



**33<sup>rd</sup>** Annual **INCOSE**  
international symposium  
hybrid event  
Honolulu, HI, USA  
July 15 - 20, 2023

**AIRBUS**

## Common Meaning



# A common language as at scale digital continuity enabler

From ISO/IEC 81346 to “The Airbus Common Language”, ... and beyond!

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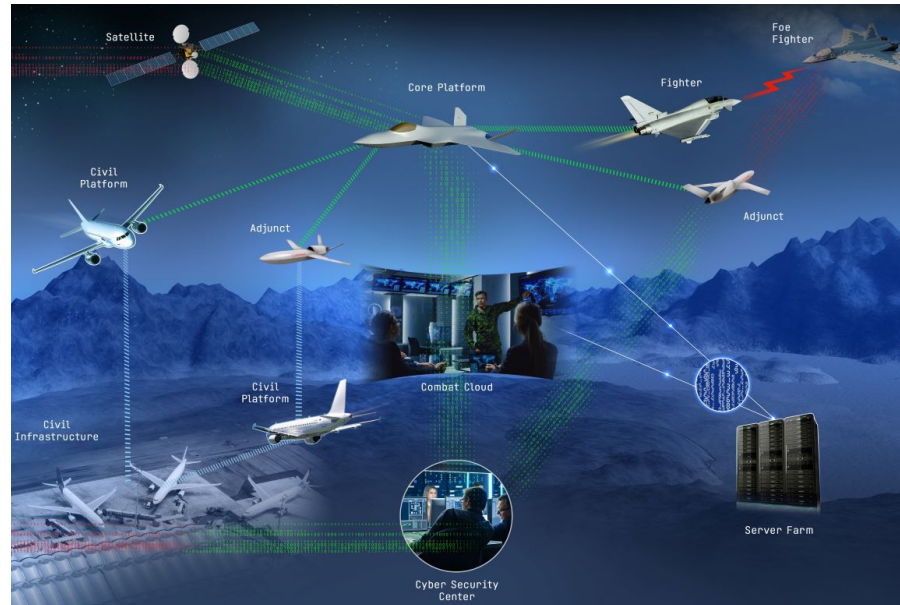
# The vision

*Data is the new gold. Digital continuity is the new Graal.*

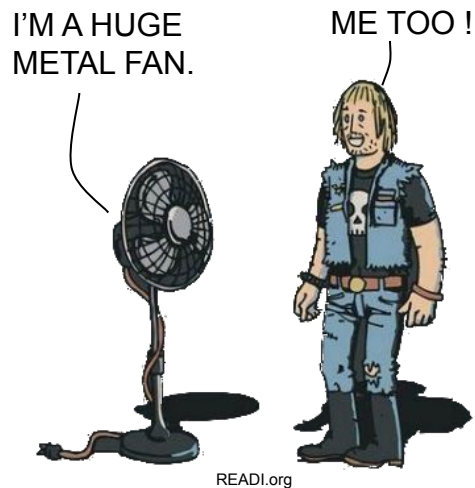
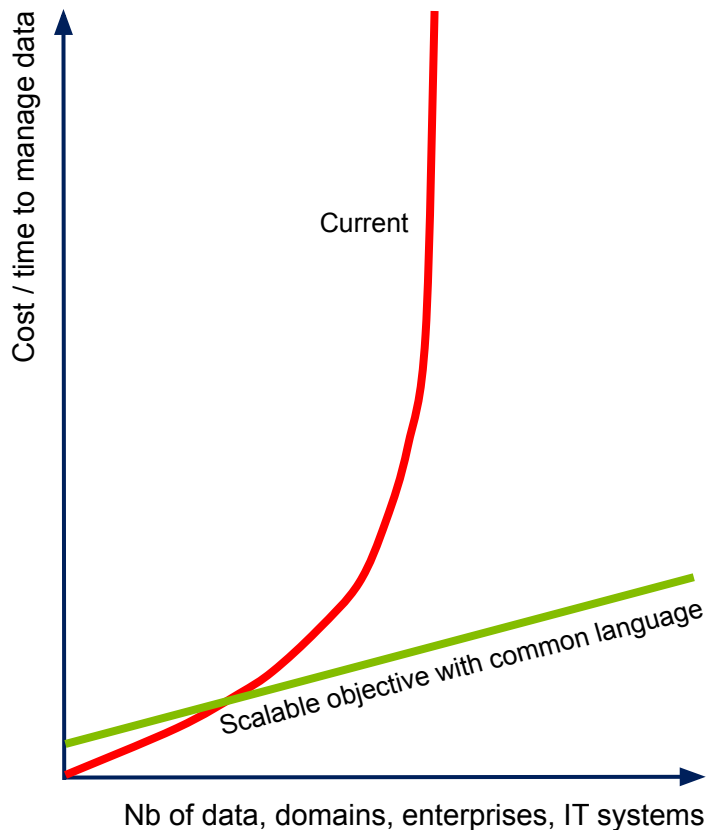


# The vision

*Digital continuity is the key to co-operations & data-based studies*



# From the pain to the solution



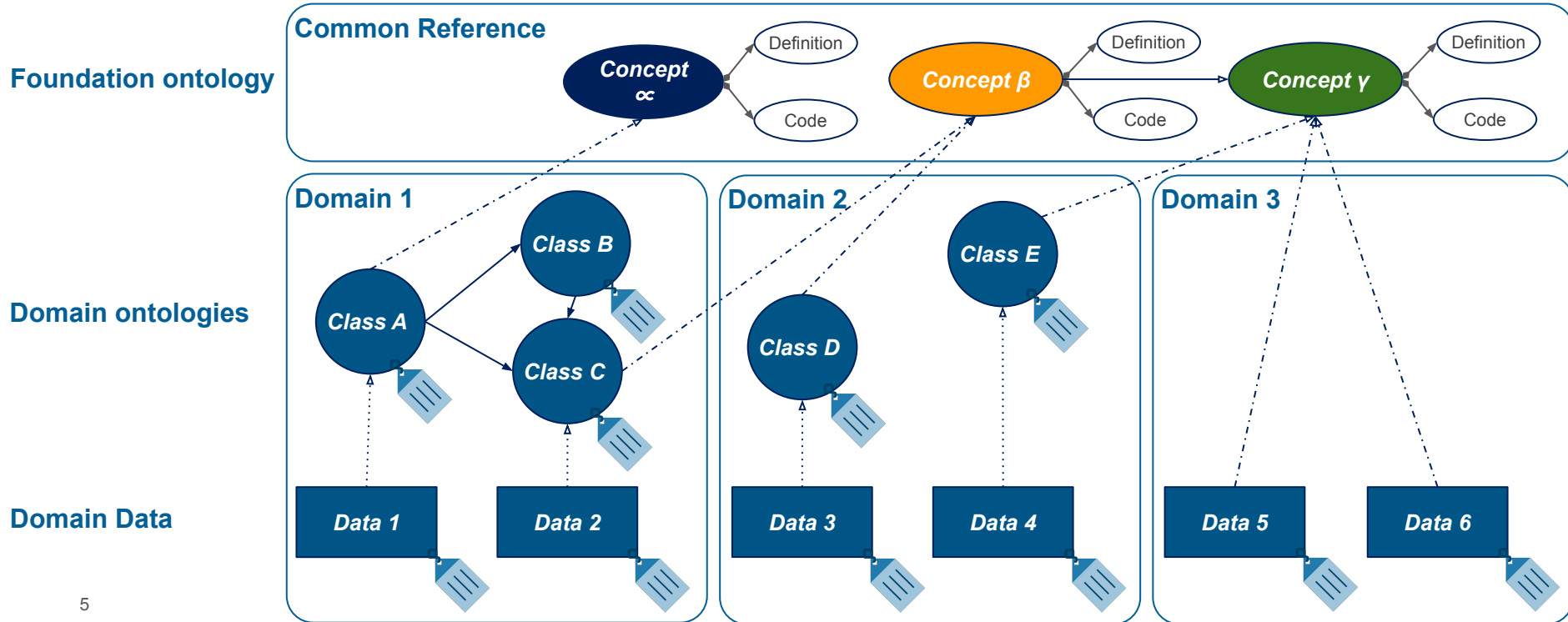
*The ambition of this language based on proven international standards is to value data by providing practical solutions to clarify, federate & query data, at marginal cost and time, even at scale*

# Value proposal - common reference concept

Tag

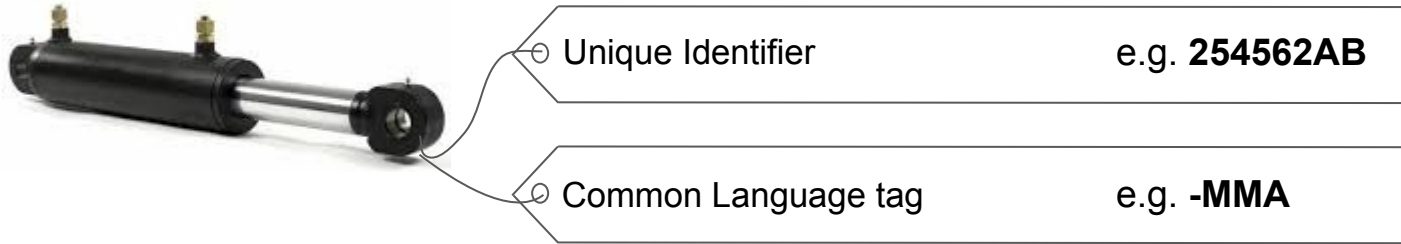
link to common reference concept

*The innovation is to use a common business language on tags as bridge between data sets: now new & legacy data are understood & operated across silos (domains, enterprise, IT solutions, ...), at marginal cost and time*



# Value proposal - Example

*This language is used to provide meaning to data thanks to tag applied on top of unique identifiers*



**MMA** (hydraulic cylinder): system for providing mechanical movement or force, powered by fluid displacement or pressure, providing movement corresponding to a liquid volume.

## Value proposal - The origin



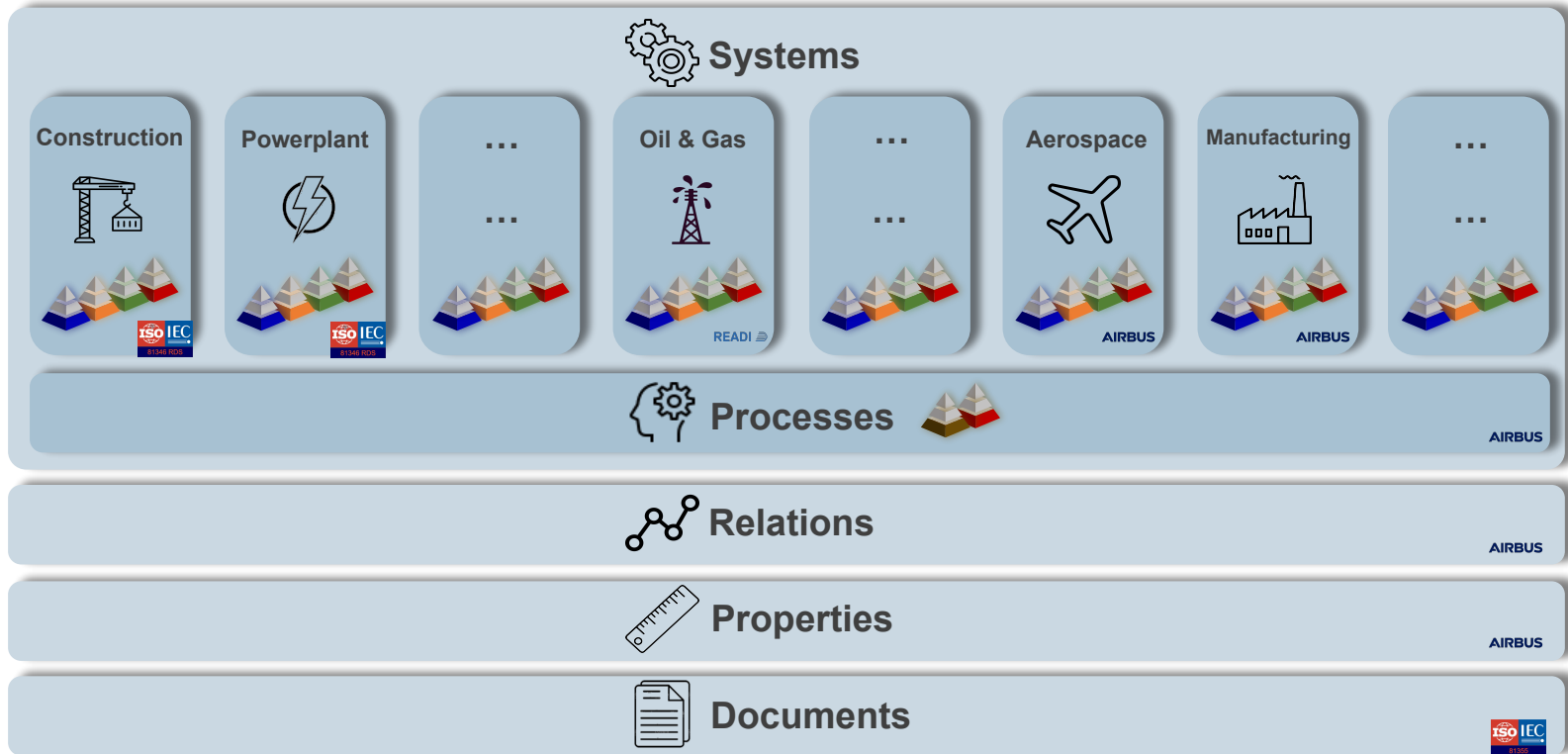
### **ISO/IEC 81346 Reference Designation System (RDS)**

*It's all about creating a common language™*

[www.81346.com](http://www.81346.com)

# A common framework

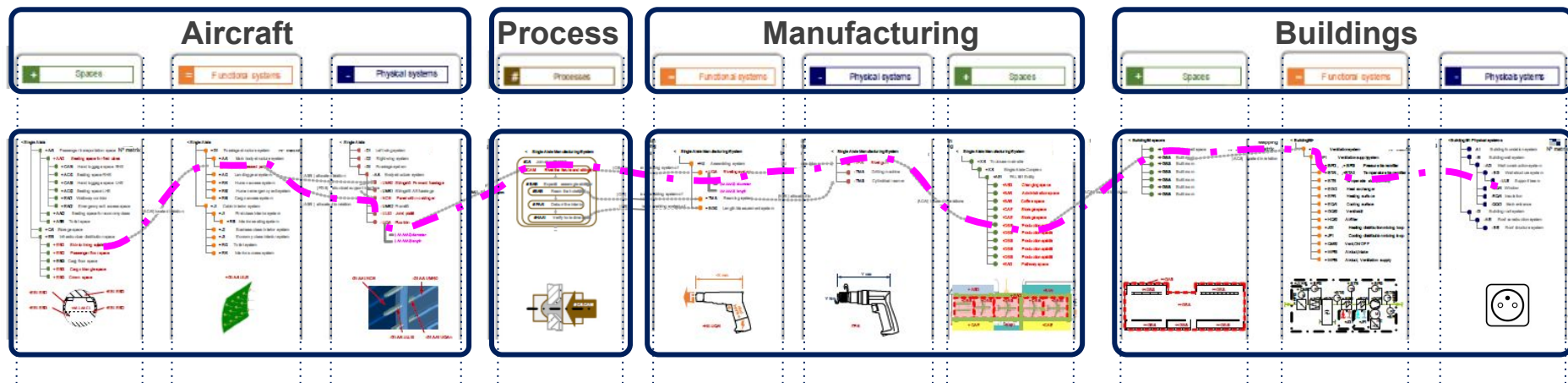
*The common reference is a set of structured concepts definitions and its associated designation language*





# The reference model in action

*This language is used to designate and federate data across silos using the same framework*



— • — Digital thread

## The challenge



About **220.000 bolts** types are registered in AIPS-01-02-008



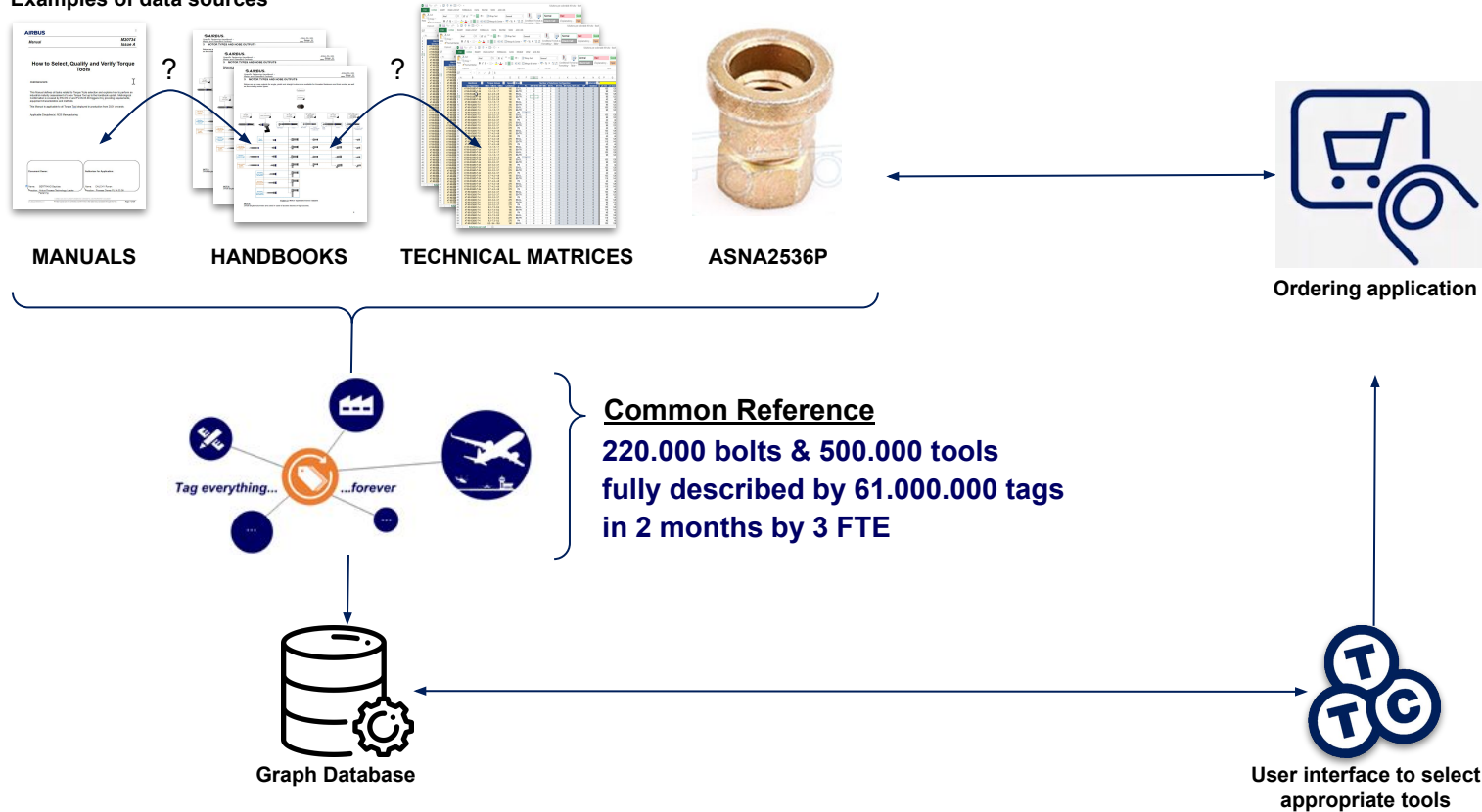
About **500.000 tools** physical types are proposed to torque them depending on:

- Bolt shape, torque, speed, ...
- Worker position, environmental constraints, energy, ...
- ...

**Which tool type(s) can be used to torque a given bolt type?**  
**How to rationalize the tools inventory?**

# Torquing Tool Configurator (TTC)

Examples of data sources



# Definitions browser

AIRBUS

Name It PROD

Tag Reader

Explore Library

Settings

?

1

Hi, Thomas BARRE

Home > Explore RDS Library

Library

Library Type:

System

Domain:

Aircraft

Aspect:

Physical

Submit

Search class ID, class name, class definition, class example

☐ Highest abstraction level
 ☐ Medium abstraction level
 ☒ Elementary abstraction level

Search...

Class ID	Class Name	Class Definition	Class Example
Q	Q	Q	Q
▾ B_	sensing object	object for picking up information and providing a representation	
▾ BA_	electric potential sensing object	sensing object for electric potential	
BAA	voltage transformer	electric potential sensing object, with scalar output	coupling capacitor, measuring voltage transformer
BAB	voltage relay	electric potential sensing object, with Boolean output	measuring voltage relay
▸ BB_	resistivity sensing object	sensing object for resistivity or conductivity	
▸ BC_	electric current sensing object	sensing object for electric current	
▸ BD_	density sensing object	sensing object for density	
▸ BE_	field sensing object	sensing object for field	
▸ BF_	flow sensing object	sensing object for flow	
▸ BG_	physical dimension sensing object	sensing object of spatial dimension and/or position	
▸ BH_	energy sensing object	sensing object for energy	
▸ BJ_	power sensing object	sensing object for power	
▸ BK_	time sensing object	sensing object for time	
▸ BL_	level sensing object	sensing object for level	

13.26

Welcome to

RDS 81346 app

13.27

Systems

Search code or text

All tags

RDS Component systems

B - Sensing object

C - Storing object

E - Emitting object

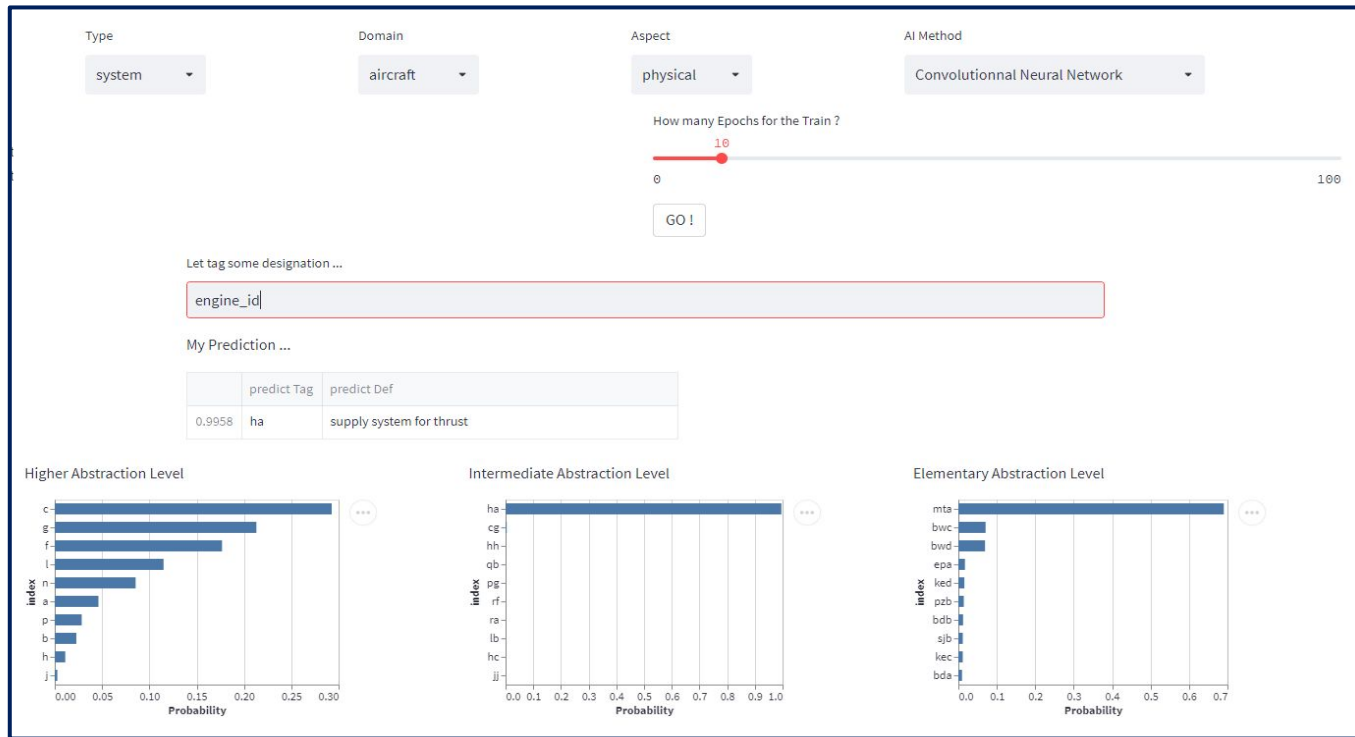
F - Protecting object

G - Generating object

H - Matter processing object

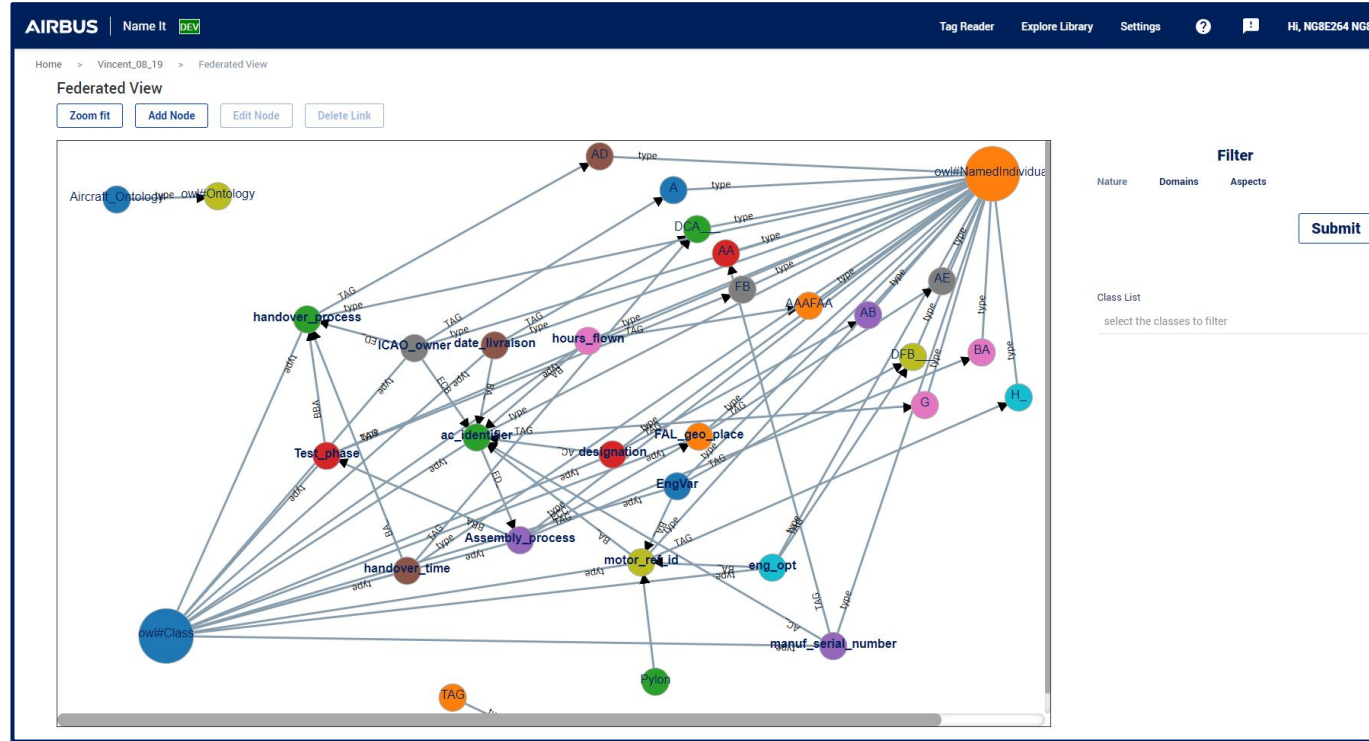
K - Information processing object

# Automatic suggestion of definitions

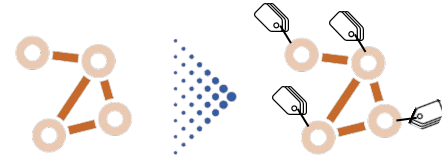


Automatic suggestion of definitions thanks to machine learning: the quickest way to select your tag

# Create and/or tag ontologies



In some clicks all the concepts have explicit meaning



# From table to graph & tags

## From a human operable table to human and machine operable graph



Import a .xlsx file



Drag and drop file here

Limit 200MB per file

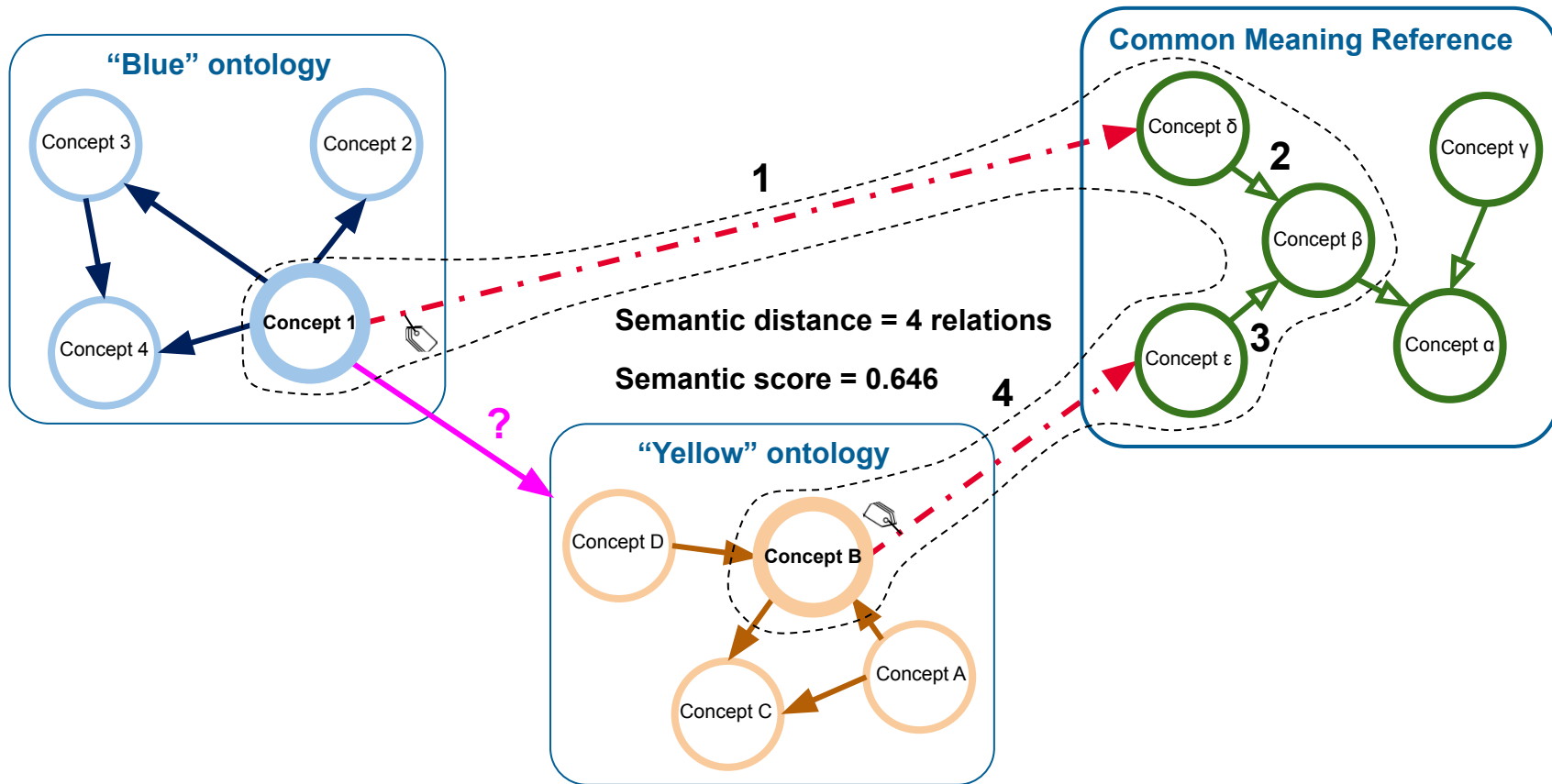
Browse files

Specify the project name

Create Project !

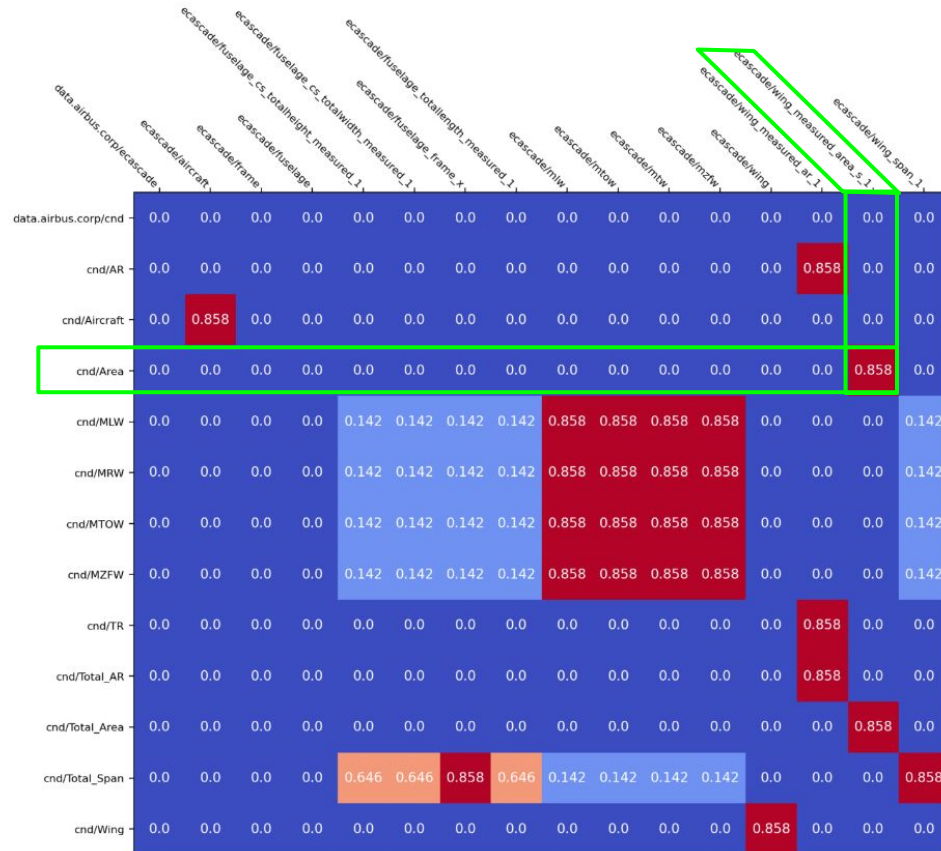
**Without modeling expertise, by simply answering to basic questions, tables are converted into graphs with explicit definitions**

# Semantic distance through Common Reference





# Semantic scores between ontologies' concepts



# Easy data query through common language definitions

 **Filter It** *Retrieve your data through their semantics*

Mass of the fuselage of the aircraft that was built in this factory



Property

System

System

Process

System

Relation

Relation

Relation

Relation



To retrieve information, users just answer to basic questions even without query language expertise

# Value proposal - Common Language advantages

*It takes advantage of the latest modelling trends & proven IT principles:*



*Robust, proven & scalable  
Low footprint on IT for new & legacy data*



*Interoperability enabler across silos  
Compatible with any IT language & software*



*Easy to learn & to apply*

## Market Size - Who Benefits from the Referential ?



*Today digital continuity is not achieved:*

- *a lot of time/money are spent to manage data across silos*
- *data based studies are not efficient*



*Tomorrow digital continuity will be achieved:*

- *simplified data management system*
- *easy data queries across current silos*
- *reliable studies at scale*

# Business Model & Deployment Steps



*Currently this solution is financed by internal customers and transformation projects*

*Tomorrow it will be financed through its benefits:*

- *Cheaper*
- *Reduces time to market*
- *Enables new services*



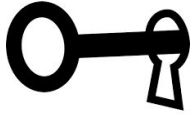
*Today we are working toward deployment:*

- *Integrate this language in ISO/IEC 81346*
- *Incremental incorporation into standard operations*
- *More implementations*

## Executive summary



*Data assets management at scale is a must*



*A common language as key enabler:*

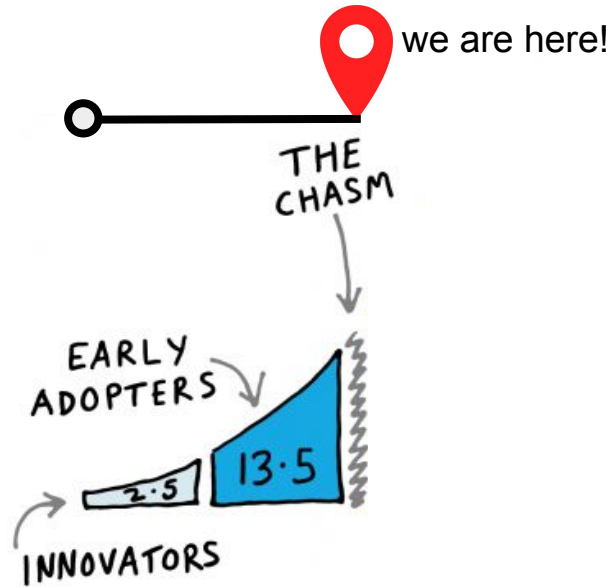
- *Explicit data usable by humans & machines*
- *Data linked across silos*
- *Relevant & trusted data*



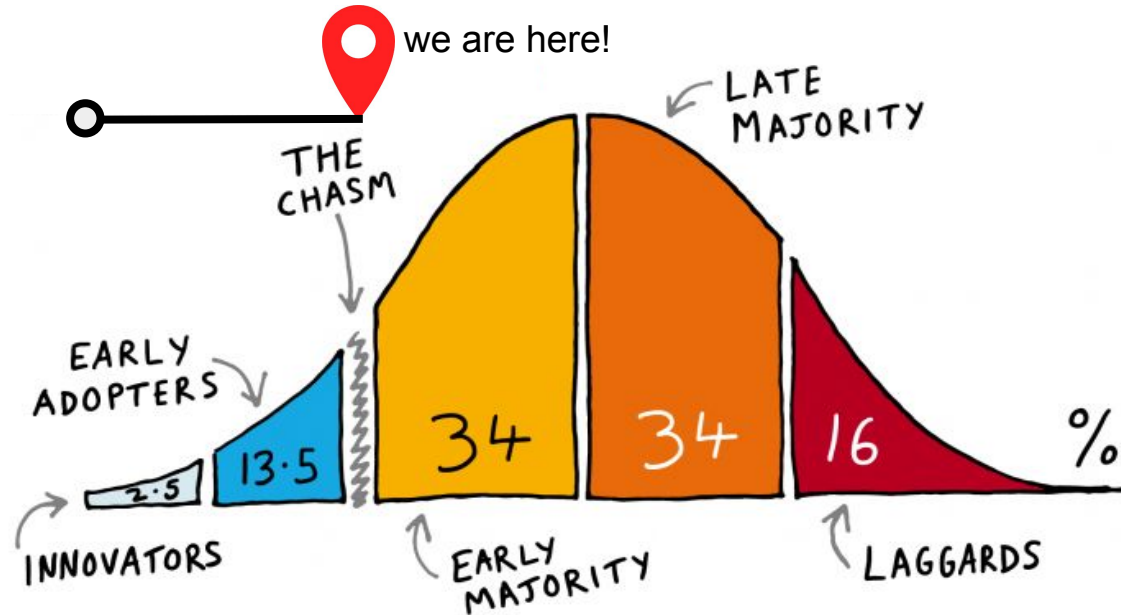
*Ready for integration:*

- *Proven practical solution*
- *Applicable at scale to any data, allowing digital continuity*
- *Standardization into ISO/IEC 81346 in progress*

# Where are we on the diffusion of Innovation?



# Join us for at scale applications!



Want to try? Any question? => [common.language@airbus.com](mailto:common.language@airbus.com) and [www.81346.com](http://www.81346.com)





# Thank you!

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