Multi-device Single Sign-on for Cloud Service Continuity

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Outline

Introduction

- Multimedia Services on the age of Cloud Computing
- Multi-device Single Sign-On (MD-SSO)

A MDSSO system for Cloud Computing

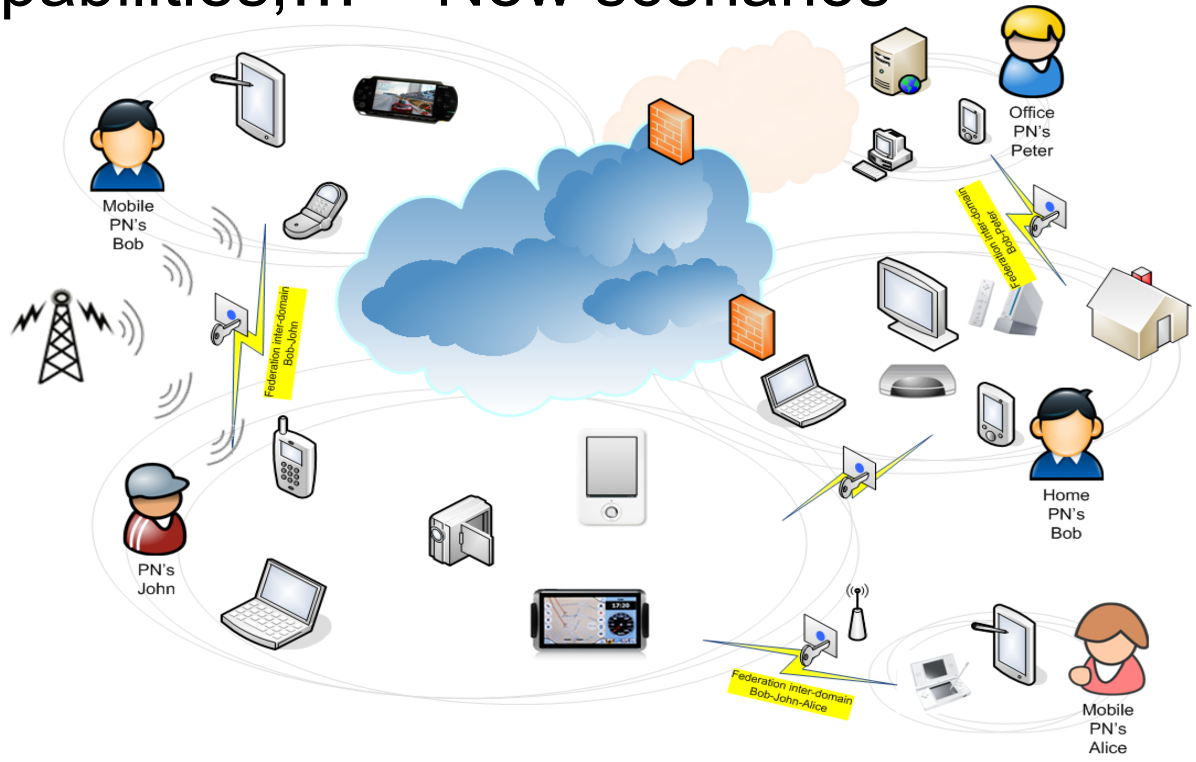
- Requirements
- Middleware Architecture

Implementation

Conclusions & Future work

Introduction

- Multimedia Services on the age of Cloud Computing
- Advances in Consumer Electronics: devices, capabilities,… New scenarios



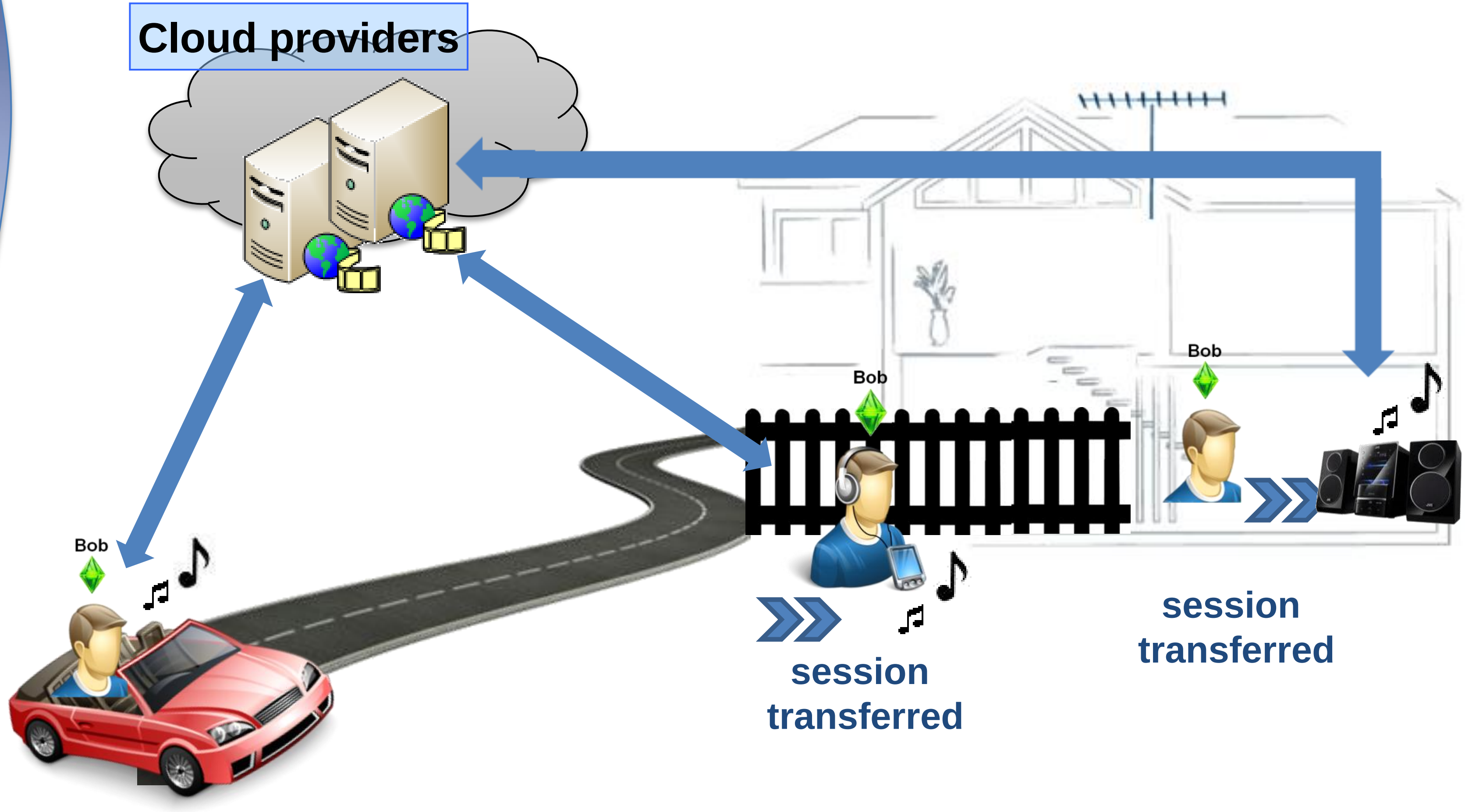
Multidevice Single Sign-On (MD-SSO)

- **MD-SSO Definition**:

*"**Single sign-on** for users that crosses devices, i.e. the session is initiated from one device or user-agent, and subsequently transferred to a second, as might be desirable in the enjoyment of long running media, e.g. streaming video"*

- **MD-SSO Implications in Cloud Services**:
  - Indispensable for Service Continuity
  - Necessary for security: session management

MD-SSO Use Case



MD-SSO and Service Continuity

Related Work

Service Continuity solutions nowadays:

- Focus on specific modifications to protocols
- Concentrate on proprietary implementations
- Impose security problems

Research Challenges

Service continuity based on session transfer is possible, but:

- Few implementations exist
- Further requirements to be addressed in Cloud scenarios

A generic framework is required for mainstream adoption.

MD-SSO and Service Continuity

We propose:

- Open and holistic architecture
- New layer embedded in CE →abstracts the complexity of session transference
- Interworking between heterogeneous devices

The approach involves 3 well defined steps:

- Requirements analysis
- Architecture definition
- Prototype implementation

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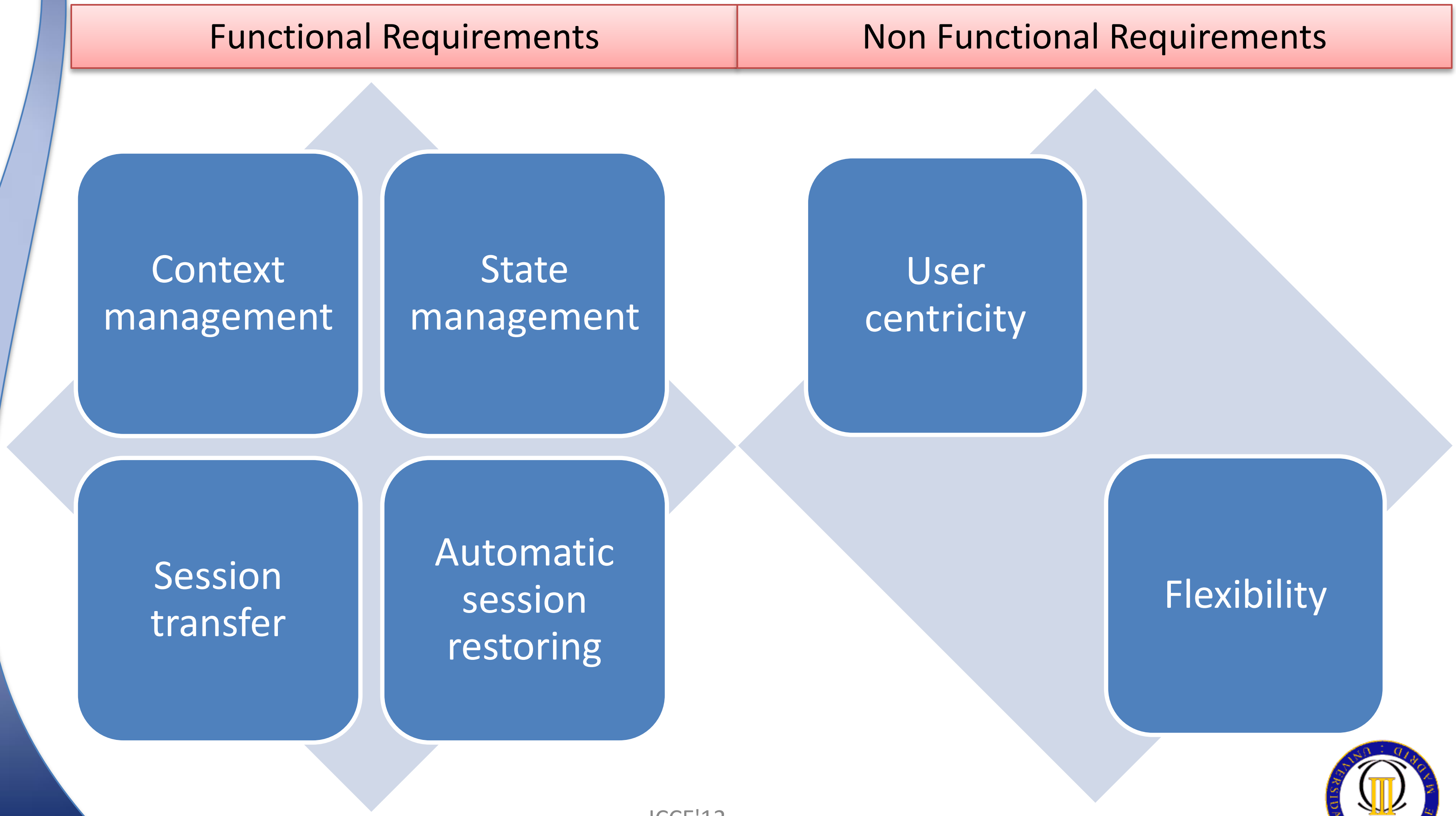
MD-SSO system: Requirements



Functional Requirements

Context management

State management

Session transfer

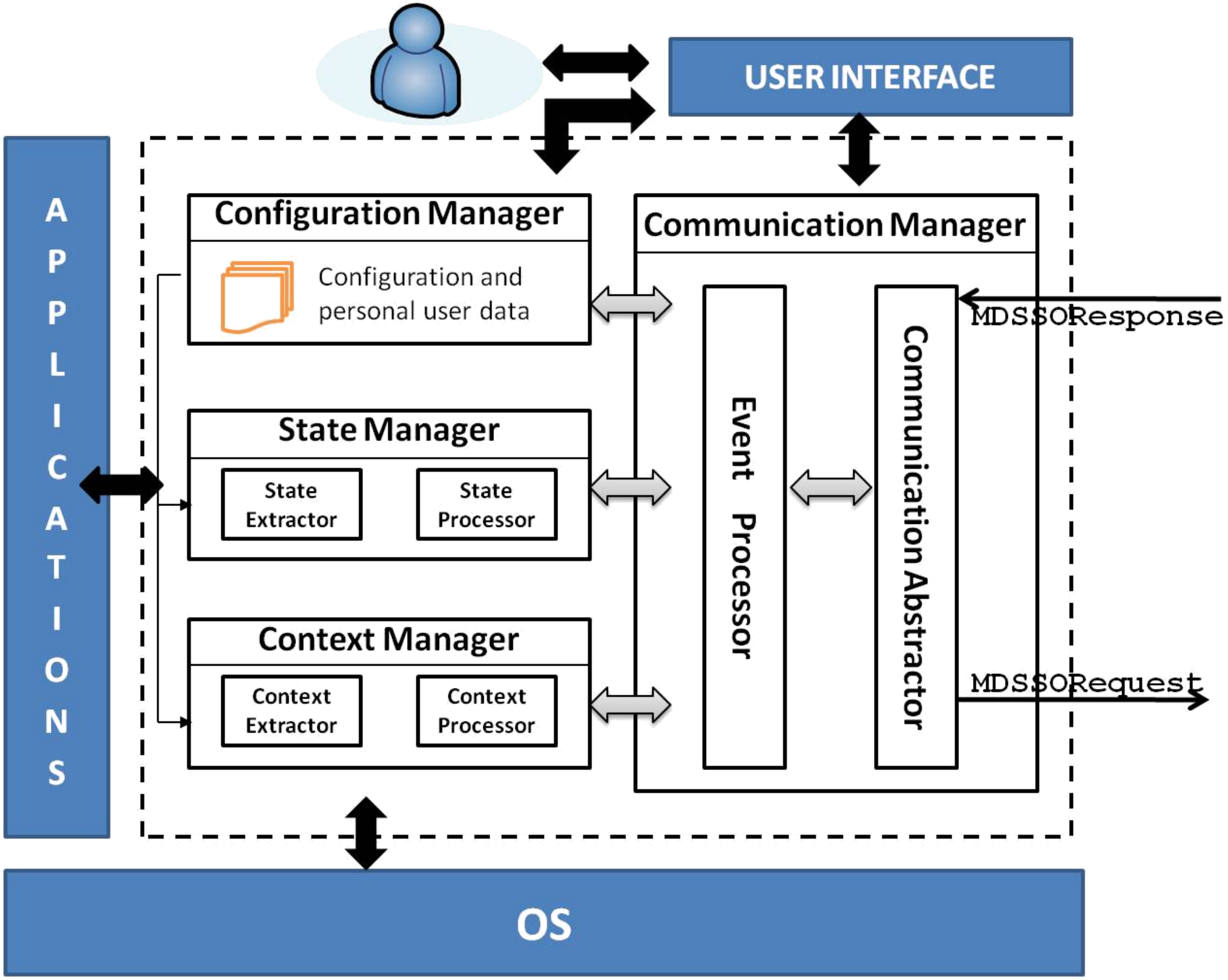
Automatic session restoring

Non Functional Requirements

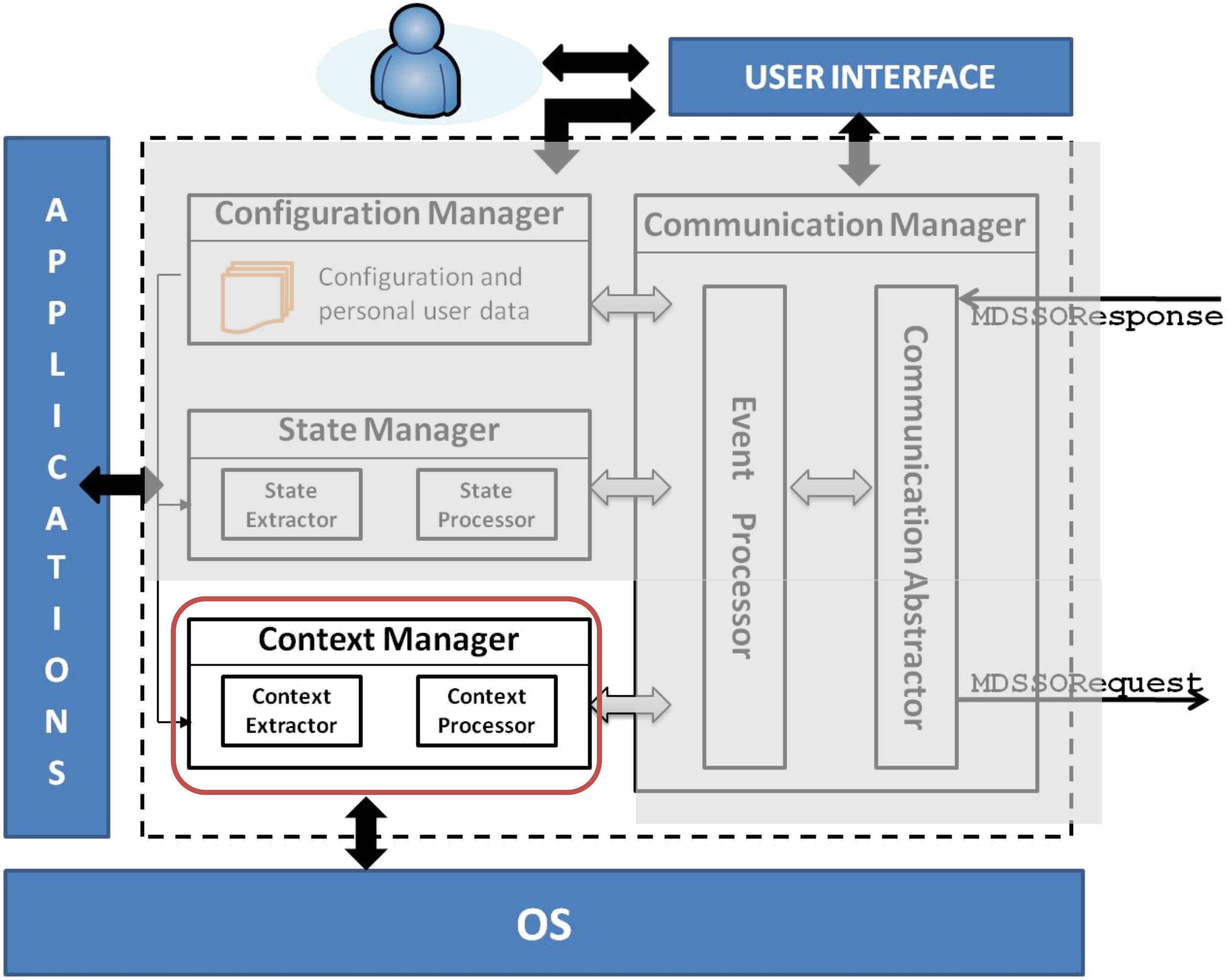
User centricity

Flexibility

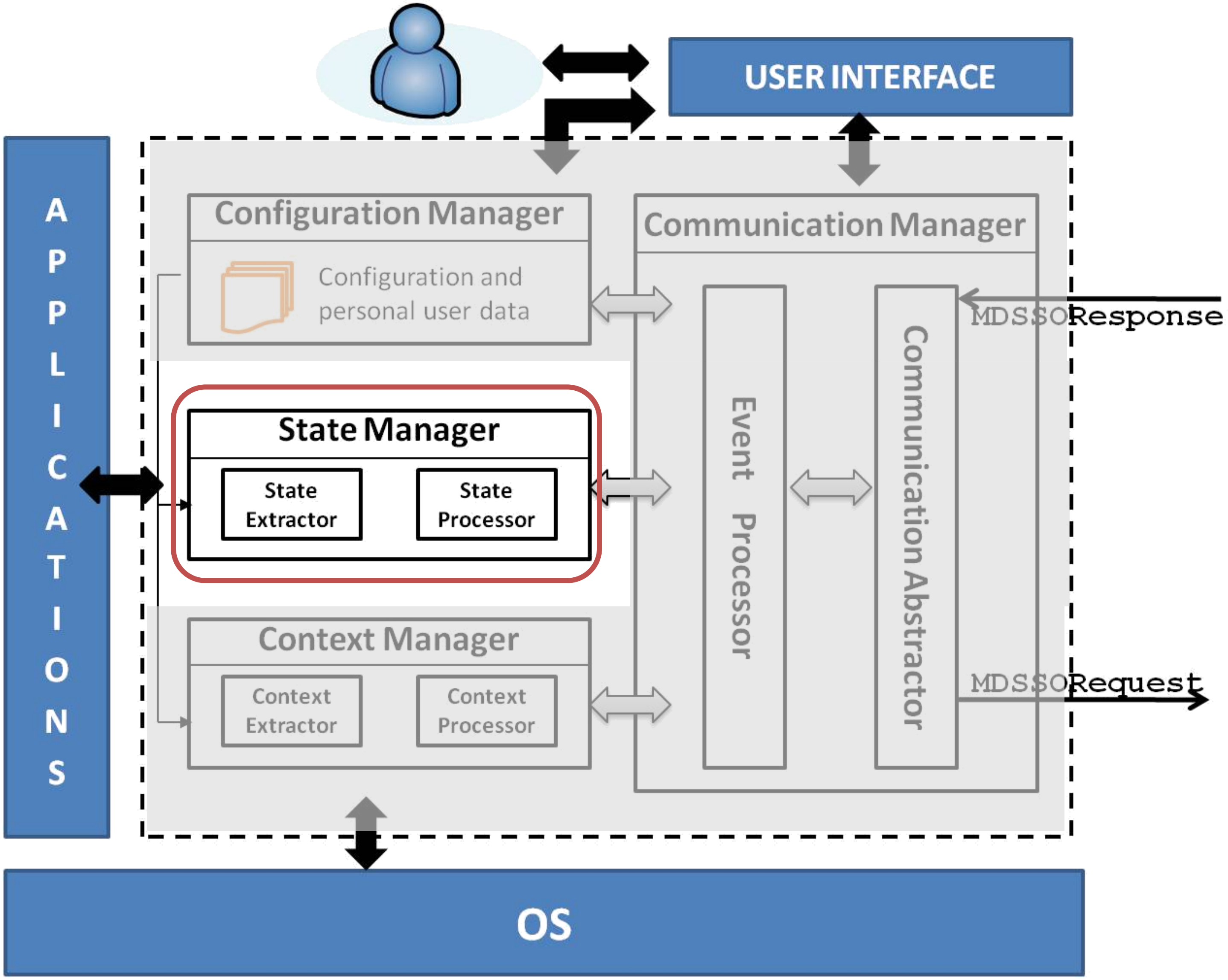
MD-SSO system: Architecture



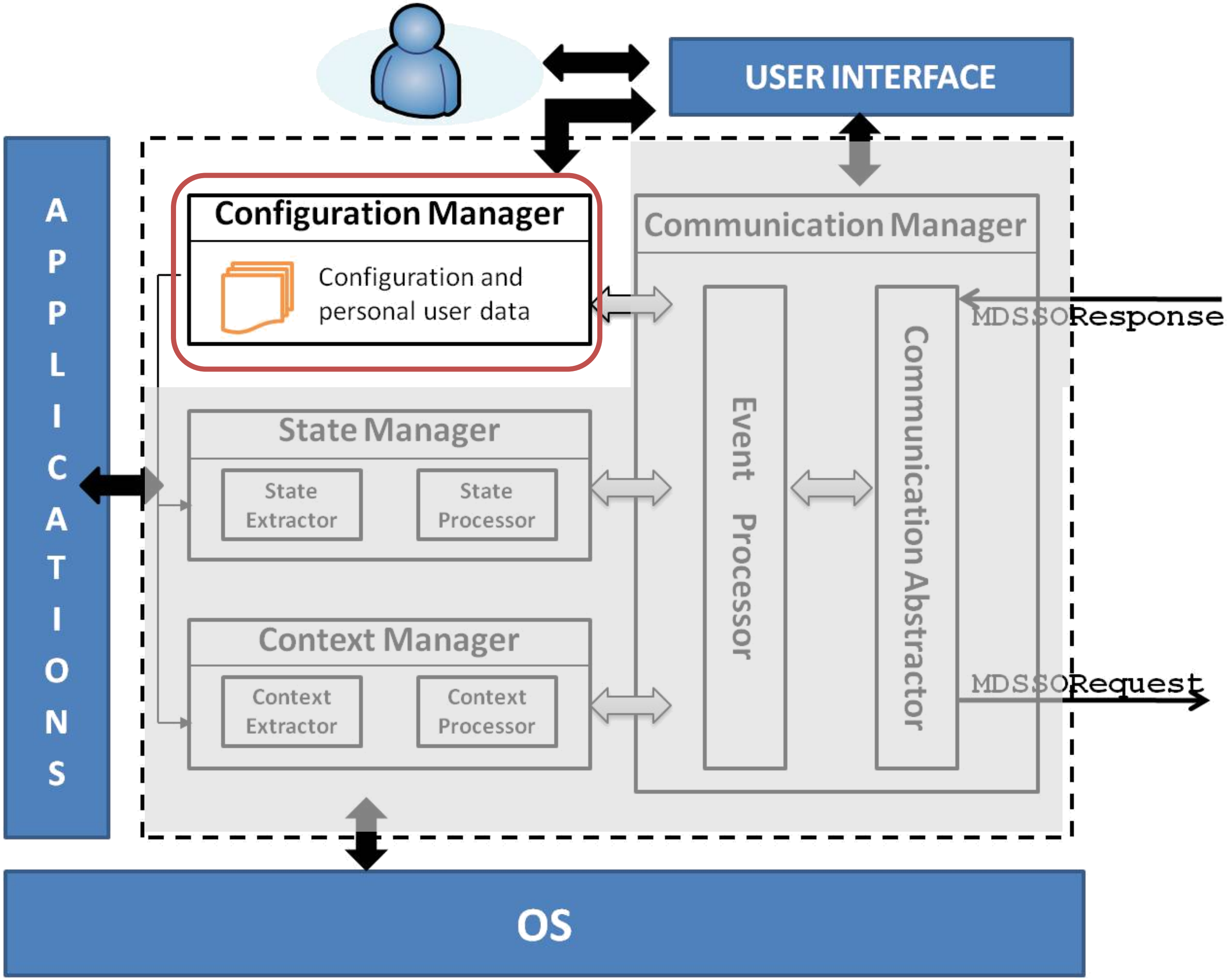
MD-SSO system: Architecture



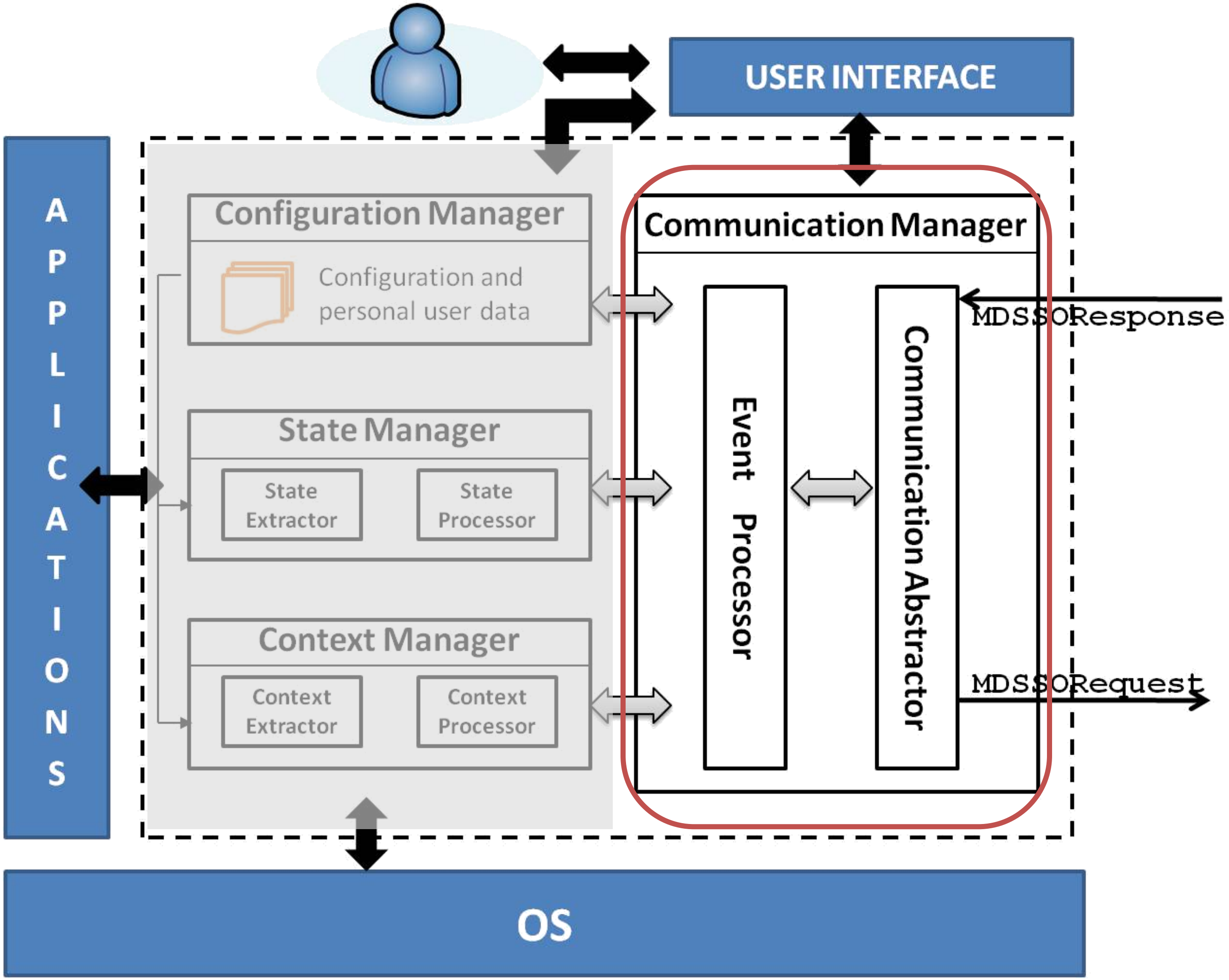
MD-SSO system: Architecture



MD-SSO system: Architecture



MD-SSO system: Architecture



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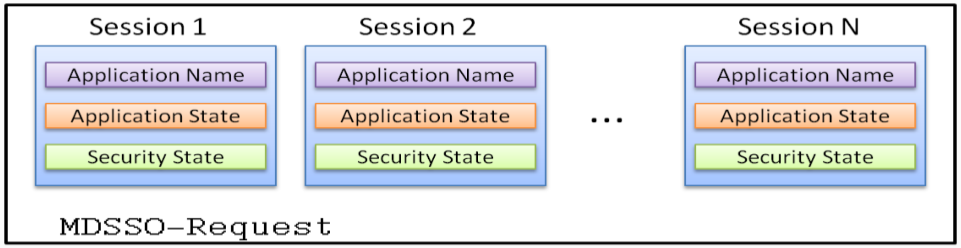
Implementation

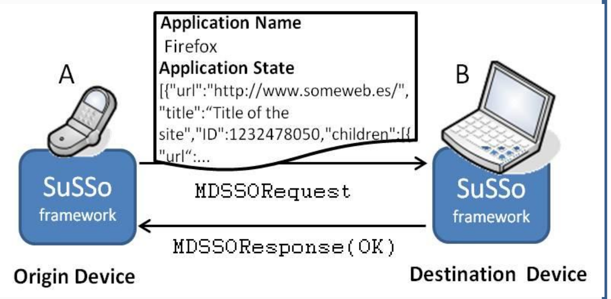
- We have:
  - Defined the middleware (APIs, communication primitives, storage formats..) and partially developed a prototype implementation for Android



Session 1	Session 2	…	Session N
Application Name	Application Name		Application Name
Application State	Application State		Application State
Security State	Security State		Security State

MDSSO-Request

- Currently working on:
  - Testing a use case: state of the brows activity is transferred between 2 devices
  - Defining testbed for performance measurement



Application Name
Firefox
Application State
[{"url":"http://www.someweb.es/", "title":"Title of the site","ID":1232478050,"children":[{ "url":...

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Conclusions and Future work

- Introduction of **MD-SSO** for service continuity in Consumer Cloud

- Definition of a generic **middleware architecture**:
  - enhances the user experience when consuming services on the move and changing terminals.
  - fosters healthy progressive adoption by industries and users.
  - formally defined APIs, communication primitives, storage formats …

- Partial implementation of the prototype “MD-SSO architecture” and test of uses cases (transfer of web browser activity).

- As future work:
  - Complete and validate the prototype system (performance, interoperability, usability…).

Thanks for your attention!

Questions?