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Highway Asset Data-led Management System (HADMS)

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Kent

- 1.64 million people.
- Almost 1,000,000 vehicles.
- 28% increase in total volume of traffic compared to 25 years ago
- Degrading asset and increase in potholes
- Limited use and dissemination of technology in highways industry
- Lack of investment

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- £23 m grant funding from Department for Transport (DfT)
- 28 bids received
- 8 successful bids
- Innovation covering (Smart) Materials, Communications, Energy & Mobility, singularly and in combination
- Kent CC awarded £1.975m from the Department for Transport to invest in Highways innovation

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- Cumbria
- Staffordshire
- Solihull & Birmingham
- Central Bedfordshire
- Buckinghamshire
- Reading
- Suffolk
- Kent

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- Live Labs will be 'open source'
- Learning from Live Labs innovation
- Active engagement and import of ideas
- Applicability to local needs / challenges – now and in the future
- Practical application at scale
- Identifying benefits
- Change within context of 'Future Mobility'



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Efficient

Intelligent

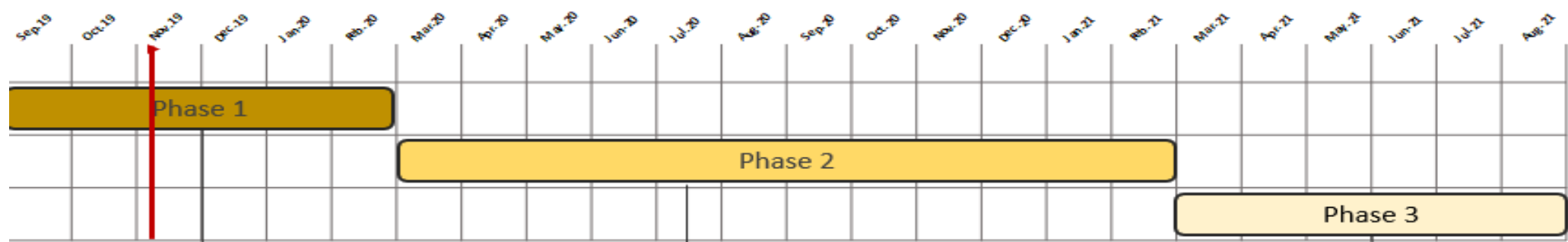
Transparent

Safer



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3-phase delivery



- 1 Innovation Discovery & Platform Development**
- Data exploration and establishing benefits cases
 - Platform architecture and prototyping
 - Market research and supplier engagement
 - Implementation of 'Quick Wins'

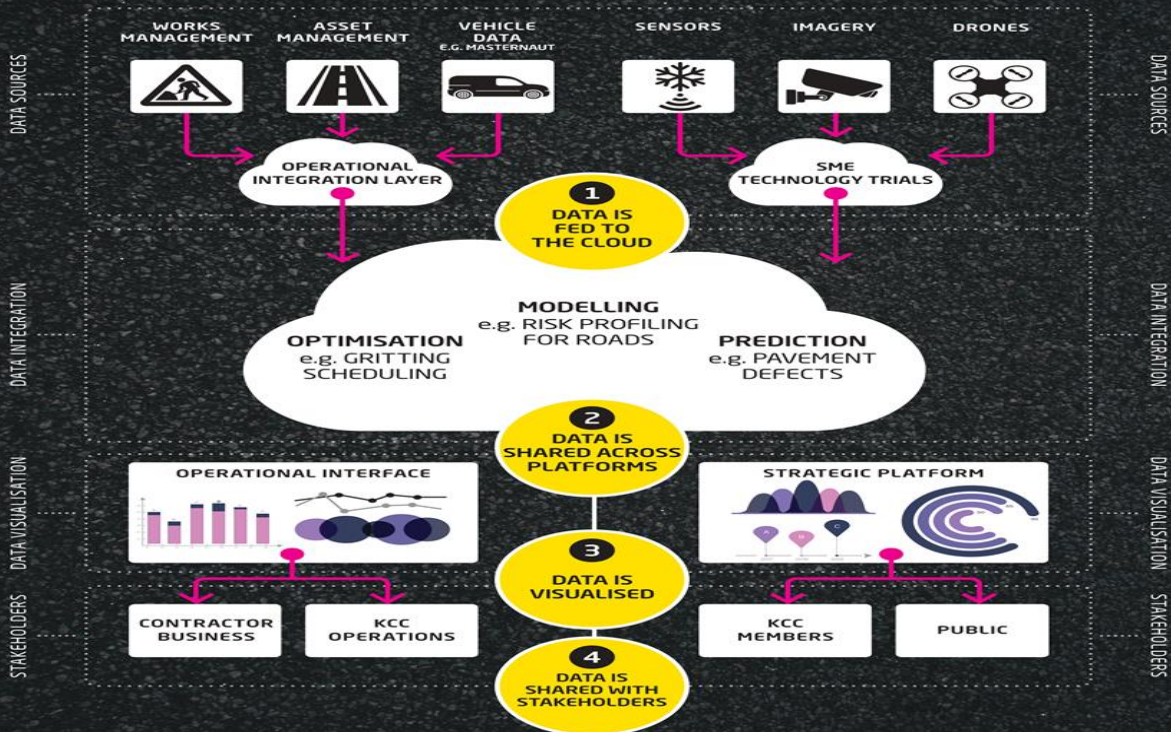
- 2 Trials and innovation implementation**
- Further platform development
 - Major innovation workstreams
 - Benefits realisation of quick wins
 - Facilitate business process changes

- 3 Business Transformation & Evaluation**
- Implement business change
 - Agile platform refinement
 - Establish performance measures
 - Embed enduring support model

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Big Data Analytics & Technology Trials for Intelligent Highways Management & Smart Customer Communications

Highways Asset Data-led Management System (HADMS)



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50 Innovations identified, categorised by type, then divided into **10 Workstreams** representing assets or key delivery elements of the Highways business

50
innovations
identified
through:

- Stakeholder Engagement
- Business Process Analysis
- Data Exploration
- Supplier Evaluation

Innovations
collected into
'Workstreams'

- Air Quality
- Drainage
- Winter
- Labour Optimisation
- Lighting
- Network Risk
- Works Processing
- General Oversight
- Road Surface
- Traffic Management

Innovations
Categorised:

- **Quick Win:** No hardware or modelling, deliverable within **Phase 1**
- **Technology Trial:** Trialing of third-party solutions, deliverable within **Phase 2**
- **Big Data Analytics Project:** development of analytical tool/model/machine learning algorithm, deliverable within **Phase 2**

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Workstreams

KEY	Quick Win (Phase 1)	Technology Trial	Analytics Project (Phase 2)			
Air Quality	road network monitoring	air quality modelling				
Drainage	Cleansing schedules	Smart Drainage	Risk-based mtce optimisation			
Elec & Connected Vehicles	Intelligent Line Markings					
Gritting	Before/after Route Monitoring	Smart Winter	Nightly decision support			
Inspections	Steward Vehicle Tracking	scheduling optimisation				
Lighting	Power usage	Fault monitoring	Engineer efficiency	Lighting failure prediction		
Network Risk	crash clustering	network risk mapping	Near Miss detection	Road risk modelling & profiling		
Ops Maintenance	Gang Vehicle Tracking	WO Efficiency/KPIs	WO/Asset Identification	Gang deployment optimisation		
Oversight	Reactive & Planned Works	Asset locations	Asset Lifecycle modelling			
Pavements	Condition & Renewals	Smart Route Surface Monitoring	Smart Condition Surveys	Holistic mtce planning	Pavement defect prediction	Pothole Backlog optimisation
Street Furniture	Smart line condition monitoring					
Structural	Terrain movement monitoring					
Traffic Mgt & Schemes	Permitted Schemes	HGV tracking	Scheme design & appraisal	Scheme prioritisation		
Trees & Vegetation	Canopy coverage & biodiversity	Smart watering	Health monitoring	Predict tree failure	Predict Impact on adjacent assets	

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Phase 1 output examples (Quick wins)

Gritting compliance



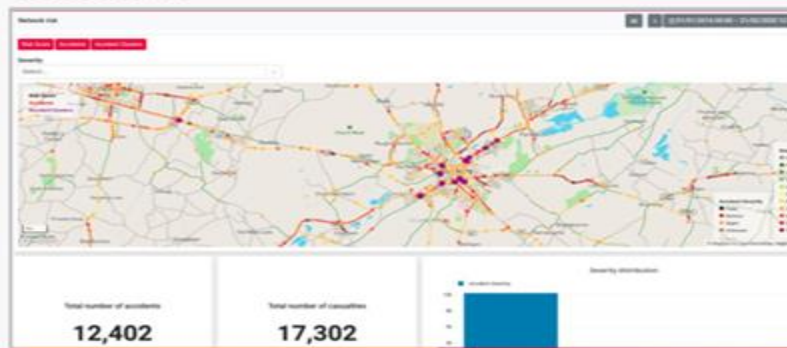
KPI tracking



Gang compliance & performance



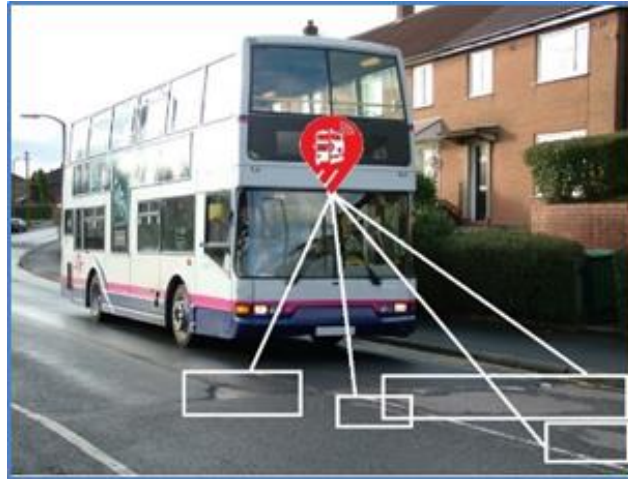
Network Risk



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Graphene enhanced asphalt



Smart route monitoring



Drain gully sensors