

DYNAMIC CONTEXT MODELING FOR AGILE CASE MANAGEMENT

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Outline

- Motivations and goals
- Forms of process agility
- Understanding context information
- Towards a context meta-model
- Handling context on ACM
- CAPE architecture
- Final remarks

Motivations and Goals

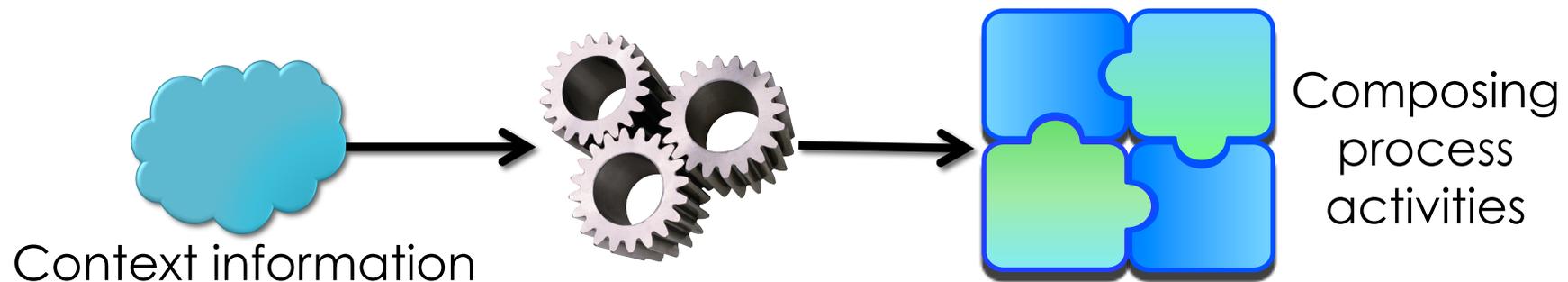
- How to handle “unpredictable” process?
 - **Adapt process at run time** according to case circumstances
- Example: **Crisis management** (flood...)
 - Multiple independent actors, no predefined sequence of activities, **process is driven by information evolution**
 - **Multiple information sources** (water fall, traffic...)
- Our goal
 - Explore the **role of context information** in ACM
 - **Monitor and manage dynamic context information**

Forms of process agility

- Two forms of agility to more dynamic process
- **First form of agility:**
 - To handle **unpredictable sequences** of activities
 - The process as a set of activities **dynamically assembled** at run time
- **Second form of agility:**
 - To *select the right action at the right moment with respect to the **current situation***
 - The ability to **monitor the process context** and to dynamically select the execution scenario accordingly

Understanding context information

- Context information is a huge concept
 - ***Any information that can characterize the situation of an entity (a person, an object...)*** (Dey 2001)
 - Knowledge giving meaning to an action
- **Context information on ACM**
 - **Adapt process execution to current situation**
 - Observing and measuring context for selecting activities accordingly



Understanding context information

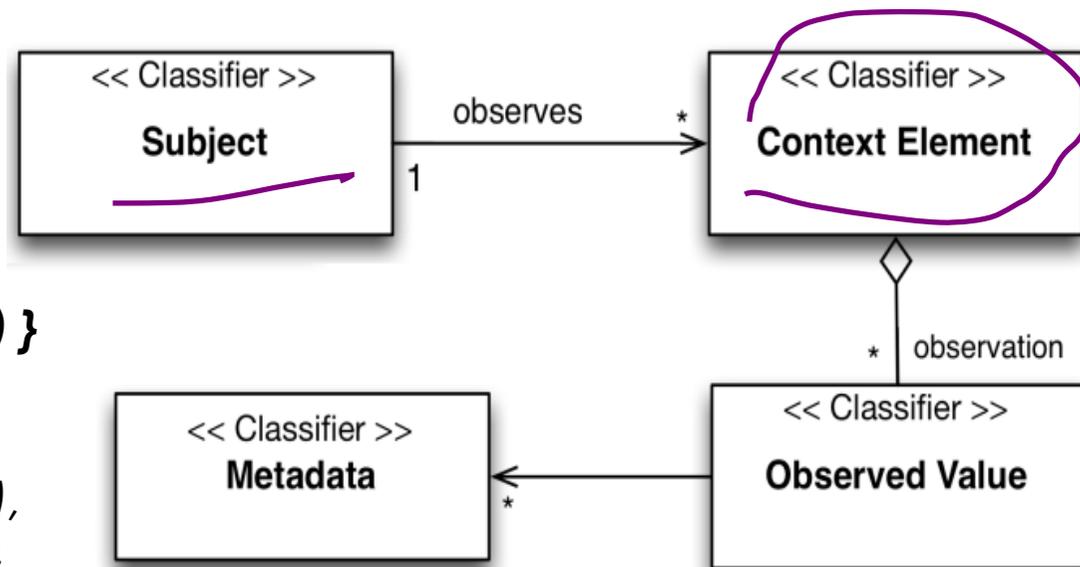
- Context information need to modeled to be explored
 - **Context model determines reasoning capabilities**
- Advantages of having a context model
 - Definition of **an independent adaptation process**
 - Isolating adaptation from **context acquiring**
- A lot of research, multiple possibilities
 - From key-value till **ontologies**
 - **What all context models have in common?**

Towards a context meta-model

- **Context meta-model**

$Context(s,t) = \{ Element(s, ce) \}$

$Context(team1, t) = \{ Element(team1, \#location), Element(team1, \#vehicle) \}$



- It is a **meta-model** → it must be **instantiated** in a model
- Defining observed subjects and elements depends on the process domain
- **Extensibility is needed !**

Handling context on ACM

- **Context-based events** can be defined

*Element(#hospital, #electricity)="out of order" OR
Element(#hospital, #access)="not available"*

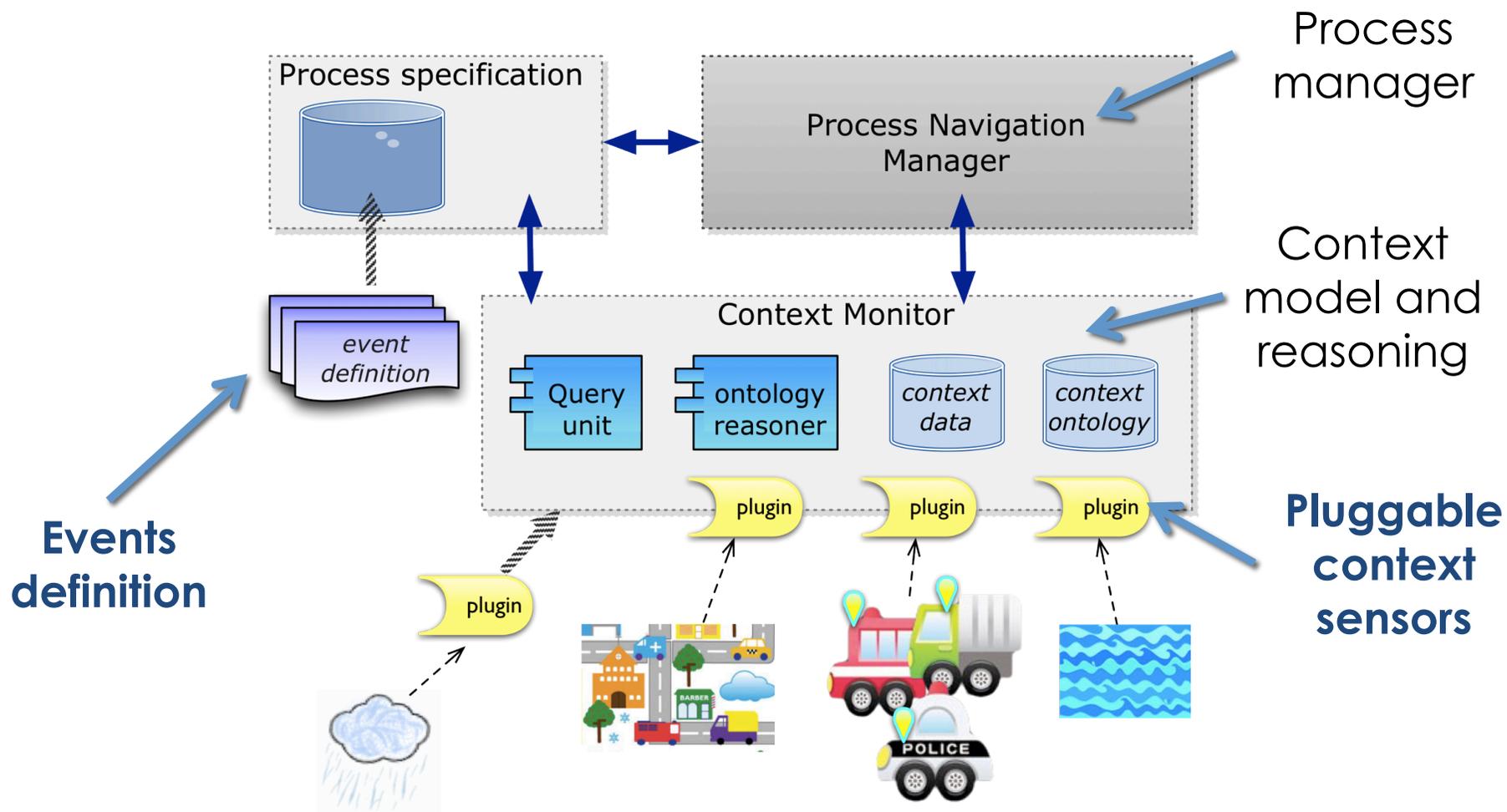
- **Expressiveness** is needed → **ontologies**
 - Information from **different nature** (location, water fall levels, road state, actors' availability...)
- **Context model may evolve**
 - Observing new context elements or subjects should be possible
- **Dynamically observing context information**

CAPE Architecture

- **Context-aware Agile business Process**
 - Open architecture for ...
 - ... **dynamic context monitoring**
 - ... dynamic process execution
- **State-oriented process representation**
 - Process as a finite state machine
 - **Context events triggering activities**
 - Activities are implicit (no predefined activities)

CAPE Architecture

- CAPE Context Monitor



Final remarks

- Context information as **part of the process** definition
- **Understanding** context information is needed
 - **Context is a dynamic construct**
- **Context model** is necessary but it is not everything
 - **Dynamic context monitoring is mandatory**
- Many challenges remain
 - **Defining relevant context elements and subjects**
 - Representing different and evolving context information
 - **Automated process guidance → recommendation**



THANKS FOR YOUR ATTENTION !

QUESTIONS?