An Introduction to Platform
for Intelligent Connected Vehicle from IBM & Continental

www.continental-corporation.com
www.ibm.com
By 2020 the Vehicle Will Have a Multitude of Cloud Connections and Behave as Single Unified Cloud Client

Content Networks

Communication Networks

Safety/eCall Networks

Mobile Devices
- Apps Integration
- Smartphones
- Tablets

USB
Bluetooth WiFi

2.5/4G Cellular

802.11 WiFi

LBS
GPS & others

Broadcast Data

Broadcast Digital Audio

Broadcast Digital Video

Back Haul Network

Roadway Infrastructure & Information Network
- Consumer/commercial
- Roadway info, events, warnings, guidance

2.5/4G Cellular

ITS
Intelligent Transportation Systems

Future Connected Vehicle Experience
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IBM and Continental’s cooperation addresses key OEM needs

IBM is an industry leader in Big Data and Cloud Computing. Further, it possesses the necessary deep analytics expertise to process and analyze vast quantities of data and make subsequent predictions at high frequency and velocity. IBM’s experience in cloud enabled platforms and embedded systems development capabilities, combined with our systems expertise in automotive electronics, create the foundation for a new generation of intelligent networked vehicles.

Elmar Degenhart, CEO Continental

„At CES 2014, Continental and IBM will begin to display the initial product concepts of the collaboration, which includes the connected eHorizon and Smart Speech technologies.“

Source: Continental Press Announcement
IBM and Continental are providing an end-to-end combined solution.
With our highly scalable cloud platform services, OEM’s are able to deliver a wide range of new mobile in-car services such as …

- **eHorizon**
  - Facilitates a safer, smarter, and more convenient journey by extending the horizon beyond what is immediately visible to driver and the vehicle’s sensors

- **Smart Speech**
  - Creates a differentiating vehicle-speech-control experience based on natural language understanding, user personalization and sophisticated dialog management

- **Virtual Key**
  - Turns smartphones into clever car keys that wirelessly exchange data with the vehicle, thus unveiling new comfort and service functions for drivers and fleet managers
eHorizon is connecting the car with its environment and also paves the way for Automated Driving

- Utilizes digital maps to anticipate the road ahead
  - Real-time digital maps to expand the digital horizon
  - Self-learning map enhancement through data collected during the drive and real-time correction of map databases
  - Extension and enhancement with dynamic information from external sources such as road infrastructure or crowd sourced from vehicles
- An extended horizon enables driver/vehicle to adjust driving styles knowing what's beyond the visible horizon leading to
  - Improved cost efficiency by reduction of fuel consumption (2-3%)
  - Lowers emissions by improved engine strategy and economic driving
  - Maximized driving comfort through adjusted routes based on real time traffic information
  - Collection of missing ADAS attributes for China, Brazil, Eastern Europe
eHorizon Solution Blueprint

- **In-Vehicle**
  - Connectivity
  - SW Client
  - Hardware

- **Continental**

- **Cloud Services**
  - Back-End Service
  - Control and Administration

- **IBM**
  - Big Data Analytics
  - Data Management & Integration
  - Data Streams
  - Messaging

- **Connected Car Application**
  - Reports
  - Dashboards
  - Visualisation
  - Exploration

- **Connected Car Cloud**

- **3rd Party Sources**
  - Maps
  - Telco
  - Other Data

- **Continental**
- **IBM**
- **Cisco**
- **3rd Party**
Bundling Continental’s in-vehicle and IBM’s cloud based speech experience creates an intelligent next generation smart speech solution

- **Avoiding driver distraction**
  - Reducing *driver distraction* is one of the **biggest challenges** for future In Vehicle Infotainment
  - Next Generation **Smart Speech Solutions** reduce driver distraction whilst improving *convenience* and *comfort*

- **IBM and Continental are combining their speech capabilities**
  - Continental will provide their deep *understanding of speech interfaces*
  - IBM contributes their *interactive dialog and content finding solutions*

- **Continental and IBM will create an intelligent cloud based Smart Speech Solution** that goes beyond current solutions

*Creates a differentiating vehicle-speech-control experience based on natural language understanding, user personalization and sophisticated dialog management*
Smart Speech Solution Blueprint

In-Vehicle

- In-Car Dialog
- Voice-2-Text
- Audio Preprocessing
- Embedded Recognition
- Open Infotainment Platform

Cloud Services

- Natural Language Understanding
- Recommendations Engine
- Context Learning
- Content

3rd Party Sources

- Manuals
- Libraries
- Environment
- Social Media
- Online Data

3rd Party

Continental
IBM
Cisco

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Continental and IBM turn smart phones into clever car keys

- **Turns smartphone into car key**
  - Opens and starts vehicle by using the smartphone
  - User-friendly, secure and low-cost fleet-management and car-sharing solution independent from car connectivity
  - Uses fast and low-energy bluetooth bridge technology
- **Enables new comfort and service functions**
  - Supports growing number of car-sharing and car-on-demand services with a temporary digital key instead of a physical car key
  - Personalize vehicles and exchange information about driver's preferences stored in the cloud (e.g. Climate control and radio settings)
  - Increases security for OTA (over-the-air) cardlet transfer into secure element on phone
  - Very low latency compared to existing solutions (seconds not minutes)
Use Cases for the next generation of intelligent networked vehicles

In addition to the previous use cases IBM and Continental will engage OEM’s to identify opportunities to leverage our mutual strengths in cloud computing, big data, analytics and vehicle systems to create foundational use cases for the next generation of intelligent networked vehicles.

For Your Consideration

- Over-the-air Software Updates
- Online Diagnostics and Repair
- Connected ADAS
- Highly Automated Driving (HAD)
- Connected CRM and Communities
- Intelligent Transportation
- Pay-as-you Drive
- New Mobility Services
- Enable other Industry`s Use Cases
  - Usage Based Insurance
  - Smarter Cities
IBM and Continental’s roles within the connected vehicle ecosystem

**Connected Vehicle Platform Offering**
**Continental + IBM**

- Tier 1 with infotainment systems responsibility
- Embedded Hardware, software and HMI LOGOS
- Value Add Services

**3rd Party Sources/Content**

- Variety of external content and services
  - Content
  - Web Services
  - Applications

**Automotive OEM**
- System Requirements
- Branding and Marketing

**Mobile Network Carrier**
- Managed Connectivity

**Backend System Integration**
- Backend System Operation
- Enhanced backend functionality
Customer Success: Integrated automotive control systems
Continental Automotive Body & Security Group

What’s smart?
- Passive start and entry systems, remote keyless entry, and more - in one integrated system
- Enhanced driver experience with intelligent safety and convenience features

Smarter business outcomes
- Cost-optimized flexible system solution
- Reduced development costs based on use of standardized hardware and software components

How Rational enables smarter products
- Requirements management across development teams and with vehicle manufacturers
- Streamlined development environment with model-driven systems and software development supporting AUTOSAR

“IBM Rational DOORS and Rhapsody are essentially helping us prevent fragmentation of our development environment and enabling us to better manage the complex architectures of our products.”
Continental and IBM invite you to predevelopment discussions around the multitude of cloud services which are enabled by our platform.

Vehicle Process

Project Phase

Activities

Pre-Development

Engineering

In Market

Feature Development

Client Solution Development

Client Solution Maintenance

Pre-develop New Features and Functions

Implement Features and Functions in OEM Project

Maintenance and Operations

Joint Continental & IBM Platform-based Solution and Offering
## Contacts

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