

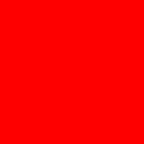
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JavaFX 2.0

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JavaFX 2.0 Agenda

- Overview
- Details
- Architecture
- Roadmap





What is JavaFX?



JavaFX is the evolution of the Java rich client platform, designed to address the needs of today's and tomorrow's customers.



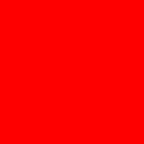
Who is JavaFX for?

Target Developers

- Current Java Developers
- Former Java Developers
- Web Developers
- New Developers



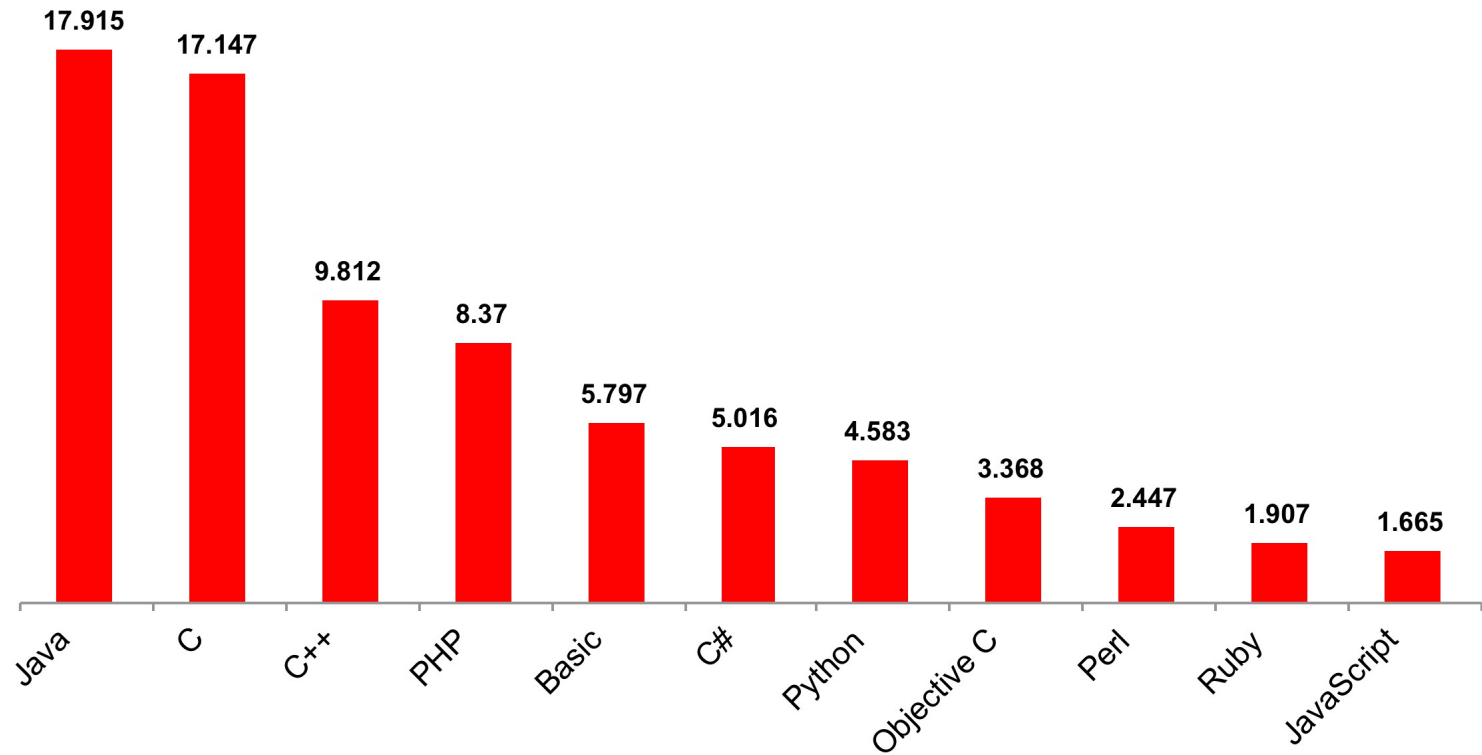
What makes JavaFX special?



JavaFX defines itself as being a well designed, cross platform application development platform. It is fast. It is flexible. It delivers exceptional value to developers and end users. It is competitive. Most importantly, it leverages the massive existing Java eco system. Nobody else offers the complete package – exceptional developer experience, user experience, cross platform development and massive ecosystem.

TIOBE Index

Popularity of a Language



The Java Eco System

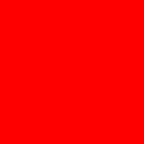
- Over 9 million Java developers
- Java is taught in universities around the globe
- Every major company uses Java

Value Proposition for Client Java

- Leverage existing Java investment
- Easier to find and train developers
- Reduce risk by reducing complexity



Why is JavaFX important?



JavaFX encourages companies to use Java on the client *and* the server. A strong and vibrant client platform retards the growth of competing technologies in enterprise server rooms. JavaFX provides a compelling end-to-end Java solution for enterprises and competes well with other technologies.



How about some examples?

Demo: Graphics

A woman with dark, wavy hair, wearing a light brown cardigan over a white blouse, is leaning over a white desk. She is looking intently at a silver laptop. On the desk, there is a white mug and some papers. The background is a light-colored stone wall. A dark blue horizontal band is overlaid on the left side of the image, containing the text 'Demo: Graphics'. A red horizontal band is at the bottom of the image, containing the Oracle logo.

Programming Languages

- Java is our primary programming language
 - Release Java APIs for all of JavaFX
 - Expose JavaFX Binding, Sequences as Java APIs
- Embrace all JVM languages
 - JRuby, Jython, Scala, Groovy, ...
 - JavaScript
- JavaFX Script compiler will not be updated to work with JavaFX 2.0 APIs
 - Existing JavaFX Script based applications will continue to run

APIs and Programming Model

- Continuation from JavaFX 1.X product line
 - We are quite pleased with the scene graph and event model
 - Most APIs will simply be ported directly to Java
 - Some APIs will be revisited (e.g. layout)
 - Existing Controls will all be ported
- Embrace more web technology
 - Update JavaFX CSS to include more from CSS 3 (eventually to be fully spec compliant)
 - * Use WAI-ARIA for accessibility API
 - * Make HTML available for rich text in all Text nodes

API Design



- Hire the best
 - We're actively hiring, visit the booth, see me for more info
 - We have a very good team, good environment, good development methodology, building a great platform!
- API Usability Studies
 - Inflict our APIs on unsuspecting volunteers
 - Observe their reactions
- Release Early Access, Beta builds to partners
 - Join the JavaFX Partner Program for access to builds
- Build blueprints, samples, demos in parallel
 - Nothing vets an API like building applications

Workflows

- Developer oriented workflow
 - Developers write application, produce UI
 - Use a RAD tool to produce forms apps quickly
 - Import graphics from Illustrator & Photoshop
 - Designers style UI using CSS
- Designer oriented workflow
 - Designer produces graphics using professional tools
 - Developers produce modules (e.g. access web services)
 - Designer aggregates graphics & code modules & scripts it together using JavaScript or another dynamic language

Web Integration

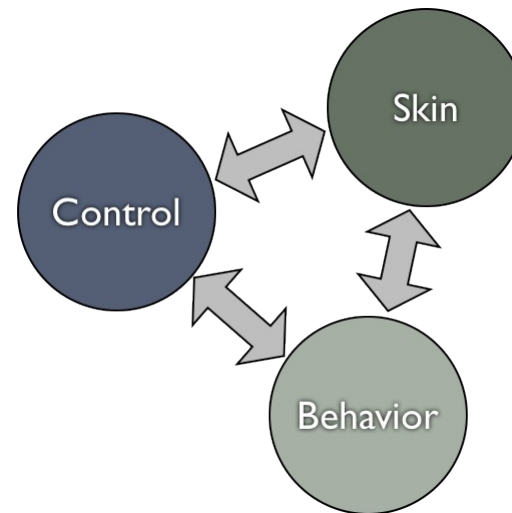
- Embed HTML in JavaFX
 - WebView node in the scene graph is embedded browser
 - Allow all Text nodes to have HTML content
 - Seamless DOM integration
- Embed JavaFX in HTML
 - Using traditional plugin technology
 - Seamless DOM integration
 - Adapt to use HTML 5 local storage, browser history, etc
- Adopt more web standard
 - CSS, Accessibility, HTML for rich text, ...

Graphics

- 2D and 3D scene graph
- Hardware accelerated pipeline
 - DirectX 9 on Windows XP, Windows Vista
 - DirectX 11 on Windows 7
 - OpenGL on Mac, Linux, Embedded
 - Software (Java2D) when necessary
- Embed in Swing
 - c.f. Java3D, JOGL
 - Allows Swing applications to add JavaFX scenes, charts, media, and controls
- High Definition Media

Controls

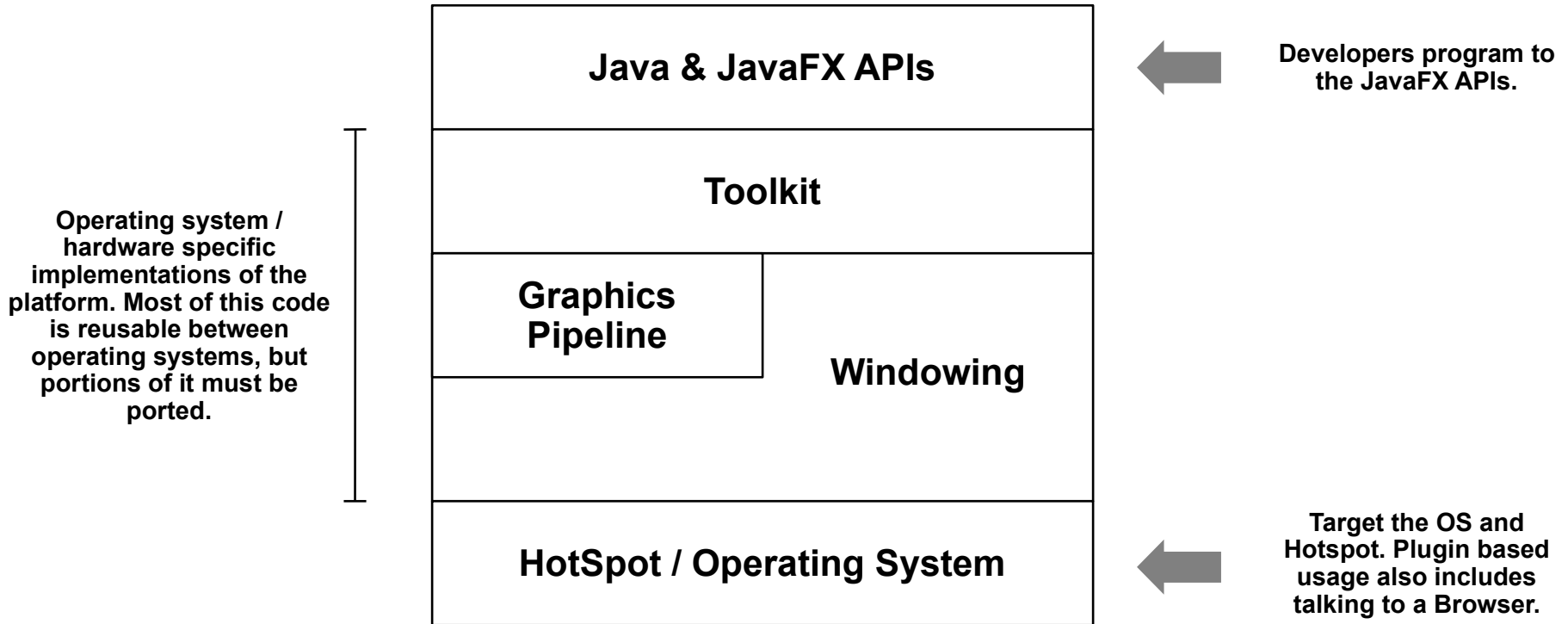
- Simple, Rich, Useful
- High customizable via CSS
- Visually appealing
- Complete out-of-the-box
- Work well with data binding
- Work well with tools



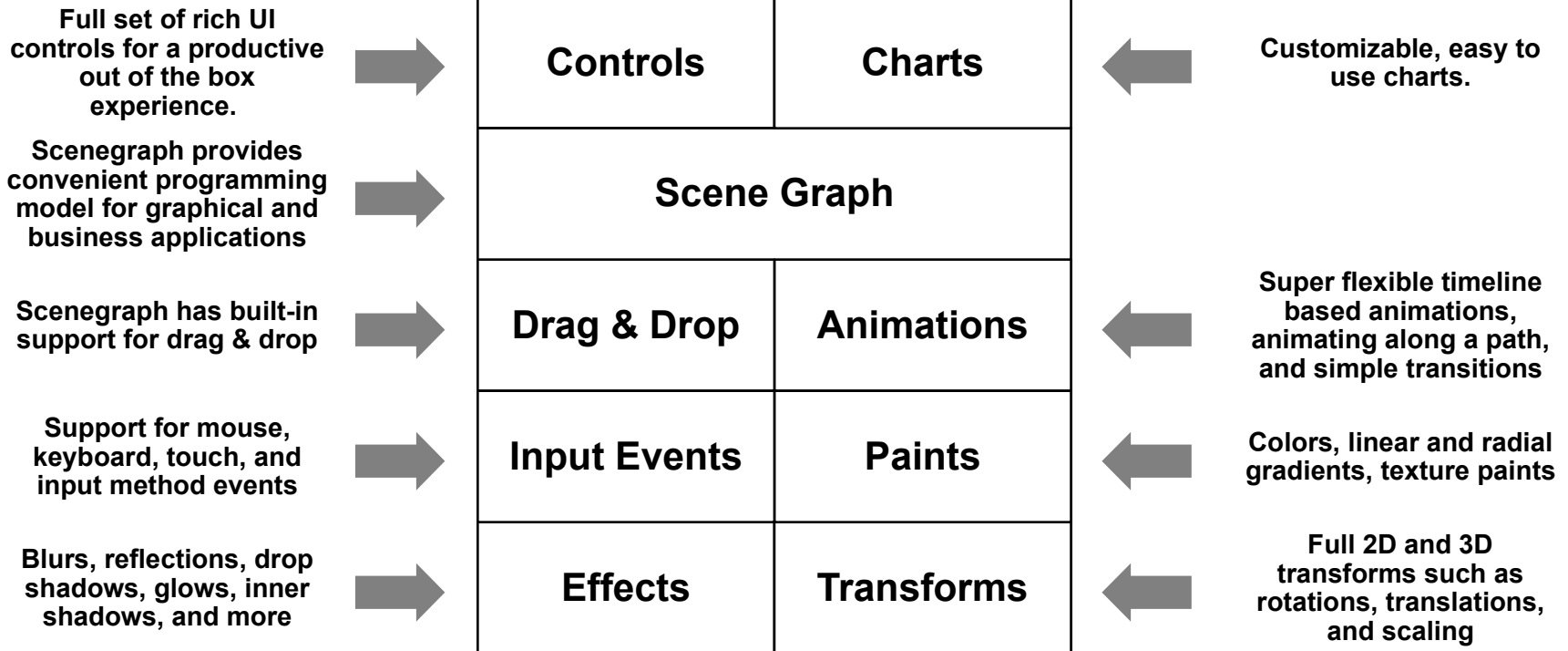
Performance

- Small & fast
 - Measure static & dynamic footprint, and reduce both
 - Measure startup time & reduce it
 - Measure FPS, CPU, GPU for many graphics scenarios
 - Aggressively refactor making things small and fast
- Measure, measure, measure
 - Engineers write performance tests
 - Measured on multiple platforms & configurations continuously
 - Write competitive performance benchmarks for everything we find. You write a blog with a benchmark, we try to compete.

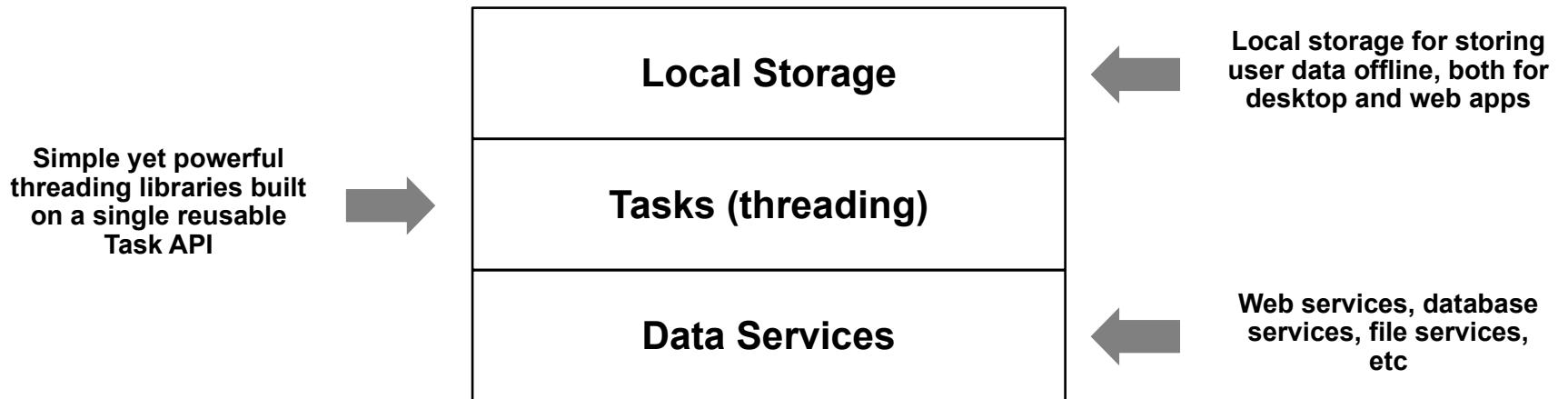
Basic Architecture



Major JavaFX Scene Graph APIs



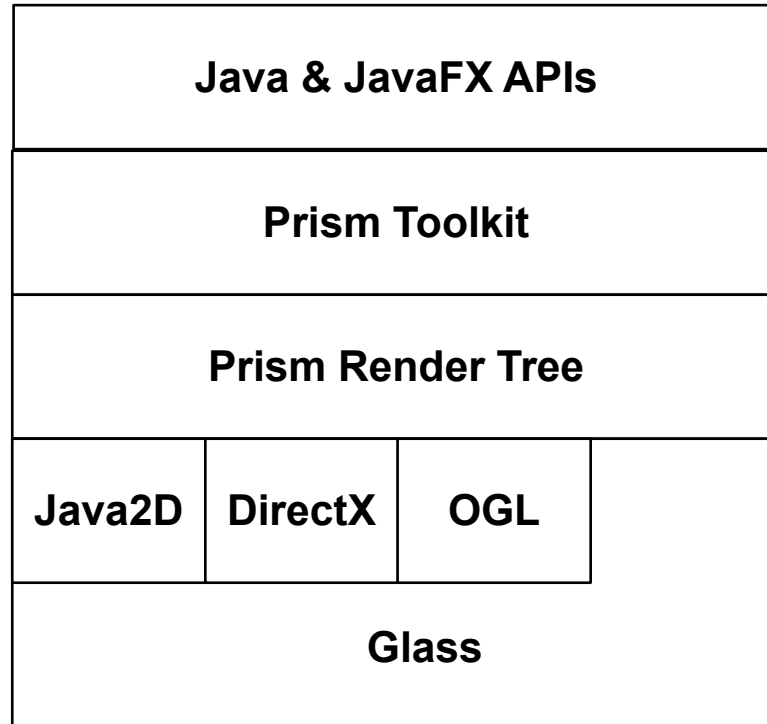
Major JavaFX APIs



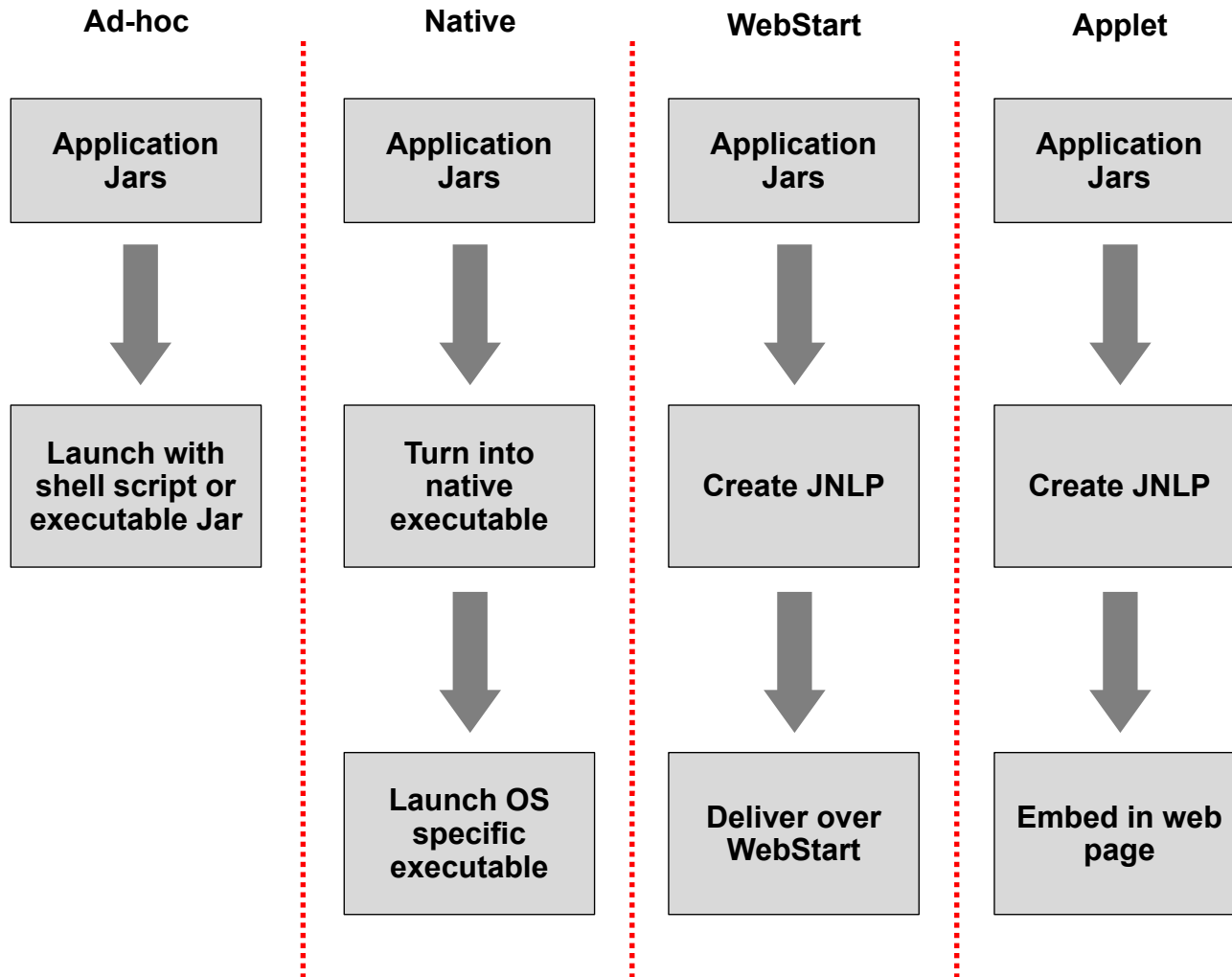
Prism Toolkit

- Next-generation hardware accelerated graphics
 - Support OpenGL ES 2, DirectX 9, DirectX 11
 - DirectX used on Windows due to superiority of drivers
 - Falls back to Java2D for software rendering as needed
- Full 3D supported for OpenGL and DirectX
 - Some 3D such as transforms supported with software pipe
- Uses next-generation “Glass” library for windowing

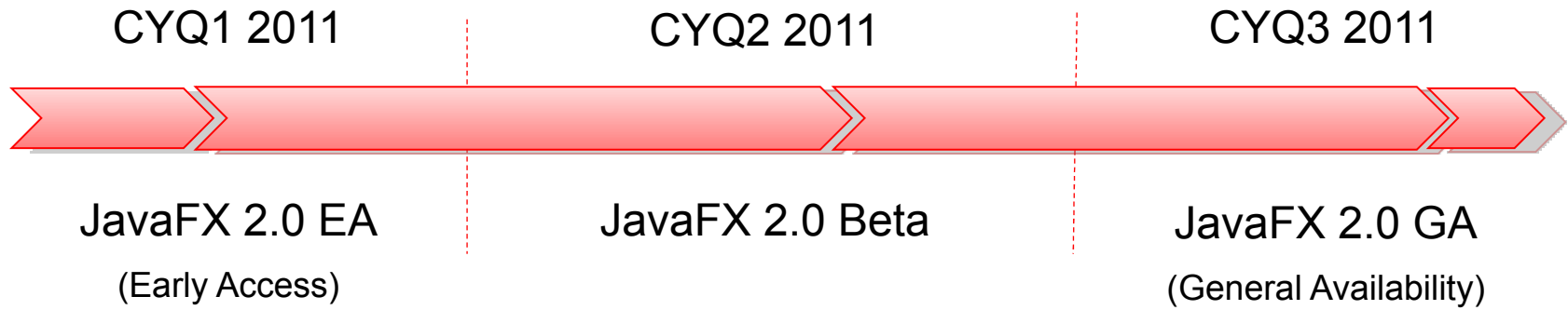
Prism Toolkit Architecture Diagram



Deployment Scenarios




JavaFX 2.0 Product Timeline




JavaFX 2.0 Roadmap






See <http://javafx.com/roadmap> for the latest up-to-date roadmap

 **Targets of Opportunity**

Early Access

- Port JavaFX Script APIs to Java
- JavaFX Binding APIs
- Sequence, Observable List
- Hardware Accelerated Graphics
- High Performance Transitions
- Triangle 
- Texture Paint
- High-def Media
- WebView
- WebEngine & WebSource
- Low Latency Audio
- Full Screen Video
- Programmatic Media Markers

Beta

- Multithreading Improvements
- Focus Management
- 3D Transitions 
- 3D Transforms for 2D Systems
- 3D Vector Math 
- Redesigned Layout Container API
- Grid Layout Container
- HTML DOM
- CSS Animations
- TableView Control
- SplitView Control 
- TabView Control 
- MediaPlayer Control 

General Availability

- Dynamic Footprint Improvements
- Static Footprint Improvements
- Improved Startup Performance
- Updated Public Benchmarks
- Blueprints & Samples
- Synch'd Media & Animations
- Prism Capable Plugin
- Rich Text 

SOFTWARE. HARDWARE. COMPLETE.

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