

Anwendungen 2 - SoSe 2009

Computational Furniture

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Schedule

- Introduction
- Examples Context Awareness
- My project
- Summary

Meaning of Computational Furniture

Introduction

Context Awareness

My Project

Summary

- Scope: Living Place Hamburg
- Computational Furniture as base of Intelligent Furniture
- Context Awareness helps making Furniture Intelligent

What is it good for?

Introduction

Context Awareness

My Project

Summary

- An intelligent living place needs sensors
- There are usual items each living place has
 - Combining sensors with these items increases acceptance

Examples for Computational Furniture

Introduction

Context Awareness

My Project

Summary

- Armchairs
- Sofas
- Beds
- Chairs
- Carpets
- ...

Schedule

Introduction

Context Awareness

My Project

Summary

- Introduction
- ***Examples Context Awareness***
- My project
- Summary

Elements of Context Awareness

Introduction

Context Awareness

My Project

Summary

- Three stages:
 - Actors
 - Context recognition
 - Sensors

Two examples Context Awareness

Introduction

Context Awareness

My Project

Summary

- Context Modeling and Reasoning in A Smart Space Environment
 - Erin Goh Yii Yin, et. al. 2007
- Learning Situation Models in a Smart Home
 - Oliver Brdiczka, et al. 2009

Example Erin Goh Yii Yin, et. al.

Introduction

Context Awareness

My Project

Summary

- Important goals:
 - Integrative system with common interface
 - Creating hi level Context out of low level inputs

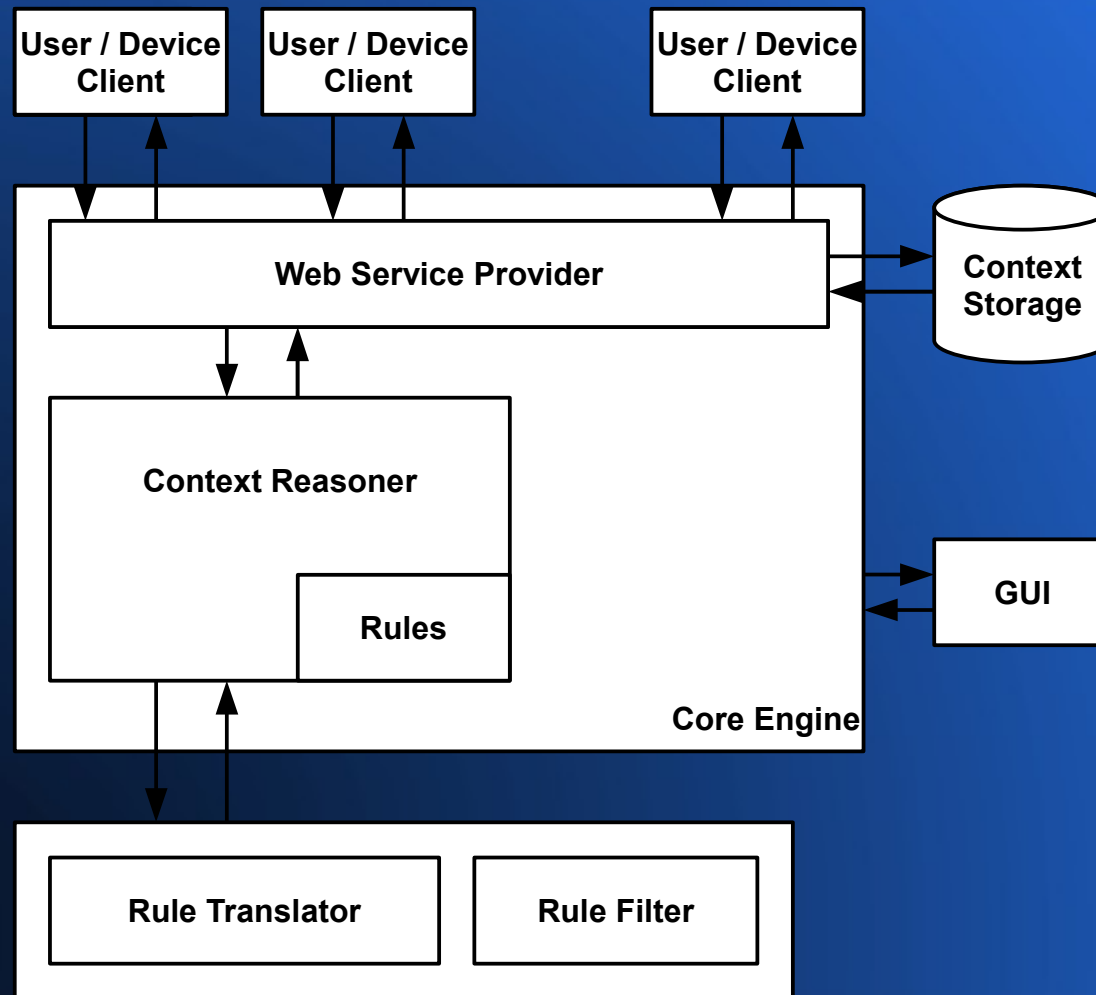
System Overview Erin Goh Yii Yin, et. al. : 2007

Introduction

Context Awareness

My Project

Summary



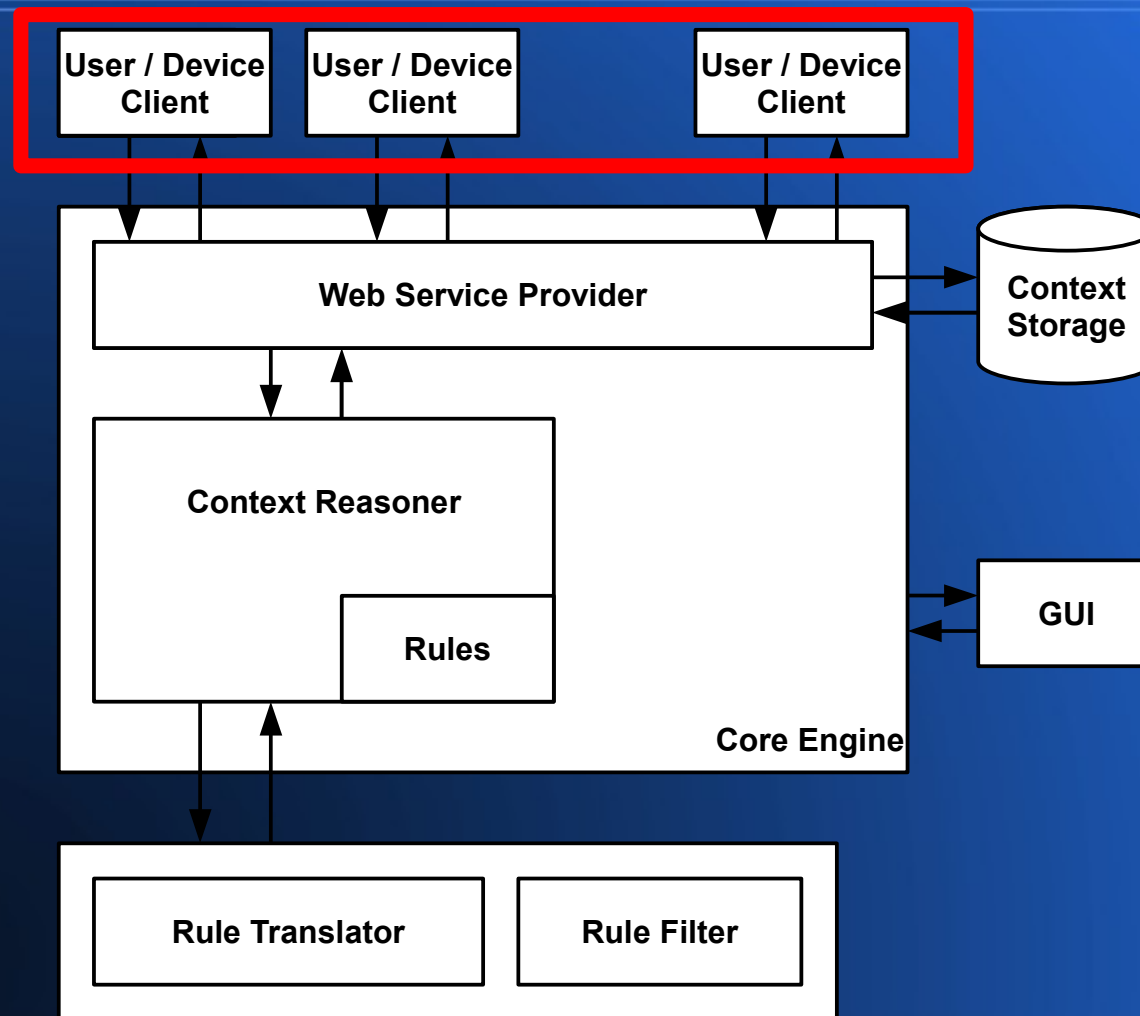
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Introduction

Context Awareness

My Project

Summary



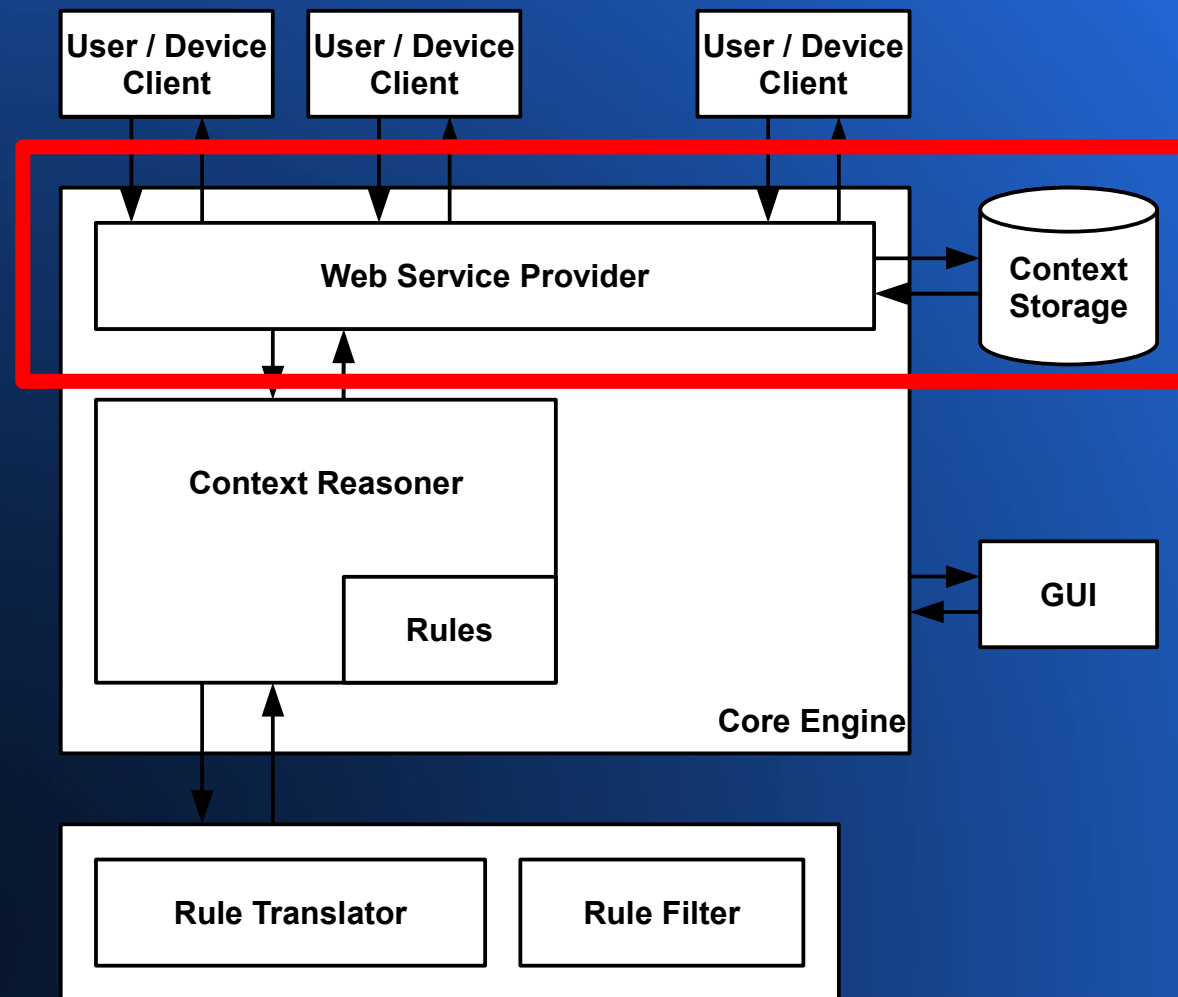
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Introduction

Context Awareness

My Project

Summary



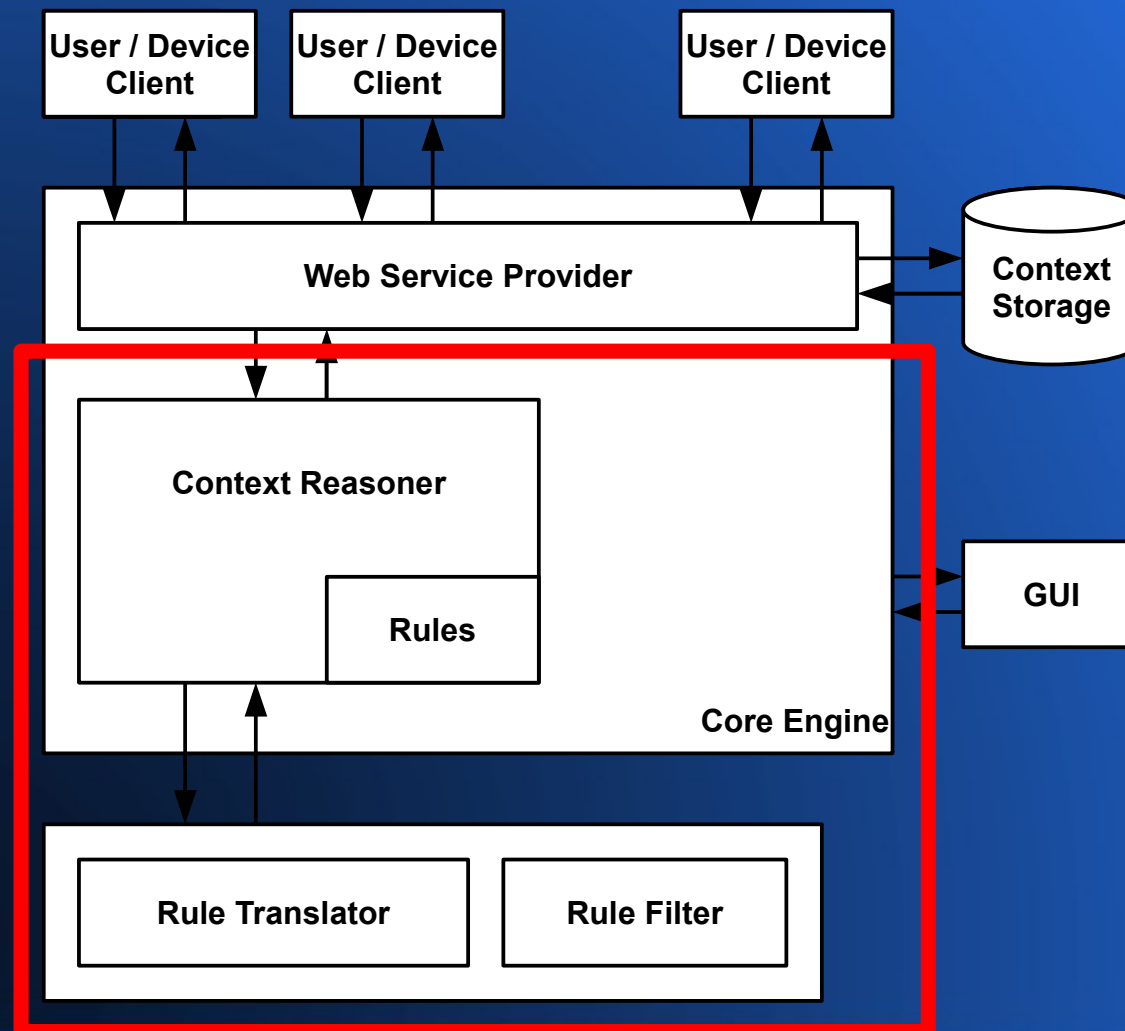
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Introduction

Context Awareness

My Project

Summary



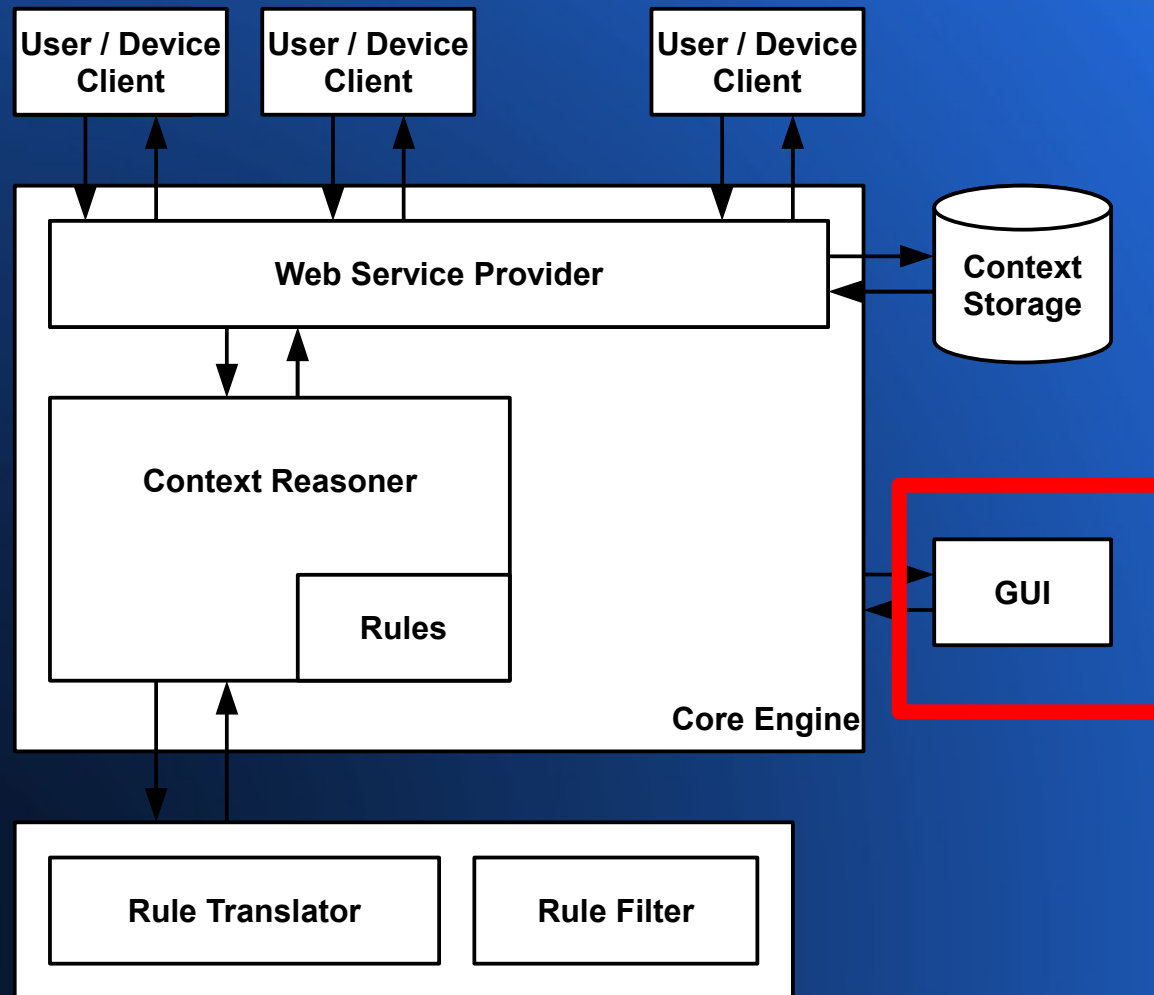
System Overview Erin Goh Yii Yin, et. al. : 2007

Introduction

Context Awareness

My Project

Summary



Example Brdiczka, et. al. : 2009

Introduction

Context Awareness

My Project

Summary

- Important goals:
 - Framework for learning situation models
 - Evolve context model for providing context-aware services

Sensors Brdiczka, et. al. : 2009

Introduction

Context Awareness

My Project

Summary

- Three cameras:
 - 1 wide angle camera
 - 2 normal cameras
- One personal microphone per person
- One microphone array

View on environment Brdiczka, et. al. : 2009

Introduction

Context Awareness

My Project

Summary



Recognized context Brdiczka, et. al. : 2009

Introduction

Context Awareness

My Project

Summary



Individual Work



Introduction



Aperitif



Siesta



Presentation



Game

Schedule

Introduction

Context Awareness

My Project

Summary

- Introduction
- Examples Context Awareness
- ***My project***
- Summary

Goals of my Project

Introduction

Context Awareness

My Project

Summary

- Sensor level
 - Making information and simple context available to the system
 - Giving alternatives and additions to camera based systems

Where does it fit? What is the goal?

Introduction

Context Awareness

My Project

Summary

- Living place is a very big area to cover

Goal:

- Build an example for “computative furniture” and evaluate how it works as a sensor in a smart environment as addition or alternative to cameras
- Evaluate data generation for an context aware environment by doing body monitoring in furniture

Examples for sensors

Introduction

Context Awareness

My Project

Summary

Tactex Sensor Tile:

- Force sensor
- Scalable
- Dimensions:
 - 305x305x16mm
- Sensor Density
 - 144 or 576 sensors
 - 25.4mm or 12.7mm

Source: <http://www.tactex.com/>



Examples for sensors

Introduction

Context Awareness

My Project

Summary

REER Babyfon 7000

- Some kind of move detection sensor
- Sensitive



Examples for sensors

Introduction

Context Awareness

My Project

Summary

Wii Balance Board

- Four force sensors measure weight and calculate a mean value which shows the weight balance
- Sensitive



Source:http://commons.wikimedia.org/wiki/File:Wii_Balance_Board.JPG

Schedule

Introduction

Context Awareness

My Project

Summary

- Introduction
- Examples Context Awareness
- My project
- ***Summary***

Summary

Introduction

Context Awareness

My Project

Summary

- Computational Furniture fits into the area of context awareness
- Context awareness is a topic under heavily development
- The three basic parts of context awareness are: Sense, context recognition, act
- This work concentrates on Sense
- Goal is to evaluate an addition or alternative to cameras for generating data for context recognition

Thanks for your attention!