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ジャパン2011

QNX SOFTWARE SYSTEMS

AUTO SUMMIT
JAPAN 2011

Deciding on an HMI Strategy

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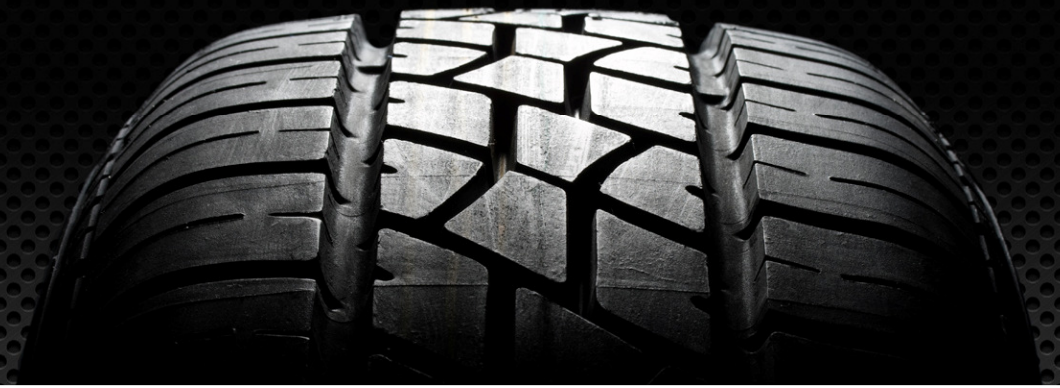

Factors to Consider

- **Adoption:** ability to leverage training + developers
- **Ease of use**: difficulty level in programming and maintenance
- **User experience**: ability to make rich, compelling UX
- **Platform support**: ability to use components, applications, stores
- **Embedded characteristics**: reliability, low-level access, speed, memory
- **Longevity:** Support lifecycle, deprecation, and breakage

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What's out there

- Do-It-Yourself
  - OpenGL ES
- Native frameworks
  - Altia, Crank, Elektrobit, etc
- Mobile
  - Android, Meego, Qt
- Web
  - AIR, HTML5

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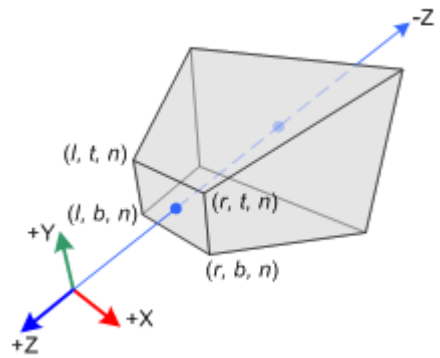

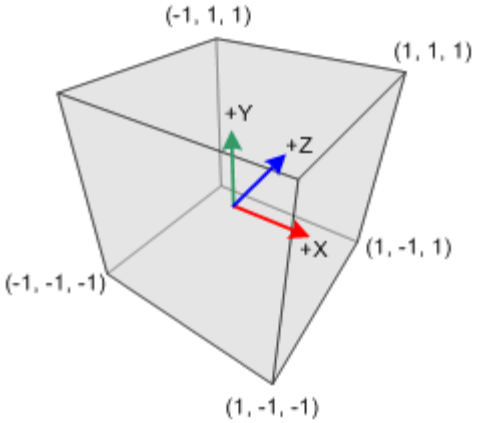

Do-It-Yourself

Write HMI to create OpenGL ES using C/C++ directly

- **Pros**
  - Closest to GPU: lightweight and fast
  - Hardware accelerated
  - 3D effects “easy”
- **Cons**
  - Very complex to program, and very low-level
  - Inconsistent support across GPUs reduces portability
  - No help, no ecosystem, no app stores

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Native frameworks

- **Pros**
  - Generally built for embedded
  - Generally lightweight
  - Can have state modeling features (easier to integrate voice recognition)
  - C/C++ access very easy
- **Cons**
  - Small community—no developers, difficult to train, lack of ports to auto-quality SOCs
  - Proprietary, non-standard and (often small) company dependent
  - May not take advantage of all newest GPU features, techniques, graphics
  - Encourages stagnation, with continuing development on legacy systems

Mobile derived frameworks

Meeting the promise

- Leverage the speed of mobility
- Leverage ecosystem of developers and apps

But can they deliver?

- General suitability in converting to automotive space

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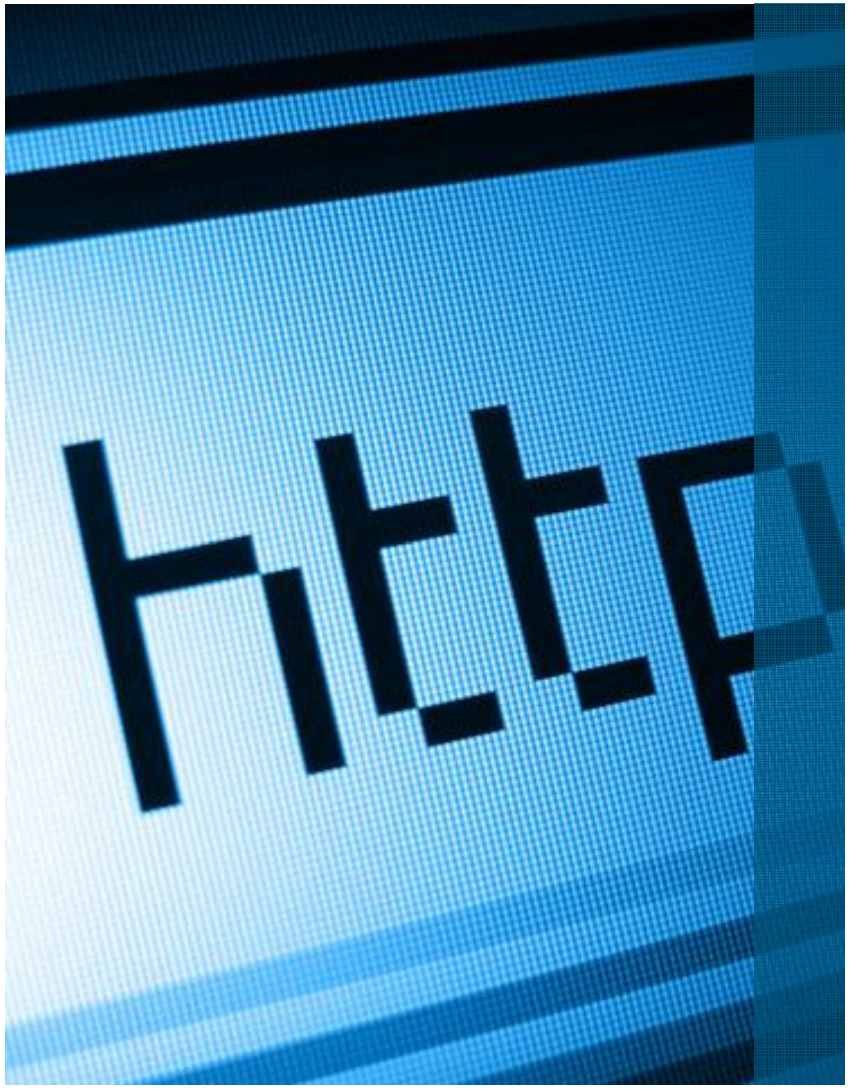

Web derived frameworks

Build on something bigger than automotive

- Biggest ecosystem and community
- Standards based
- Flexibility (head unit, mobile connectivity, cloud)
- Longevity
- Track record for legacy support

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Adobe AIR

Adobe platform for web and embedded development

- **Pros**
  - Powerful framework
  - Big ecosystem
  - UX designer friendly
- **Cons**
  - Adobe proprietary de-facto “standard”
  - Some automotive deployment, but limited

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HTML5

Shorthand for HTML5, CSS3, JavaScript, AJAX, JSON, XML

- **Pros**
  - High level, easy to program, powerful
  - Huge community
  - Standards based
  - Flexibility: internal HMI, mobile connectivity, leveraging cloud, easy reskinning
- **Cons**
  - As yet unproven in automotive
  - Needs optimization to match performance

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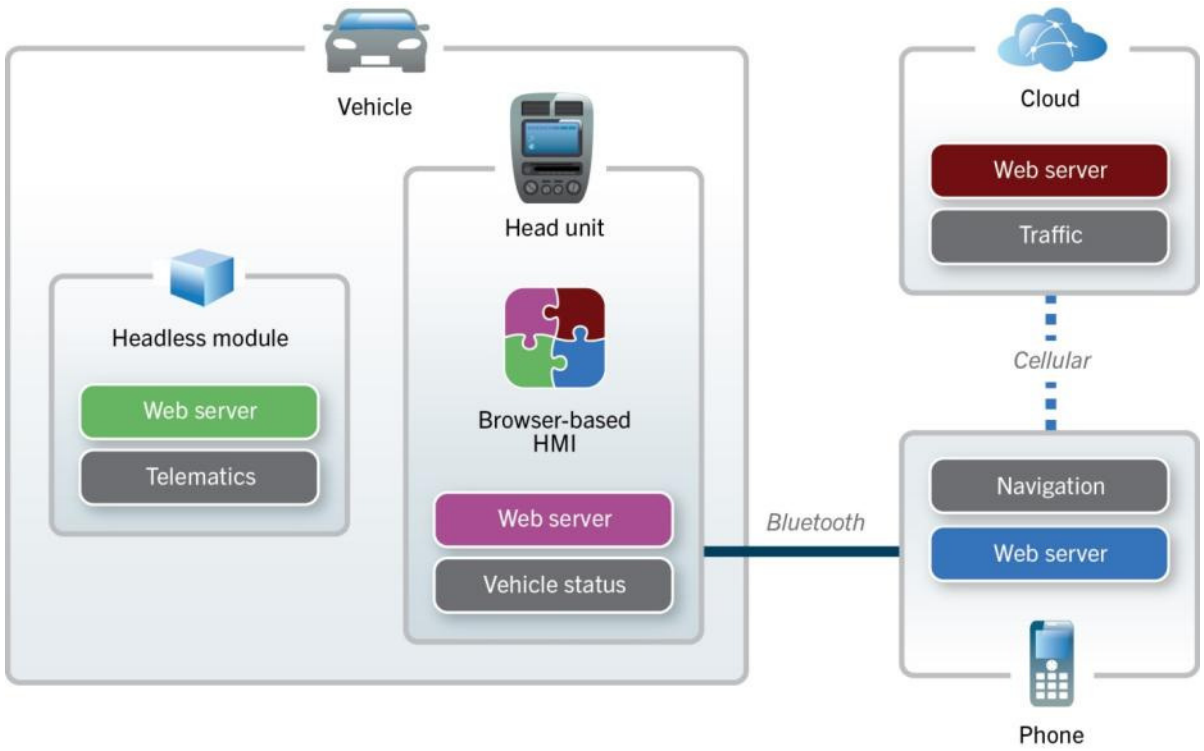
HTML5 integration



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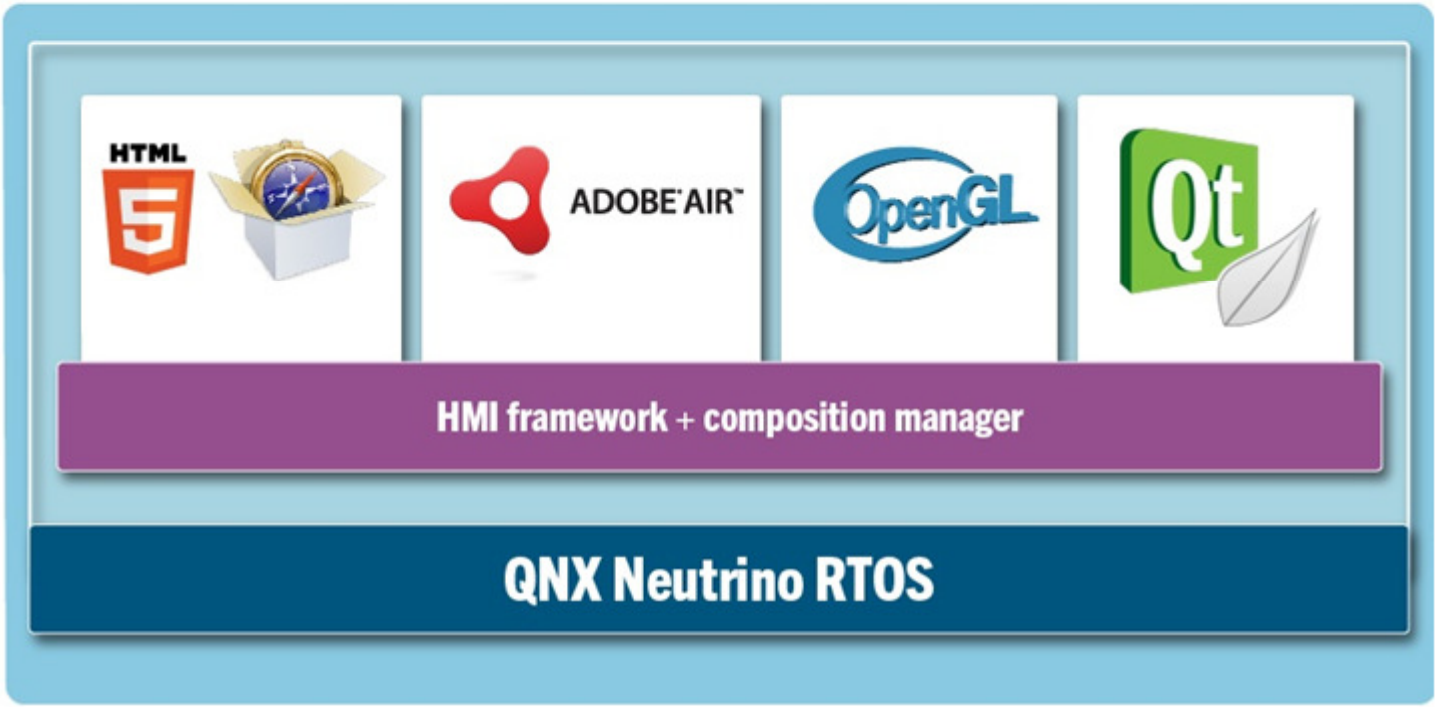
QNX CAR Universal Application Platform



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QNX Composition Manager

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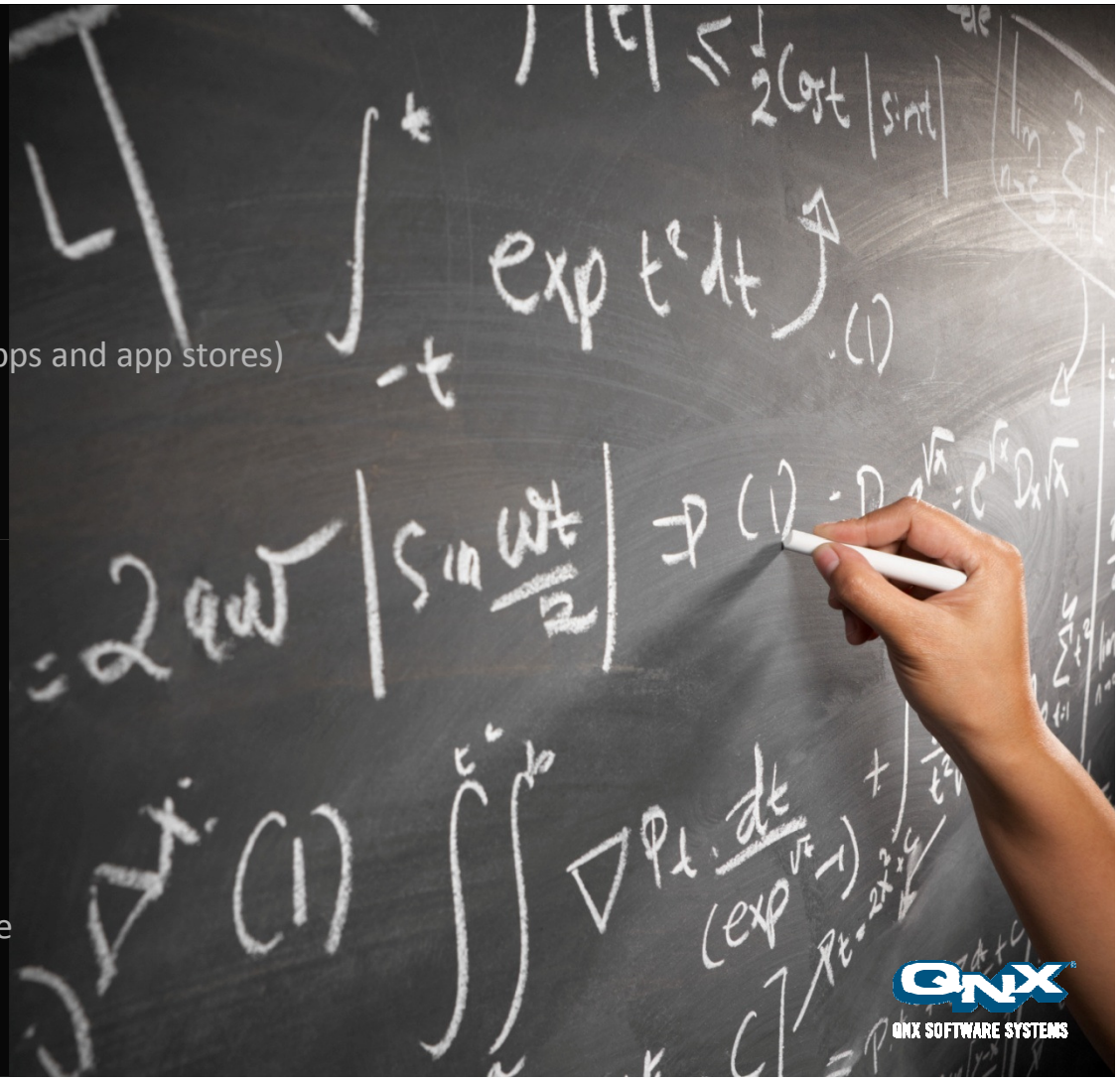
Parting thoughts

Embracing web approaches…
- Expands your options (more developers, apps and app stores)
- Leverages interfaces to mobiles
- Improves developer productivity

…comes with a cost
- More RAM
- Faster CPU
- Capable GPU

Look for solutions that are
- Optimized for embedded applications
- Hardened for automotive
- Provide easy access to underlying hardware



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