

Enhancing the Man-Machine-Interface of Accelerator Control Applications with Modern Consumer Market Technologies

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10.10.2013

Motivation

- Today's consumer market is a major technology driver
- In particular:
 - Smartphones and tablets
 - Game consoles
 - Augmented reality devices



**Microsoft
Kinect**



**Apple
Siri**



**Google
Glass**

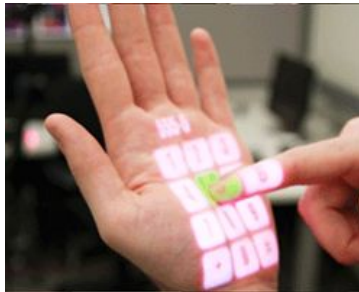
Unique Features

- **App** established as novel application class
- Staying **online** everywhere all the time
- Versatile **Man-Machine-Interface (MMI)** available providing
 - **Touch** gesture (2D) recognition
 - **Motion** gesture (3D) recognition
 - **Speech** recognition
 - **Gaze** recognition

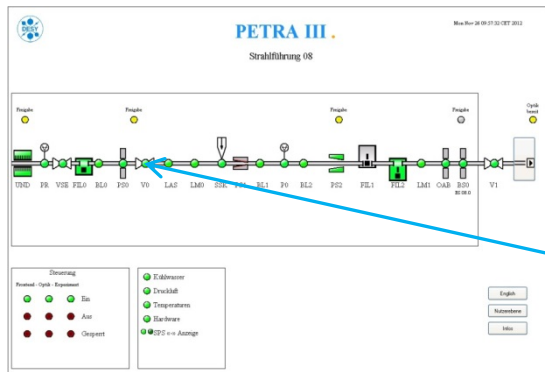
This
talk!

Imagine ...

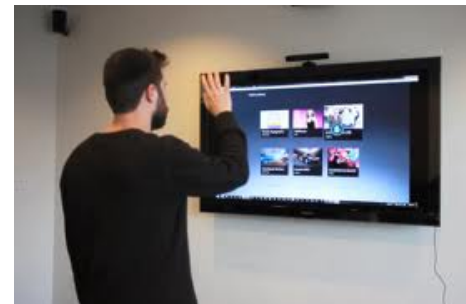
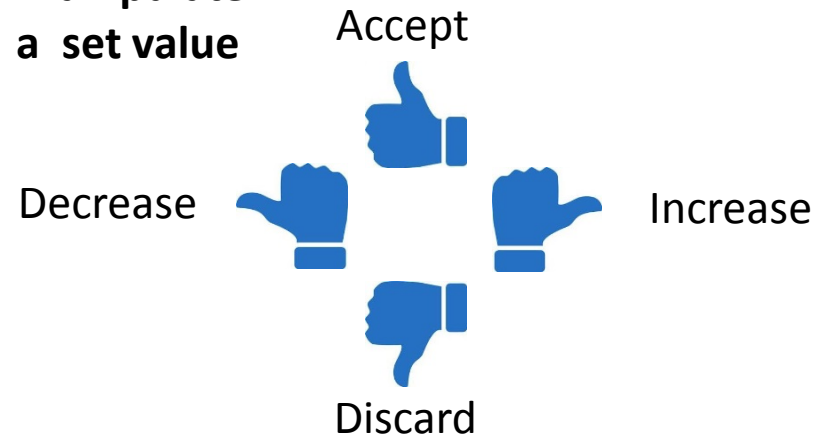
Control a device



Close valve
V0



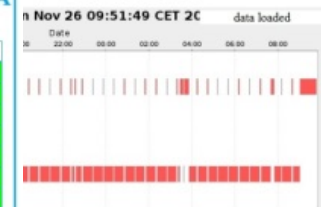
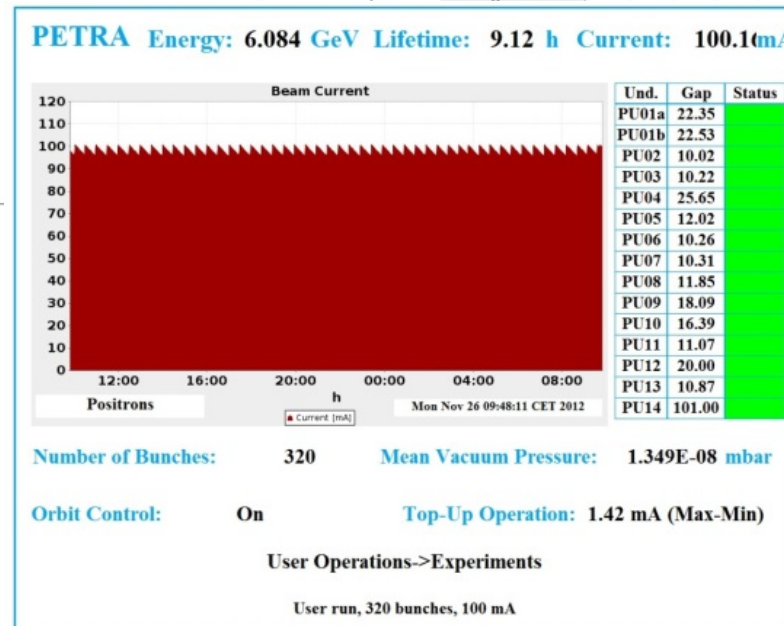
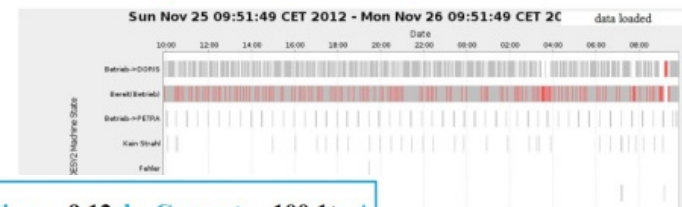
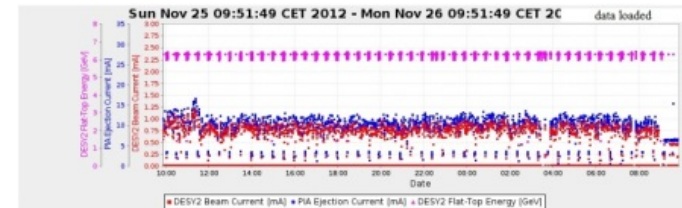
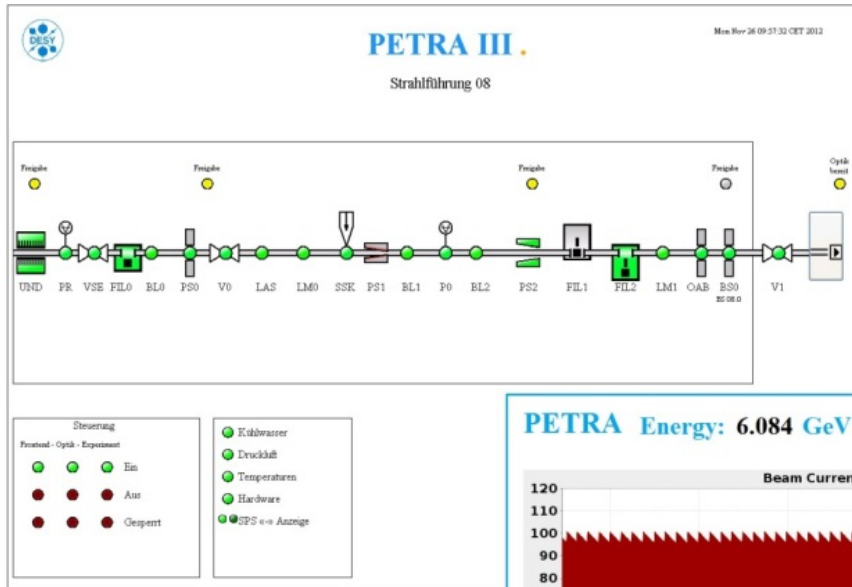
Manipulate a set value



Operate an
over-head
display

Note: The next generation of operators might no longer be familiar with detailed, mouse-controlled applications

Web2cToGo Project



Web2cToToolkit
Example Web-Applications

Web2cToolkit -
compliant Web-service

Web2cToGo Implementations

- **Platform - neutral**
 - Native mobile apps
 - Browser-based app
 - Native Java application
- **Hybrid**
 - Embedded **Web2cToGo** Web-Desktop (HTML, CSS, JavaScript)

The screenshot displays a web interface for configuring a Web2cToGo application. It features two main sections: 'Server' and 'Application'. Under 'Server', there is a 'Select:' dropdown menu currently showing 'localhost:8080'. Below this is an 'Enter:' text input field. Under 'Application', there is another 'Select:' dropdown menu showing 'Web2cToGoDemo.xml'. Below the application dropdown, there are several checkboxes for different features: 'Guest Login' (checked), 'Mouse MMI' (checked), 'Voice MMI' (checked), 'Touch MMI' (unchecked), 'Virtual Touch MMI' (checked), and 'Camera Mirrored' (unchecked). A large blue 'web²c' watermark is overlaid on the interface. At the bottom right, there is a 'Connect >>>' button and a small version number 'V 1.1.0'.

Server	Application
Select: localhost:8080	Select: Web2cToGoDemo.xml
Enter: [Text Input]	[Text Input]
<input checked="" type="checkbox"/> Guest Login	<input checked="" type="checkbox"/> Voice MMI
<input checked="" type="checkbox"/> Mouse MMI	<input checked="" type="checkbox"/> Virtual Touch MMI
<input type="checkbox"/> Touch MMI	<input type="checkbox"/> Camera Mirrored
Connect >>>	
V 1.1.0	

Web2cToGo Environment

- Mouse
- Touch
- Voice
- Virtual Touch



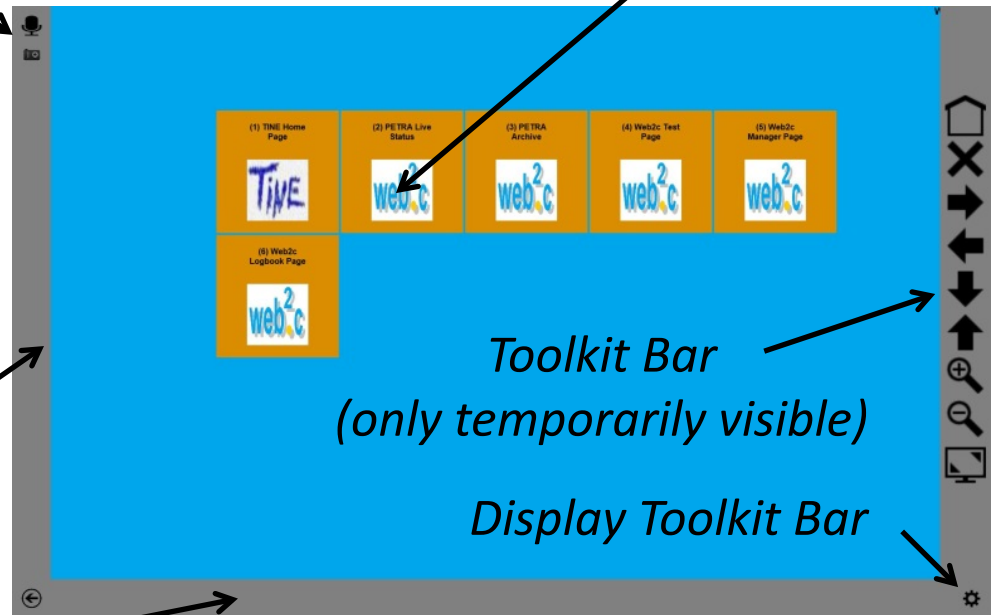
*Indicators for Video- /
Audio Recording*

*Select
Application*

*Toolkit Bar
(only temporarily visible)*

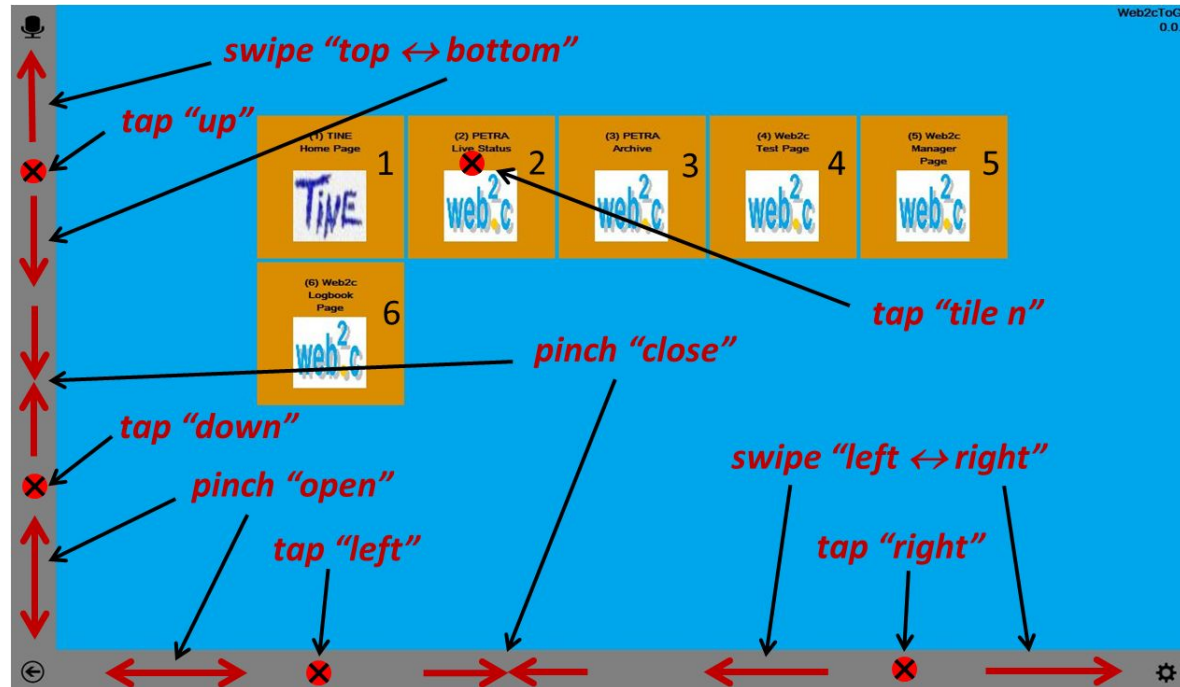
Display Toolkit Bar

*Touch-Sensitive
Navigation Bars*



Web2cToGo Web-Desktop
(Application Explorer)

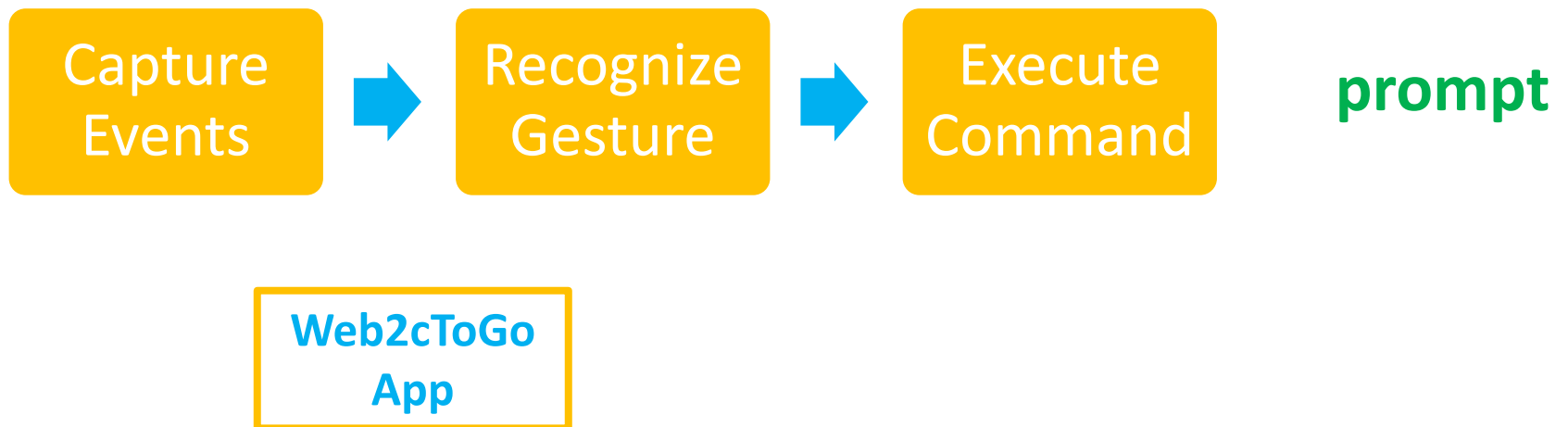
Web2cToGo MMI: Touch



Swipe "right → left"
("left → right")

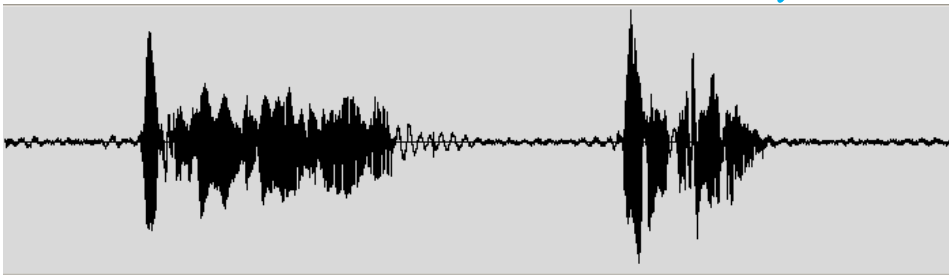
Browse to next (previous)
application

Web2cToGo MMI: Touch



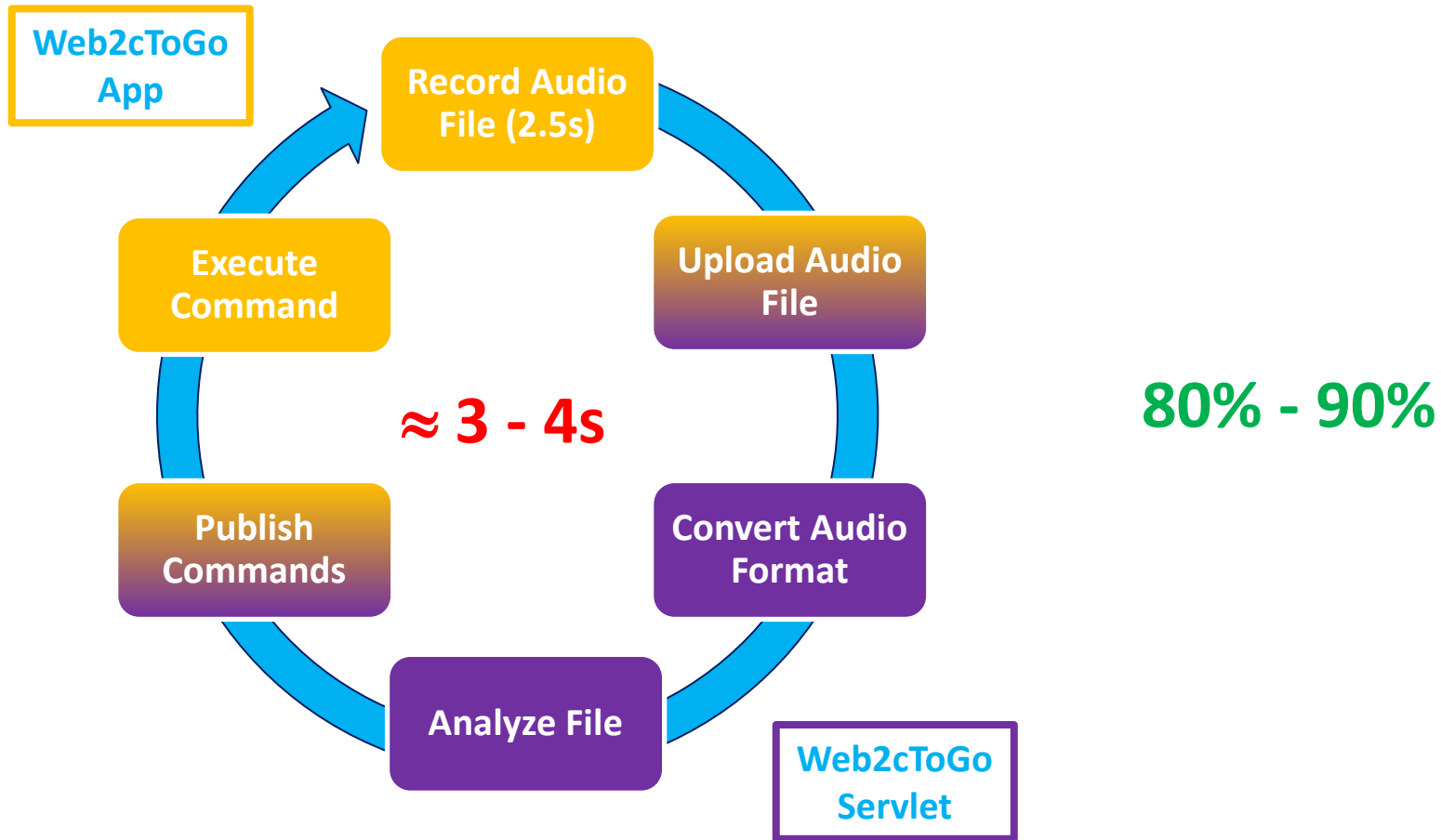
Web2cToGo MMI: Voice

B R A W Z R A Y T



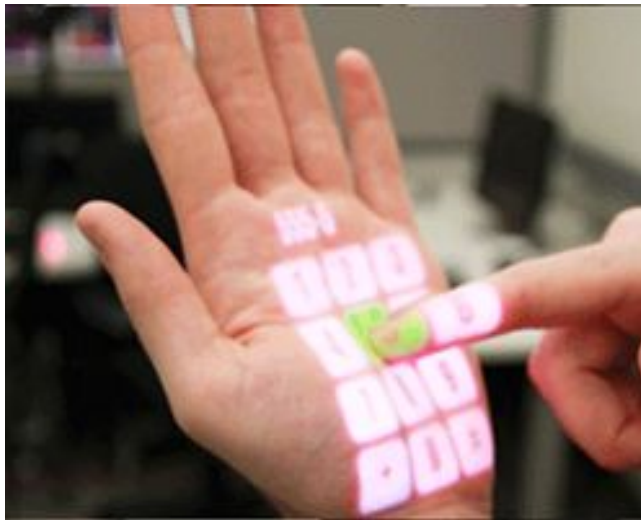
“Browse right”

Web2cToGo MMI: Voice



Web2cToGo MMI: Virtual Touch

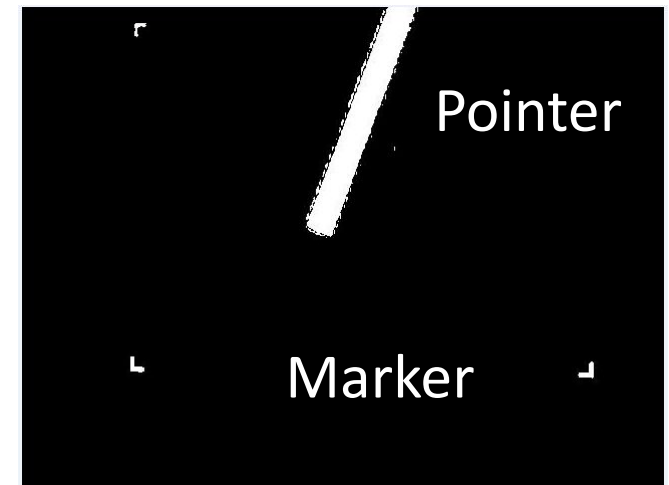
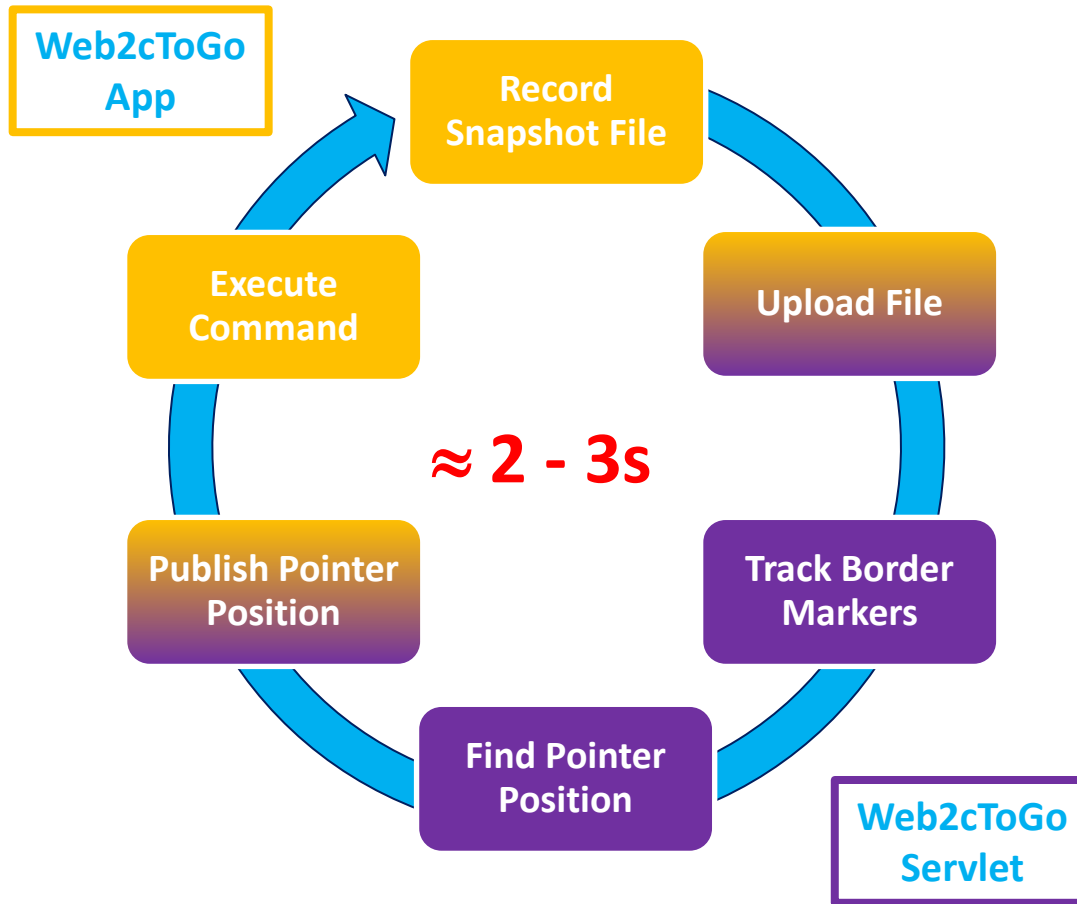
LCD projector



Camera



Web2cToGo MMI: Virtual Touch



Web2cToGo: Next Steps

- Support more MMI types and provide
 - Motion gesture (3D) recognition
 - Gaze recognition



Leap Motion Controller

- Test **Web2cToGo** in combination with Google Glass



Google Glass

- Design and implement Web2cToGo-compliant apps for specific use cases
- Field test involving control room operators and service technicians

Web2cToolkit Home

<http://web2ctoolkit.desy.de>

Web2cToGo Client-Server Architecture

