#### Rethinking the Integrative Foundation of Enterprises -The Activity Domain Theory

Lars Taxén Linköping University <u>www.neana.se</u>

lars.taxen@telia.com

## My background





34 yrs

> 10 yrs Consulting

Methods, processes, IT, Information systems project management



>15 yrs Coordination & Integration PhD (2003), Associate prof. (2007) PREMIER REFERENCE SOURCE

Using Activity Domain Theory for Managing Complex Systems







#### Outline

- My professional context
- Some existing integrational approaches
- The Activity Domain
- Integrating product development
- The System Anatomy
- The Enterprise Anatomy
- IT system implementation
- Some takeaways

# My professional context



#### **Enterprise Integration!**



# Some existing integrational approaches

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#### **BPMN 2.0 - Business Process Model and Notation**

http://bpmb.de/poster Conversations Choreographies Activities Participant A omphy Participant A A Communication defines a set of Intermediate Ind 0.005 A Task is a unit of work, the job to be performed. When marked with a + symbol it indicates a Sub-Process, an activity that can logically related message exchanges. When marked with a + symbol it ..... Task indicates a Sub-Conversation, a compound conversation element. be refined. A Conversation Link connects A Transaction is a set of activities that logically Participants beiong together; it might fallow a specified Transaction transaction protocol. 00 An Event Sub-Process is placed into a Pro-00000 Sub-Proness, It is activated when its sta-Event gets triggered and can interrupt the Sub-Process process context or run in parallel (n interrupting) depending on the star 000 A Call Activity is a wrapper for a  $\otimes \otimes \otimes \otimes$ Call Activity Sub-Process or Task that is reusprocess. 01 ) Activity Markers Task Types Markers indicate execution Types specify the  $\odot$ 5) behavior of activities: the action to + Sub-Process Marker  $\otimes$ @O Loop Marker 3  $\otimes$ Faraliel W Marker Sequential MJ Marker ٦ € € Ad Hoc Marker Compensation Marker  $\otimes$  $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$ Sequence Flow Default Flow 0 defines the execution is the default to be chosen order of activities, other parall evoluate to Gateways Exclusive Gateway When splitting, it routes the A Data Input is an external input for the one of the outgoing branches. W entire process. It can be read by an activity.  $\Diamond$ one incoming branch to complete before triggerin Dut-pert outgoing flow. A Data Output is a variable available as result of the entire process. Event-based Gateway is always followed by catching events or receive task: Sequence flow is routed to the subsequent event/task Ô A Data Object represents information flowing which happens first. through the process, such as business documents, e-mails, or letters, **Panallel Geterway** When used to split the sequence flow, all outgoing branches are activated simultaneously. When merging Swimlanes parallel branches it waits for all incoming branches to A Collection Data Object represents a ss camunda complete before triggering the outgoing flow. Hasso Platiner institut collection of information, e.g., a list of order items. ш Inclusive Gateway When solitting, one or more Exclusive Event-based Galeway Task Ø ø (Instantiate) s. inubit branches are activated. All A Data Store is a place where the process can Each occurrence of a subsequent 2000 C read or write data, e.g., a database or a filing active incoming branches must event starts a new process improfessor inside Pools (Participants) and Lanes **Hessage Flow** The order of message Data Store cabinet. It persists beyond the lifetime of the 8 BPM BERLIN complete before merging. instance. represent, responsibilities for symbolizes information exchanges can be process instance. activities in a process. A pool flow across organizational specified by combining Parallel Event-based Gateway SIGNAVIO **Complex Gateway** ۲ or a lane can be an boundaries, Hessage flow message flow and A Message is used to depict the contents of a Complex months and (Instantiate)  $\sim$ organization, a role, or a can be attached to pools. sequence flow. branching behavior that is not The occurrence of all subsequent communication between two Participants. system. Lanes subdivide pools activities, or message captured by other gateways. events starts a new process or other lanes hierarchically. ovents. instance.



#### Zachman EA

	WHAT	ном	WHERE	wнo	WHEN	WHY	
	A	В	с	D	E	F	
SCOPE 1	List of things important to business	List of processes the business performs	List of locations which the business operates	List of organisations / agents that are important	List of significant events	List of business goals / strategies	Planner
BUSINESS MODEL 2	Semantic Wodel	Business Process Model	Business Logistics Syst.	Work Flow Model	Master Schedule	Business Plan	Owner
SYSTEM MODEL 3	Logical Data Model	Application A chitecture	Distributed System Architecture	Human Interface Architecture	Processing Structure	Business Rule Model	Designer
TECHNOLOGY 4	Phy <del>sical Ba</del> ta Model	System Design	Technology Architecture	Presentation Architecture	Control Structure	Rule Design	Builder
DETAILED 5	Data Definition	Program	Network Architecture	Security Architecture	Timing Definition	Rule Specification	Programmer
FUNCTIONING ENTERPRISE 6	Usable Data	Working Function	Usable Network	Functioning Organization	Implemented Schedule	Working Strategy	User
	DATA	FUNCTION	NETWORK	PEOPLE	TIME	MOTIVATION	

#### **A Logical Data Model in practice...**



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#### **Another Logical Data model ...**



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#### What's the difference?







#### ERICSSON 📁







Defined by a consultant "in the chamber"



Existing integrating approaches not particularly successful

## **The Activity Domain**

Back to basics
What does it take to integrate an activity?

#### **The Activity Domain**

#### Focus on a target, motivated by a need

Frame a context of relevance

**Orient ourselves in space** 

Conceive of actions leading to the goal

Learn how to act relevantly Change focus

#### **Activity Modalities**

- objectivation

- contextualization

- spatialization

- temporalization

- stabilization

- transition

Enact means Align individual meanings

#### **Cognitive** – Neural, inner realm

#### Social, external realm





The Activity Domain is regarded as the **integrative foundation** for all human activities, including organizational ones

Why?

Because we still employ the same biological abilities in all situations we encounter in every-day life, including organizations



#### The structure of the Activity Domain



# Integrating product development

#### **Management based on Activity Domains**



## **Early phases?**



 $\frown$ 

"The most important thing when working with complex systems is to *manage dependencies*"

Jack Järkvik (1990s)

The System Anatomy
- an integrating image in early phases





## **Ť †**







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## An anatomy for a processor (objectivation)



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## Activity domains (contextualization)



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#### **Integration plan**



## Integration plan (temporalization)



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#### **Target trajectory through Activity Domains**



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# **The Enterprise Anatomy**

#### The **ERICSSON** Activity Domain



#### **ERICSSON Business process**



## **ERICSSON** Business process (temporalization)



### **ERICSSON** Activity Domains as Business Capabilities



#### **Define activity domains**

- Activity Domains
  - Target

- Motive



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#### **Define the enterprise anatomy**



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#### **Transitions**

- Activity Domains
  - Target
  - Motive
- Dependencies between domains
- Transitions between domains
  - Mapping rules, translations, interfaces ....



## The internals of each domain

- Activity Domains
  - Target
  - Motive
- Dependencies between domains
- Transitions between domains
  - Mapping rules, translations, interfaces ...
- Activity modalities for each domain
  - Information Model relevant things
    - Process Models ordered actions
  - Business rules valid actions
  - PLM, ERP means
  - Enacting means
  - Aligning individual meanings



ERICSSON

#### **ERICSSON** Activity Domain process model (temporalization)



#### **ERICSSON** Activity Domain information model (spatialization)



# **IT system implementation**

#### **Enterprise systems in the anatomy**



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#### **PLM system anatomy**



# Some takeaways



#### **Context** is King!



#### **Tones!**



Tons!

#### An integrating visualization of the EA

One image where business and IT are visualized in a common notation: dependencies between capabilities

- Enterprise anatomy
- IT system anatomy
- Infrastructure anatomy



#### **A core Enterprise Architecture**



Enterprise architecture, the science of aligning business needs and IT solutions

**Roger Sessions** 

# **The Activity Domain Theory**

- An alternative approach to EA
- Great potential
- Work in progress!

## The end is near ...



lars.taxen@telia.com +46 73 09 77864