



Context Modelling

- Group 1 of 2

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Proposed Structure of the brainstorming

- Abstract model: design
- Computational model: software design
- Conceptual architecture models
- Implementational architectures and tooling
(in red : issues that have been discussed)



Point of departure

- Reuse work done in Grenoble about context modelling



Context: Abstract Model

Contentious issue:

Should context be grounded on the user's task

Reminder:

Task =(goal, procedure/plan to reach the goal)

A hierarchical decomposition + temporal relationships (seq, //, interleaving, etc.)



Context : Abstract Model (Grenoble)

- User U, Task T, Time t,
- $\text{Context}(U, T, t) = \text{Cumul}(\text{Situation}(U, T, t_0) \dots \text{Situation}(U, T, t))$
- t_0 = time of reference

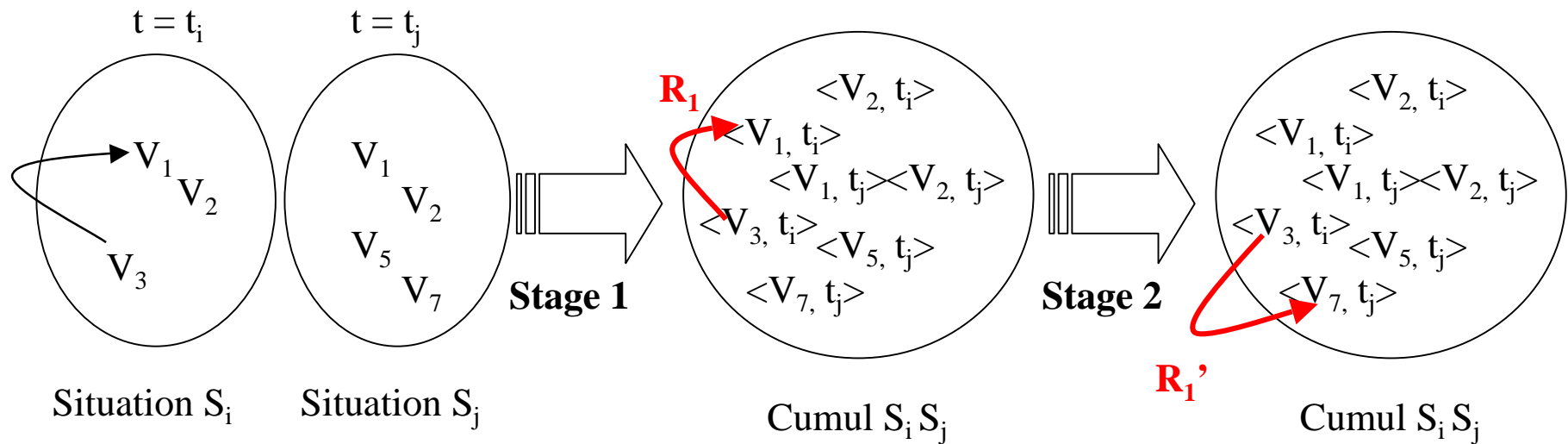
- $\text{Situation}(U, T, t)$ = Set of values of peripheral variables and relation between those variables.
- Peripheral variable = Entity *not central* to the task T at time t but likely to influence it

- Granularity of time and task is left opened



Context : Abstract Model

- Context(U,T,t) = *Cumul*(Situation(U,T,t₀) ... Situation (U,T,t))



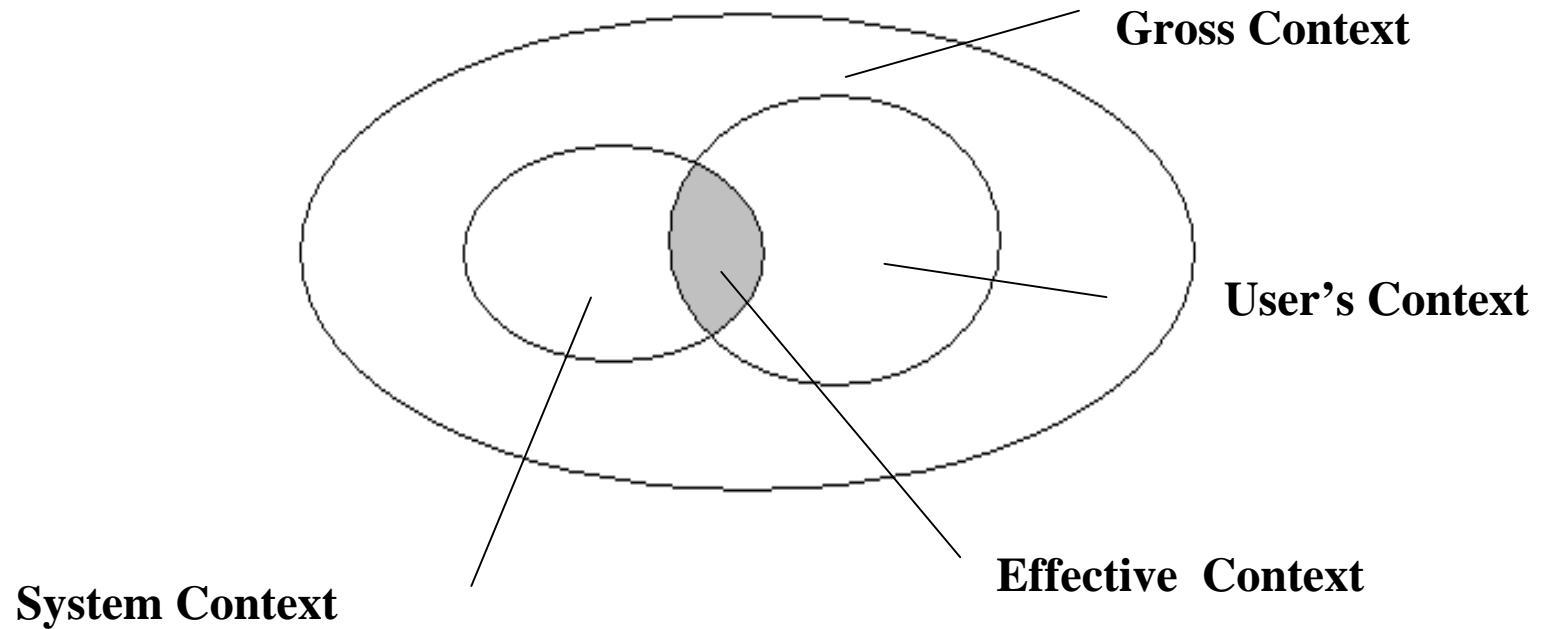


Peripheral variables : typology

- 4 dimensions
 - Physical
 - Social
 - System
 - User



Context : Abstract Model





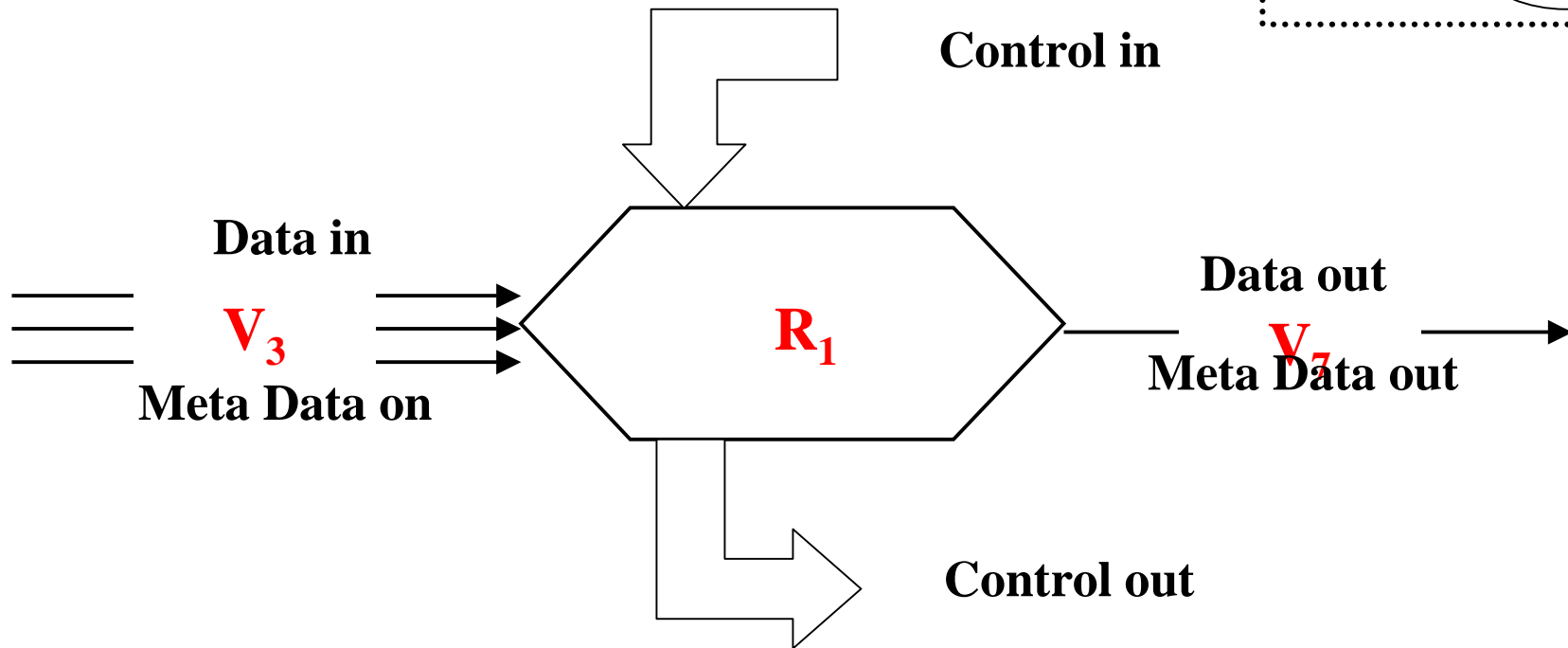
Proposed Structure of the brainstorming

- Abstract model
- **Computational model**
- Conceptual architecture models
- Implementational architectures and tooling



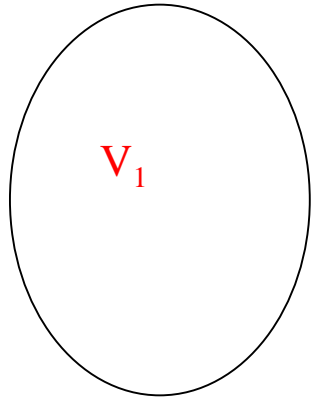
Contextor : definition

- Software abstraction



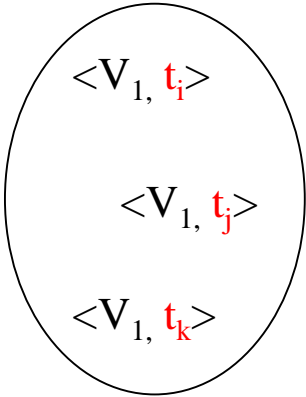


Contextor : typology

Type of contextor	Direct connection with a sensor	Number of input	Number of output	Type of data in	Type of data out
Elementary	Yes	0	1	-	X
Memory(history)	No	<ul style="list-style-type: none"> •Encapsulates a sensor •Equivalent to the context-widget •Represents a variable 			
Thresholder	No				
Translator	No				
Aggregator	No				
Abstractor	No				



Contextor : typology

Type of contextor	Direct connection with a sensor	Number of input	Number of output	Type of data in	Type of data out
Elementary	Yes	0	1	-	X
Memory(History)	No	1	1	X	{X}
Thresholder	No	<ul style="list-style-type: none"> • Represents time labelling 			
Translator	No				
Aggregator	No				
Abstractor	No				



Contextor : typology

Type of contextor	Direct connection with a sensor	Number of input	Number of output	Type of data in	Type of data out
Elementary	Yes	0	1	-	X
Memory(history)	No	1	1	X	{X}
Thresholder	No	1	1	X	Boolean
Translator	No	• Tests a threshold			
Aggregator	No				
Abstractor	No				



Contextor : typology

Type of contextor	Direct connection with a sensor	Number of input	Number of output	Type of data in	Type of data out
Elementary	Yes	0	1	-	X
Memory	No	1	1	X	{X}
Threshold	No	1	1	X	Booléen
Translator	No	<ul style="list-style-type: none"> • Tests a threshold 			
Aggregator	No				
Abstractor	No				



Contextor : typology

Type of contextor	Direct connection with a sensor	Number of input	Number of output	Type of data in	Type of data out
Elementary	Yes	0	1	-	X
Memory	No	1	1	X	{X}
Thresholder	No	1	1	X	Boolean
Translator	No	<ul style="list-style-type: none"> • Tests a threshold 			
Aggregator	No				
Abstractor	No				



Contextor : typology

Type of contextor	Direct connection with a sensor	Number of input	Number of output	Type of data in	Type of data out
Elementary	Yes	<ul style="list-style-type: none"> •Changes unit of the data 			
Memory	No				
Thresholder	No				
Translator	No	1	1	X	X
Aggregator	No	2 ou +	1	X,X	X
Abstractor	No	1 ou +	1	X,Y	Z



Contextor : typology

Type of contextor	Direct connection with a sensor	Number of input	Number of output	Type of data in	Type of data out
Elementary	Yes	<ul style="list-style-type: none"> Improves Meta data 			
Memory	No				
Thresholder	No				
Translator	No				
Aggregator	No				
Abstractor	No	1 ou +	1	X,Y	Z



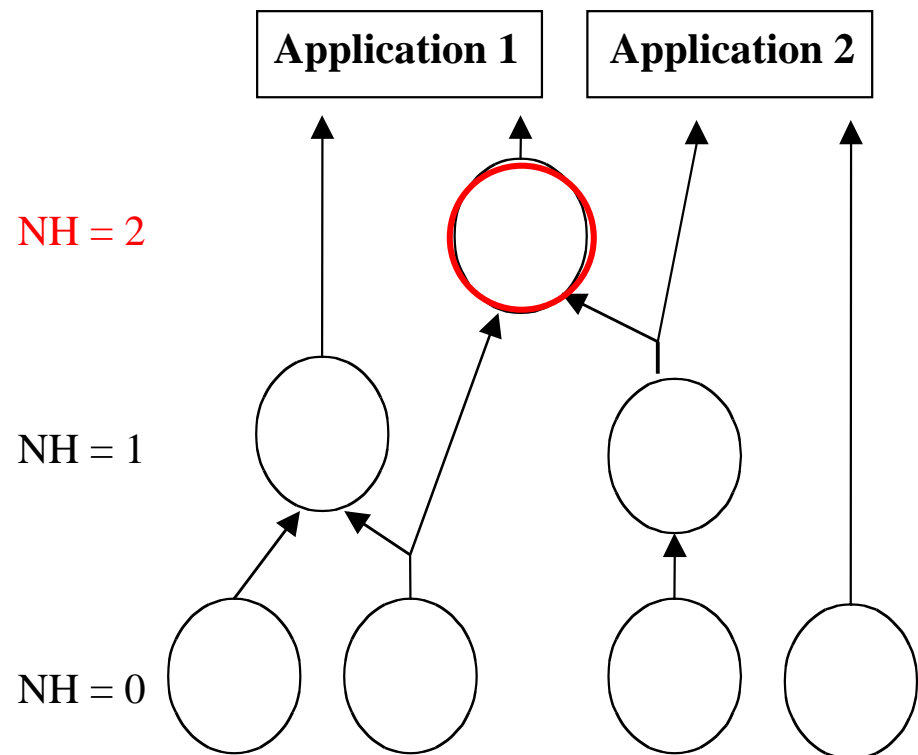
Contextor : typology

Type of contextor	Direct connection with a sensor	Number of input	Number of output	Type of data in	Type of data out
Elementary	Yes	<ul style="list-style-type: none"> • Composition of data • Creates new information 			
Memory	No				
Thresholder	No				
Translator	No				
Aggregator	No				
Abstractor	No	1 ou +	1	X,Y	Z



Contextors composition

- Dependence chain
- Hierarchical level





Conceptual Software Architecture

- Extension of the Arch model (D. Salber, IBM)

