Rapid Enterprise Design

DEMO®

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History of Data, Information systems and Enterprise Engineering

- 1st wave (before 1970): ***Data Systems Engineering***

militaire project ENIAC, de bouw van de eerste elektronische computer. revolutionaire Von Neumann-architectuur, met CPU en werkgeheugen

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The 1970 revolution

•In the sixties, BÖrje Langefors proposed the distinction between the *infological* view and the *datalogical* view.

•Langefors' separation of *content* and *form* created a new field - *information systems engineering* - and made that *intellectually manageable*.

• Edsgar Dijkstra separation of design and implementation

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The second wave (1970-2005)

- 1st wave: ***Data Systems Engineering (datalogical view)***
- 2nd wave: ***Information Systems Engineering (infological view)***

Go-to statement considered harmful in *Commun. ACM 11 (1968), 3: 147–148.*

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Current challenges

- Rapid changes in the environment, global competitors and new technologies
- Growing complexity of business processes
- Time to market of new products: less then 9 months
- Average duration of ICT projects: 2 years

- How to bring your ICT under control?
- How to become an agile enterprise?

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What is needed to achieve this?

- Leadership
- high-quality technical expertise based on the latest scientific developments in the field of
  - designing information systems and organisations
  - system development and automation of code development
- If you genuinely wish to say goodbye to ever increasing costs and decreasing flexibility in your ICT systems, then you also have to manage your ICT department and ICT projects differently.
- Half-measures do not offer any results here. You will have to invest in your staff, because you also need expertise if you wish to record results and develop a manageable ICT platform.

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The current revolution

- Like Langefors articulated the concern for the *content* of information, on top of its *form* ...

- ... we need to articulate the concern for the *intention* of information on top of its *content*, and develop the *ontological view* on enterprise.

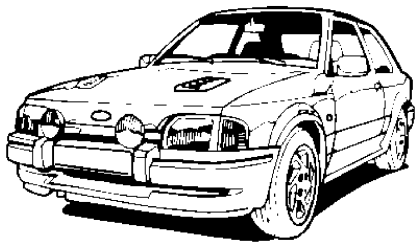
- This separation of intention (pragmatics) and content (semantics) creates a new field - *enterprise engineering* -.

The third wave

- 1st wave: ***Data Systems Engineering (datalogical view on enterprise)***
- 2nd wave: ***Information Systems Engineering (infological view on enterprise)***
- 3rd wave: ***Enterprise Engineering (ontological 'white-box' view on enterprise)***

The black-box model

the driver's perspective

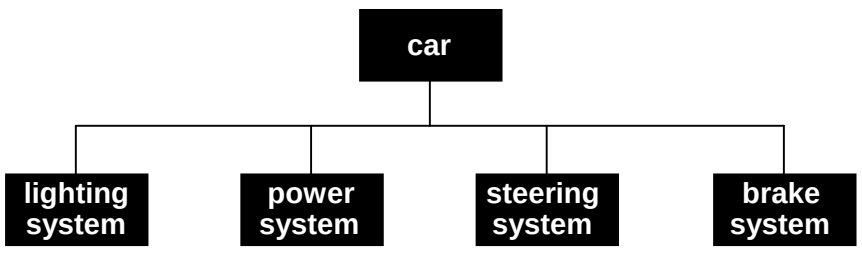


function
relationship between
input and output

behavior
the manifestation of the
function in the course of time

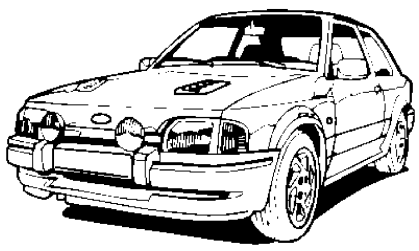
functional decomposition

is subjective !



The white-box model

the mechanic's perspective

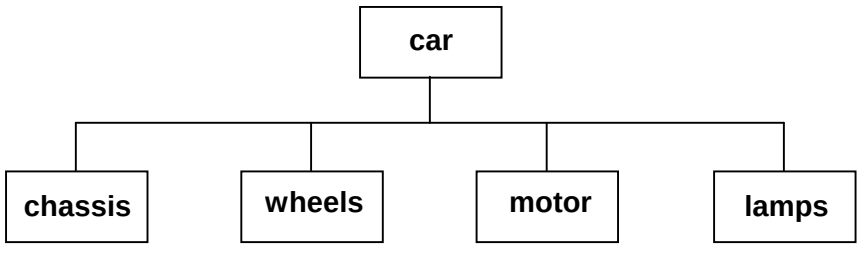


construction
the elements and their
interaction relationships

operation
the manifestation of the
construction in the course of time

constructional composition

is objective !



Theoretical definitions

- By the *business* of an enterprise is understood the *function* (behavioural) perspective on the enterprise - the delivered products and services etc.

- By the *organization* of an enterprise is understood the *construction* (engineering) perspective on the enterprise - the actors that bring about the products and services in cooperation.

- Three *concepts to reduce complexity:*
  - *Transaction, Abstraction and System Thinking*

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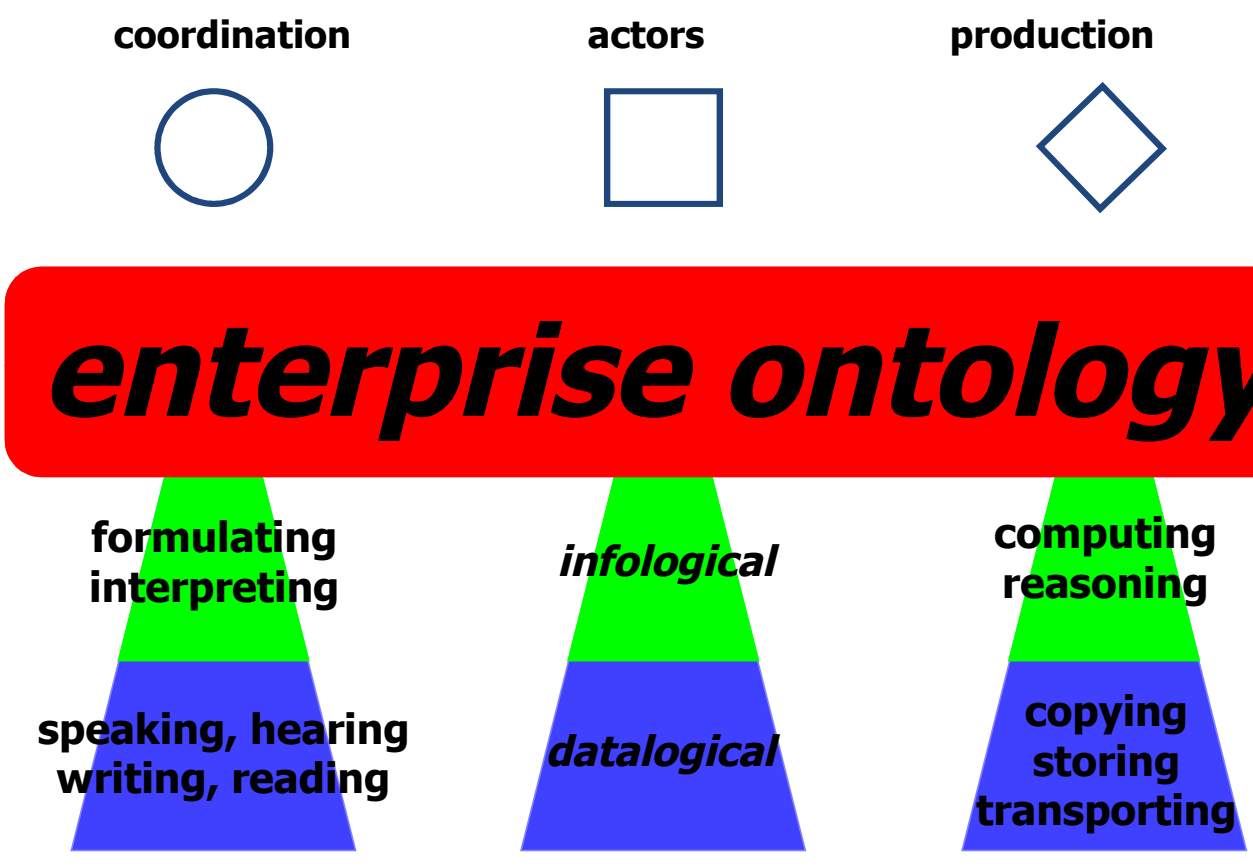
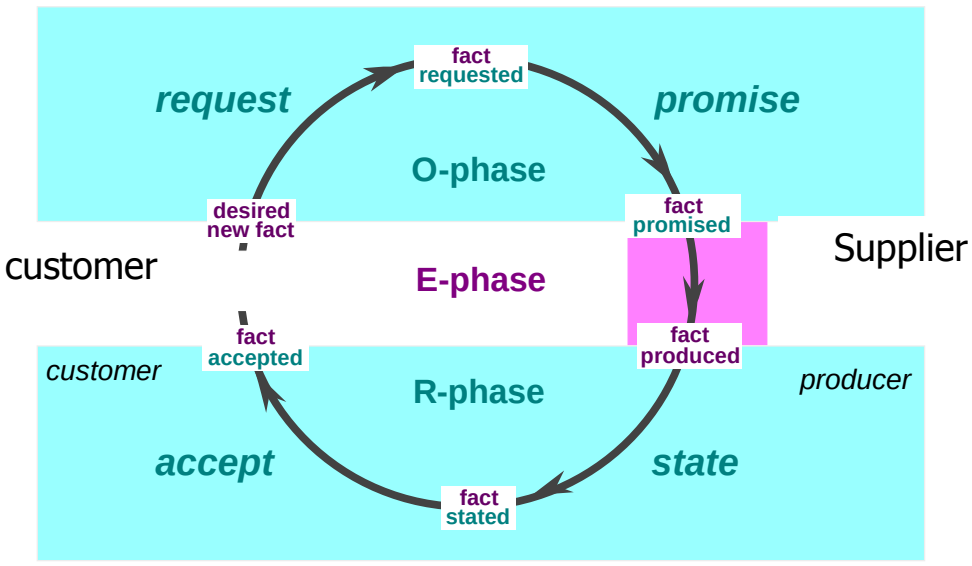
EO - practical definition



The generic transaction pattern



The transaction pattern in its implementation, may be scattered all over the place!

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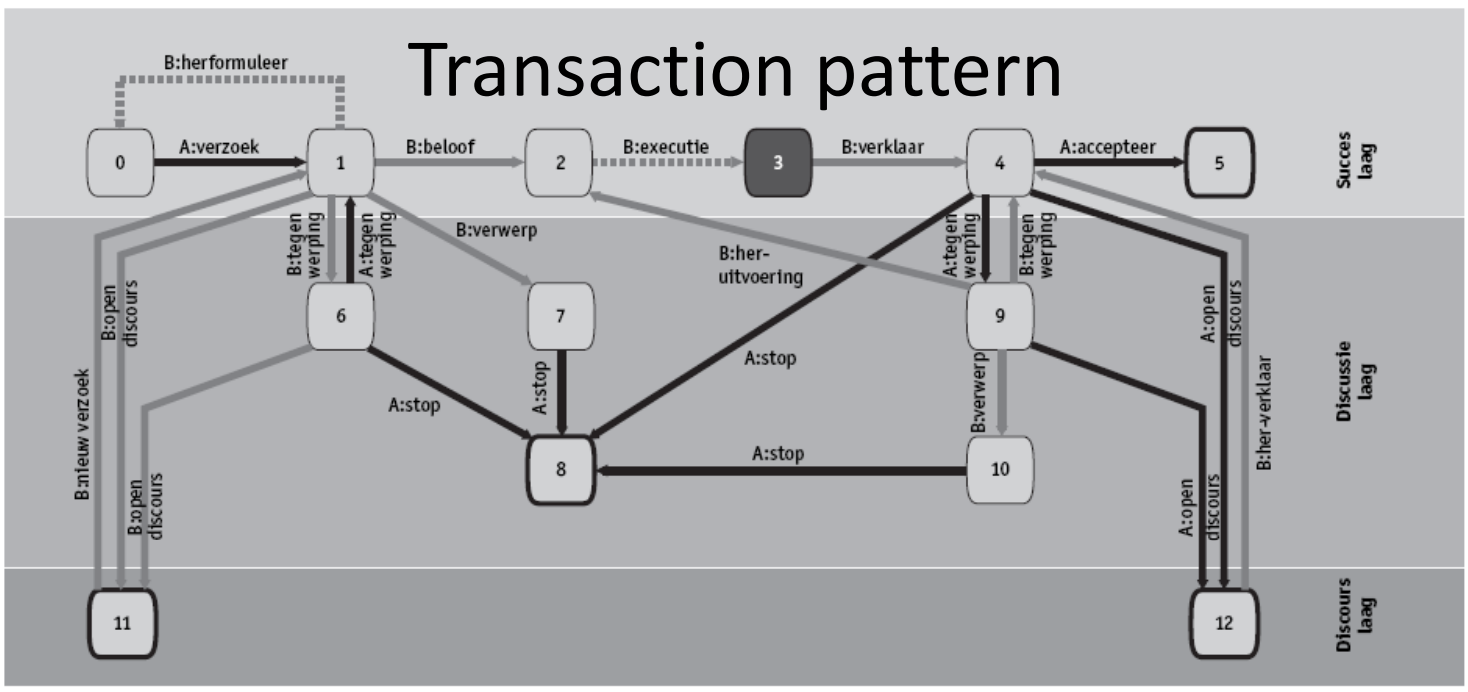


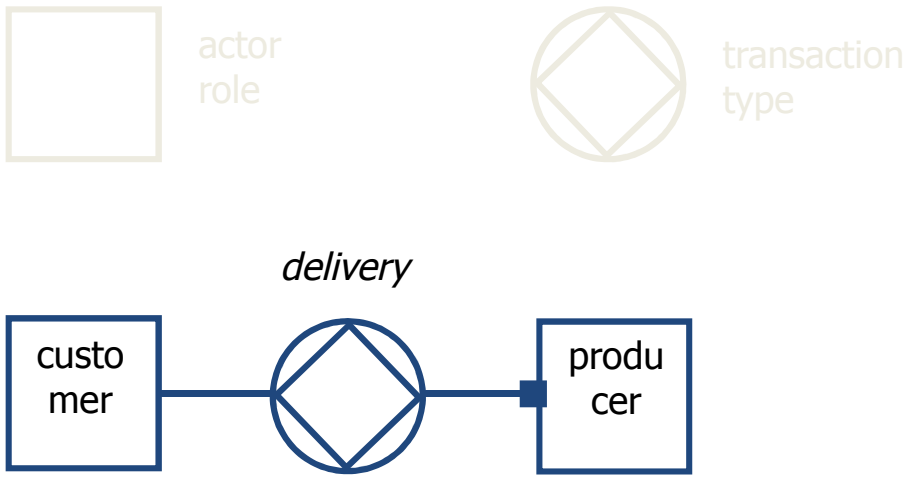
Figuur 1.10 Het transactieprocesmodel (Van Reijswoud, 1996)

omvang en de aard van de uit te voeren actie en het resultaat bediscussiëren. Indien partijen het niet eens kunnen worden kan dit leiden tot het niet succesvol beëindigen van een transactie. Een transactieproces kan ook belanden in de discours-laag. In deze laag worden de achtergrondcondities waartegen alle transacties van een bepaald soort worden uitgevoerd ter discussie gesteld en zonodig veranderd. Discourses tussen partijen vormen veelvuldig het onderwerp van managementmeetings. In het discours spelen gebruiken, juridische kaders, zoals raamovereenkomsten en wetgeving een belangrijke rol. Wanneer de partijen in een onderling discours er niet in slagen om de transactie te

donkere pijlen geven de mogelijke communicatieve acties van de initiator weer en de lichte pijlen de mogelijke communicatieve acties van de executor. Naast de pijlen staat de intentie van de actie aangegeven. De drie lagen waarop kan worden gecommuniceerd door de actoren zijn door de drie 'achtergrondvlakken' uitgebeeld.

In de DEMO-methodiek worden een aantal aspectmodellen geïntroduceerd om de werking van organisaties te visualiseren. De modellen hebben tot doel om het bedrijfsmodel op het essentiële niveau te presenteren. De modellen geven verschillende perspectieven van het

The building blocks



every actor role is *producer* of exactly *one* transaction type and may be *customer* of *several* transaction types

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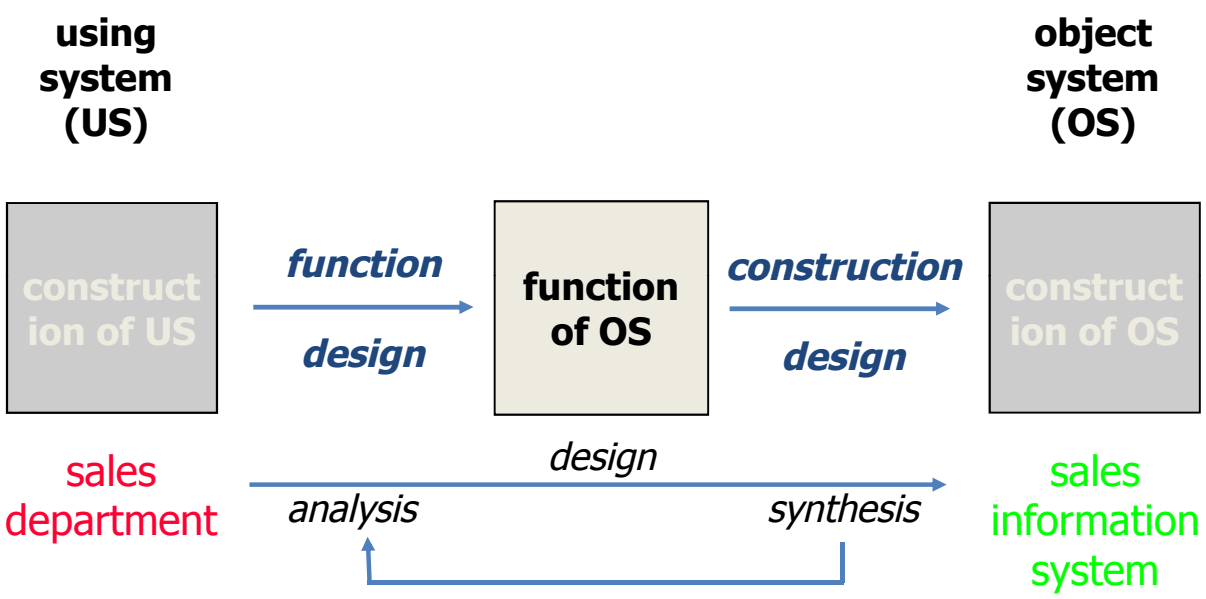
The System Design Process



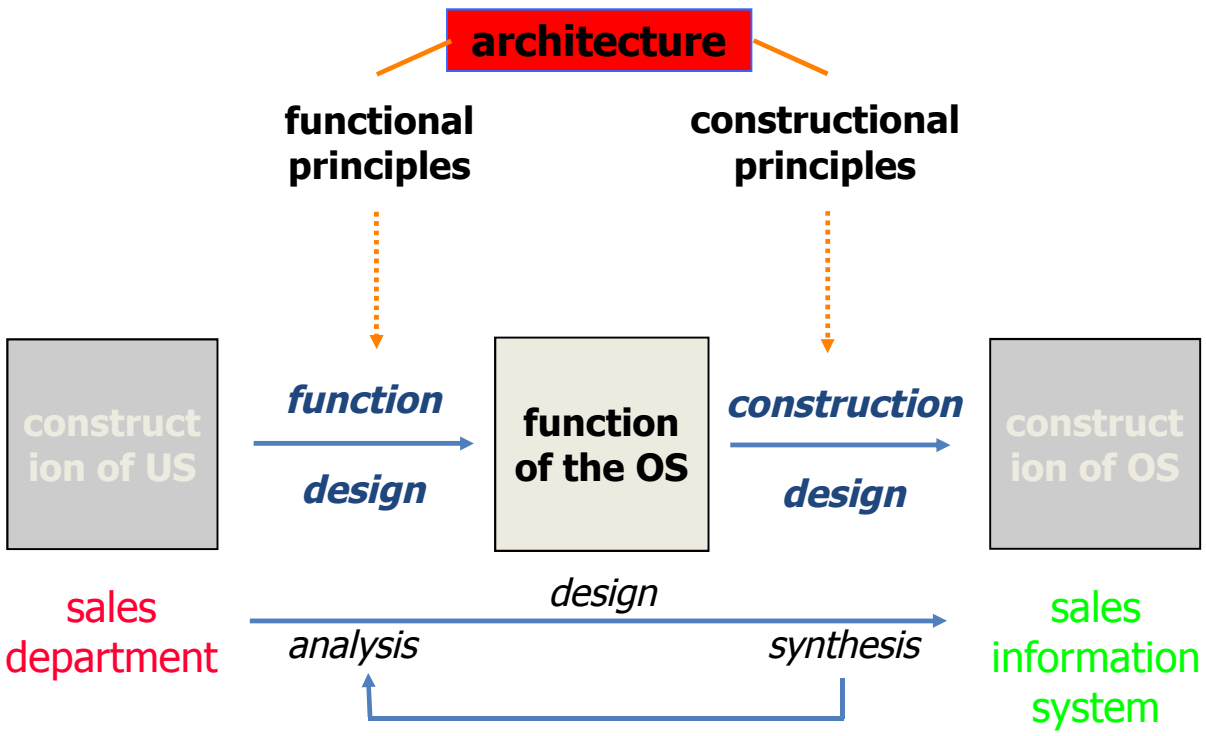
Architecture

- Conceptually, *architecture* is the *normative restriction of design freedom* in system development.
- Operationally, architecture is a consistent and coherent set of *design principles* that address all *general requirements* (= requirements that hold for classes of systems).
- Note that architecture is not equal to design. It is correct though to say that one may recognize from a design (or from the concrete system) the applied architecture.

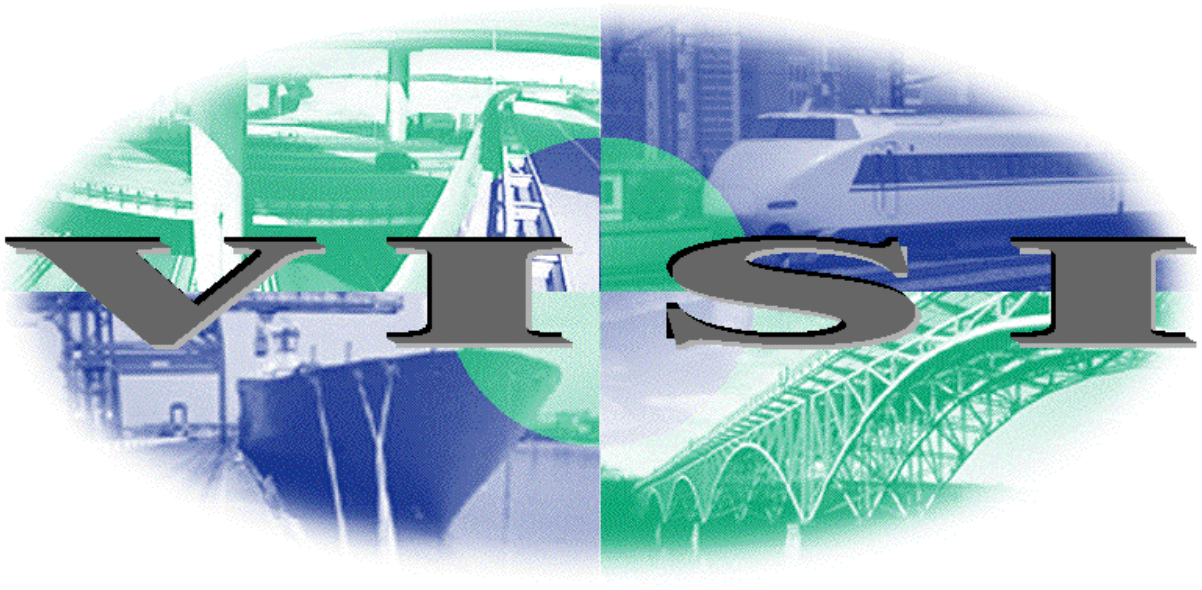
Requirements and Principles

General Requirement	Design Principle	
high customer loyalty	make products and services customizable	Functional
transparent customer information	make customer info available at all customer access points	
transparent customer information	transform all data to XML	Constructional
multi-channel access	accept customer transactions through every channel	

Architecture and System Design



Rapid Enterprise Design: A Case study in Business & ICT architecture



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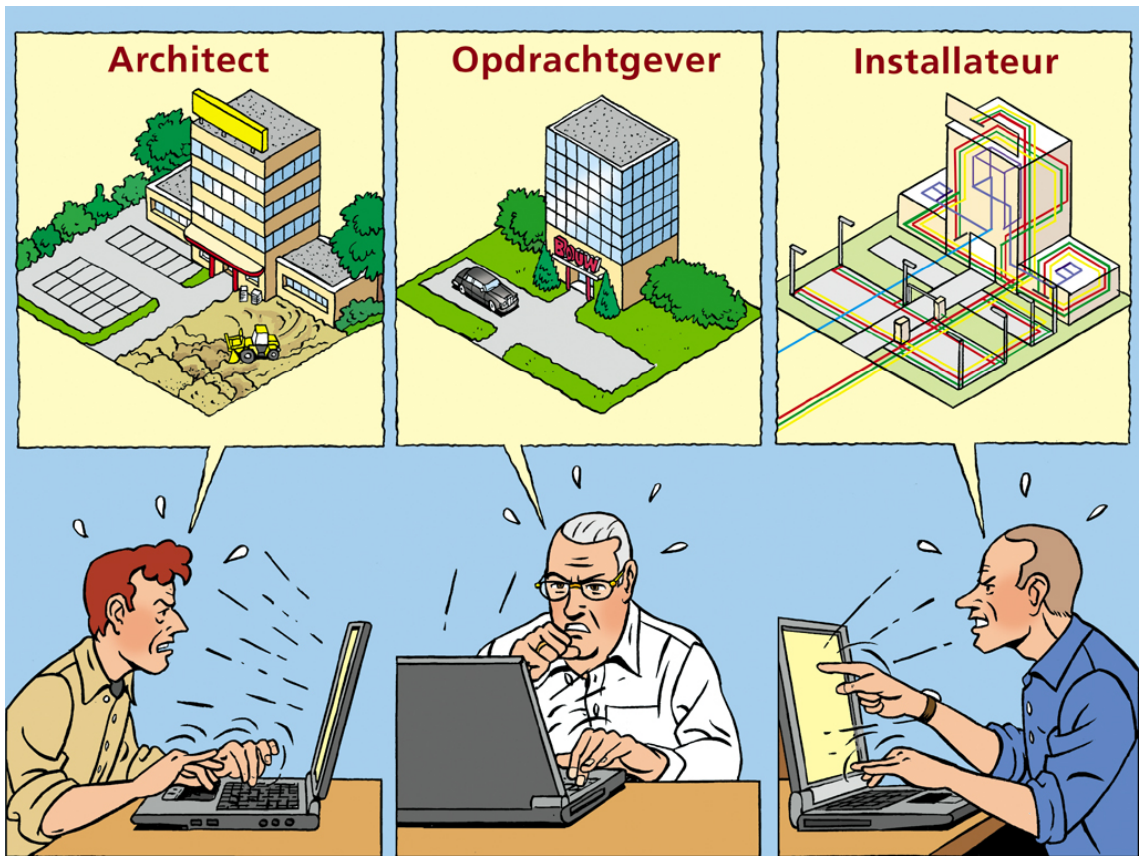
Who needs Enterprise Ontology?

- The building industry is characterised by varying collaborations between different parties.
- Good communication between parties is of the utmost importance for efficiency. Prompt confirmation of alterations by all building parties or the prompt availability of the latest version of a detailed building plan have an immense influence on the quality, completion time and cost of a project.
- Project partners experience lack of communication as a bottleneck in building practices.
- At the beginning of 1998, a number of organisations from the building industry came up with a plan to formulate agreements about communication between partners in construction projects.
- This plan formed the beginning of what is now known as ‘VISI’ the Dutch acronym for ‘Terms & Conditions for the Implementation of Standardisation in ICT’ and



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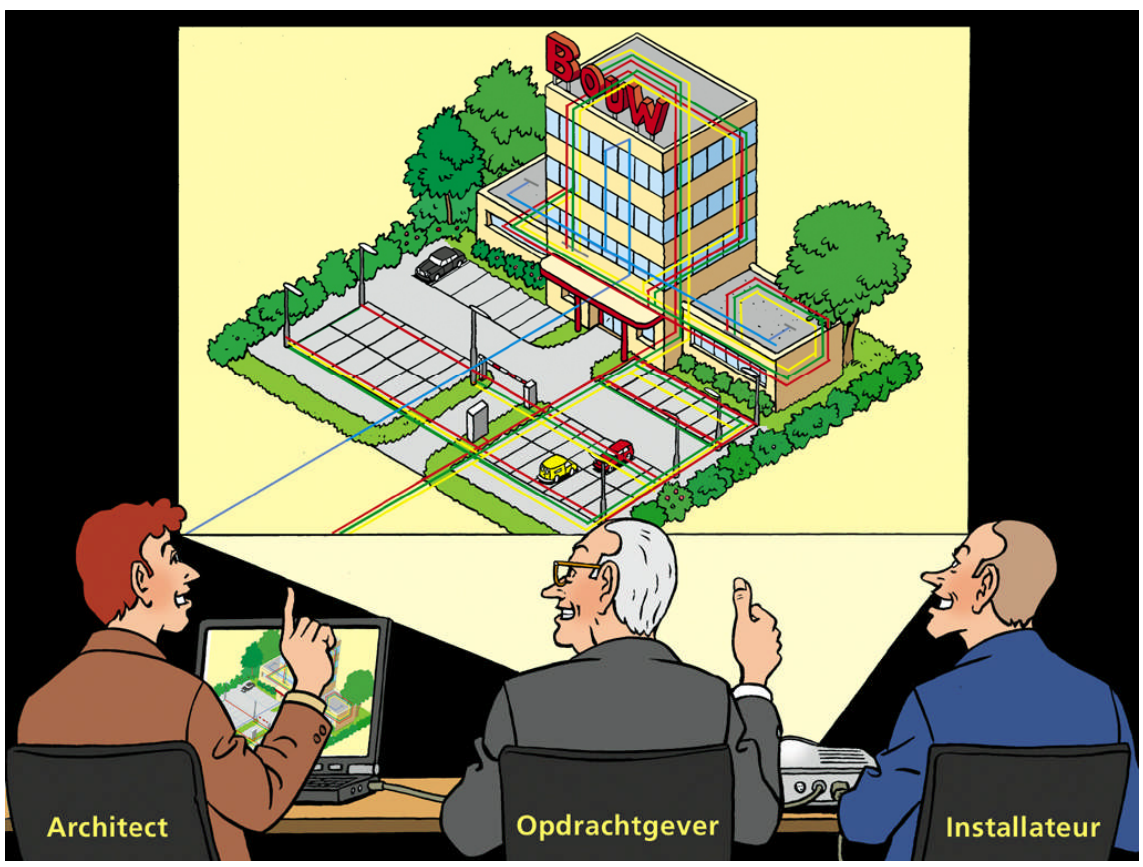
Ambition



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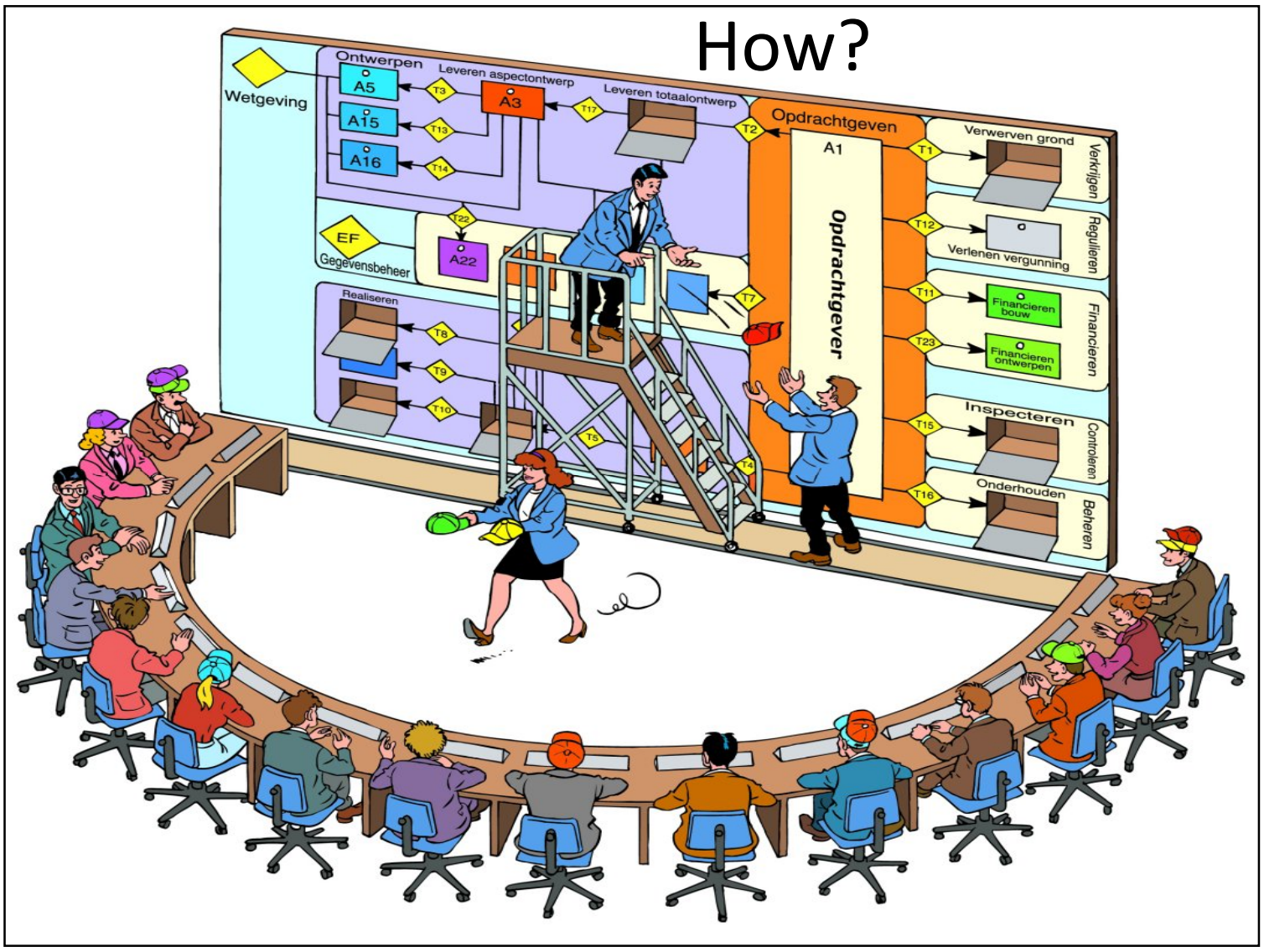
Who needs Enterprise Ontology?

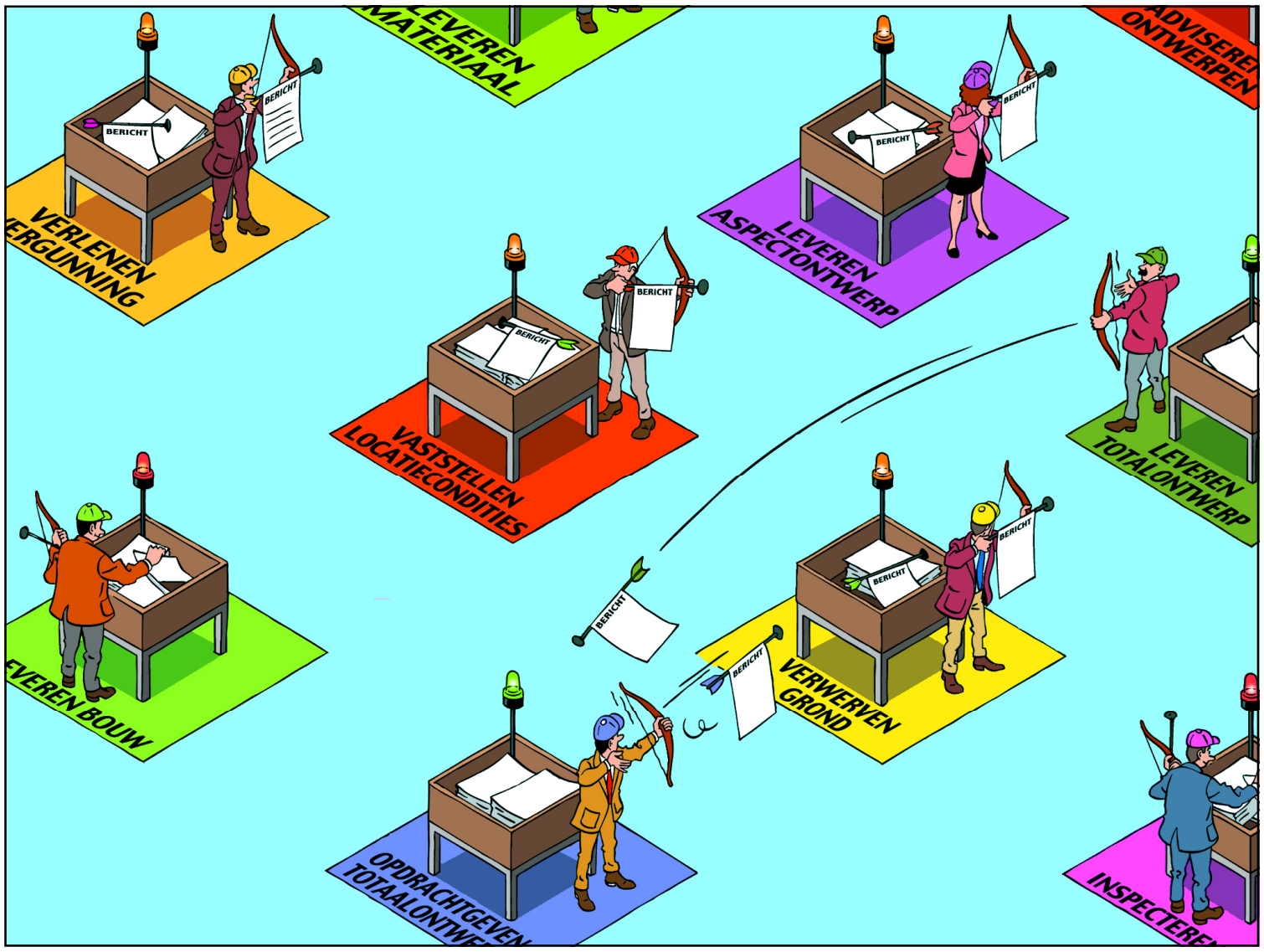
- VISI has the following objectives:

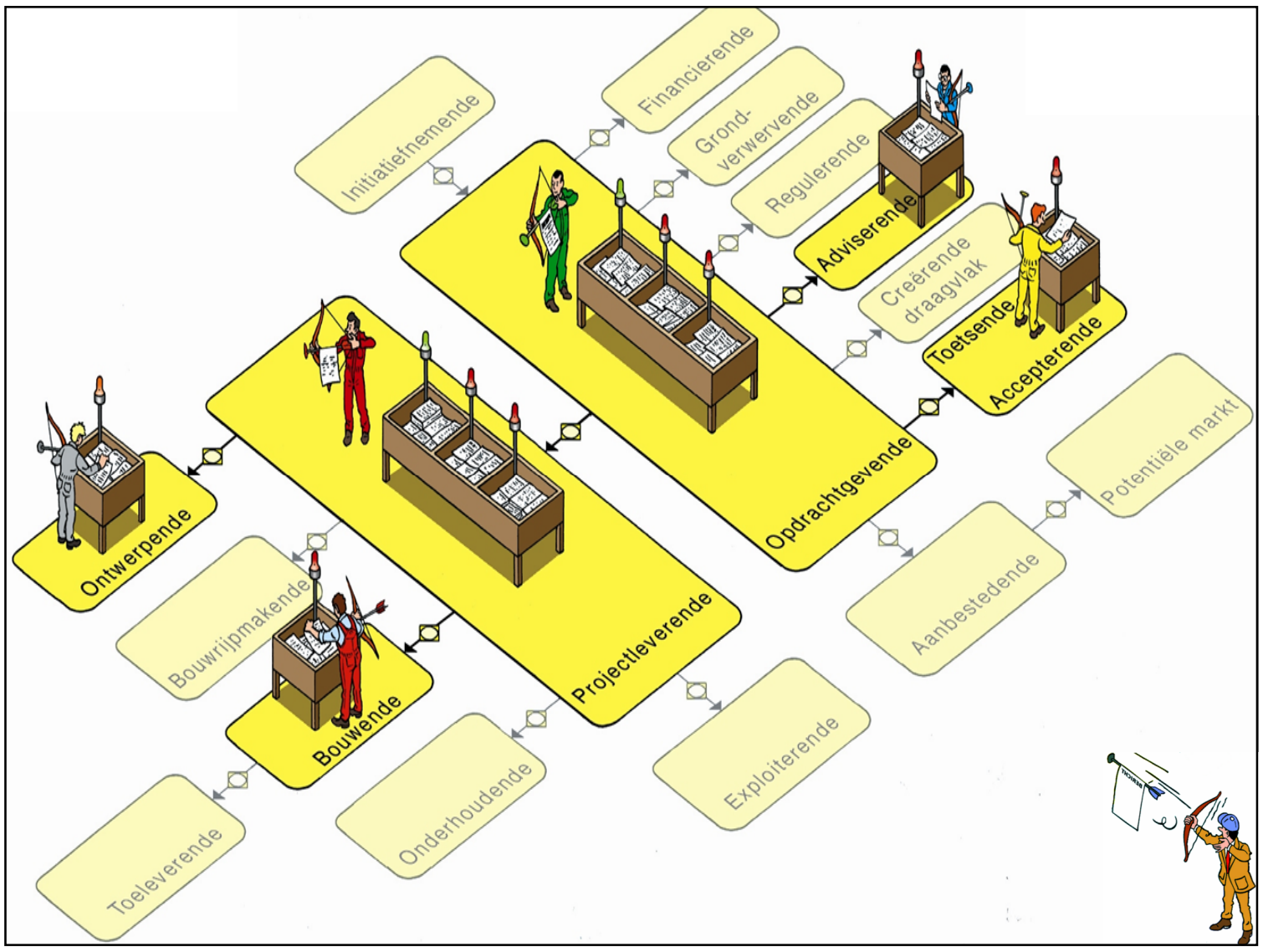
- parties have access to generally applicable agreements concerning the content and design of communication;
- on the basis of these agreements, parties are able to enter into joint ventures more quickly and flexibly and to establish communication structures;
- Parties are capable of being more accountable to the outside world and of increasing the quality of their product.
- These agreements enable a better use of resources in information and communication technology (ICT).

- Simply put, VISI's objective is to create unequivocal agreements concerning the (digital) communication on the interfaces between parties in building projects.

How?




BERICHT
VERLENEN VERGUNNING
LEVEREN MATERIAAL
LEVEREN ASPECTONTWERP
ADVISEREN ONTWERPEN
VASTSTELLEN LOCATIECONDITIES
LEVEREN TOTAALONTWERP
LEVEREN BOUW
VERWERVEN GROND
OPDRACHTGEVEN TOTAALONTWERP
INSPECTEREN


Initiatiefnemende
Financierende
Grond-verwervende
Regulerende
Adviserende
Creërende draagvlak
Toetsende
Accepterende
Potentiële markt
Opdrachtgevende
Aanbestedende
Ontwerpende
Bouwrijpmakende
Projectleverende
Bouwende
Exploiterende
Onderhoudende
Toeleverende

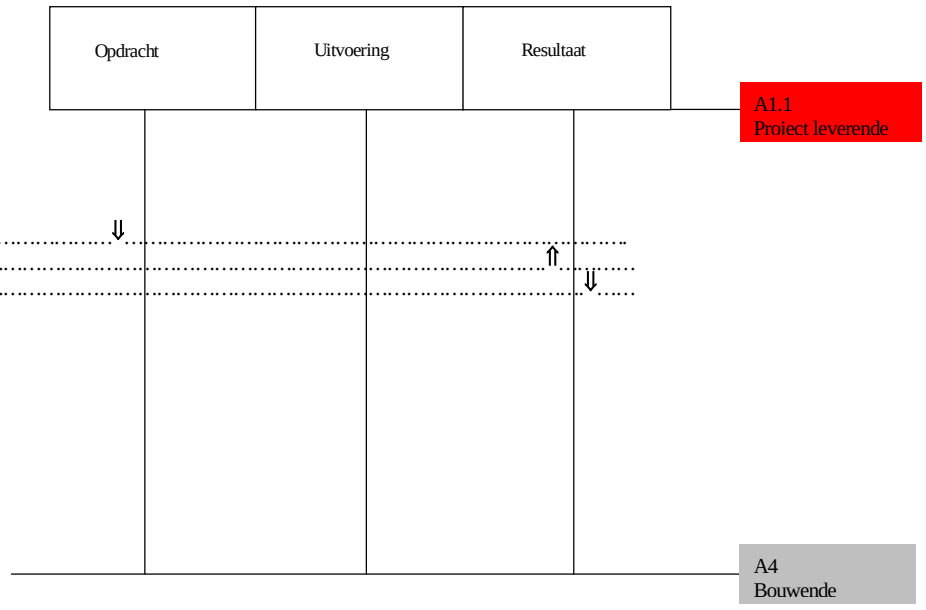
Transaction Framework for business communication

TRANSACTIE T004: REALISERING WERK

DOEL: DE REALISATIE VAN HET IN HET UITGEWERKTE (UITVOERINGSGEREED) ONTWERP VASTGELEGDE BOUWWERK

RESULTAAT: WERK

Deeltransacties:



Berichten:

B01 Opdracht
B02 Bevestiging levering
B03 Prestatieverklaring

Some examples

Project: Argos Client: Rotterdam Public Works Department
Project: Dredging work Client: Rotterdam Public Works Department
Project: Hartelhaven Client: Rotterdam Public Works Department
Project: Weena Tunnel Client: Rotterdam Public Works Department
Project: Ridderkerk sluice gate Client: Directorate-General for Public Works and Water Management – Province of Zuid Holland
Project: N57 Client: Directorate-General for Public Works and Water Management – Province of Zeeland
Project: Stille Veerkade Client: Municipality of The Hague
Project: Museumpark Multi-storey car park Client: Rotterdam Public Works Department
Project: Doubling of the railway on the Hanzelijn; Vleuten-Amsterdam Rijnkanaal Client: ProRail
Project: Vinex location Nesselande Client: Rotterdam Public Works Department
Project: Mathenesselaan Client: Rotterdam Public Works Department
Project: Lange Hilleweg Client: Rotterdam Public Works Department
Project: PA/E sewer system Client: Municipality of Breda
Project: Randstad Rail – Rotterdam Central Station Client: Rotterdam Public Works Department
Project: N382 Client: Province of Drenthe
Project: NOUW 1&2 Client: Municipality of Utrecht, Urban Management Office
Project: Europalaan Client: Municipality of Utrecht
Project: Harderwijk ring road Client: Province of Gelderland
Project: Canals Client: Rotterdam Public Works Department

Who needs Enterprise Ontology?

- **Managers** need to understand the ontological essence of their enterprise because they are held accountable.
- **Developers** need to understand the organization independent of its implementation.
- **Employees** - only the ontology of the organization shows deeply the role(s) they fulfil.
- **Users** - why should the operation of an enterprise be fully opaque to its users? Enterprise Ontology would provide the users the transparency they deserve!

Conclusions

- *Enterprises* are *designed* and *engineered* social systems (of which the elements are *human beings*).
- The presented notions of *ontology* and *architecture* are *indispensable*.
- *Enterprise Engineering* is a *singular discipline* and *Enterprise Engineer* is a *singular profession*.
- The third wave is inescapable!

So, what are you going to do?

Repeat the mistakes of the second wave?