AGENDA

- Synergy Value Proposition
  - Reduce Total Cost of Ownership
  - Speed up Time to Market

- Saving Time with a Complete Platform
  - Platform Creation Costs

- Versioning, Licensing, and Maintenance
  - Versioning Scheme
  - Synergy Software Package Licenses
  - Maintenance Options
WHY WE DESIGNED SYNERGY TO IMPROVE TCO

- **Trend:** Complexity inflexion point creates cost inflexion point
- Many system requirements add cost but do not create differentiation - are now mainstream
- Synergy greatly reduces the TCO burden
HOW SYNERGY REDUCES TCO

• Production-grade platform of hardware, software, and ecosystem
• Eliminates infrastructure development and maintenance
• Fully integrated, maintained and supported by Renesas
WHY WE DESIGNED SYNERGY TO IMPROVE TTM

- **Trend**: Huge complexity increase creates drastic schedule impact
- Short window of opportunity to incorporate new technologies before being considered outdated
- Synergy shrinks the schedule increase
HOW SYNERGY ACCELERATES TTM

Traditional Development

Hardware Design | Driver Software Design | Middleware Design & Test | Integration w/ RTOS | Cloud Connect | Application Code | System Test

Development Using Integrated Platform

H/W Design

Essential Building Code

Application Code

Differentiated Code

Additional Innovation | Product Differentiation

System Test

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<table>
<thead>
<tr>
<th>Element</th>
<th>From Scratch</th>
<th>Port Open Source</th>
<th>Purchase Separately</th>
<th>Synergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTOS</td>
<td>1 year</td>
<td>2 weeks</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>Ethernet IPv6</td>
<td>2 years</td>
<td>1 month</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>USB Host</td>
<td>1 year</td>
<td>N/A</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>Graphics</td>
<td>1 year</td>
<td>1 month</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>Touch</td>
<td>1 year</td>
<td>N/A</td>
<td>N/A</td>
<td>Available</td>
</tr>
<tr>
<td>File System</td>
<td>6 months</td>
<td>1 week</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>TOTAL TIME</td>
<td>6.5 years</td>
<td>3 months</td>
<td>2 weeks</td>
<td>ZERO</td>
</tr>
</tbody>
</table>

“No one in their right mind”

Still requires time to locate and purchase

Most developers will leverage some sort of pre-existing solution

With Synergy, it is already done!
## Creating an Integrated Platform

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>RTOS</td>
<td>2 months</td>
<td>3 months</td>
<td>&lt;= 3 months</td>
<td>Done!</td>
</tr>
<tr>
<td>Ethernet IPv6</td>
<td>2 months</td>
<td>3 months</td>
<td>&lt;= 3 months</td>
<td>Done!</td>
</tr>
<tr>
<td>USB Host</td>
<td>1 month</td>
<td>2 months</td>
<td>&lt;= 2 months</td>
<td>Done!</td>
</tr>
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<td>&lt;= 3 months</td>
<td>Done!</td>
</tr>
<tr>
<td>Touch</td>
<td>3 months</td>
<td>N/A</td>
<td>N/A</td>
<td>Done!</td>
</tr>
<tr>
<td>File System</td>
<td>2 weeks</td>
<td>2 weeks</td>
<td>&lt;= 2 weeks</td>
<td>Done!</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9.5 months</td>
<td>11.5 months</td>
<td>&lt;= 11.5 months</td>
<td>ZERO</td>
</tr>
</tbody>
</table>

Often elements sourced from the same vendor must be manually integrated!

With Synergy, it is already done!
## TEST THE INTEGRATED PLATFORM

<table>
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</tr>
<tr>
<td>File System</td>
<td>2 weeks</td>
<td>1 week</td>
<td>1 week</td>
<td>Done!</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3 months</strong></td>
<td><strong>1.5 months</strong></td>
<td><strong>1.5 months</strong></td>
<td><strong>ZERO</strong></td>
</tr>
</tbody>
</table>

Integration still requires testing!

This is a best case scenario! It can easily be much, much longer…

With Synergy, it is already done!
THE TRUE COST OF AN INTEGRATED PLATFORM

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<th>Purchase Separately</th>
<th>Synergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop</td>
<td>78 months</td>
<td>3 months</td>
<td>2 weeks</td>
<td>0</td>
</tr>
<tr>
<td>Integrate</td>
<td>9.5 months</td>
<td>11.5 months</td>
<td>11.5 months</td>
<td>0</td>
</tr>
<tr>
<td>Test</td>
<td>3 months</td>
<td>1.5 months</td>
<td>1.5 months</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>90.5 months</td>
<td>16 months</td>
<td>13.5 months</td>
<td>0</td>
</tr>
</tbody>
</table>

All of this must be in place before work on the specific application can begin!

With Synergy, it is already done!
### INCREDIBLE VALUE FOR MONEY

You get all of this, and more, when you buy a Synergy device or kit. A single source eliminates multiple cost for **Licensing**, **Integration**, **Maintenance**, **Version Tracking**, and so on…

<table>
<thead>
<tr>
<th>Hardware Abstraction Layer (HAL) Drivers</th>
<th>Board Support Package (BSP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet MAC Controller</td>
<td>USBHS, USBFS, SPI, SSI, RTC</td>
</tr>
<tr>
<td>Serial Comm Interface</td>
<td>CAN, SDHI, ADC-12, ADC-14, DAC, Security</td>
</tr>
<tr>
<td>ADC-12</td>
<td>ADC-14</td>
</tr>
<tr>
<td>iOIA Interface</td>
<td>Secure Crypto Engines</td>
</tr>
<tr>
<td>Clock Management</td>
<td>Graphics LCD Controller</td>
</tr>
<tr>
<td>Timing &amp; Control</td>
<td>2D Drawing Engine</td>
</tr>
<tr>
<td>Functional Libraries</td>
<td>Security &amp; Encryption, CMSIS- DSP, Captouch</td>
</tr>
</tbody>
</table>

### Synergy Software Package (SSP)

- **ThreadX® RTOS**
  - Advanced Scheduler
  - Inter-process and Inter-thread Communication
  - Memory Management
  - Message Queue
  - FAT12/16/32, exFAT, SD, microSD, CF, and MemoryStick
  - Complete Flash Management with Wear Leveling
  - Very Fast Performance and Low Footprint

- **FileX®**
  - Host Classes (Storage, CDC)
  - Host Stack
  - Host Controller
  - Device Classes (Storage, Audio, HID, Printer, Hub)
  - Device Stack
  - Device Controller

- **USBX™**
  - GUIX Studio
  - Run Time Library
  - Canvas
  - Drawing
  - Screen
  - System
  - Widget
  - Window

- **GUIX™**
  - FTP
  - TFTP
  - NAT
  - Telnet
  - TCP
  - PPP
  - UDP
  - POP3
  - ICMP
  - HTTP
  - IGMP
  - DNS
  - ARP
  - SNMP
  - RARP
  - DHCP
  - Widget

- **NetX™ and NetX™ Duo**
  - Audio
  - Console
  - SPI
  - I2C
  - JPEG
  - UART
  - Touch Panel
  - Thread Monitor
  - External Button
  - Power Profile
  - Shared Interface
  - Messaging
VERSIONING, LICENSING, AND MAINTENANCE
When two major releases exist both will be supported and maintained as independent products.
SYNERGY GALLERY ACCOUNTS

User Account

- Required for downloading SSP and e² studio for Evaluation license and prototyping purposes
- Required information (Account Profile):
  - Name of User
  - E-mail address
  - Phone number
  - Name of Company / Organization
  - Other Information
- History of download activity maintained

Company Account

- Required for Development and Production License and SSP Source License
- Required information beyond user information:
  - Legal entity name (company name)
  - Legal entity address
  - List of user accounts are linked with company account
  - Primary user account gets “Administration privilege”
- Priority support
- Company accounts get proactive email based notifications
## SYNERGY GALLERY ACCOUNT CAPABILITIES

<table>
<thead>
<tr>
<th>Feature</th>
<th>User Account</th>
<th>Company Account</th>
</tr>
</thead>
<tbody>
<tr>
<td>Download SSP (includes Evaluation License)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Download e² studio</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Download Evaluation VSA Components</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Request Development and Production License</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Download QSA Components</td>
<td>✗</td>
<td>✓</td>
</tr>
</tbody>
</table>
SSP LICENSES

Distributed under two licensing models, available on-line at the Synergy Gallery

**Evaluation License**

- Provides full evaluation
- The user has access to view some of the source code.
- No warranty or liability

**Development and Production License**

- Fully featured with warranty
- Full source code visibility
- Higher priority technical support
- Authorizes creating commercial end products

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PRODUCT DEVELOPMENT LICENSING PROCESS

Evaluate
• Create user account
• Download the SSP with an Evaluation License

Develop
• Create company account
• Obtain Development and Production License

Deliver
• Confirm Development and Production License for required SSP version
• Determine long-term support requirements
# Long Term Maintenance Options

<table>
<thead>
<tr>
<th><strong>Extended Warranty and Support</strong></th>
<th><strong>Source Code License</strong></th>
<th><strong>Escrow</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Initial Development and Production License provides free updates for one year</td>
<td>• Can be purchased for individual SSP components</td>
<td>• Less expensive than Source Code License</td>
</tr>
<tr>
<td>• Extended Warranty and Support available for purchase</td>
<td>• Pricing based on MCU and number of design efforts</td>
<td>• Provides “disaster protection”</td>
</tr>
<tr>
<td></td>
<td>• Service Level Agreement (SLA) available for continued support</td>
<td>• Licensed SSP version is held by third party, released upon SSP support discontinuation</td>
</tr>
</tbody>
</table>
IN SUMMARY...
SUMMARY

• The complexity inflexion point changed everything
• Synergy is a bold new way of working, designed to enable life in a world after the inflexion point
• Synergy is designed to:
  • Get you started easily
  • Provide a complete platform
  • Offer one-stop-licensing
  • Eliminate your maintenance efforts

https://synergygallery.renesas.com/
Thank you for your attention

PLEASE REMEMBER TO COMPLETE THE FEEDBACK SURVEY IN YOUR SMARTPHONE APP