Building Embedded Displays Using Model-Based Design

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Example Target Applications

- Instrument Cluster
- Center Stack
- Heads-up display
- Command/Control Center
Traditional Display Design Process

**Manual Integration**
- Cumbersome to map components
- Error-prone to keep making changes

**Physical Prototypes**
- Hardware/drivers not available early
- Low-level designs prevent rapid iteration

**Traditional Testing**
- Design and integration issues found late
Model-Based Design of Displays

**SPECIFICATIONS**
- Visual Design
  - Graphical Illustrations
- Graphics
  - Embeddable Graphics
- Business Logic
  - Embeddable Algorithms
- Other Application
  - Embeddable Algorithms

**INTEGRATION AND TEST**
- Manual Integration
  - Cumbersome to map components
  - Error-prone to keep make changes
- Traditional Testing
  - Design and integration issues found late
- Physical Prototypes
  - Hardware/drivers not available early
  - Low-level designs prevent rapid iteration
  - Out-of-the-box integration of business logic with graphics tools through published API
  - Test requirements and analyze behavior of complete design using simulation on desktop
  - Verify and validate designs using testing and error detection through desktop simulation

**Hardware Prototype**
- Embedded Software

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**MathWorks**
DiSTI GL Studio Integration for HMI Applications

Purpose: Demonstrate a workflow that is tailored to developers who focus on embedded HMI applications

Focal point of the demonstration is on early validation and verification in Simulink for HMI development
Key Takeaways

- Co-Simulation/Development Environment in Simulink
- Automated Test Case Execution

- Deployment to Target
  - Embedded Coder code and GL Studio code can be built into a single application
  - Application can deploy to an embedded target or desktop
### Existing Automotive Graphic Vendor Integrations

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<tr>
<th>Vendor</th>
<th>Website</th>
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<tr>
<td>DiSTI (GL Studio)</td>
<td><a href="http://www.disti.com/">http://www.disti.com/</a></td>
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<tr>
<td>Digia Qt (technology)</td>
<td><a href="http://www.qt.io/">http://www.qt.io/</a></td>
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<tr>
<td>Fujitsu (CGI-Studio)</td>
<td><a href="http://www.cgistudio.at/">http://www.cgistudio.at/</a></td>
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