vPresent

Collaborative Presentation System on Mobile Devices

Introduction

Presentation … (1)

- Is to show or explain content of a topic to audience *(From Wikipedia)*
- Used in many aspects
  - Educational
  - Business
- Analyze existing presentation …
  - Based on existing presentation systems

Presentation … (2)

- Content
  - Slides-based
    - Apple Keynote / Microsoft PowerPoint
  - Alternative
    - Prezi – Zoom-in and out of whole picture

Presentation … (3)

- Style
  - Single Presenter oriented
  - Few Viewer involvement
    - Ask question
    - Voting
- Device
  - Single machine connected to external monitor

Problem ?

- Presenter Dominance
- Difficult for Passing Control
  - For multiple presenter
- Few Viewer Involvement
  - Just listening
  - Posting question and voting … But still limited

Objective

- Prevent Single Presenter Dominance
- Optimize for Multiple Presenters
- Allow Viewers Join and Contribute
- Vague Boundary between Presenters and Viewers

Agenda

- Introduction
- Collaborative Presentation
- System Design and Implementation
- Conclusion
- Future Development

Collaborative Presentation

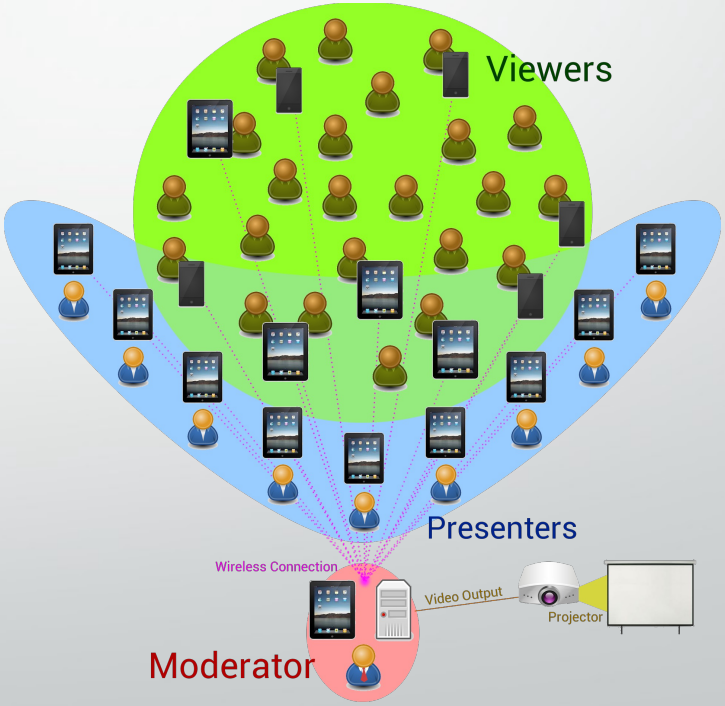
… Make the Difference

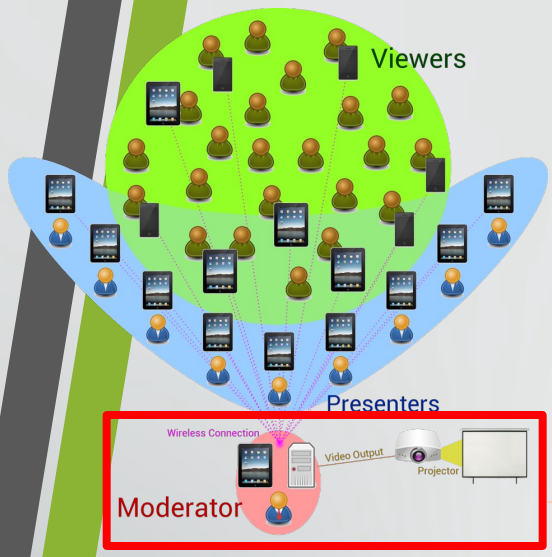
Main Idea

- Allow more people to contribute presentation content
- Contribute by Presenters
  - Seamless Presentation
- Contribute by Viewers
  - Viewers Involvement

Terminologies

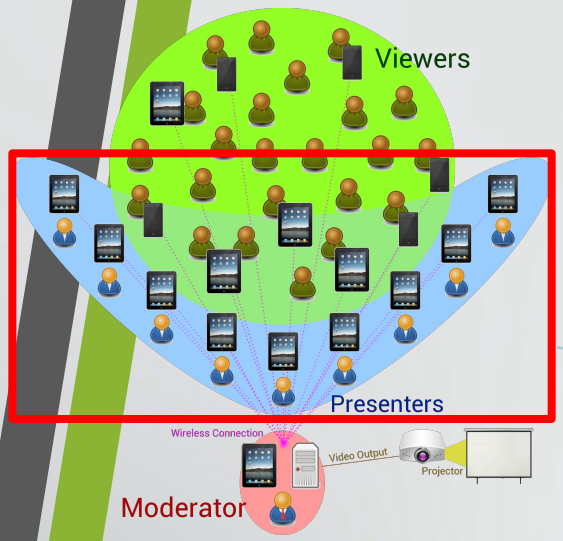
- Group of People
  - Moderator
  - Presenter
  - Viewer
- Mechanism
  - Seamless Presentation
  - Viewers Involvement



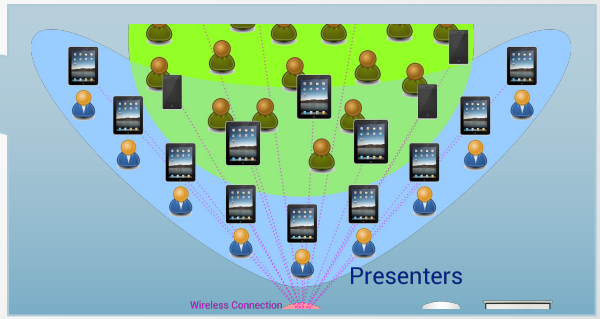


Moderator

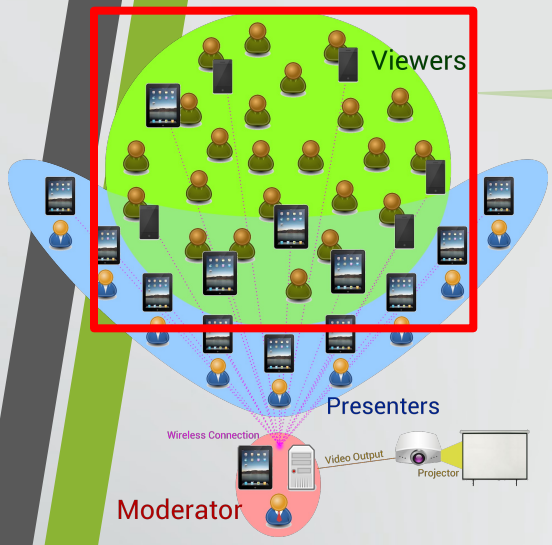
- One in a presentation
- Controlling and Monitoring Presentation
  - Handling requests by presenters and viewers
- Device connected to External Monitor
- Sometime can be a Presenter



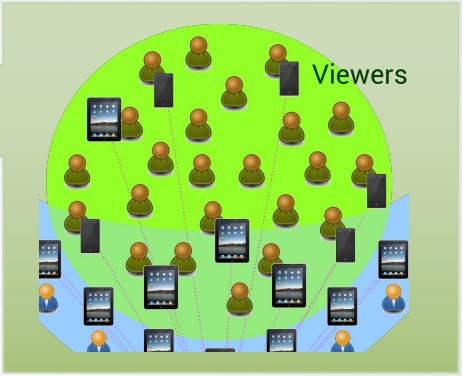
Presenters



- Presentation with own slides
  - In their own device
- Active Presenter
  - Presenting Presenter
- Inactive Presenter
  - Not presenting
  - Act as viewers



Viewers



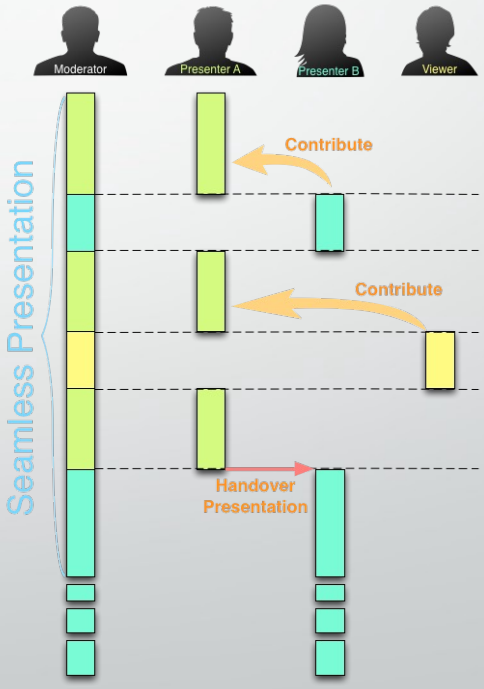
- Not bring any content to present
- Contribute to presentation
- Request
  - for interrupt presentation

Viewers Involvement

- Request of Presentation Control
  - Keep in the slide
  - Drawing
- Present his comment and opinion
  - Communicate between presenter and viewer

Presenters Collaboration – Seamless Presentation

- No physical action needed for passing control
- Using own device for presentation
- Own device screen synchronize to external monitor
  - Connected Moderator
  - Moderator Connect to External Monitor



Deployment Scenario

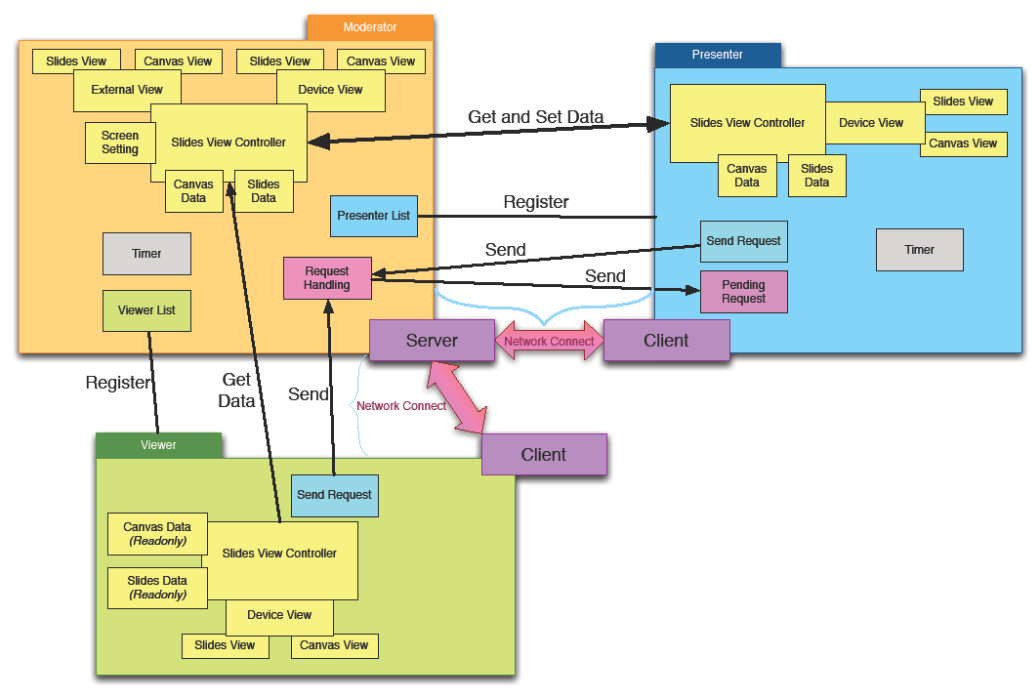
Scenario	Presenters Group	Viewers Group
Business Meeting	Small / Medium	None / Small
Lecture	Small / Individual	Medium
Conference	Small	Large
…	…	…

Implementation Platform

- iOS and iPad
  - With enough equipments and APIs
- Why not Android?
  - External Display support from Android 4.2 (Jelly Bean)

Design and Implementation

System Structure



Drawing Pad

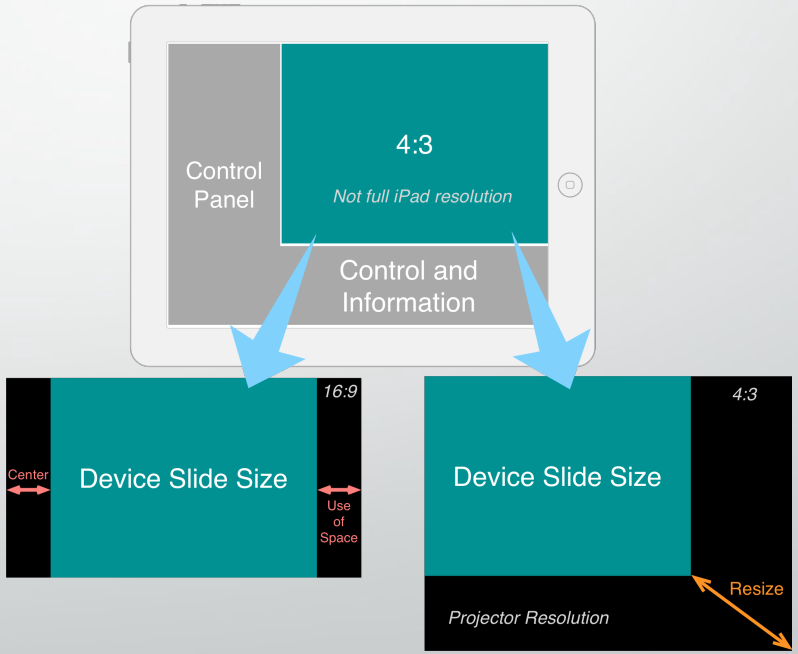
- Drawing Arbitrary Path on Screen
  - Consider as multiple points
  - Join points together
  - Further improvement: Using Set for storage
- Synchronize to External Screen (via Moderator)

External Monitor (1) – Overview

- For Moderator
  - Connecting to External Screen
- Showing Slides

External Monitor (2) – Fitting to External Monitor

- Resolution of iPad and External Monitor is different
- Need to Resize and Scale

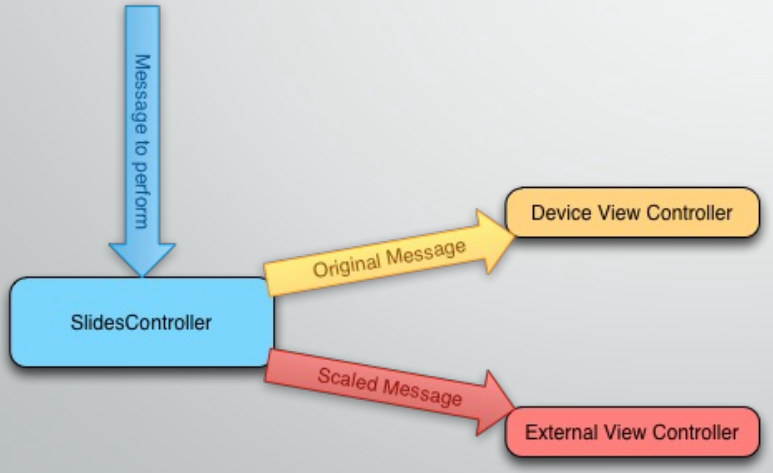


External Monitor (3) – View Synchronization

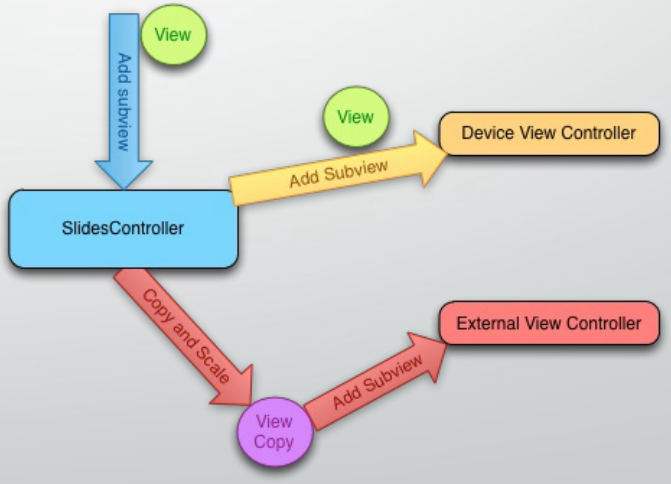
- Maintaining two view objects
  - Device View
  - External View
- Copying of View Object
  - When adding into subview
- Messaging to Two Views
  - Mapping point coordinates from device to external monitor

External Monitor (4) – View Synchronization

Perform Action



Copying a View



Network and Messaging – Introduction

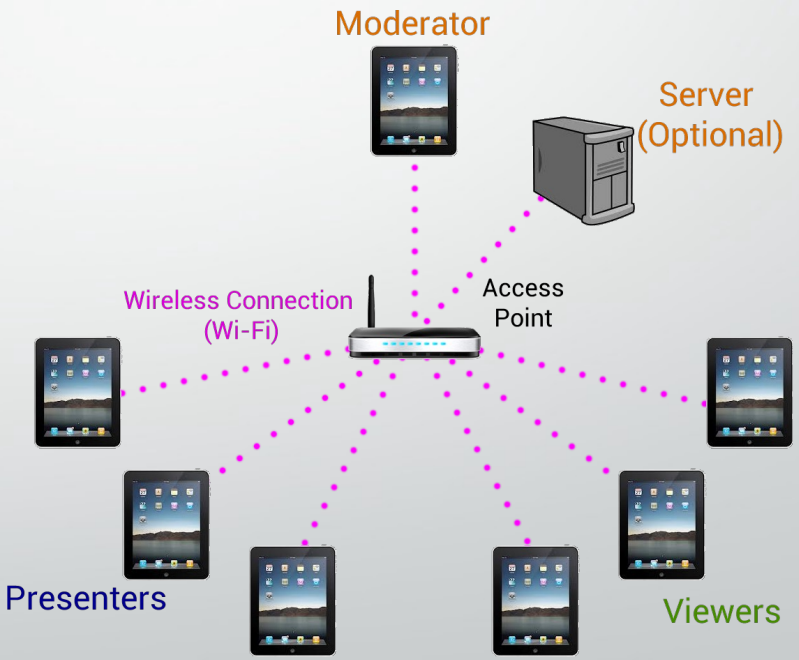
- Important for Inter-Device Communication
- Main Idea – Client-Server Model
  - All Data sent / get from Moderator
  - All Requests Send and Forwarded by Moderator

Network and Messaging – Connection (1)

- Based on Internet Protocol
  - Currently using TCP
  - Transport layer alternative: UDP
    - Performance Boost
- Wireless Connection

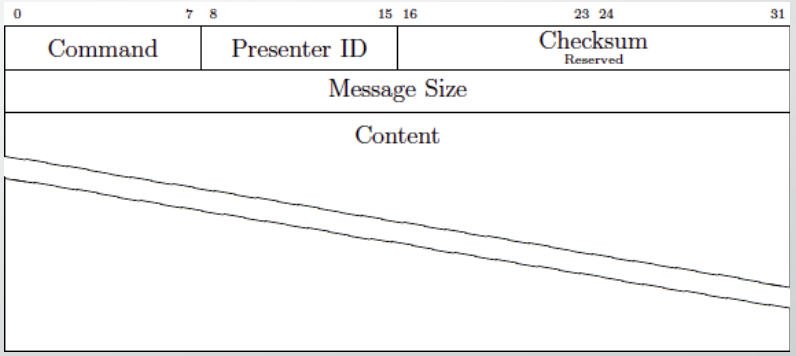
Network and Messaging – Connection (2)

- Wireless Connection
  - Wi-Fi and Wi-Fi Access Point
- Local Area Network or Internet
  - LAN for easy deployment and control
- Optional back end server
  - Avoid moderator bottleneck



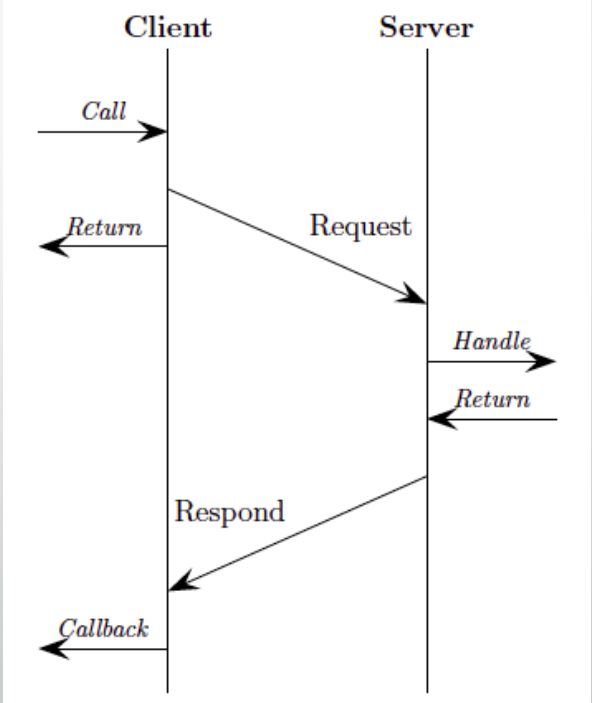
Network and Messaging – Protocol (1)

- Understand by both sides
- Easy to Manage
  - Partitioning Presenter
  - Partitioning Message Type
- Easy to encode and decode
- Minimize Traffic



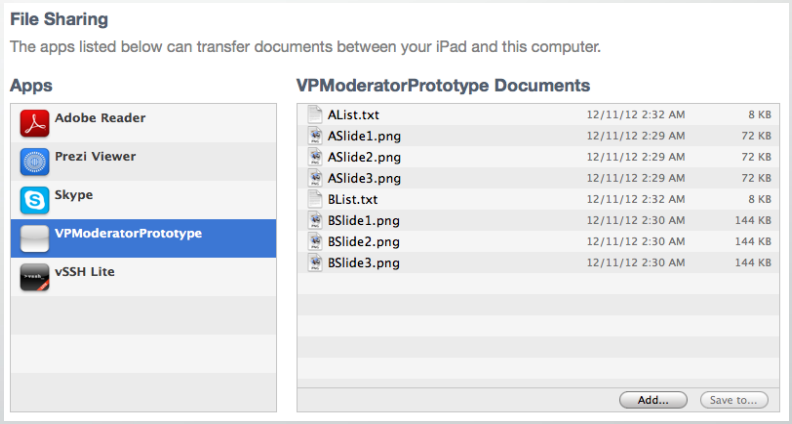
Network and Messaging – Protocol (2)

- Request-Response
  - Respond when foreign (server) finish action
  - Receive Success or Failure Response
- Echo Mechanism
  - SSH-liked
  - Ensure Synchronization
  - Used in Drawing Pad



Slides Import

- Import files via iTunes
  - Common in iOS apps
- Sandbox
  - Isolate data from other apps
  - Limited Permission
- Slides Format
  - Currently support image files
    - PNG
    - JPG
  - Together with index file



Conclusion

Conclusion of Presentation

- Presentation … as starting point
- Collaborative Presentation
  - Seamless Presentation
  - Viewers Involvement
- Software Design and Implementation
  - Some Issue Mentioned

Progress in Summer and Fall 2012

- Implemented two Prototypes
  - Moderator and Presenter
  - Subset of Functions
    - Arbitrary Path Drawing
    - External Monitor
    - Network and Synchronization
    - File Import and Read/Write
- Knowledge and Soft Skills
  - iOS and Objective-C Programming
  - UIKit and NextStep API
  - Experiencing Software Development
  - User Experience and Interface Design

Future Development

… What’s next ?

Functionality

- Recording
- Drawing Pad
  - Support more shapes
  - Undo and Redo
  - Save the Drawing
- More presentation style
  - Multimedia
- Viewer Implementation

Performance Optimization

- Adopting UDP for some network message
  - Points Drawing
  - Avoid TCP overhead
- Drawing Pad
  - Try of OpenGL ES
    - Supported by GPU of iPad (and other devices)
  - Optimizing Mechanism

Q & A

Feel Free to Try our apps =]