Telematics Future and Legislation

Geneva
05.03.2015
Connecting you to what matters

- Extensive know-how in integrating consumer technology into vehicles
- Tailor-made products for worldwide use
- International footprint, local-for-local development
- Partnerships for wide range of services
- Upgradable and future-proof systems with latest LTE technology

Delivering revolutionary functions for the daily driving experience!
Continental
A History of Telematics Competence

1946
First “Car Phone”

1980s
Introduces automotive cellular phone systems; becomes leader in automotive communications

1996
First automotive Telematics systems (Ford, GM)

1998-2000
Motorola develops Personal Area Network wireless technologies and joins Bluetooth SIG, becoming the Lead for BT Car Working Group

2002
Motorola launches its first Bluetooth Car Kit

2005
OnStar goes standard
Bluetooth for Music
Ford SYNC award
By 2005, Motorola shipped over 5 million Telematics systems worldwide, including GM OnStar, Ford, Daimler, BMW

2006
Continental acquires Motorola Automotive Deer Park leads newly-formed Telematics Business Unit

2008
Continental is the selected supplier for 7 major OEMs for the Brazilian Stolen Vehicle Tracking System

2012
Over 24 million Continental Telematics/Connectivity units shipped by 2012 (over 17 million embedded cell phone Telematics systems)

2006
Continental acquires Motorola Automotive
Deer Park leads newly-formed Telematics Business Unit

2007
Continental acquires Siemens VDO, including the Multimedia Business Unit

2009
Continental forms the new Business Unit Infotainment and Connectivity, led from Deer Park

2015
4 G / LTE Module is launched with a Japanese OEM

Continental has shipped Telematics for longer than any other Tier One
Continental
Leading Technologies on Worldwide Markets

Successful Telematics shipments worldwide

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Strong Partnerships
Proven Successful Launches

› Long history of collaboration in successfully deploying multiple Telematics systems
› Continental has direct access to network operator subject matter experts for fast problem resolution
› Continental’s expertise with both modem and product level certification results in faster time to market
› Continental has in-depth knowledge of network operator features and requirements for proper definition of critical tests applicable to automotive Telematics applications

› Proven performance of existing systems in the field
› Strong partnerships resulted in successful deployments under tight time constraints
› Continental often consulted as subject matter expert in analyzing complex system issues to root cause

› Qualcomm has been a partner for over 20 years (e.g., DS-CDMA license agreement signed in 1990)
› Strong collaboration on roadmap definition of future products and technologies for Automotive
› Integration of multiple generations of Qualcomm’s CDMA technology from DS-CDMA to 3G EVDO

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Continental – eCall and ERA
eCall
European Emergency Call

Dates
› Current PSAP (infrastructure) date – Oct 1st 2017
› Current vehicle mandate date – Mar 31st 2018
› To be confirmed by law – Mar 2015

Technical Issues
› LTE: New project, I_HeERO starting up to plan eCall + LTE
› TSP: (Third Party Services) to be allowed in parallel with eCall

Continental already has an eCall capable platform and is actively participating in Plug Test Fests to ensure eCall readiness
› 4Q 2014: Result 95% Test Pass Rate – Above Average

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## ERA GLONASS

### Russian Emergency Response System

### Dates
- New vehicles and New Type Approved Vehicles
- Starting Jan 1\textsuperscript{st} 2015

### Status
- Previous certification issues have been fully or largely resolved:
- Accredited certification houses now exist for both component and vehicle level
- Infrastructure support for ERA is rolled out across all regions

### Current Projects
- Continental will submit two different OEM programs to ERA certification in 2015

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Evolution of the Connected World
The Vehicle is becoming part of the Internet

In the past, vehicles had no access to the Internet.

Today, more and more vehicles have Internet access.

In the future, the vehicle will be part of the Internet.
The World of Connected Objects
Growth of Connected Vehicles stronger than Smartphones

In average Smartphone volumes are doubling every 16 months (and increasing), Connected Vehicle volume every 9 months

* = Forecast, Source: Statista July 2014
* = Forecast, Source: IHS April 2014, NAD = Network Access Device
Connectivity Helps - Increase Comfort, Safety and Efficiency

Comfort
A driver in Germany spends about 1.5 Days in traffic jams each year.

Safety
90% of all accidents are due to human error.

Efficiency
The style of driving can influence fuel consumption by up to 20%.
Vehicle Networking and Partnerships
Strong Partners in the IT industry

- Network Connectivity
- Data compression and data security

- Big Data processing
- Stream computing
- Analytics
- Infrastructure
- Platform as a service

- Highly precise digital map data
- Map based cloud services

- System Integrator
- ITS Applications and ITS services
- In-car systems
- In-car components

Connected Vehicle

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Electronic Horizon
Increases the Visual Range beyond Vehicle Sensors

Car Sensor range
100-300m
The future is starting now
eHorizon paves the way to Automated Driving

Slow down a bit – speed limit

Traffic light turns green in 15 seconds

Green wave at 30 miles per hour

Change route – small accident ahead
Electronic Horizon Use Cases
New services to increase the benefit of Connected Vehicles

Goal is the improvement of
› Comfort
› Efficiency
› Safety
Evolution of Telematics
Faster, more Secure and consistent Connections + Safety

3G Telematic
- 3G Telematic
- Connected eHorizon
- On Board Security
- ERA

4G Telematic
- 4G Telematic
- Connected eHorizon
- On Board Security
- ERA

4.5G (LTE-A) Telematic
- Dynamic eHorizon
- (HD OTA Map)
- Cloud Security
- Smart Telematics (Seamless Connectivity)
- SW Update Gateway
- Safety Integrations
- eCall

SOP ready 2015
SOP ready 2017+

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Continental – Pushing through the Challenges
Innovative Solutions for the future networked car

- Smart Telematics for consistent and seamless connectivity
- eHorizon providing PROACTIVE safety measures
- Telematics with eCall/ERA providing REACTIONS to safety
Backup
Continental – Ensuring Consistent Connectivity
A Telematic Unit Becomes a Secure Mobile Router

Today:
4G Telematics

- 3G/4G world wide solution
- Up to 100MBPS
- WLAN, USB, Bluetooth
- Over-the-Air Update

In Future:
Advanced Mobile Router

- LTE Advanced
- Up to 300Mbps
- Seamless net-work switching
- Gateway for all SW Updates
- Safety Integrations – eHorizon, C2X
- Cloud Security
- eCall/ERA

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