

Flash CS4 & Flash Player 10 /  
AIR 1.5

New programming features

# General

- Record penetration
- How to
  - Flash CS4
  - Flex 3 SDK
    - <http://opensource.adobe.com/wiki/display/flexsdk/Download+Flex+3>

# Agenda

- Vector data type
- 3D programming
- Drawing API changes
- FileReference updates
- NetStream updates
- Audio changes
- P2P abilities
- Text layout component / Hebrew in flash

# Vector: typed array

- ECMA Standards
- Syntax
- Vector vs. Array
  - Sizing
  - Type
  - Errors
  - Performance
  - Memory

# Vector

- Standard array methods
  - Push
  - Shift
  - etc.
- Additional methods:
  - Filter
  - Every
  - ForEach
  - Map

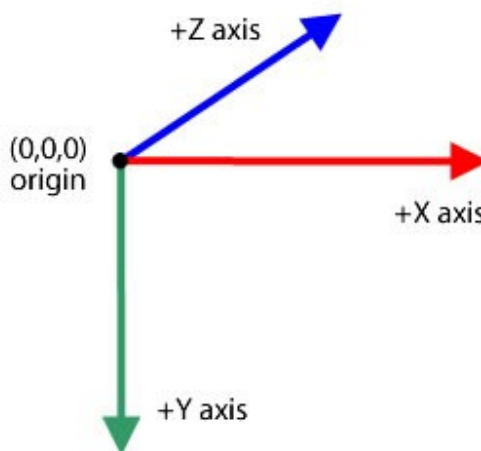
# 3D Programming

- Basic Terms
  - Perspective
  - Projection
  - Transformation: scale, rotation, translation, skew
  - Vanishing point
  - Vector
  - Vertex
  - Texture mesh
  - UV mapping

# DisplayObject 3D

- Properties
  - z
  - rotationZ
  - transform.matrix3D

# Vector3D



- Represents point of 3 dimensional location in cartesian coordinates
- Can refer as matrix, and do matrix math

# Matrix 3D

	Orientation			Translation
x-axis	scaleX	0	0	$t_x$
y-axis	0	scaleY	0	$t_y$
z-axis	0	0	scaleZ	$t_z$
	0	0	0	$t_w$

- Represent transformation matrix of 3D display object
- Can perform translation, rotation, scaling and perspective projection
- `transform.matrix3d` of a display object

# PerspectiveProjection

- FieldOfView
- FocalLength
- projectionCenter

# Drawing API

- Shader – PixelBender container

- `public function lineShaderStyle(shader:Shader=null, matrix:Matrix=null);`
- `public function beginShaderFill(shader:Shader=null, matrix:Matrix=null);`

- DrawPath

- `public function drawPath(commands:Vector.<int>, data:Vector.<Number>, winding:String="evenOdd");`

- DrawTriangles

- `public function drawTriangles(vertices:Vector.<Number>, indices:Vector.<int>=null, uvData:Vector.<Number>=null, culling:String="none");`

# TextLayout

- Easy Hebrew integration
- Bidi composing
- Highly customizable
- Examples...

# FileReference updates

- FileReference content data
- access
- save
  
- Where do we go from here?

# Net Stream

- FMS 3.5 and FP10
  - Dynamic streaming
    - Play2
      - switch
      - Swap
      - Reset
      - append
    - GetInfo
  - Image, text and XMP data

# Audio

- SPEEX
  - encodeQuality
  - FramesPerPacket
- Sound
  - Extract
  - Not all good...

Quality value	Required bit rate (kilobits per second)
0	3.95
1	5.75
2	7.75
3	9.8
4	12.8
5	16.8
6	20.6
7	23.8
8	27.8
9	34.2
10	42.2

# P2P abilities

- Rtmfp - Real Time Media Flow Protocol
- Not file sharing though (wikipedia)
- Reduce bandwidth costs
- UDP
  - Less reliable
  - Decrease latency, tolerance of dropped packets
- Rapid connection restore
- Ip mobility
- Example...

# references

- Vectors:
  - <http://www.mikechambers.com/blog/2008/09/24/actioscript-3-vector-array-performance-comparison/>
- Drawing API:
  - <http://www.senocular.com/flash/tutorials/flash10drawingapi/>
- Pixel bender library
  - [http://www.adobe.com/cfusion/exchange/index.cfm?event=productHome&exc=26&loc=en\\_us](http://www.adobe.com/cfusion/exchange/index.cfm?event=productHome&exc=26&loc=en_us)
- File reference
  - <http://drawlogic.com/2008/05/17/amazing-new-feature-for-flash-10/>
- Audio
  - <http://www.kaourantin.net/2008/05/adobe-is-making-some-noise-part-3.html>
- Rtmfp
  - [http://en.wikipedia.org/wiki/Real\\_Time\\_Media\\_Flow\\_Protocol](http://en.wikipedia.org/wiki/Real_Time_Media_Flow_Protocol)
- Main
  - <http://www.experimo.net/uncategorized/flash-player-10-new-features/>