



Integrated Skills



Using Technology to Address Challenges in Local Authority Waste Management

Andy Clewes, Client Services Director

Tools for the Challenge

- ⚙️ Strategic questions for Local Authorities
- ⚙️ How waste services operate
- ⚙️ Operational questions faced by Local Authorities
- ⚙️ A technological solution
- ⚙️ Responding to the new Waste Strategy



Strategic Questions for Local Authorities

⚙️ What are our long-term strategic plans?

⚙️ Easy to stop setting strategic goals

⚙️ Technology can provide a vision for future services

⚙️ Should we innovate?

⚙️ Maximise resources

⚙️ Achieve efficiencies

⚙️ Improve standards



Strategic Questions for Local Authorities

⚙️ Should we follow what others are doing?

⚙️ Best practice

⚙️ One size does not fit all

⚙️ Should we work with others or alone?

⚙️ Sharing resources

⚙️ Cross-boundary working



Strategic Questions for Local Authorities

- ⚙️ Do we have the confidence to see our plans through?
 - ⚙️ Confidence can be eroded by a lack of evidence
 - ⚙️ Modelling options and build an evidence
 - ⚙️ On-going review and performance management



Local Authority Waste Services

- ⚙️ Historically services have been designed around experience and a best guess
- ⚙️ Technology allows us to take the guess work out of providing services
- ⚙️ Decisions can be made using evidence



Operational Questions for Local Authorities

- ⚙️ What services do we have to provide?
- ⚙️ What services would we like to provide?
- ⚙️ Where should services be provided?
- ⚙️ How should we provide services?
- ⚙️ Should we charge for services?
- ⚙️ How many vehicles – what type/size?
- ⚙️ Can we afford these services?



Tools for the Challenge



A Technological Solution from Integrated Skills



The world's most intelligent routing system



In-cab solution for precision route navigation, reporting and two-way messaging



Online route management, operations monitoring & plan vs actual







For dynamic and variable route planning



A smartphone app for the improved management of recycling & waste collections



A Technological Solution from Integrated Skills

-  RouteSmart is capable of solving the most complex routing challenges with the highest degree of precision and processing performance
-  RouteSmart can be used as a tool to model options, collection methodologies, shift patterns, depot & disposal arrangements and property growth
-  RouteSmart generates evidence and provides confidence for decision-making
-  RouteSmart can model cross-boundary working and compare the relative efficiency of multiple solutions



RouteSmart Route Optimisation Software

The image displays the RouteSmart software interface for ArcGIS. The main window shows a map of an urban area with several routes highlighted in different colors: red, blue, purple, and green. A 'Solver Options - Generate' dialog box is open in the center, showing various optimization settings. The interface includes a menu bar (File, Edit, View, Bookmarks, Insert, Selection, Tools, Window, Help), a toolbar, and a 'Layers' panel on the left. The 'Layers' panel shows 'Urban_Properties' with 6 routes, 'Sequence', 'Travel Path', 'Facility', 'Base Mapping', and 'TopographicArea'. The 'Solver Options' dialog box has tabs for 'General', 'Facilities', 'Route Sets', 'Cost', and 'Mixed Mode'. The 'General' tab is active, showing settings for 'Balance and compact', 'Non-productive travel', 'Reaching', 'Area reduction', 'Use balance', 'Reduce inter', 'Enable stop locking', 'Cycle Day Balancing', and 'Move between'. The 'Route Sets' tab is also visible, showing 'Advanced Sequencing' and 'Park and Loop'. The 'Cost' tab shows 'Park and Loop' and 'Multiple Capacities'. The 'Mixed Mode' tab shows 'Multiple Capacities'. The 'Route' panel on the right shows 'One-way' and 'Route'.

REDUCE time and mileage

INCREASE productivity

IMPROVE efficiency

LOWER CO₂ footprint

BALANCE workloads

MODEL new scenarios

OPTIMISE resources

EVIDENCE

Create Optimised Routes with RouteSmart

- GIS-based precision solution for high density routing
- Routing at the individual property level over a customisable network taking account of travel restrictions and H&S factors



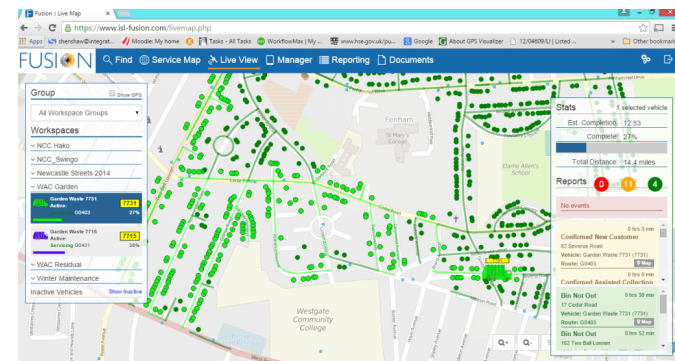
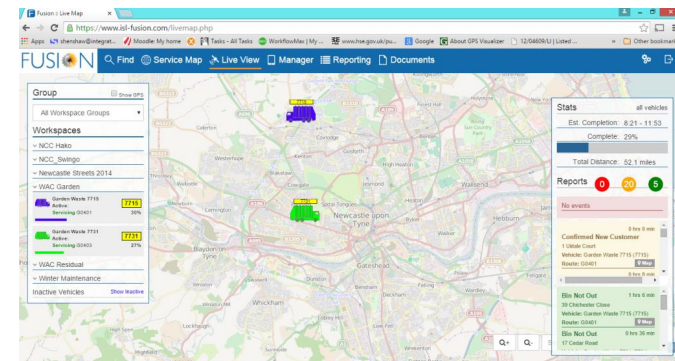
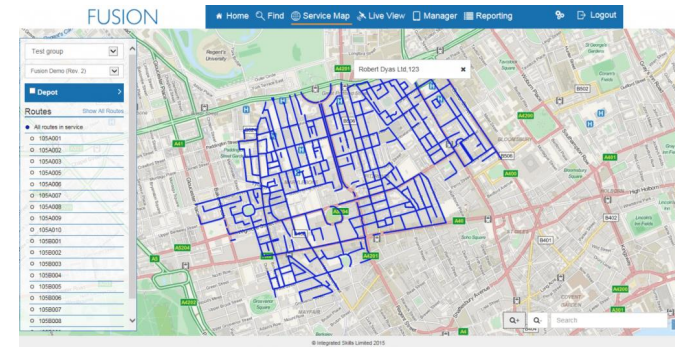
Realise Efficiencies with RouteSmart Navigator

- ⚙️ RouteSmart Navigator provides precision navigation over a customised road network
- ⚙️ The in-cab, touchscreen RouteSmart Navigator solution ensures that drivers view every detail of a route
- ⚙️ Audio and visual navigation information
- ⚙️ Report service issues



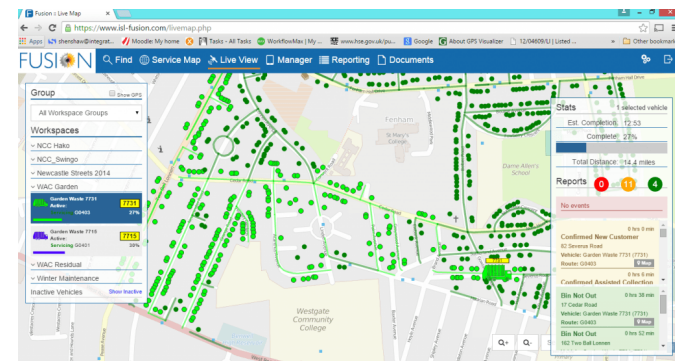
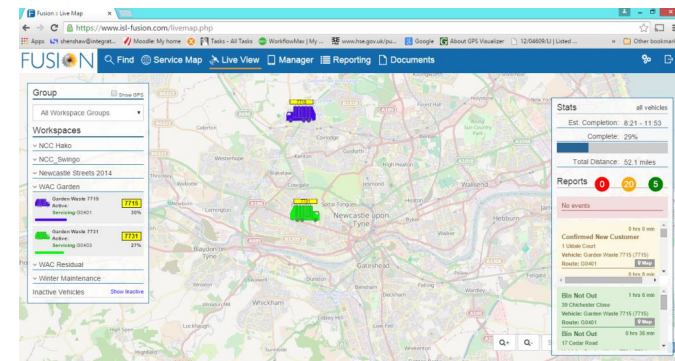
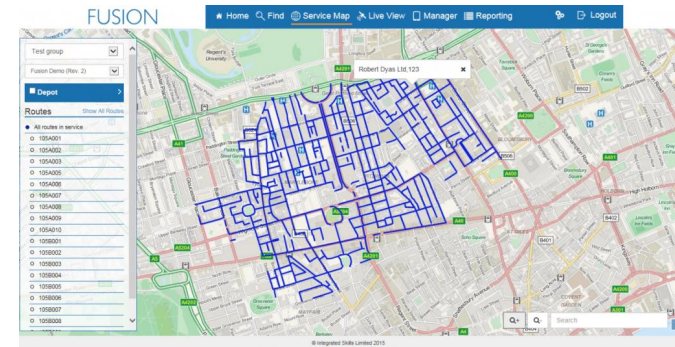
Manage Performance with Fusion

- 🌀 Online view of optimised routes
- 🌀 Real time view of vehicle operations
- 🌀 Live view of vehicle GPS track with real time progress of vehicle along optimised route
- 🌀 Plan versus actual monitoring
- 🌀 Live feed of exception reports



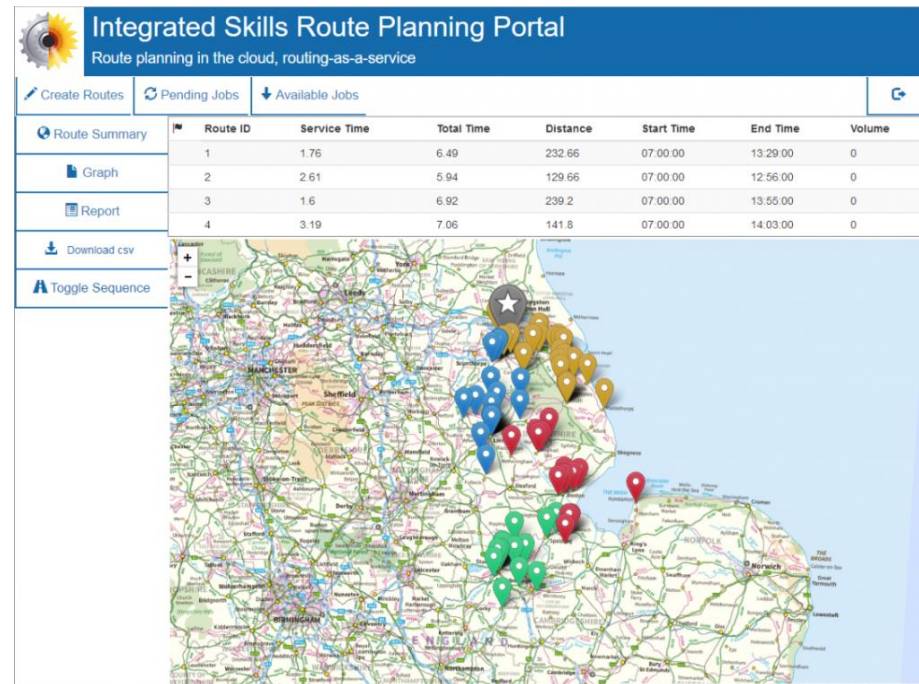
Manage Performance with Fusion

- Map and calendar view of the planned optimised routes
- Search of services by property or street
- Management of two-way messaging between driver and HQ
- Management of in-cab Navigator devices



Optimise Dynamic Routes with RaaS

- ☀ Routing as a Service portal for Dynamic Routing and Variable Route Planning – bin deliveries, bulky waste etc.
- ☀ Cloud-based optimisation service with a standard API
- ☀ RaaS would typically be used on a daily basis
- ☀ Creates optimal balanced routes for medium density/ medium volume routes
- ☀ Adheres to time windows and driving hours



Integrated Skills Route Planning Portal
Route planning in the cloud, routing-as-a-service

Create Routes Pending Jobs Available Jobs

Route ID	Service Time	Total Time	Distance	Start Time	End Time	Volume
1	1.76	6.49	232.66	07.00.00	13.29.00	0
2	2.61	5.94	129.66	07.00.00	12.56.00	0
3	1.6	6.92	239.2	07.00.00	13.55.00	0
4	3.19	7.06	141.8	07.00.00	14.03.00	0

Route Summary Graph Report Download csv Toggle Sequence

Communicate with the Public using Bin2Day

- Smartphone App for the improved management of recycling & waste collections
- With Bin2Day local authorities can:
 - Notify residents of changes to collection days
 - Send reminders of paid-for collections (bulky, garden, clinical, etc.).
 - Engage directly with residents when introducing new services
 - Notify residents if there is a delay to the service
 - Inform residents of recycling targets met
- Residents can:
 - Set alerts to remind them when to put the bin out (and which one)
 - Review what items go into which bin
 - View a collection calendar
- Single source of data across all solutions = consistency and accuracy



Responding to the New Waste Strategy

- ⚙️ Food waste collections
 - ⚙️ RouteSmart can design dedicated food waste collections and model the impact on residual collections
- ⚙️ Collection frequencies
 - ⚙️ RouteSmart can model the requirements of weekly, fortnightly, 3-weekly & 4-weekly collections
- ⚙️ Increased packaging recovery
 - ⚙️ RouteSmart can model variations to container types and scale up and down for increased volumes of different waste streams
- ⚙️ Waste disposal options
 - ⚙️ RouteSmart can model the impact of changes to waste disposal e.g. impact of delivering to EfW sites vs WTS



A Technological Approach

- ⚙️ Model long term plans
- ⚙️ Evaluate innovative approaches to achieving efficiencies and improved standards
- ⚙️ Benchmark and model working with neighbours
- ⚙️ Generate evidence for decision making
- ⚙️ Build confidence at all levels of the organisation
- ⚙️ Monitor performance
- ⚙️ Engage with customers





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