Software for Ambulance Logistics Planning and Realtime Optimised Ambulance Redeployment

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• University spin-off Company
  – Operations Research Experts
• Based in Auckland, New Zealand
  – Offices in Arizona and Oxford (UK)
• Emergency Medical Services (EMS) focus since 2001
• Ongoing research programs on EMS
  – Internal and University-based research
• Customers around globe
SIREN Software
Software for Improving Responses in Emergency

- Two modules
- SIREN Predict
  - Simulation
  - “What if” analyses
  - Major incident planning
  - Strategic, future
- SIREN Live
  - Easy to use GIS display
  - Optimized redeployments
  - Tactical, day to day
Siren Predict

• Realistic Simulation of Ambulance Operations
  – Detailed travel model
    • predict travel times under time-varying congestion
  – Complex vehicle rules
    • Dispatch, at accident scene, at hospital
    • Interactions between multiple vehicles
• Simulation answers ‘what-if’ questions
  – New bases, new vehicles, new roads, new hospitals, new dispatch rules, shift changes, growth scenarios
SIREN: Software for Improving Responses in Emergency Networks
SIREN Live

Redeployment selects actions now that will improve response times for calls in the future

- Move vehicles to improve coverage
- Improved coverage improves response times
Redeployment: The Challenge

• When should you consider moving vehicles?
• How many vehicles should you move?
• What type of vehicles should you be moving?

• Complex temporal & spatial problem
  – Upcoming call patterns
  – ‘First Response’ vs ‘Transport Capable’ vehicle coverage
  – Waiting at Bases vs Street Corners
  – Traffic congestion
  – Changes hour by hour

• Combine Optimisation and Visualisation
SIREN Live Process

- Listens to CAD
- Monitors coverage
- Triggers optimizer

Computer Aided Dispatch

SIREN Live

- Identify coverage holes
- Redeploy available vehicles

SIREN Optimizer

Apply Redeployments
Crew automatically notified
SIREN Real time View

65% Calls covered, 57% Geography
SIREN with Optimised Redeployments

86% Calls covered, 72% Geography
Conclusion

Siren Predict:
• Powerful Decision Making Tool
• Improved response times save lives

Siren Live:
• Innovative real time optimisation application
• Delivering technology step-change in industry