A Framework for Networked Interactive Surfaces

Peer-reviewed author version

# A Framework For Networked Interactive Surfaces

*Tom Cuypers – Karel Frederix*

*Chris Raymaekers – Philippe Bekaert*

*Hasselt University – tUL – IBBT*
*Expertise Centre for Digital Media (EDM)*

- Software framework

- C/C++ (OpenGL for rendering)

- Easy developing of applications
  with support for:

  - Multi-touch interaction

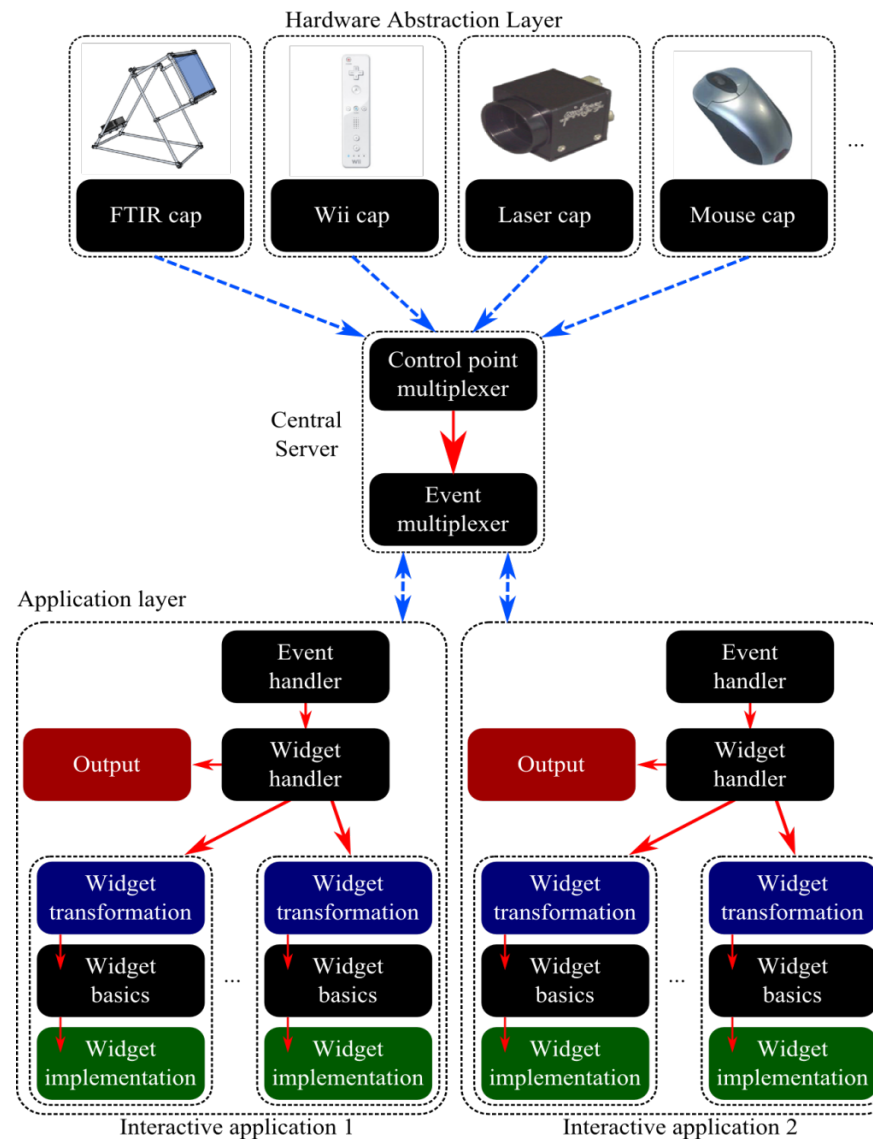  - Networked collaboration

# Overview

- General System Architecture

- Event Passing Mechanism

- Creating Applications
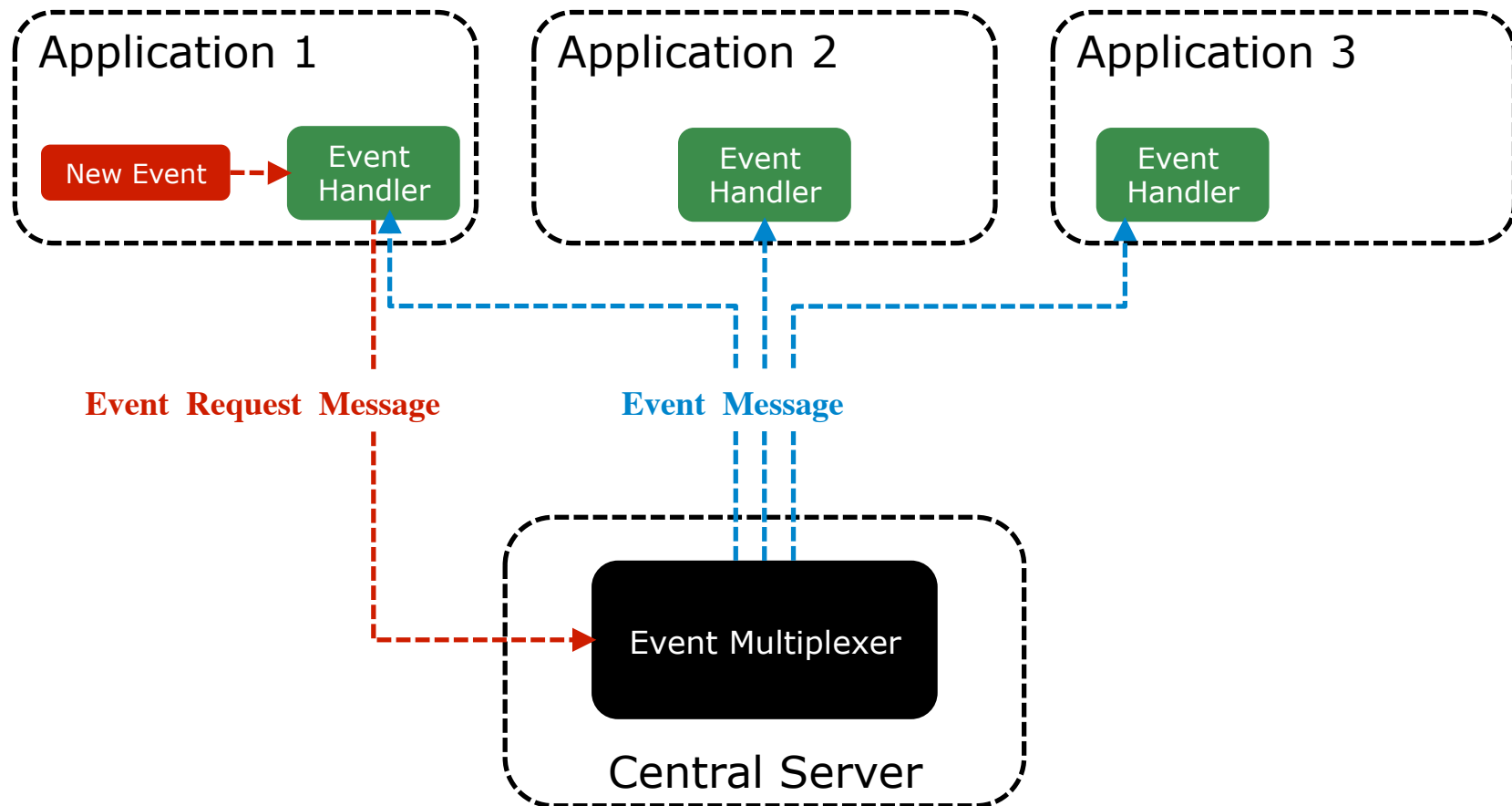
- Examples

# Architecture

- Three Layers:
  - Hardware Abstraction Layer
  - Central Server Layer
  - Application Layer

- Compiled as separate executables
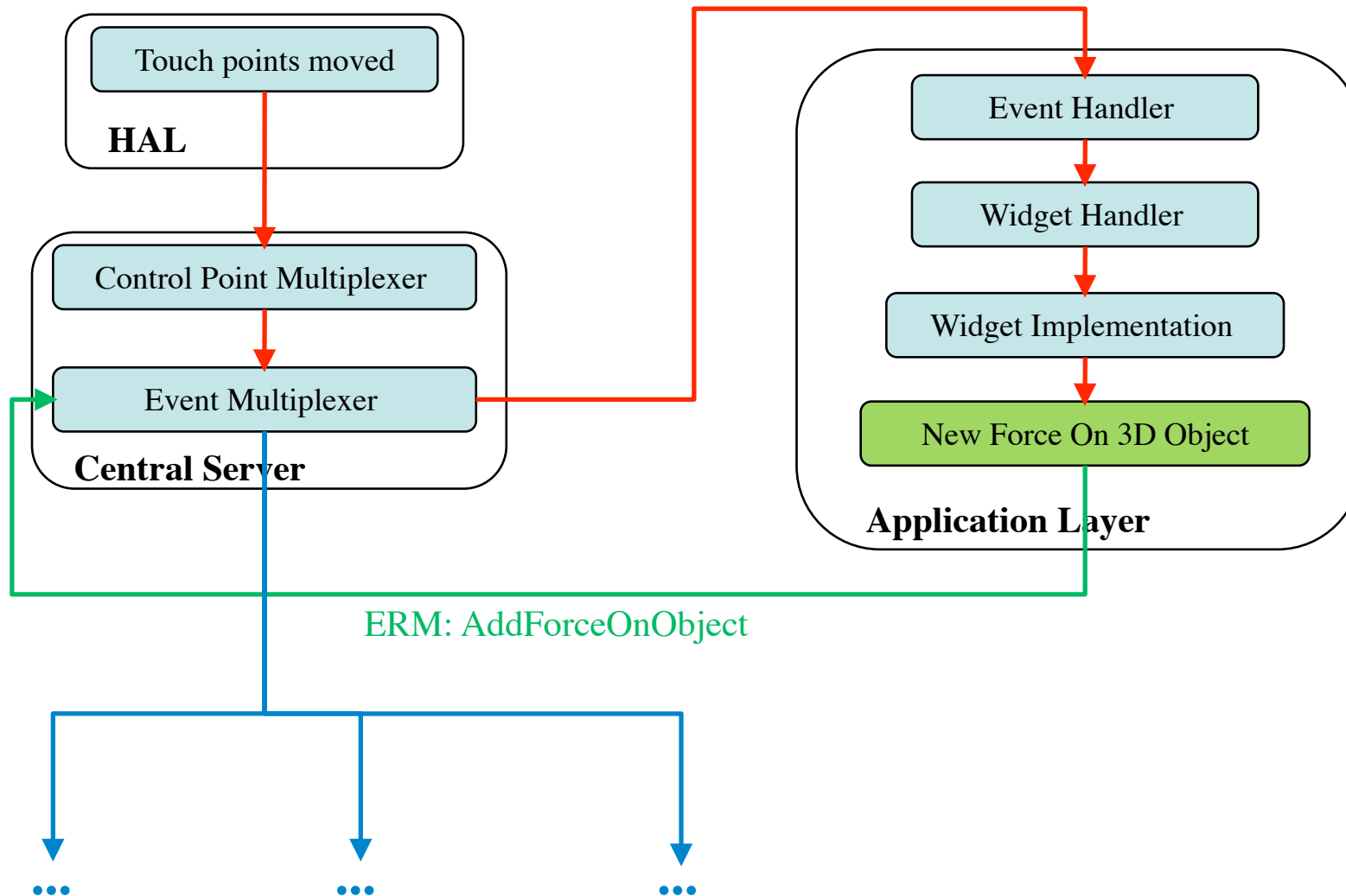
- UDP communication

# Architecture



Hardware Abstraction Layer

FTIR cap · Wii cap · Laser cap · Mouse cap · ...

Central Server

Control point multiplexer → Event multiplexer

Application layer

Interactive application 1

Event handler → Widget handler → Output

Widget transformation → Widget basics → Widget implementation ... Widget transformation → Widget basics → Widget implementation

Interactive application 2

Event handler → Widget handler → Output

Widget transformation → Widget basics → Widget implementation ... Widget transformation → Widget basics → Widget implementation

# Event Passing

# Event Passing Example

Touch points moved

**HAL**

Control Point Multiplexer

Event Multiplexer

**Central Server**

Event Handler

Widget Handler

Widget Implementation

New Force On 3D Object

**Application Layer**

ERM: AddForceOnObject

...   ...   ...

# Creating Applications

- Inherit from basic widget class

- Add Application Logic

- Implement `Render()` function

- Optional:
  - Touch Point Events
  - Physics Updates
  - New Input

# Video

- ## Author homepage:
  http://research.edm.uhasselt.be/~tcuypers/

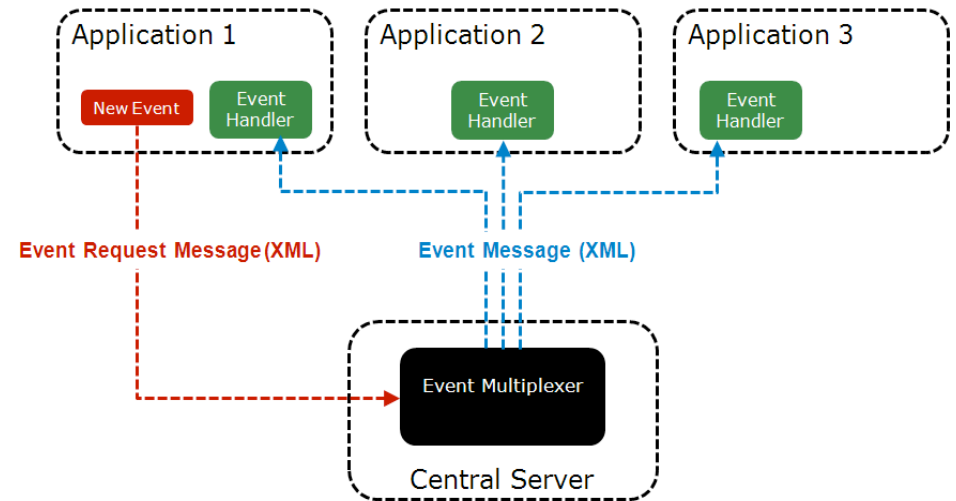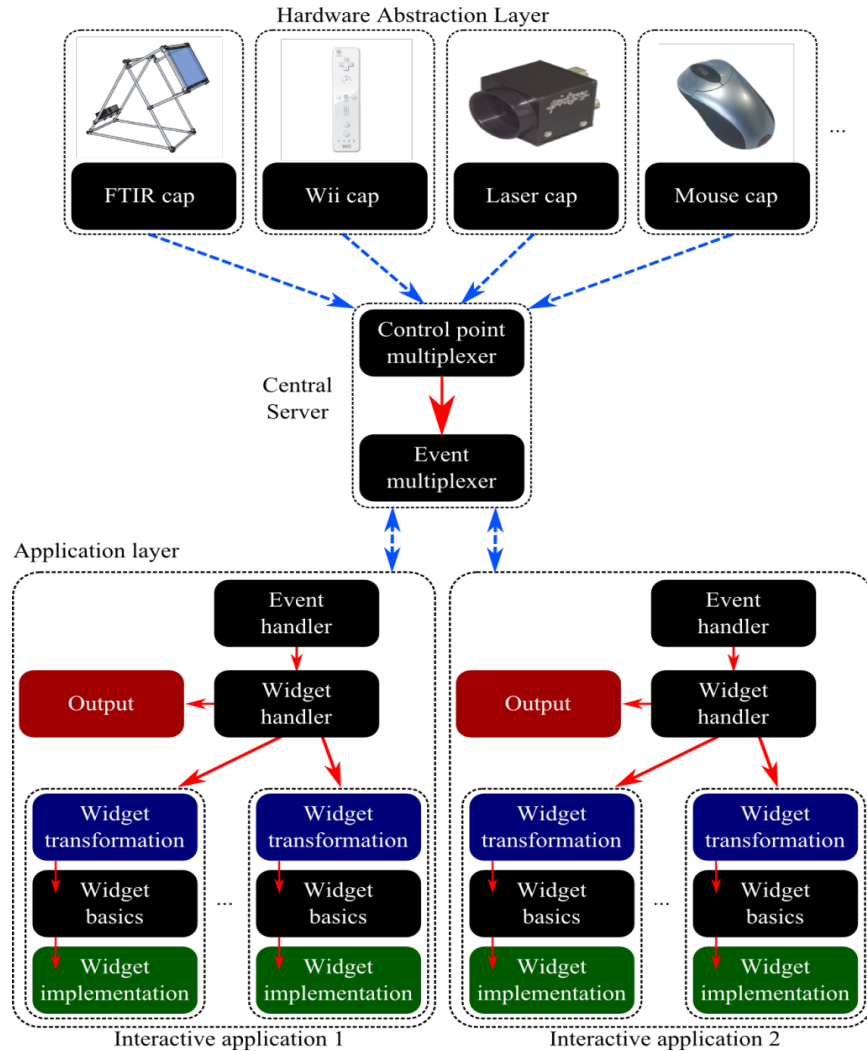- ## YouTube:
  http://www.youtube.com/watch?v=FjDwIcN5omw

# Questions?

# Extern Libraries

- OpenGL → for rendering

- FFMpeg → for video loading

- DevIL → for image loading