

A TECHNOLOGY UPDATE ON AUTONOMOUS DRIVING AND CONNECTIVITY HARALD WESTER | CHIEF TECHNICAL OFFICER



DEMAND-LED ADVANCEMENTS

Transportation Service Providers, OEMs and Tier 1s are shaping their plans for the opportunities and challenges of autonomous vehicles.

These advancements are being **driven** primarily by:

BUSINESS OPPORTUNITIES

- Large ride-sharing companies spend upwards of ~70% of revenue on drivers share and incentives
- Transportation-as-a-Service (TaaS) fleets











AUTONOMOUS DRIVING Level of Automation, Cost, Timing









AD SYSTEM - ARCHITECTURE







AUTONOMOUS DRIVING Hardware at Level 4







DIGITAL-AGE MOBILITY

Connectivity is essential and enables the driver and passengers to interact with the car and the world around them









INFOTAINMENT CONVENIENCE





ECOSYSTEM

CONNECTED CARS

- Retrieve and manage in-vehicle and environmental data through the Cloud
- Predict maintenance
- Offer services and information
- Create an engaging experience of Brand-related ownership
- Keep the customer connected to their home and office











SYSTEM ARCHITECTURE

CONNECTIVITY SYSTEM LAYOUT AND ARCHITECTURE ON-BOARD TELEMATIC BOX MODULE (TBM) CONNECTING THE VEHICLE WITH INTERNET AND FCA SERVICE DELIVERY PLATFORM (SDP)









OFF-BOARD CONNECTIVITY

SDP

The Service Delivery Platform is a cloud based open architecture:

- Scalable and flexible to support services and technology evolution
- Maximum cybersecurity

SD

• Easy to integrate and interface with any service provider

















STAKEHOLDERS

CONNECTIVITY GENERATES EXTENSIVE BENEFITS TO MULTIPLE STAKEHOLDERS IN THE ECOSYSTEM

Commands Nav. Destinations Media & Entertainment

Driver/ Passenger Personalized Experience Content Notifications Operational Health Vehicle Alerts Contextual Offers







Over The Air Update Commands

Operational Data Customer Data Fleet Optimization Data









SERVICES









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OUR DEPLOYMENT PLAN











CORE TECHNOLOGIES FOR AD





HIGH-SPEED COMPUTING

COMPUTER-VISION & IMAGE-PROCESSING







EXTENSIVE SOFTWARE DEVELOPMENT **INCLUDING AI**

SENSOR & SENSING TECHNOLOGY



OPTIONALITY AND CHOICES





BECOME BENEFICIARIES OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING



DON'T... **PAY HEAVILY FOR THE EXPERIMENTATION** MAKE BOLD CHOICES WHICH LIMITS FREEDOM AND ENTAILS HIGH RISK PLACE DEPENDENCY FOR SUCCESS **ON A SINGLE PLAN OR PATH**







MARKETS Potential opportunities and needs

TRANSPORT-AS-A-SERVICE (LEVEL 4 AND 5)

FINANCIAL TIMES

"...global revenues from self-driving technology by 2030 will be up to \$2.8tn, with Alphabet's Waymo potential global leader in the MoD area..."





RAN

PRIVATE RETAIL (LEVEL 2+ TO 3) 2019-2021 LEVEL 2+/3 NEEDED FOR LEVEL COMPETIVENESS 2+/3 Jeep **IN MARKETS 2019-2021**

TRUE AUTONOMY AS OF 2023





FCA TO PURSUE MULTIPLE PATHS Autonomous Driving

FCA TO PARTNER WITH THREE OF THE MAJOR TECHNOLOGY PLAYERS IN AUTONOMOUS DRIVING AND ARTIFICIAL INTELLIGENCE





GOOGLE'S SELF-DRIVING TECHNOLOGY COMPANY



• A P T I V •

PREMIUM OEM

TIER 1 IN AD



PARTNERSHIP WITH WAYMO The clear leader in Level 4 technology

Up to 62,000 Pacifica Hybrids over the next three years





600 Units







62,600 Units



INCREASING CUSTOMIZATION





FCA AND WAYMO BEGINNING DISCUSSIONS ON DEVELOPING A WAYMO-EQUIPPED FULLY SELF-DRIVING VEHICLE FOR FCA RETAIL CUSTOMERS







PARTNERSHIP WITH BMW Level 3 system for highway application



FURTHER DEFINED PARTNERSHIP STRUCTURE



DEVELOP AUTONOMOUS TECHNOLOGY FOCUSED ON LEVEL 3







FCA Engineers embedded with BMW Teams at BMW's AD campus near Munich

SHARE RESOURCES INCLUDING DATA FOR VALIDATION & RELIABILITY TESTING

.

SHARE UNDERLYING INVESTMENTS



PARTNERSHIP WITH APTIV The most advanced Tier 1 in L2+ systems

EXPANDING COLLABORATION OF AUTONOMOUS TECHNOLOGY STUDIES AND DEVELOPMENT PROJECTS







L2+ SYSTEMS TO BE INTRODUCED IN FCA 2020CY LAUNCHES





SUMMARY Autonomous Driving

FCA'S MULTI-PRONGED APPROACH:

BROAD ACCESS TO A RANGE OF TECHNOLOGY

DELIVER NEAR-TERM ADVANCEMENTS







PARTICIPATE IN THE MoD/TaaS REVENUE STREAMS

AMONG THE FIRST OEMS TO RETAIL MARKET





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