

QNX Automotive Summit: China
Canada Pavilion, Expo 2010 Shanghai
26 August 2010



Choosing the Right Application Platform for Your Infotainment System

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- **Importance of software and application platforms**
- **Overview of potential platforms**
 - **Android**
 - **Microsoft**
 - **HTML 5**
 - **Adobe Air / Flash**
- **The impact of pocket application platforms on the vehicle**
- **QNX approach: universal application platform**

- **Consumers want cars to work seamlessly with their mobile devices**
 - Software strategy is key to market differentiation
- **Benefits of application platforms**
 - Rapidly integrate new applications to keep vehicle up to date
 - Enable new business models and revenue opportunities
 - Leverage rapid development cycles of mobile device market
- **Characteristics of application platforms**
 - Connected to the Internet and to mobile devices/services
 - Offer compelling user experience
 - Enable large developer community
 - Dynamically support new technologies
 - Scale across low-end, mid-range, and high-end systems

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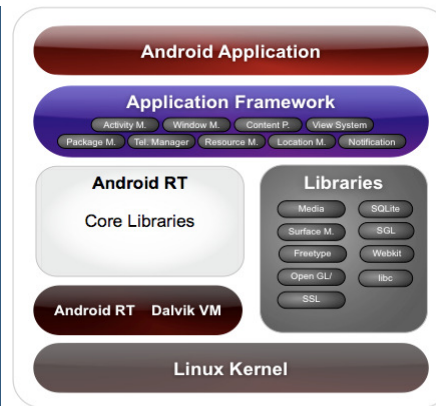


Application Platforms



Benefits

- Free to use and distribute
- Leverages Java
- Thousands of apps
- Widget-based HMI development tools for Eclipse
- Safe, upgradable environment



Drawbacks

- Boot times can be long
- Designed for mobile phones, not cars
- Limited ability to influence Google – especially outside of the mobile market
- Android virtual machine is not quite Java
 - Java code must be recompiled
 - Java environment can be challenging for graphics designers
 - No solution for sharing display with native applications
- Linux only (GPL, etc.)
- Google's future direction: HTML 5 /Chrome?

Benefits

- Many developers familiar with Windows API
- Choice of device drivers
- Full-featured automotive stack with Bluetooth, multimedia, etc.
- Large third-party ecosystem
- Core (basic) WinCE inexpensive
- Inexpensive tools

Drawbacks

- Fragmented approach
- Features such as multi-core not consistently supported across products
- All or nothing: core WinCE not enough, but full automotive stack much more expensive
- Embedded browser not HTML 5 compliant
- Customer must develop all iPod interfaces
- Limited ability to influence Microsoft
- Currently lacks application store support



Benefits

- Built on open industry standards
- Supports multiple operating systems
- Wide industry adoption
- Create once, deploy on multiple devices
- Huge development community



Drawbacks

- Poor development environment for rich user experiences*
- Poor application environment*
- Standards not yet ratified
- Limited stand-alone applications and application store
- Difficult to leverage native operating system resources
- No full-featured media player that can integrate with mobile devices

* New suppliers trying to address this.
Example: www.sencha.com

Benefits

- Flexible: Can be an application platform, HMI solution, or browser plug-in
- Supports multiple operating systems
- HMIs are very easy to design
- ActionScript-based HMIs can be accelerated with OpenGL ES
- Lots of built-in application, multimedia, and graphics functionality with ActionScript 3
- Adobe Air framework can interact with native resources and applications
- Flash plug-in enables full Internet experience
- Adobe Air Marketplace application store



98%

of Internet-connected PCs worldwide have Flash Player installed

95%

of top 20 smart phones will support Flash Player this year

3.5 million

develop using the Flash Platform

85%

of Alexa 100 top websites use Flash Player

98%

penetration rate in enterprises - Forrester

70%

of web games are delivered using Flash Player

75%

of enterprise professionals will seek Flash Platform development skills in 2010 – Society of Digital Agencies

Drawbacks

- Proprietary solution
- Open to developers, but the Adobe Flash / Adobe Air engine isn't "open"
- No full-featured media player that can integrate with mobile devices (e.g. Apple)
- Limited ability to influence Adobe

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Devices as Application Platforms



Emergence of pocket application platforms

Benefits

- Leverage rapid rollout of new applications developed for the consumer market
- Reduce time to introduce new, connected applications into the car
- Large ecosystem of apps and services appeals to all demographics
- Improve personalization – what is more personal than a personal device?
- Off-load hardware / BOM costs
 - For example, Internet radio can eliminate need for expensive satellite radio chipset



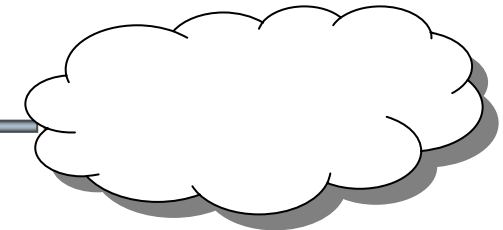
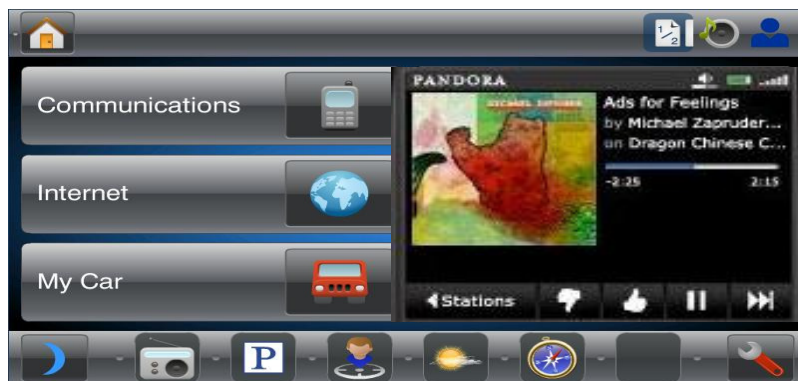
Device integration: iPod out / terminal mode

Benefits

- Simple integration
- When app becomes available on phone, it also becomes available in the car
- Keeps the vehicle up to date and allows end-user to leverage personal devices

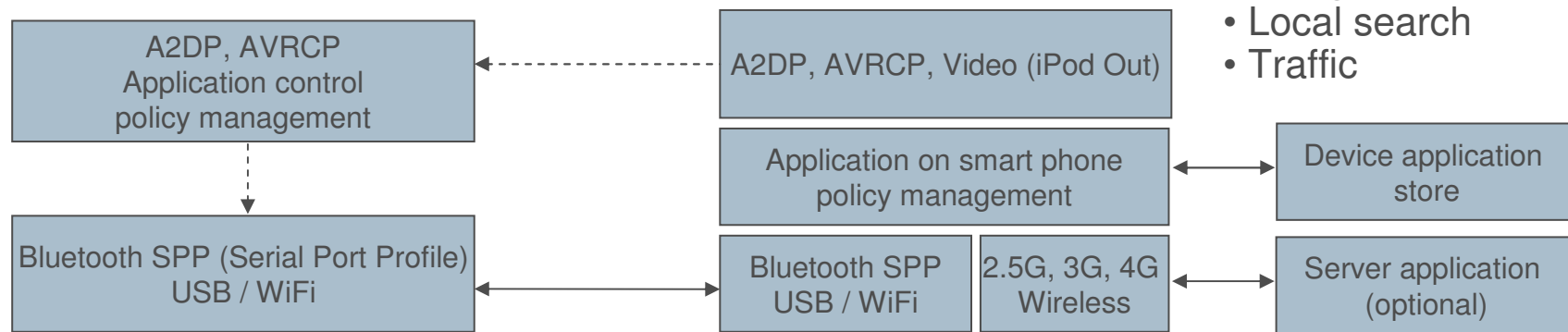
Drawbacks

- Developer community might not have appetite to create “car mode” HMI
- Possible fragmented user experience
- Policy management and driver distraction issues
- Pressure on OEM brand



Pocket applications

- Internet radio
- Navigation
- Local search
- Traffic



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QNX Approach: Universal Application Platform

Modular components consisting of Adobe Air, Adobe Flash, HTML 5, OpenVG, OpenGL, and Java

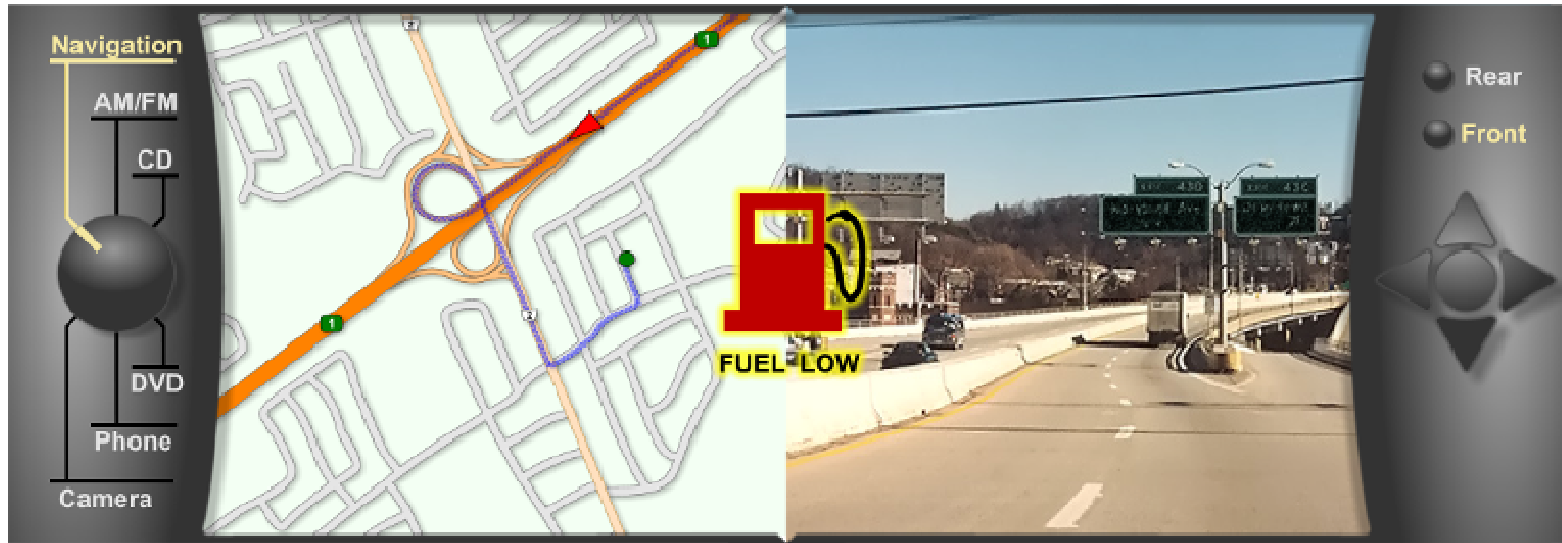


Universal application platform



Putting it all together

HMI

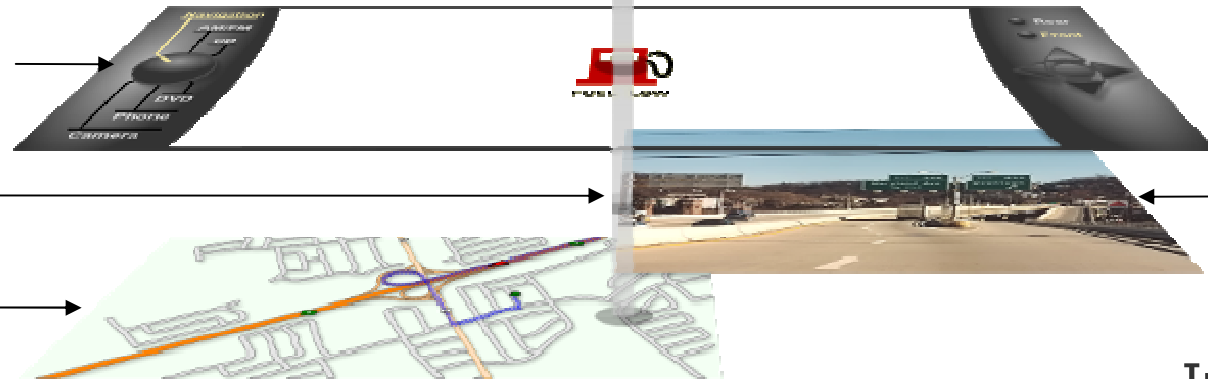


Composition Manager

Adobe Air

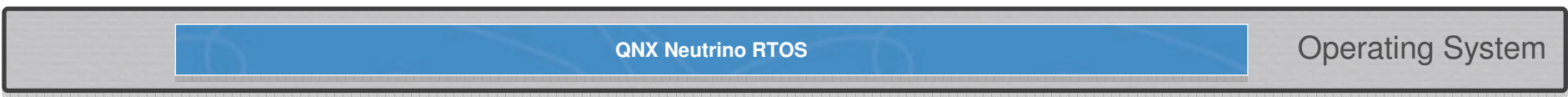
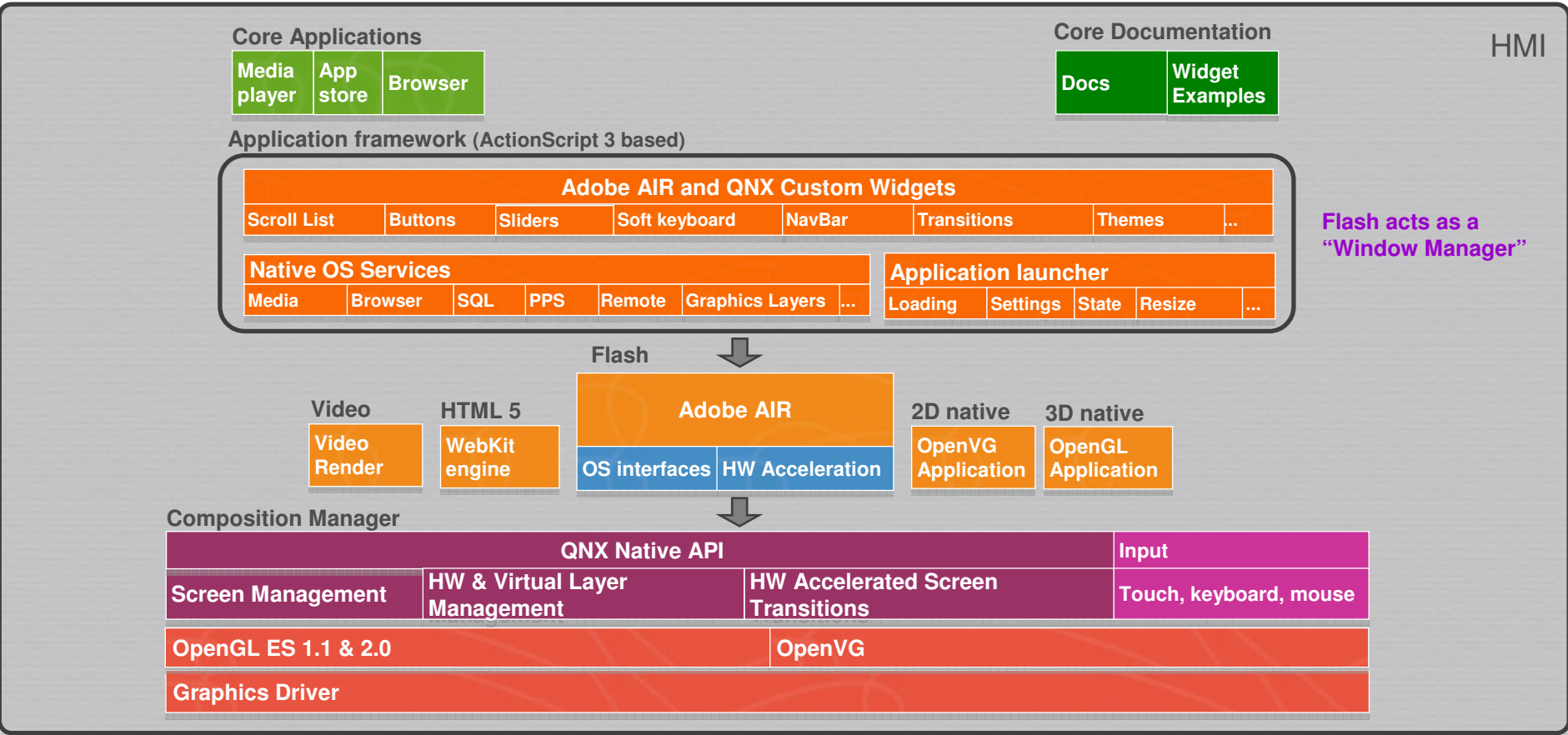
Video /
OpenGL

HTML 5 +
Adobe Flash



Device
Integration

Platform overview



Universal application platform



Protect core applications and offer consistent user experience

Safe & Secure
Browse, Download, Install



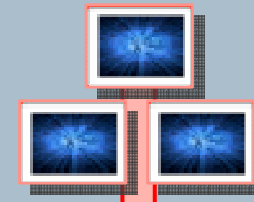
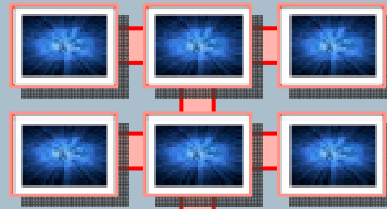
Guarantee CPU time
And protect memory

Partition 1

Partition 2
(Sandbox)

Core Apps

Other Apps



Flash

Flash

Composition
Manager

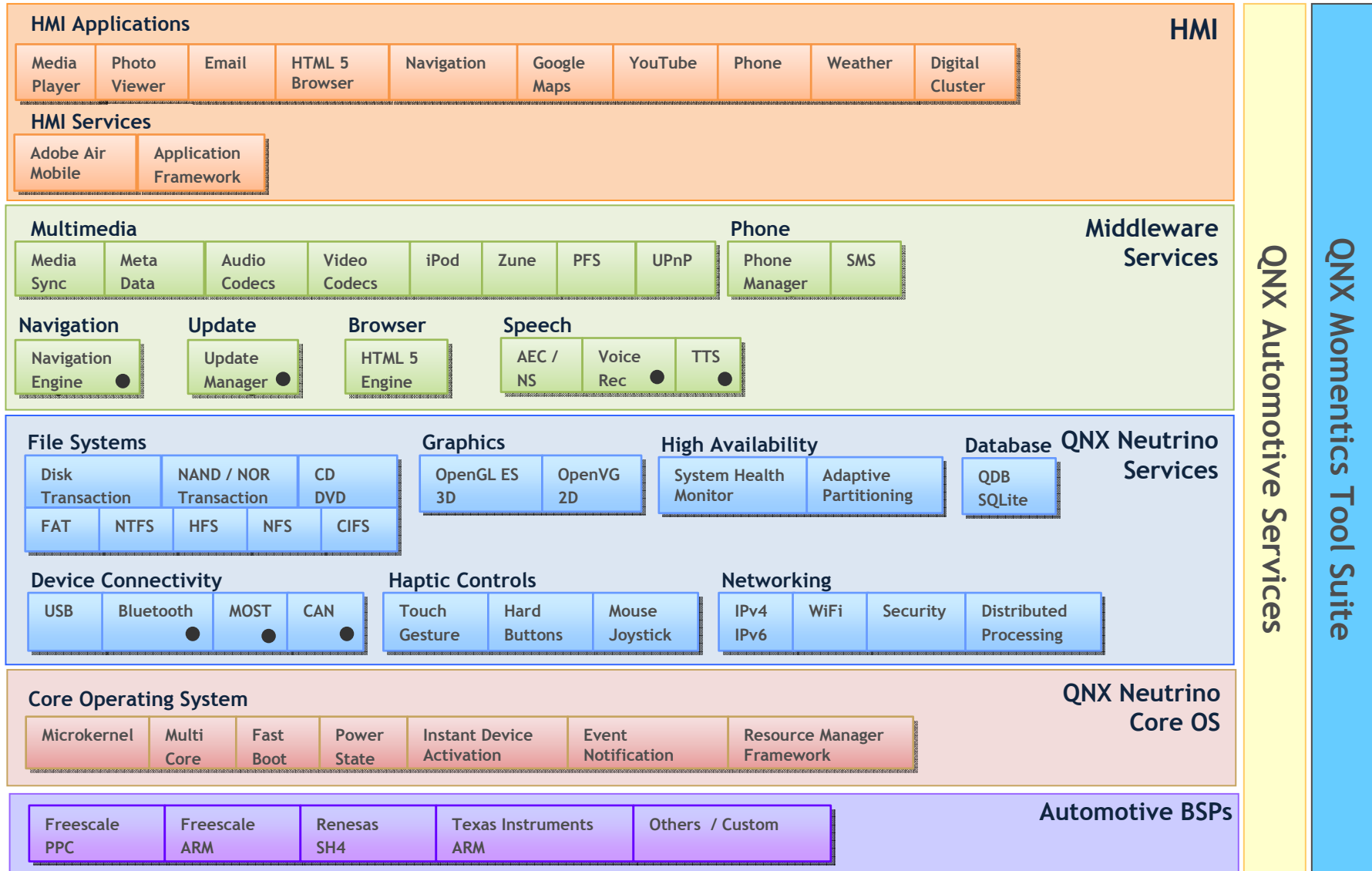
Separate Flash environments;
Common display and
user experience



QNX Neutrino RTOS
Secure Kernel

Common Criteria
EAL 4+
Certification

QNX architecture



● Denotes QNX Automotive partner solution

Addressing the challenges



- QNX understands automotive requirements and challenges
- Focused on bringing customers to production
- Over 200 production models to date
- Full support for automotive silicon (ARM, SH, PowerPC, x86)
- Design, planning, and integration services anticipated and built in
- Integration not left to you: team of senior QNX automotive engineers working on QNX components — no one is more qualified
- Open and integrated — select from a wide array of hardware and middleware components, depending on your design

- **QNX Software Systems**
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Thank you