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UK CITE Project Overview



- **The project will be trialling**
 - Mixed road types and speeds up to 70mph
 - Functionality, Safety and Convenience
 - Both DSRC 802.11p and LTE V
 - Wi-Fi services on the move
 - Road network efficiency and modelling
 - Multipath broadcasting using multiple communications methods
 - Whole journey experience - Interlink between the urban and Strategic Road Network



Visteon®



Co Project Leads



MIRA



Coventry University



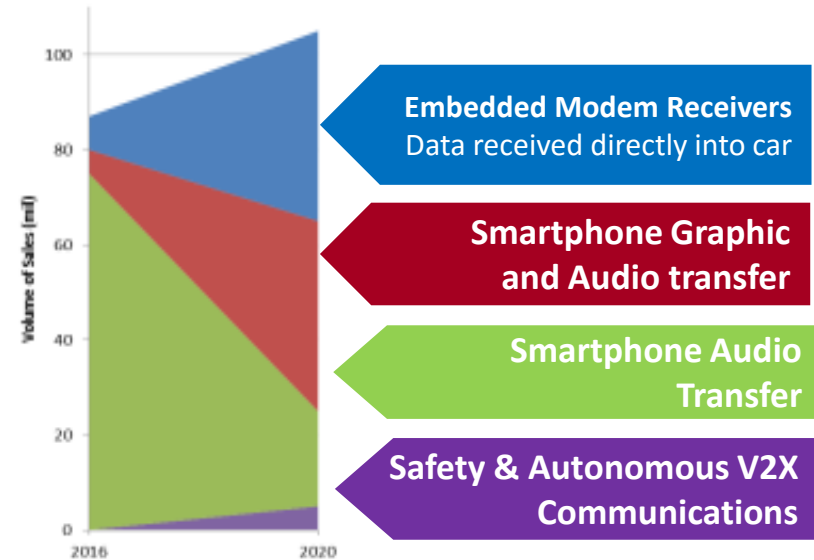
Work Packages and Leads

- WP1 – Project Management – Visteon
- WP2 – Back Office – Siemens
- WP3 – Infrastructure – Highways England
- WP4 – Vehicle Systems – JLR
- WP5 – Cyber Security – University of Warwick (WMG)
- WP6 – Trialling and Testing – JLR
- WP7 – VRSM and Mobility App – Visteon
- WP8 – Driver Interface Testing
- WP9 – Simulation and Modelling – Horiba MIRA
- WP10 – Business Case – University of Warwick (WMG)
- WP11 – Exploitation, Dissemination and Comms – Horiba MIRA

The Technology Mix

Information Examples			
Information Use Case	Semi & Autonomous messaging	Driver Assistance	Informed Driver
Example Message	CACC SAE/NHTSA Class 2-3	"Accident lane closed"	"Traffic Jam – Take alternative route"
Time Criticality	< 100 ms	< 60 secs	Secs to Min
Distance	0-1.5 Km	0.5-2.5Km	>1 Km
GPS accuracy	< 1 meter	1-5 meters	>10 meters
Hardware Receiver Required			Mobile Phone
	Embedded		
Network Required			LTE
	LTE-V ?		
	DSRC		Wi-Fi Services
Market Availability of technology	2018	2016	2016

Global Vehicle Connectivity Installations



- The method of communication to and from vehicles is dependent upon the installed technology
- The content of the communication depends on BOTH the installed technology BUT also the information type and urgency

Connected Corridors must take into account installed technology, information type and urgency to provide near-term benefits and long-term solutions

Challenges and Successes



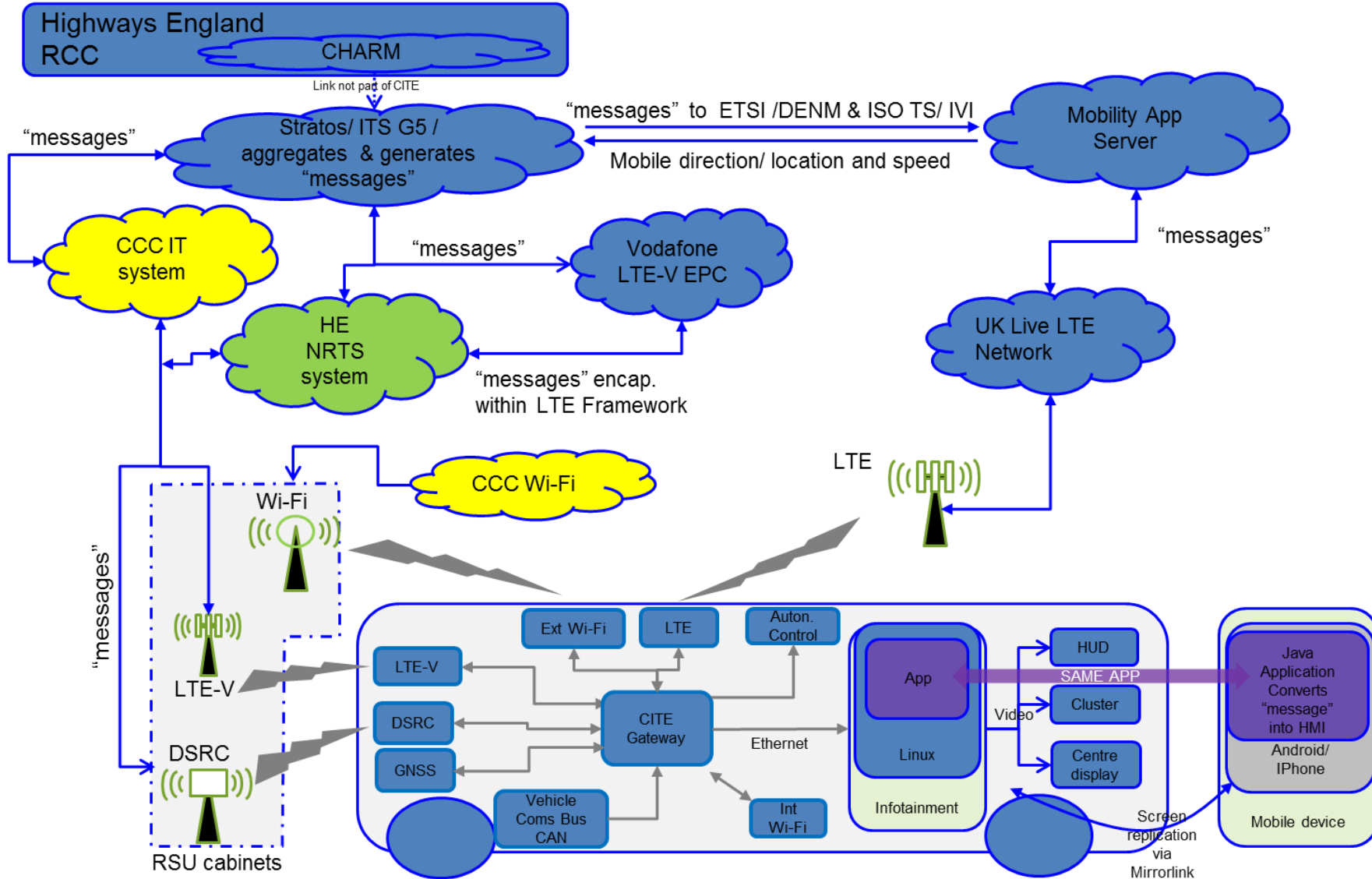
Challenges

- Large consortium – complex WP interactions - takes time to agree direction
- Infrastructure power constraints
- Ensuring project continues to be aligned with changes to protocol, standards and technology during the project life – how to keep the research up to date and relevant – funding required scope changes
- File sharing

Successes

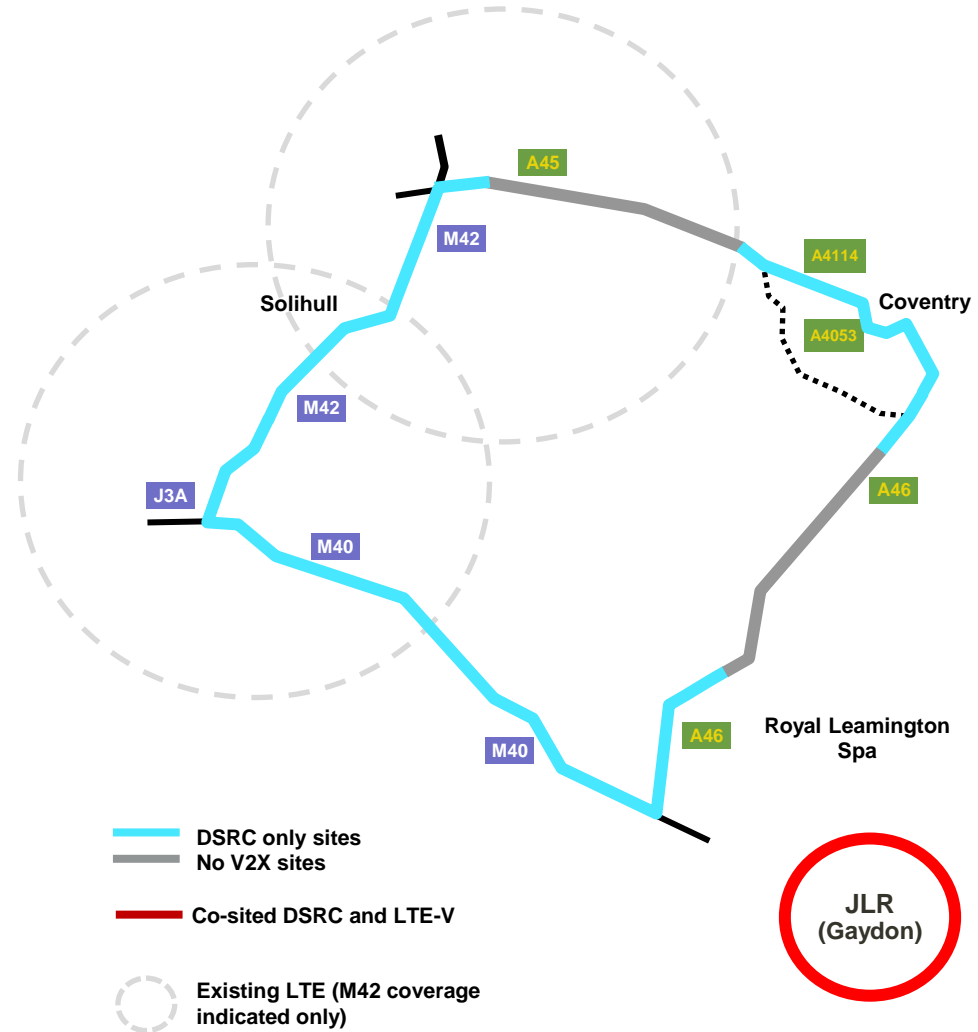
- USE CASES defined
- Vehicle architecture frozen
- High level architecture defined
- Infrastructure design completed
- Bench testing complete
- Prototype android app complete (virtual gantry)
- Cyber Security SoA report issued
- 1st UK LTE-V vehicle demo for CACC

High Level System Architecture



Test Route Road and Track

- Five different road types
 1. Smart Motorway (M42)
 2. Motorway (M40)
 3. Expressway (A46)
 4. A-road (A45)
 5. Urban (A4114/A4035)
- Mixture of Urban and Interurban SRN
- DSRC V2V (802.11p)
- Cellular V2V (LTE-V)
- Cellular & DSRC V2I
- Cellular V2N



Vehicles

- 100+ vehicles
- Stage 1 - 3 fully kitted vehicles – OBU's, embedded displays
- Stage 2 – 20 vehicles per month for 5 months with mobile apps
- Stage 3 – 20-30 vehicles with data connection via OBDII port

USE CASES

Feature Name	Project Phase	V2I vs. V2V	Existing car2car Triggering Conditions
Emergency Electronic Brake Lights (EEBL)	1	V2V	Y
Emergency vehicle warning	1	V2V	Y
Traffic condition Warning	1	V2I/V2V	Y
Roadwork warning	1	I2V	N
In-Vehicle Signage (with speed information)	2	I2V	N
Decentralized floating car data - adverse weather condition (fog, precipitation, Traction loss)	2	I2V	Y
Co-operative ACC	2	V2I/V2V	N
Lane merge assist	2	I2V	N

Timing



- Project Start June 1st 2016
- Bench Testing Q1 2017
- Track Testing Q1/2 2017
- Infrastructure Install Start May 2017
- Road Testing From end Q2 2017
- Project Finish Q4 2018

Thank You

