Innovation Dialogue (extract)
Commercial Vehicle Connectivity / Telematics

ETI ToolTech April 16, 2015

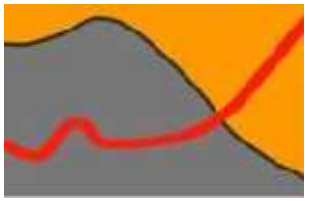
Continental

Innovation Dialogue (extract)
Agenda

1. **Trends in CV Market**
2. **Continental as Solution Partner**
3. **HMI – Human Machine Interface**
4. **Connectivity & Services**
5. **Automated Driving**
6. **48V – Technical & Commercial Study**

Trends
A Challenging Environment Requires Innovative Solutions










Globalization **Knowledge is key** **Energy Demand** **Legislation** **Demographics**

Urbanization **Digitalization** **Sustainability** **New Values** **Climatic Change**

Increased Vehicle Intelligence

Trends

Commercial Vehicle Innovation Drivers at Continental

Passenger Car Technology

Legislation

CV Market Requirements

Innovation Questionnaire

Meetings/Interviews

Conti Innovation Programs

Continental CV Roadmap is derived from multiple internal and external information sources

Trends
Continental Innovation Truck

- New truck added to vehicle development fleet
- Testing of new systems and technologies
- Demonstration of innovations and new use cases

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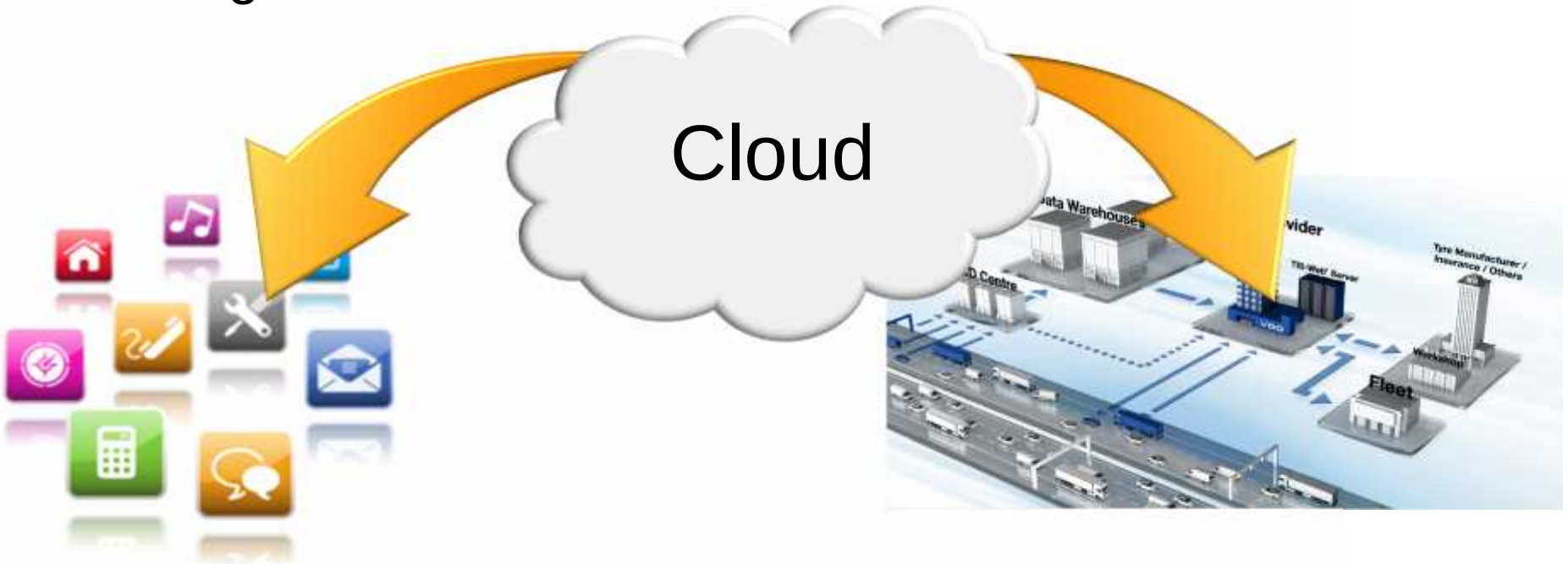
Connectivity
Partitioning of Services



Driver Centric Services (Flexible)
- Up-to-date information
- Navigation
- Traffic info
- Internet radio
- Emails
- Apps

Vehicle Centric Services (Secure)
- Fleet management/efficiency
- Proactive diagnosis
- Vehicle health reports
- Stolen vehicle tracking
- Intelligent tire monitoring
- Remote software updates

Connectivity
Enabler for Multiple New and Extended Services

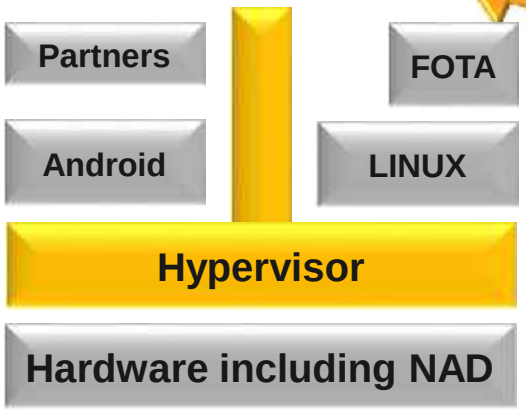
- **Fleet Management**
- **Driver Management**
- **Remote Diagnosis**
- Software Updating
- Intelligent Tire
- **Connected eHorizon**
- Dynamic eHorizon
- Connected Powertrain

Secure connectivity is an essential technology for all future trucks.

Connectivity
Unified Platform for Multiple Services

One Onboard Unit with Virtualization

Commercial Vehicle Services Cloud



Technical Solution

- Multiple OS running on one microprocessor (single or multi-core)
- Paravirtualisation by hypervisor software
- Each partition is capable of running without the other in operation

Benefit

- Hardware cost savings without compromising security

Status & Next Steps

- First Continental Proof of Concept with LINUX and real time OS completed in 2014
- Further concepts under development

Android and LINUX are examples and not final suggestions

Connectivity
Intelligent Transportation Systems (ITS)

Archived Data Management

Extension in collection of ITS related data for **value creation**

Commercial Fleet Operations & Logistics

Provision of **individual cost reduction solutions** via fleet management services

Emergency Management

Utilization of connected applications, allowing **faster emergency** services

Maintenance Management

Transformation of workshop diagnostics to **diagnostics in the cloud**

Advanced Public Transportation Systems

Integration of intelligent **ITS applications** in **public transport**

Advanced Traffic Management System

Enabling of **intelligent traffic** via Car2Car & Car2Infrastructure technologies

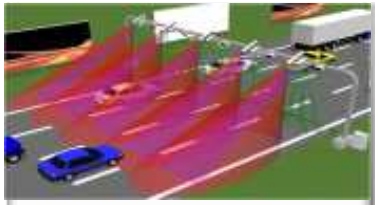
Advanced Traveller Information System

Evolution of intelligent **multimodal travel** services

Safety & Security

Development of **highly-automated** driving systems

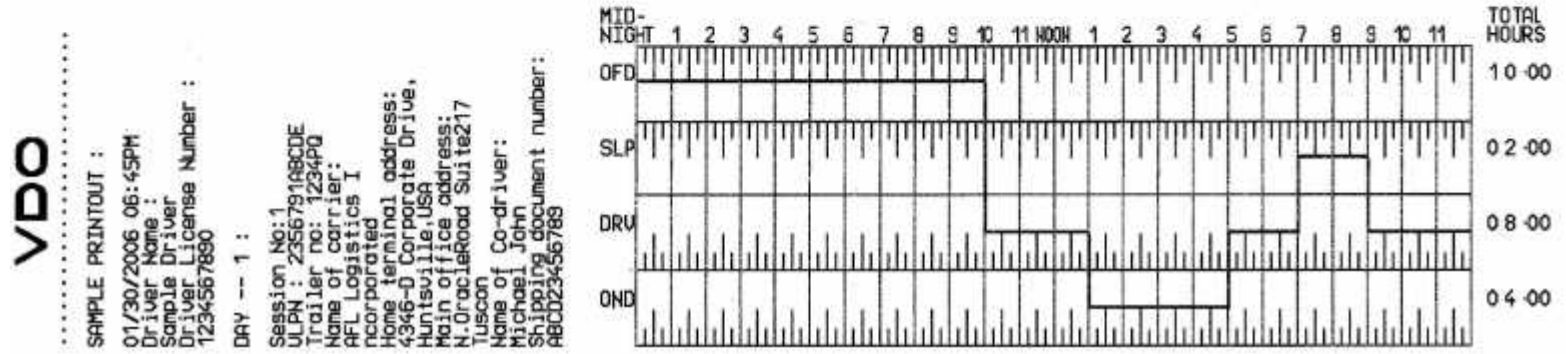
Traffic Payment



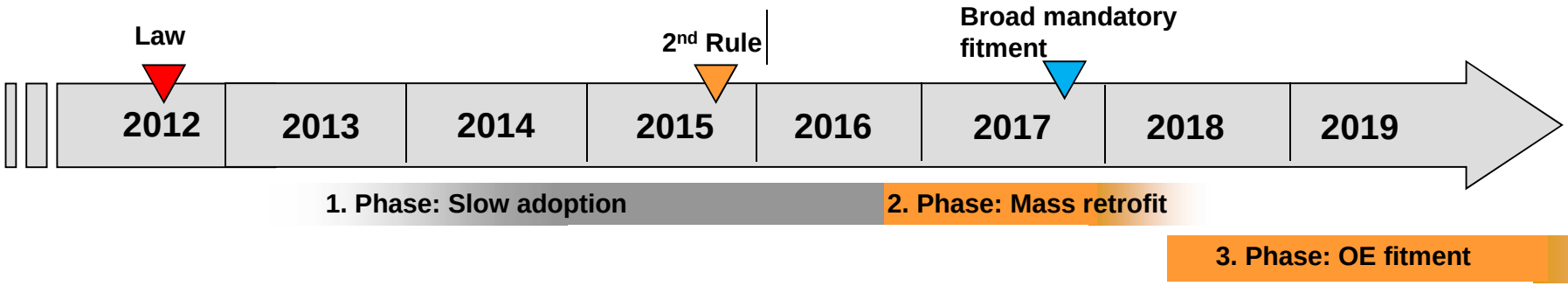
Implementation of **congestion and environmental fees**

Connectivity
VDO RoadLog™ ELD (Electronic Logging Device)

- Affordable, easy compliance
  - Driver logs, Vehicle Inspection Reports
  - US, Canada
- Easy to install, easy to use, No monthly fees
- Wireless connectivity optional
- Integrated thermal printer for quick roadside inspection



Connectivity
Electronic Logging Device - Roadmap



Lack of standardization
Limited volumes for new vehicles

Standardized requirements
High volumes

Step 1: Retrofit in fleets

Compatibility

Interoperability

Step 2: OE fitment

Connectivity
ITS App - TruckYa!

Solution

- VDO TruckYa! “communicates” the free parking spaces along the route
- DTCO® SmartLink transfers remaining driving time to app
- Community based information management

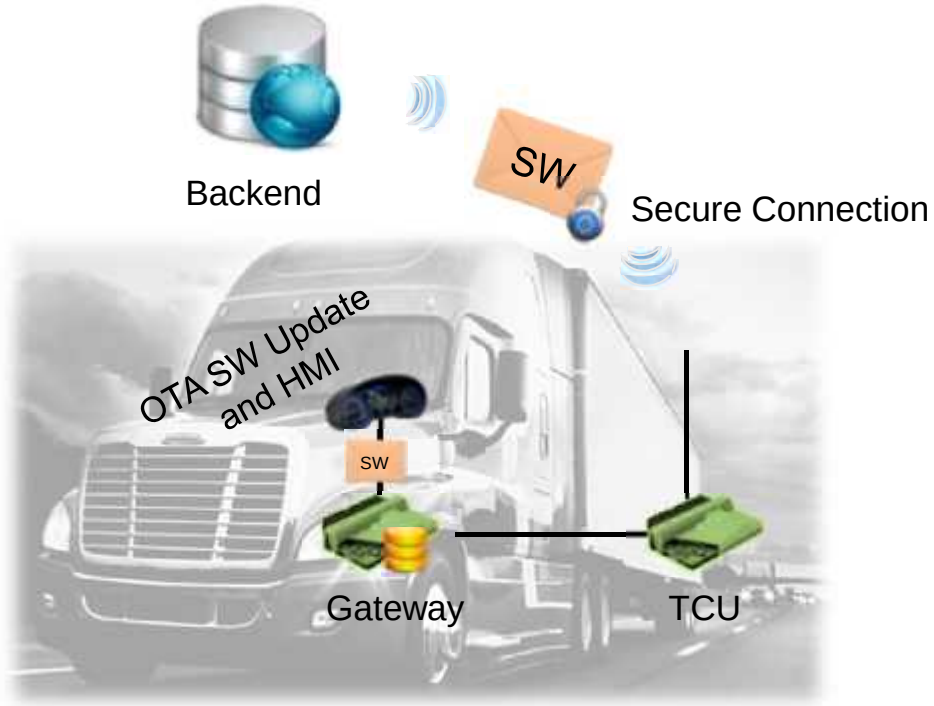
Benefit

- Drivers can optimize their drive time
- “CB Radio 2.0”
- Continental app experience

Status and Next Steps

- Relevance of truck parking app given in NA
- Investigate business models for re-use of TruckYa! App by OEM customers

Connectivity
Secure Software Update over the Air



Technical Solution

- (Light) Backend for online SW updates will be provided by IT partner
- Connection between backend and vehicle secured by telecom partner
- Telematics unit will receive and validate SW update packages
- Instrument cluster will guide the user through the SW update (HMI)
- Gateway will apply the SW update to the target ECU, e.g. instrument cluster

Status & Next Steps

- Ongoing PoC project at Continental
- Investigate service business opportunities

Benefit

- Reduced time in workshop
- Increase fleet efficiency

Commercial Vehicle Connectivity

Summary “We Connect”