

An Integrated Road and Weather Information System



Presented by

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Overview

- Project partners
- Objective of the project
- Concept history
- Current status
- Future efforts



Project Participants

- Meridian Environmental Technology, Inc
- Science Applications International Corporation (SAIC)
- Weather Solutions Group



Project Vision

Create an information system that will collect, quality assure, and integrate roadway and weather information into user-friendly ITS and highway operations and maintenance systems ...

code name Camino



Camino Project Scope

Provide a broad vision of future integrated information services for surface transportation

- 511 Travel Information Systems,
- Road Condition Reporting Systems,
- Maintenance Decision Support Systems,
- Maintenance Data Collection Systems, and
- Multi-State RWIS ESS Data Integration



Camino Features

- Clarus-like data handling
- Data validation and quality control
- Integrated decision support
- Product displays
 - Client-side applications



Surface Transportation Weather

Dramatic Growth in Less Than 10 Years!



Completion of the National
Interstate Highway System
(~100 years)

- - Clarus
- - NAS Report
- - AMS Policy Forum
- - WIST Report
- - PFS MDSS Effort Begins
- - MDSS FP Effort Begins
- - Nebraska 511
- - COMET FHWA/NWS
- - OFCM WIST II
- - NITSA Version 4.0
- - WSDOT rWeather
- - STWDSR
- - OFCM WIST I
- - FORETELL Project begins
- - FHWA RWMP Established
- - #SAFE Deployment in ND & SD
- - Aurora Program established
- - UND ATWIS En-Route Weather
- - ITSA WIATF
- - RWIS weather forecasting
- - SHRP - RWIS

1950

1960

1970

1980

1990

2000

2010

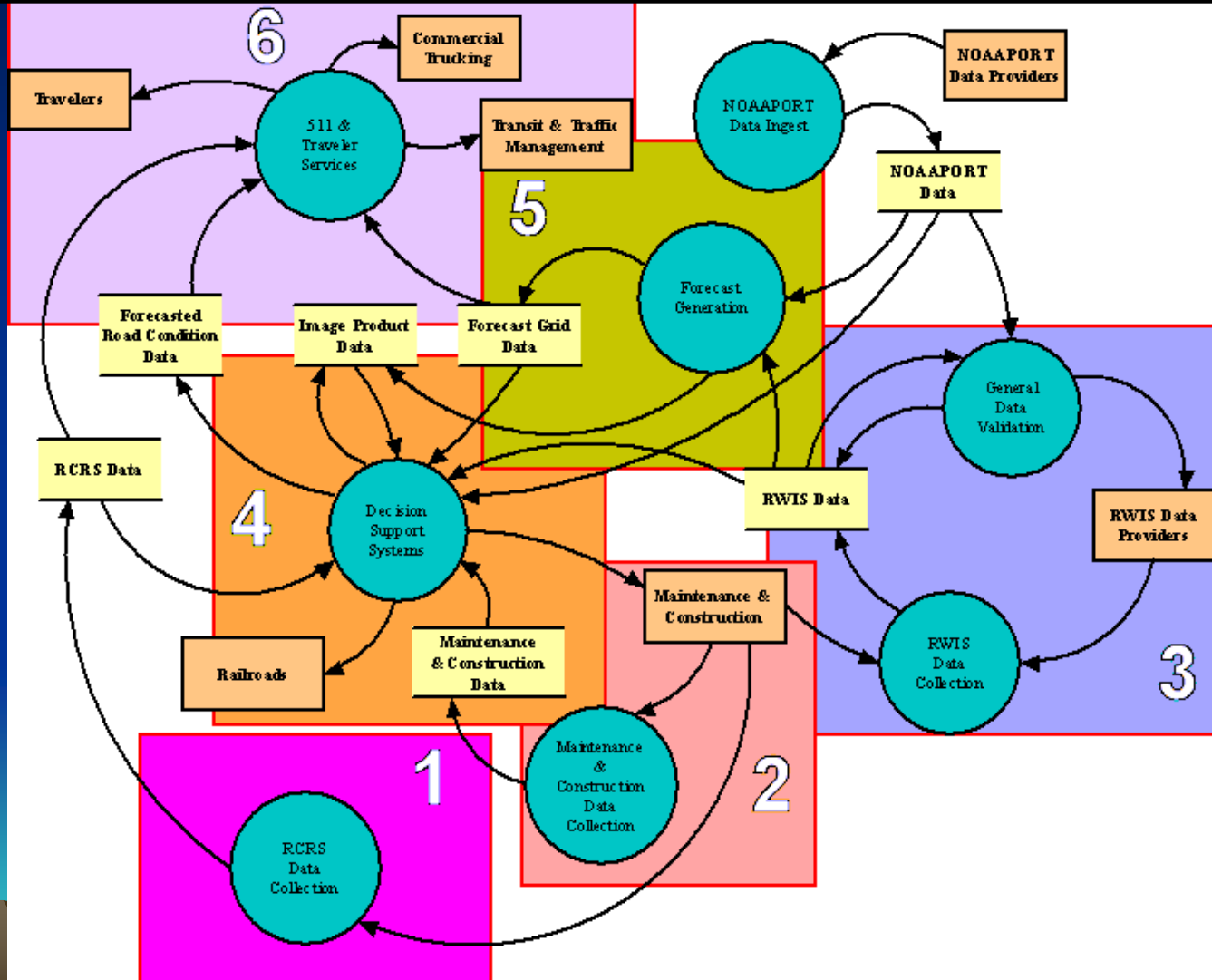
Project History

- UND – STWRC → Meridian Environmental Technology, Inc.
- Meridian Initiatives
 - # SAFE → 511 Systems
 - Maintenance weather forecasting
 - MDSS development (pooled fund effort)
 - ESS data integration
 - Data collection and processing
- SAIC Support → Camino project



Concept & Vision

- An Integration of -



Current Status

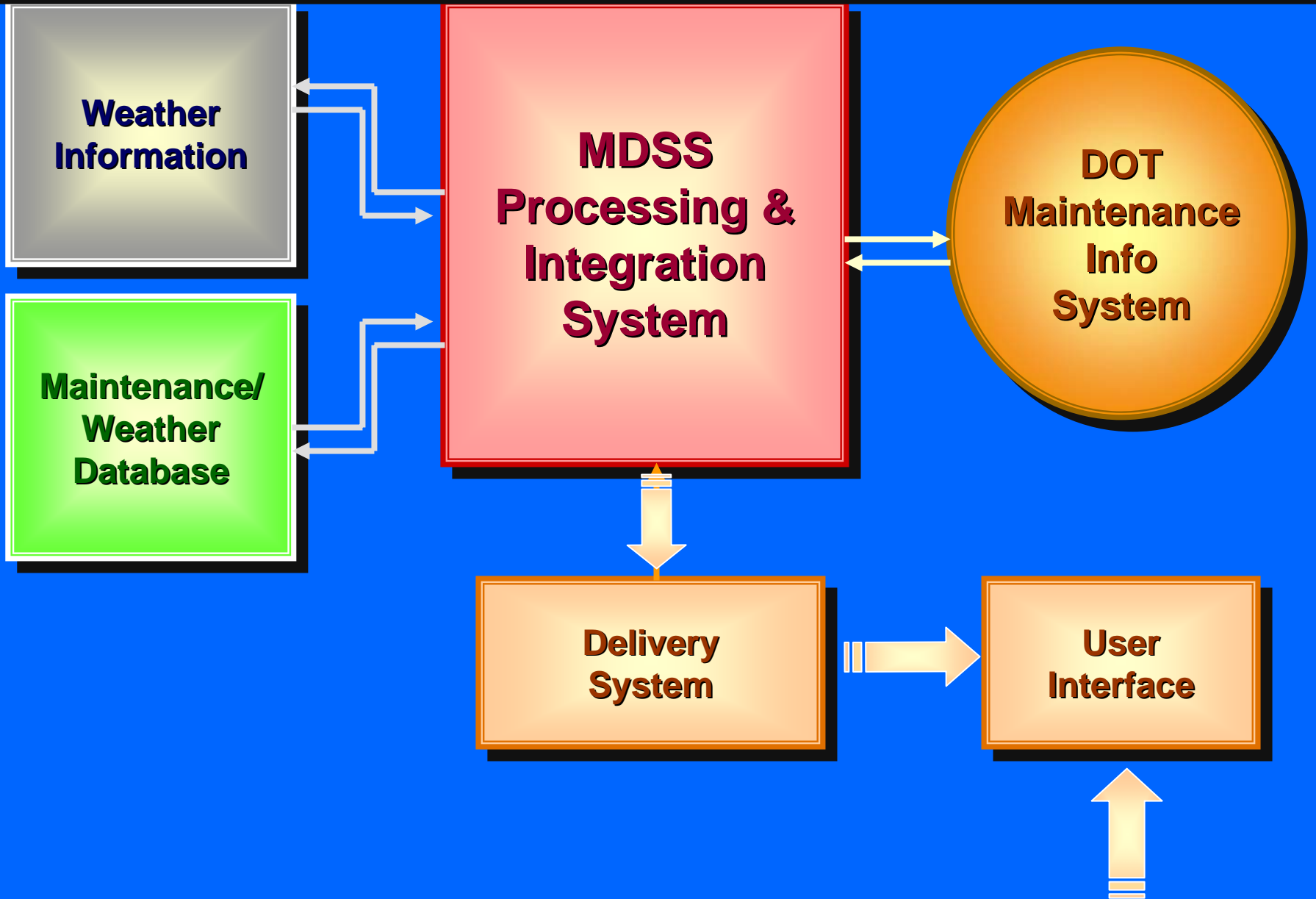
- MDSS Pooled Fund effort working well
 - Road segment specific now
 - Expanding to state wide
- Intellectual property issues resolved
- Camino marketing begun



A Quick Look at the PF MDSS



Meridian MDSS Open Architecture



Meridian MDSS provides tools to set route-specific criteria for levels of service and maintenance treatments

Support System - Meridian Environmental Technology v1.10.0

SR 46 (I-65 to Jct. SR 135 S) IN-3

Custom Graph Treatment Refresh

SR 46 (I-65 to Jct. SR 135 S) IN-3-1

| Date Time | Road Temp | Road Cond | % Ice | Maint Action | Road Snow Depth | Road Temp | Road Cond | % Ice | Maint Action | Road Snow Depth | Wind Dir / Spd | Cloud Cvr | Precip Prob | Precip Type | Snw Rate | Date Time |
|-----------|-----------|-----------|-------|--------------|-----------------|-----------|-----------|-------|--------------|-----------------|----------------|-----------|-------------|-------------|----------|-------------|
| 34 | | | | | | | | | | | | | | SN | 0.16 | Wed 07:40PM |
| 34 | | | | | | | | | | | | | | SN | 0.16 | Wed 06:40PM |
| 42 | | | | | | | | | | | | | | SN | 0.16 | Wed 05:40PM |
| 42 | | | | | | | | | | | | | | SN | 0.16 | Wed 04:40PM |
| 52 | | | | | | | | | | | | | | SN | 0.16 | Wed 03:40PM |
| 60 | | | | | | | | | | | | | | SN | 0.23 | Wed 02:40PM |
| 60 | | | | | | | | | | | | | | SN | 0.36 | Wed 01:40PM |
| 64 | | | | | | | | | | | | | | SN | 0.52 | Wed 12:40PM |
| 64 | | | | | | | | | | | | | | SN | 0.52 | Wed 11:40AM |
| 74 | | | | | | | | | | | | | | SN | 0.51 | Wed 10:40AM |
| 80 | | | | | | | | | | | | | | SN | 0.67 | Wed 09:40AM |
| 90 | | | | | | | | | | | | | | SN | 0.69 | Wed 08:40AM |
| 94 | | | | | | | | | | | | | | SN | 0.80 | Wed 07:40AM |
| 90 | | | | | | | | | | | | | | SN | 0.80 | Wed 06:40AM |
| 90 | | | | | | | | | | | | | | SN | 0.80 | Wed 05:40AM |
| 90 | | | | | | | | | | | | | | SN | 0.54 | Wed 04:40AM |
| 60 | | | | | | | | | | | | | | SN | 0.40 | Wed 03:40AM |
| 50 | | | | | | | | | | | | | | SN | 0.21 | Wed 02:40AM |
| 40 | | | | | | | | | | | | | | SN | 0.12 | Wed 01:40AM |
| 22 | | | | | | | | | | | | | | SN | 0.02 | Wed 12:40AM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 11:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 10:40PM |
| | | | | | | | | | | | | | | RA | 0.00 | Tue 09:40PM |
| | | | | | | | | | | | | | | RA | 0.00 | Tue 08:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 07:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 06:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 05:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 04:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 03:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 02:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 01:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 12:40PM |
| | | | | | | | | | | | | | | None | 0.00 | Tue 11:40AM |

Edit Guidance Maintenance Actions...

Traversal Time: 2 hours

Cycle Time: 2 hours

Event Service Requirements: 1 (Very High) 2 (High) 3 (Medium) 4 (Low) 5 (Very Low)

Nominal Service Requirements: 1 (Very High) 2 (High) 3 (Medium) 4 (Low) 5 (Very Low)

Time of Day Constraints (Blackout Times and Dates)

6P 7P 8P 9P 10P 11P 12A 1A 2A 3A 4A 5A 6A 7A 8A 9A 10A 11A 12P 1P 2P 3P 4P 5P

Allow Prewet NaCl

Min Rate: Max Rate: lbs Unit Cost (\$):

Allow Plow Only

Min Rate: Max Rate: na Unit Cost (\$):

Allow Anti-Icing Submit Restore Defaults Cancel

Alerts Next 24 Hours

State Wide Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

NWS Alerts

4AM 10AM 4PM 10PM 4AM

Map Views

None

MDSS Route Views

None

METAR Views

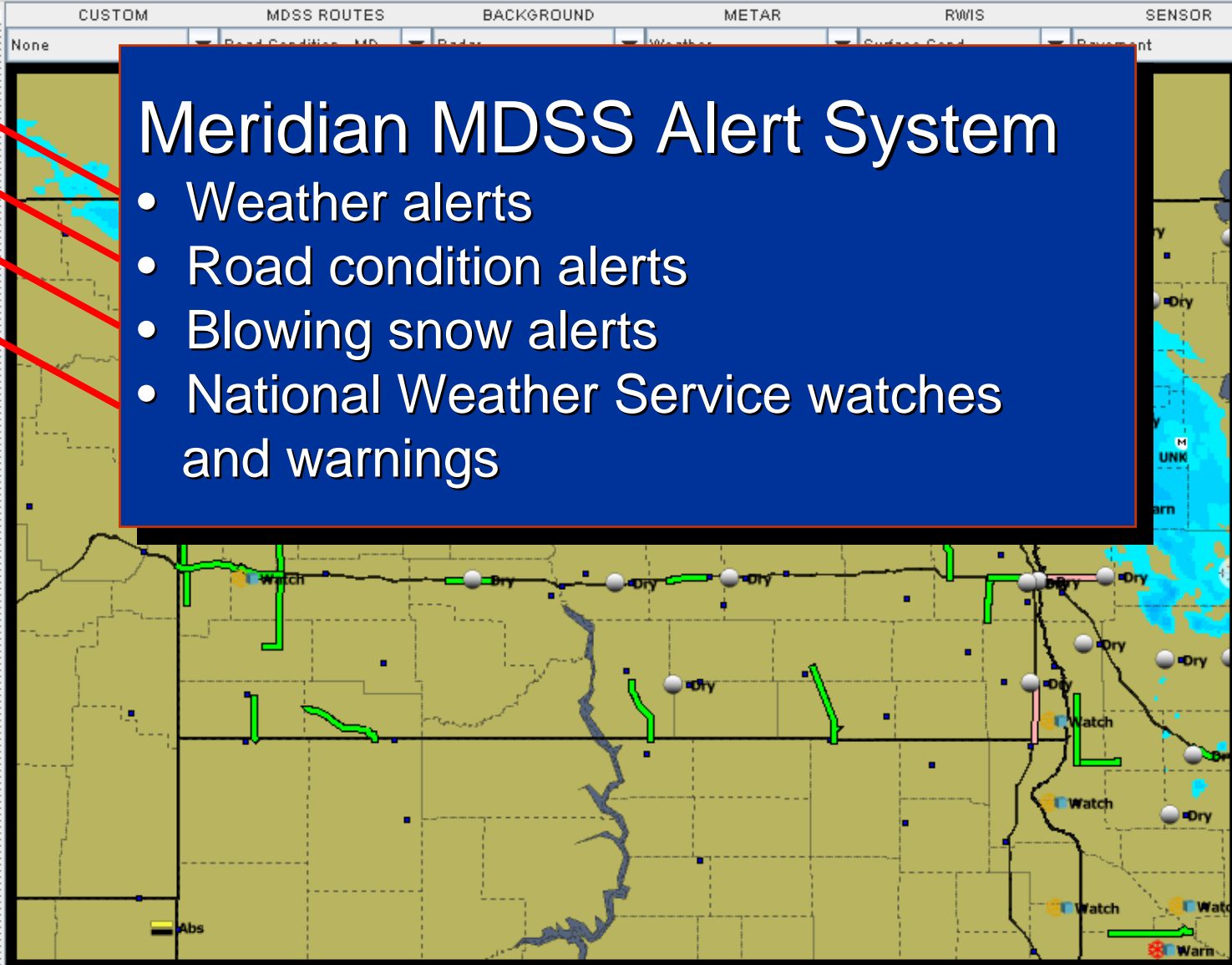
None

RWIS Views

None

Web Browser Links

Last Selected



Meridian MDSS Alert System

- Weather alerts
- Road condition alerts
- Blowing snow alerts
- National Weather Service watches and warnings

Current Time: Mon Feb 27, 2006 4:10AM CST Selected Time: Mon Feb 27, 2006 4:10AM CST

4AM 8AM 12PM 4PM 8PM 12AM 4AM 8AM 12PM 4PM 8PM 12AM 4AM

1 Hour 10 Min. Loop

Alerts Next 24 Hours

State Wide Current View

MDSS Weather Alerts

MDSS Road Alerts

MDSS Blowing Snow Alerts

NWS Alerts

5PM 11PM 5AM 11AM 5PM

Map Views

None

MDSS Route Views

None

METAR Views

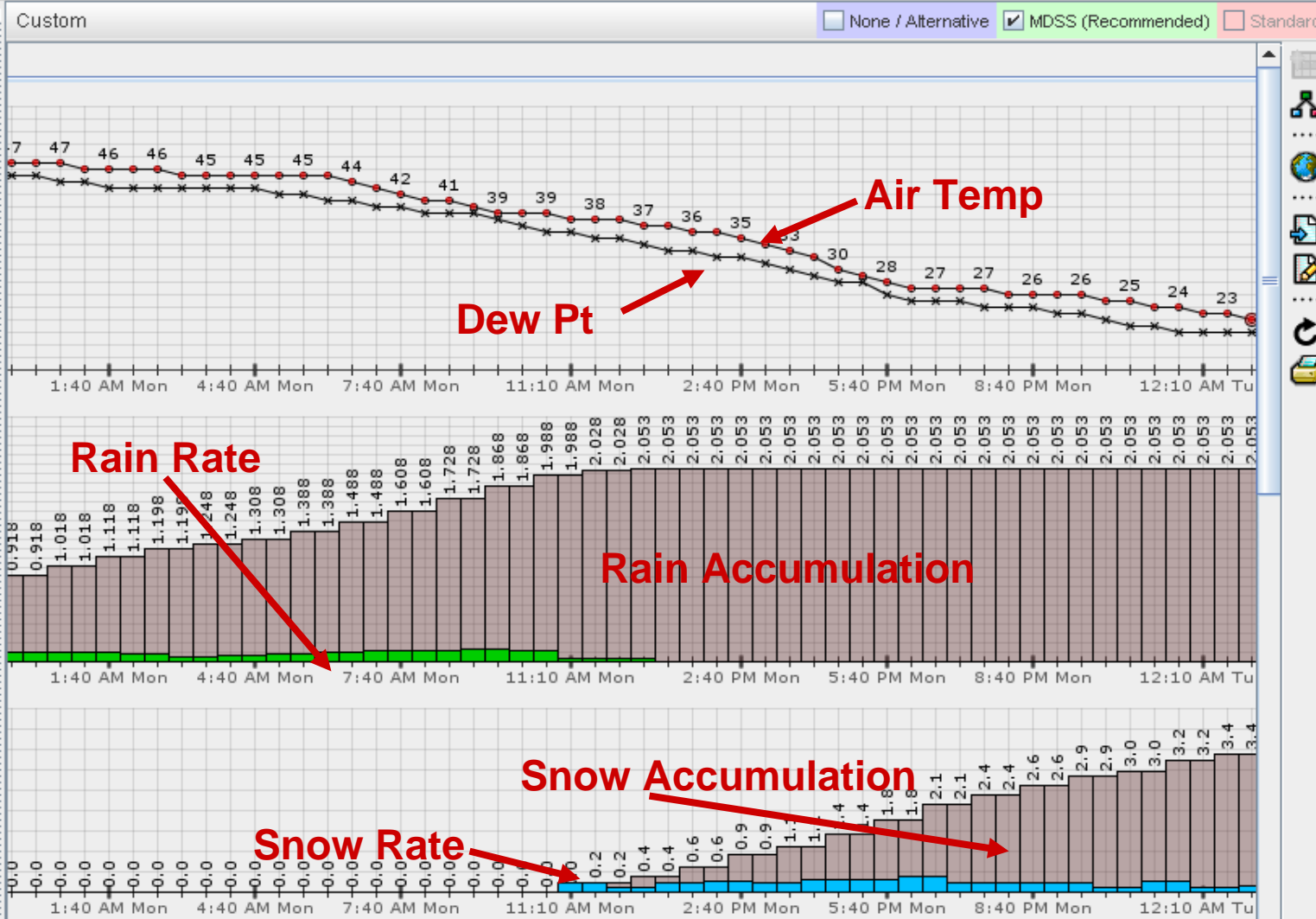
None

RWIS Views

None

Web Browser Links

Last Selected



Meridian MDSS Graphic Route Display

Forecasted Weather Conditions

Meridian MDSS Concept

- Weather creates a contaminant layer on the road surface
- The intent of maintenance is to modify and/or remove this layer in the most effective and efficient manner
- Bottom line is to improve safety and mobility

Contaminant Layer

A layer atop the pavement composed of:

- Snow
- Ice
- Water
- Chemical
- Abrasives
- Miscellaneous other materials





**Meridian MDSS open architecture lays the foundation
for additional maintenance support modules**

Materials Inventory

Equipment Maintenance Management

Personnel Scheduling

Route Optimization

Recommendations for Variable Route Segments

Recommendations for Specific Bridge Structures

Segment Specific Blowing Snow

Recommendations

Future Efforts

Camino will also be marketed for

- Hydrological/Flooding DSS
- Traffic Management DSS
- Construction and Summer Maintenance DSS
- Rail and Transit DSS
- Airport Services DSS



QUESTIONS?



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