

OpenGL ES in the Ecosystem

Synergistic Development of authoring and acceleration standards under one body.
Third party tools and debuggers.

KHRONOS
GROUP

Market demand for mobile media

Industry Cooperation

Open API Standards

Conformance Tests

Great 3D Applications

Tools

graphic **REMEDY**
g **DEB**ugger
COLLADA

Benchmarks

JBenchmark



FUTUREMARK
CORPORATION

High-quality platforms

Futuremark
3DMarkMobile06
& JBenchmark 3D.

Khronos drives OpenGL ES roadmap to meet market needs

OpenGL ES

All Khronos APIs are accompanied by rigorous Conformance Tests to ensure reliable operation



Benchmarking

(or “Performance... is... Conformance”)



March, 2007

Oliver Baltuch

Vice President, Sales and Marketing
Futuremark Corporation

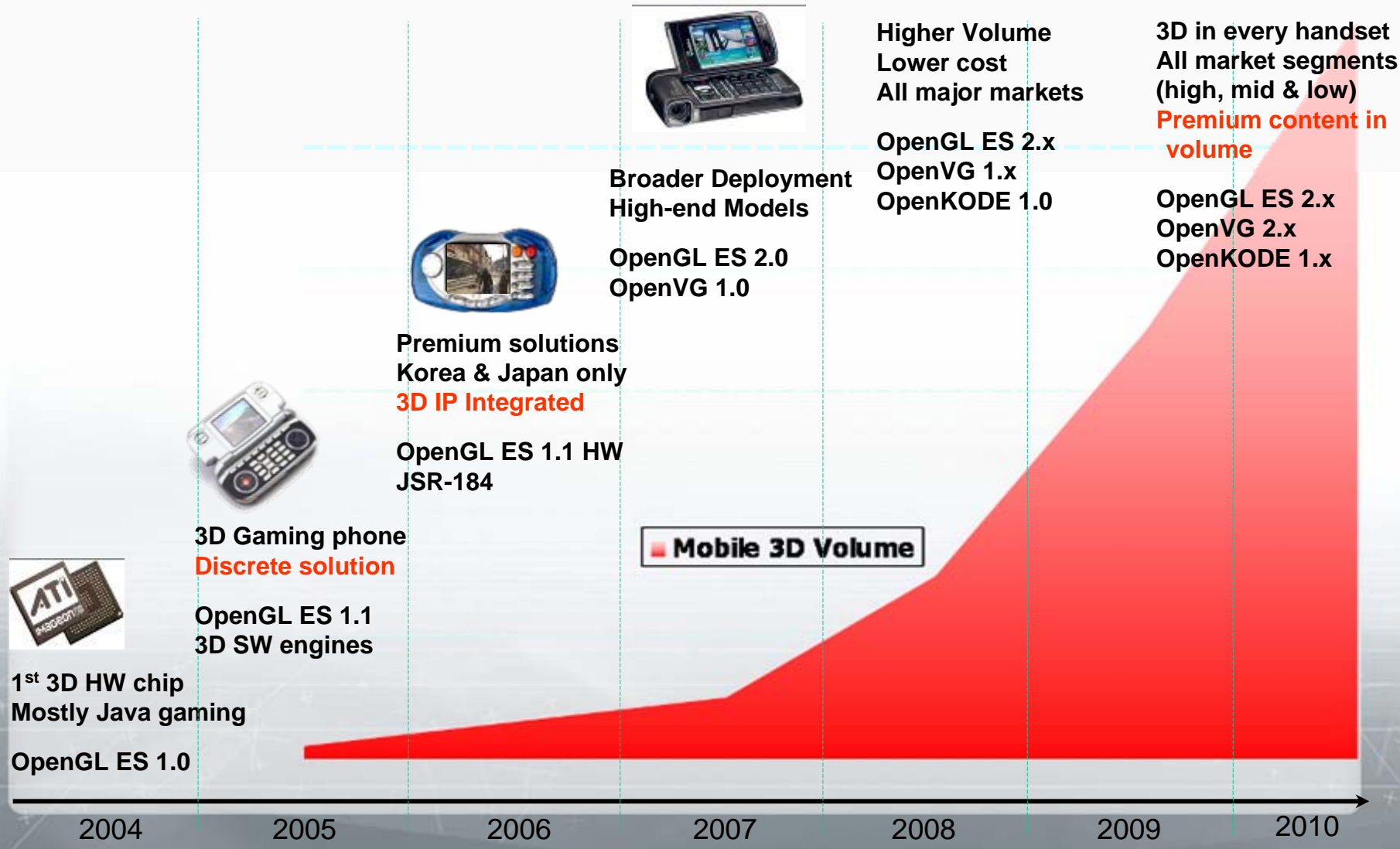
Requirements for NextGen Mobile Devices: A Real Computer in Your Hand

- ➔ Poor performance with huge power consumption **without** HW acceleration for
 - Blazing Fast Usual Functions
 - 3D Desktops and Gaming
 - Video and music
 - More demanding media applications
- ➔ Need to optimize performance and power consumption
- ➔ Need to specify performance requirements to handset manufacturers, content developers and mobile operators
- ➔ Sophisticated media processing will be central to mobile computing evolution

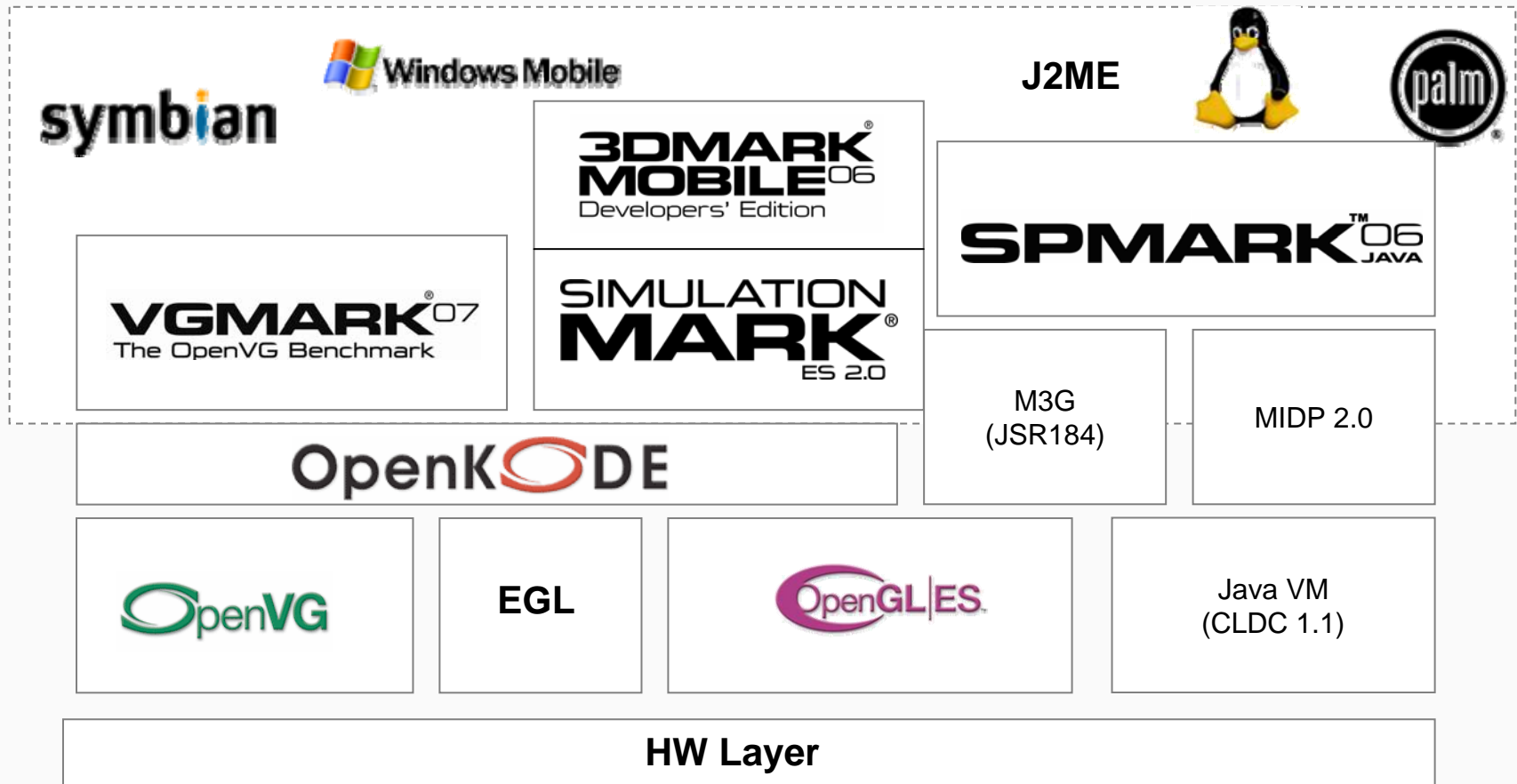


"In mobile devices the transition from 2D to 3D can be compared to that of black-white TV to Color TV." – Gameloft president Michel Guillemot

Mobile 3D Evolution

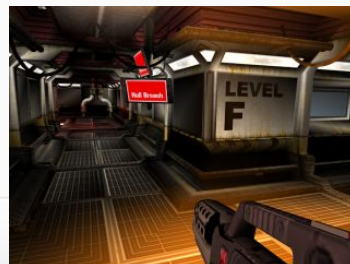


Products and Technology Platforms to be Benchmarked



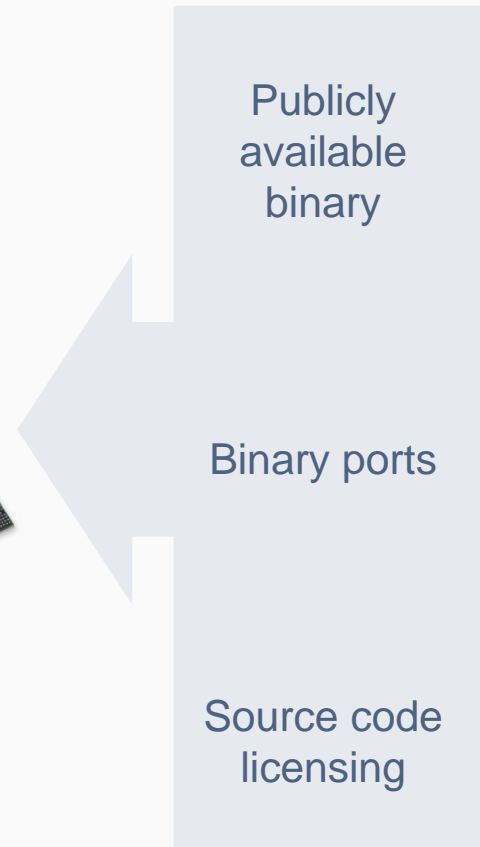
Mobile Benchmarks – Performance equals Conformance

- ➔ Theoretical performance requirements should not be used as those do not correlate with real-world
- ➔ If a device does not perform adequately, it will not conform to the users' desire
- ➔ Benchmarks must have been purposely built to measure both component and system performance by experts



Mobile Benchmarking Targets

- ➔ Retail phones 
- ➔ Phones in development 
- ➔ Reference designs 
- ➔ Semiconductor development boards 
- ➔ FPGAs 
- ➔ Simulators 



Publicly available binary

Binary ports

Source code licensing

Handheld Certification Testing Tools and Services for Mobile Carriers

- ➔ **Conformance and certification testing tools, lab and services**
 - Management and implementation of platform, application, performance and usefulness certification programs as a service
 - Or testing tools to certify native applications, performance and usefulness on handsets as licensed SW tools
 - OpenKODE conformance, OpenGL ES requirements, etc...

