



Knowledge Modelling and Management

Part A (2)

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<http://www.aiai.ed.ac.uk/~jessicac/project/KMM>





CommonKADS' Knowledge Management Approach



A Two-Tiered Approach

KM AIM: right time, place, shape, quality, lowest possible cost.

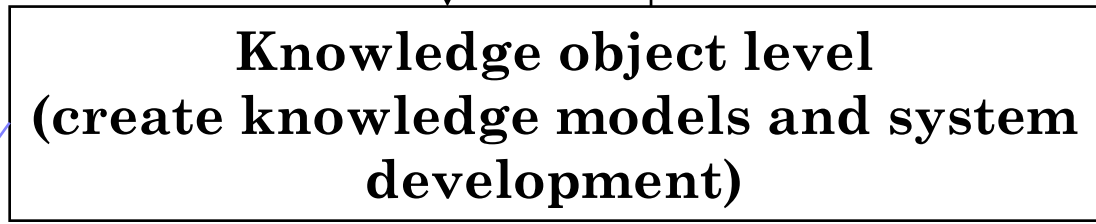


**Organizational goals
Knowledge as a resource
Value chain**

**Project mgmt
Life cycle**

**Knowledge
management
actions**

**KM
experiences
(reports written at the
project management level)**



**Knowledge assets
Organizational roles
Business processes**

**Annotated business processes,
Knowledge assets and models,
Organisational roles,
Communication models,
Knowledge systems**

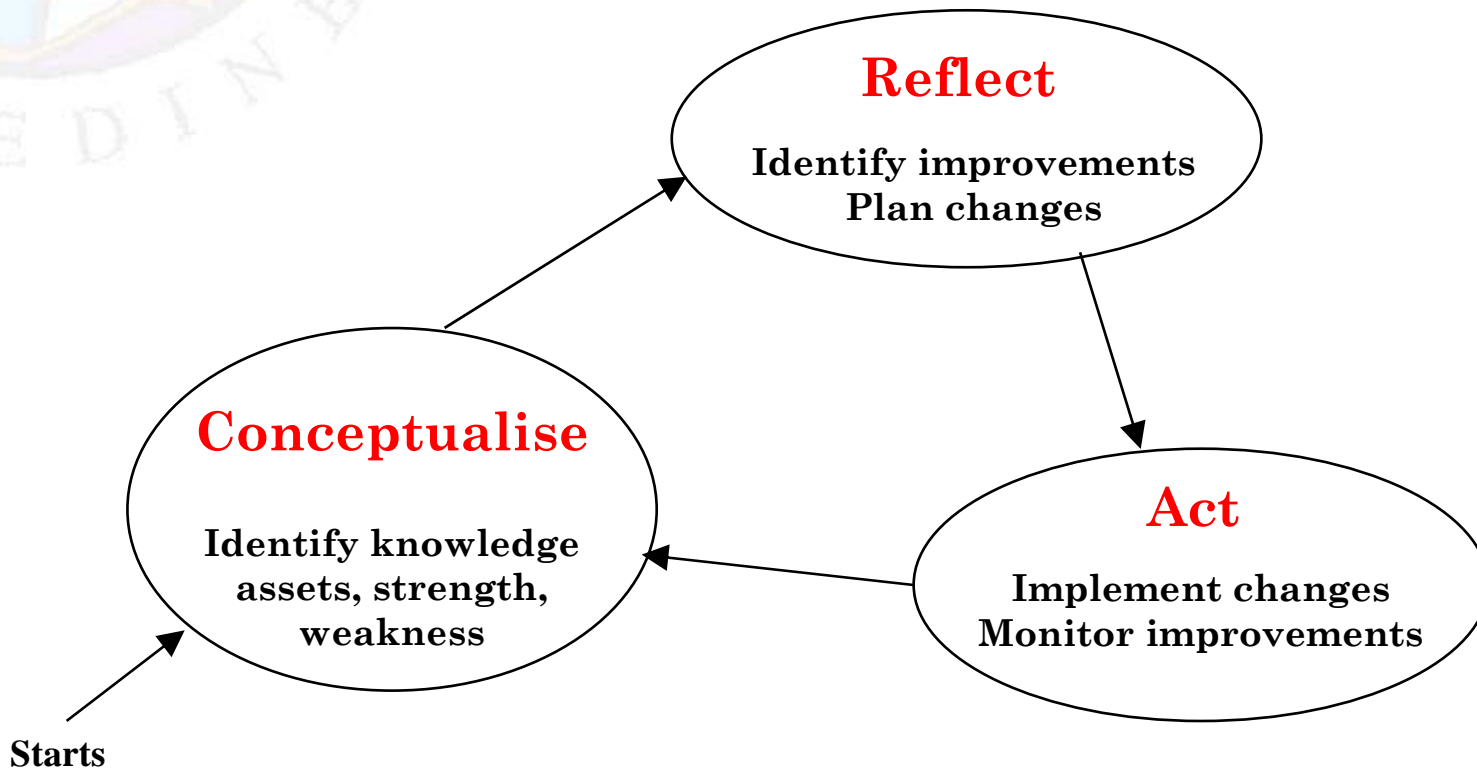
Project Mgmt Life Cycle



- **S/W engineering life cycle**
 - Strategy phase, Information analysis, System Design, Program and Test, Operation Maintenance
- **Rapid, Evolutionary Prototyping approach to Software System Development**
 - Gather expert data, implement prototype, validate and get feedback, iterate.
- **Spiral model of the software life cycle and CommonKADS activities**
 - Review, Risk (Assessment), Plan, Monitor
 - Focuses on products and output, not activities
 - Configurable and adaptive manner driven by goals and risks
 - Quality assurance



Activities in the Knowledge Management Level



Guidelines for Activity Conceptualisation



- **Main tasks:** capture knowledge assets, strong and weak points:
 1. Define scope of the project: bottlenecks, human resources, problems and opportunities;
 2. Choose an appropriate level of details;
 3. Beware of hidden/informal knowledge;
 4. Don't rely on single source when try to link knowledge – try **network analysis**, find out how people interact with each other, and how they get information;
 5. Evaluate strong and weak points from different angles;
 6. Try to **quantify** the value of knowledge, or at least **qualify** the value of knowledge, give justification of knowledge, e.g. “this knowledge is indispensable to the organisation”
- **Results** – an overview of domain, inc. a list of knowledge items, bottlenecks, problems and opportunities, weakness and strength.

Guidelines for activity Reflect



- **Main tasks:** identify problems/opportunity to be improved upon; set priorities; refine improvement plans.
 1. Keep a distance from (S/W) methodologies used – so to prevent bias towards some knowledge system solutions;
 2. Avoid choosing software engineering solutions hastily – seek and compare alternative solutions;
 3. There are no silver bullets – organisations and knowledge are far more complex than using just one automated system;
 4. Murphy's law – careful in choosing improvements, easier solutions may not be most effective, need risk assessment;
 5. Sleep on it – review the reflect process itself.
- **Results** – to produce a list of detailed improvement plans with priorities.



Guidelines for activity Act

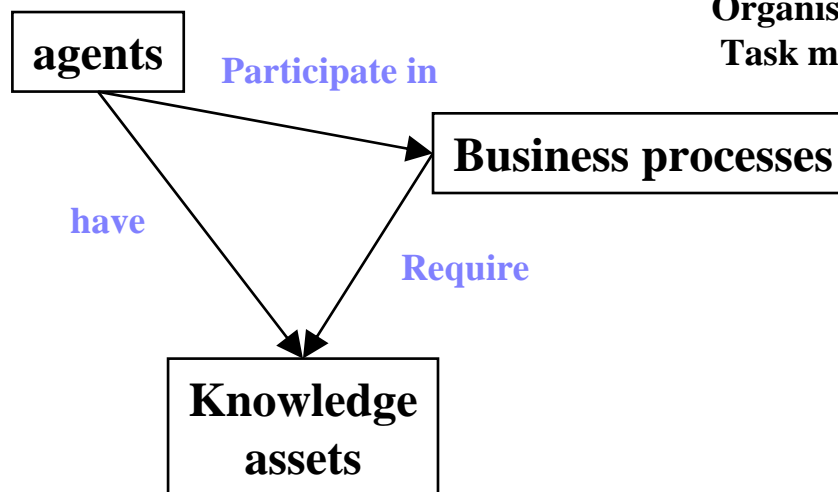


- **Main tasks:** Initiate agreed improvement plans (e.g. S/W development) and monitor their progress:
 1. Set measurable objectives when monitor progress and evaluate outcome;
 2. Assign responsibilities to stake holders and give clear instructions - monitor frequently and carefully.
- **Results:** initiate improvement plans, monitor and manage progress.

Main components in Knowledge Object Level

Organisation model: OM-2
Agent Model: AM-1 (agent des)

Organisation model: OM-2, OM-3
Task model: TM-1 (fine task des)



Organisational model: OM-1, OM-2, OM-4
Task model: TM-2 (knowledge bottleneck analysis)
Knowledge model: knowledge specification for KBS

Summary: Three knowledge management processes

1. **The knowledge management cycle (process) supports the model of knowledge-value chain, Fig 4.2, p71 [1].**
 2. **The CommonKADS' 2-tiered knowledge management level process [1] – is consistent with Argyris' model of “double-looped” organizational learning process.**
 3. **Compare CommonKADS' model with the knowledge management process as described by Preece. For interested readers, see [2] for more details.**
- **For interested readers, chapter 15 in [1] provides more details on the project management process.**



Organisational Context Modelling

CommonKADS' Approach

What is a model ?

- An **abstract description** and/or representation of a **part** of the world in concerned.
- Often has a **perspective**, application and goal-driven.
- Captures only important **selective features** of the part of domain to achieve the goals for having the model.
- Often used to describe a complex or abstract domain.
- Graphs or visualisation methods are often used.
- Often has complimentary textual information.
- Often used to **explain, analyse and predict** properties and/or behaviours of the world in concerned.
- May be provided in a formal description using specific languages.

Example Models

- **Architecture model (3D objects and textual),**
- **Building plans or blue prints,**
- **Road map (graphical and textual),**
- **A set of co-related (mathematical) formulas,**
- **Business model,**
- **Organisational model,**
- **Communication model,**
- **Process model.**

Map of The University



Building Name **GO** **CAMPUS MAPS » CENTRAL AREA »** New College [1] ▼

New College, 1 Mound Place, EH1 2LU [\(further details\)](#)

Maps Home
A-Z Listing
Edinburgh
Central Area
Kings Buildings
Little France
Travel Information
Feedback
Search

- Cafeterias **F**
- Information **i**
- Libraries **L**
- Permit Parking **P**
- Public Buses **B**
- Public Parking **P**
- Shuttle Buses **B**
- Student Unions **U**
- Wi-Fi Access **W**
- Toggle All

► Magnify map
► Larger map
► Print this location
► Print this campus
► Hide Address Bar



Map Index - Complimentary Textual Info



Info	Place ▲▼	Key ▲▼
i	Adam Ferguson Building	35
i	Adam House	3
i	Alison House	13
i	Appleton Tower	24
i	Bedlam Theatre	16
i	Careers Service	30
i	Chaplaincy Centre	14
i	Charles Stewart House	36
i	Charter's Land	40
i	Chessel's Land	38
i	College of Humanities & Social Sciences Office	25
i	David Hume Tower	28
i	David Hume Tower Lecture Theatres	27
i	Disability Office	11
i	Forrest Hill Building	44
i	George Square Lecture Theatre	34
i	Health Centre	14
i	High School Yards	5
i	Hugh Robson Building	21
i	International Office	23
i	International Students Centre	32
i	Law & Europa Library	10
i	MacKenzie Medical Centre	42
i	Main University Library	33
i	Management School	15
i	McEwan Hall	18
i	Medical School	17

Info	Place ▲▼	Key ▲▼
i	Minto House	2
i	Moray House Reception	41
i	New College	1
i	New College Library	1
i	Office of Lifelong Learning	31
i	Old College	10
i	Paterson's Land	6
i	Registry	10
i	Reid Concert Hall	19
i	School of Law	10
i	Societies Centre	9
i	Sports and Exercise Centre	8
i	Sports Union	9
i	St Cecilia's Hall	4
i	St Leonard's Land	7
i	St Mary's Land	37
i	Student Association	14
i	Student Counselling Service	29
i	Student Recruitment & Admissions	23
i	Talbot Rice Gallery	10
i	Teviot Row House	20
i	The Pleasance	9
i	The Potterow Student Centre	14
i	University of Edinburgh Centre	12
i	Weir's Land	39
i	William Robertson Building	26



Aspect: Permit Parking



Maps Home

A-Z Listing

Edinburgh

Central Area

Kings Buildings

Little France

Travel Information

Feedback

Search

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- ▶ Magnify map
- ▶ Larger map
- ▶ Print this location
- ▶ Print this campus
- ▶ Hide Address Bar

New College, 1 Mound Place, EH1 2LU (further details)



Aspect: Transportation Info



[Maps Home](#)
[A-Z Listing](#)
[Edinburgh](#)
[Central Area](#)
[Kings Buildings](#)
[Little France](#)
[Travel Information](#)
[Feedback](#)
[Search](#)

<input type="checkbox"/> Cafeterias	F
<input type="checkbox"/> Information	i
<input type="checkbox"/> Libraries	L
<input checked="" type="checkbox"/> Permit Parking	P
<input type="checkbox"/> Public Buses	B
<input checked="" type="checkbox"/> Public Parking	P
<input checked="" type="checkbox"/> Shuttle Buses	B
<input type="checkbox"/> Student Unions	U
<input type="checkbox"/> Wi-Fi Access	W
<input type="checkbox"/> Toggle All	

[Magnify map](#)
[Larger map](#)
[Print this location](#)
[Print this campus](#)
[Hide Address Bar](#)



Cafeteria, Permit and Public Parking



CAMPUS MAPS **EDINBURGH** > **CENTRAL AREA** > **KINGS BUILDINGS** > **LITTLE FRANCE** >

Building Name **CAMPUS MAPS » CENTRAL AREA** » New College [1]

New College, 1 Mound Place, EH1 2LU (further details)

Legend:

- Cafeterias **F**
- Information **I**
- Libraries **L**
- Permit Parking **P**
- Public Buses **B**
- Public Parking **P**
- Shuttle Buses **S**
- Student Unions **U**
- Wi-Fi Access **W**
- Toggle All

Map Actions:

- ▶ Magnify map
- ▶ Larger map
- ▶ Print this location
- ▶ Print this campus
- ▶ Hide Address Bar



What is modelling ?

- The activities for producing an **abstract description** and/or **representation** of a part of the world in concerned.
- The **activities** of creating, refining and maintaining a model.
- **Example modelling tasks:**
 - Knowledge acquisition
 - Knowledge capture (e.g. informal)
 - Knowledge representation (e.g. formal)
 - Knowledge analysis
 - Consistency checking
 - Knowledge derivation

Why organisation modelling and context analysis?



- Critical success factor for a KM project is how well the relevant **organizational issues** have been dealt with.
- Many failures in automated systems are resulted from the lack of concern for **social and organizational factors**, and not from technical problems.
- Yet, many system development methodologies continue to focus on development problems from technical aspects and **do not support appropriate analysis of organizational elements**.
- **Similar recognition is recorded in Requirement Engineering:**
*“Requirements engineering is about the **satisfaction of goals**. But goals by themselves do not make a good starting point for requirements engineering. To see why, consider a project to develop a computer-controlled turnstile guarding the entrance to a zoo ... **the real goal is to ensure the profitability of the zoo.**”* – Zave, Jackson [9a].





CommonKADS' Organisational Context Analysis



CommonKADS approach

Organisational Context Analysis

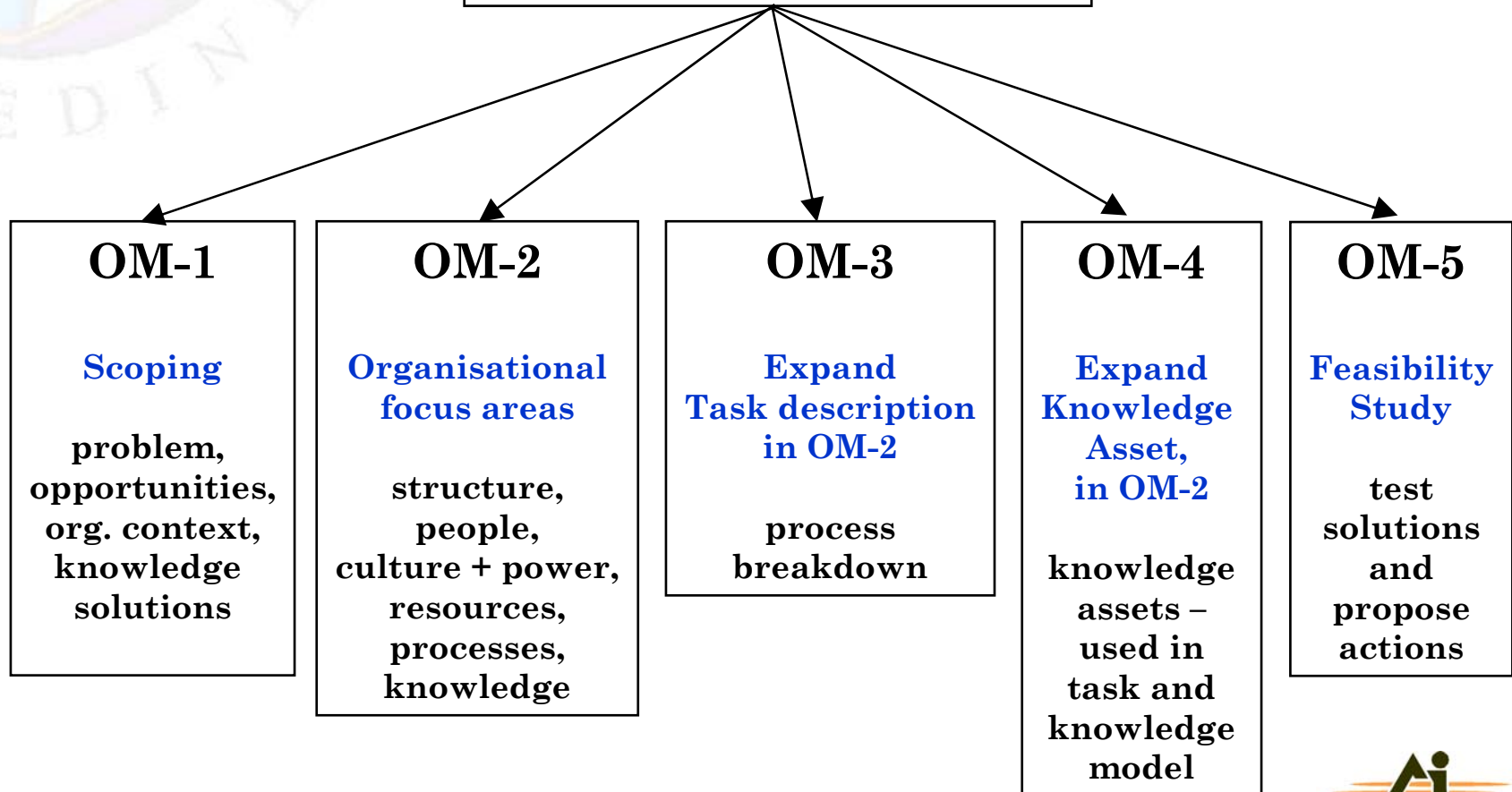


- **Organisational Modelling: scoping and feasibility studies:**
 - Identifying **problem/opportunities** areas and potential solutions in an organisational context;
 - **Select focus areas and solutions** based on feasibility evaluations.
- **Task and Agent Modelling: impact of changes and improvement study for selected solutions:**
 - Identify relations between **tasks and agents**, the knowledge involved, possible improvements;
 - **Decide measure and task changes**; ensure organisational acceptance and integration of knowledge system solution.

Worksheets for Organisational Modelling



Organisation Model



Problems and Opportunities

WS OM-1



- **Problems and opportunities** – give a short list of P&Os through interviews, brainstorm and visioning meetings, discussion with managers:
- **Organisational context:** key features of an organisational context – inc. organizational missions, goals, strategy; external factors; strategies; (knowledge and business) value chain and main value driver;
- **Solutions:** suggest possible solutions for problems and opportunities.

Knowledge Acquisition Approach



- **Identify Key Personnel:**
 - Talk to managers in key business areas, may also include selected customers;
 - Hold KA workshops use models as a way to extract knowledge
 - Identify stakeholders: **knowledge providers, knowledge users, knowledge decision-makers;**
 - Understand what is at stake for each person/role; identify potential conflicts.
- **Breakdown the organisation into smaller chunks:**
 - Horizontal Division - divide the organisation in different business areas;
 - Vertical Division - Examine the organisation using product and services **generation lifecycle** – using value-added chain, BPR oriented method.
- **Question: how do you identify a knowledge decision-maker?**



Organisational Model OM-1



Organisation Model: Problems and Opportunities Worksheet OM-1 Initial assessment on context and problem analysis Example Worksheet for Housing Application

Problems and Opportunities	<ul style="list-style-type: none">*Assessment of individual applications takes too much time, creating back log to be processed.*There is not sufficient staff for handling urgent cases.
Organizational Context	<ul style="list-style-type: none">*Mission: Enable people to take responsibility to find a proper home.*External factors: National regulations.*Strategy: Provide high quality housing at a reasonable price.
Solutions	<ul style="list-style-type: none">Solution 1: Develop an automated system to speed up application assessment.Solution 2: Set up a training program for application assessment.

[Table taken from Chapter 10, p241.]



Variant Aspects WS OM-2

- For each identified problems/opportunities in OM-1, OM-2 describe important focus areas below:
 - **Organisational structure**;
 - **Processes** – aided using an UML activity diagram, or other business process models (used by OM-3);
 - **People** and their roles;
 - **Resources** – e.g. information systems, equipment and materials, technology/patents and rights;
 - **Knowledge** – exploited in processes (used by OM-4);
 - **Culture and power** – organisational practice; social and interpersonal skills; influence, relationships and networks.
- The process aspect is emphasised.



Example Organisational Structure to Use with OM-2

Organisational Structure



- **Composition, hierarchy, structure of the company;**
 - E.g. rigid hierarchical or flat management style
- **Size of company;**
- **Who is responsible for which areas of business and tasks;**
- **Who is responsible/report to whom;**
- **Who to talk to when problems or queries arise;**
- **Functions of a company;**
- **Missions of a company.**



Commissioner's Chief of Staff
Caroline Murdoch

Commissioner
Sir Ian Blair

Deputy Commissioner
Paul Stephenson

DAC Rose Fitzpatrick
Diversity and Citizen Focus

Cmdr Moir Stewart
July Review Group



Ailsa Beaton
Director of Information



T/AC John Yates
Standards & Intelligence



Dick Fedorcio
Director of Public Affairs



AC Tarique Ghaffur
Central Operations



AC Tim Godwin
Territorial Policing



AC Andy Hayman
Specialist Operations



AC Steve House
Specialist Crime Directorate



Sharon Burd
A/ Director of Resources



Stephen Rimmer
Director of Strategy, Modernisation & Performance



Martin Tiplady
Director of Human Resources

DAC Ron McPherson
Group Director Communications and C3I Programme

DAC Paddock
Management of Police Information

Paul Cook
Group Director Service Delivery

Toss Conway
Group Director Business Services and IT Training School

Richard Earlend
Group Director Information Programme

Steve Parquharson
Group Director Information Management

Philip Scutchings
Group Director Technology

Cmdr Sue Akers
Deputy Director of Professional Standards

Dr Nina Cope
Deputy Director of Intelligence Standards Unit

Ed Solomon
Director of Legal Services

Chris Webb
Deputy Director of Public Affairs

Joy Bentley
Assistant Director, Head of Corporate Press Office

Bob Cox
Assistant Director, Chief Press Officer

Stephanie Day
Assistant Director, Head of Publicity

Vacant
Internal Communication

DAC Richard Bryan
Director of Tasking

Cmdr Julian Bennett
Olympics OCU

Cmdr Shabir Hussain
Traffic & Transport

Cmdr Joe Kays
Specialist Firearms OCU & National Identification Bureau

Cmdr Bob Broadhurst
Public Order & Pan London Units

Beverly Butterworth
Head of Business Support

Vacant
Director of Operations & Deputy to AC

Diana Marchant
Director of Business Development

Ian Kirby
Director of Business Support

Cmdr Steve Allen
Violent Crime Directorate

Cmdr Mark Simmons
Volume Crime

Cmdr Chris Allison
Borough Commander - Westminster

Cmdr Simon Bray
Planning & SW Link Commander

Cmdr Paul Minton
Patrol & C3I & SE Link Commander

Cmdr Alfred Hitchcock
Safer Neighbourhoods & NE Link Commander

Cmdr Rod Jarman
Patrol & SW Link Commander

DAC Suzanna Beckis
Security and Protection

DAC Peter Clarke
National Coordinator of Terrorist Investigations

Cmdr Ian Carter
Security Command

Cmdr Philip Gormley
Special Branch

Cmdr Peter Loughborough
Protection Command

Cmdr John McDowell
Deputy National Coordinator of Terrorist Investigations

DAC Janet Williams
Director of Operations & Tasking - Deputy to AC

Cmdr Cressida Dick
Serious Gun Enabled & Organised Crime in Communities

Cmdr Allan Gibson
Strategic Development

Cmdr David Johnston
Homicide

Gary Pugh
Director of Forensic Services

Cmdr Shaun Sawyer
Intelligence and Covert Policing

Mark Thomson
Director of Business Support

Cmdr Sue Wilkinson
Child Abuse Investigation & Economic Crime

Alastair Thompson
Director of Logistical Services & Deputy Director of Resources

Simon Hart
A/Director of Finance Services

Alan Cronsey
Director of Property Services

Jane Bond
Director of Asset Management

Paul Daly
Director of Exchange Services and Business Development

Anthony Doyle
Director of Procurement Services

Peter Peirce
Director of Catering Services

Peter Ross
Director of Construction Group

Kerim Muhamadallah
Director of Business Support

Stuart Middleton
Director of Transport Services

Cmdr Simon Foy
Performance Directorate

Vacant
Director of Strategy

Vacant
Met Modernisation Programme

John Whitaker
Director of Commercial Services

DAC Steve Roberts
Deputy Director of HR & Training & Development

Claire Appleby
Director of HR Services

Bill Griffiths
Director of Leadership Development

Simon Marshall
Director of HR Recruitment

Paul Mudge
Director of People Development

HOME OFFICE BOARD
Setting Home Office wide strategy; leading cultural change by promoting values and diversity; building an effective organisation

DAVID NORMINGTON
Permanent Secretary



LIN HOMER
Director General, IND



HOME OFFICE VALUES
To build a safe, just and tolerant society:

We deliver for the public
We are professional and innovative
We work openly and collaboratively
We treat everyone with respect

Non-Executive Directors

CHRIS LITTMODEN



TIM GBEDEMAH



IND ZMS TEAM

Simon Hayes
Chief of Staff

THE IND BOARD

KEN SUTTON
Deputy Director General



JOANNA PLACE
Change and Reform



BRODIE CLARK
Borders



STUART HYDE
Enforcement and Removals



PAULA HIGSON
Managed Migration



MATTHEW COATS
Asylum



MARK SEDWILL
UKvisas



DAVID STEPHENS
Resource Management



RICHARD WESTLAKE
Policy - Head of Profession

Tom Dodd
International Delivery

Vacant
European Policy

Iain Walsh
Asylum and Appeals Policy

James Quinault
Managed Migration Strategy and Review

Aleck Thomson
Special Casework Directorate

Gary Row
Research and Statistics

Mark Voce
IND 2010

Jim Minton
Communications

Jill Beckingham
Information Management

IND Review

JEREMY OPPENHEIM
Director of Social Policy

Jonathan Duke-Evans
Social Policy

Brian Kinney
UASC Reform

David Wilson
IND Intelligence Service

Tony Smith
Border Control

Angela Pearce
Border Control

Vacant
e-Borders

Peter Graham
Special Projects

Mandy Jones
Performance Management and Assurance Unit

Dave Roberts
Enforcement and Removals

Brian Pollett
Detention Services

Mandie Campbell
Criminal Cases

Christina Parry
Operations (South)

Vacant
Operations (North)

Alan Bucknall
Customer Service

Adele Townsend
Delivery Director, Points Identity and Documentation Programme

Nigel Toone
Design Director, Points Identity and Documentation Programme

Paul Milkins
Finance

Jon Wild
Human Resources

Bob Eagle
Asylum Casework

Keith Lambert
Appeals

Freda Chaloner
New Asylum Model

Paul Darling
Asylum Resources

Tony Mercer
Network Operations and Biometrics

Glyn Williams
Business Development

Emma de-la-Haye
Corporate Services

Fiona Spencer
Strategic Programme Director

Tony Arber
Finance and Planning

Robert Scotland
Commercial and Programme Services Directorate

Fiona Webster
Corporate Services

Transformation Programme

Chris Felton
Performance and Management Consultancy Services

Tim Barnsley
Corporate Services Group

Ros McCool
Human Resources

Jonathan Potts
IND College

Andrew Pearce
Security and Anti-Corruption Unit

Gillian Smith
Workforce Planning and Other Projects

Marie Baboglu
Enablers Management Support Unit

Stephen Crunckhorn (acting)
Home Office IT

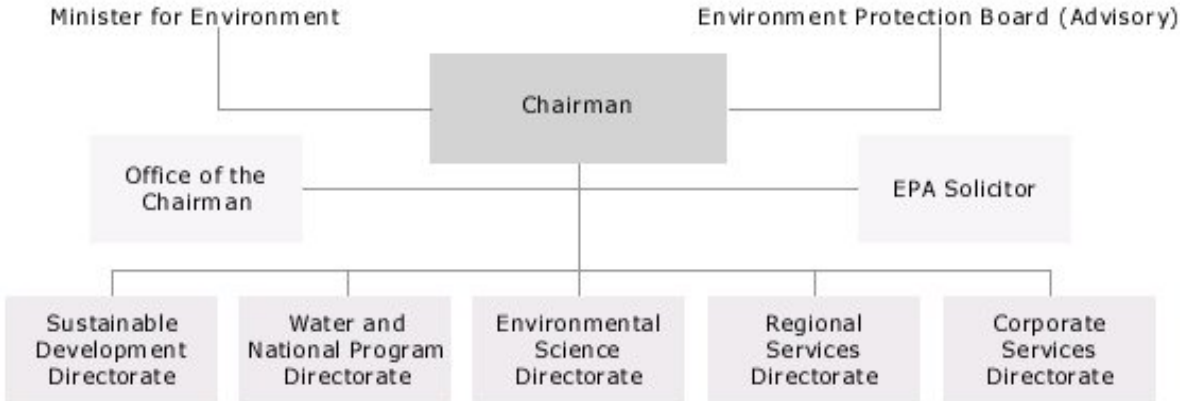
REGIONAL DIRECTORS

Phil Taylor (interim)
Regional Director, Scotland

Regional Directors will manage a model of regional integrated working. They are collectively responsible to the Board, but will be line managed by individual Board members.

Chris Hudson (interim)
Regional Director, North East, Yorkshire and The Humber

Organisational structure



CEO/Chairman

The CEO is responsible for the overall strategic direction and management of EPA, and is supported by the Executive, the Office of the Chairman and the EPA Solicitor, who all report to directly to the CEO. The statutory role of Chairman is responsible for administering the relevant provisions of the [Environment Protection Act 1970](#) and is advised by the members of the Environment Protection Board (Advisory).

Sustainable Development Directorate

Sustainable Development works with partners, including business, other government organisations and the broader Victorian community, to facilitate progress towards developing a sustainable Victorian environment.

Water and National Program Directorate

Water and National Program includes EPA's water programs including stormwater and ballast water policy. The Directorate is responsible for EPA agreements, partnerships and relations with national, interstate and local governments.

Environmental Science Directorate

Environmental Science provides strategic direction and corporate management of the environmental science functions of EPA including air quality studies, fresh and marine water studies and environmental chemistry. In addition, the role provides overall direction to the air quality and environmental audit programs.

Regional Services Directorate

Another Example Organisational Structure (Unilever)



Traditional organisation diagram



Analyse an Organisational Chart



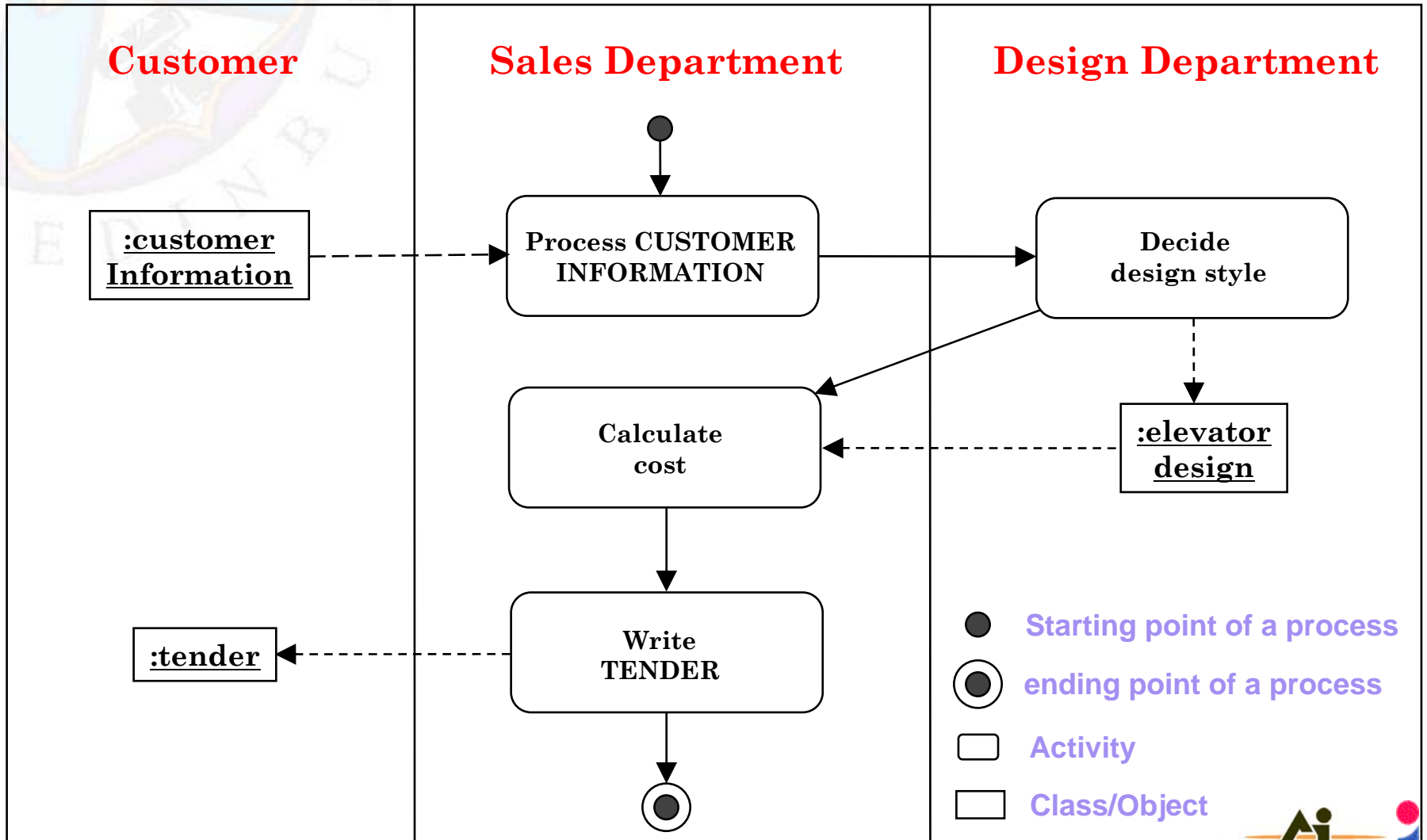
- **What is the name of the (sub-)organisation? Is it clearly shown in the structure?**
- **Is the organisational structure clear and logical?**
- **Is it clear who is responsible for what role?**
- **Is it clear what is involved in each role, what are the people's duties?**
- **Is it clear how people interact with each other?**
- **Are the actual people (at least higher level posts) involved in the organisations clearly identified?**
- **What is the knowledge based network between personnel?**
- **What are the informal influence links? (see case study in slides 3 later on)**





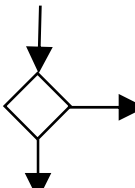
Example Visual Process Model to Use with OM-2

Example UML Activity Diagram for Submitting a Tender for an Elevator



UML Activity Diagram Notations

- **Initial activity** ●
- **Final activity** ⊙
- **Activity State** □
- **Object (:class-name)** □
- **Control flow (directional arcs)** →
- **Object flow (dashed directional arcs)** - - - - - →
- **Swim Lanes: divide business/process areas**

- **Decision (diamond)** 

- **Concurrency (splitting and joining control threads)** 

- **Signals: sending and receiving signals** 

Send Receive

- **Sec. 14.2, p348, p438 [1].**

Good naming style for a process



- Start with a **verb** that indicates the action to be carried out,
- Followed by a **noun (phrase)** that indicates the main type of data that the process operates upon
 - This data type is often included in a class in a class diagram, an entity in a relational diagram, or a class in an ontology,
 - data types may be highlighted using **all capital letters**
- Keep it **meaningful**,
- Keep it **short**,
- Keep it **unique** within the model.

- Process name may also be used together with
 - an unique (shorter) ID, a position ID in the process hierarchy, reference ID (when reuse of processes) to provide a more comprehensive ID schema
 - see IDEF3 process description schema for more info on this [5].



Process Breakdown WS

OM-3



- Provides more details for each process
- For each process in OM-2, gives:
 - Task ID;
 - Task Name (as in the process model and OM-2);
 - **Agent** (performed by person/software);
 - Position – where is this task carried out in the organisational structure;
 - **Knowledge asset used**;
 - **Is it knowledge intensive?** (true/false)
 - Determine the **significance** of the process:
 - » 1-5 points (5 = most significant)
 - » in terms of its frequency, cost (vs. efforts required), resources used and mission criticality.



Knowledge Assets WS

OM-4



- Based on **Knowledge** identified in OM-2, specify them in more detail and identify where they may be **improved**.
- This is to be used for the task and knowledge models later on:
 - Name (of knowledge asset),
 - Possessed by which agent – relate to OM-3,
 - Used in which task – relate to OM-3,
 - Is it provided in the right form (yes/no),
 - Is it provided in the right place (yes/no),
 - Is it provided at the right time (yes/no),
 - Is it provided with the right quality (yes/no).



Feasibility Study

Organisational Modelling: OM-5



- **Purpose: to select feasible solutions**
- **Activities focuses on knowledge.**
- **Main components include:**
 - **Organisational structure**
 - **Processes**
 - **Staff**
 - **Resources**
- **These components are filled in the **as-is** and **to-be** models for comparison**
 - **assess the value, feasibility and acceptance of knowledge-oriented solutions.**
- **For each potential solution, 3 types of feasibility tests are carried out, w.r.t. business, technical and project aspects.**

Feasibility Decision Document

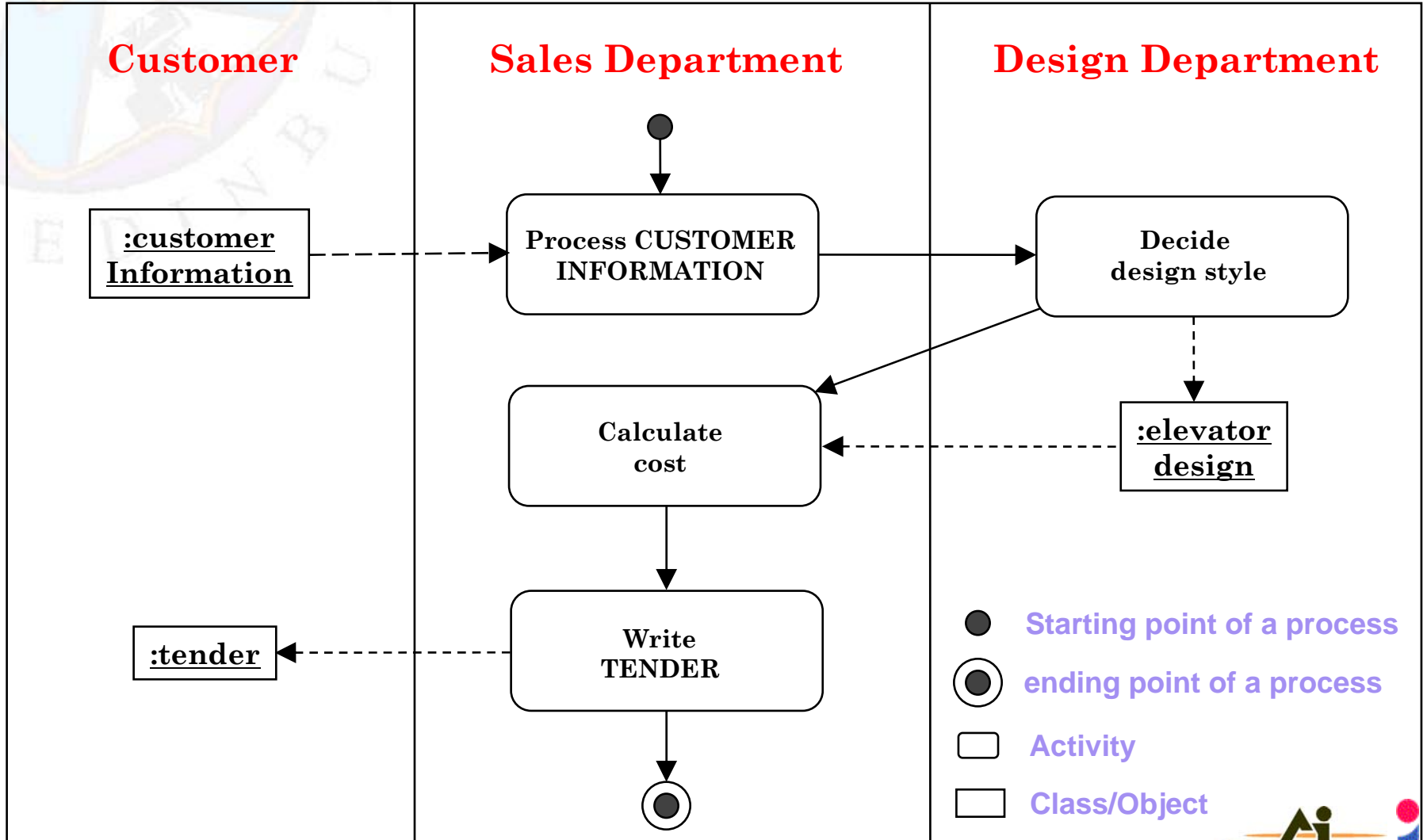
WS OM-5



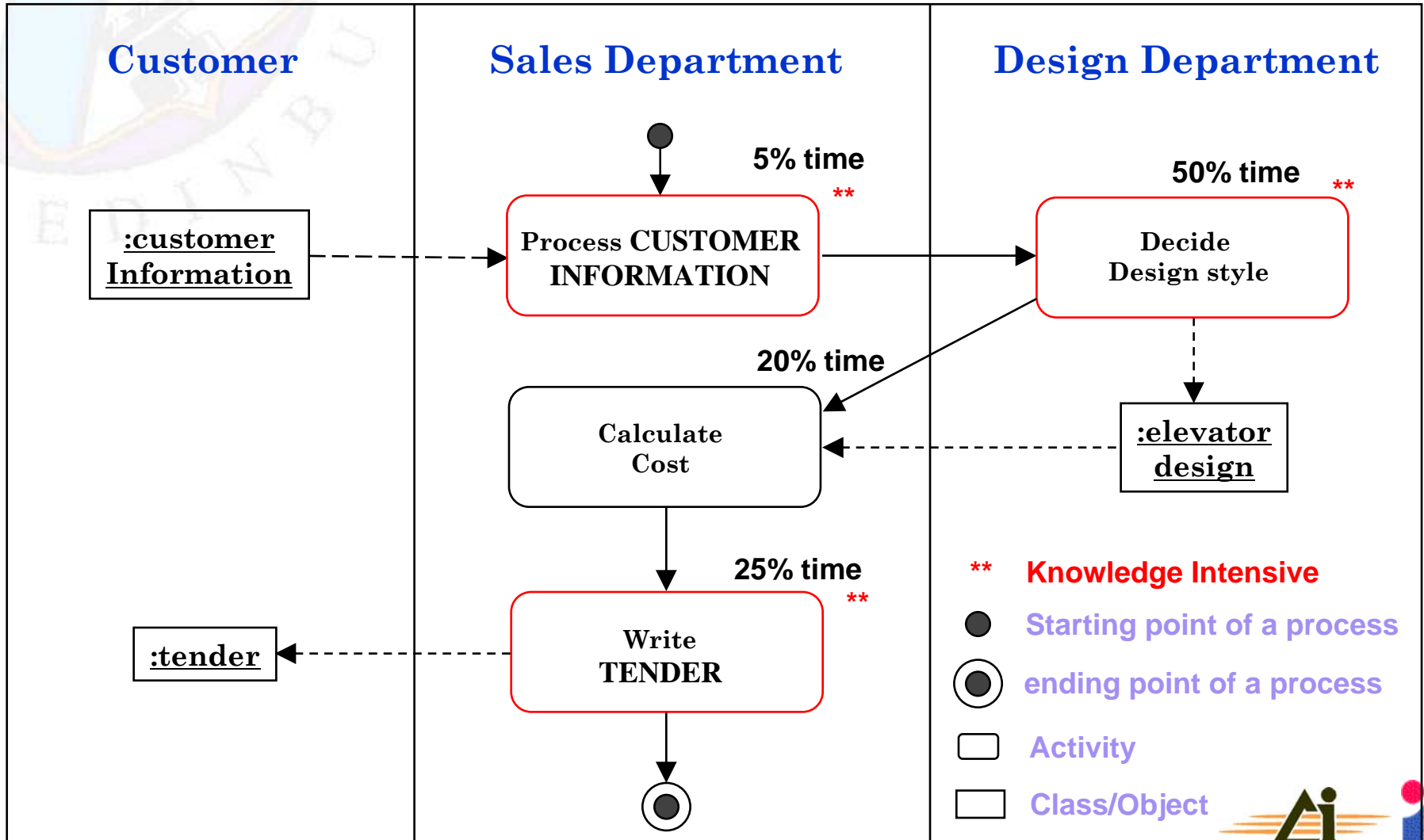
- **Business Feasibility testing:**

1. What are the expected **business benefits** for the organisation?
 - inc. tangible and intangible, short and long-short term business benefits
2. How large is the expected **added value**?
3. What are the expected **costs** for solution? (**Cost-effectiveness analysis**)
4. How does it compare with alternative solutions?
5. Are organizational changes required?
6. What are the economic and business risks?

Given a Business Process Model for Submitting a Tender for an Elevator



Analyse Knowledge Intensity and Cost-effectiveness



Feasibility Decision Document

WS OM-5



- **Technical feasibility testing:**
 1. **How complex is the solution, is it readily available?**
 2. **Any critical aspects required?**
 - Timing, quality, resources?
 - How to achieve goals or go about limitations?
 3. **Are success measures clear?**
 - What are the tests for validity, quality and satisfactory performance?
 4. **How complex are the interactions with users?**
 5. **How complex are the interactions with other software?**
 6. **Any technological risk?**
 - Limitations, fading out of technologies, etc...

Feasibility Decision Document

WS OM-5



- **Project feasibility testing:** based on OM-3 and OM-4, given each problem and solution pair:
 1. Are there adequate **commitments** from actors, stakeholders ?
 2. Are the needed **resources** available? (time, budget, equipments, staffing)
 3. Are **knowledge** and required **competence** available? (If lacking, can a knowledge system provide similar competence?)
 4. Are the **expectations** realistic?
 5. Are project **organization** and (internal/external) **communication** adequate?
 6. Any other (**foreseeable**) project risks? E.g. change of personnel, organisational strategies, technical or business environment?



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- **Proposed actions:**

1. **Focus:**

- What is the recommended focus in the identified problem-opportunity area?

2. **Identify Target solution.**

3. **Identify expected results, costs and benefits.**

4. **What are the project actions?**

5. **Risks:** if internal/external conditions are changed, when does one need to re-consider and alter the project?

Learning Objectives and Exercises



- Gain an **overview** of the different types of knowledge modelling methods and how they may be used together;
- Understand the relationships between the different models/worksheets: e.g. what worksheets are used to produce worksheets of next stages? What models are used to support each worksheet?
- Understand what is the overall process of the CommonKADS Organisational Context Analysis, i.e. one that involves all worksheets?
- Able to **select** the appropriate modelling method(s) given a problem; can **construct** correct models given a domain; can carry out **reasoning** on models based on **lightweight logical methods**;
- Can independently review relevant literature and extend one's knowledge.

Main References

- [1] (Chapter 3, 4 and some of 10) Knowledge Engineering and Management: The CommonKADS Methodology. Guus Schreiber, Robert de Hoog, Hans Akkermans, Anjo Anjewierden, Nigel Shadbolt, Walter Van de Velde.
http://www.amazon.co.uk/exec/obidos/ASIN/0262193000/qid=1091803195/sr=1-1/ref=sr_1_2_1/026-4023131-7023627.
- [2] Alun Preece, Alan Flett, Derek Sleeman, David Curry, Nigel Meany and Phil Perry. Better knowledge management through knowledge engineering:
<http://www.csd.abdn.ac.uk/~apreece/research/download/ieeeis2001.pdf>
- [5] The IDEF3 Process description language: <http://www.idef.com/>, pp 21-pp 51 (process schematics only, not including object schematics.)
- [16] AIFB: CommonKADS Methodology. <http://www.aifb.uni-karlsruhe.de/Lehrangebot/Sommer2001/Wissensmanagement/download/folien/kap2.kads-vCS.pdf>

Other references (not examinable)



- [3] Jurgen Angele, Dieter Fensel and R. Studer. What could the knowledge engineer learn from the software engineer? In D. Ehrenberg u.a. (Hrsg.), *Wissensbasierte Systeme in der Betriebswirtschaft* Reihe betriebliche Informations- und Kommunikationssysteme, Nr. 15, Erich Schmidt Verlag, Berlin, 1990. (see notes)
- [9a] Pamela Zave and Michael Jackson, Four Dark Corners of Requirements Engineering, *ACM Transactions on Software Engineering and Methodology*, 6 (1), Jan 1997, pp. 1-30.