

# Smart Indicator Environment

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# Smart Indicator Environment

Christian Glahn



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# Case: TeamSpace

The screenshot shows a Mozilla Firefox browser window with the address bar displaying `http://live-olivesp-005v.eu.nl/portal/`. The page title is "Team Space".

**del.icio.us Links**

- [Blackboard Academic Suite](#)  
posted by Marcus Specht, on 2007-10-18 15:12:04
- [Programme - Online Educa Berlin 2007](#)  
posted by Marcus Specht, on 2007-10-17 14:48:03
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**Blog Entries**

- [the platform is the platform is the ... 2.0](#)  
posted by Marcus Specht, on 2007-10-17 18:17:56  
I like discussion about web 2.0 especially those of dilbert. are you web 2.0 ready? So did you ever have such discussions with your colleagues? Lets stop buzzword bingo I mobile socialsoftware, technologiez, web2.0
- [Educating People](#)  
posted by Christian Glahn, on 2007-10-16 06:17:07  
Opposite to many people I met, I like clear communication and proper structure when it comes to work organisation. Maybe I am just in the wrong business, but the people I meet over time seem to prefer reinventing structure and hide important information in a lot of talk. Yesterday, I just learned one of these lessons. [read more](#)
- [Approaching Adaptation Smartness Systematically](#)  
posted by Christian Glahn, on 2007-10-06 18:48:17  
Since EC-TEL it has been pretty quiet here. But never mind, it wasn't that quiet under the surface. I have been pretty busy in polishing and breaking my [smart indicator prototype](#) and sharpening the evaluation design for the follow-up studies of my research. In this post I discuss some of preliminary results that [cannot run](#) while I have been worked on the

**Hello Christian Glahn** [tools](#) [logout](#)

**performance**

**tags** [clear selection](#)

ajax architecture airt audiacaster blog coding conferences context coolstuff culture design education events flash gaming hci home innovation javascript kinder languagetechnology learning learningtechnology linux literature mace mobile mobilelearning museum music opencontent opensource oss perl projects publications **research** semanticweb smalltools socialsoftware software technologiez technology tencompetence theory tools web2.0 **webapplications** wiki

Done 0.3 MB / 10 MB 6.6 MB / 48.0 MB



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# The Challenge

How to utilize  
interaction footprints  
for learner support in  
unstructured or emerging  
environments?



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# Our Approach

Highlight and unveil

interaction footprints

(about effort, interest, and concepts)

for *reflection support*

to the learner



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# The underlying Interaction-Model

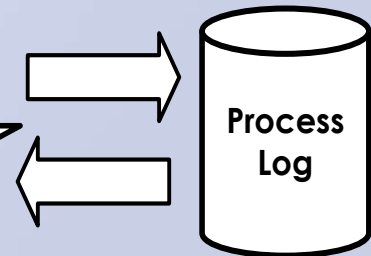
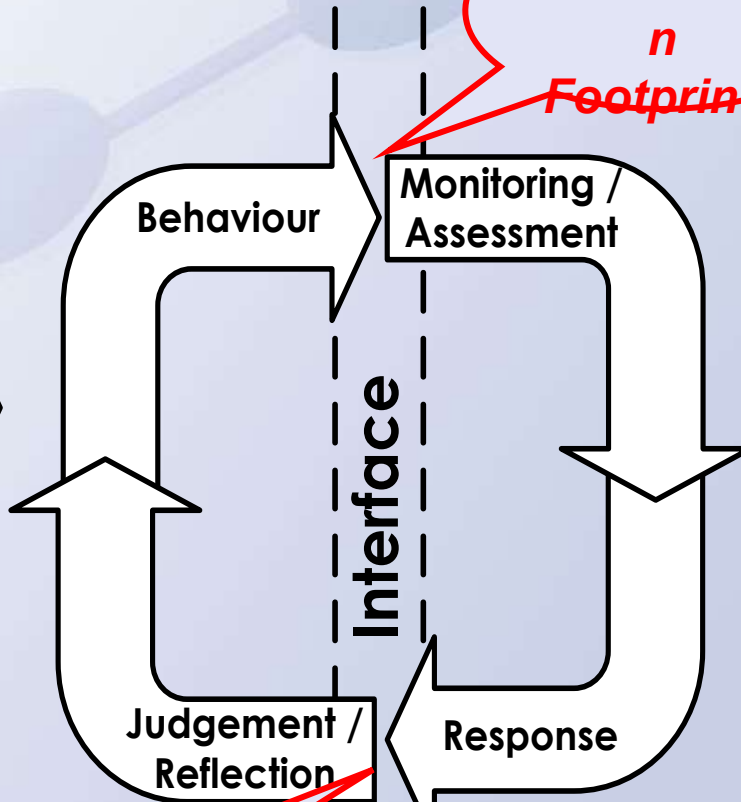
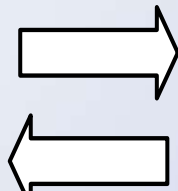
(Dey, 2000)



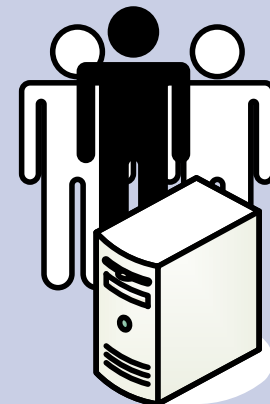
Actor



Experience Knowledge



Process Log



System

(Butler & Winne, 1995)




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# Example: Context Adaptation for Informal Learning



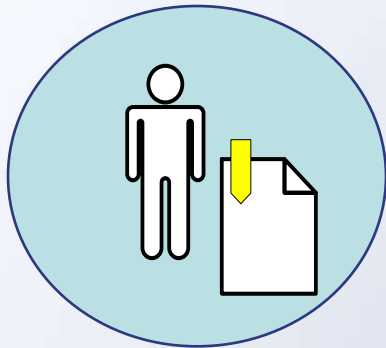
**Engage**

▼ activity 


▼ tags ComputerGames ComputerHistory  
ComputerScience Demos Design Flash  
FutureTechnologies GameBasedLearning Gaming  
GraphicDesign GUI HCI Journals JSON  
LearningTechnology Literature LSA Mace MMURPG  
MobileLearning OpenSource SOAP SocialSoftware  
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WebAnimation WebApplications We  
XUL

*actions*

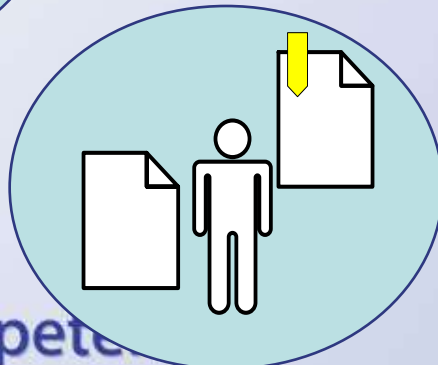
*performance*




**Motivate**

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WebAnimation WebApplications We  
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**Reflect**

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Visualisation Web WebAnimation  
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*interest*



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# The Architecture



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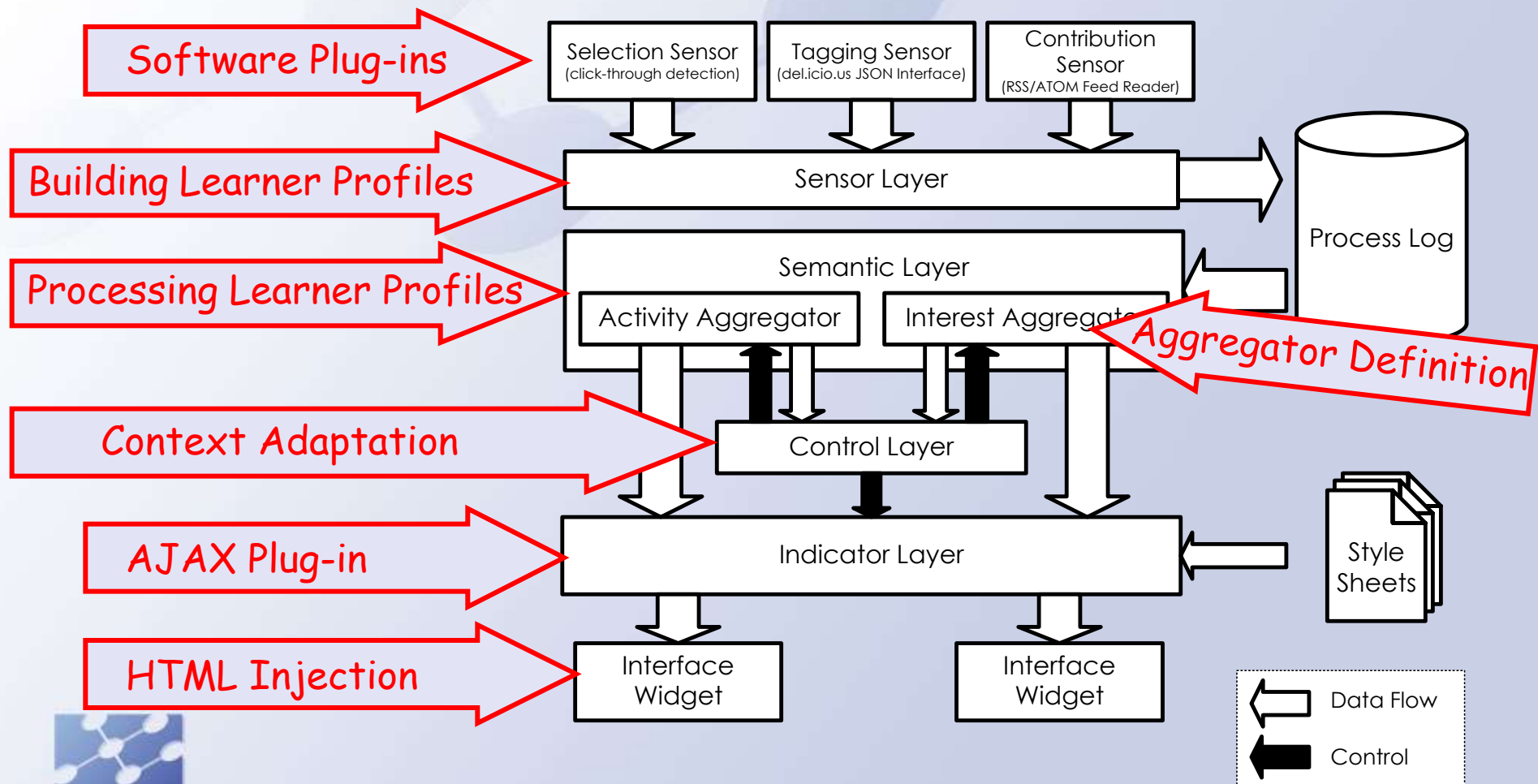
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# A Few Technical Details about the Services

- REST services
- implemented as LAMP
- State-of-the-Art Web2.0 Features
  - Mash-up enabled
  - XML and JSON as output content types
  - XML and JSON as input content types



# Actual Implementation



# Sensor Service

- Simple Sensors Registration
- Collects Interaction Footprints
- Extensible Sensor Events
- Sensor Event Clustering

The sensor layer is ***not*** a replacement of Log4J or similar debugging systems



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# Collect Interaction Footprints

- Sources
  - RSS News Feeds
  - Del.icio.us Bookmarks
  - Online Web-interaction
- Sensors submit interaction events
- Interaction events are stored in the learner's process log



# Semantic *Aggregation* Service

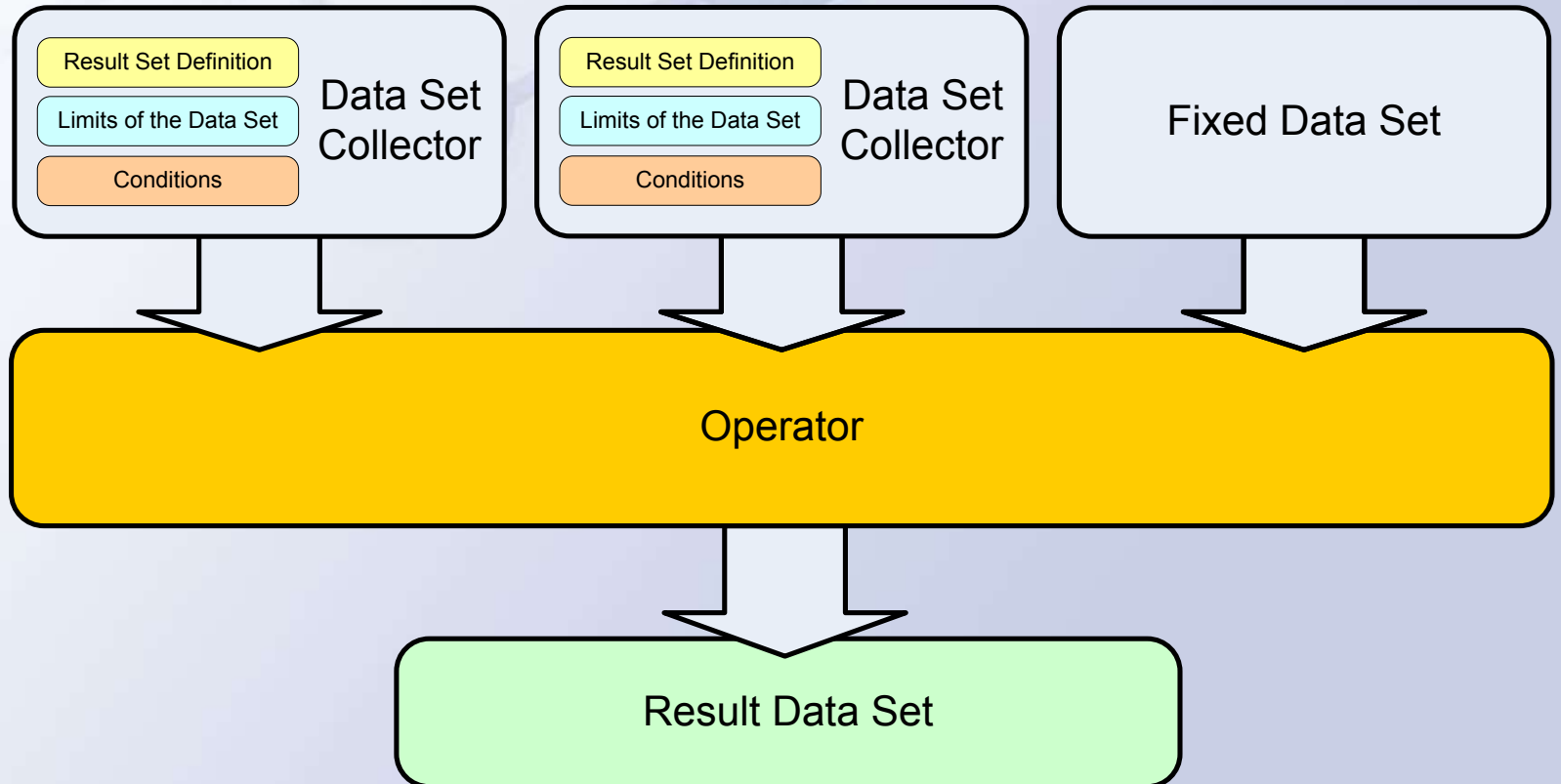
- Analyze the process log
  - Anonymous analysis
  - User centered analysis
- Open framework for sensor analysis
- Named aggregators
- Extension through aggregator scripts



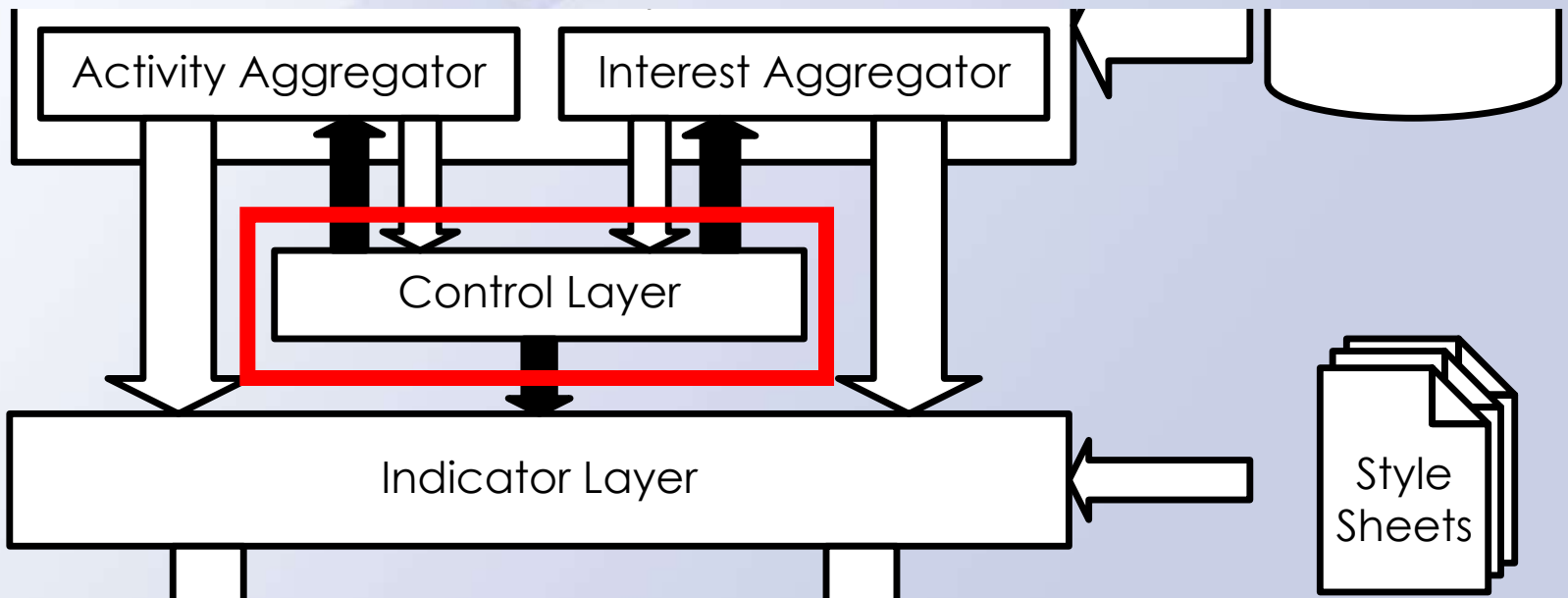
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# Aggregator Scripts

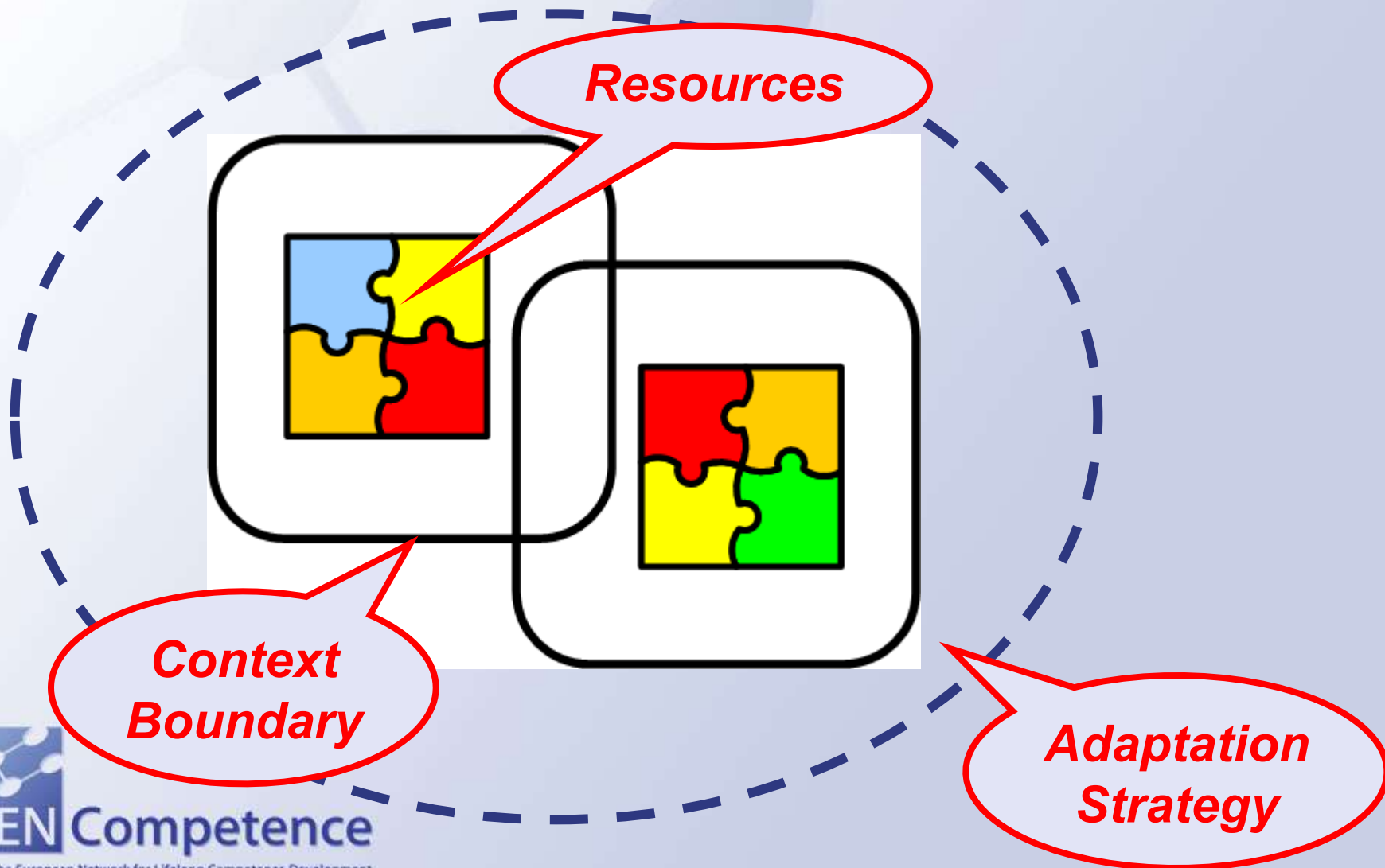


# Context Adaptation

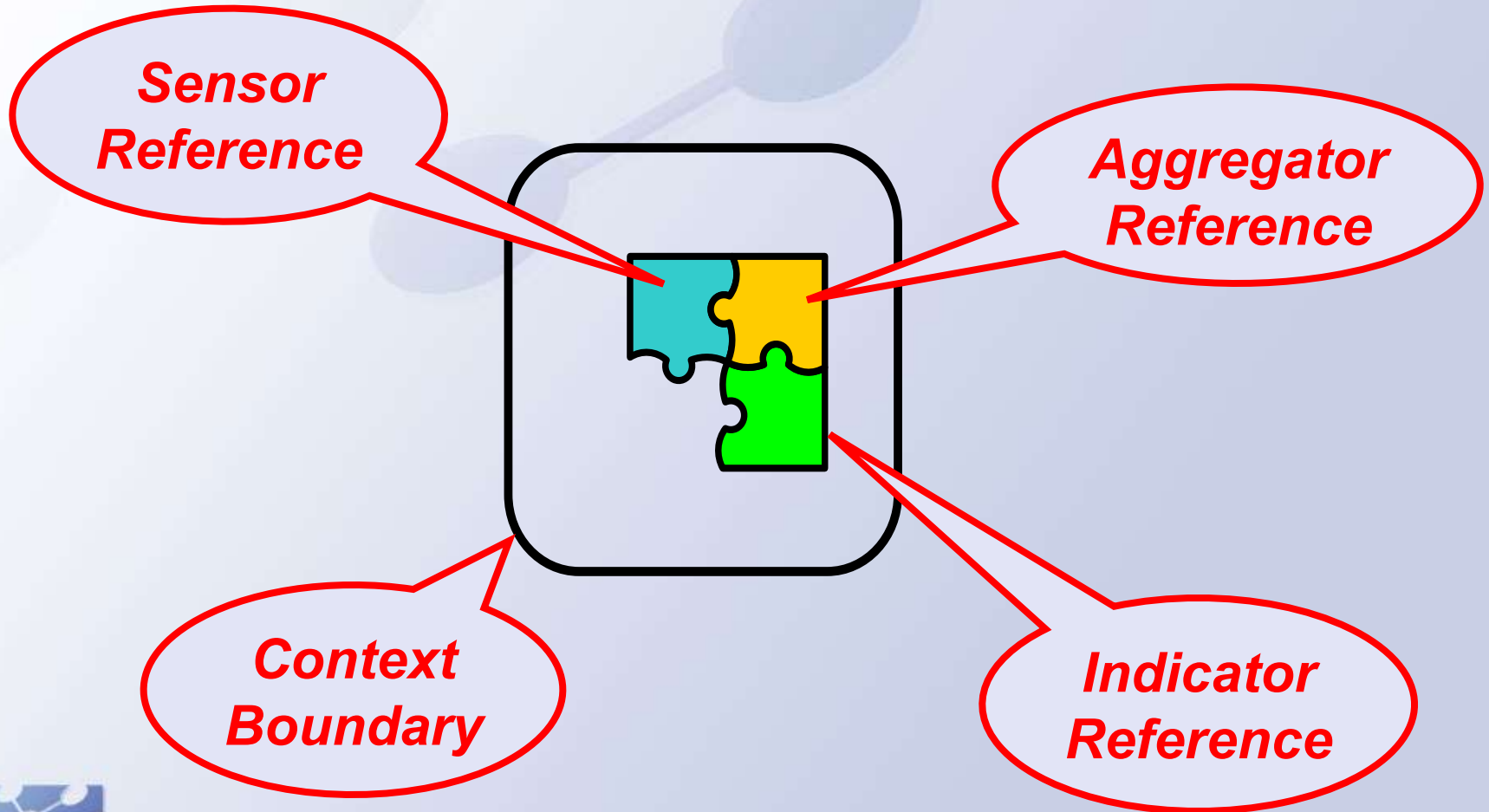




# Adaptation Strategies



# Smart Indicator Contexts





# Web Integration



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# Web-App Integration Architecture

Minimize interference with the business logic of a web-application

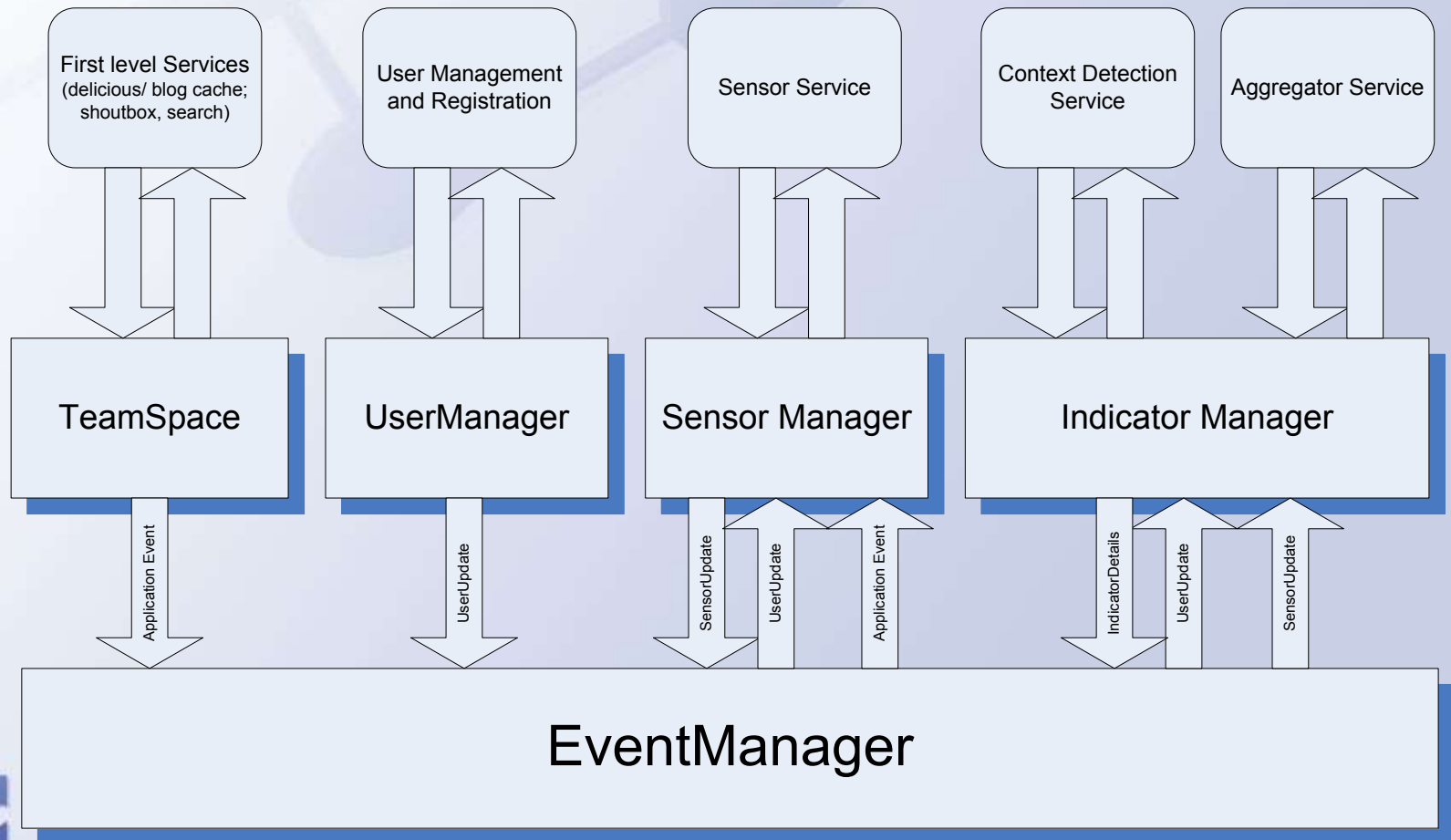
- Application independent code injection
  - Sensor Code
  - Indicator Code
- Modular frontend for web-applications



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# Frontend Architecture Layout



# Management of Non-DOM-Events

Non-DOM-events = high level application logic

- Richer meaning of things that happen in the UI
  - Independent from the DOM structure of the UI
  - Connection points for events on code level
- Sub-systems can hook in on high-level functions
  - E.g. “followlink”, “userupdate”, or “sensorupdate”
- Events can be triggered by different sub-systems





Thank you



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