

# Shell's downstream data model based on ISO 15926

Matthew West

Reference Data Architecture and Standards Manager – Shell



# Against idiosyncrasy in the development of ontologies

|                                     | Major Technical | Minor Technical | Editorial | Rejected | Total | Pages |
|-------------------------------------|-----------------|-----------------|-----------|----------|-------|-------|
| Barry Smith Issues on ISO 15926-2   | 0               | 0               | 13        | 10       | 23    | 250   |
| Issues on “Against idiosyncrasy...” | 1               | 9               | 0         |          | 10    | 12    |

# Against idiosyncrasy in the critique of ontologies

- Issue based on material that is not present
- Issue based on the absence of material that is present
- Issue based on ignoring material that is present
- Alternative proposed without identifying a defect
- Confusing definitions with comments and examples
- Unintended meaning used as basis for issue
  - But this does give an ambiguity issue
- Expecting terms to be parsable by computers and humans
- Misunderstanding the difference between a word and a term in the ontology

# Moving on

- We respond positively to criticism and there is a formal process for raising issues. This is the best way we know to improve a standard.
- The accepted issues raised have already been fixed in a Work in Progress draft for a new version of Part 2
- We will seek further input from Barry and others as we develop the new version.

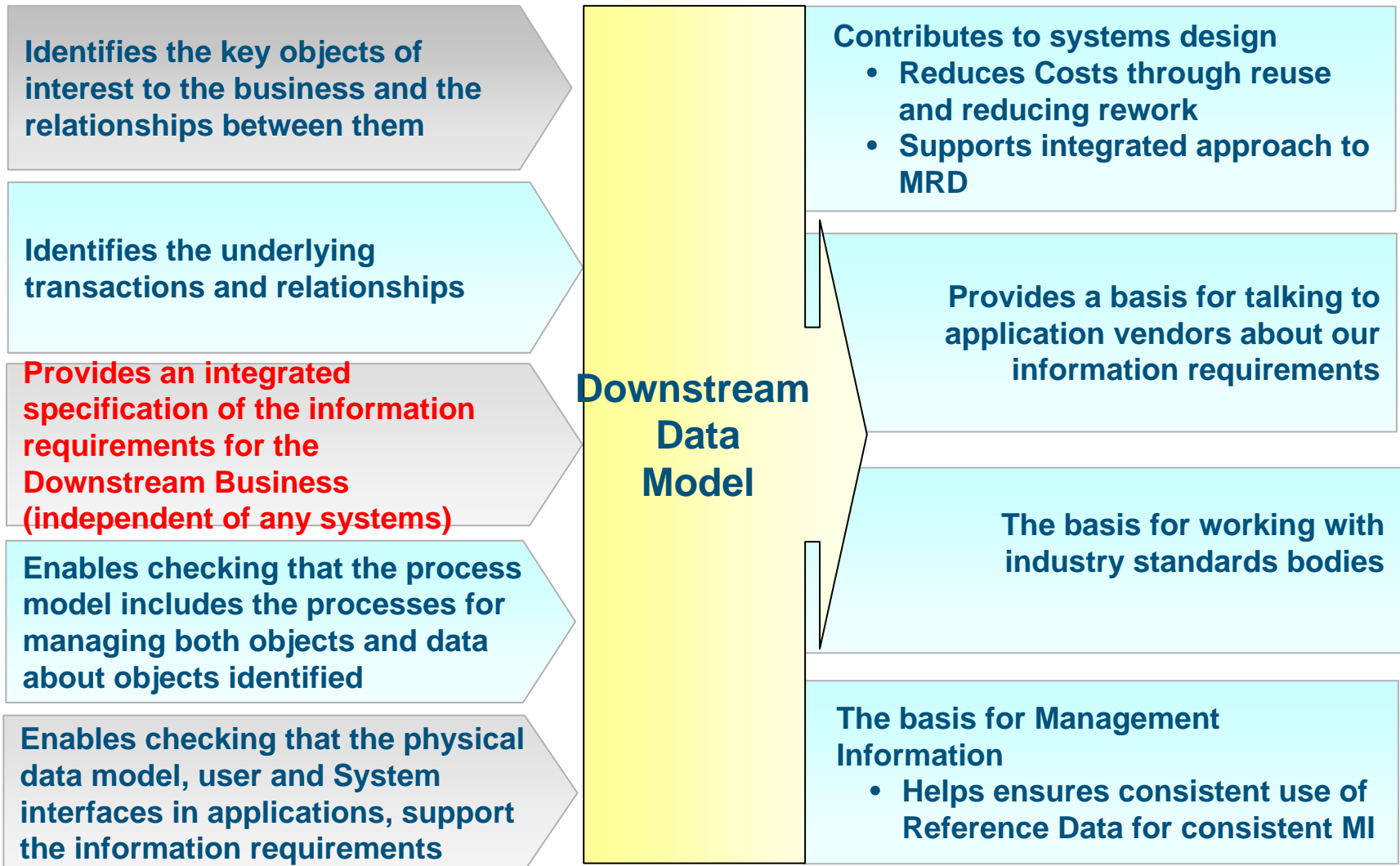
# Introduction and Agenda

- Shell in the Downstream has been undertaking a major programme to revise its business processes and its Downstream Data Model.
- The data model has used the ISO 15926 data model as its foundation and has extended it to explicitly support the information requirements of Shell's Downstream Business. The talk will cover:
  - Project objectives
  - Data modelling approach
  - Excerpts from the model
  - Lessons learned

# Project objectives



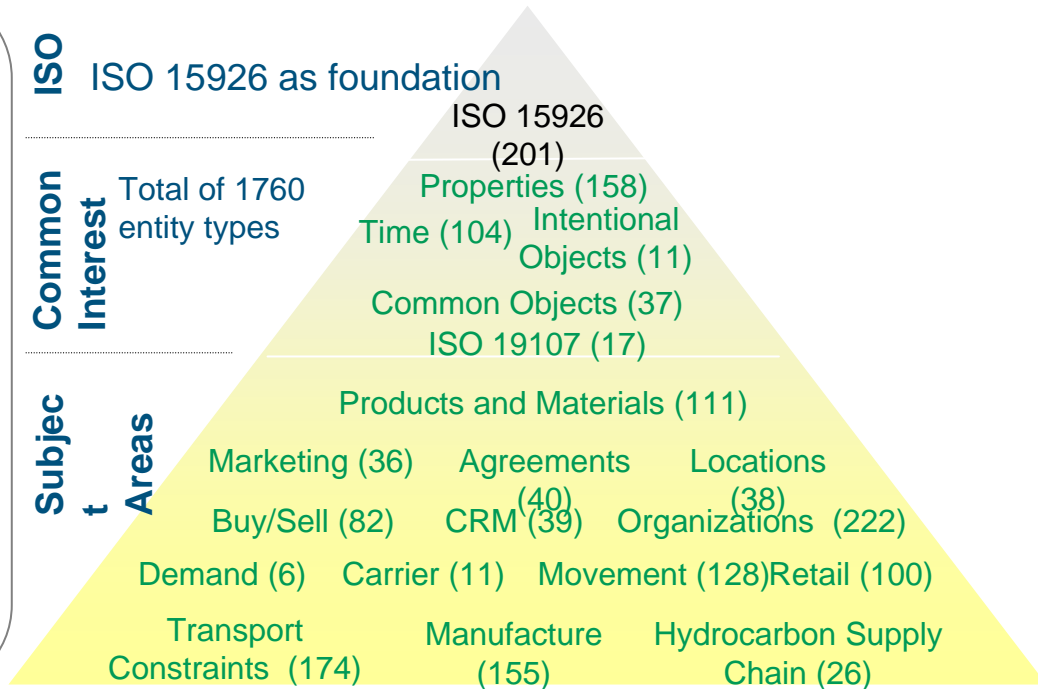
# What is the purpose of the Downstream Data Model



# Scope



Evidence organized by Process Area



Data model developed by Subject Area

# Data modelling approach



# Starting points and Methodologies

- EXPRESS
  - ISO standard data modelling language (ISO 10303-11)
  - Using EPM's Visual EXPRESS to develop
- ISO 15926
  - Abstract data model designed to support large scale integration
  - Based on 4D paradigm
- Developing High Quality Data Models (HQDM)
  - A Shell developed data modelling methodology with a “middle out” approach
- The Boro Methodology
  - A reengineering methodology that starts from data



# 3D and 4D approaches to ontology

- Data model consistency is dependent on taking a common view of how to represent things across the business.
- Unfortunately there are many ways in which we can model the world.
- However, there are two main approaches, with on the whole minor variations, that dominate the philosophical literature.
- I will call these the 3D paradigm and the 4D paradigm.

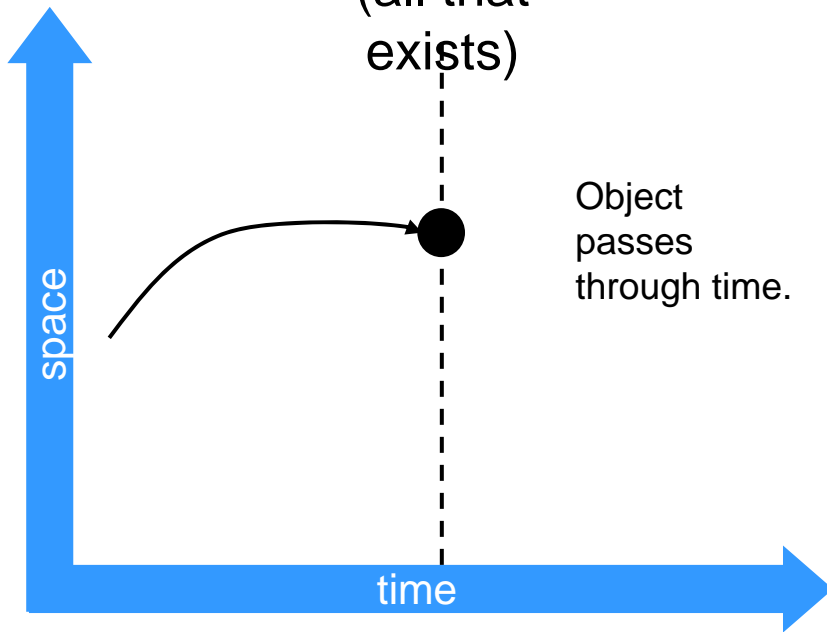


# 3D

# vs 4D + Extensionalism

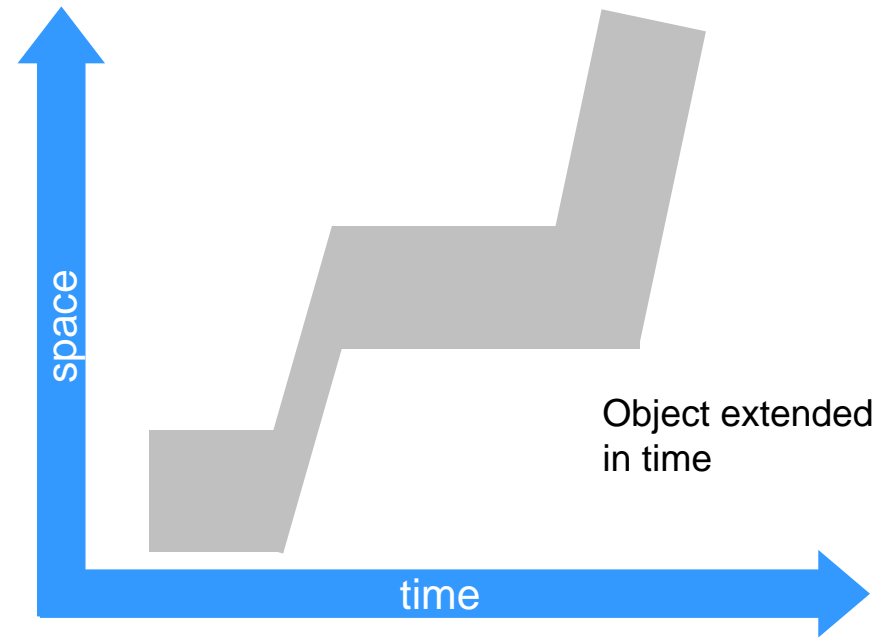
The present

(all that exists)



1. Physical objects do not have temporal parts.
2. Different physical objects may coincide (non-extensional).

The past and the future exist as well as the present



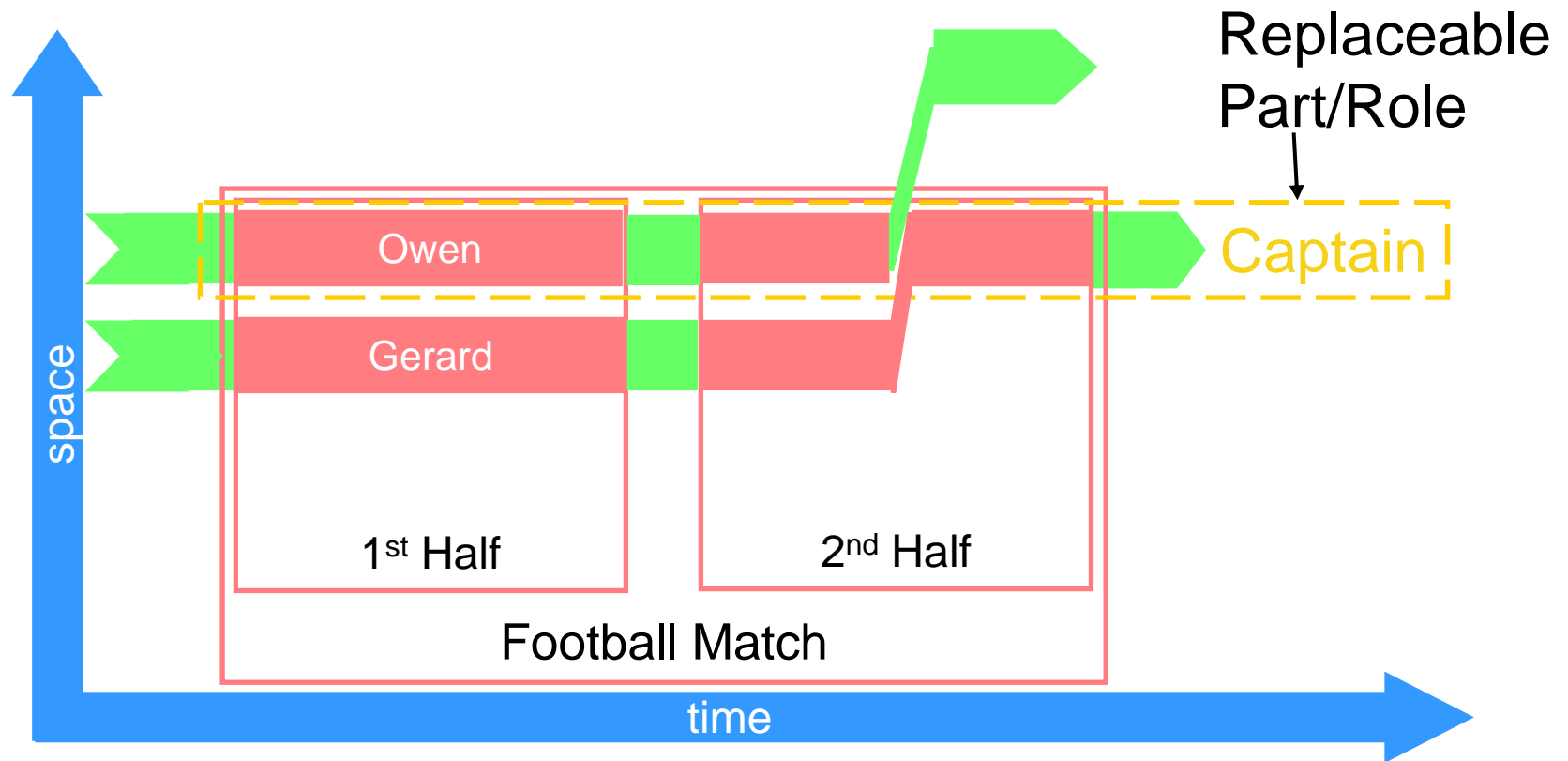
1. Individuals extend in time as well as space and have both temporal parts and spatial parts.
2. When two individuals have the same spatio-temporal extent they are the same thing (extensionalism).

# Space-Time diagrams – an aid to analysis





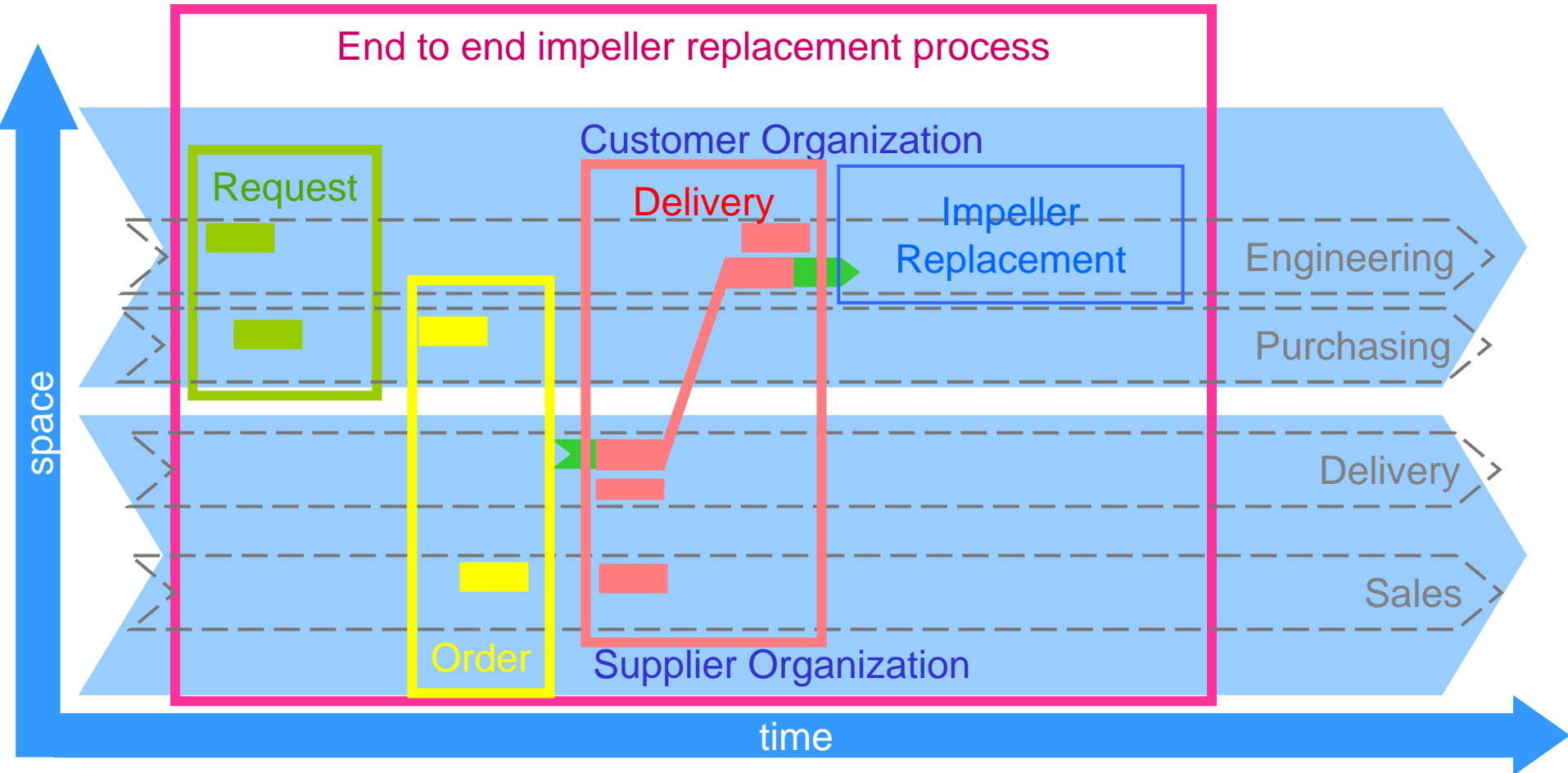
# A game of football – Roles



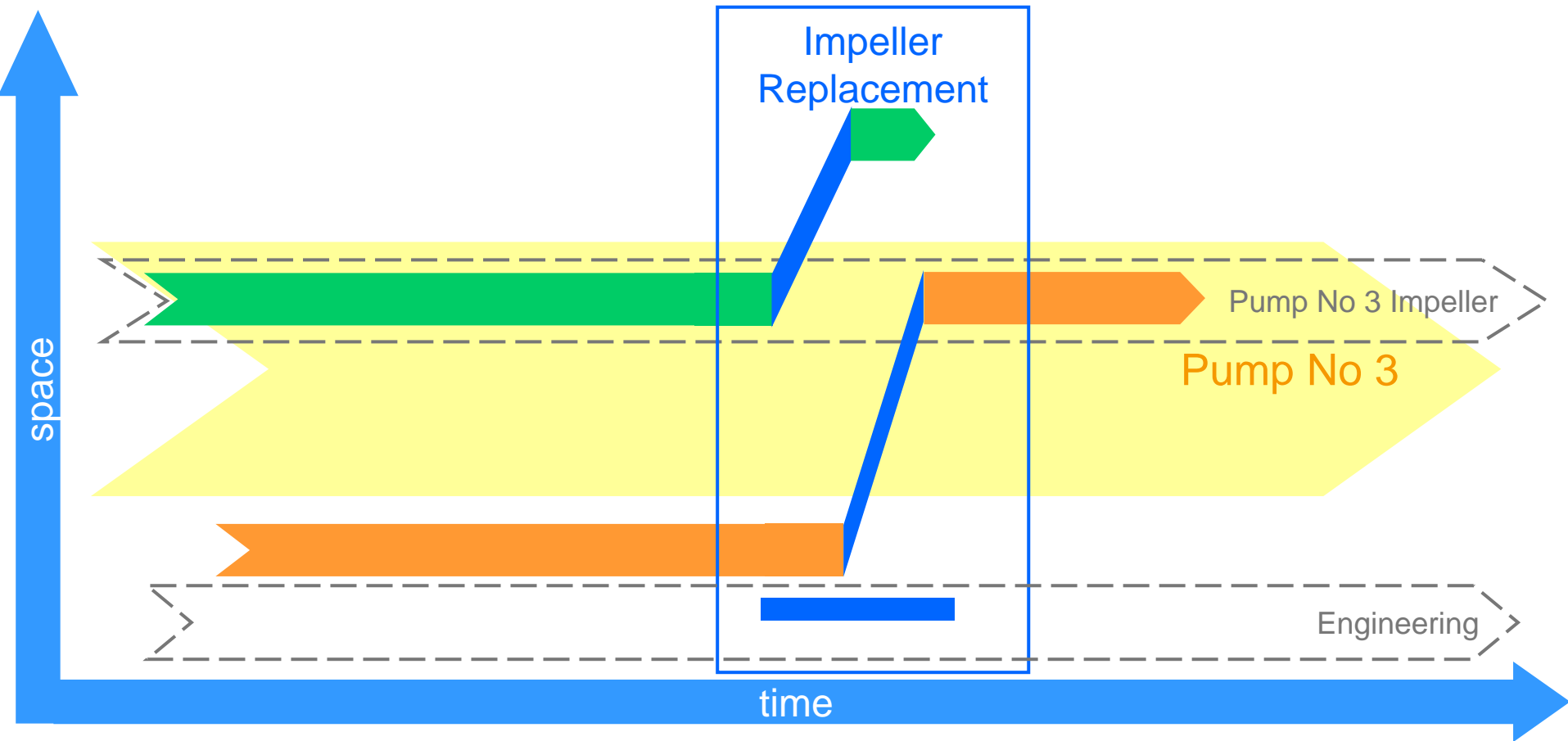
Note: Some replaceable parts are roles



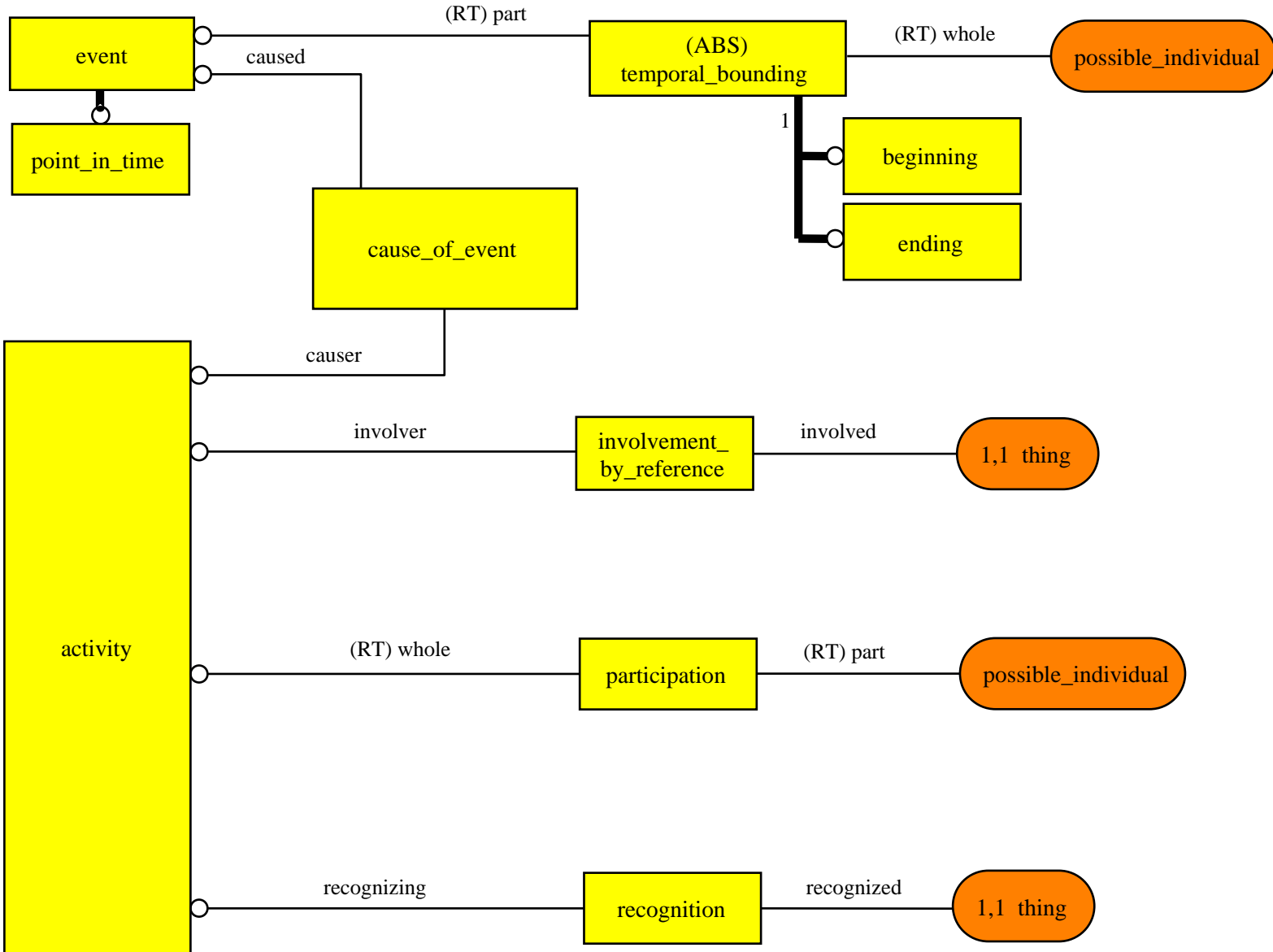
# A more practical example – Part 1



# A more practical example – Part 2



# Activity



How about roles?

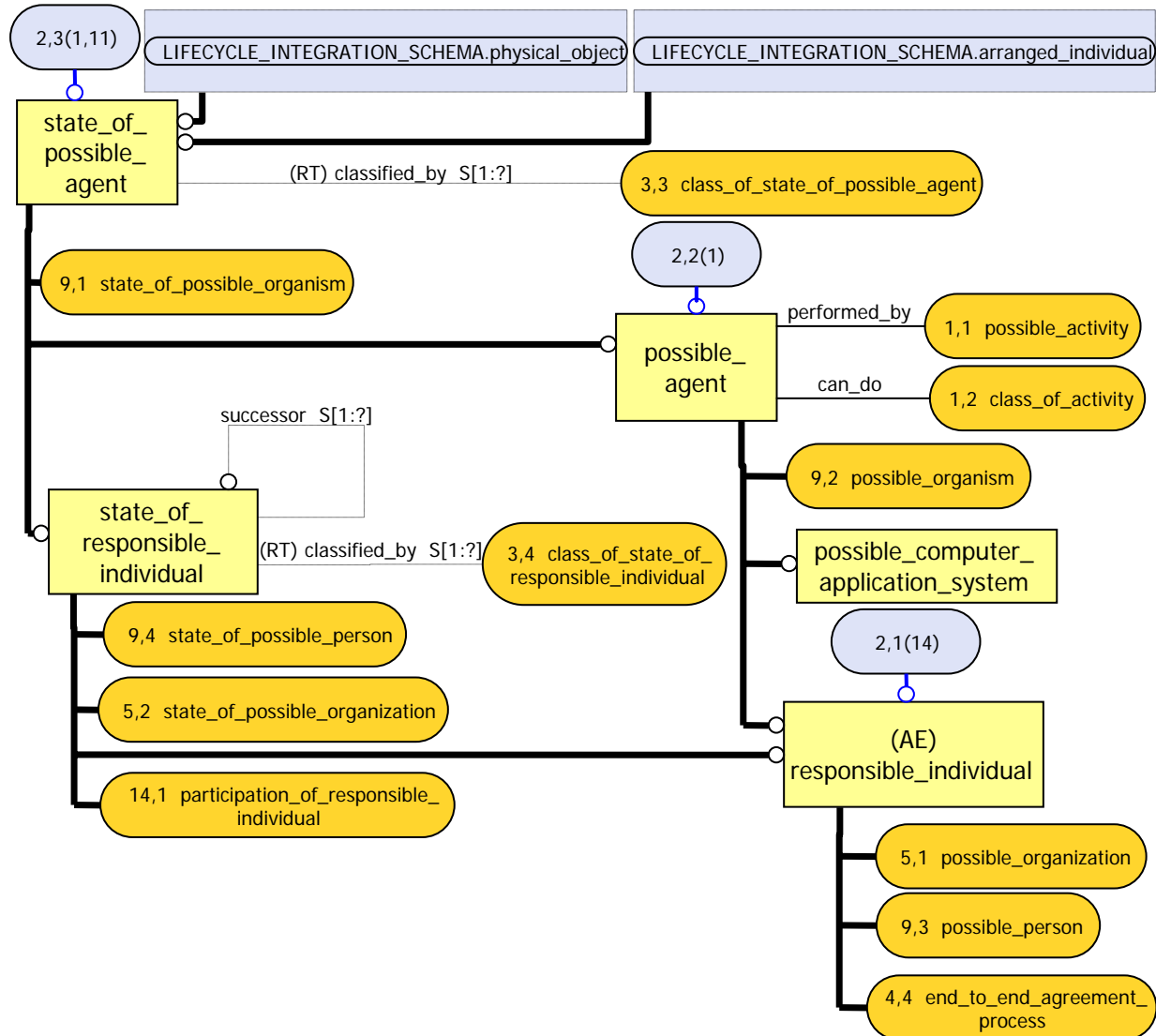
***Shell's Downstream Data Model (DDM) has extended ISO 15926-2 from 201 entity types to more than 1700***

***Many different parties can be involved in buying and selling.***

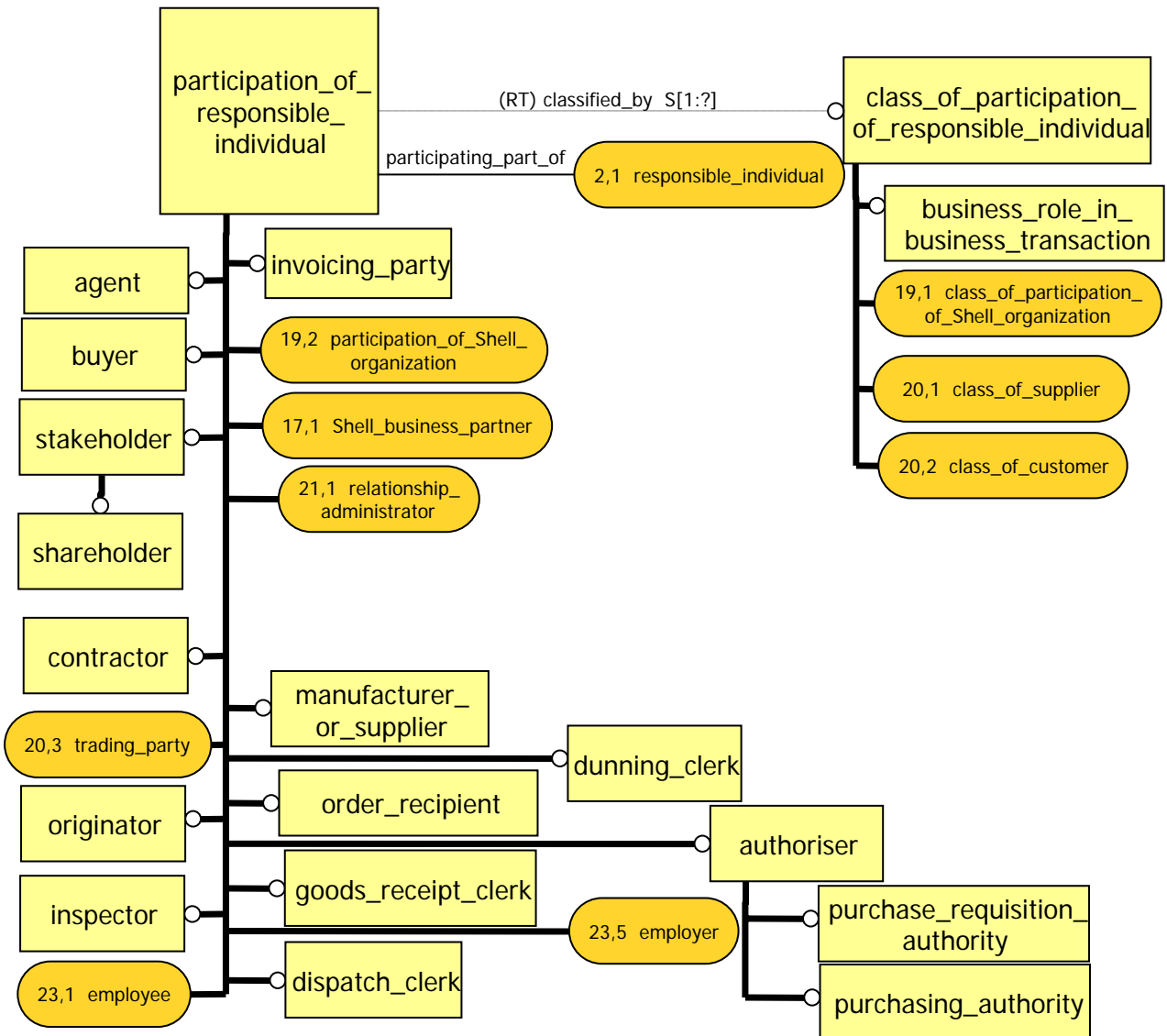
***Some of these parties are defined in the Organization schema – this is shown on the next slide***



# Roles as states



# Buy and Sell parties



These subtypes give us some of the parties in buying & selling



# Summary

- Data Models are ontologies, and we need to take more account of the work done in philosophical ontology in the development of data models
- The application of ontology can add considerable value to businesses in helping to provide data models that better meet business requirements



