

Webalyt: Implemetation of Architecture for Capturing Web User Behaviours With Feedback Propagation

Petr Filip & Lukáš Čegan

ABSTRACT

In the world of the Internet where people are consuming web-content, more and more emphasis is placed on user friendliness of web-pages. It means increasing web-page usability and better user-experience. Increasing quality of user-experience (UX) is the task of UX developers. They should always base their work on the best practices and research. Each web-page has its own specificity and it leads to new challenges for the UX developers. One of the biggest issues is the problematic view of a web-page on specific devices with specific web-browser versions. Tools for capturing user behaviour are available, but there are issues with data ownership and with the development of new functionality. Actually, there are no free easily scalable and extendable products for user data gathering on the market. In this paper, implementation of architecture (based on Spring Boot microservices) for capturing web user behaviours with feedback propagation is introduced. Architecture implementation is easily scalable and extendable. Webalyt is helpful for understanding user behaviour and improving user-experience.

BACKGROUND

One year ago, we proposed architecture called Webalyt, which is designed for web analysis. The architecture reflects needs such as data gathering, data extraction, transformation, processing and analysis. Gathered data are used for increasing user-experience, because Hint module is designed for sending of a recommendations to a user's web browser. For example, according to the recommendation web browser can increase a font size.

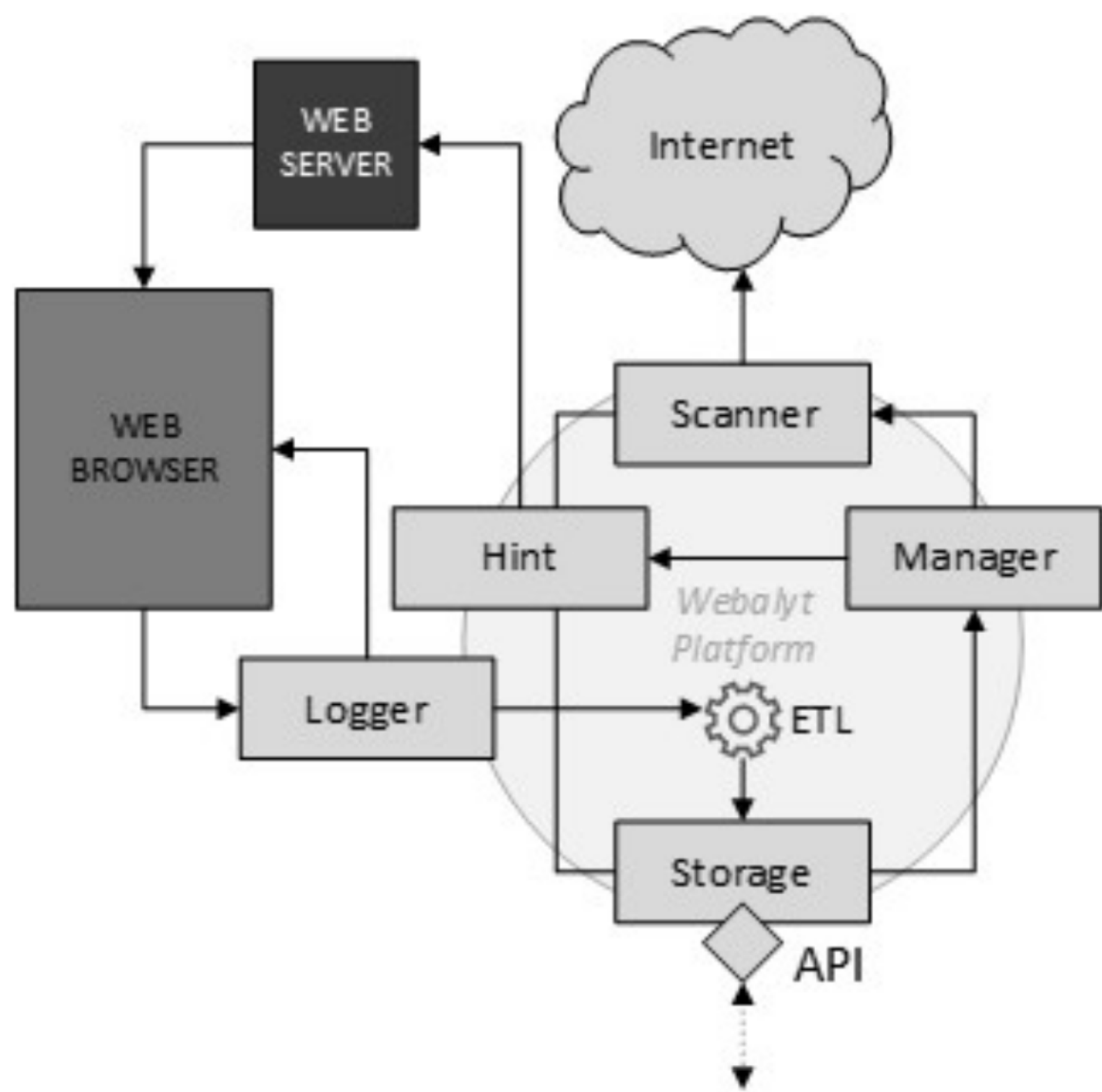


Figure 1: Proposed Webalyt Architecture

IMPLEMENTATION

Implemented system is Java based and lays on Spring Boot framework, Apache Kafka and Apache ZooKeeper. Many Spring Boot modules such as Spring Cloud Config, Eureka, Actuator, Kafka Streams were used. Due to used technologies and design patterns, architecture is easy scalable and maintainable.

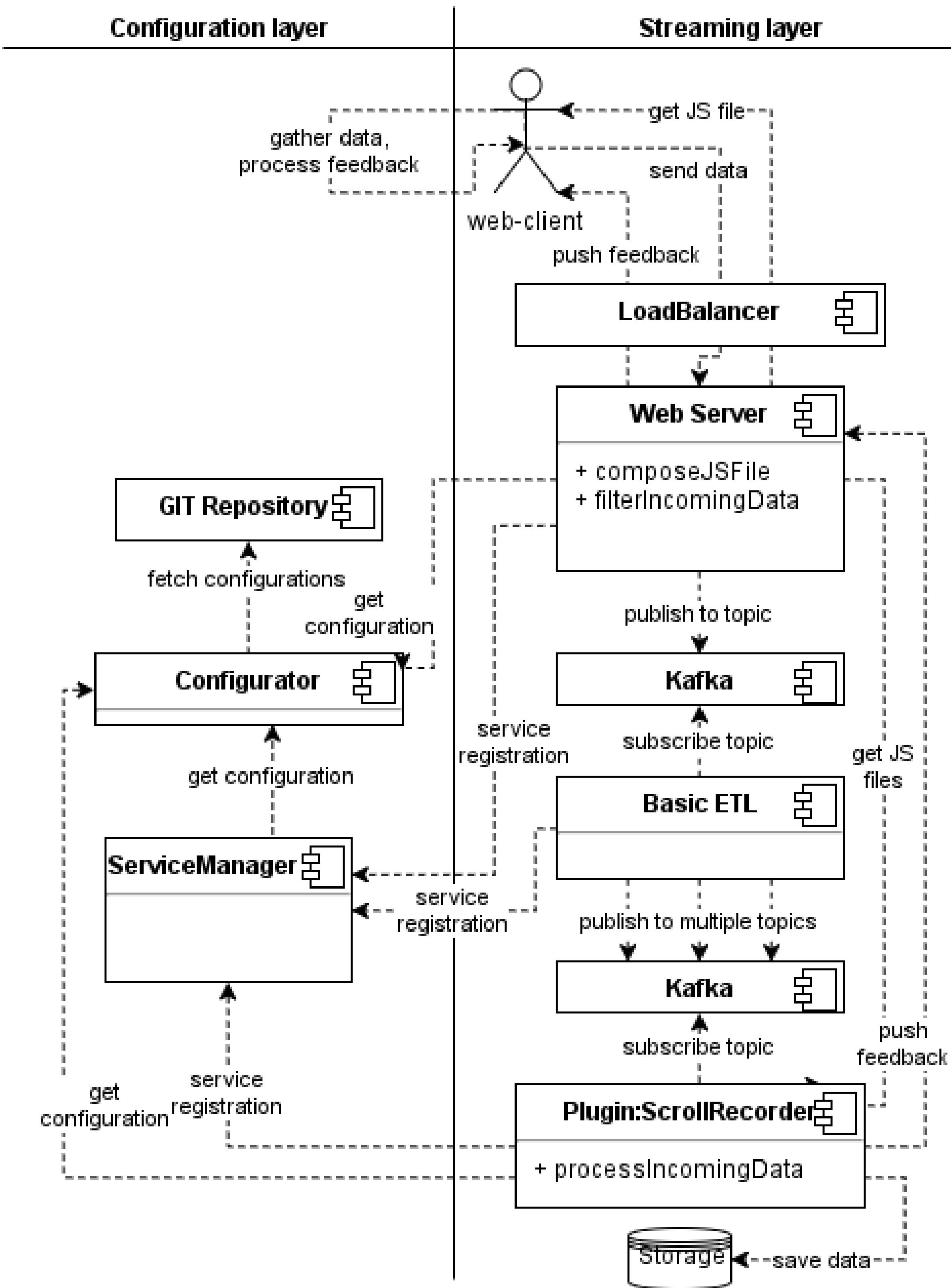


Figure 2: Implementation of the Webalyt Architecture

Data Layer

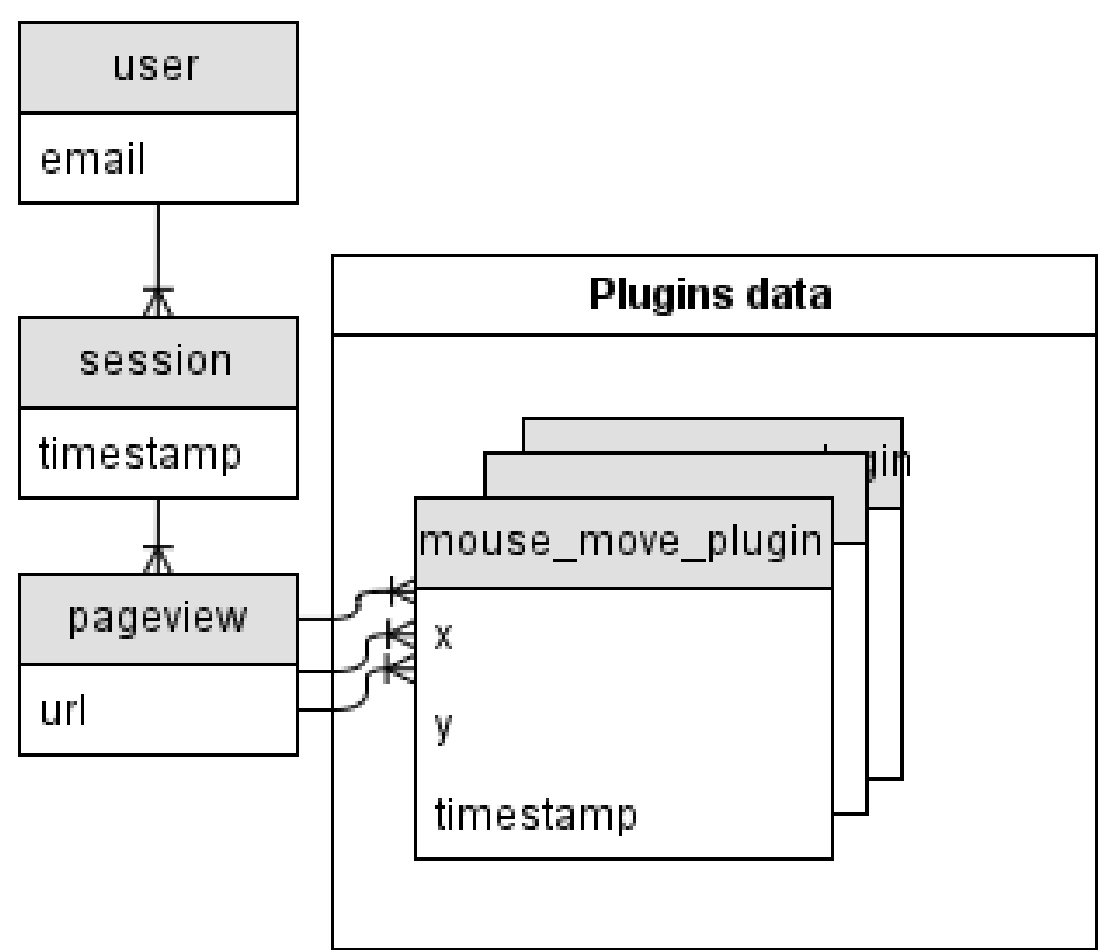


Figure 3: Data Structure

Plugin Skeleton

```
@Service
public class MousePluginEtlService extends PluginBase<MousePosition> {
    @Override
    protected void processMessage(MousePosition object) {
        //implement the process logic
    }
}
```

Listing 1: Plugin Skeleton Based on Spring Boot

ADVANTAGES

- easy to deploy and scale – just run a JAR file
- easy to extend – prepared skeleton for new modules
- self-hosted, optional cloud (AWS, Google Cloud)
- platform independent (Linux, Mac, Windows)
- open-source – available on github

FORTHCOMING RESEARCH

- implementation of analytical and recommendation modules
- replaying of user session – event such as scrolling, mouse movement, click etc.
- real-time remote control of a user session – useful for a help-desk
- clustering of user – based on user behaviour