



CONNECTING MULTIMEDIA- AND PEN-BASED WHITEBOARDS

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Master Thesis Project

Digital Media

University of Applied Sciences Hagenberg

February 2008



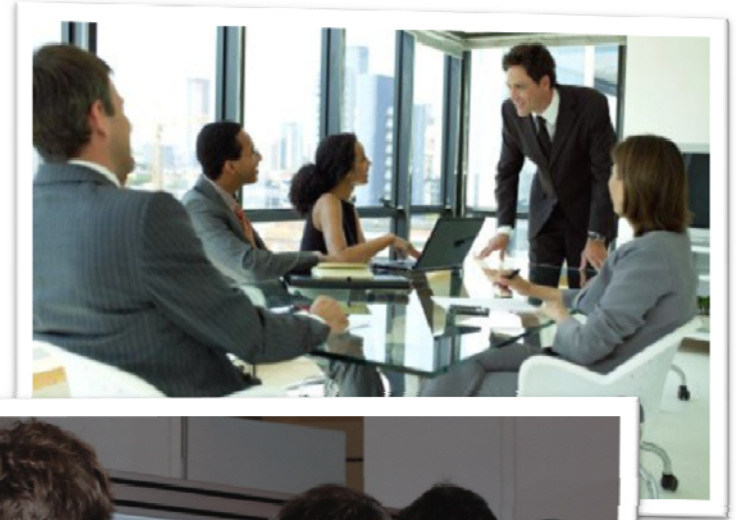
OVERVIEW

- Motivation
- Research
- My Prototype
- Server/Client Solution
- Outlook Master Thesis



MOTIVATION

- Multiple Users should be able to work on multiple locations, like they would work together on the same place.
- Collaborative Workflows
 - Brainstorming





RESEARCH

- Existing solutions
 - Paint-like “whiteboard” applications (Windows GUI)
 - ‘Remote Desktop’-like solutions to share desktop
 - Skype Extra Plugins
 - 1 Presenter → Audience

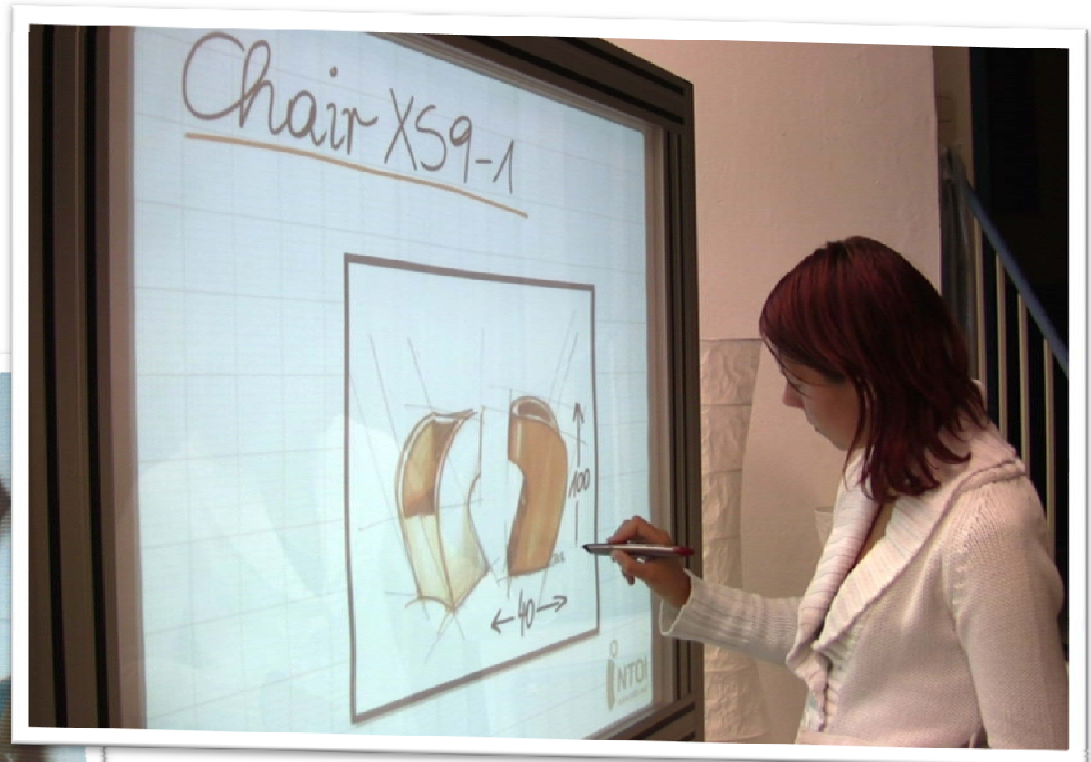
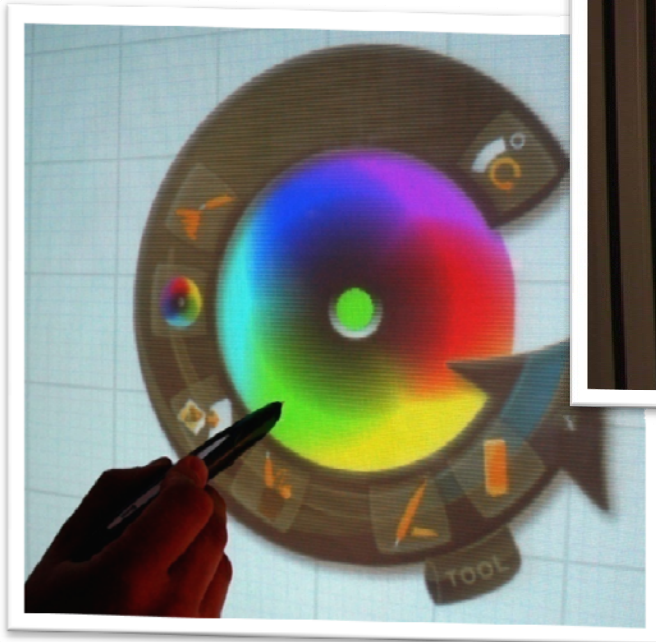
- No pen-based interaction
- No tools for good collaborative work





PHYSICAL SETUP

- Intoi Board¹
- Anoto Pens²



¹ www.intoi.net

² www.anoto.com



CONNECTING MULTIMEDIA-BASED WHITEBOARDS

MY PROTOTYPE

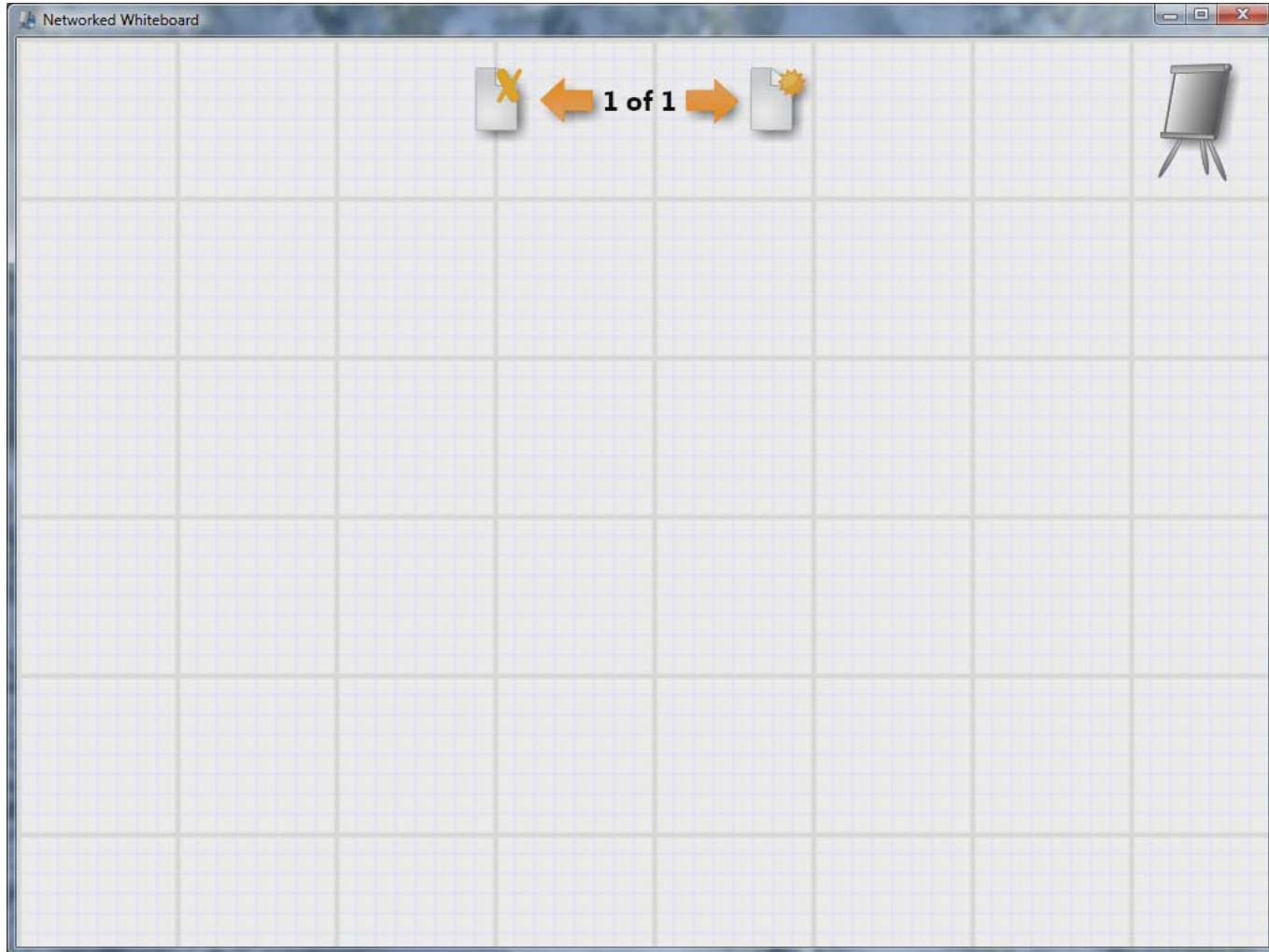
- C# / Windows Presentation Foundation (WPF)
- Re-Implemented basic features of the INTOI project (which wasn't implemented with WPF)
- Built own components to enable an infinite-sized drawing area and identifiable objects (necessary for exchange of objects via a server).

```
<Window
  xmlns="http://schemas.microsoft.com/winfx/2006/xaml/presentation"
  xmlns:wbc="clr-namespace:Whiteboard.Controls"
  x:Class="Whiteboard.WhiteboardWindow"
  Title="Networked Whiteboard" Width="1024" Height="768">
  <Canvas x:Name="LayoutRoot">
    <wbc:WbCanvas Identifier="1233,23,343"
  x:Name="WhiteboardCanvas">
      <wbc:WbStroke Identifier="1233,23,343" Stroke="..." />
      <wbc:WbImage Identifier="1233,25,343" Uri="..." />
    </wbc:WbCanvas>
  </Canvas>
</Window>
```

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MY PROTOTYPE



Click to Play!



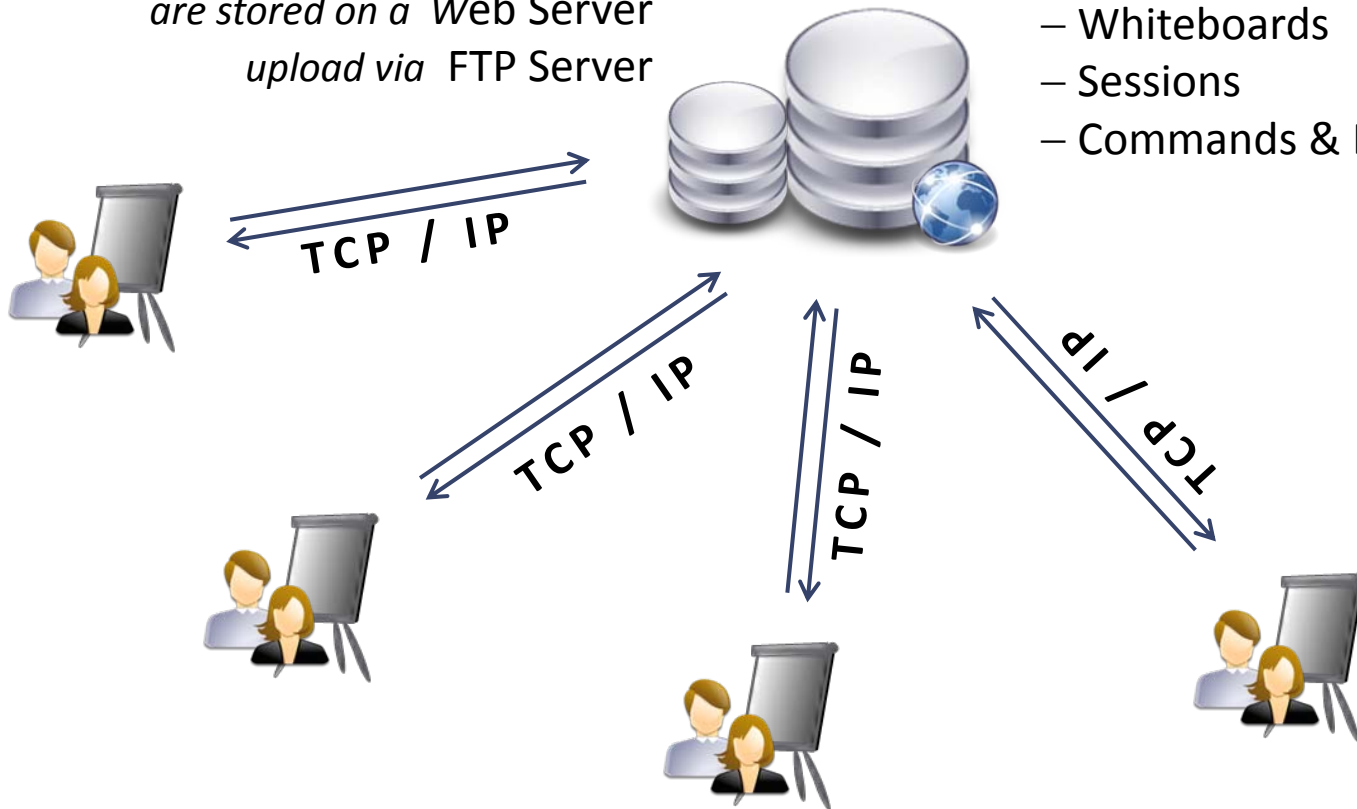
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SERVER/CLIENTS

Files (Images, Powerpoint Files)
*are stored on a Web Server
upload via FTP Server*

Main Server manages

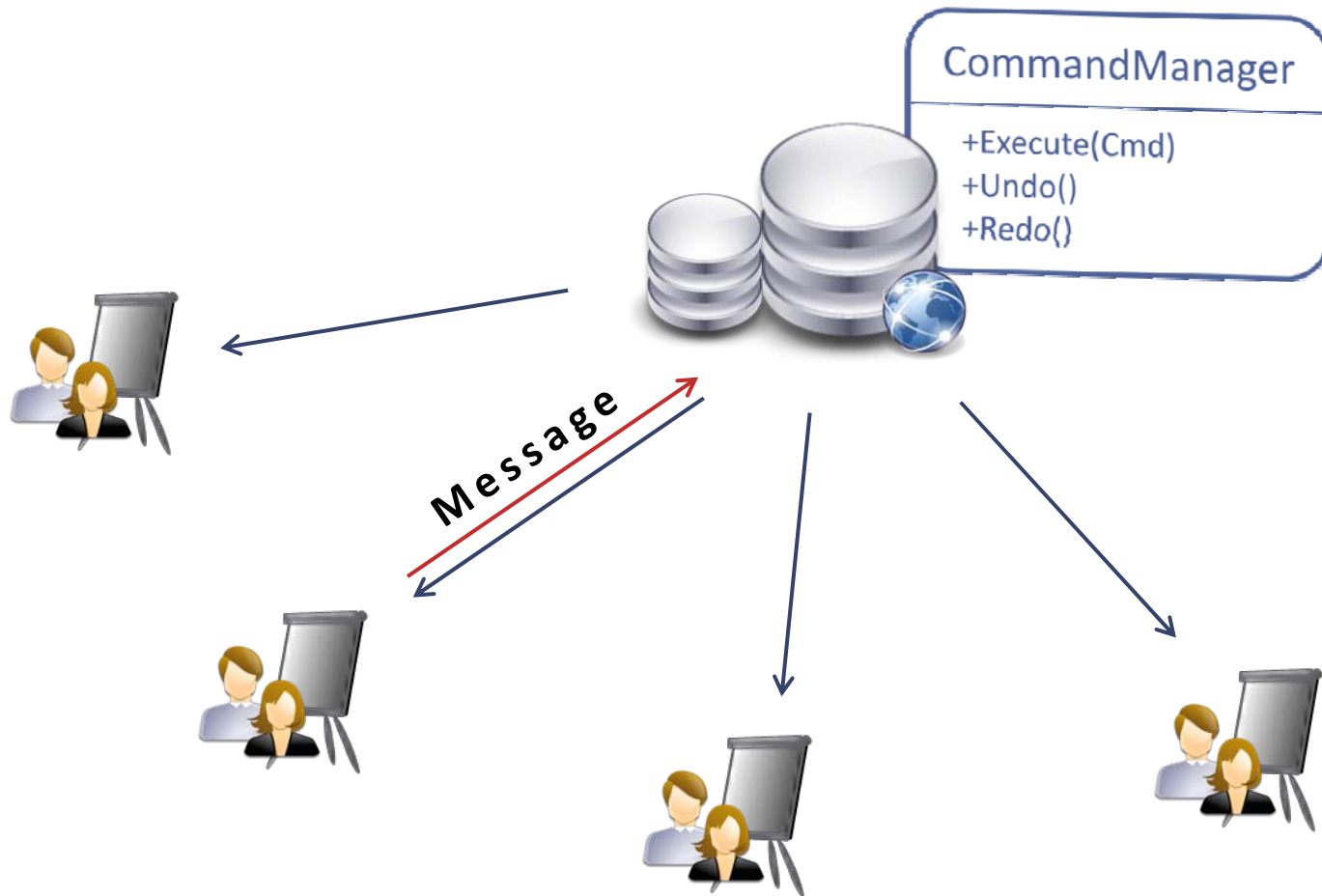
- Whiteboards
- Sessions
- Commands & Events





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SERVER/CLIENTS





CONNECTING MULTIMEDIA-BASED WHITEBOARDS

DEMO

- Register Whiteboards and Users
- Session Management
- Work together on an infinite sized drawing area
 - Handwriting
 - Images





MASTER THESIS OUTLOOK

- Improve Application
 - Usability, Adding Pen Interaction Features
 - Curve Dial, Pen Based Browser, ...
- Add more features to enable collaborative work, e.g.
 - Admin/Moderator Mode, Rights
 - Add Indicators on Objects to see, who is working on
- Minutes of a meeting
 - e.g. To see WHO has written WHAT & WHEN
 - Replay Sessions



CONTACT

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