OSGi™ as an Evolutionary Precursor for the Connected Vehicle
June 27th, 2007
9:45 AM – 10:45 AM
Welcome!

Thank you for attending today's session

Darwin Dahlgren

Founding Member of the Connected Vehicle Trade Association (CVTA)
Greetings, from Scott McCormick
President, CVTA

Co-Chairman of CVTA’s Technical Roadmap Advisory Committee for the Connected Vehicle Proving Center
What to present to the OSGi Alliance Community?

Figure it out for yourself!
If I were a member of OSGi™ Alliance, what would I want to hear at this event?

- What is new:
  - with my peers?
  - with the technology?
  - with the market opportunity?
- Who are these potential customers?
- What are my current and potential customers thinking?
- Where are my customers going in the future?
- Why do those customers want to go in that future direction?
- How can the OSGi™ Alliance Community help customers achieve their goals
  - With a constantly improved value proposition?
Who are these potential customers?

- Automakers
- Automotive suppliers
- Consumer Electronics Firms
- Telecoms and Backhaul Conduits
- Programmers and Aftermarket Services
- Domain Consulting Companies
- Content Providers and Aggregators
- Other Transportation Modal (Trains, Busses, Ambulances, Police, etc.)
- National, Regional and Local Transportation Authorities
What are my current and potential customers thinking?

• Deliver more valuable, useful and actionable information to their customers:
  • You
  • Your device
  • Your family
  • Your car
  • Your company, or
  • Your city, state or country
What are my current and potential customers thinking?

- The amount of in-vehicle electronics content is going to triple in the next five years
- This content is going to involve a multitude of content and systems providers
- Electronics and software are expected to represent 80–90% of vehicle innovations through 2010. (Source: Automotive Software Foundry)
What are my current and potential customers thinking?

- Vehicle Infotainment and Communications is the primary growth area for automotive electronics and computation.
- Between 2007-2011, Telematics Sales growth is forecast as:

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<thead>
<tr>
<th></th>
<th>Global</th>
<th>No. Amer</th>
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<tbody>
<tr>
<td>OEM Monitored</td>
<td>400%</td>
<td>184%</td>
</tr>
<tr>
<td>OEM Non-Monitored</td>
<td>1,511%</td>
<td>1,008%</td>
</tr>
<tr>
<td>Aftermarket Monitored</td>
<td>1,131%</td>
<td>515%</td>
</tr>
<tr>
<td>Aftermarket Non-Monitored</td>
<td>723%</td>
<td>377%</td>
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- **Total Growth**

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<th></th>
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<td></td>
<td>713%</td>
<td>310%</td>
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</table>

SOURCE: Telematics Research Group.
Monitored = External vehicle communication
Non-Monitored = In-vehicle system only
What are my current and potential customers thinking?

- Jacques Barrot, Vice-President of the European Commission in charge of Transport
  - "Intelligent Transport System in Europe- eSafety, Berlin, 5th June 2007"
    - “I am currently preparing an action plan for large scale ITS deployment on all transport modes which I will present next year.”
    - “…Our strategy focuses simultaneously on the driver, the car and the infrastructure.”
  - The Commission has initiated significant collaboratives such as the
    - eSafety
    - E-Call
    - Intelligent Car Initiative
    - Traffic Message Channel feature of RDS
  - European strategy to reduce the number of deaths on (Europe’s) roads by half by 2010.
  - GALILEO, the European satellite navigation system with hitherto unprecedented precision in location
  - European Research and the trans-European Transport Network budgets devoted to intelligent transport for the period 2007 -2013 will be roughly 2 billion €
What are my current and potential customers thinking?

• Vehicle communications will drive the need for a new type of in-vehicle, road-side and personal terminal
  • whether the communication is with the:
    • vehicle itself (infotainment, diagnostics)
    • road infrastructure (control)
    • outside commercial services (logistics, prognostics)
    • other vehicles (enhanced communication, recognition) or
    • mobile devices (location based services),

• Growth of actionable information from these terminals means that this market will develop:
  • More functionality over time
  • New feature sets
• Advanced and efficient means to remotely manage the roll out of new features, services and functionality over time is required
OSGi™ as an Evolutionary Precursor for the Connected Vehicle and Connected World
What are my current and potential customers thinking?

- Introducing a Connected Vehicle customer
  - Customer background
    - Engineer
    - Former Principal-in-Charge of Braun Intertec’s Government Group
      - Roadway Infrastructure
    - Former President of Logikos
      - Develop the in-vehicle software technology for OnStar™
    - Chief Executive Officer of a group of highly specialized companies focusing on the connection between the:
      - Transportation system;
      - Vehicle; and
      - Driver.
    - Co-Founder of the Center for the Commercialization of Transportation Informatics (CCTI) a.k.a. (MoveIT)
Introducing the Customer

- Lambda Tech International - Virtual imaging, image recognition and mobile infrastructure mapping solutions
Introducing the Customer

• Lambda Tech International – Mapping the transportation infrastructure
Introducing the Customer

- Lambda Tech International – Mapping the transportation infrastructure
Introducing the Customer

- Thomtech Design - Automatic Vehicle Location (AVL) and probe vehicle data
Introducing the Customer

- ZOOM Information Systems - Intelligent Transportation Systems to government agencies
Introducing the Customer

- Automated Real-Time Infrastructure Information System – ARTIIS

Data Core Overview

Data Node Overview
Introducing the Customer

- GoodPointe - Local and state government transportation infrastructure management system software
Simple derivative applications?

• Use Case: Locate a convenient parking space in dense urban area
  • Parking lot/Garage owner determines number of available parking spaces
  • Driver indicates the need of a space
  • Owner/driver continually push live data to Content Aggregator
  • Content Aggregator bundles/sends to TSP
  • TSP must localize the information, broadcast and transact with user
Even the simple is not so simple

- This simple parking scenario requires:
  - Systems to constantly determine available
    - Capacity at garage
    - Potential available customers
  - Robust and automatic means of delivering open space and possibly price status
  - Rapid database update, parsing and redistribution common subscription method, account management
  - Ubiquitous and robust broadcast and provisioning capability
  - In-vehicle equipment (embedded or nomadic) for bidirectional transaction handling (data and payment)
  - Standardizations of a broad range of protocols and a consensed means to validate
Why am I talking about these particular companies?

- All controlled by one person, yet
  - Each company is using different:
    - Development centers
      - Five states and three countries
    - Development environments
    - Operating systems
    - Middleware
    - Tools
    - Methodologies
  - They are producing products that are known to be interrelated yet still have
    - Redundant core areas
    - Difficulty to integrate
    - Expensive and time consuming updates
Why am I talking about these particular companies?

- The product feature roll out problems faced by these companies are either
  - The nature of the Connected Vehicle industry and market dynamics or
  - The person in charge of these companies ist ein dummkopf!
Nature of the Connected Vehicle industry and market dynamics

- Deployed systems need to be updated easily
  - In vehicles
  - At the roadside or
  - On other dispersed mobile transportation devices,
- The update pace is rapidly accelerating
  - Due to
    - Nature of the product development environment
    - Nature of the changing market demand
      - Poor management
Why do those customers want to go in that future direction?

• Connected World –
  • Ubiquitous communication,
  • Data mining and analysis tools
  • Generates actionable knowledge,
  • Allowing us to collectively work toward a sustainable society

• And to make money
Where are my customers going in the future?

• Connected Travel
  • The first major structured means to move us towards ubiquitous communication
    • Addresses improvements in Safety, Efficiency, Mobility, Commerce

• Connected Home and Work
  • The logical extension of pervasive communication
    • Always able to access your information
How can the OSGi™ Alliance Community help?

• The world is moving towards device agnostic solutions
  • Collaboration and building of consensus on technologies and methods for products is hard enough within a company
  • The Connected Vehicle will bring numerous diverse systems, markets, industries and activities into the same sphere
How can the OSGi™ Alliance Community help?

- The problems of recoding for every new product/service combination is onerous and expensive
  - Decoupling the life cycle management of the application and service from the hardware
    - Extends the devices utility,
    - Reduces costs and
    - Improves user satisfaction
    - Saves money
    - Makes money

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How can the OSGi™ Alliance Community help?

- The OSGi™ Framework addresses the major issues of managing change
  - A complete and dynamic component model.
    - Applications or components can be remotely installed, started, stopped, updated and uninstalled without requiring a reboot.
    - The service registry allows bundles to detect new or absent services, and adapt accordingly.
    - Life cycle management is done via APIs which allow for remote downloading of management policies.
  - With improvements configuration management and provisioning
    - Can apply to vehicles, home, appliances and business/industry and most if not all other systems
A gold mine of opportunity in the Connected Vehicle market

• OSGi™ already has an excellent in to the Connected Vehicle market
  • VII Consortium’s initiative
• Can the OSGi™ Alliance maximize this opportunity?
  • Peers
  • Technology
  • Markets
  • Customer
    • What, Where, Why, How
The Connect Vehicle Community will love the OSGi™ Alliance Community if it?

- Improves the remote management of software configurations for tens of thousands to millions of vehicles, as well as numerous roadside and mobile units.
The OSGi Framework is arguably the best candidate for large scale remote software management required for the Connected Vehicle market place

• Who knows this?
  • OSGi™ is highly regarded by its users!
  • Are you broadly educating all the players in both the horizontal and vertical value chains?
  • Are you understanding your customers business objective well enough to bring significant value ad?
From the session yesterday it appears that OSGi Alliance is actively looking towards the future

- Didier Donsez
  - Embrace .NET
- Jochen Krause
  - Improve provisioning and monitoring
- Prof. Dae Young Seo
  - Near perfect technical specs
  - Need to work on promotion to CEOs of financial benefits
- Craig Blitz (Product Manager placed on marketing committee)
  - First recommendation better market customer benefits
- Peter Kriens
  - The world outside Java

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I congratulate the OSGi™ Alliance for taking the initiative to initiate the technology, form this group and host events like this one.

Where do you want to go from here? How will you get there?