Trends in Automotive Infotainment
Can Cloud be a game changer?

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Agenda

Key Technologies

Can Cloud be a game Changer?

Future Trends

Infotainment Future

Automotive Electronics – driving forces

Automotive Infotainment – what it means for you?

Key Technologies
Automotive Electronics - Driving forces

Safety
- TPMS
- Passive Safety
- Airbags
- LDW
- Active Safety
- Collusion Detection
- ABS
- Break-by-Wire

Fuel Efficiency
- Start Stop
- Hybridisation
- Cylinder Deactivation
- GDI
- Variable Compression Ratio
- Turbo Charging
- EGR
- Electrification
- Connected Services

Environmental Impact

Fun to Drive
- Parking Assistance
- Adaptive Cruise Control
- Night Vision
- Remote Diagnostic

Personalisation
- Internet Connectivity

Cloud Computing
Automotive Electronics - Driving forces

Source: Gartner research
Automotive Infotainment - What it means for you?

Connectivity to Consumer Devices
- iPod
- Mobile Phone
- Bluetooth
- Wifi
- USB stick

Emergency Service
- Voice Commands
- Access to call centre
- Emergency call
- Remote Door unlock

Location Based Services
- Points of Interest
- Traffic
- Weather
- Email Access
- Internet Radio

Live Information
- Social Networking
- Speed Cameras
- Pay-as-you-drive insurance

Cost & Time Optimisation
- Music Download
- Turn by Turn Navigation
- Climate Control
- Ambient Lighting
- Continuity with work env.
Automotive Infotainment - The Transformation

1. Analog vehicle dashboard
2. Personal Navigation Device
3. Car Radio
4. Hybrid dashboard (Analog + Digital)
5. PND + Multimedia Player
6. Telematics (On-star)
7. All-in-one (Digital cluster, Navigation, Infotainment) - single Control Unit
8. Next Generation Telematics Services (Ford Sync, On-Star, Toyota G Book)

Source – Pictures from QNX, Ford, Cobra, Toyota, On-star
Automotive Infotainment - Some examples

GM- OnStar

MyFord Touch

BMW -iDrive

Source: GM Onstar, Ford, BMW
Connectivity

Embedded in Vehicle:
Application and connectivity in built in car

Terminal Mode:
Phone applications available on car head unit via Remote Terminal implementation

Remote Skin:
It is Terminal mode with tailoring of HMI on head unit. Application still resides in phone

Tethering:
Application resides in car with connectivity provided by mobile
Automotive Infotainment - Key Technologies

OS

Microsoft
- Good customer base - Fiat, Ford, Kia
- Silverlight as UI framework, Internet explorer, support for multi-core IA, ARM v7 and SH4 architecture

QNX
- Owned by RIM, niche player
- QNX Nutrino RTOS, Aviage HMI suite, Adobe Flash lite

Genivi
- Customized version of Linux, Lead by Consortium
- Open Source, MeeGo as a platform

Microltron
- Proven track record in Japanese market
- Uses Third party HMI engine like UIEvolution
Automotive Head Unit

- HMI to be main differentiator
- More integration with Vehicle functionalities
- Focus on Data security
- Head Unit Applications, Data on cloud, Field up-gradation

- Rich GUI, 3D Graphics, Voice Recognition, capability, Fast response time, minimum driver distraction
- Interior Lighting, Climate Control, Parking assistance, LDW
- 3rd party Application downloads, data on cloud, preventing harmful applications
- Less computing & hardware requirements for Head Unit, OEM certified App Stores
Can Cloud be a game changer?

Cloud Advantages

- Cost Saving
- Highly Scalable
- High Availability
- Pay per Use
- Developer Tools
Can Cloud be a game changer? - Benefits

- **End Users**
  - Reduced cost of ownership
  - Multiple options and can always choose the best service provider.
  - Can get personalized services from OEMs

- **Automotive OEMs**
  - Get real-time data from the vehicles
  - Ease of building differentiated applications and distributing them using OEM specific data from the vehicles.
  - Reduced cost & faster time to market.

- **Tier1 Suppliers**
  - Can be interface between OEMs and cloud developer ecosystem.
  - Reduce development cost for OEMs
  - Can address needs of all OEMs irrespective of their size.

- **Infotainment Ecosystem**
  - Larger, Better Developer Ecosystem
  - Cheaper Validation
  - Multi-OS / Multi-Platform agnostic Infotainment systems
Future of In-Vehicle Infotainment

Applications & Servers
- Insurance App
- Social Network Applications
- Optimal Route Finder App
- Third Party App

User #1 Car Nav Device
- Paired

User #2 Car Nav Device

User #N Car Nav Device

Applications on Mobile Phones

Data Base
Analytics
Alert Mgmt
Web Interfaces

Emergency Alerts

<<GPRS/3G/4G>>

• User to login using unique User ID and Vehicle ID
• User can control Data sharing credentials
• All applications like finding optimal route/navigating/insurance app will run on Mobile Phones
• In car device will communicate with server using GPRS/3G/4G and devices will be GPS enabled
• In car device will have to get some information from Car electronics – Mileage data etc.,
• Server will store all data in data base and will run Analytics software for providing data to third party application developers
• Server will expose Open web interfaces for any third party application developers to develop applications
• All map data, navigation information etc., will run on Mobile devices
Wireless connectivity to become a backbone of any in-vehicle infotainment system.

Smart phone to become a most prominent connectivity gateway.

More standardization on Head unit hardware and OS.

Open-source OS to gain more & more market share.

Innovation would happen on creating applications using vehicle and environmental data.

Innovative HMI, reliable voice recognition, Personalization of in-vehicle environment, and App stores to drive future growth !!

In-car Health & Wellness Monitoring can be a next wave !!
Successful Customers
Happy People
Innovative Solutions

Our Mission

Mangesh Khare

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