A pragmatic guide to business process modelling

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‘If you're looking for trouble, you came to the right place’

Elvis Presley
Overview

1. The magic of processes
2. Modelling
3. The seven views
4. Conclusions
‘Process and procedure are the last hiding place for people who don’t have the wit or wisdom to do their jobs properly’

David Brent
1. The magic of processes

Processes are an integral part of life

- every time we do anything
- the way we do it

Process describes the approach

Effective processes

- replication rather than copying
- perception

Requires views
Example process

Different view points
- observer/executor

Traceability
- steps involved
- evolution of information

Roles

Why?
- initial requirements
Who follows processes?

- people
- organisations

Process modelling, aka

- business process modelling, business process management, business process re-engineering, operations management, process mapping, process re-alignment

Modelling techniques may be applied to all of the above
Problems with processes

- Too long
- Too short
- Written by committee
- Too many
- Unrealistic
- Language
- Awareness
- Fear of failure
- Perception
(‘Camelot, Camelot’)  
‘It’s only a model’

Patsy
2. Modelling

Modelling helps to combat the ‘three evils’ of life:

- Complexity
- Lack of understanding
- Communication problems

Impossible to eliminate, but essential to minimise
Modelling techniques

Many techniques exist

- flow charts
- RACI matrix tables (and variations)
- BPML
- I-DEF

Technique we will be looking at is the UML
The Unified Modelling Language

- visual modelling language
- origins in software engineering
- open standard modelling
- now an ISO standard

Created in 1997

- evolution and consolidation of 120+ techniques and notations
Rationale for UML

- Widespread use
- Accepted internationally
- ISO 19805
- UK government mandate, under eGIF
- Intuitive
- Extensive use in other aspects of organisation
Processes are complex

Different types of process

- very high level (ISO, IEC, BSI)
- high level (industry standards, PAS)
- medium level (in-house processes)
- low level (procedures)
- very low level (guidelines, work instructions)
The process meta-model

In order to fully specify any process, a number of concepts must be realised.

The process meta-model defines this:
- the concepts involved
- how they may be realised

Generic meta-model presented here:
- may be tailored for specific/organisational use
Concept view

- Process knowledge
- Process model
- Process document
- Document template
- Process
- Process description
- Requirements set
- Process validation
- Stakeholder
  - Supplier
    - Domain expert
  - Customer
    - Author
    - User
Concept view - with groups

Source

Process knowledge

1..*

Process

Understanding

Process model

1..*

organises

Process description

1..*

satisfies

Requirements set

1..*

presents stakeholder’s view of

Process validation

Presentation

is formatted according to

1..*

Process document

1..*

describes purpose of

Document template

1..*

Section

Stakeholder

Supplier

Domain expert

Customer

Author

User

The Magnificent Seven
3. The seven views

- The process meta-model comprises seven inter-related views
  - Any language/notation may be used that is able to realise the seven views
  - Each may be realised using a small subset of UML diagrams
- Provides basis for analysis and discussion
- Consistency may be defined:
  - UML + consistency = model
  - UML - consistency = pictures
  - Consistency = confidence
Presenting the seven views

The views are presented here with examples from a process model.

Aim of example is to:
- identify complexity
- promote understanding of meta-model
- promote understanding of modelling
- promote discussion within group
- promote discussion with customer
The requirements view

- Specifies overall aims of process
  ♠ possible to have more than one view
  ♠ specified by stakeholder or groups

- Essential for validation
  ♠ changes in related process models
  ♠ changes in business

- Requirements need to be checked periodically
Example requirements view

Invoicing context

- Raise invoice
- Check
- Deliver invoice
- Monitor invoice
- Maintain accountancy records
- Ensure timeliness
- Ensure payment

«includes»
«constrains»

Administrator
Initiator
Director
Process structure view

- Specifies
  ♠ structure of concepts
  ♠ terminology used

- Forms basis for process mapping

- May relate to other issues
  ♠ life cycle management

- Identifies high-level conceptual problems
Example process structure view

- **Process model**
  - 4

- **Process group**
  - 1..*

- **Process**
  - 1..*

- **Artefact**
  - 1..*
  - produces/consumes 1..*

- **Activity**
  - 1..*

- **Role**
  - 1..*
  - is responsible for 1..*
Process structure view - extended for life cycles

**Process model**
- **Process group**
  - **Process**
    - **Artefact**
    - **Role**
      - **Activity**

**Life cycle**
- **Iteration**
  - **Phase**
    - Conception
    - Construction
    - Operations
      - Development
      - Transition
      - Retirement

1..* is responsible for
1..* produces/consumes
1..* is executed during
Process content view

Identifies actual processes in each group

♠ shows activities
♠ shows artefacts

May show general associations
May show dependencies
## Meeting logistics

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Outcome info</th>
<th>Invitation</th>
<th>Agenda</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>define outcomes()</td>
<td>identify attendees()</td>
<td>invite()</td>
<td>set environment()</td>
<td>greet()</td>
</tr>
<tr>
<td>execute meeting()</td>
<td>close meeting()</td>
<td>record minutes()</td>
<td>reset environment()</td>
<td></td>
</tr>
</tbody>
</table>
The ‘Enterprise’ process

**Meeting logistics**
- Minutes
- Outcome info
- Invitation
- Agenda
- Outcome
  - define outcomes()
  - identify attendees()
  - invite()
  - set environment()
  - greet()
  - execute meeting()
  - close meeting()
  - record minutes()
  - reset environment()

**Tender application**
- Tender information
  - save source()
  - perform high-level review()
  - assess feasibility()
  - update statistics()
  - create directory()
  - create entry()
  - apply for ITT()
  - receive ITT()
  - write tender()
  - review()
  - distribute documents()
  - collate documents()

**Personnel**
- Customer invoice
  - Invoice
  - Date
  - Invoice number
  - Amount
  - VAT rate
  - VAT amount
  - Total
  - To
  - Address
  - PO number
  - Raised by
  - Approved by
  - calculate figures()
  - print()
  - authorise()
  - deliver()
  - check()
  - secondary check()
  - confirm payment()
  - close invoice()
Stakeholder view

Identifies stakeholder roles within:
- organisation
- project
- system

Presents stakeholders in a classification hierarchy:
- additional relationships may be added
Example stakeholder view

- **Stakeholder**
  - **Customer**
    - User
    - Operator
  - **External**
    - Sponsor
    - Standard
  - **Supplier**
    - Technical
    - Management
    - Administration

- **Operator**
- **User**
- **Sponsor**
- **Technical**
- **Legal**
- **Administration**
The process behaviour view

Shows how an individual process behaves:
- order of activities
- information flow
- responsibilities

Applies to any process with activity

Often defined at procedure level
Process behaviour view - ‘Meeting logistics’

Administrator
- define outcomes
- set environment
- reset environment

Chair
- identify attendees
- greet
- execute meeting
- close meeting
- reset environment

Secretary
- invite
- confirm
- record minutes
- respond

Attendee
- confirm
- cancel
- outcome

Outcomes:
- Agenda
- Invitation[1..*]
- Outcome info
- Minutes
The information view

Identifies

♠ all artefacts
♠ relationships between them

May be at high or low level

♠ detailed structure and content of individual artefacts
♠ traceability trails
Information view - instances

Invoice

<table>
<thead>
<tr>
<th>Date</th>
<th>«instance»</th>
<th>Company copy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invoice number</td>
<td>«instance»</td>
<td>Accountant copy</td>
</tr>
<tr>
<td>Amount</td>
<td>«instance»</td>
<td>Customer copy</td>
</tr>
<tr>
<td>VAT rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAT amount</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
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<td></td>
</tr>
<tr>
<td>To</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PO number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raised by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approved by</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

going further together
Information view - high level

- Course set-up specification
  - provides detail for
  - 1..*

- Invoice
  - defines detail for
  - 1..*
  - feeds into
  - Accounts record
    - 1..*

- Work order
Process instance view

- Shows instances of processes and stakeholders
- Forms basis for validation
- Relates process execution back to requirements
Practical uses

- Process capture (tacit, documented, etc)
- Process analysis (optimisation, improvement, verification, validation, etc)
- Process definition (documentation, automation, etc)
- Process mapping (compliance, assessments, audits, etc)

Most other process-related buzz words
‘And now, the end is near’

Frank Sinatra
4. Conclusions

- Processes are prevalent
- Processes exhibit the three evils
- Processes may be modelled
- Confidence in process is essential