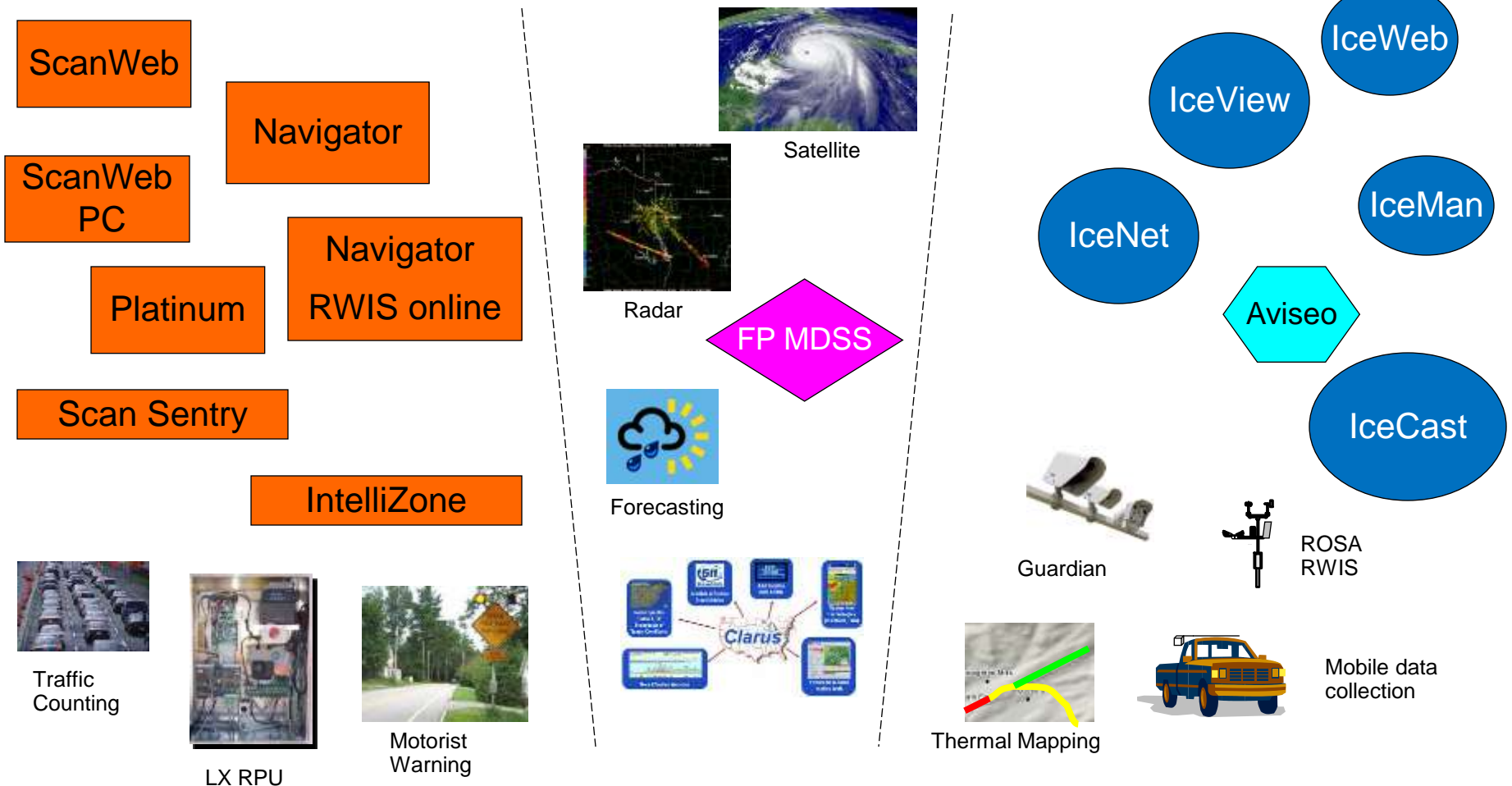


Road Weather Management Stakeholder Meeting

Paul Bridge - September 2011

VAISALA

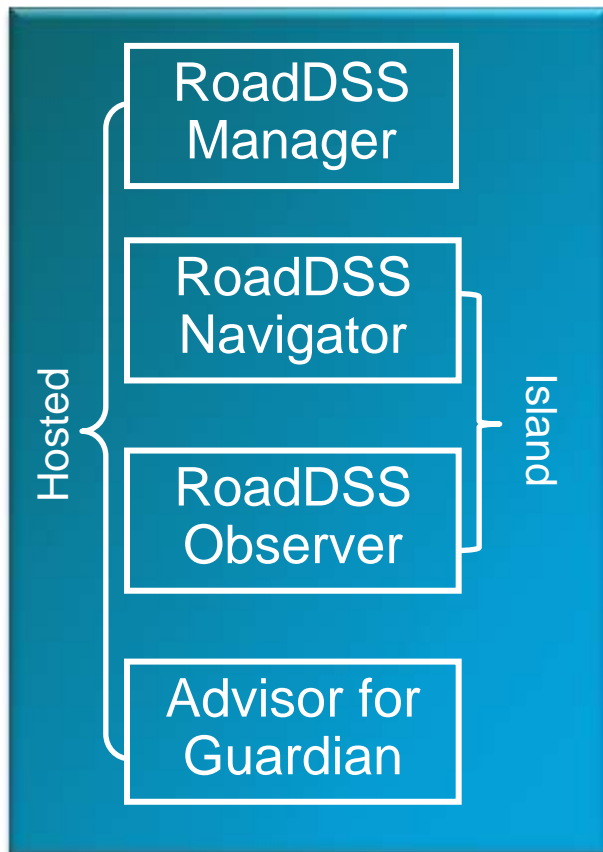
Putting the Solution Together



Many separate offerings to blend in to a one stop shop

Vaisala RoadDSS Suite

A modular/Scalable approach is required that allows products to match differing capabilities and requirements within a road organization.....



- Analytical information for planners and policy makers
- Custom Treatment Recommendations
- Information for area decision makers
- Wider information for Drivers/Depot/contractors
- Concise & intuitive information for non-winter maintenance staff



RoadDSS Navigator - Radar/Satellite/Forecasting/Clarus

RoadDSS Manager - Client Specified Treatment Recommendations

VAISALA / RoadDSS Manager xx Vaisala Internal test ARCHIVE 04.08.2011 14:32

Region: xx Vaisala Internal | Map | Station summary | Camera wall | Planning | Operations | Forecast | Save as PDF

Route Actions

- A1
- Carlton Gardens
- Clewley
- Congleton 1
- Cork 1
- Cork 2
- Cork 3
- Cork 4 (2)
- Cork 5
- Cranberry Moss (1)
- Crewe 1
- Derwent
- Fields Road
- High Street
- Lavenham PR1 Route 1
- Limerick 1
- Limerick 2 (1)
- Limerick 3
- Limerick 4
- Maryport 1
- Maryport 2
- Mere Park
- NZ-1 Wedderburg (2)**
- NZ-2 Waipahi (2)
- NZ-3 Tekapo (2)
- NZ-4 Shotover (2)
- NZ-5 South Waiouru (2)
- NZ-6 High Level Road (2)

NZ-1 Wedderburg

14:00 No action Accepted

Cause: Auto Propose

Action: No action

Start time: 09.08.2011 14:00

Comments: No treatment recommendation

Update Cancel Action

14:00 No action Accepted

Cause: Auto Propose

Action: No action

Start time: 09.08.2011 14:00

Comments: No treatment recommendation

Update Cancel Action

Accept all actions Add new Action

Air Temperature

Surface Temp

Surface Temp °C

Surface State

dry

Surface State Forecast

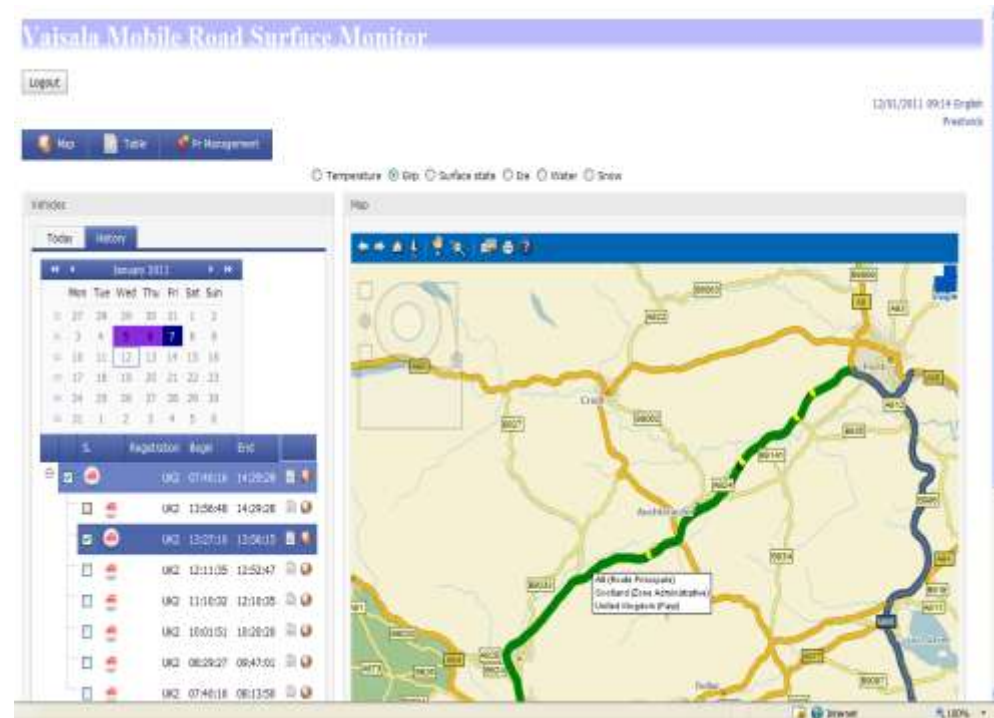
dry

RoadDSS - Mobile Weather Data Collection

- Friction
- Pavement State
- Air & Road Temperature
- Humidity

Integrated into Vaisala RoadDSS Suite

Continued sensor & capability development



RoadDSS Value Calculator

VAISALA / RoadDSS Value Calculator
Contact Vaisala
Snowy City
PAUL BRIDGE

RoadDSS Calculator Results – Potential Benefits

Summary | User Benefits | Community Benefits | Other Benefits | All Benefits | Change Assumptions

Assumptions Category: Customer Info | Input | Labor & Infrastructure | Maintenance Fleet | Treatment | Community | Other

Customer Information

Name: Paul Bridge
 Organisation: Snowy City
 Phone Number: (813) 303-2624
 Email Address: paul.bridge@vaisala.com

Calculator Input

| | | |
|---------------------------------------|-------------|---------------|
| Weather Events Requiring Treatment | 55 | Events |
| Number of RWIS Stations | 12 | Stations |
| Winter Maintenance Budget | \$4,000,000 | USD |
| Population | 500,000 | People |
| Number of Treatment Vehicles | 20 | Vehicles |
| Treatment Distance (per Event) | 25 | Lane Miles |
| Number of Routes | 22 | Routes |
| Abrasive Cleanup Distance (per Event) | 0 | Lane Miles |
| Dry Material Use (per Event) | 120 | Tons / Event |
| Wet Material Use (per Event) | 0 | Gals / Event |
| Tolls (per Vehicle) | \$0.00 | USD / Vehicle |

Many of the assumptions below are calculated from the calculator input provided above. If you change the calculator input, the assumptions will no longer reflect their values and you may want to recalculate them. Recalculate Assumptions

Customer Labor & Infrastructure

| | | |
|--------------------------------------|----------|-----------------|
| Decision Maker Rate | \$50.00 | USD / Hour |
| Driver Rate | \$40.00 | USD / Hour |
| Complaint Labor Cost | \$10.00 | USD / Call |
| Hours for Decision to Send Operators | 3.0 | Hours / Day |
| Number of Drivers | 25 | Drivers |
| Number of Decision Makers | 4 | Decision Mak... |
| Stress Related Absences (per Person) | 4 | Absences |
| IT Labor Cost | \$50,000 | USD / Year |
| IT Hardware Cost | \$4,000 | USD / Year |


Maintenance Fleet Vehicles

| | | |
|--|--------------|---------------|
| Maintenance Vehicle Fuel Economy | 4.0 | MPG |
| Fuel Cost | \$3.50 | USD / Gall |
| Cleaning Costs (per Vehicle per Event) | \$100.00 | USD / Vehicle |
| Servicing Costs (per Vehicle per Year) | \$5,000.00 | USD / Vehicle |
| Equipment Replacement Costs (per Year) | \$950,000.00 | USD / Year |


Treatment

| | | |
|-------------------------|---------|--------------|
| Dry Material Cost | \$59.00 | USD / Ton |
| Wet Material Cost | \$0.52 | USD / Gall |
| Cleanup Time (per Mile) | 0.17 | Hours / Mile |

Summary | All Benefits | Change Assumptions



\$18,617,500
Accident Costs Savings



\$23,818,003
Pollution Costs Savings

Summary

- **Continued development of Vaisala RoadDSS suite**
 - Modular to fit your staff needs and takes account of your operations
- **Mobile Weather Data collection**
 - Understanding the Surface State & Friction of your network in concise displays
- **RoadDSS Value Calculator**
 - Helping you to protect your budgets

