Building a Data Strategy - Practical Steps for Aligning with Business Goals

Donna Burbank, Managing Director
Global Data Strategy, Ltd.

February 28th, 2019

Twitter Event hashtag: #DAStrategies

The Business of Data

Becky Russell

Becky Russell is the National Lead for Data Standards at the Environment Agency, a role she has held since 2013. Previously she had held several other jobs in the Environment Agency including leading a Data Team and both managing a team and acting as a technical specialist to regulate industrial activities and implement European legislation. Becky is a qualified chemist, and initially joined Nestle through their Graduate Programme, before working for Cadburys, and then the Environment Agency.

Donna Burbank

Donna is a recognised industry expert in information management with over 20 years of experience in data strategy, information management, data modeling, metadata management, and enterprise architecture. Her background is multi-faceted across consulting, product development, product management, brand strategy, marketing, and business leadership.

She is currently the Managing Director at Global Data Strategy, Ltd., an international information management consulting company that specializes in the alignment of business drivers with data-centric technology. In past roles, she has served in key brand strategy and product management roles at CA Technologies and Embarcadero Technologies for several of the leading data management products in the market.

As an active contributor to the data management community, she is a long time DAMA International member, Past President and Advisor to the DAMA Rocky Mountain chapter, and was recently awarded the Excellence in Data Management Award from DAMA International in 2016.

Donna is also an analyst at the Boulder BI Train Trust (BBBT) where she provides advice and gains insight on the latest BI and Analytics software in the market. She was on several review committees for the Object Management Group's for key information management and process modeling notations.

She has worked with dozens of Fortune 500 companies worldwide in the Americas, Europe, Asia, and Africa and speaks regularly at industry conferences. She has co-authored two books: *Data Modeling for the Business* and *Data Modeling Made Simple with ERwin Data Modeler* and is a regular contributor to industry publications. She can be reached at donna.burbank@globaldatastrategy.com Donna is based in Boulder, Colorado, USA.

Follow on Twitter @donnaburbank
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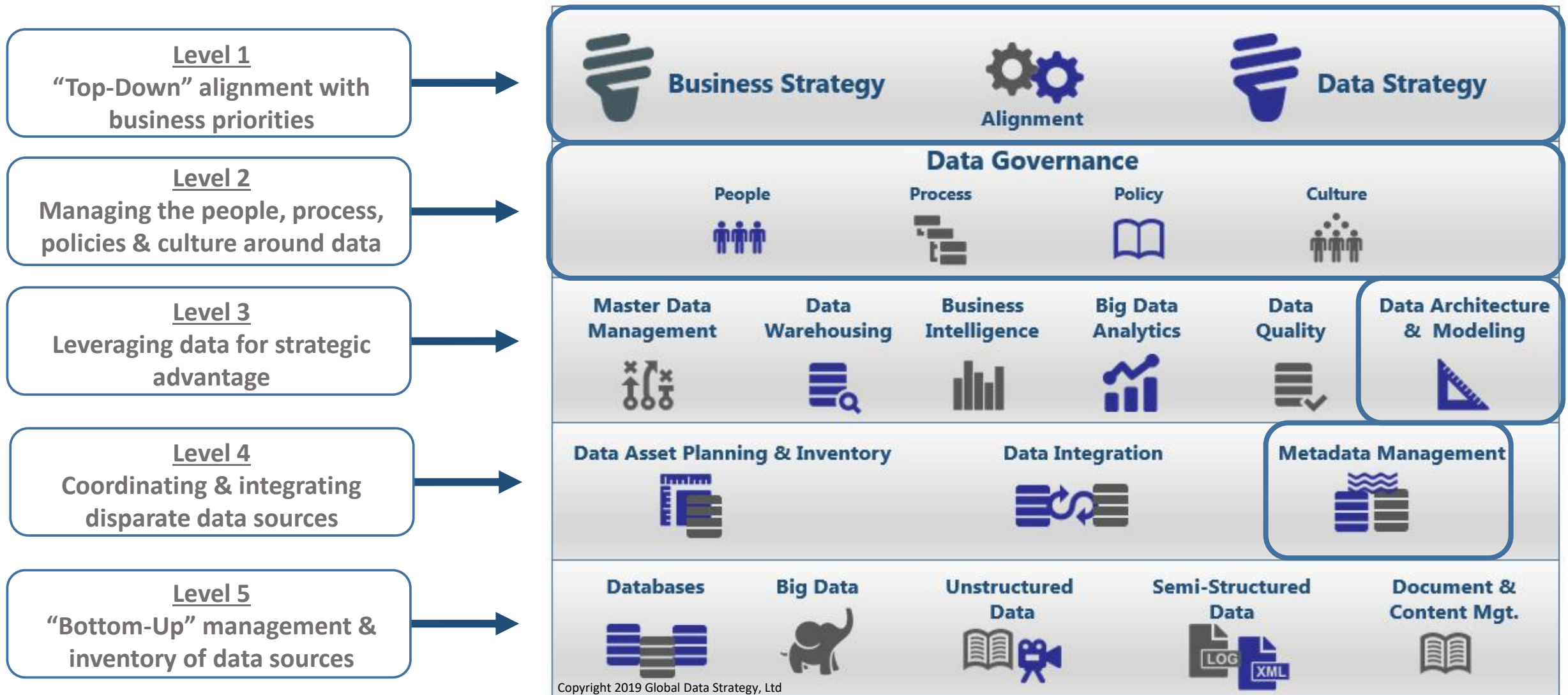# DATAVERSITY Data Architecture Strategies

This Year's Lineup

- **January 24** - *on demand*   Emerging Trends in Data Architecture – What's the Next Big Thing?

- **February 18** - *on demand*   Building a Data Strategy - Practical Steps for Aligning with Business Goals

- **March 28**   Data Modeling at the Environment Agency of England - Case Study (w/ guest Becky Russell from the EA)

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Aligning Business Stakeholders through Data Models

Data Models are a key part of any wider Data Strategy

DATA
ARCHITECTURE
STRATEGIES

Level 1
"Top-Down" alignment with business priorities

Level 2
Managing the people, process, policies & culture around data

Level 3
Leveraging data for strategic advantage

Level 4
Coordinating & integrating disparate data sources

Level 5
"Bottom-Up" management & inventory of data sources

Business Strategy — Alignment — Data Strategy

Data Governance

People | Process | Policy | Culture

Master Data Management | Data Warehousing | Business Intelligence | Big Data Analytics | Data Quality | Data Architecture & Modeling

Data Asset Planning & Inventory | Data Integration | Metadata Management

Databases | Big Data | Unstructured Data | Semi-Structured Data | Document & Content Mgt.

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Levels of Data Models

Audience

Purpose

Business Stakeholders
Data Architects

Business Stakeholders
Data Architects

Data Architects
Business Analysts

DBAs
Developers

Enterprise Subject Areas

Conceptual Business Concepts

Logical Data Entities

Physical Physical Tables

Organization & Scoping of main business domain areas

Communication & Definition of Business Concepts & Rules

Clarification & Detail of Business Rules & Data Structures

Technical Implementation on a Physical Database

Global Data Strategy, Ltd. 2019

Use the Language of Your Audience

Gaining Buy-In

- When communicating with business stakeholders, it's important to display data models in a way that's intuitive to them

  - Graphical, User-Friendly Conceptual & Logical Data Models
  - Use Business Terminology
  - Avoid Excess Detail
  - Tell the "Story" of how the model relates to a real-world business scenarios
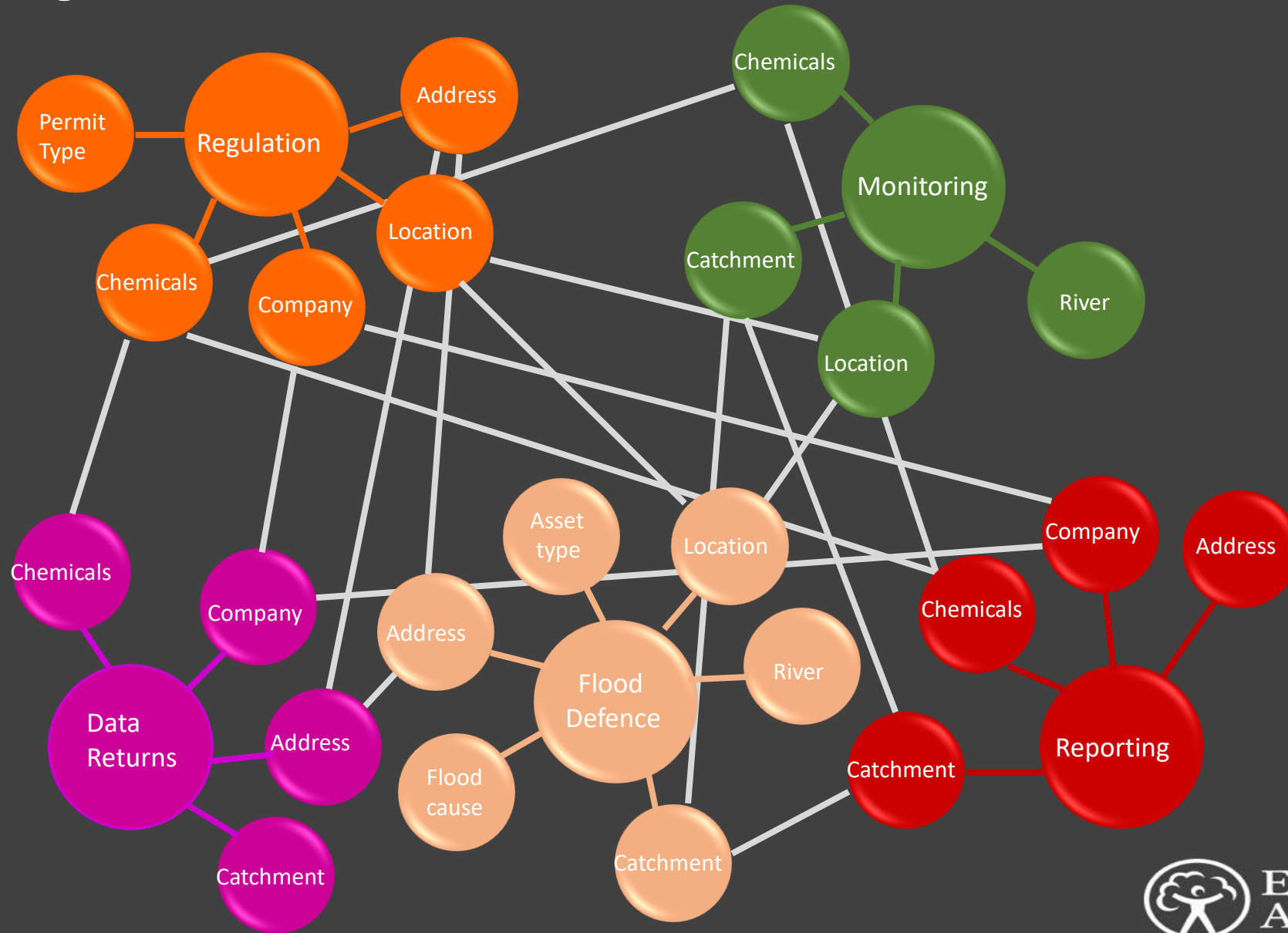 - Use workshops and other interactive sessions to move quickly and gain buy-in

Data Models Tell a Story

From Data Modeling for the Business by Hoberman, Burbank, Bradley, Technics Publications, 2009

The Environment Agency: Our Work

A typical data scenario…..

Lost in translation.....Catchment

A hydrologically connected collection of waterbodies

A collection of waterbodies that end up in the sea

A defined area for environmental monitoring

A way of categorising and segmenting data for reporting purposes

A waterbody, such as a river or lake

A defined grouping of permits and water quality measurements

An area / polygon shape around a river waterbody

A recognised group of waterbodies with similar hydrological characteristics

An area of land that drains to a single point on the coast

A unit of water resource

An area where rain falls and flows into a river

A self-contained hydrological area

An area of land drained by a particular river at a particular point

An operational water abstraction area

An area used for reporting the health of the environment

An area from which a school attracts its pupils

Lost in translation…..where am I?

Horizon House
Ho Ho
HH
Bristol
Head Office
National

Importance of standards
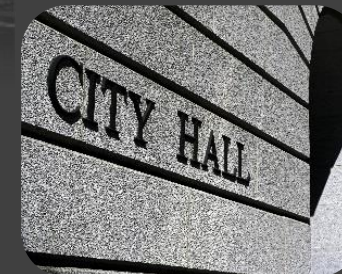
Data Standards Challenge

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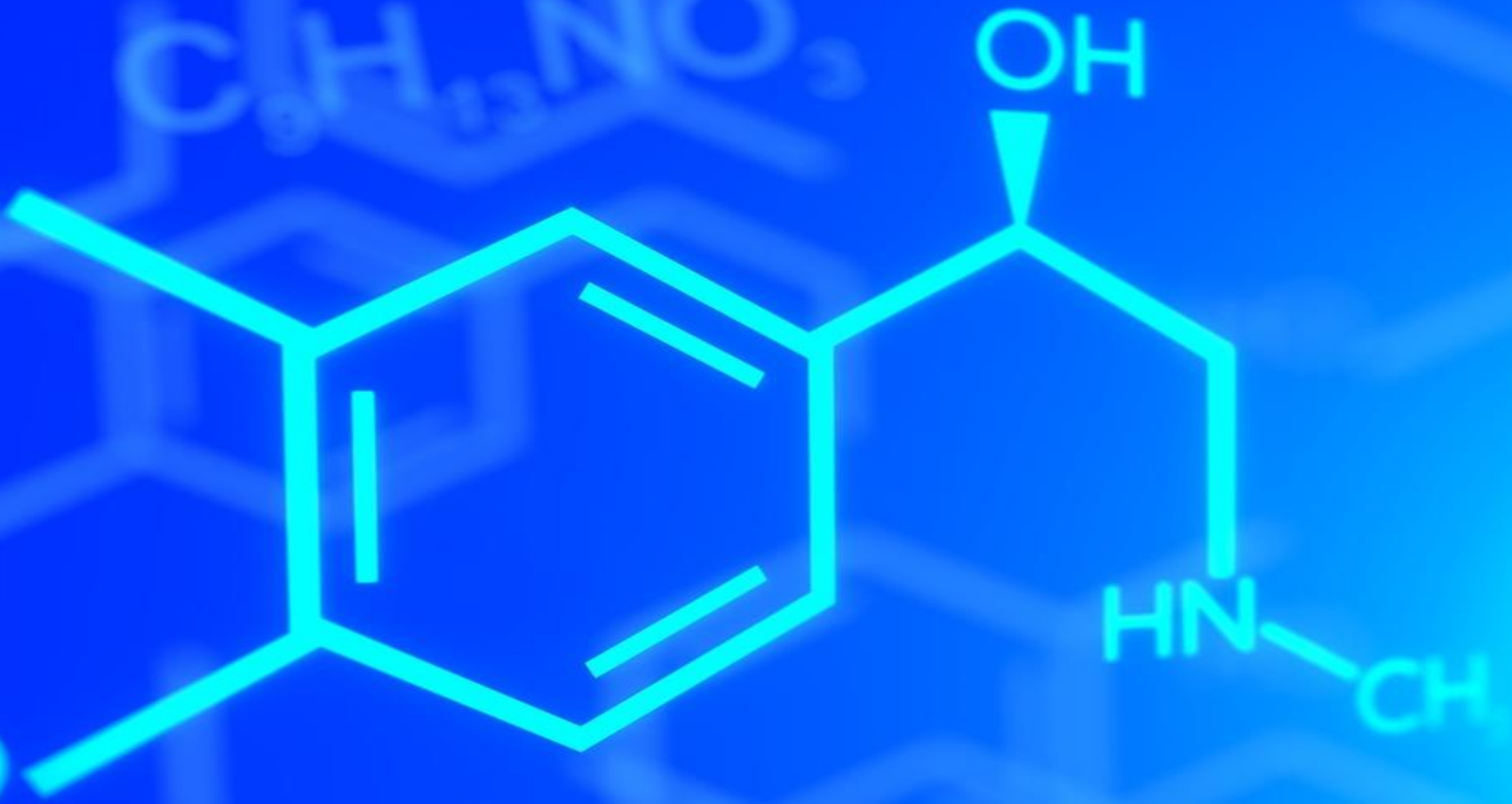
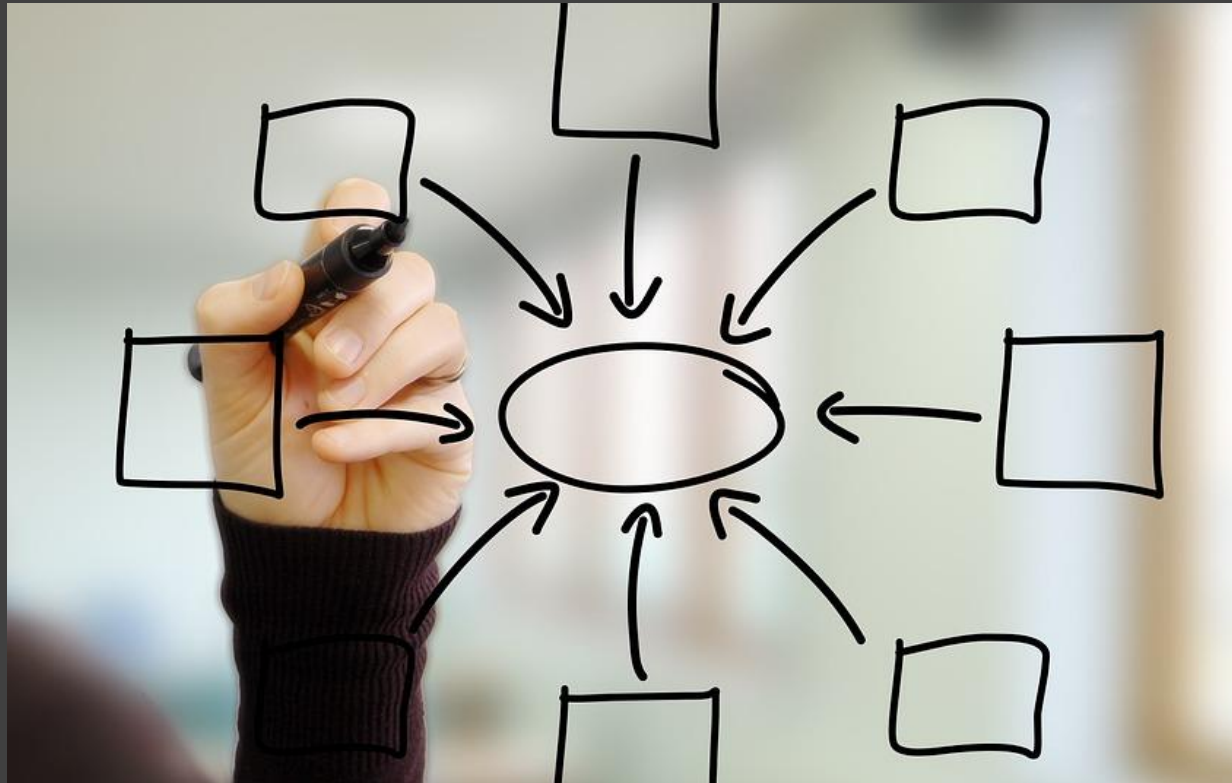# A chemical list should be easy…..

No common understanding

- Different data models

- Chemical vs parameter

- Result vs. set of values

- Measurement vs. monitoring

- What about non-chemicals?

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When a data standard is not enough…..

- Understand the concepts around chemicals and measurement

- Identify and define each entity

- Understand their relationships and logic (business rules)

Principles of engagement

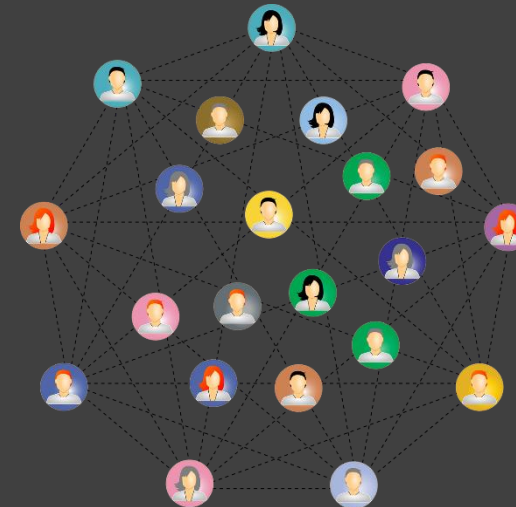Consensus Approach

Business problem

Business led

New IT only

Transparent

Use existing network

Images released under creative commons licence

# First steps….

Gained senior support

Communicated widely

Identified stakeholders

Building Models Top Down vs. Bottom Up vs. "Middle Out"

- While there were no formal models in place at the EA, there was a significant amount of existing in-house knowledge.

- The data models were developed:

  - **Top-Down:** Through business stakeholder interviews, workshops, reviewing "models" from non-modellers, etc.

  - **Bottom-Up:** Reviewing existing systems, databases, and technical implementations

- An Iterative approach was used to refine the model moving forward.

- While an industry model was considered, it wouldn't meet the needs of the unique organisation and environment at the EA.
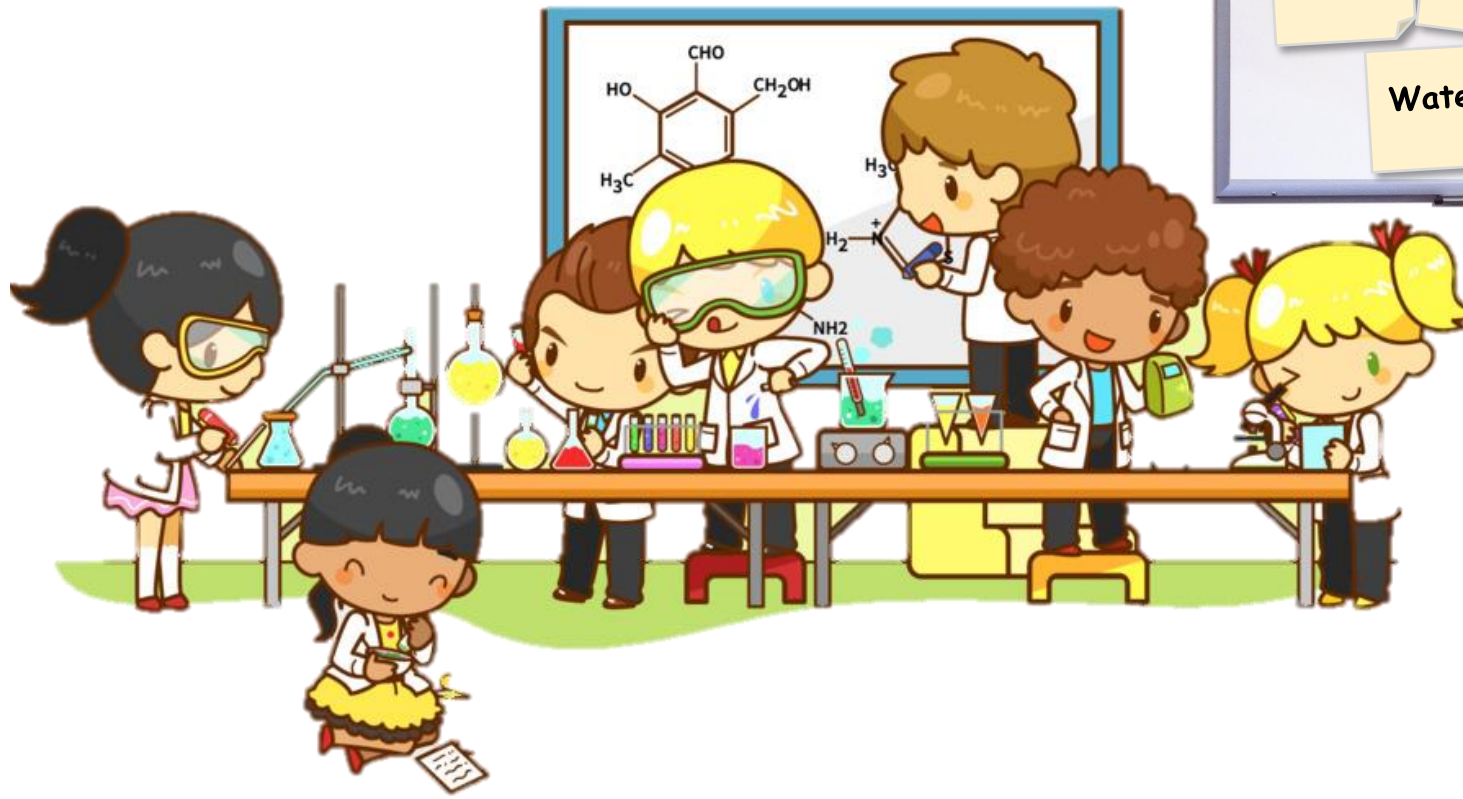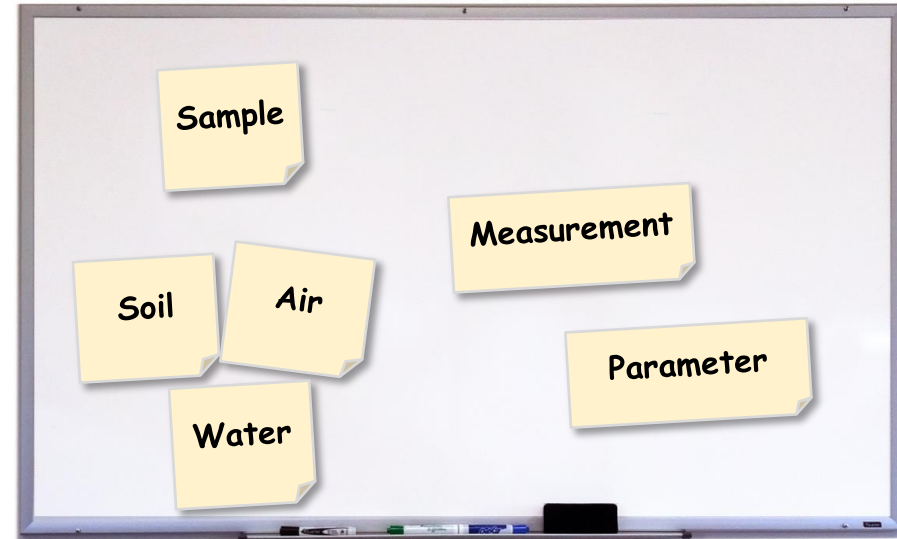
Conceptual

Iterative

Logical

Physical
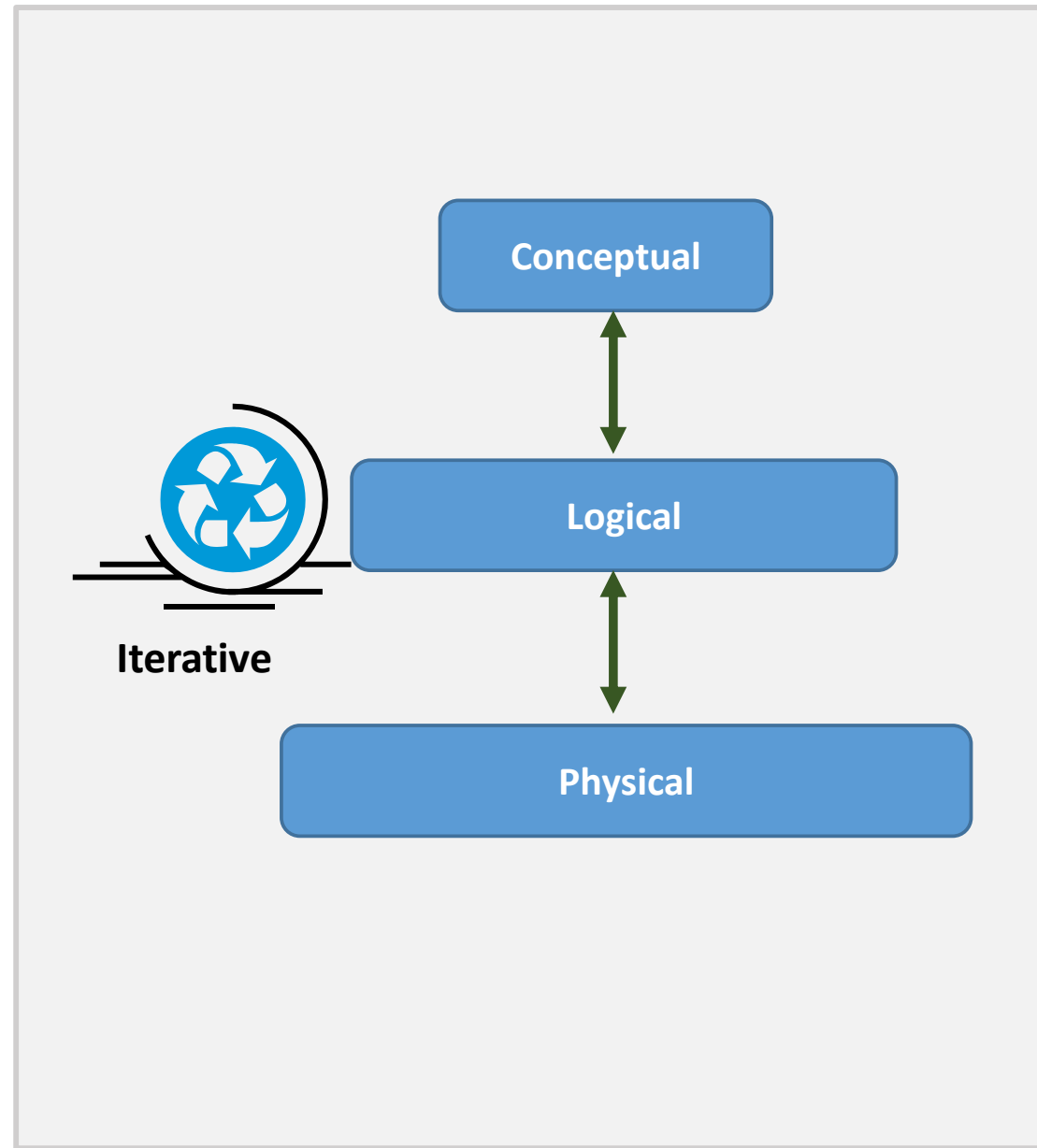
Measurement Data Model – High-Level
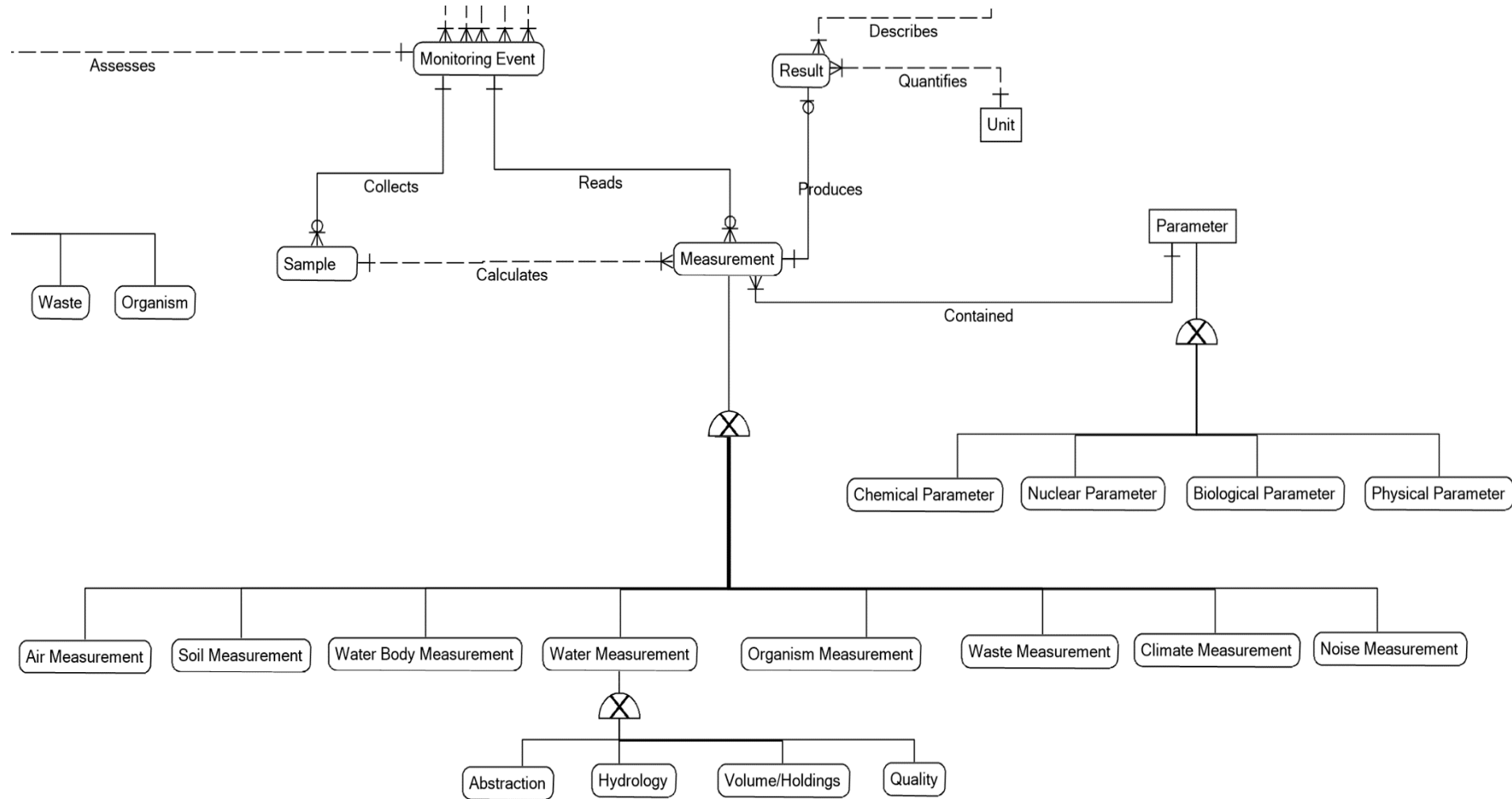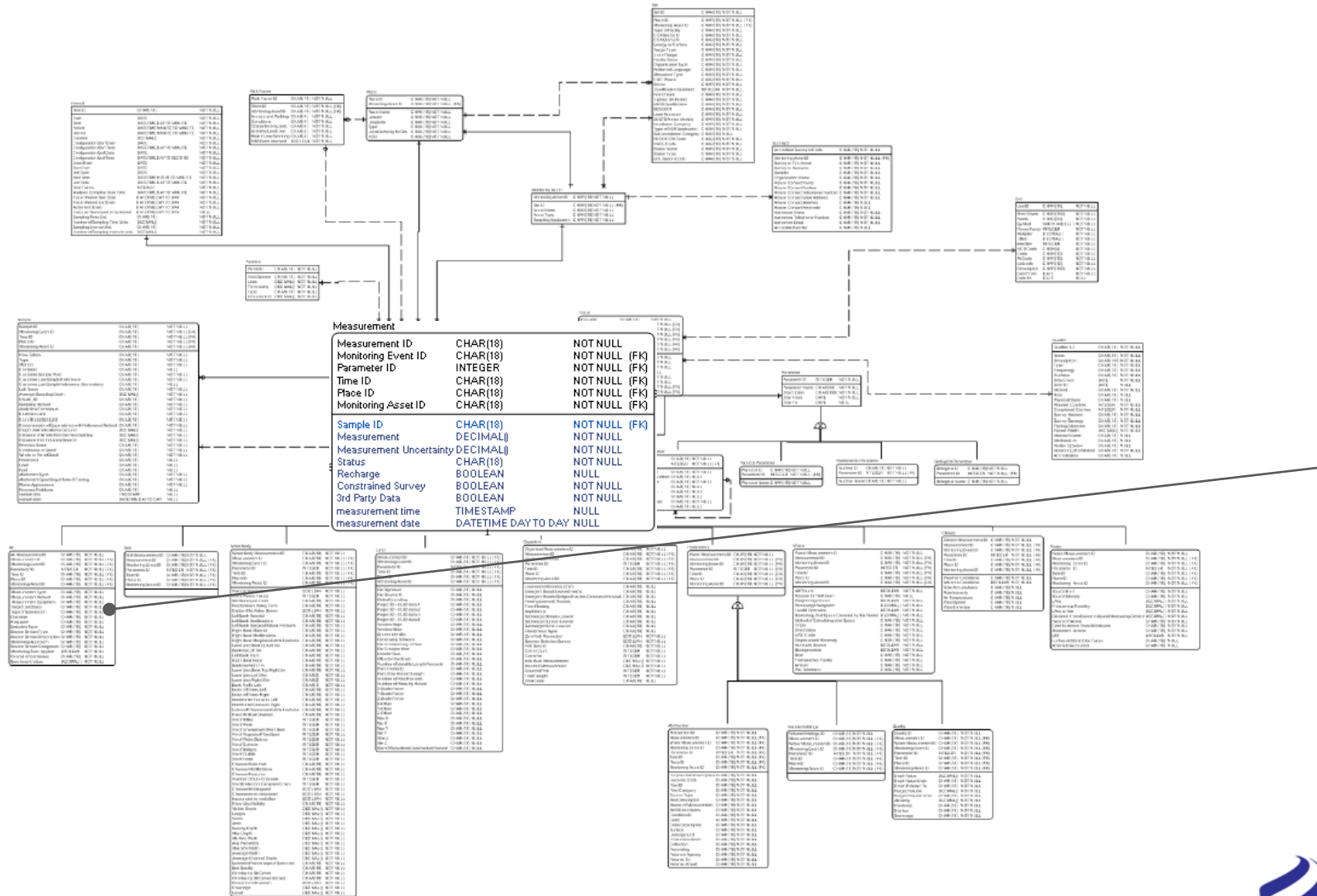
Data Model Workshops

Data Modelling workshops helped refine the model and gain consensus:

- Team members were able to share ideas
- See each other's different viewpoints
- Come to consensus more quickly than in separate interviews

The detail of the logical model helped refine the terminology, e.g. are Air and Water Measurements subtypes of a similar Measurement supertype? How are they similar? How are they different?

Measurement

Measurement ID	CHAR(18)	NOT NULL
Monitoring Event ID	CHAR(18)	NOT NULL (FK)
Parameter ID	INTEGER	NOT NULL (FK)
Time ID	CHAR(18)	NOT NULL (FK)
Place ID	CHAR(18)	NOT NULL (FK)
Monitoring Asset ID	CHAR(18)	NOT NULL (FK)
Sample ID	CHAR(18)	NOT NULL (FK)
Measurement	DECIMAL()	NOT NULL
Measurement Uncertainty	DECIMAL()	NOT NULL
Status	CHAR(18)	NOT NULL
Recharge	BOOLEAN	NULL
Constrained Survey	BOOLEAN	NOT NULL
3rd Party Data	BOOLEAN	NOT NULL
measurement time	TIMESTAMP	NULL
measurement date	DATETIME DAY TO DAY	NULL

Air

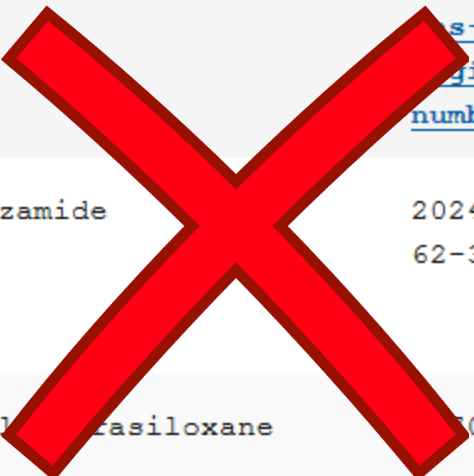|		
Air Measurement ID	CHAR(18)	NOT NULL
Measurement ID	CHAR(18)	NOT NULL (FK)
Monitoring Event ID	CHAR(18)	NOT NULL (FK)
Parameter ID	INTEGER	NOT NULL (FK)
Time ID	CHAR(18)	NOT NULL (FK)
Place ID	CHAR(18)	NOT NULL (FK)
Monitoring Asset ID	CHAR(18)	NOT NULL (FK)
Measurement Type	CHAR(18)	NOT NULL
Measurement Method	CHAR(18)	NOT NULL
Measurement Equipment	CHAR(18)	NOT NULL
Target Unit Status	CHAR(18)	NOT NULL
Type of Submission	CHAR(18)	NOT NULL
Outcome	CHAR(18)	NOT NULL
Regulator	CHAR(18)	NOT NULL
Emission Type	CHAR(18)	NOT NULL
Source Stream Type	CHAR(18)	NOT NULL
Source Stream Description	CHAR(18)	NOT NULL
Monitoring Approach	CHAR(18)	NOT NULL
Source Stream Categories	CHAR(18)	NOT NULL
Monitoring Tiers Applied	BOOLEAN	NOT NULL
Overall Uncertainties	CHAR(18)	NOT NULL
Benchmark Value	DECIMAL()	NOT NULL

Enterprise Conceptual Model
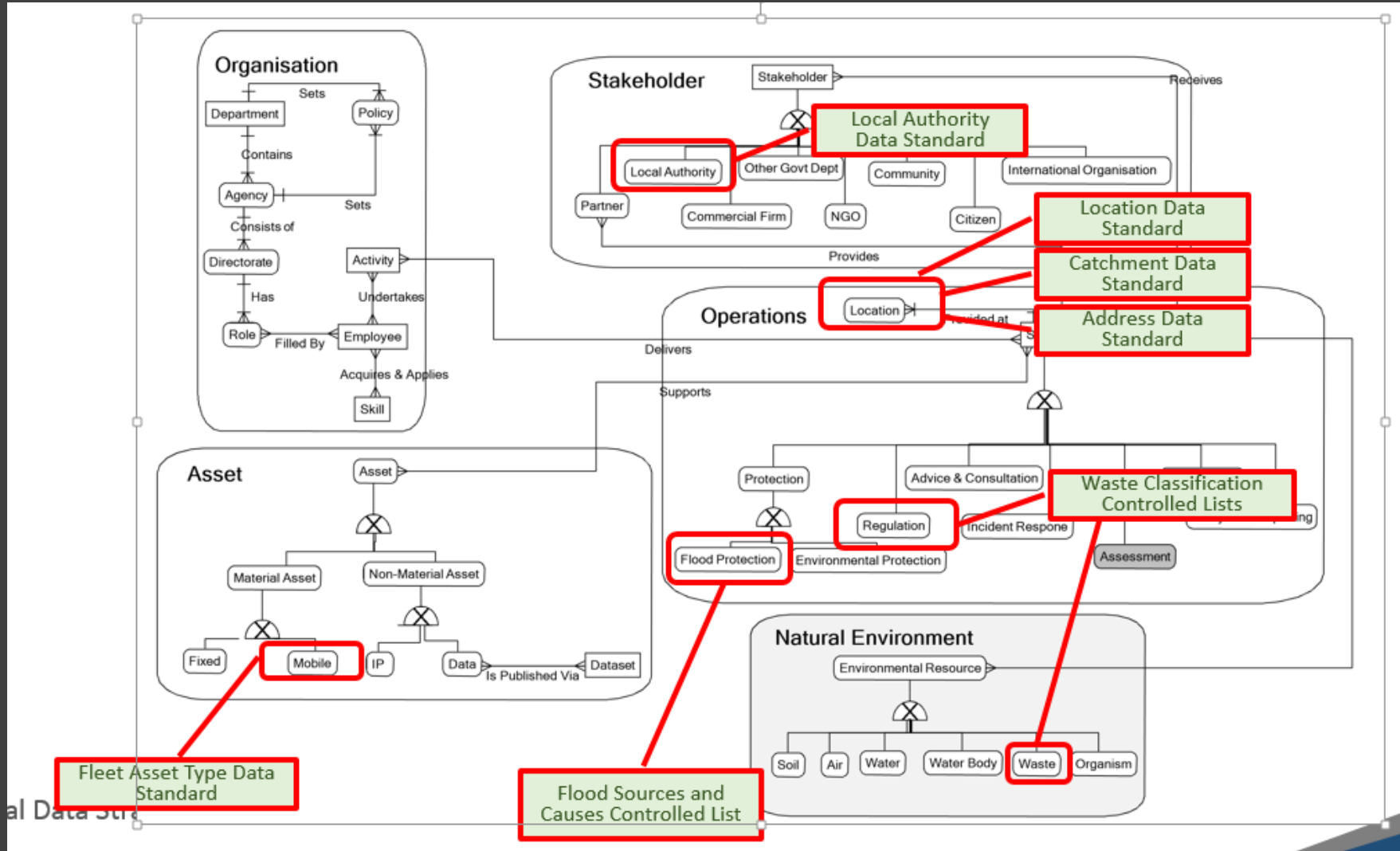
An Enterprise Conceptual Model helped identify areas where controlled lists were needed.
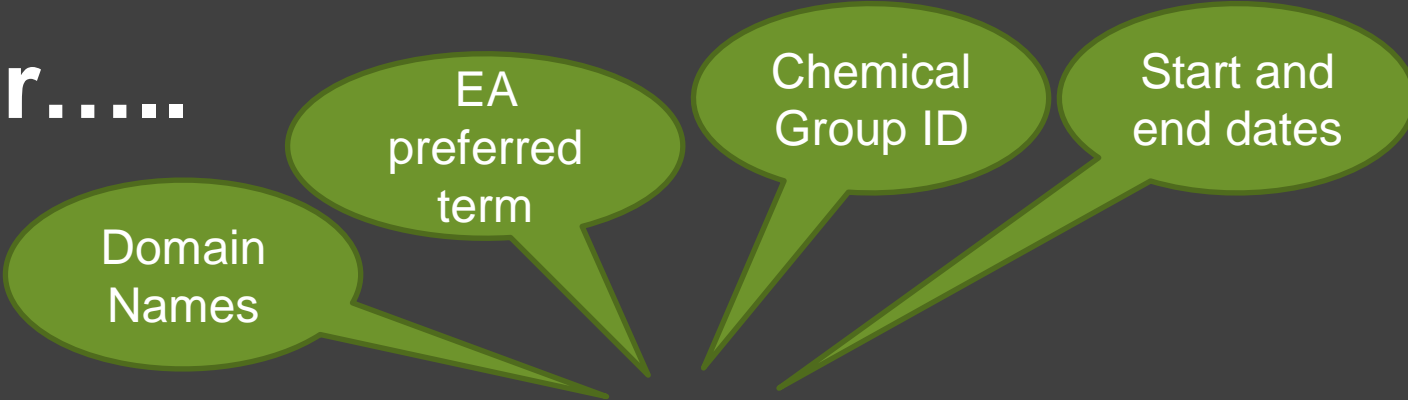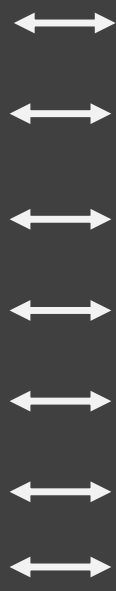
Creating the controlled list

Building the register…..

Domain Names

EA preferred term

Chemical Group ID

Start and end dates

Global ID	External ID	Regulation Name		Water Quality Name
746394746328	130-15-4	Cyanide	↔	1,4-Naphthoquinone
165745982365	1702-17-6	Clopyralid	↔	Pyridinecarboxylic acid
846209654092		Dichloromethane	↔	Methylene chloride
187409286637	111-46-6	Diethylene glycol	↔	2,2'-Oxydiethanol
473928475638	565-80-0	Diisopropyl ketone	↔	Diisopropyl ketone
857649302738		Disodium tetraborate decahydrate	↔	Borax
846375948209		Methanal	↔	Formaldehyde

Global Data Strategy

Environment Agency

The EA's overall approach

Data Model

Create Data Standards

Data Objects and Attributes
Data Definitions
Data standards

Controlled List

Register

Data Object library
Data Dictionary

Deploy into new IT

Governance

KPIs
Measures
Improvement

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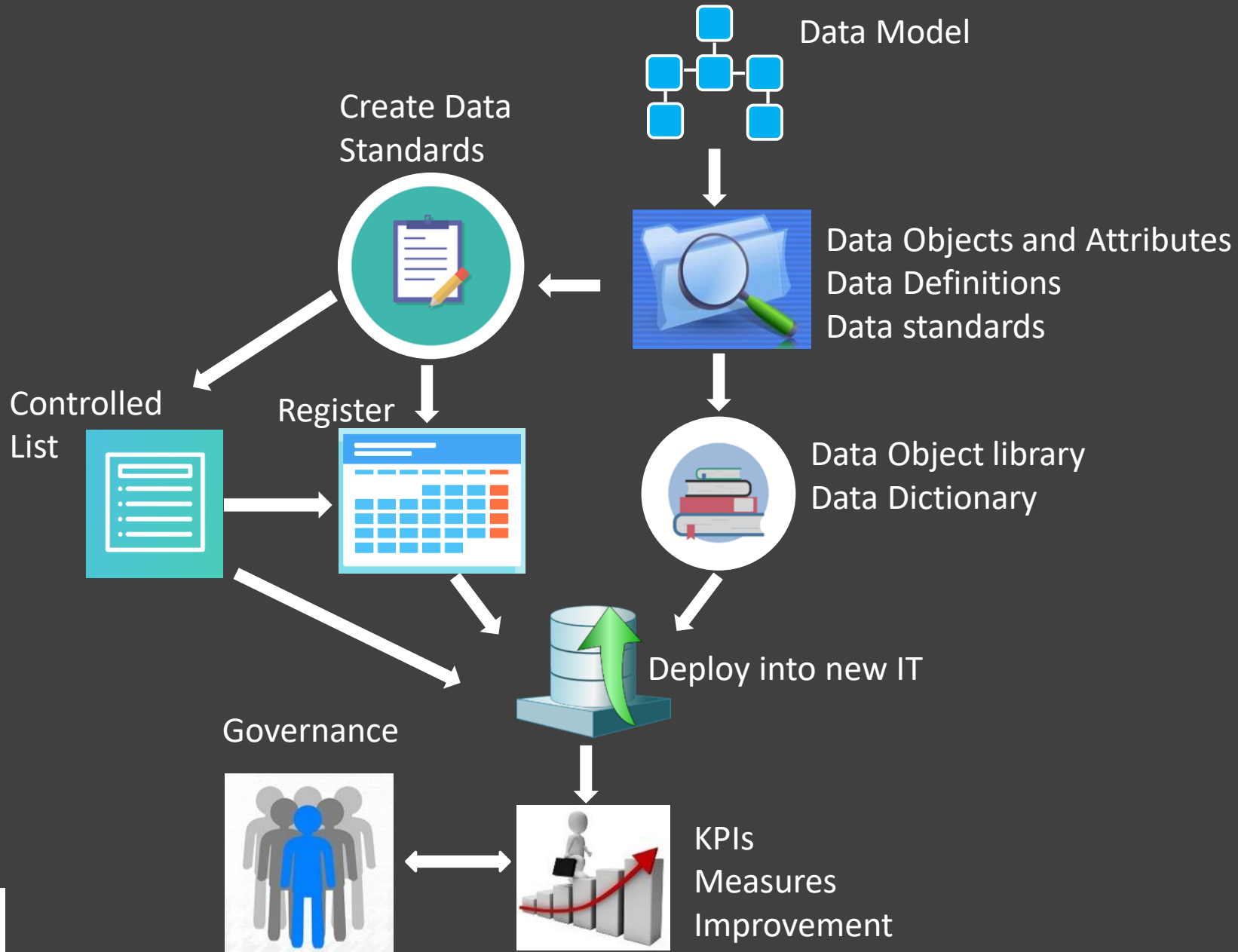
Our six-step methodology for producing data standards

STEP 1 PRIORITISE	STEP 2 PLAN	STEP 3 PREPARE	STEP 4 PILOT	STEP 5 PRODUCE	STEP 6 PROTECT
Assess Data Holdings and Enterprise Data model	Agree project scope and terms of reference	Agree Data Standard template(s)	Draft Data Standard	Finalise and publish Data Standard	Update and maintain
Identify & prioritise main issues	Identify stakeholders & data sources	Schedule stakeholder interviews	Interview/ consult stakeholders	Assign Custodian	Review project & recommend future actions
Create projects for Data Standards	Identify custodian	Understand uses of data	Review & finalise Data Standard with stakeholders	Revisit and update approach	Enforce in new IT developments

Iterative Data Standard Development projects

Lessons Learned

Talking business language critical

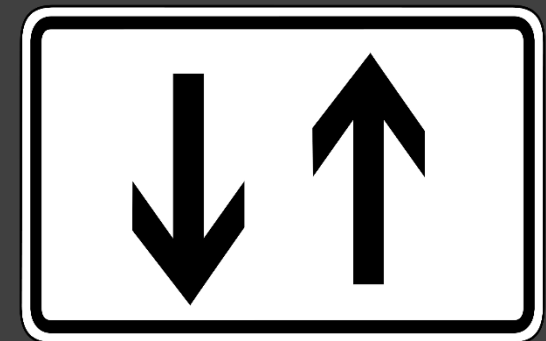Creating virtual teams is powerful

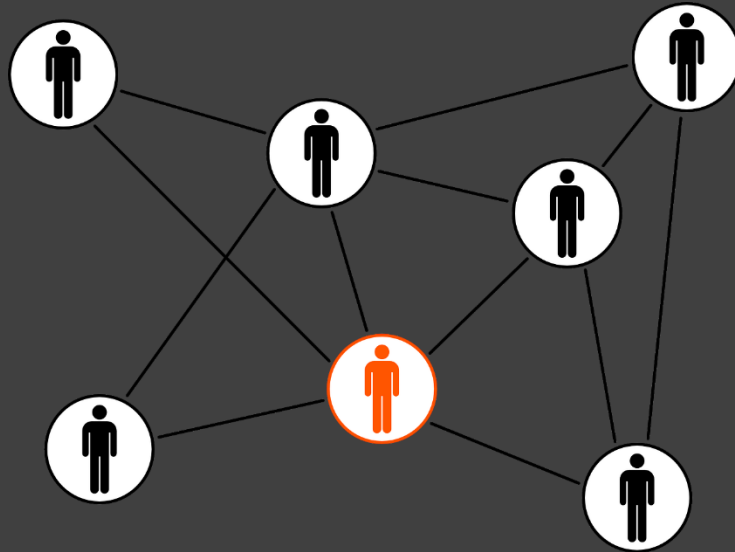Webinars and workshops essential
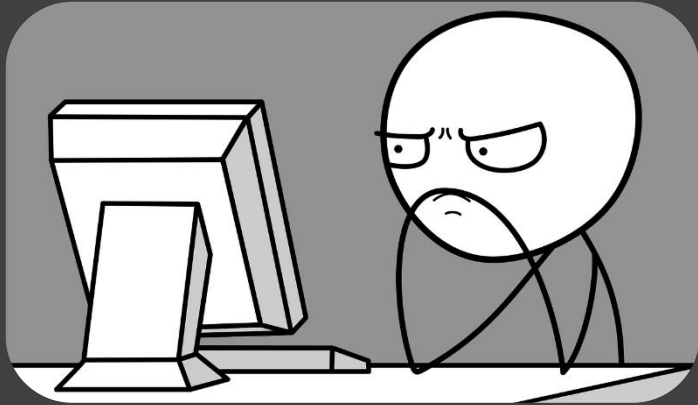
Must act on feedback

Frequent communication essential

'Top Down' and 'Bottom up' analysis needed

Successes and benefits

DATAVERSITY Data Architecture Strategies

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Questions?

- Thoughts? Ideas?

About Global Data Strategy, Ltd

Data-Driven Business Transformation

- **Global Data Strategy is an international information management consulting company** that specializes in the alignment of business drivers with data-centric technology.

- **Our passion is data**, and helping organizations enrich their business opportunities through data and information.

- Our core values center around providing solutions that are:

  - **Business-Driven:** We put the needs of your business first, before we look at any technology solution.

  - **Clear & Relevant:** We provide clear explanations using real-world examples.

  - **Customized & Right-Sized:** Our implementations are based on the unique needs of your organization's size, corporate culture, and geography.

  - **High Quality & Technically Precise:** We pride ourselves in excellence of execution, with years of technical expertise in the industry.

Business Strategy   *Aligned With*   **Data Strategy**

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