

## ADEPT President's Awards 2022

### Entry form

<b>Award category:</b>	Digital innovation/technology
<b>Title:</b>	Aerial Data Acquisition and analytics, using Machine Learning and AI to support Asset Management Activities.
<b>Entrant:</b>	Kent County Council
<b>Main contact name:</b>	Carol Valentine AMCIHT   Highways Project Manager Live Labs
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<b>Partner/s (if applicable):</b>	Amey Consulting (Simon Grundy – <a href="mailto:simon.grundy@amey.co.uk">simon.grundy@amey.co.uk</a> ) Sub partners – Collins Aerospace
<b>Headline summary (150 characters, c. 20-25 words)</b>  Adoption and development of AI capabilities developed for fast fighter jet reconnaissance reimagined for highway infrastructure asset management, collecting data via drones.	

Please note we need **at least one supporting image** per award submission.  
Supporting images should be attached separately as jpg or png files.

Please paste links to any supporting video evidence here

Link 1 – Media coverage (Not Video)	<a href="https://kccmediahub.net/drones-back-in-kents-skies-for-trials-second-phase745">https://kccmediahub.net/drones-back-in-kents-skies-for-trials-second-phase745</a>
Link 2	



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Kent County Council working with Amey Consulting and partner Collins Aerospace have undertaken a project funded by the Kent Lane Rental Fund to evaluate the use of Aerial Data Acquisition and Analytics to support Infrastructure Resilience. The threats of climate change, economic uncertainty, and more recently a global pandemic, present risks to the health, well-being, and security of the UK population. The following project was designed to support minimising these risks by increasing the reliability of the infrastructure required to sustain our society.

Inspecting and assessing road assets has not materially changed in decades. With examinations being undertaken by personnel either driving or walking the live network or undertaking under a closure. These types of examinations often leave personnel exposed to hazardous environments or cause delays due to the need for traffic management. Due to this, inspections are often kept to a minimum, resulting in assets not being inspected for prolonged periods of time, with the lengthy intervals making it increasingly difficult to monitor asset performance. Due to the factors above, engineers and inspectors are under critical time constraints to inspect full networks looking for asset defects that if left could later result in significant disruption.

Current methodologies can be inefficient, unrewarding, and expose people to increasingly unacceptable and unnecessary hazards. It results in scarce specialist resources spending most of their time accessing and examining assets that present no defects - an unavoidable result of having to physically examine entire networks. The project's objective has been to automate most of this activity such that specialist engineers can focus their unique skills on addressing those parts of the infrastructure which are known to be defective.

Through ADEPT, KCC has been working with Amey to understand how aerial data can be used to better understand the condition of assets and help reduce the burden on limited inspectors and engineers, by supporting the generation of actionable insights from data. This has led to the 'Aerial Data Acquisition and analytics project, using Machine Learning and AI to support Asset Management Activities.'

The project has developed several first of a kind innovation from the use of drones within a local authority to collect data of critical assets, to the development and adoption of AI capabilities typically used for fast fighter jet reconnaissance, retraining the machine learning to support highway infrastructure asset management. Change detection developments are helping aid asset managers pinpoint defective or degrading assets, supporting inspection efficiency, and enabling faster remedy.

#### **Benefits**

- Safety – Reduced need to send inspectors and surveyors into hazardous environments
- Sustainability – Reduced requirements for driving the network for inspections
- Economy – automation results in much lower data acquisition and processing costs and avoids wasting engineer time in validation
- Efficiency – reduced possession times, automation supports targeted intervention
- Efficacy – accurate, repeatable, and traceable data and an absolute audit trail
- Intelligence – AI tools enable automation of change detection and predictive modelling



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The team plans to continue innovating, developing further data automation to extract more actionable insights from the aerial data, alongside efforts to undertake full network corridor data collections via drone.