vPresent

Collaborative Presentation on Mobile Devices

Introduction

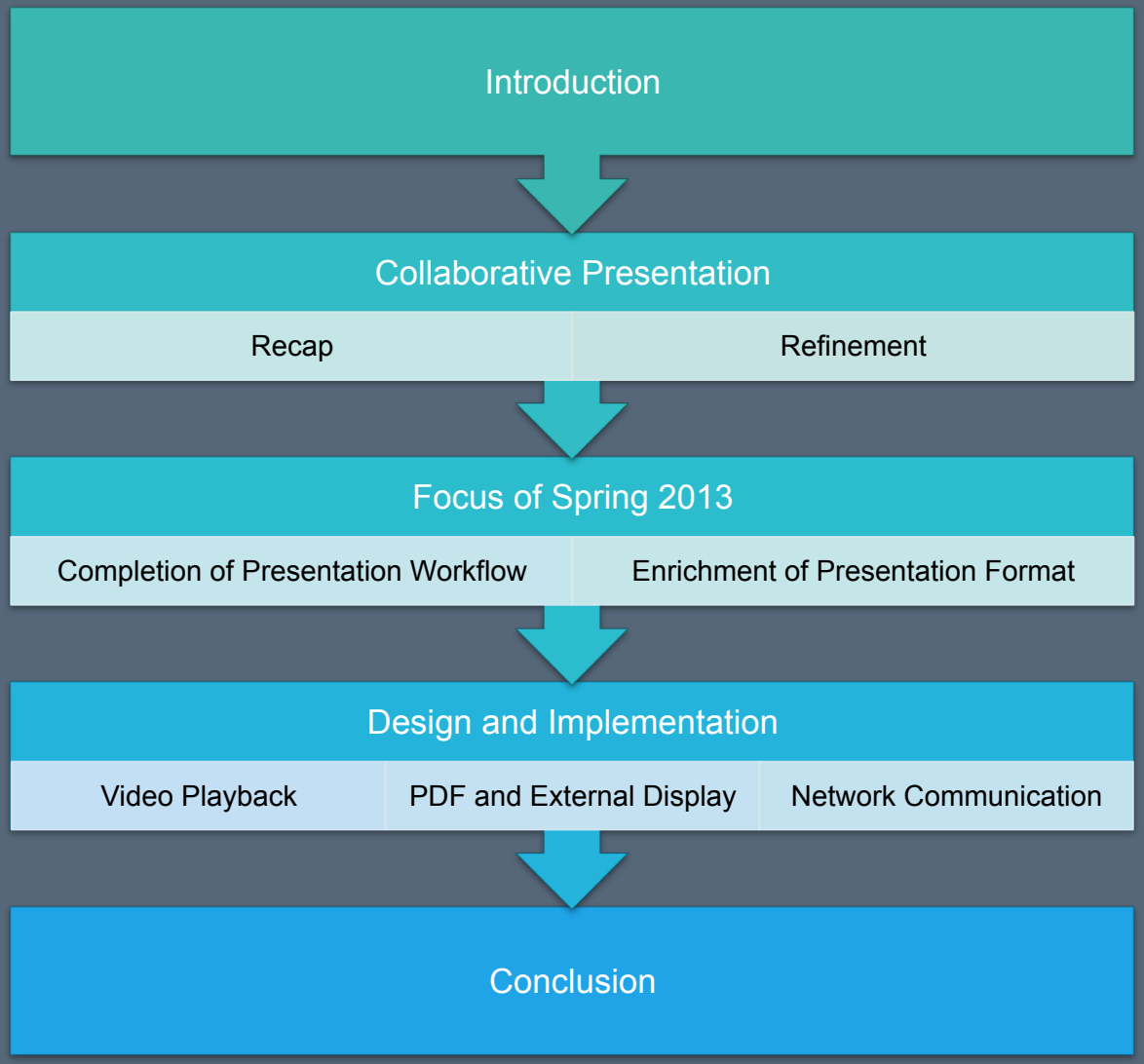
Recap of Fall 2012

- Defined Collaborative Presentation
  - Seamless Presentation
  - Viewers Involvement
- Implemented two Prototypes – Moderator and Presenter
  - Arbitrary Path Drawing
  - External Display Support
  - Network Communication and Synchronization
  - File Import from iTunes

Overview of Spring 2013

- Refinement of Collaborative Presentation
- Completion of Presentation Workflow
  - PDF Presentation
- Enrichment of Presentation Content
  - Video Playback

Agenda


Introduction
Collaborative Presentation
Recap
Refinement
Focus of Spring 2013
Completion of Presentation Workflow
Enrichment of Presentation Format
Design and Implementation
Video Playback
PDF and External Display
Network Communication
Conclusion

Refine

Collaborative Presentation

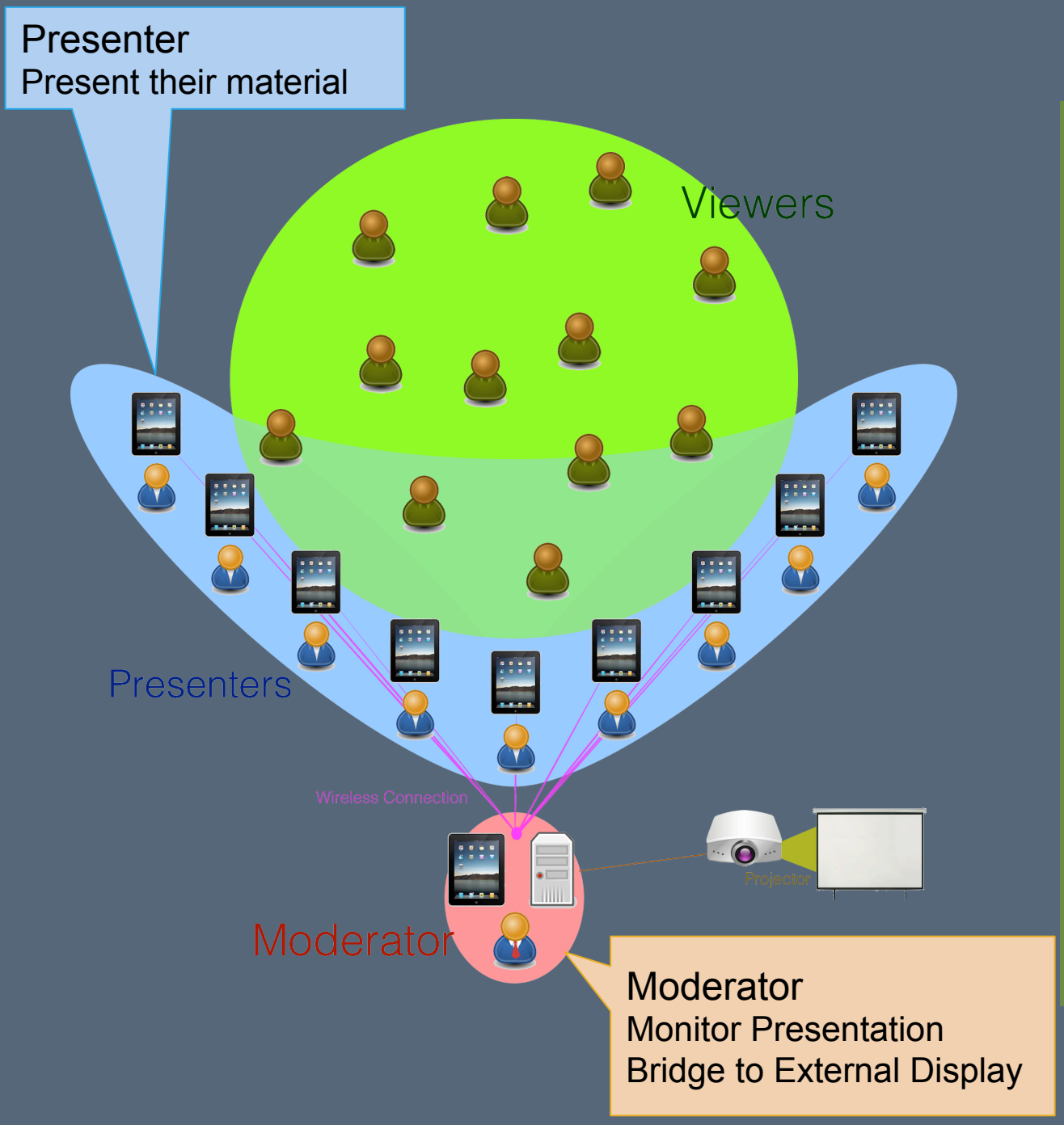
Recap of Collaborative Presentation and Problem

- Dividing people into 3 groups
  - Moderator
  - Presenters
  - Viewers
- Features
  - Seamless Presentation
  - Viewer Involvement
- Problems
  - Overloading of Moderator
    - Difficult in handling too many requests
  - Disturbing presenters

Refinement

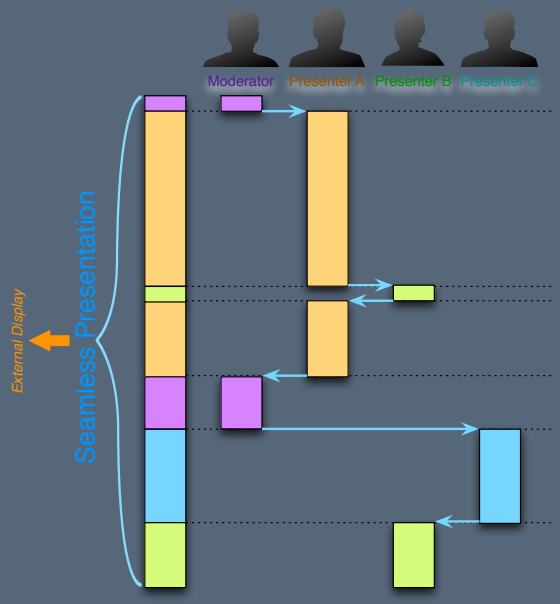
- Focus in 2 Deployment Scenarios
  - Small Group Meeting
  - Conference
- Focus in Moderator and Presenter
  - Viewer could be a subset of presenter when needed

Collaborative Presentation



Seamless Handover of Presentation Control

- Presenter sent their presentation slides to Moderator during presentation
- Moderator project the content to external display
- Presenter synchronize control to moderator, thus external display
- No physical wire needed



Other Functions

- Temporary Presentation Control Passing
  - Variation of Seamless Presentation
  - Viewer request for Permission
  - Presenter grant the Permission
- Showing Slides and Presentation Content
- Supporting External Display
- Drawing on Presentation Slides

Deployment Scenario

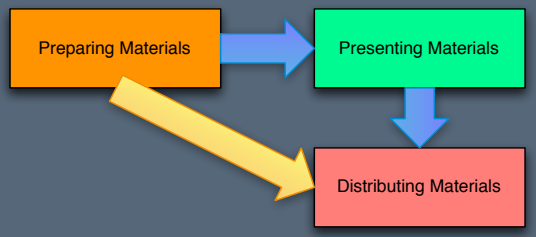
- Group Meeting / Conference
  - Many Interaction and Control Passing
  - Setting
    - Chairman of Meeting as Moderator
    - Other Participants as Presenters
  - No fixed size of participants
    - Controllable by Moderator
    - Could be handled by network
  - Display showing details and supporting documents in discussion

Focus

Presentation Workflow and Content Enrichment

Presentation Workflow

- Have been focusing on Presenting Materials
  - Multiple files of image from Fall 2012
- How to prepare and distribute materials?
  - Not practical if using archive



PDF (Portable Document Format)

- Easy to prepare
  - PowerPoint, Keynote, Google Docs could export presentation to PDF
  - Also applicable to documents, spreadsheet etc
- Easy to distribute
  - Single File for transfer
  - Common

PDF

- Contain following content
  - Text
    - Embed with Font
    - In different Encoding
  - Raster Graphics
  - Vector Graphics
  - Annotation
- Annotation supported
  - Emphasize a point
  - Useful during presentation and discussion

Video Playback

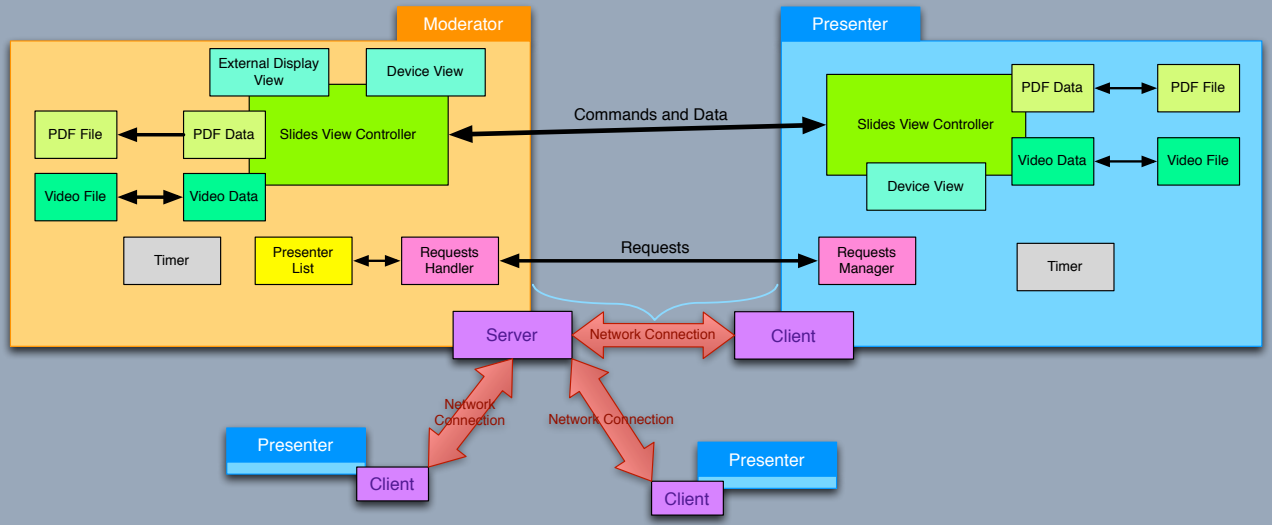
- Common in Presentation
- Challenge
  - Large file size
  - Resource exhaustive
  - Major bottleneck – network
    - Stability
    - Speed
  - Minimize the disturbance to presenters

Demo Video

Design and Implementation

System Design

Whole Picture of System



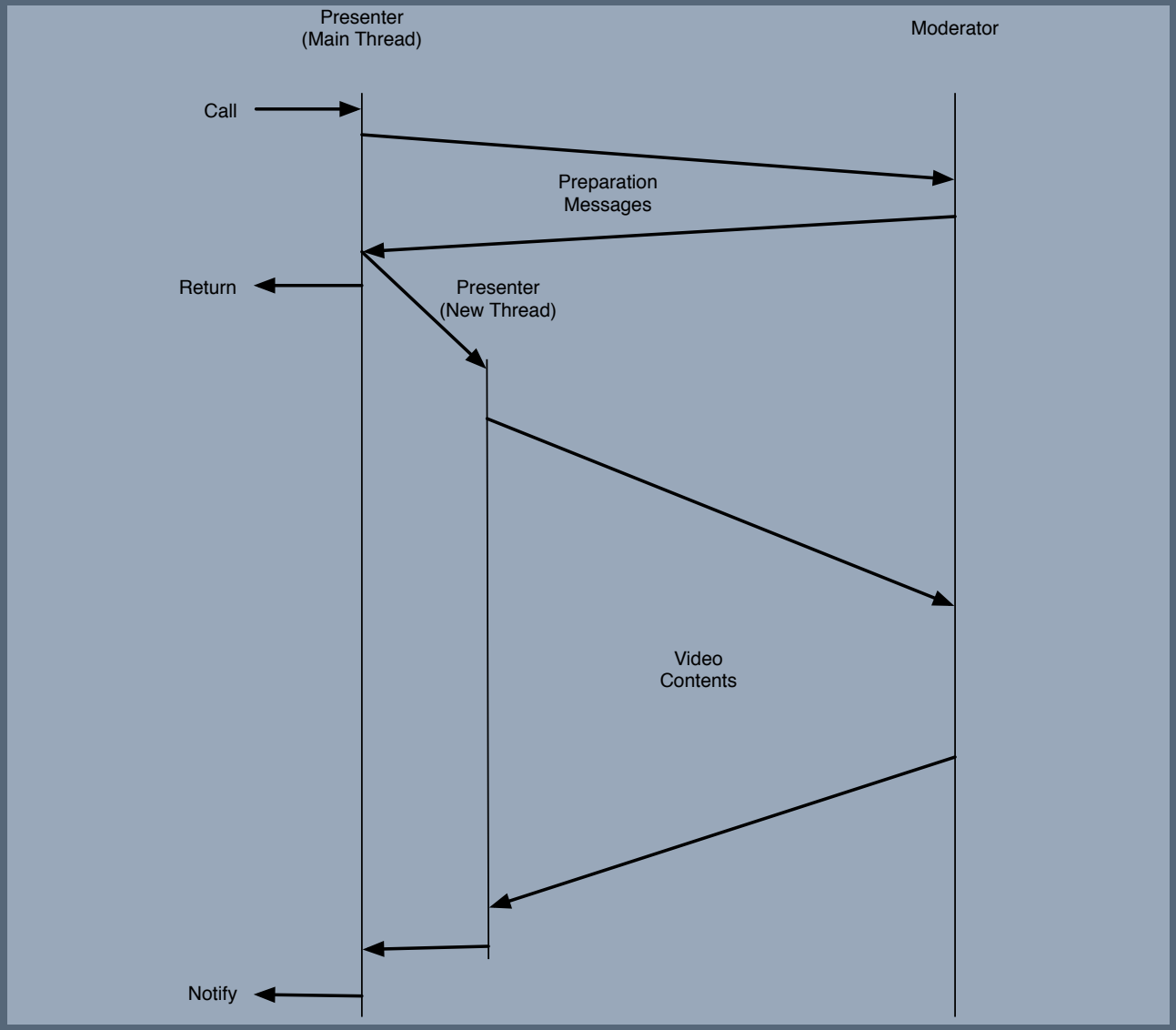
Video Playback – Approaches

- Content Delivery
  1. Direct video clips transmission
  2. Video Streaming – external server
  3. Video Streaming – self-contain server
- Playback Mechanism
  - Extension of Protocol
  - Moderator Control

Video Playback – Implementa-tion (1)

- Direct video transmission
  - Simple
  - No extra streaming server is needed
- But how to minimize the degrading performance of system?
  - New thread and temporary connection

Video Playback – Implementa-tion (2)



Video Playback – Implementa-tion (3)

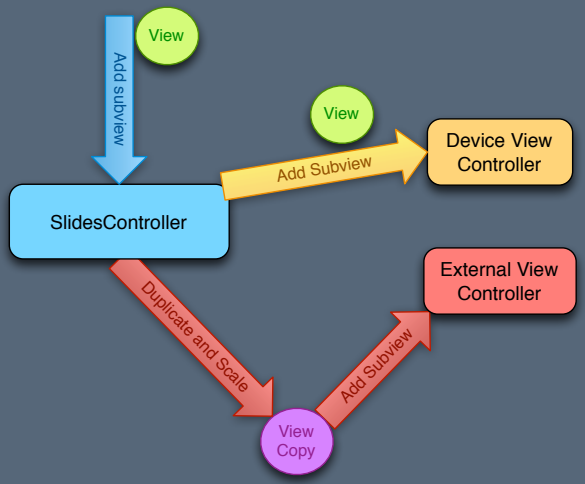
- MPMoviePlayerController
  - Provided by Objective-C Library
  - Video type support
    - Streaming --- HTTP Live Streaming Protocol
    - Static Video Clips with compression
      - H.264 Baseline Profile
      - MPEG-4 Part 2
  - Various delegate methods for controlling video playback

PDF

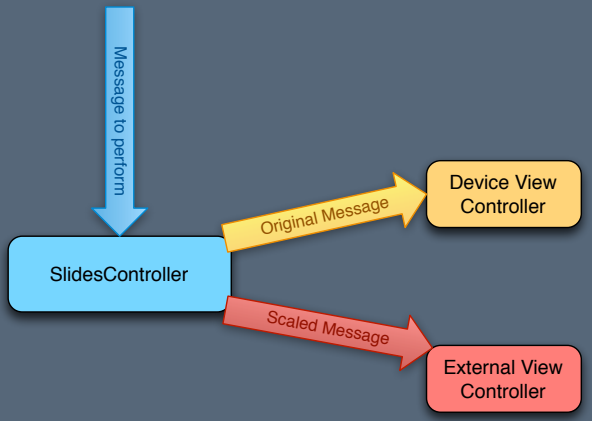
- Third Party Library: PSPDFKit
  - Read, Parse PDF
  - Add, Save Annotation
- Focus: Synchronize with External Display

External Display Sync (1)

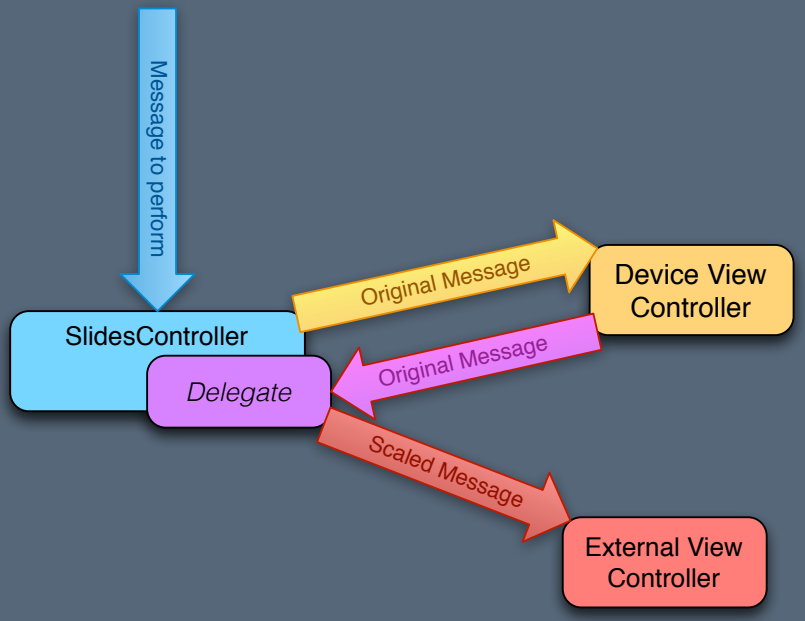
Deep Copy of View



Duplicate Message



External Display Sync (2)



Delegate (Callback)

- Delegate is a common technique of Objective C
- Implement `PSPDFViewControllerDelegate` and register `delegate`
- Duplicate Message in Delegate Method

Network Protocol (1)

- No much change on implementation
  - Same application layer protocol
- Implement more types of message
  - Support PDF and Video

Network Protocol (2)

Command List

Type	Action	From	Command
Register	Request	Client	0x01
	Success Response	Server	0x02
	Failure Response	Server	0x03
Unregister	Request	Client	0x04
	Response	Server	0x05
Control Permission	Request	Client	0x06
	Response of Request	Server	0x07
	Grant Permission	Server	0x08
	Withdraw Permission	Server	0x09
Control Signal	Request	Client	0x0C
	Success Respond	Server	0x0D
	Failure Respond	Server	0x0E
Video Playback	Request	Client	0x20
	Success Response	Server	0x21
	Pause Request	Client	0x22
	Pause Success Response	Server	0x23
	Stop Request	Client	0x24
	Stop Success Response	Server	0x25
	Goto Request	Client	0x26
	Goto Success Response	Server	0x27
	Prepare Send Request	Client	0x28
	Prepare Send Response	Server	0x29
	Prepare Send	Client	0x2A
	Prepare Send Complete Response	Client	0x2B
Sending PDF	PDF Data	Client	0x30
	Response	Server	0x31
Annotation	Request	Client	0x32
	Response	Server	0x33
Zoom and Drag	Request	Client	0x34
	Response	Server	0x35

Conclusion

Conclusion

- Refinement of Collaborative Presentation
  - Focus on main components and features
  - Enhanced User Experience
- Supporting PDF and Video Playback
  - Integrate with original apps
  - Support External Display and Network Communication

Thank you

Any question ?

Recap of Concept (1) – Group of People

Moderator

- Unique in a presentation
- Control and Monitor
- Connected to External Display

Presenters

- Bring with own Content
- Take turn to Present
  - Active Presenter and Inactive Presenter

Viewers

- Listen to Presenters
- No his own content

Recap of Concept (2) – Mechanism

Seamless Presentation

- Using Presenter's own devices to present
- Contents are Synchronized to External Display
  - Wireless Network to Moderator

Viewer Involvement

- Contribute to Presentation