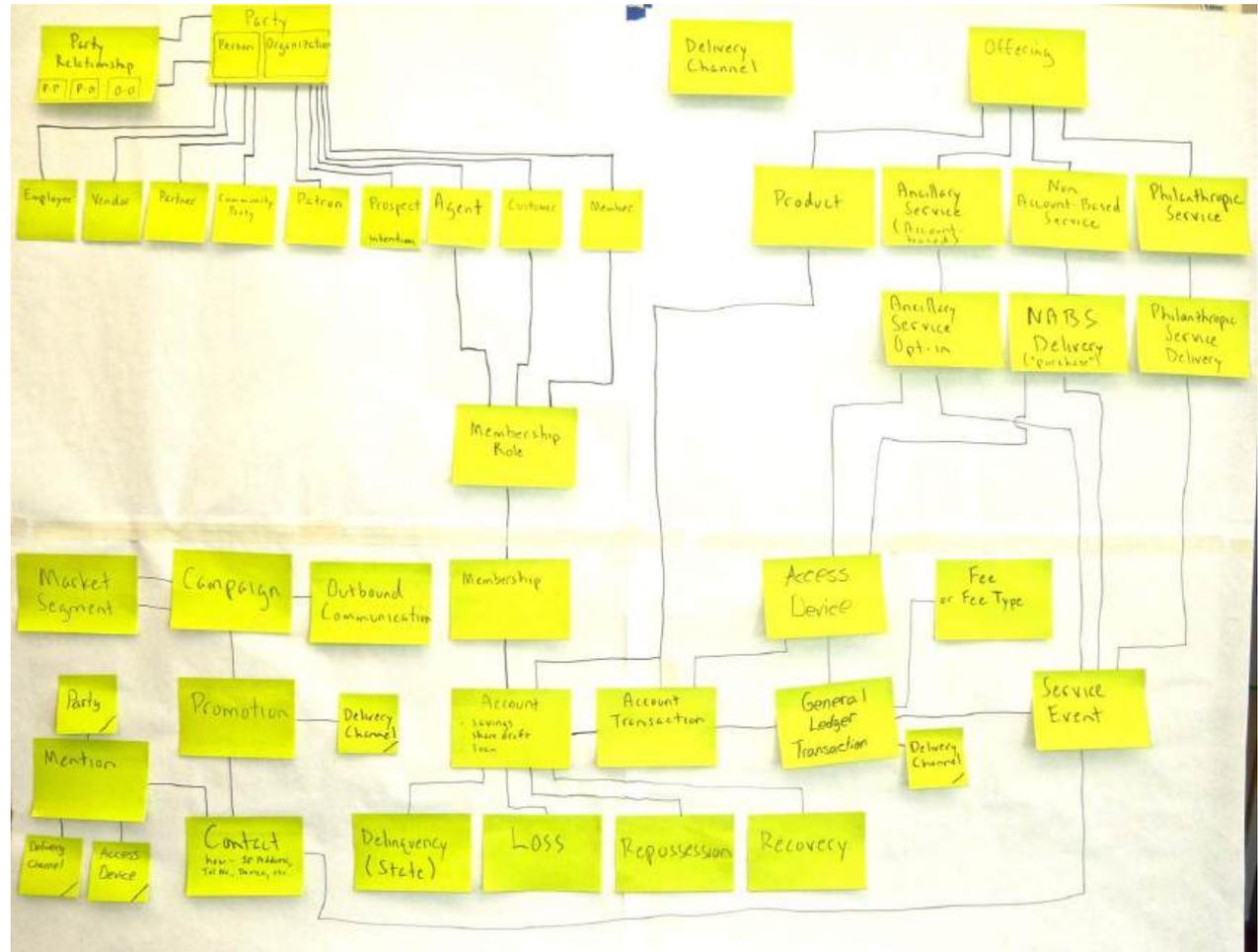
Day One Done!



Three partial days, and a ~40 entity concept model emerges

Plus...

- Over 50 flipcharts of notes – issues, goals, decisions, etc.
- Definitions for all entities
- Very positive feedback



They were very pleased with the outcome...

Retrospective W-25

- I learned a lot - perspective and definitions. We were all open-minded. I had some tunnel-vision.
- We've had the conversations, but not facilitated into something concrete.
- A disinterested third party
- Intelligent and ability to collaborate. A bit overwhelmed, but we have a foundation. Lots of work ahead.
- We have a backbone - need muscle, tissue, skin, ...
- I learned a lot about our platforms and systems - capabilities and limitations.

W-26

- I learned a lot - we made more assumed definitions explicit.
- There is a better understanding of the situation, and why certain questions arise.
- Stunned that we solved the member definition problem.
- Learned a lot, and it's fascinating. I see more clearly how my department contributes. Affirmational.
- Talking the same thing in different languages, now have one language.
- Expanded knowledge as a group. Collaboration.

W-27

- Appreciated the opportunity, learned a lot.
- Appreciate how we interacted, and came to consensus.
- And, Stephen Kie has a lot of biz knowledge.
- New spelling and pronunciation. Relevant to my CRM initiative.
- I've had 20+ years of hearing different definitions - exciting that we've started, and I understand different perspectives.
- Amazing that a group this large can come together and not argue. This is a step toward self-serve reporting.

Plus... COO - "We should have done this 20 years ago."

Another example – Concept Model shows possibility of major process change

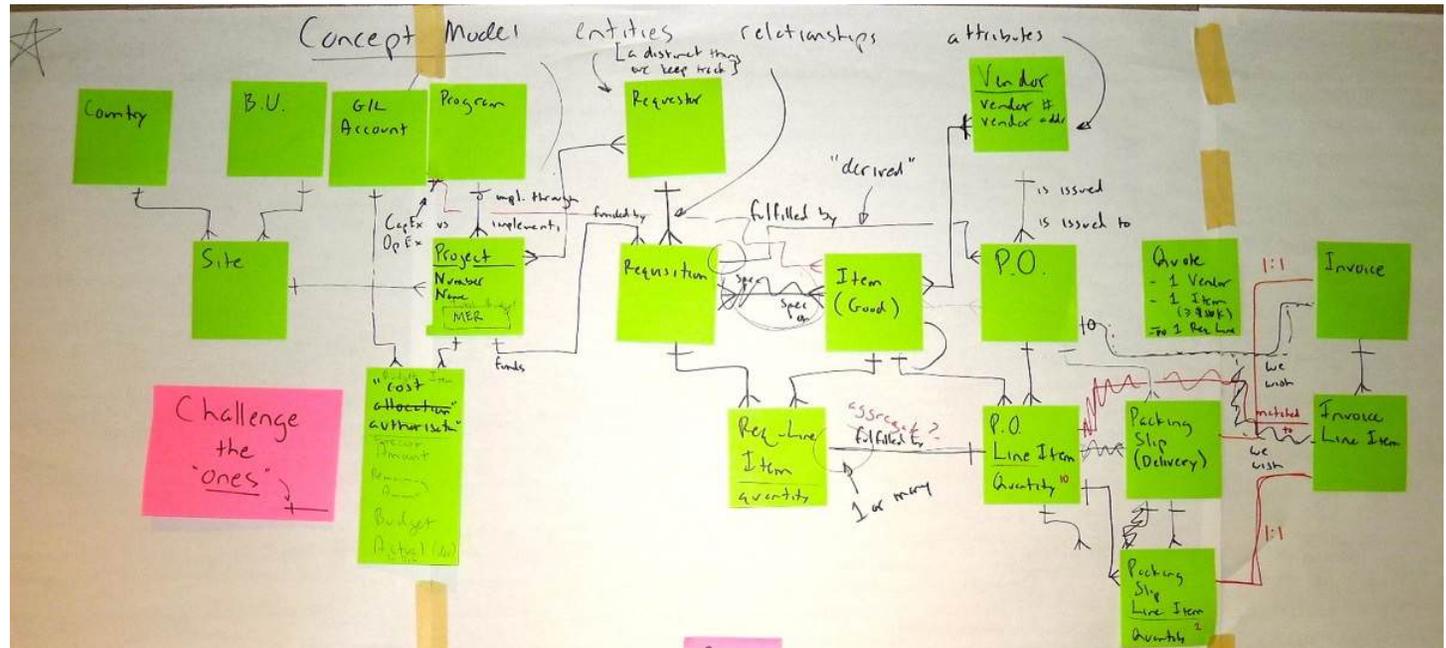
Global mining company hires me to help with Business Process in support of ERP changeover.

I "snuck in" some quick, informal Concept Modelling.

This highlighted many areas lacking clarity:

- Program vs. Project
- Site vs. BU Location vs. Country
- Requisition vs. Quote vs. Purchase Order
- The 1:1 relationships among PO/PO Line Item, Packing Slip/Packing Slip Item, and Invoice/Invoice Line Item showed that Invoiceless Payment, a major process change, was possible

I did not use any data modelling terminology until the end!



Example: If you ignore the process and the data...

U.S. University implementing cloud-based Human Resources and Payroll systems from *the same vendor*.

- Total spend US\$80M, nothing salvageable
- University leadership unamused
- I was brought in for “project recovery”

Project recovery

My assignment –
take a large team through a process model
and data model-based approach –
run 4-day offsite in “The Capsule”
(we felt like astronauts)

What we learned:

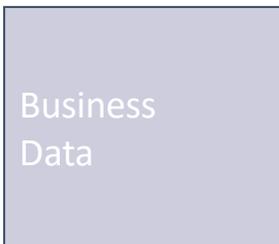
- Little time on “business process”
 - very generic / unrecognisable as “what we do”
 - team tires of this
- Zero time on “data” (no “concept model”)
- Management: “Get on with it – the vendor has seen it all before.”
- 100+ programmers begin detailed configuration of *application rules and logic* – “*Straight to task.*”



A "Futuro" house by
Finnish architect Matti Suuronen

Initial focus – too much on "requirements"

Process
Application
Data



Over 100 developers coded detailed business rules and contract terms *separately* into

- Payroll Application
- HR Application

Note: university had over 35 labour unions with complex payroll and benefits policies/rules – ***no rethinking whatsoever!***

Remediation – focus on process and data

Process
Application
Data



Identified, modelled, analysed, redesigned significant process – “Recruit, Hire, and Onboard Employee,” the Case was “Tenure-Track Faculty”

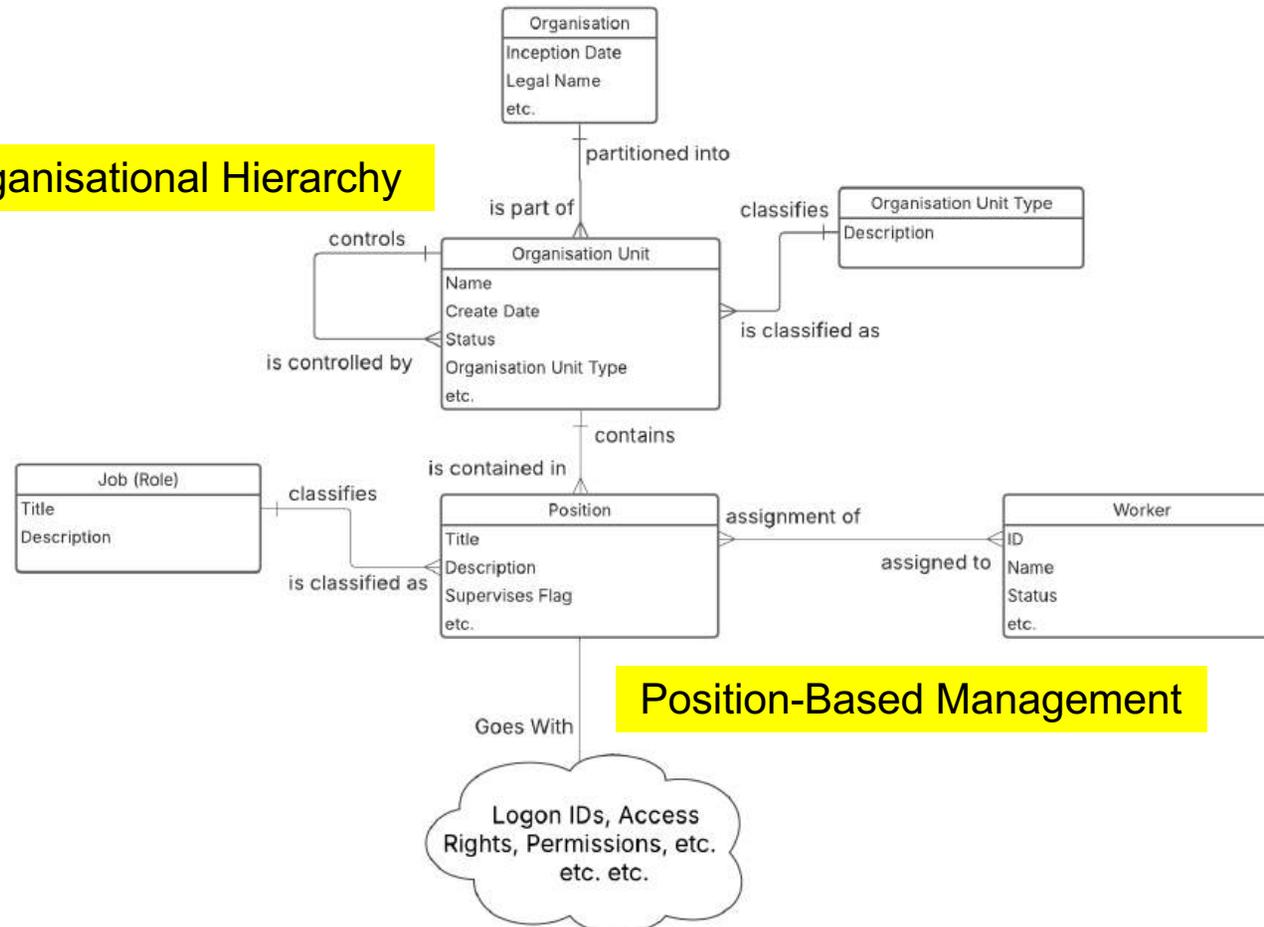
- Developed *scope model* (invaluable!)
- Developed augmented scope model
- Assessed and redesigned based on “what”
- Added “who & how” to create a to-be *augmented scope model*

Modelled seven critical concepts in data – “what do we mean by...”

- Supervisory-Organisational Hierarchy
- Position-Based Management
- Visible Application Workflow
- etc.

And of course, Concept Modelling was really important

Supervisory-Organisational Hierarchy



Identify main phases in a Scope Model



Recruit, Hire, and Onboard Employee

Prepare
to Recruit

Recruit
Employee

Extend
Offer

Hire
Employee

Complete
Onboarding

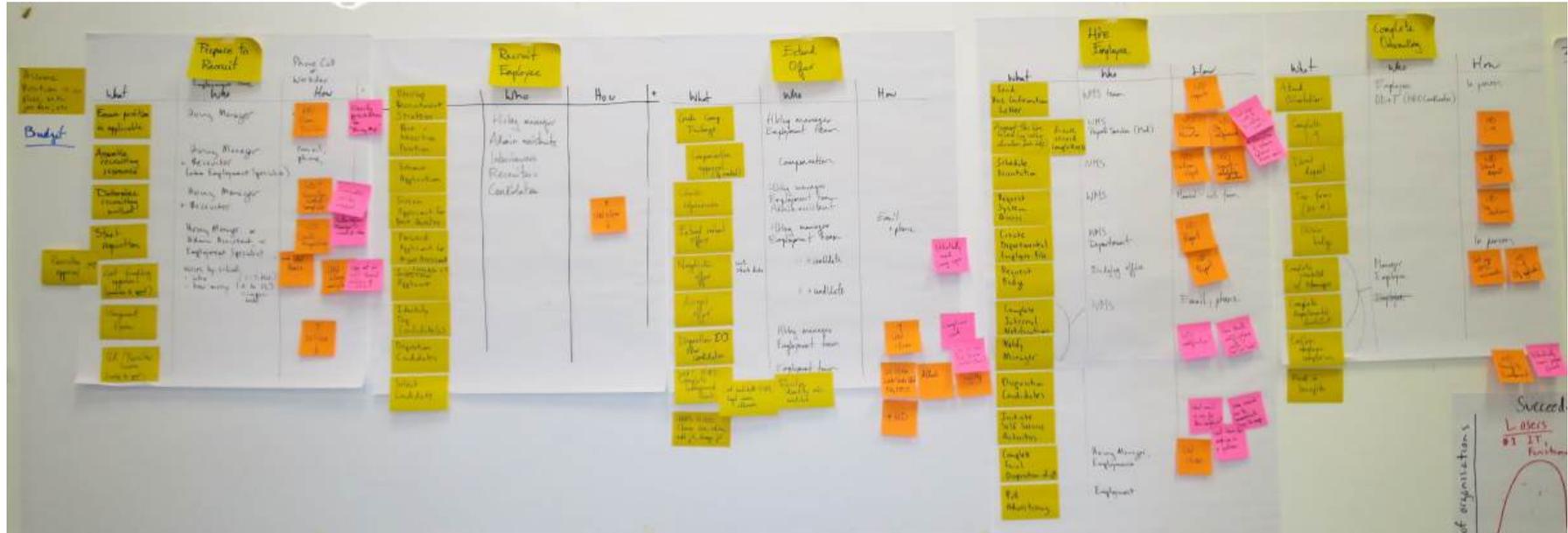
Augmented Scope Model ("what") for the full process

Recruit, Hire, and Onboard Employee



- For the first time, the entire end-to-end process is visible
- A surprise to everyone how much work it is, and how many functions participate!
- Still no reference to "who or how," just "what" – active verb + noun
- This is critical to build support for change – it "depersonalises" in a good way! 50

Example 5: 3rd, add "who and how"



Next, add “who” (which role) and

“how” (which tool or system function) and "notes."

Now we have the basics of a to-be process design, and *an understanding of which steps will be supported by which system functions – great for understanding if the COTS app will actually work!*

A more complex example – is a new process concept viable?

Classroom tech support at major US research university

- Goal: “Uber-style” tech support for classrooms – when an Incident is raised in a Classroom, dispatch it to one or more appropriate Techs (qualified, available, assigned to the appropriate Support Unit) who will bid on it.
- Approximately 20 “assertions” described the planned state:
 - Each Tech may be badged for one or more Service Category Levels, and for each Service Category Level there may be one or more Badged Techs.
 - Each Tech may be assigned to one or more Support Units during a given time period, and for each Support Unit there may be one or more assigned Techs. A Tech can only be assigned to one Support Unit at a time.
 - An Incident for a particular Classroom can be raised by either a Customer (the “reporter” – Faculty, Staff, Tech, ...?) or an automated Alert raised by an Equipment Unit located in a particular GP Classroom.
 - many more...
- The assertions led to the development of an ERD.
Note – the complete “Concept Model” is the combination of the definitions, the assertions, and the graphic (ERD)

Example 5 – Assertions. Lots of assertions.

Classroom Support

Assertions, for review and validation:

- Support is provided by different Support Units (organizations) for different Service Levels (tiers) and different Service Categories (Computers, Audio-Visual, Learning Technologies, Networking, Scheduling, and Facilities.) We are concerned with support for Computers, Audio-Visual, Learning Technologies, and Networks. Scheduling is supported by the Registrar’s Office, and Facilities is supported by (shockingly) Facilities.
If we only cared about one Service Category, say “Computers,” there would be no need to model the “Support Category / Support Unit” concept, because it would be a given – there would only be one.
- Each Support Unit could support one or more Service Categories. E.g., Sam’s Call Center provides Tier 1 support for Computers, Audio-Visual, Learning Technologies, and Networking.
- Support for Department-owned rooms is not within the scope of this initiative; support will be provided by the owning Department’s Local Support Unit.
- Support for Classrooms (GPC and non-GPCs) or a Room Block of GPCs will be provided by a Support Unit during a Time Block for a Support Level (Tier.) That is, for a given Room Block (available via the Classroom reporting the Incident) for a given Service Category Level (e.g., Computers – Tier 1) during a particular Time Block, a particular Support Unit will provide support. This concept is represented via the “Support Responsibility” concept, an associative entity which indicates the responsibility of a Support Unit to provide support for a Service Category Level for a Room Block during a Time Block. There are three general possibilities:
 1. Support for the Room Block will be provided exclusively by the Local Support Unit (the Department);
 - this only applies to non-General Purpose Classrooms (Department “owned”)
 2. Support for the Room Block will be provided exclusively by the Central Support Unit;
 - Will this happen? Is this a goal?
 3. Support for the Room Block) will be provided by the Local Support Unit during “normal business hours” (a Time Block) and by the Central Support Unit outside of “normal business hours.”

Classroom Support

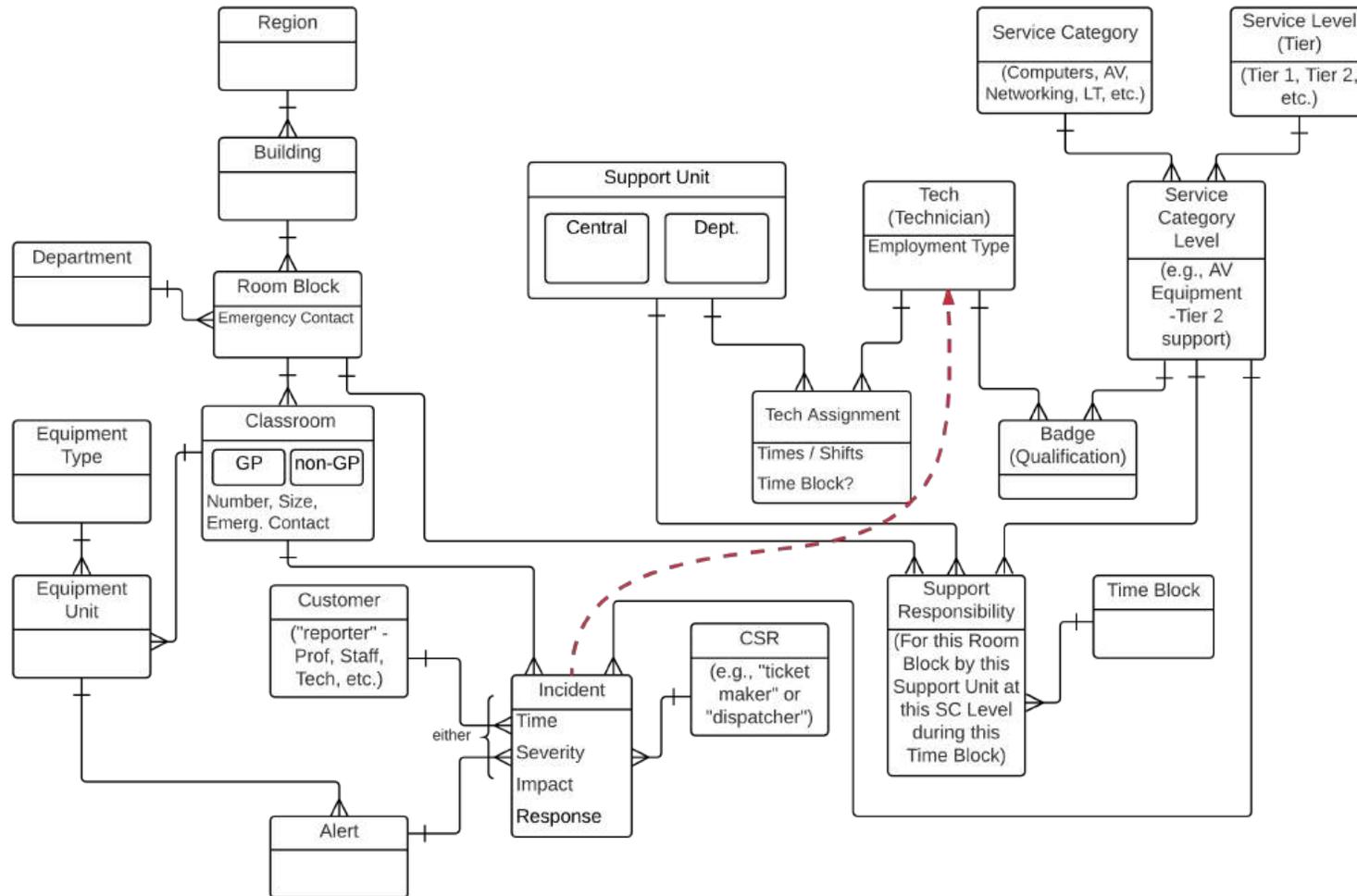
- Is this the “normal” case?
- Should it read “after normal business hours?” That is, will Central ever provide support both before and after normal business hours?
- Each Tech may be badged for one or more Service Category Levels, and for each Service Category Level there may be one or more Badged Techs. A M:M relationship.
- Each Tech may be assigned to one or more Support Units during a given time period, and for each Support Unit there may be one or more assigned Techs. A M:M relationship, but will a constraint be that a Tech can only be assigned to one Support Unit at a time?
- An Incident for a particular GP Classroom can be raised by either a Customer (the “reporter” – Faculty, Staff, Tech, ...?) or an automated Alert raised by an Equipment Unit located on a particular GP Classroom.
- The “dispatcher” or “CSR” at Room Support (?) assigns (or routes?) an Incident to the appropriate Support Unit based on the Support Responsibility.

Putting all this to work...

The goal is to automatically route an Incident to one or more Techs. When an Incident is raised, Dispatch will always create a Ticket, and then route it to the appropriate Tech(s) based on Service Category Level (Service Category and Service Level,) Time Block, Room, and Support Unit. Here’s how...

- When an Incident is raised, we know the Room Block (via Room,) the Time Block, and the Service Category Level, therefore we know the Support Responsibility, and therefore the Support Unit.
- We also know which Techs are badged for that Service Category Level, and which Techs are assigned to that Support Unit at that time.
- Now we have a pool of Techs the Incident could be dispatched to, for them to “bid on,” Uber-style.

The underlying "Concept Plus" Model



Summary of findings

The assertions and the ERD showed the idea could be implemented:

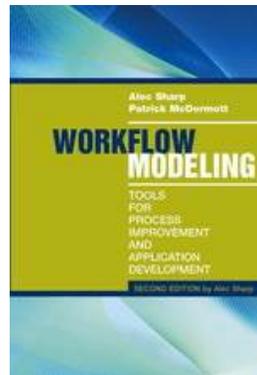
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Thank you – stay in touch!



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And most of all, if you have questions or comments...
don't be shy – send me a note!