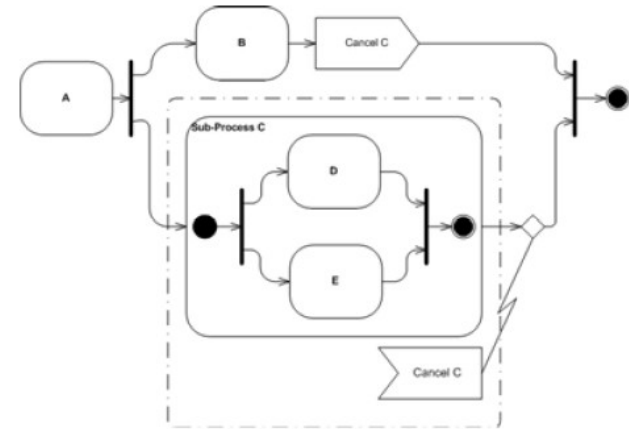


Behavioural Specifications



Suitability,
expressiveness
and formality

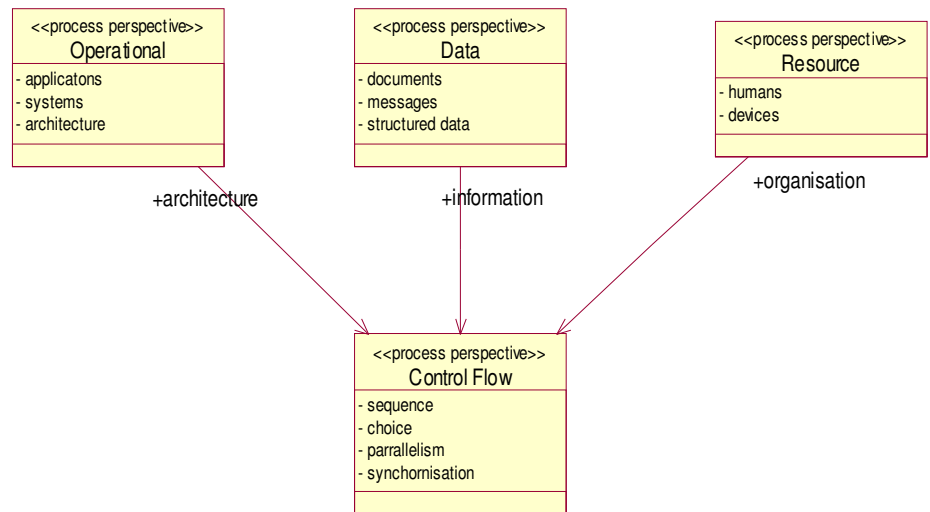
An overview of workflow and behavioural principals

Presentation Summary

- Behavioural Specifications
 - Behavioural perspectives
 - Defining behaviour
 - Choosing a specification language
 - Standards Organisations
 - Specification Languages
- Behavioural Patterns
 - Control Flow
 - Data Handling

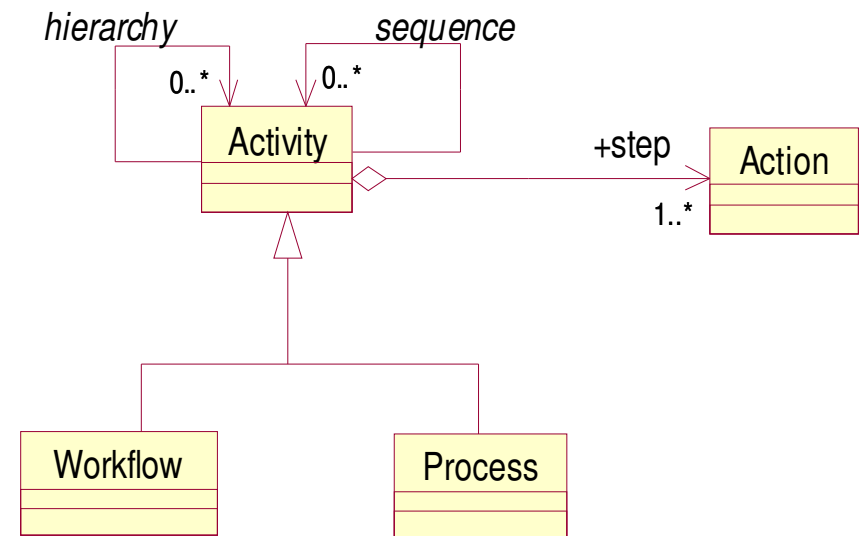
Behavioural Perspectives

- Control flow dominates and is the basis for understanding temporality.
- Operational [Architecture] constraints impact on how behaviour can be specified.
- Data is carried and contained in different sources of transport, including events, messages and documents.
- Resources and resource constraints are important for simulating capacity and through-put.



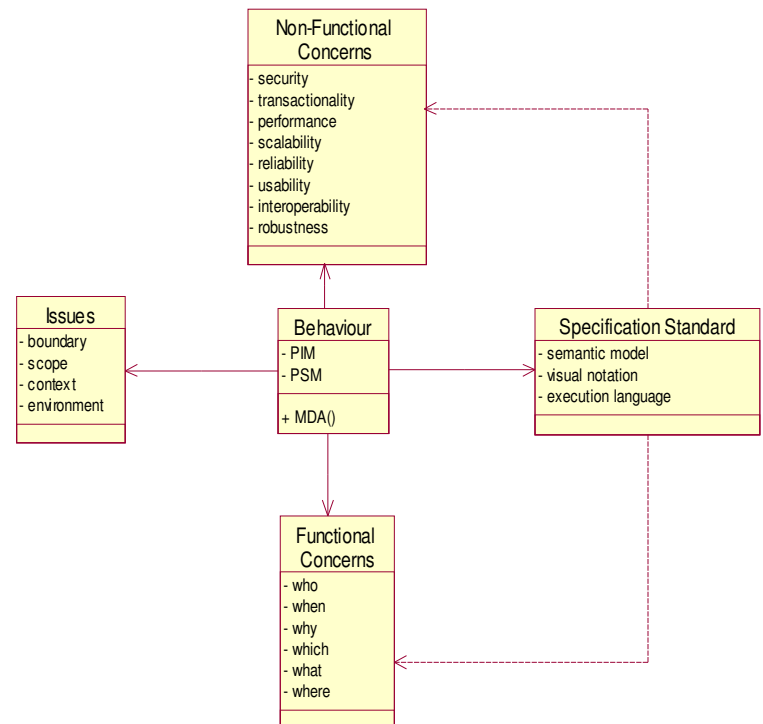
Defining Behaviour

- The focus on behaviour is normally on understanding how systems react to events or on how inputs are transformed as they flow through a system.
- Industry terminology is varied with behaviour commonly called workflow, processes and activity.
- Behavioural patterns are used to describe common facets of control flow, data flows, resource strategies and run-time architectures.
- The use of rules is critical for defining complex behaviour. The more complete behavioural languages have rules and constraint mechanisms.



Chosing a specification language

- Who, Where, Why, What, When and Which – identify what is important to capture.
- Security, transactions, performance, scalability, reliability, usability, interoperability, robustness – define using textual rules and constraints.
- Where possible establish platform independent specifications as they can be re-used in other contexts and technology platforms.
- Communicate with a formal language where possible as it reduces ambiguity. Try not to establish your own notation and meanings....



Specification Issues

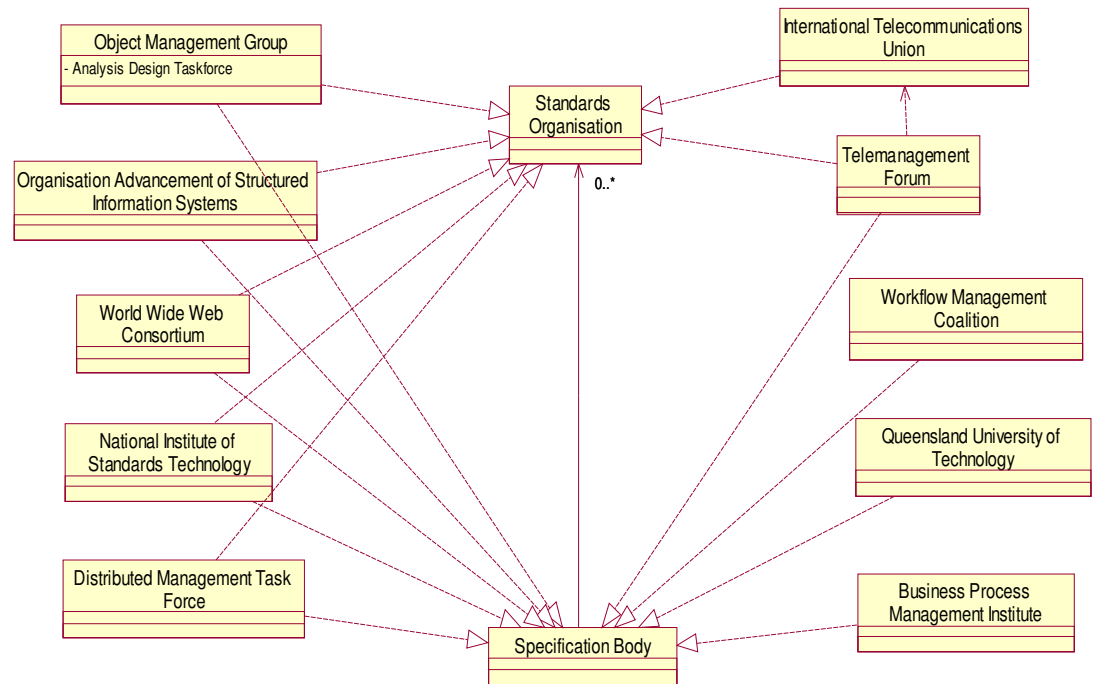
- Difficulties arisen with current languages when:
 - Batch processes need to be modelled; especially when batches contain data relating to more than one processing channel or the data contained in the batch is derived from other disconnected upstream activities.
 - Analogue or Continuous flows are involved; sampling rates, input buffering, caching refresh strategies are not easily handled.
 - Failure conditions and failure characteristics need to be specified.
 - Language limitations do not accurately define the types of things you want to model, like for example data resource assignments, security concerns etc..

Workflow Patterns – a few

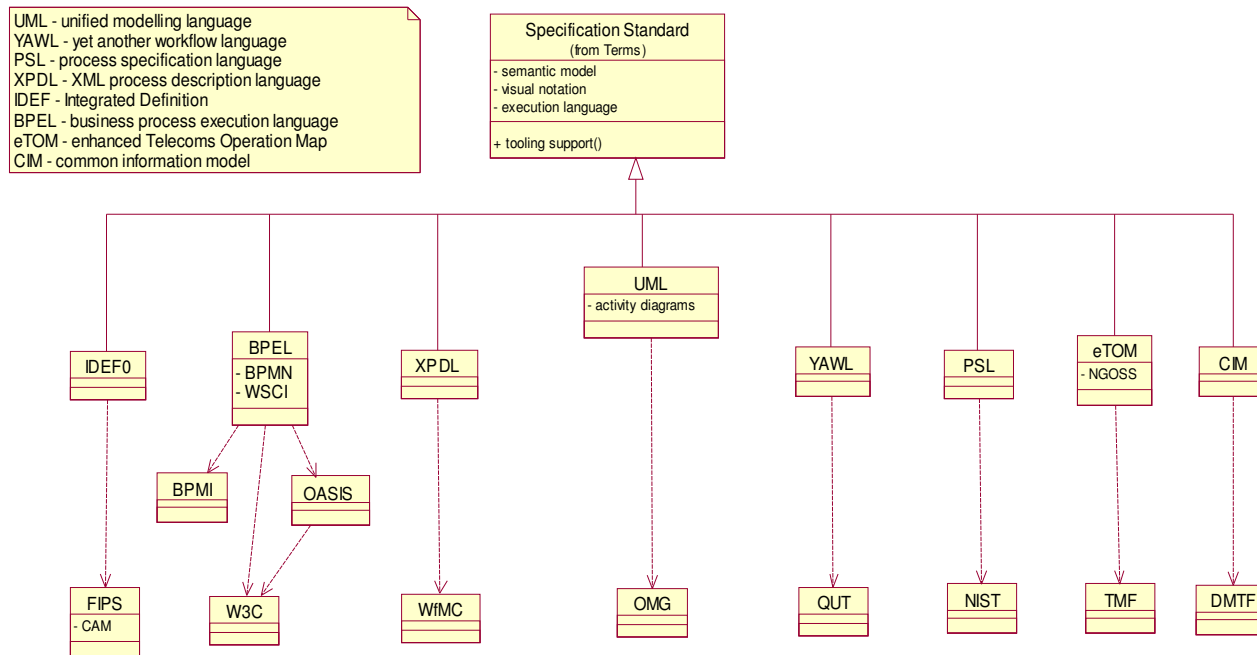
- Control Flow Patterns
 - Basic control flows
 - Advanced branching and synchronisation
 - Structural
 - Multiple instance
 - State based
 - Cancellation
- Data Handling Patterns
 - Data Visibility
 - Data Interaction Internal
 - Data Interaction External
 - Data Transfer
 - Data based routing
- Resource Patterns
 - Creation
 - Push
 - Pull
 - Detour
 - Auto-start
 - Visibility
 - Multiple Resource

Standards Organisations

- Different specification bodies and standards organisations focus on behavioural techniques optimised for different run-time environments and architectures.
- Often the level of formality and conceptual integrity behind the specification techniques are incomplete.



Specification Languages



- Work is underway to standardise the way process and workflow languages are defined across these different organisations. The use of MOF2, an OMG standard, will provide a common meta-modelling format simplifying the translation of different behavioural specs.

Platform Independent Specifications...

Recent trends, in particular MDA, have suggested that defining rules, logic and processes in a platform and technology agnostic manner protects an organisations investment in the design and specification processes. This allows designs to be effectively applied and reused across different flavours or generations of technology platform.

Platform independent Models [PIM] address functional and non-functional concerns:

- Who – identity and entities
- Which – one thing or many things
- Why – requirements and reasons
- When – timing and conditions
- What – data and activities
- Where – location and place

Different environments constrain the number and type of variables listed above. Industry specifications have tended to focus on describing the types of issues important for their area of interest with the intention being to improve accuracy and remove the ambiguity surrounding the types of things they need to capture and explain.

Platform Specific Specifications

