WisDOT IC Demo

Brian Lingobardo
Topcon Positioning Systems
Tom Walrath
Positioning Solutions
## Positioning Business Markets

<table>
<thead>
<tr>
<th>Survey</th>
<th>Construction</th>
<th>Agriculture</th>
<th>OEM GPS</th>
<th>Networks</th>
<th>GIS/Mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Survey Image" /></td>
<td><img src="image2.png" alt="Construction Image" /></td>
<td><img src="image3.png" alt="Agriculture Image" /></td>
<td><img src="image4.png" alt="OEM GPS Image" /></td>
<td><img src="image5.png" alt="Networks Image" /></td>
<td><img src="image6.png" alt="GIS/Mapping Image" /></td>
</tr>
<tr>
<td><img src="image1.png" alt="Survey Image" /></td>
<td><img src="image2.png" alt="Construction Image" /></td>
<td><img src="image3.png" alt="Agriculture Image" /></td>
<td><img src="image4.png" alt="OEM GPS Image" /></td>
<td><img src="image5.png" alt="Networks Image" /></td>
<td><img src="image6.png" alt="GIS/Mapping Image" /></td>
</tr>
<tr>
<td><img src="image1.png" alt="Survey Image" /></td>
<td><img src="image2.png" alt="Construction Image" /></td>
<td><img src="image3.png" alt="Agriculture Image" /></td>
<td><img src="image4.png" alt="OEM GPS Image" /></td>
<td><img src="image5.png" alt="Networks Image" /></td>
<td><img src="image6.png" alt="GIS/Mapping Image" /></td>
</tr>
<tr>
<td><img src="image1.png" alt="Survey Image" /></td>
<td><img src="image2.png" alt="Construction Image" /></td>
<td><img src="image3.png" alt="Agriculture Image" /></td>
<td><img src="image4.png" alt="OEM GPS Image" /></td>
<td><img src="image5.png" alt="Networks Image" /></td>
<td><img src="image6.png" alt="GIS/Mapping Image" /></td>
</tr>
</tbody>
</table>
Topcon’s Technology Goals

- Use resources more effectively.
- Improve operator’s performance.
- Bid more competitively.
- Increase production.
- Reduce staking costs.
- Control material costs.
3D-MC Systems

Machine Control Solutions for Every Step of the Project

EXCAVATE 3DXi
ROUGH 3Di
PLACE 3D auto
FINISH 3D millimeter
Mainline Paving Project Timeline...

**Asbuilt**  
Measure Existing

**Analysis**  
Design phase

**Trim / Mill**  
Constant Depth

**Inspection**  
Confirm milling

---

**Paving**  
Multiple Lifts

**Rolling**  
Optimum Density

**Inspection**  
Confirm paving

**Asbuilt**  
Measure Finished
Millimeter GPS+

The versatility of GPS with the accuracy of a laser
Shared Components

GX-60
PZS-MC
MC-R3
mmGPS Profiling
mmGPS Paving
Multiple Applications
“IC” Intelligent Compaction

Asphalt IC Rollers

Ammann/Case

Sakai America

Bomag America

Caterpillar

Dynapac
Intelligent Compaction

A system of hardware, software and analysis equipment installed on a roller that work together to improve the compaction process and to provide innovative tools for compaction acceptance.

Goals:

• Continuous assessment of mechanistic compacted material properties (e.g., stiffness, modulus) through roller vibration monitoring.

• On-the-fly modification (“feedback control”) of vibration amplitude and frequency.

• Integrated global positioning system (GPS) to provide a complete GPS-based record of the compaction site.
GX-60

- Used in 2D & 3D applications
- Touch screen
- Windows XP
- Operator selectable views
• GPS receiver(s) safely inside
• Internal 900Mhz or UHF modem
• Network capable (GPRS or CDMA)
# GPS+ System Comparison

<table>
<thead>
<tr>
<th></th>
<th>GPS</th>
<th>GLONASS</th>
<th>GALILEO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Satellites</strong></td>
<td>24</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td><strong>Frequencies</strong></td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Modernized</strong></td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Code Messages</strong></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Info Messages</strong></td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Sats per Launch</strong></td>
<td>1</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

- Delta 2 Rocket
- Proton K Rocket
- Ariane 5
- Soyuz
Pocket 3D

- Pre-Bid Topo
- Grade Checking
- Collect Points
- Volume Calculations
- Staking
- Locate Utilities (and much more!!)
GR-3 Series

World’s First GPS, Glonass and Galileo rover.

- Completely integrated GNSS receiver
- Integrated Universal Constellation receiver
- Internal TX/RX radio modems
- Internal Bluetooth Wireless Technology
- Dual communications system (radio & cellular)
GRS-1

- First Network Rover
- Lightest weight rover in market
• Instant-On RTK anytime, anywhere within a network.

• No need for base station.

• Uses common, reliable communications.

• Light weight rover.

• Also works with Base Stations, using RS-1 radio.
SiteLINK–3D – Jobsite Setup

SiteLINK Jobsite ➔ Cellular Connection ➔ Cellular Network ➔ Internet Connection ➔ Server ➔ Internet Connection ➔ Customer’s Computer
SiteLINK–3D – Jobsite Setup

Features:

• Remote Machine Troubleshooting
• Remote File Transfer / Messaging / Reporting
• RTK Corrections over SiteLINK or VRS
• Calculated daily productivity including total cut/fill volume and cut/fill area.
• Builds upon existing 3D grade control systems.
Asset Management for Construction
• How efficiently are my assets being utilized?

• Where are they?

• How can improved management of my assets translate to reduced cost and increased productivity?

• How to recover stolen assets

• Scalable solutions from single interface

Topcon Tierra is Asset Management
What can Tierra do for you?

- Security
- Maintenance
- Equipment Utilization
- Job Costing
- Productivity
Works with all on and off road machines
THANK YOU