The AMI-C / OSGi Alliance Relationship

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Topical Outline

- A brief overview of AMI-C
- The strong partnership between AMI-C and OSGi
- The benefits of the AMI-C/OSGi partnership to the Telematics industry
- The AMI-C Release 2 effort with OSGi
- AMI-C's evolving role in Phase 3
- Opportunities for participation in AMI-C Phase 3, and
- The significant past, present, and ongoing contributions to this effort by Acunia
Global Telematics Standards

Typical Management and Organizational Challenges

- Emerging technologies
- Cultural, experiential, language, & locational diversity
- Volunteer task-force
- Collaborative competition
- Minimal resources
- Large and cross-industry ecosystem
- Regional preferences and scope creep
- Quality of contributions and participation
What is AMI-C?

- The Automotive Multimedia Interface Collaboration (AMI-C) was created by automobile manufacturers in 1999 to focus on standards for mobile information and entertainment systems.

- AMI-C, Inc. was formed in 2001 to deliver validated specifications in collaboration with industry suppliers.
AMI-C’s Context
Mobile Information & Entertainment Systems

A collection of hardware & software components that are used to deliver information and entertainment services to the vehicle occupants*

*Telematics & Multimedia systems are included
The Standards Landscape
AMI-C Among Standard Development Organizations

**Consortia Standards Bodies**
+ Faster than SDO
+ Consensus approach
+ Automotive context
- Time consuming
  (ISO, IEEE, SAE, etc)

**De Jure Standards**
+ Consensus process
  (ISO, IEEE, SAE, etc)
- Time consuming

**De Facto Standards**
+ Fast to market
- High risk of failure
  (Windows, VHS, etc)

**Participants in Locus of Control**
Small → Large
Low → High

+ Typically faster than SDO
+ Specific technology focus
- Varying levels of consensus
- Varying automotive participation
  (OSGi, Bluetooth SIG, MOSTCO, 1394TA, etc)
The AMI-C Ecosystem
The AMI-C/OSGi Partnership

Timeline

- Jun 2001: AMI-C initiates participation in OSGi VEG
- Sept 2001: Initial communique to OSGi leadership suggesting harmonization of automotive-related API efforts
- Oct 2001-Feb 2002: Discussions regarding alignment of initiatives and roles & responsibilities
- Mar 2002: AMI-C & OSGi leadership agree to coordinate efforts
  - OSGi to harmonize with AMI-C Vehicle Services APIs
  - AMI-C to harmonize with OSGi Telematics Framework
- Jul 2002: AMI-C announces intent to incorporate OSGi as underlying framework for AMI-C Host specifications & Core APIs
- Oct 2002: AMI-C presentation at OSGi World Congress 2002
- Apr 2003: AMI-C announces adoption of OSGi platform Release 3 in its Release 2 specifications
## The AMI-C/OSGi Partnership

### Benefits

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<th>Lowers Risk of Adding New Telematics Services</th>
<th>Allows better Long-term Cost Management</th>
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<td>• Common architectural framework</td>
<td>• Build once, use everywhere</td>
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<td>• Global consensus</td>
<td>• More legacy carry-over</td>
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<td>• Validated specifications</td>
<td>• Promotes supplier competition</td>
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<td>• Open standards</td>
<td>• Unbundles procurements</td>
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<td>• Isolation of vehicle systems</td>
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<th>Expands Range of Viable Telematics Services</th>
<th>Reduces Time from Concept to Realization</th>
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<td>• Common interfaces permit independent service development</td>
<td>• Decouples Telematics and Multimedia products and services from the automotive lifecycle</td>
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<td>• Dramatically reduces costs of service &amp; application development</td>
<td>• Allows closer tracking of new services to CE lifecycles</td>
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<td>• Lower risk &amp; barriers to entry</td>
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The AMI-C / OSGi Partnership

Areas of Coordination

- Bluetooth Hands-Free Profile Guidelines
- Off-board Navigation APIs
- SW Architecture & Core System Management APIs
- Vehicle Services APIs
- Vehicle Interface Spec
- AMI-C Vehicle Services Interface
- OEM / Embedded
- Audio Services
- HMI Services
- 1394 Automotive & MOST Network Guidelines
- AMI-C & OSGi Partnership Focus
- Validation & Certification Plans & Procedures
- Audio Arbitration, Power Mgmt, Diagnostics, & Interconnection
- NW Architecture & Common Message Set
- Bluetooth Hands-Free Profile Guidelines

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AMI-C Release 2 Specifications

- A set of **foundational elements** enabling automakers and suppliers to develop mobile information and entertainment systems to deliver innovative services to customers in the vehicle.

- The culmination of about **100 man-years** of dedicated effort by automakers and suppliers resulting in approximately 3000 pages of specifications.

AMI-C
Release 2
Roadmap

Enablers & Design Specs

VEHICLE INTERFACE
- Vehicle Services
- AV Services
- HMI Services
- Network Power

HMI
- HMI Manager
- XML Schemas

NETWORK

Network Protocol Requirements
- MOST
- 1394 AUTO
- BLUETOOTH
  - Requirements & Guidelines
  - Test specs
  - AMI-C Reference Implementation

Common Message Set
- General & HMI
- Vehicle
- AV
- Phone
- AMI-C
- AV Profile
- BT Profile
- AMI-C
- AV/C
- AT

AMI-C/OSGi Partnership Focus

Reference
- User Guide
- Compliance Guide
- Technical Glossary

Physical
Software and Network Interfaces

Vehicle Services Provider

AMI-C Defined Messages

Applications

Device

Host

Multimedia (AMI-C) Bus

Vehicle Interface

AMl-C Defined Software interfaces

OEM Bus
The AMI-C Release 2 APIs

- The AMI-C APIs define a uniform vehicle independent java based interface to in-vehicle computing platforms.

- AMI-C Release 2 covers interfaces to basic software support services, vehicle services, human machine interface services and off-board navigation.

- The APIs are available at www.ami-c.org
API Structure

- **Core APIs**
  - Required on all AMI-C hosts
  - Provide the basic infrastructure needed by applications

- **Extension APIs**
  - Not required for all hosts
  - Provide useful services for applications

- **Application APIs**
  - Application domain specific services
  - Only release 2 API is off-board navigation
Core APIs

- Software Lifecycle Management
- Resource Management
- Service Discovery
- Security
- Communication
- Execution Management

- Internationalization
- Vehicle Services
- Human Machine Interface
- Persistent Storage
- Application Execution Manager
Looking Ahead

Vehicle Systems

AMI-C Host

Application Software
- AMI-C API Implementations
- Other Implementations
- Drivers
- Config Software
- General

Internal Vehicle Services Interface

Internal Software Interface

Networked Devices

External Wireless Interfaces
- WiFi/DSRC
- GSM/GPRS
- WCDMA
- SDARS
- Bluetooth

External Information Interfaces
- OSGi Server
- DSRC Server
- Internet Server
- Portable Device

Internal Network Interface

External Hardware/Media Interfaces
- CD/DVD
- SD/CF Card

1394
MOST
USB
Other

Common Message Set

AMI-C Host

Other

Drivers
AMI-C Phase 3
Connecting the Telematics Landscape

Vehicle-to-Car
Vehicle-to-Hot Spot
Vehicle-to-Cellular
Vehicle-to-Roadside
Vehicle-to-Vehicle
Applications
Vehicle and Road Data
Road Data
AMI-C System
Vehicle Data
Internet
Applications
Service Provider
Road Infrastructure Data System
AMI-C Phase 3

Status of Activities

- AMI-C has released the Phase 3 solicitation for participation and legal agreements (www.ami-c.org)
- AMI-C is presently evaluating applications to become Phase 3 Contributing Organizations
- AMI-C Members (Automakers) are forming teams of selected Contributing Organizations to support their Sponsored Projects
- The Program Coordinating Committee is accepting proposals from Contributing Organizations for projects
- Invitations to planning workshops and solicitations for participating in specific TEGs will be issued to Contributing Organizations as requirements are determined.
AMI-C Phase 3

Current Technical Expert Groups

- Networking TEG
  - 1394 Automotive

- Wireless TEG
  - Wireless Connectivity Interfaces

- External Communication TEG
  - External communication messages and protocols
  - DSRC Interfaces (with demonstration)

- Software TEG
  - Host/VSI Extension (with demonstration)
  - Provisioning Support
  - Security
  - HMI Manager

- Physical TEG
  - Power and mechanical specs
AMI-C Phase 3

Current Sponsored Projects

- Vehicle to Infrastructure Integration
- Low Cost In-vehicle Telematics Terminal
- Off Board Navigation
- Applications for 1394 Automotive Networks
- Telematics Deployment Test Bed
- Interoperability Test Bed for Telematics
Global Telematics standards development presents several significant challenges.

AMI-C & OSGi created a strong alliance that successfully met several of these challenges.

The alliance created industry specifications that pave the way for the next generation of Mobile Information & Entertainment Systems.

AMI-C continues to leverage alliance relationships while expanding scope across the Telematics landscape.
For More Information…

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Questions?