Media-rich web applications with Macromedia Flash

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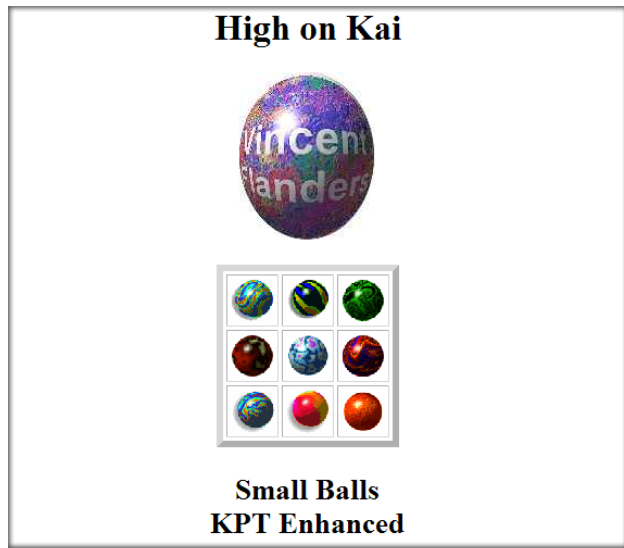
Too much for 20 minutes!

Topics

- **An introduction to Macromedia Flash**
- **Overview of Flash media support**
- **Overview of Flash ActionScript 2.0**
- **Putting it all together!**

Introduction

Remember the 90's?

'Questionable' web design from the mid 1990s

Video conferencing in the mid 1990s

*"The prototype would not only **quit unexpectedly**, but would often require help from the development team to get it running again."*
- ACM Paper 1994: www.izix.com/pro/media/montage.php

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Macromedia Flash

Flash – what it it?

- Product from Macromedia (1995)
- Originally a vector animation tool
- Browser plug-in (large install base)
- Driving towards 'media-rich' web-applications (v6 & v7).

Macromedia Flash content reaches 98% of Internet viewers
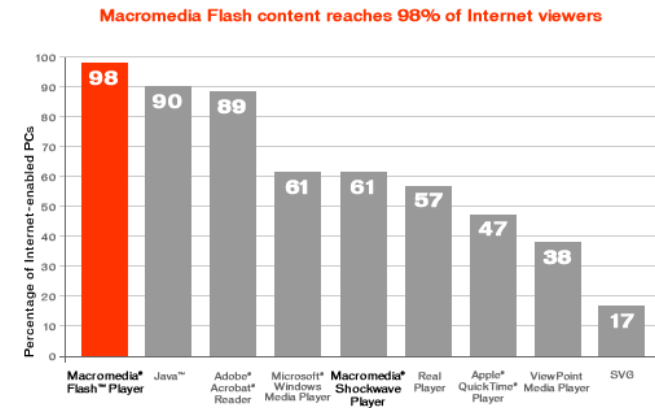
Macromedia Claims 98% Coverage with Flash

Vital for Macromedia?

- Broadband access climbing
- Maturing web technologies
- Threats from everywhere!

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New Macromedia Flash Features

Audio / Video Support *

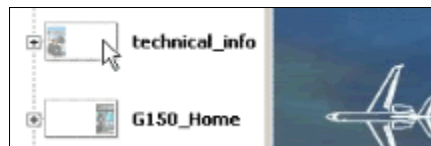Media capable with support for streaming & progressive download
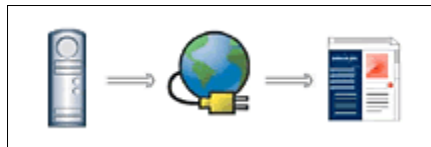
Data Integration

Data binding allows automatic data integration and updates (XML support)

ActionScript 2.0 *

Object oriented scripting language support for advanced applications

Screens-Based Application Development

Organizational technique for developing applications without the timeline

Component Technology

An extended architecture for 'self-contained' *pre-made* Flash objects

Flash Media – Audio Support

Audio Subsystem

– MP3 support

– Both streaming & download

– Asynchronous loading

 • Multi-threaded

– Positioning possible

 • Unreliable position data in certain states!

– Controllable via ActionScript
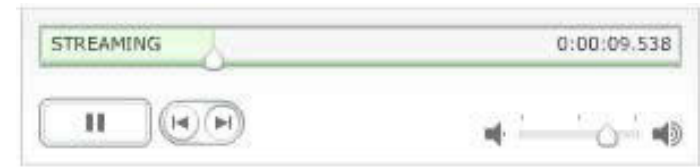
**Macromedia MediaPlayer component
with streaming audio support**

Flash Media – Video Support

Video Subsystem (Methods)

- Embedded
  - Full download required
  - Sync issues after 120 seconds
  - Frame-rate tied to timeline rate
- Progressive download
  - Fast start capable
  - No sync issues
  - Independent frame-rates
- Streaming (Comm Server)
  - Live video possible
  - Network efficiency

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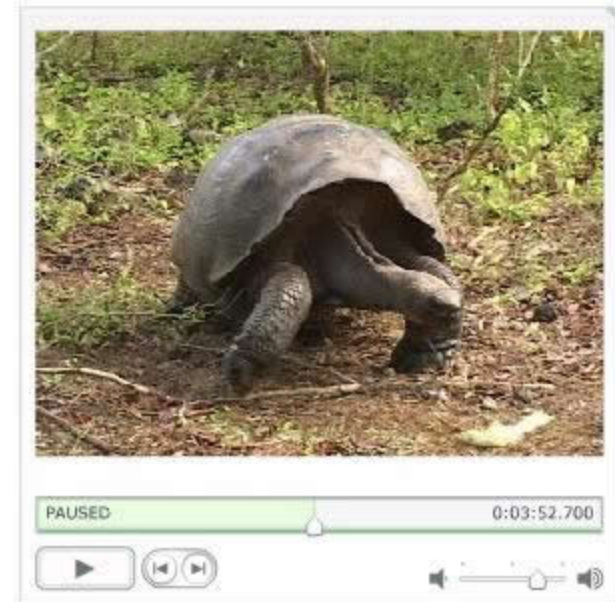
**Macromedia MediaPlayer component
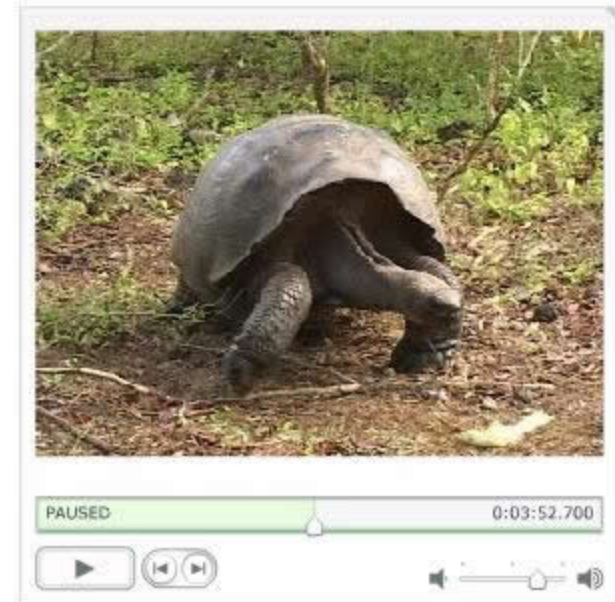with streaming video support**

Flash Media – Video Support

Video Subsystem (Details)

- Single codec: Sorenson Spark
- Based on *modified* H.263v1
  - GOB layer / PB-Frames
  - Arbitrary picture width and height up to 65,535 pixels

Export Support

- Adobe After Effects
- Final Cut Pro
- Most Avid Systems
- Discreet Cleaner XL

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Macromedia MediaPlayer component with streaming video support

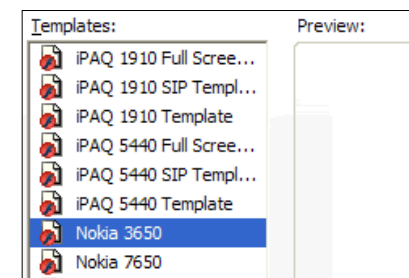ISNM
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Flash Media - Mobile Devices

Device support

– Devices running PocketPC

– The faster the better! (Xscale / ARM)

– Plug-in for Microsoft Pocket Explorer.

– Video and audio is fully supported!

– Vector graphics engine optimized

– Multi-platform (Linux prototyping)
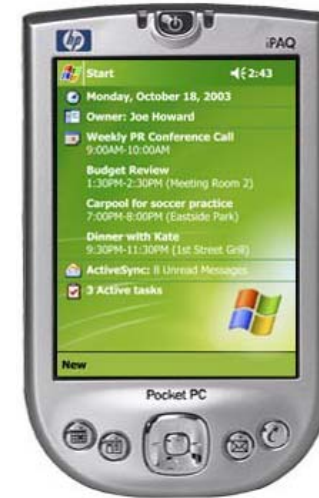
iPAQ Support with Media
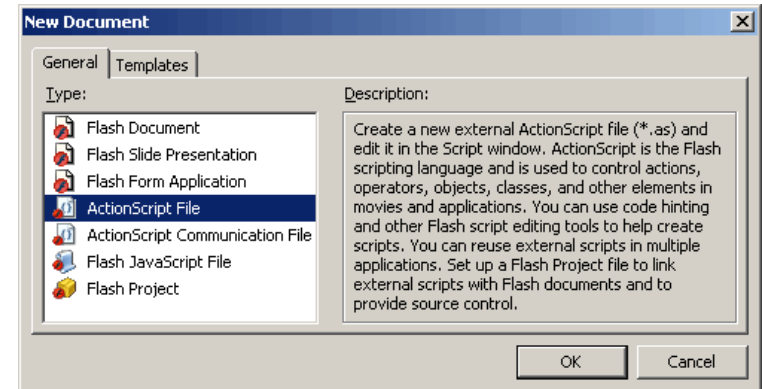

Included device templates

ActionScript 2.0 Overview

Object Orientation in Flash!

– Encapsulation (external classes)

– Inheritance (Events, State)

– Polymorphism (Interfaces)

Other Notable Features

– 'Java style' package support

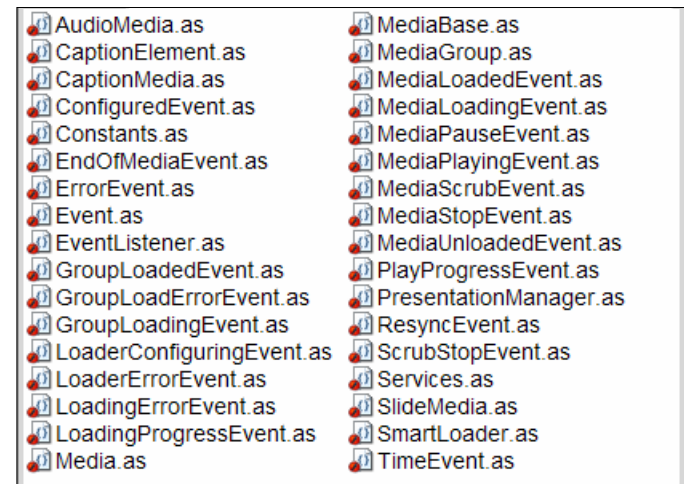– 'Strict' data typing

– Access to extra functionality

**Macromedia Flash Professional 2004
with built-in code editor**

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ActionScript 2.0 Details

ActionScript Keywords

- **class**
- **extends**
- **implements**
- **interface**
- **dynamic**
- **static**
- **public**
- **private**
- **Import**

|	
AudioMedia.as	MediaBase.as
CaptionElement.as	MediaGroup.as
CaptionMedia.as	MediaLoadedEvent.as
ConfiguredEvent.as	MediaLoadingEvent.as
Constants.as	MediaPauseEvent.as
EndOfMediaEvent.as	MediaPlayingEvent.as
ErrorEvent.as	MediaScrubEvent.as
Event.as	MediaStopEvent.as
EventListener.as	MediaUnloadedEvent.as
GroupLoadedEvent.as	PlayProgressEvent.as
GroupLoadErrorEvent.as	PresentationManager.as
GroupLoadingEvent.as	ResyncEvent.as
LoaderConfiguringEvent.as	ScrubStopEvent.as
LoaderErrorEvent.as	Services.as
LoadingErrorEvent.as	SlideMedia.as
LoadingProgressEvent.as	SmartLoader.as
Media.as	TimeEvent.as

A sample ActionScript Package Structure

What's Missing?

- **Abstract classes (abstract)**
- **Final classes (final)**
- **A real private scope**
- **Protected classes (protected)**
- **Real constants (constant)**
- **Overloading**
- **Runtime type checking**

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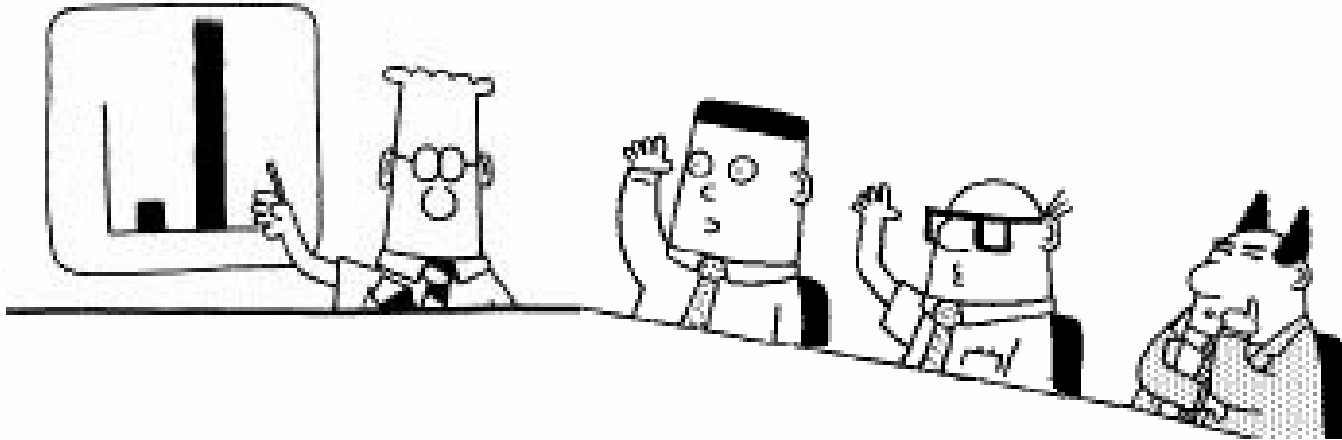
And all this means… what?

Rich Media Apps

– High quality media

– Fast vector graphics

– Object oriented code

– Connection with

- Web services
- XML data
- Comm server
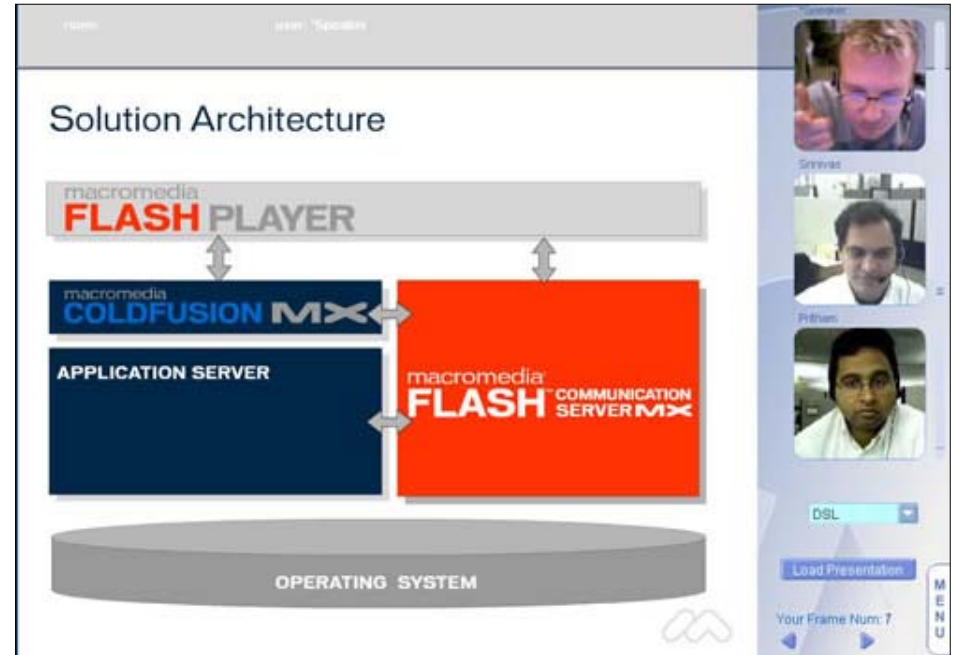
The Macromedia Solutions Archtecture

Questions & References

References

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- http://www.macromedia.com/software/flashcom/productinfo/features/static_tour/messaging/multiway.html
- http://www.ultrashock.com/tutorials/flashmx2004/as2-01.php
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