




Sub-Foot GPS with Trimble H-Star technology



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GIS Trends

- Demand for High Accuracy Enterprise data
- Efficient Asset Management
- Increased Legislative requirements
- More Accurate positioning
- One user- Field to GIS







What is H-Star

- Advanced GPS Receiver
- Sophisticated data logging capabilities
- Innovative post processing






Three essentials of H-Star

1. Quality GPS data and equipment
2. PPA- driven workflow
3. H-Star Postprocessing



1. Quality GPS data and equipment

- Receiver and Antenna are critical
 - Multipath
 - Right hand circular polarized (RHCP)
 - LHCP
 - Everest rejection
 - L1/L2 Zephyr



1. Quality GPS equipment



2. PPA- driven workflow

- Predicted Postprocessed Accuracy
- Key to H-Star
- Antenna Type
- Confidence



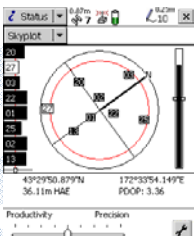
- Satellite Geometry
- Duration of Lock
- Good Base stations available

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Field Software

TerraSync



GPSCorrect for ArcPad



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H-Star satellite needs



- Continuous lock on minimum number satellites
- Four+ Static
- Five+ Dynamic
- Without interruption

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Data collection practices



- Log data until PPA reaches required accuracy
- If you want 20cm, remain at the feature until PPA shows 20cm
- If lock is lost, start over



Maximize productivity

- Work in an open environment
- Collect series of features
- Keep satellite lock
- PPA will back calculate positions



3. H-Star Postprocessing

Select Base Provider

Provider	Distance	Integrity Index
CORS, Milwaukee 1, WI	10 mi	73.17
CORS, Lake County DT, IL	40 mi	79.57
COOP_CORS, Rock River, IL	65 mi	73.97
COOP_CORS, Elmhurst, IL	67 mi	81.54
COOP_CORS, DuPage, IL	70 mi	82.10
City of Madison Engineering Division	72 mi	?
COOP_CORS, Downer's Grove IL	74 mi	81.76

Show Integrity Index of Type:

Show Base Providers of Type:

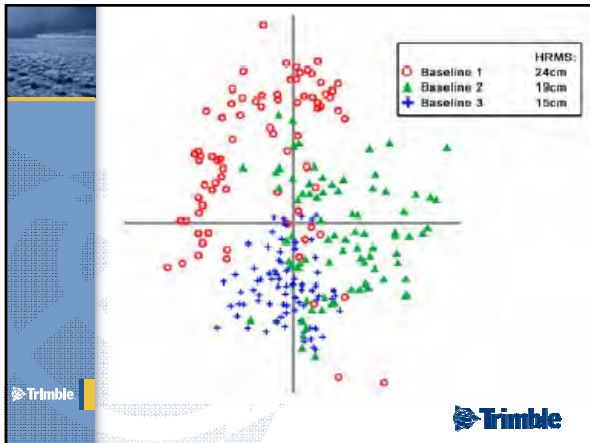
Base Provider

Selecting Reference Stations

- Choose close to worksite
- Use of Averaging
- More is not always better
- Evenly distributed
- High Reference Station Integrity Index
 - Continuously recalculated
 - 0-100
 - Quality of data
 - Higher better
 - Bias, precision, reliability, baseline distance

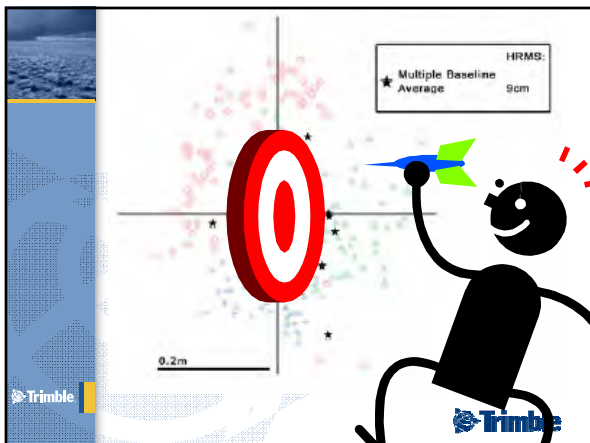
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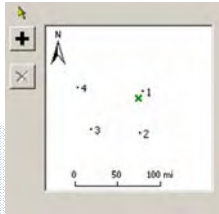


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Optimal Results

- Three well distributed reference stations
- Single reliable reference station within 20 -30km



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Selecting the right base/s

Base Provider Group

Base Provider Group: Franklin

New... Delete

#	Provider	Distance	Integrity Index
1	CORS, Milwaukee 1, WI	10 mi	86.01
2	CORS, Lake County DT, IL	40 mi	86.83
3	COOP_CORS, Rock River, IL	65 mi	87.63
4	City of Madison Engineering Division	72 mi	87.74

Show Integrity Index of Type: Code

Help OK Cancel

A map showing four reference stations labeled 1, 2, 3, and 4. Station 1 is highlighted in green. A scale bar indicates 0, 50, and 100 miles. A north arrow is present.

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Coordinate Systems and Datums

- Don't mix and match
- Know your reference station
- North American Datum 1983 (1991 adjustment) NAD83(91)
- International Terrestrial Reference Frame 2000 (ITRF00)



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Review



Three essentials of H-Star

1. Quality GPS data and equipment
2. PPA- driven workflow
3. H-Star Postprocessing





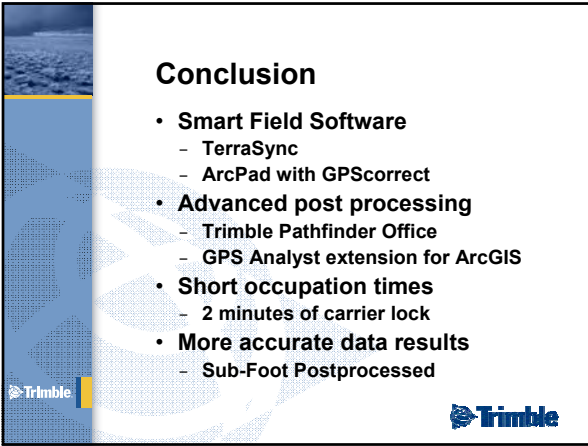
High Accuracy Alternatives

- H- Star GPS systems
 - Provides higher accuracy to meet demands
 - One user- Field to GIS
- Survey Grade GPS Systems
 - Centimeter accuracy
 - More accurate than any GIS collection tool
 - Real time answers
 - Costs more



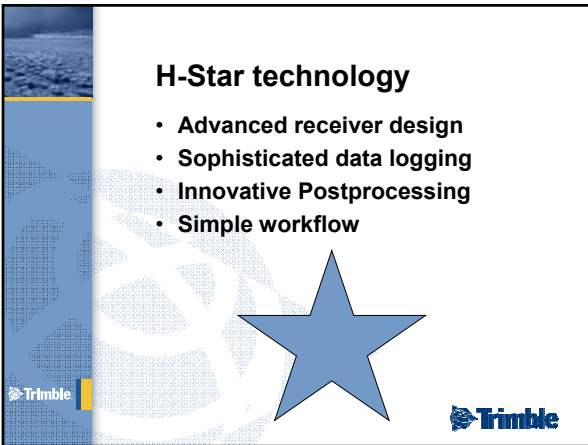
Demonstration





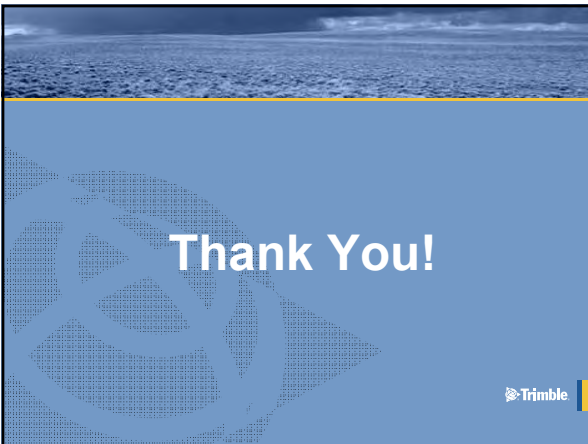
Conclusion

- **Smart Field Software**
 - TerraSync
 - ArcPad with GPSCorrect
- **Advanced post processing**
 - Trimble Pathfinder Office
 - GPS Analyst extension for ArcGIS
- **Short occupation times**
 - 2 minutes of carrier lock
- **More accurate data results**
 - Sub-Foot Postprocessed



H-Star technology

- **Advanced receiver design**
- **Sophisticated data logging**
- **Innovative Postprocessing**
- **Simple workflow**



Thank You!
