

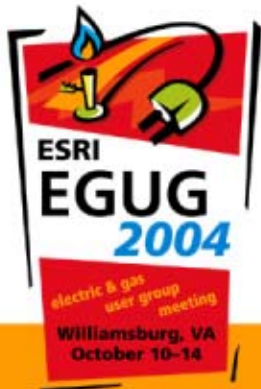
Arming Your Field Forces

Give away your measuring wheel – GPS rules rural line design

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www.gsiworks.com

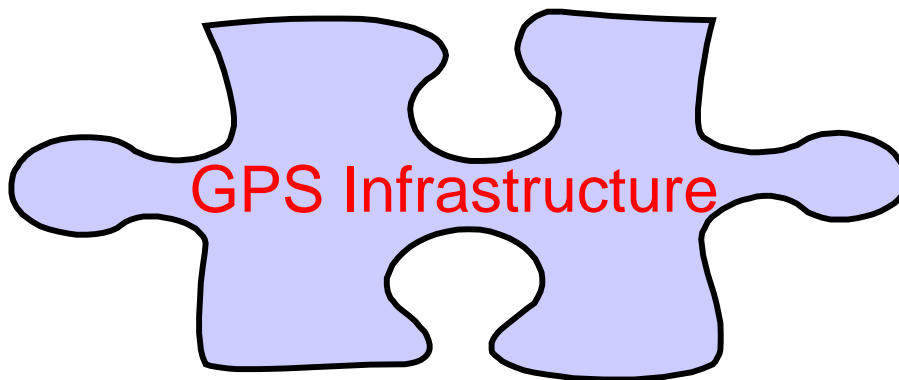


Audience Experience

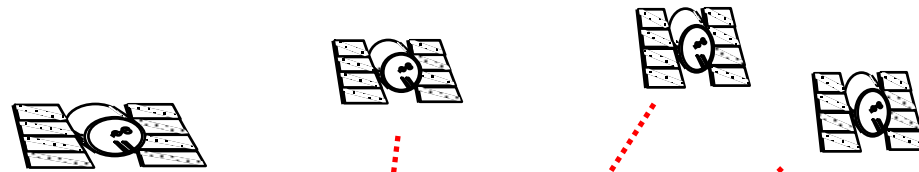
- Update or manage GIS
- Design rural line extensions
- Supervise rural line design
- Use GPS for fun
- Capture GPS during pole inventory
- Design rural lines using GPS
- Manage vehicles with GPS (AVL)
- Survey with GPS



Use “Free” Technology



Review GPS Fundamentals



Global Positioning System

GPS gives you a coordinate in World

Global System:

•Longitude

•Latitude

•Height Above Ellipsoid

1. Trilateration using speed of light

2. Very accurate clocks

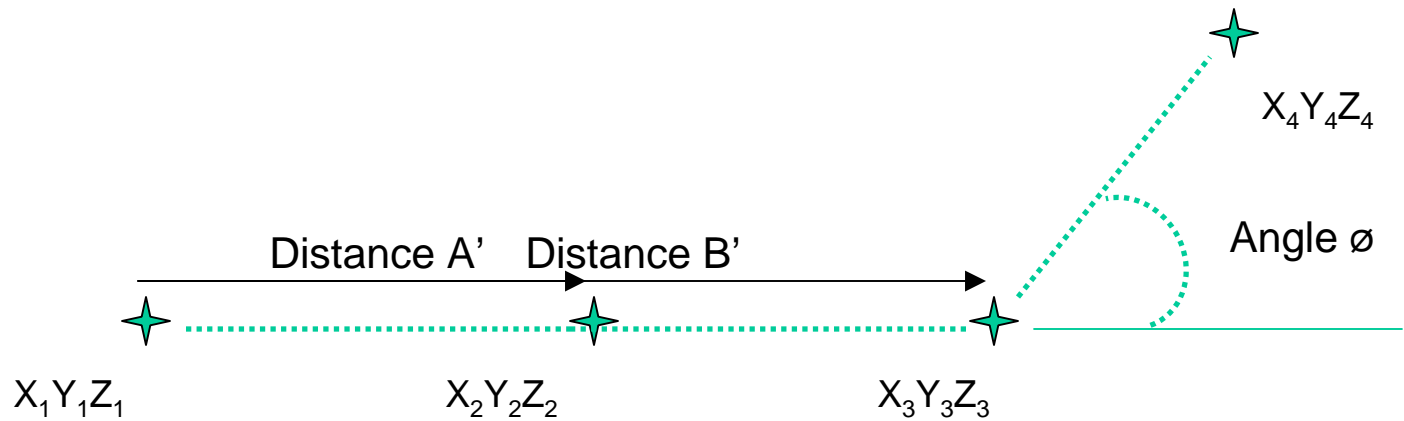
3. Ephemeris of satellites

WGS coordinates can be converted to local coordinate system = X, Y, Z

5. Differential correction



Measure Distances and Angles

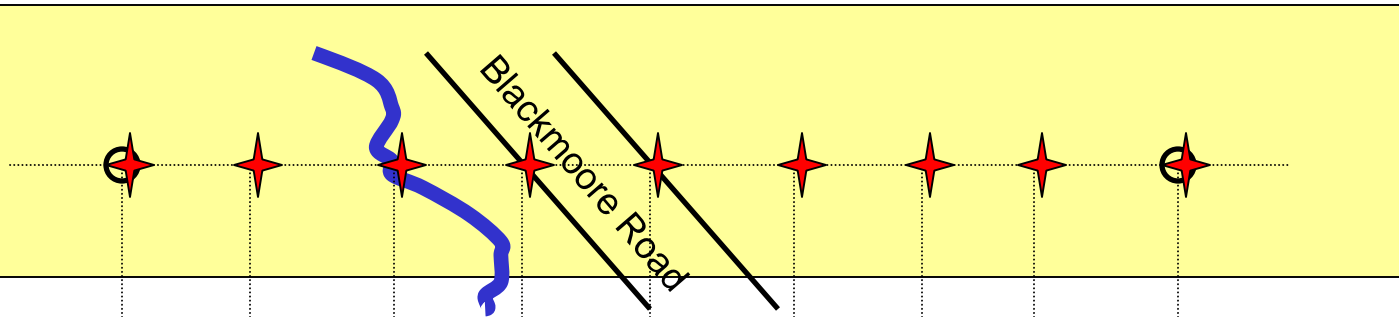


So by capturing GPS coordinates, we can calculate horizontal distances, angles between lines, and elevations...

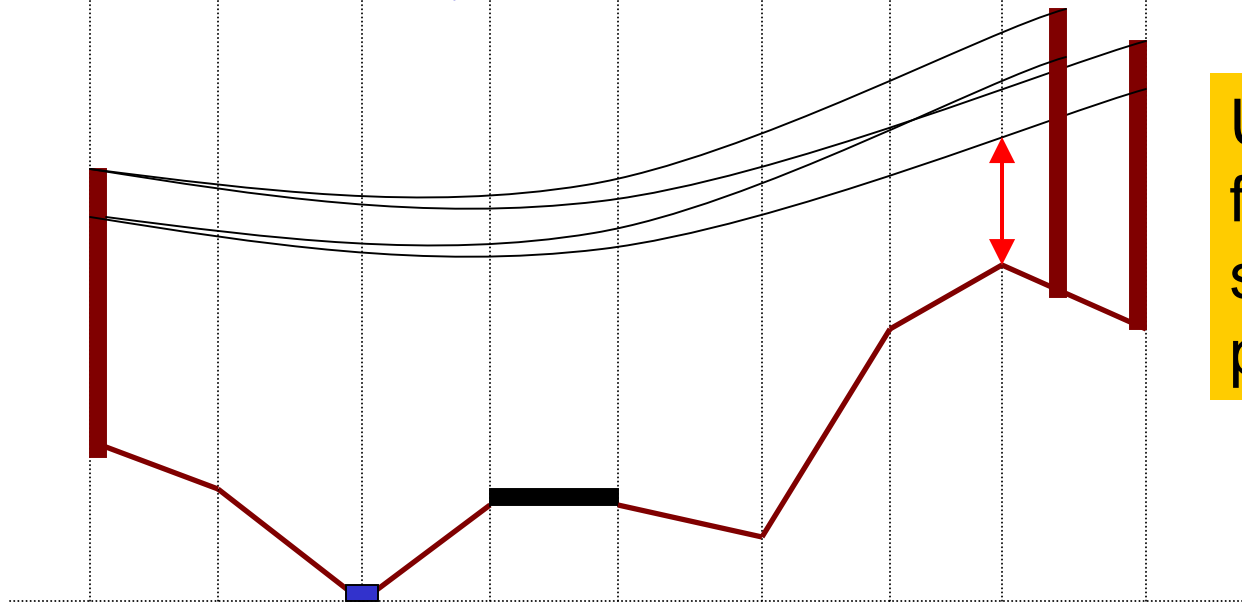


Capture Elevation Data

Plan View



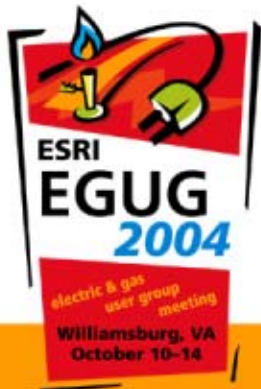
Profile View



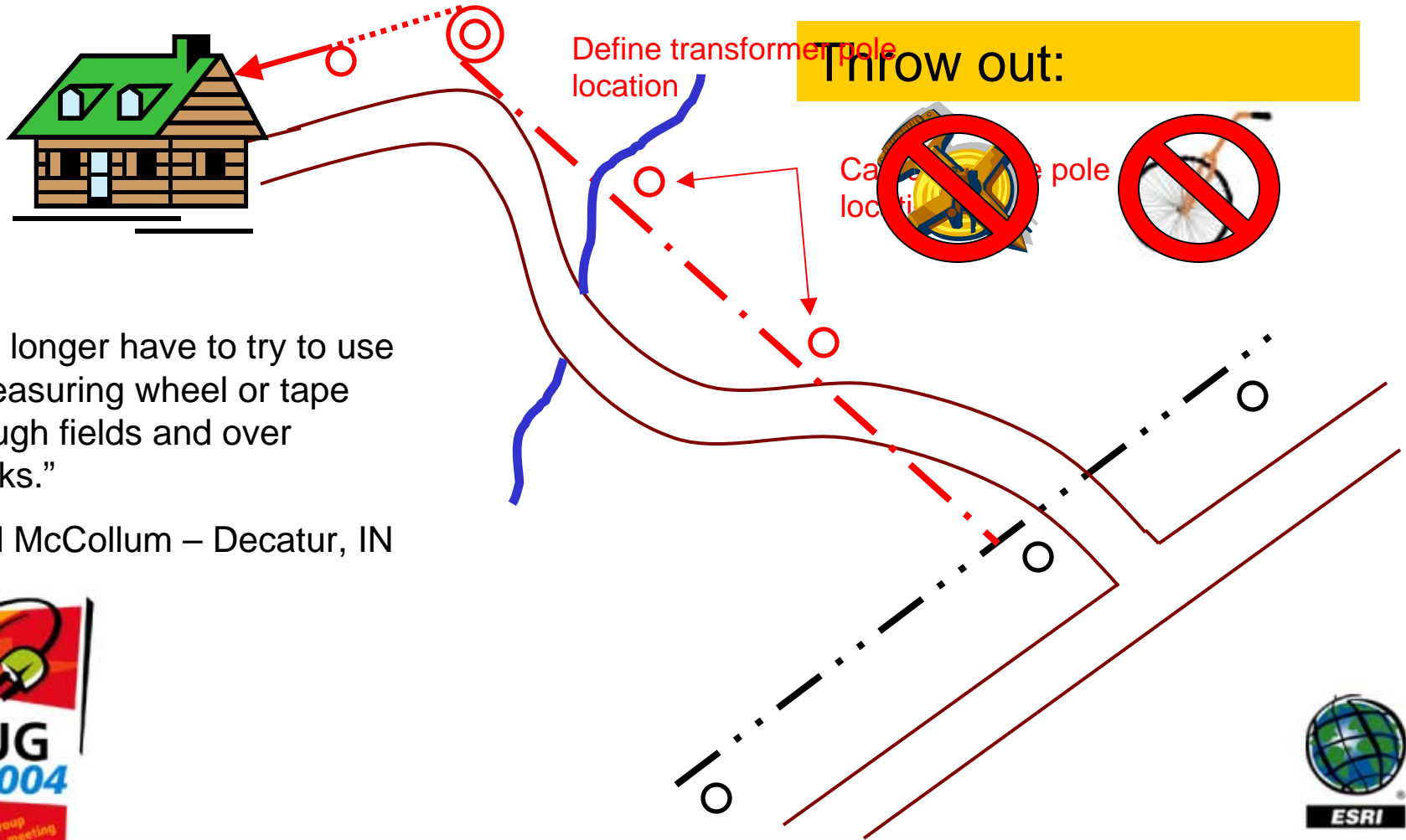
Use fewer & smaller poles



Define the Line Design Process



Layout Overhead Lines

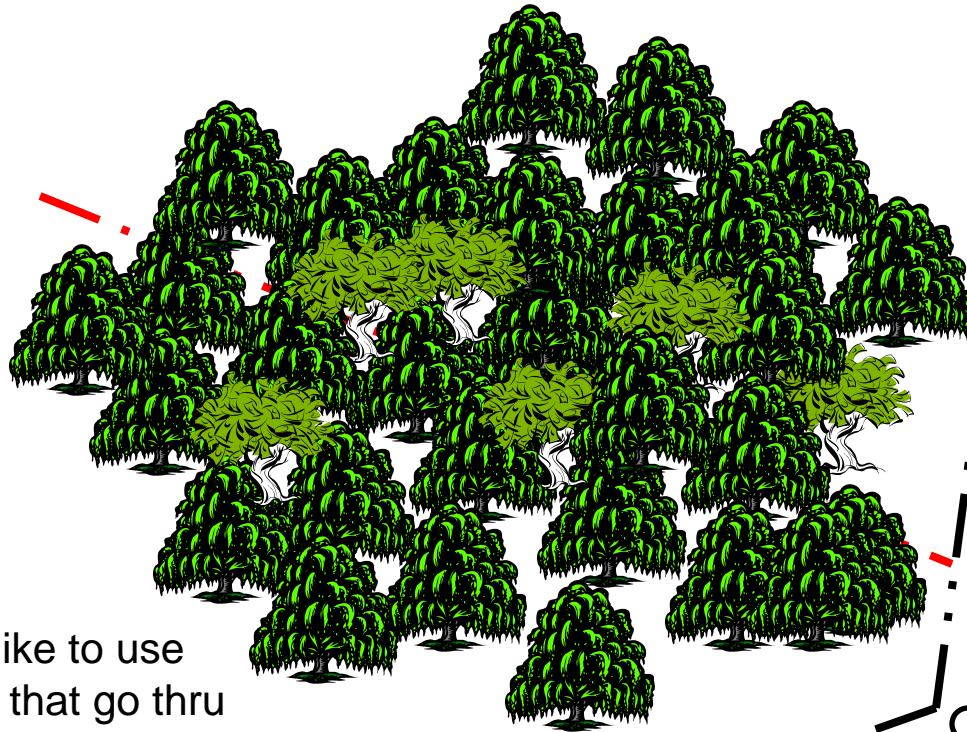


“I no longer have to try to use a measuring wheel or tape through fields and over creeks.”

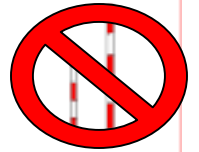
Brad McCollum – Decatur, IN



Avoid Brush Clearing



Throw out:



ESRI

“I especially like to use GPS on taps that go thru a grove of trees where you can't see very well.”

Jeff Jones – Kingsport, TN



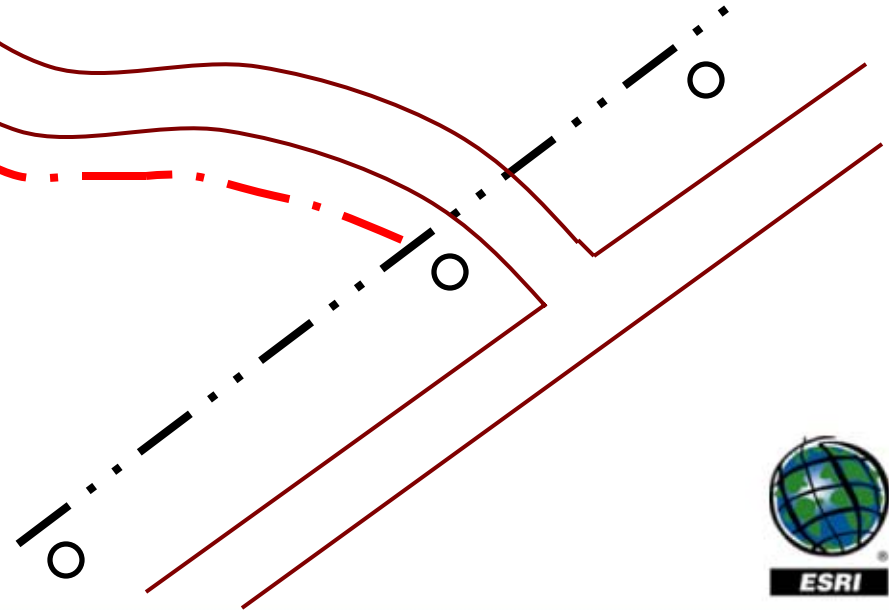
Underground Line Extensions



“I like staking UG jobs with GPS because you can get a better detail on the route the cable takes.”

Jeff Jones – Kingsport, TN

You don't need to send the “mapping people” to capture the line route



Locate Nearest Facilities

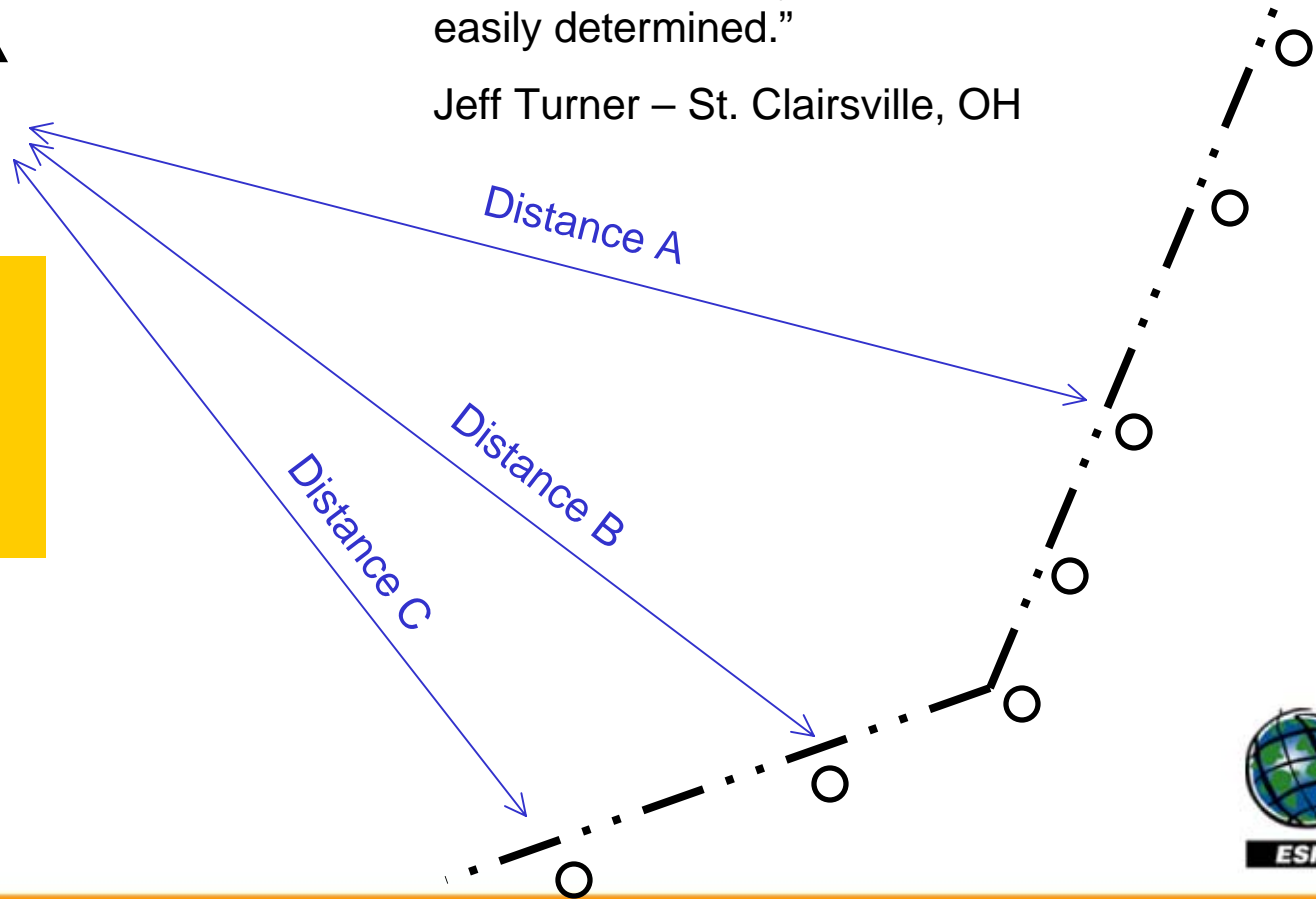


"I use GPS to locate our nearest facilities which may not be visible or easily determined."

Jeff Turner – St. Clairsville, OH

Shortest Path means:

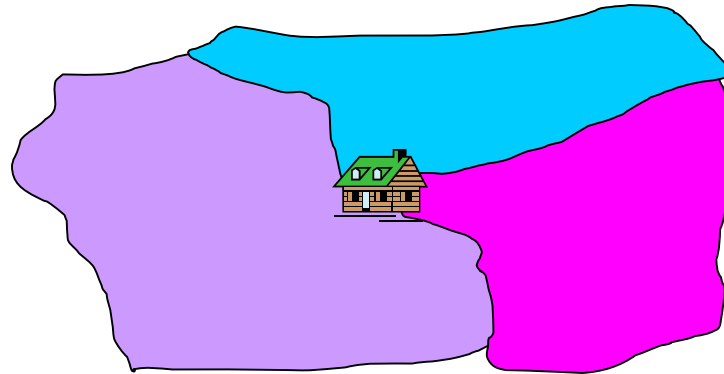
- Less materials
- Less tree trimming
- Less labor



Identify Service Territory

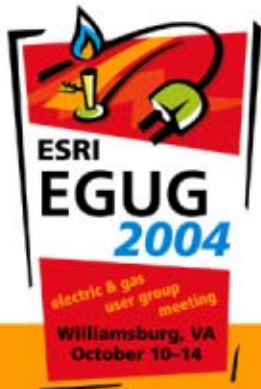
“Service territory boundary lines are tied to landmarks that aren’t easily found in the field. With GPS you can easily set a point at the house site, then go to the maps and check out if the site is ours or not. This has cut the time on this job by several hours.”

Gary Hall - Athens, OH

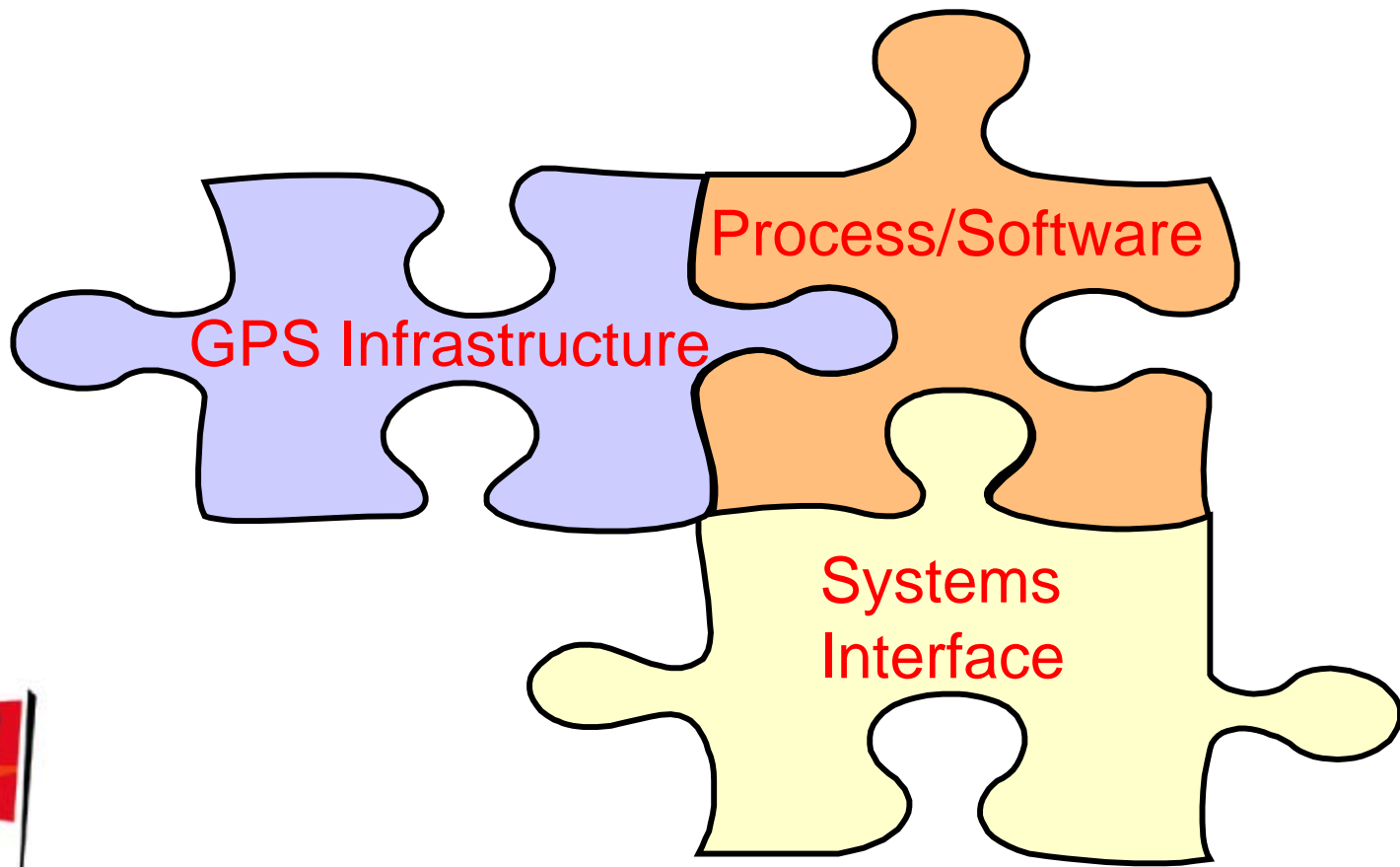


“There are several co-ops, municipals, and other utilities serving adjacent territories. [GPS] is recognized as the preferred method for determining the customer’s exact location and to settle any disputes regarding boundaries.”

Jeff Turner – St. Clairsville, OH

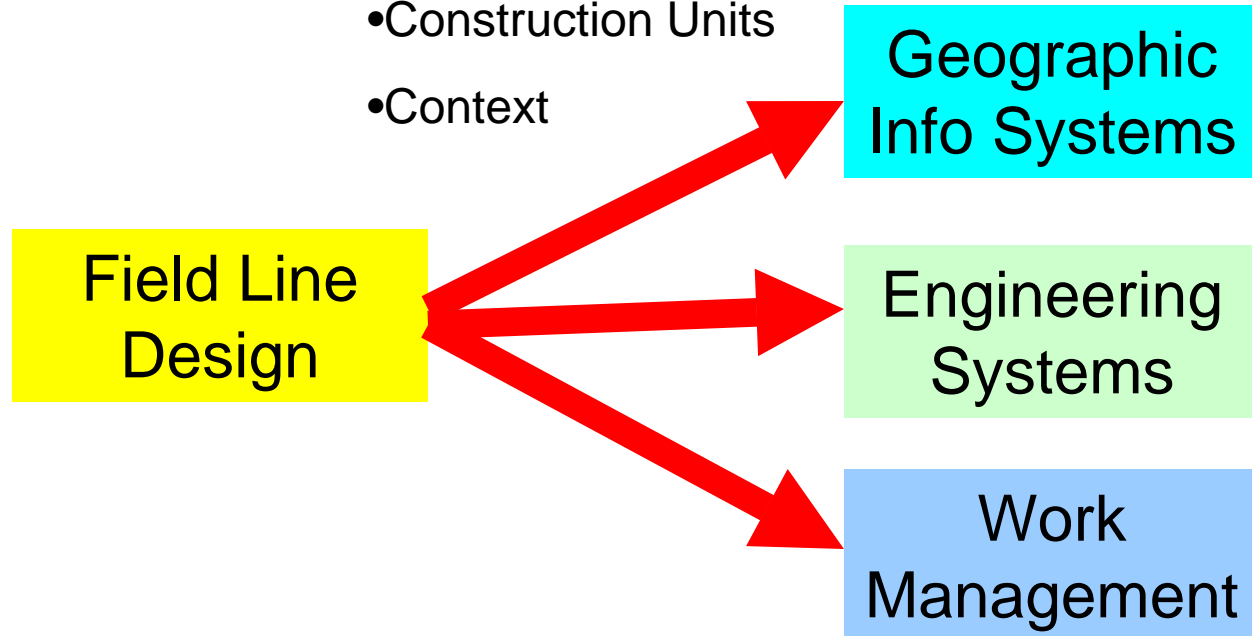


Eliminate Redundant Data Entry



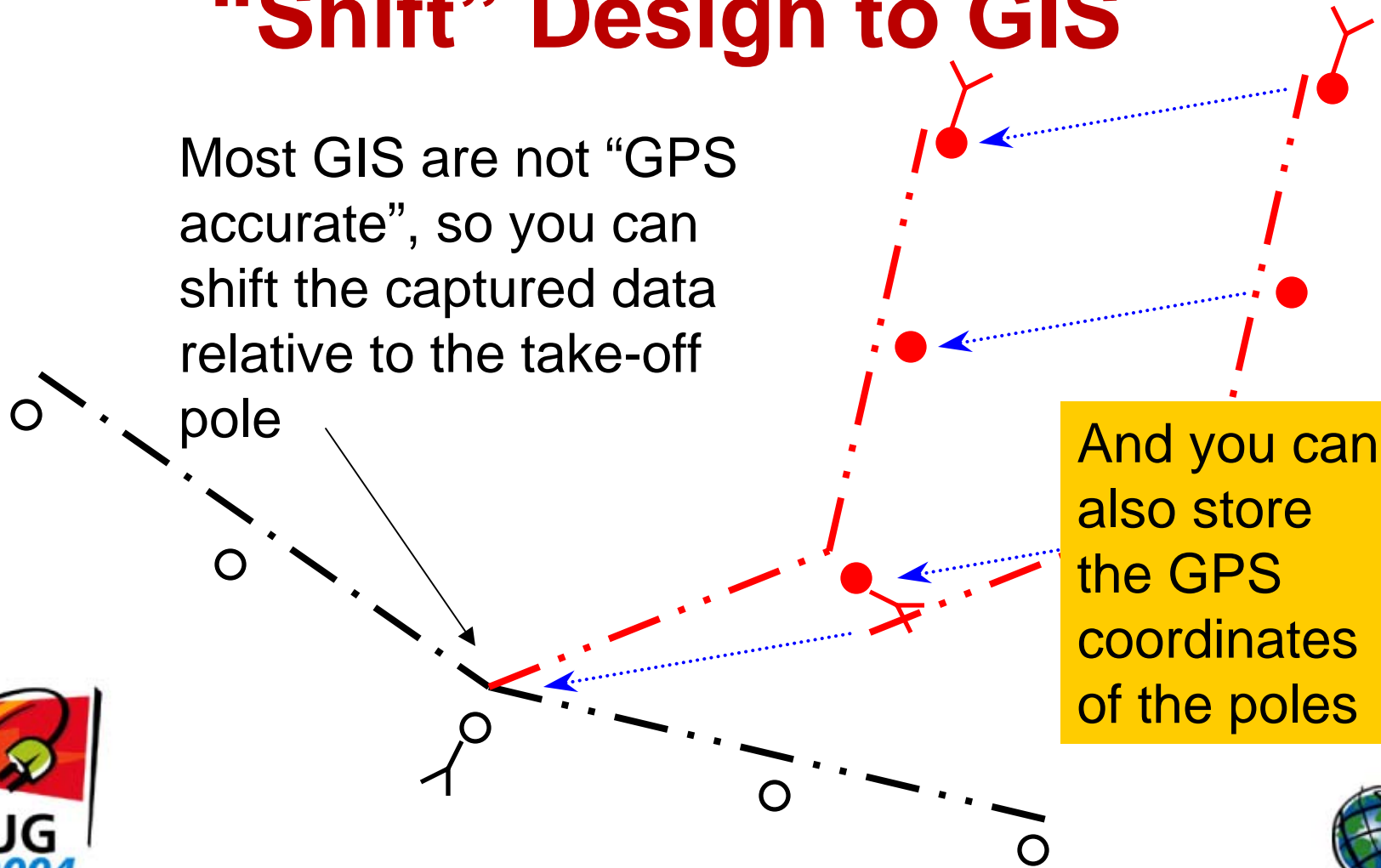
Streamline Data Entry

- Coordinates
- Construction Units
- Context

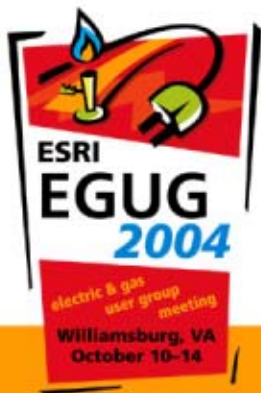
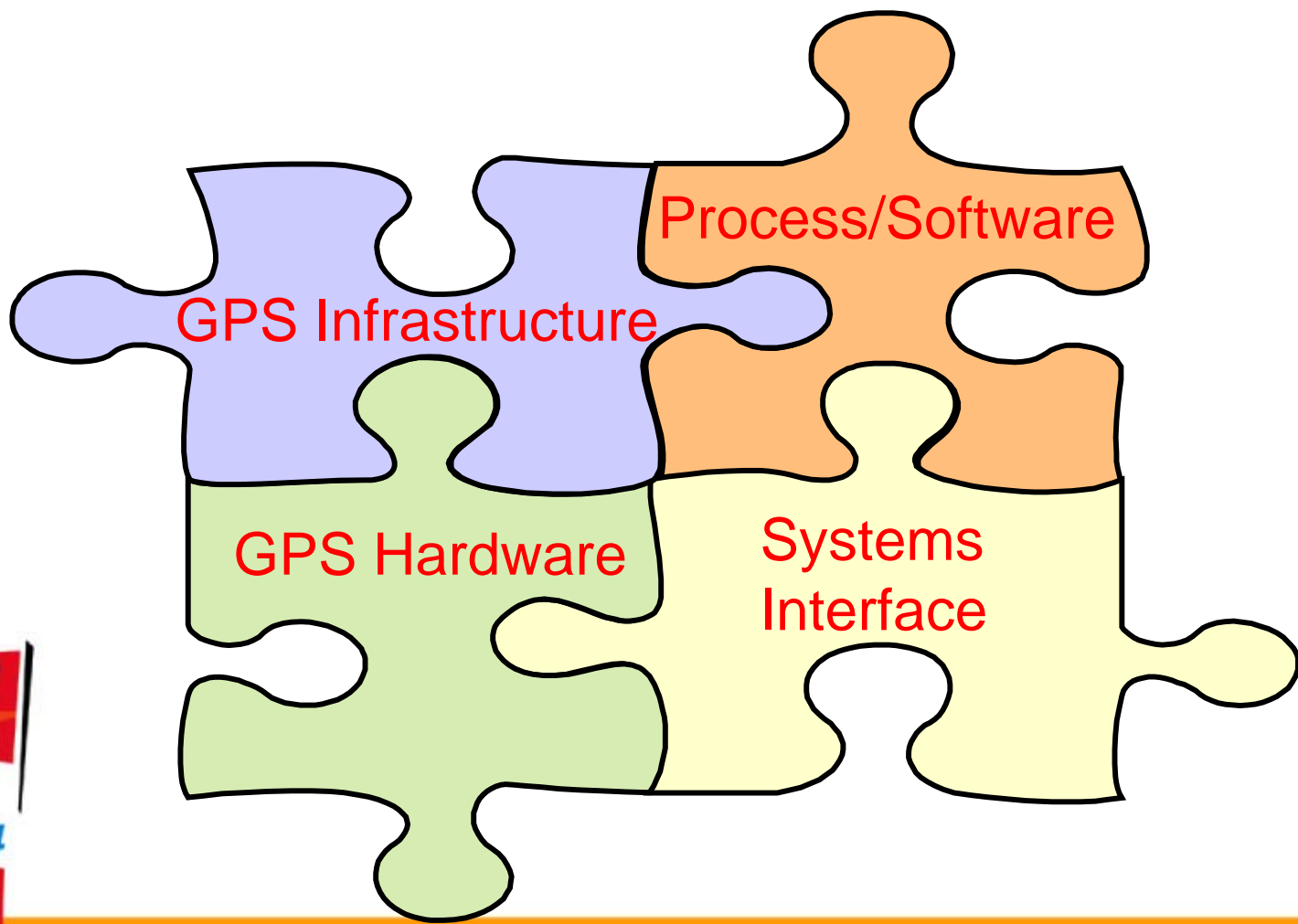


“Shift” Design to GIS

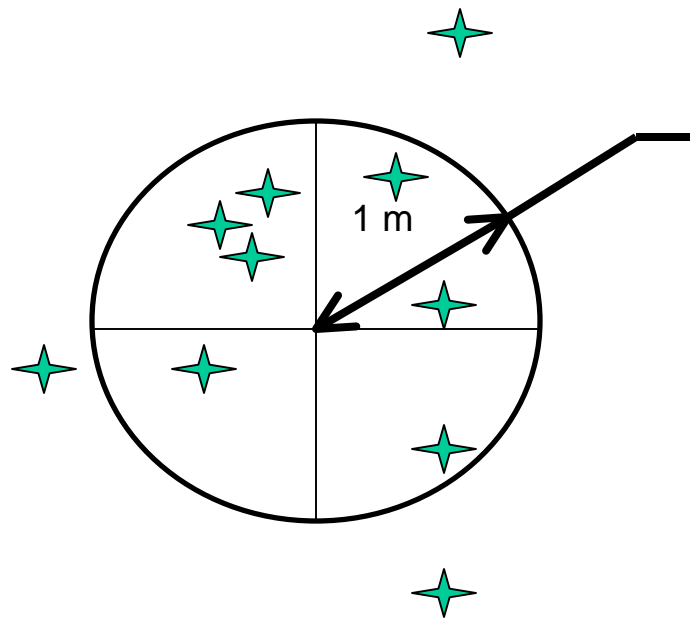
Most GIS are not “GPS accurate”, so you can shift the captured data relative to the take-off pole



Match Hardware with Task



Understand “GPS Accuracy”

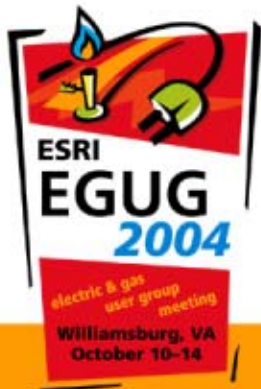
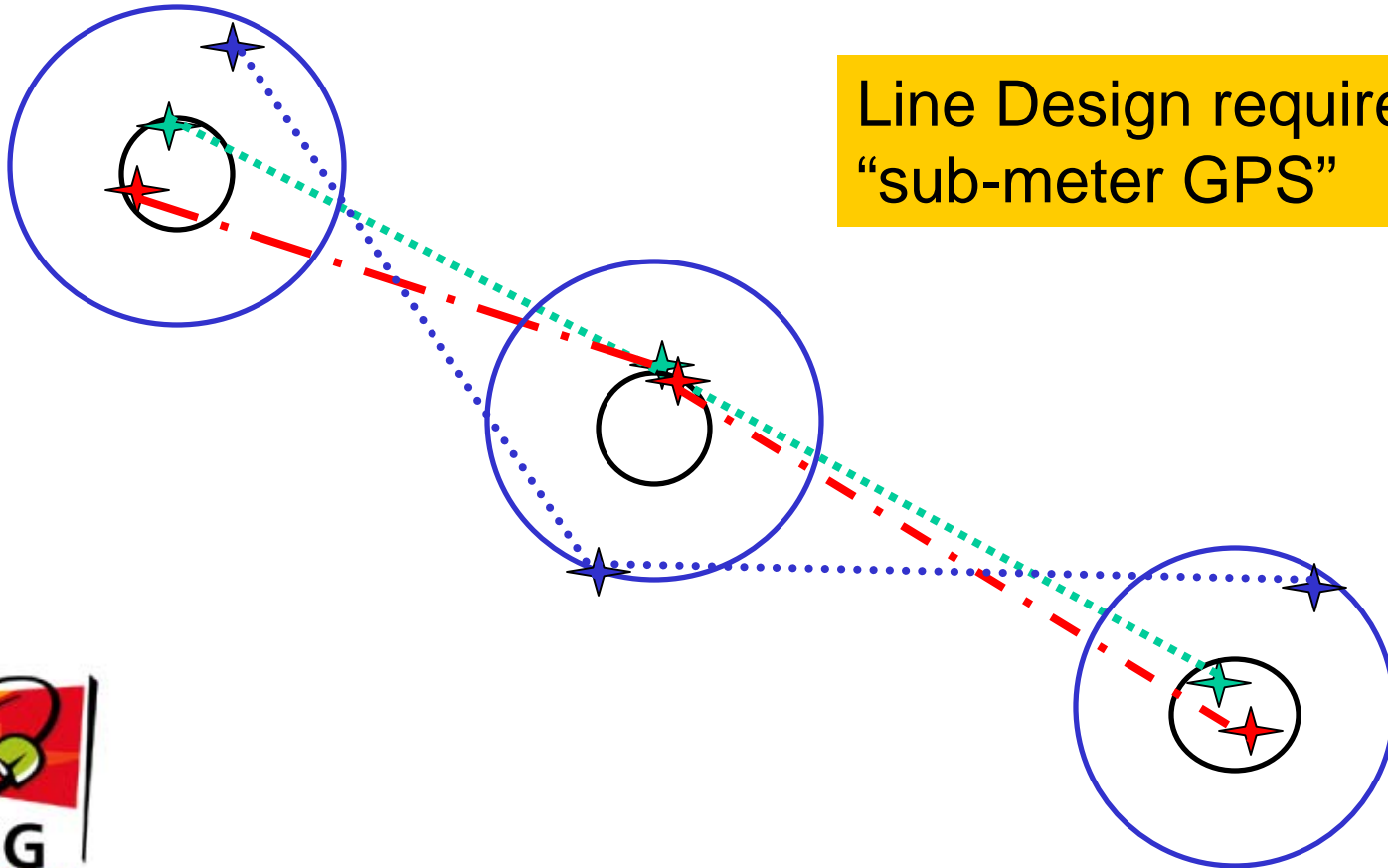


GPS quoted accuracy is 68% of time inside horizontal range (in good conditions)

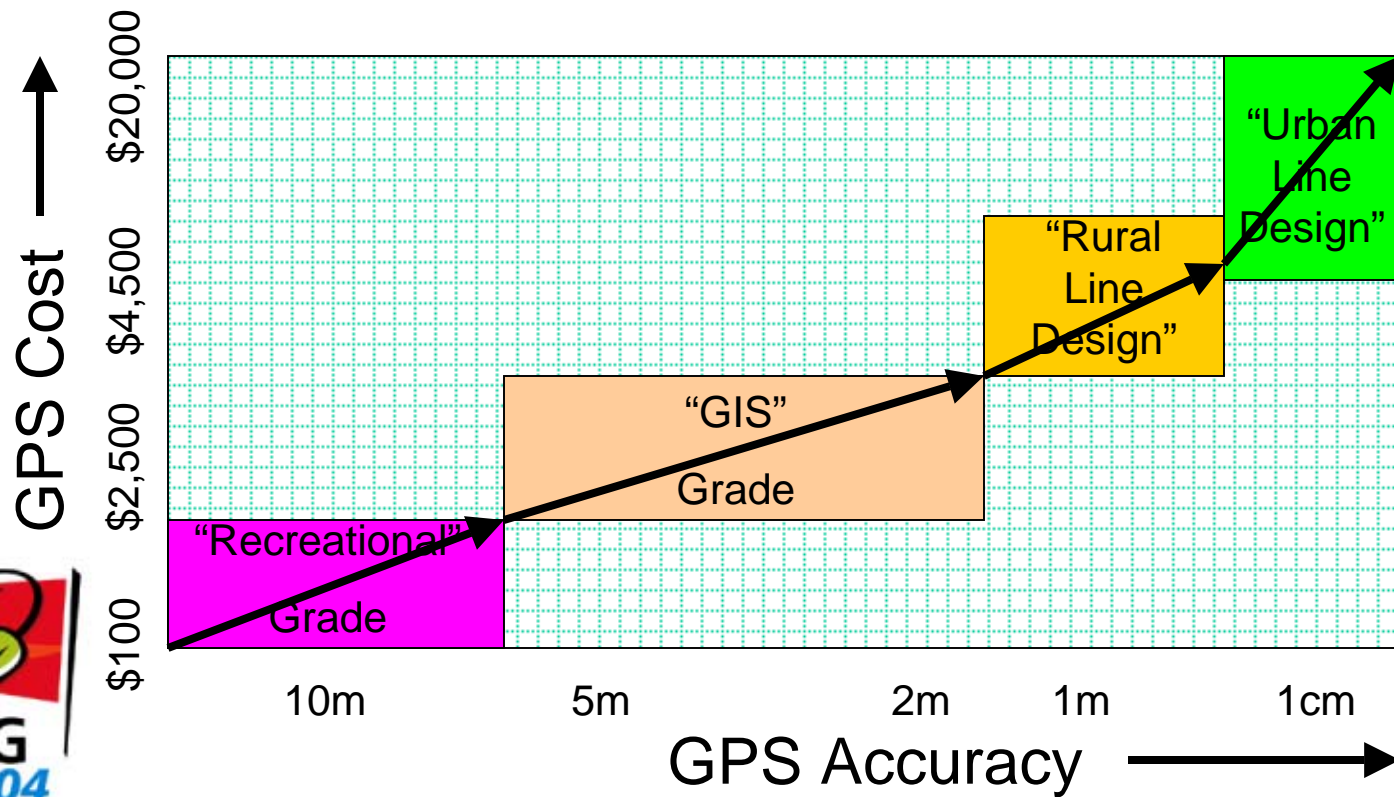


Choose Sub-meter Accuracy

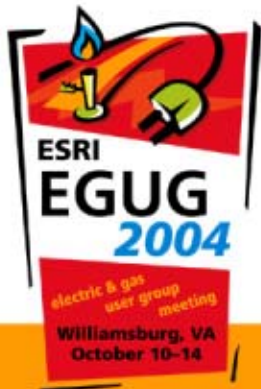
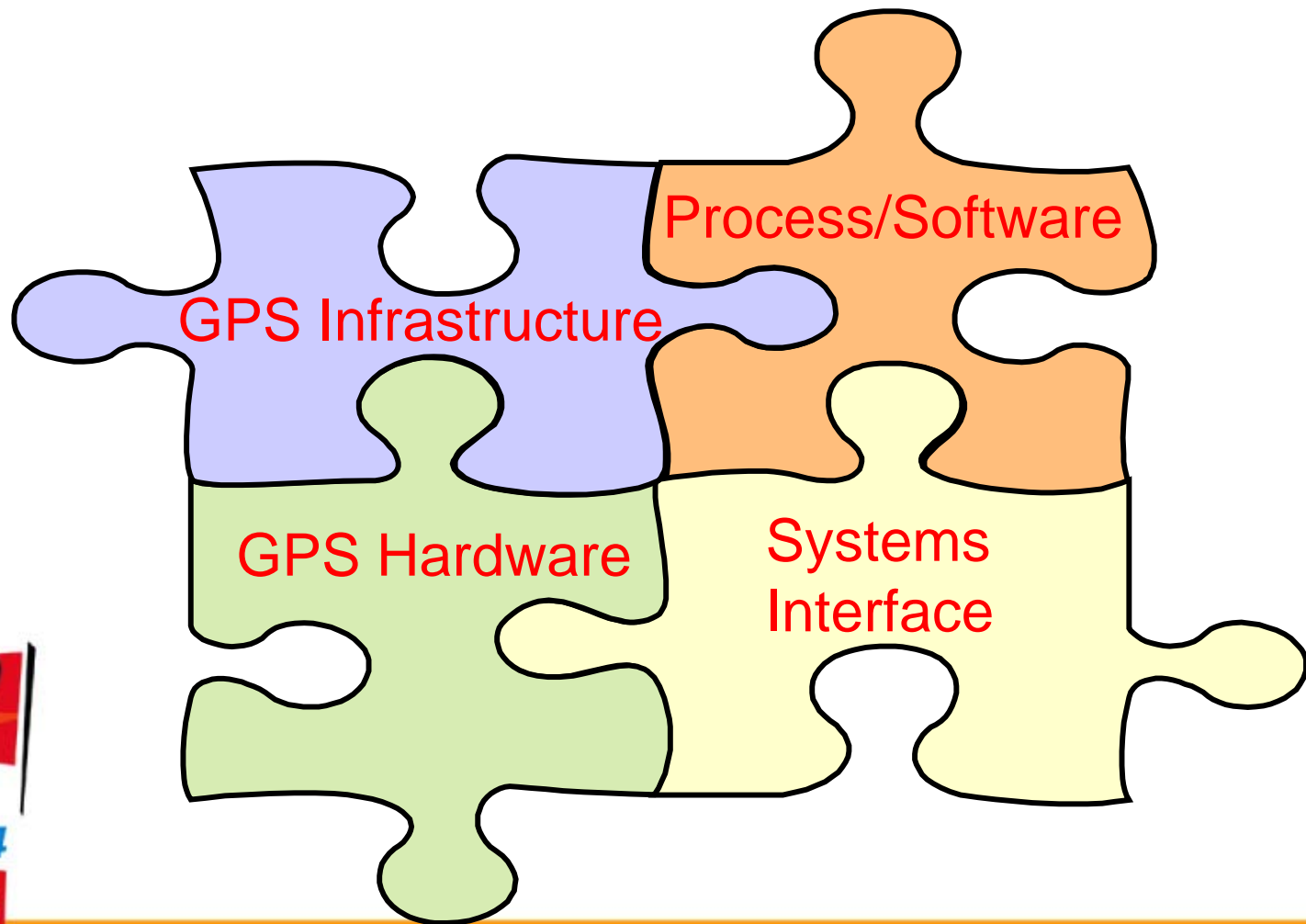
Line Design requires
“sub-meter GPS”



Cost vs. Accuracy



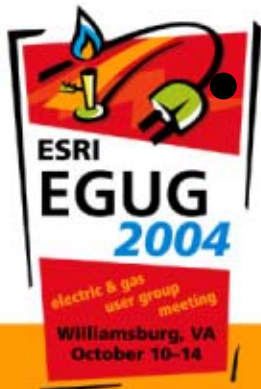
View GPS as a System



Reinforce Key Concepts

- Software must support the line design business process
- Rural line design requires sub-meter GPS that is convenient and rugged
- Efficient systems interfaces eliminate redundant data entry

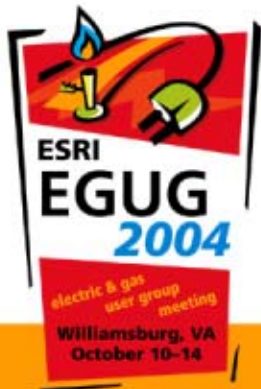
GPS is a system, not an “add-on”



Summarize GPS Benefits



- Faster (and safer) capture of design data
- More accurate positional and elevation data
- Eliminate redundant data entry
- Reduce material and labor requirements for construction



Questions and Comments

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