

# RATA Context Sensitive Testing Architecture

16.4.2012

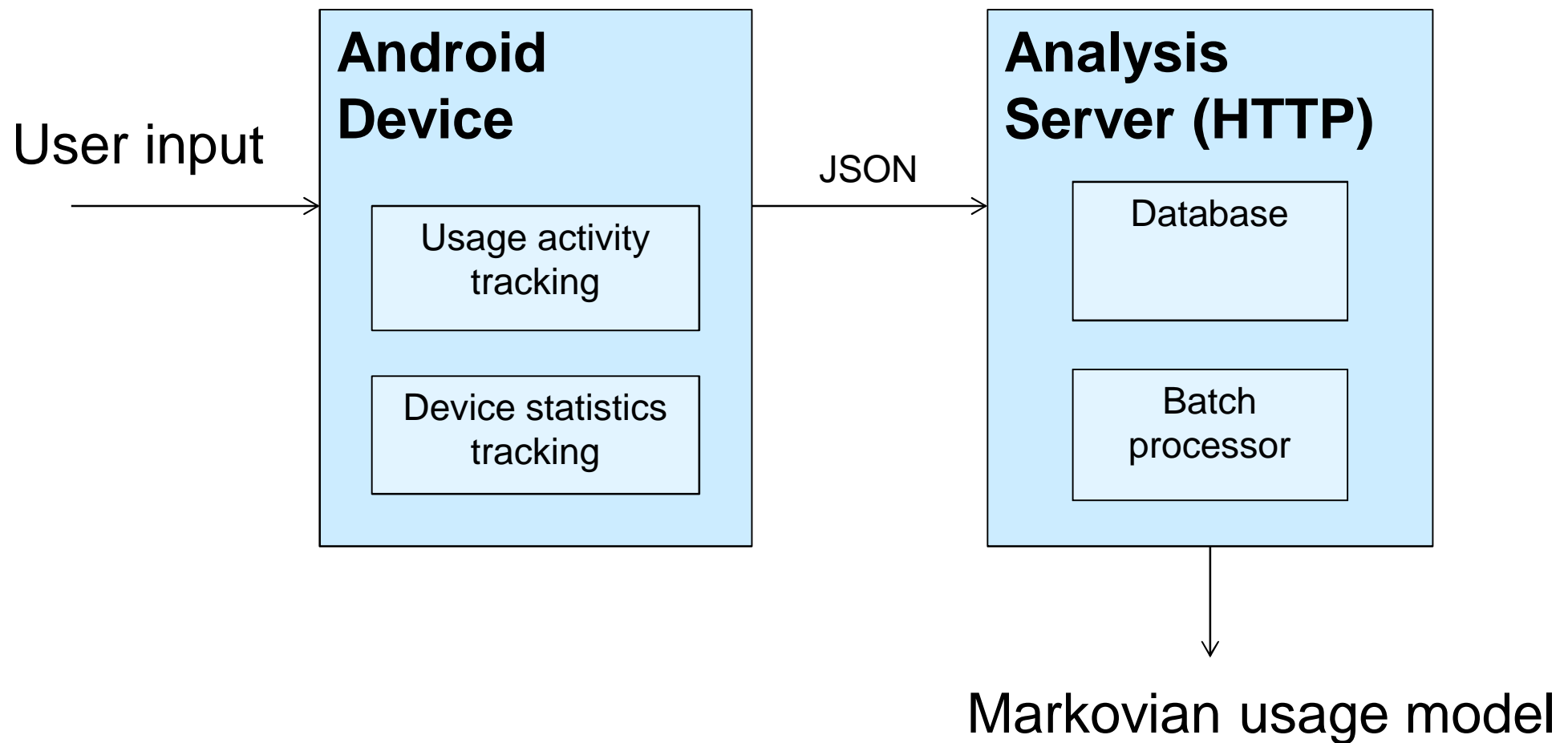
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## Introduction

- Software components are installed on an Android device to track the usage of the device and user interface
- Statistical model is generated of the information gathered from multiple devices
- The generated Markovian model can be used to simulate real life user interface usage over a long period of time

## System architecture



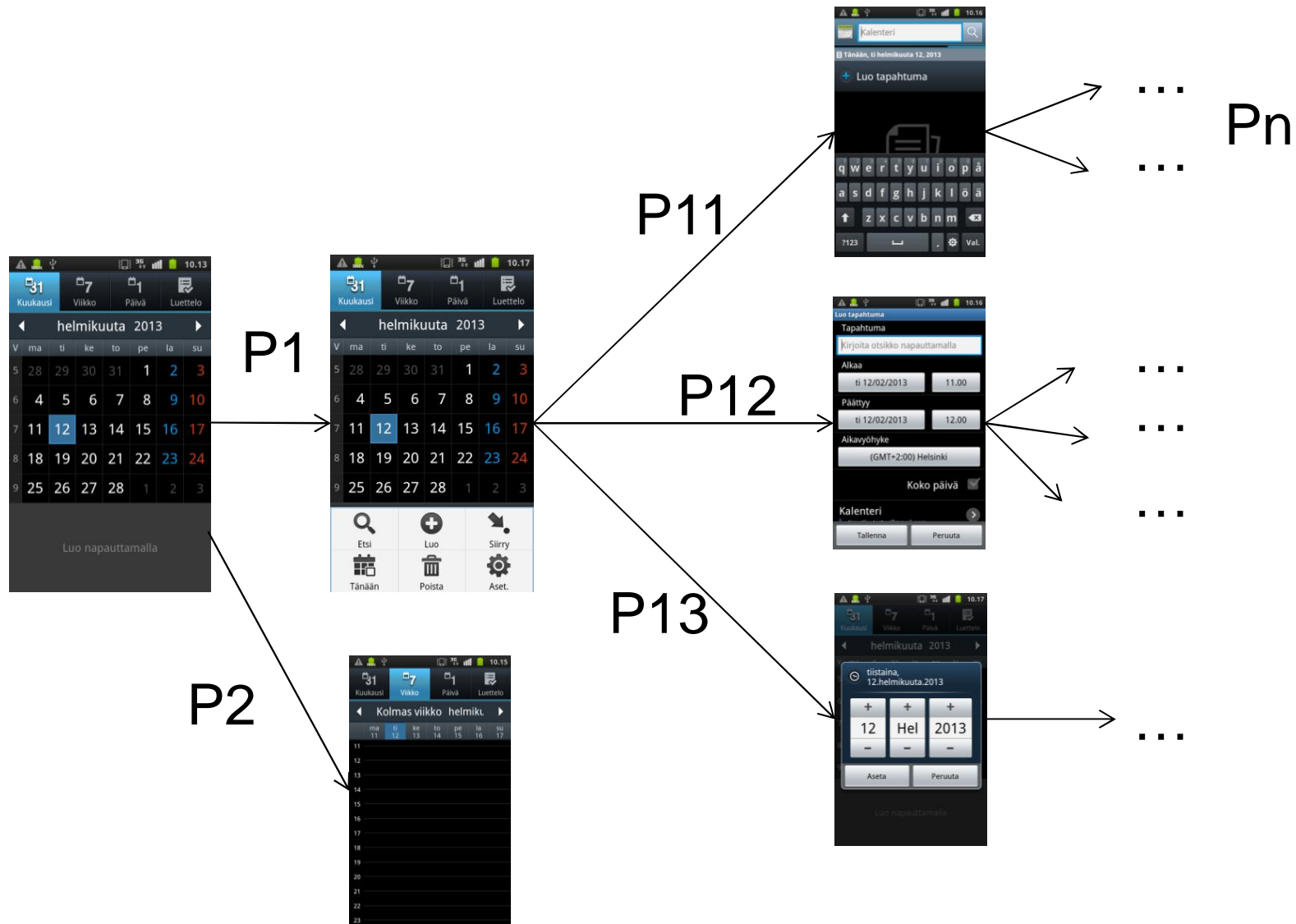
## System architecture (cont.)

- Usage activity tracking
  - A software component on the Android device tracks the usage of the applications and transitions between them
  - Possibly touch events are tracked within an application (might require modified firmware)
- Device tracking
  - System statistics: battery voltage, charging status etc.

## System architecture (cont.)

- Android devices send their tracking to the analysis server in JSON format
- Analysis server stores the information into a database and sequentially runs a batch processor that does statistical analysis of the information
- As a result a Markovian model of the user interface usage is got
  - Probabilities of transitions between user interface views

# System architecture (cont.), Markovian model

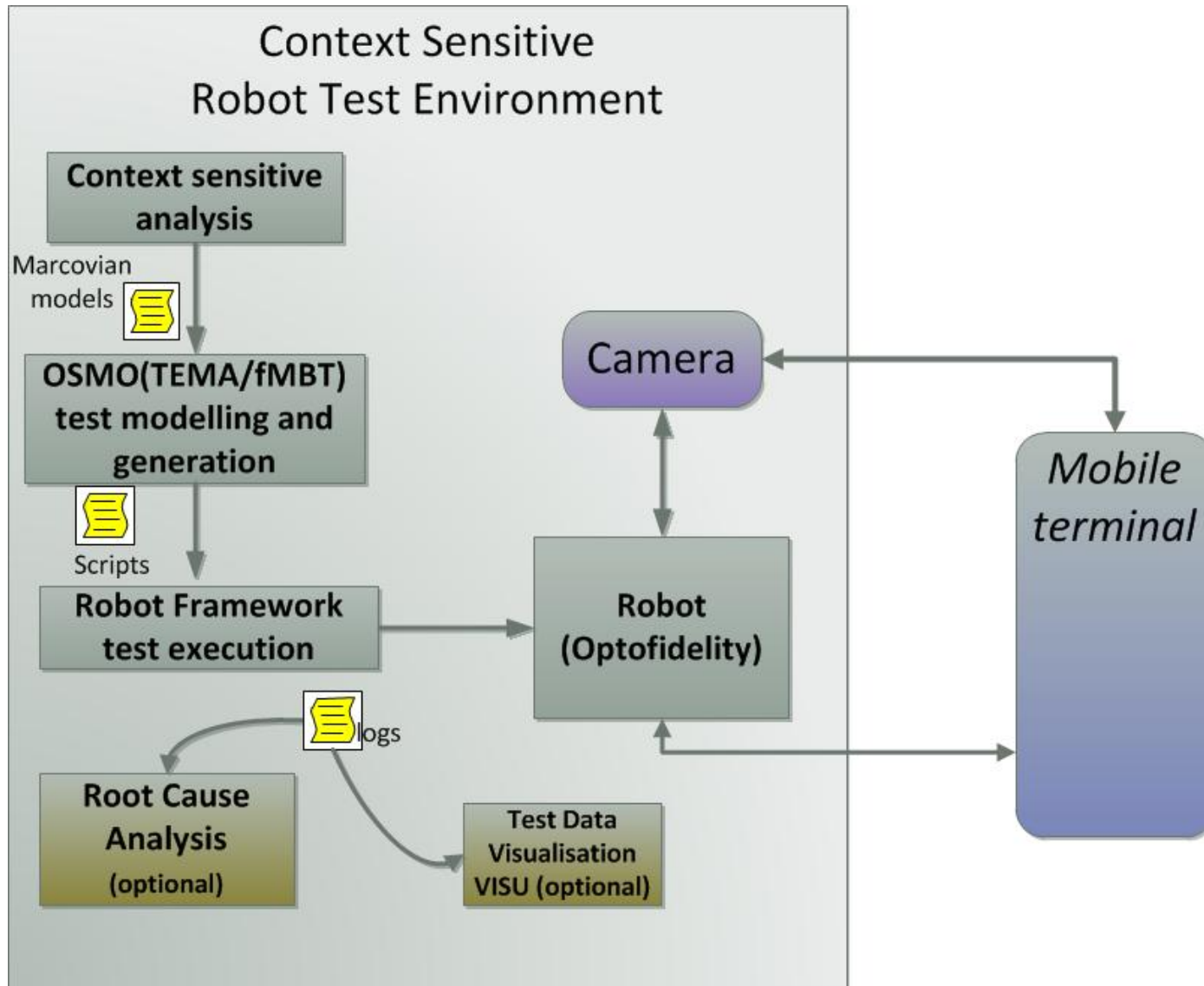


# Output format of Markovian model generation

```
<?xml version="1.0" encoding="UTF-8"?>
<MarkovModel>

  <GuiState>
    <ID>1</ID>
    <ActivityClassName>fi.vtt.TestApp1.MainView</ActivityClassName>
    <PicUrl>fi.vtt.TestApp1.Mainview_1.png</PicUrl>
    <TimesVisited>10</TimesVisited>
    <Transitions>
      <Transition>
        <ID>2</ID>
        <Probability>0.4</Probability>
        <Trigger>
          <Location>
            <CoordinateX>128</CoordinateX>
            <CoordinateY>128</CoordinateY>
          </Location>
        </Trigger>
      </Transition>
      <Transition>
        <ID>3</ID>
        <Probability>0.6</Probability>
        <Trigger>
          <Button>
            -- We assume that this is hardware back button for now
            TODO some nice way to introduce for example androids hard
            keys (back button, home...)
          </Button>
        </Trigger>
      </Transition>
    </Transitions>
  </GuiState>
```

## Context sensitive robot test environment



1. Client software component in Android mobile device collects usage activity information and sends them to analysis server
2. Analysis server generates Markovian models
3. Markovian models are transformed to OSMO test models or to models of other tools
4. OSMO generates scripts for Robot Framework open source tool
5. Robot Framework scripts control Optofidelity robot





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