Introduction

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Notes

• These notes are intended to complement the presentation.

• The presentation itself is a live demonstration of Google Earth.

• Slides and examples available at www.earthpoint.us/plso.aspx
Topics

• Getting started with Google Earth
• Township and Range Grid on Google Earth
• Texas Survey System on Google Earth
• USGS topo maps on Google Earth
• Calculate Polygon Area and Perimeter, and Line length and midpoint
• Map Excel Data
• Convert Coordinates (lat/long, state plane, PLSS, UTM, US National Grid)
Install Google Earth

• Install page is earth.google.com
• Google Chrome is also installed unless you request otherwise.
• Make sure you have “admin” rights to your computer, or find someone who does. Otherwise, you might have trouble opening Google Earth files.
Getting Started

• Daily reading
  – Google Earth Blog at www.gearthblog.com

• Learning
  – Search Google for tutorials
  – Search YouTube for tutorials

• Contact Earth Point
  – bill.clark@earthpoint.us
Google Earth Settings - Tour Guide

• From the Google Earth menu, select “View”, then uncheck “Tour Guide”. This removes the strip of photos across the bottom of the screen.
Google Earth Settings – Options Menu

• From the Google Earth menu, select “Tools”, “Options”. A busy screen appears.

• Note the tabs across the top.
Google Earth – 3D View Tab

• Midway down on the left side is a the “Show Lat/Long” box. Select as desired. These options format the display of coordinates on Google Earth.

• To the right is the “Units of Measurement”. Select as desired. Formats the display of elevation on Google Earth.
Google Earth – Navigation Tab

• Midway down on the right side is the “Navigation” box.
• Select the first option “Do not automatically tilt while zooming”.
• Uncheck the last option “Gradually slow the Earth while rotating or zooming”.
• Midway down on the left side is the option “Invert mouse wheel zoom direction”. I have this checked. To me the mouse wheel zoom is backwards with out it.
Google Earth – General Tab

• In the upper left corner is the “Display” box.
• Make sure “Show web results in external browser” is checked.
Google Earth – Save Options

• Click the “OK” button to save the options.
Google Earth – Layers

• Layers are shown in the lower left corner of Google Earth.

• If there are no windows on the left side of the Google Earth screen, select “View”, “Layers” from the Google Earth menu.
Google Earth – Layers

• The only layers I have checked are “Borders and Labels” and “Roads”. The rest are turned off as they clutter the screen.

• Also, drill into “Borders and Labels”, then into “Labels”. Uncheck “Islands” and “Geographic Features” as these can also clutter the screen.
The Basics

• Moving around – tilt, zoom, keyboard, mouse, press the “R” key to reset north up
• Fly To – lat/long or address
• Places – a folders view of the files you have loaded in Google Earth
• Layers - roads, photos, Google Earth Community
• Street View
Adding Content

• Add a folder.
• Plot locations, polygons, lines, and paths.
• Use Image Overlays to place scanned plat maps and enhanced areal imagery onto Google Earth
• Quick view of KML
Earth Point

- Provides several tools for Google Earth.
- Some have limits if the user has no subscription.
- This is a non-commercial presentation, free subscriptions are available to any class participant. Send a request to bill.clark@earthpoint.us
Earth Point Features

• View Township and Range Grid on Google Earth
• View Texas survey on Google Earth
• View USGS topo maps on Google Earth.
• Map spreadsheet data onto Google Earth using lat/long, state plane, UTM, and PLSS coordinates
• Convert coordinates from one system to another, for example UTM to State Plane, or State Plane to lat/long
• Calculate Polygon area and perimeter
Sign into your account

• Most features work better if you are signed into your account.
• A test account is available for today’s session.
• Go to www.earthpoint.us
• Towards the upper left corner, click the “Sign In” link.
• User name is plso15
• Password is plso15
Earth Point PLSO demo account

• This account will expire in a few days, at which time any links you have loaded into Google Earth will start displaying pop-up messages.
• If this happens, delete the link from Google Earth and get your free account.
• Contact bill.clark@earthpoint.us
Township and Range Data

• Data is sourced from the BLM “Geocommunicator” service

  http://www.geocommunicator.gov/GeoComm/

• The data is extensively processed and cleaned up by Earth Point for display on Google Earth.

• There are approximately
  – 85,000 townships
  – 3,000,000 sections
  – 21,000,000 quarter-quarters
Township and Range Grid

• Go to the Earth Point Township and Range page at [www.earthpoint.us/townships.aspx](www.earthpoint.us/townships.aspx)
• Make sure you are signed into your account.
• If no account, a pop-up message is displayed every ten minutes.
• Click the “View On Google Earth” button, under the heading “BLM Township, Range, and Section”
• If prompted, “Open” the file.
Township and Range Grid

- The file opens in Google Earth.
- Zoom into a western State.
- Township lines are orange, sections are purple, quarter-quarters are green.
- Mouse-over an icon to see the name.
- Click on the icon to see the details, such as area and corners.
Township and Range Grid

• To save the file permanently in Google Earth
  – Right click the “Earth Point Townships” folder
  – Select “Save to My Places” from the pop-up menu.

• The grid can be turned on and off by clicking
  the check-box to the left of the “Earth Point Townships” folder name.
Township and Range Lookup

• Go to the Township and Range page at www.earthpoint.us/townships.aspx
• No account is needed.
• Scroll down to “Convert Township and Range to Latitude and Longitude”
• Use the drop-down boxes to enter the township and range description.
• Click the “Fly To On Google Earth” button.
Texas Land Survey

- Texas does not use township and range.
- Texas has its own system.
- The data is available from the Texas Railroad Commission at [http://www.rrc.state.tx.us/data/online/gis/index.php](http://www.rrc.state.tx.us/data/online/gis/index.php)
- Earth Point grid is just like Township and Range, except the web page is [www.earthpoint.us/TexasLandSurvey.aspx](http://www.earthpoint.us/TexasLandSurvey.aspx)
USGS Topo Map

• Resulting from research program by the USGS and Microsoft Corporation, now hosted by ESRI.
• Earth Point wires the ESRI map into Google Earth.
• An Earth Point account is not needed.
• To get the map, go to www.earthpoint.us/topomap.aspx
• Use the transparency slider at the bottom of the Google Earth “Places” window to adjust the topo transparency.
Polygon Area

- Add a folder to Google Earth.
- Add a polygon to the folder.
- Right click the polygon or the folder.
- Select “Copy” from the pop-up menu.
- Go to [www.earthpoint.us/Shapes.aspx](http://www.earthpoint.us/Shapes.aspx)
- Paste the polygon into the web page.
- Results can be displayed on the web page or returned in an Excel file.
Map Spreadsheet Data onto Google Earth

• The Earth Point “Excel To KML” utility maps spreadsheet data onto Google Earth.

• Several coordinate systems are supported
  – Latitude/Longitude
  – State Plane
  – UTM
  – MGRS, USNG
  – Township and Range (maps centroids)
Example Data

• Sample data for this example available at

www.earthpoint.us/plso.aspx
Prepare Spreadsheet

• Prepare a spreadsheet of data.
• At a minimum, need latitude and longitude, or any of UTM, MGRS, PLSS, or state plane.
• Can also specify icons, text, pop-up descriptions, connecting paths, and more.
• Sample sheets are available at www.earthpoint.us/ExcelToKml.aspx
Sample Spreadsheet

• Latitude, Longitude

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Latitude</td>
<td>Longitude</td>
<td>Name</td>
<td>Icon</td>
</tr>
<tr>
<td>2</td>
<td>44.938767°</td>
<td>-123.040555°</td>
<td>Grand Hotel</td>
<td>Site of 2011 PLSO conference</td>
</tr>
</tbody>
</table>
## Sample Spreadsheet

- **Position**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Position</td>
<td>Name</td>
<td>Description</td>
<td>Icon</td>
</tr>
<tr>
<td>2</td>
<td>10T 496800mE 4976149mN</td>
<td>Grand Hotel</td>
<td>Site of 2011 PLSO conference</td>
<td>186</td>
</tr>
</tbody>
</table>
# Sample Spreadsheet

- **Township and Range**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TownshipAndRange</td>
<td>Name</td>
<td>Description</td>
<td>Icon</td>
</tr>
<tr>
<td>2</td>
<td>OR Willamette S27 T7S R3W</td>
<td>S27 T7S R3W</td>
<td>Contains Grand Hotel</td>
<td>186</td>
</tr>
</tbody>
</table>
Map Spreadsheet

• Go to www.earthpoint.us/ExcelToKml.aspx
• Sign into your account.
• If no account, map is limited to 200 rows of data.
• Click the “Browse” button.
• Select the spreadsheet.
• Click the “View on Google Earth” button.
• Can also check spreadsheet for errors.
Convert Coordinates

• Individual coordinates can be converted at [www.earthpoint.us/Convert.aspx](http://www.earthpoint.us/Convert.aspx)

• State Plane coordinates at [www.earthpoint.us/StatePlane.aspx](http://www.earthpoint.us/StatePlane.aspx)
Batch Convert

• A spreadsheet of coordinates can be converted at www.earthpoint.us/BatchConvert.aspx
• Compatible with ExcelToKml spreadsheets
• Supports lat/long, UTM, MGRS, USNG, state plane, PLSS
• Plots centroids of PLSS grid, corners are coming...
### Sample Spreadsheet

- Can include several coordinate systems on the same sheet.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latitude</td>
<td>Longitude</td>
<td>Position</td>
<td>TownshipAndRange</td>
<td>ToStatePlaneZone</td>
</tr>
<tr>
<td>43°36'34.86&quot;N</td>
<td>116°12'23.30&quot;W</td>
<td>10S 577727mE 4341180mN</td>
<td>0402</td>
<td>1103</td>
</tr>
<tr>
<td>43 36 33.22</td>
<td>-116 12 18.40</td>
<td>12SVD9954691185</td>
<td>0202</td>
<td>1103</td>
</tr>
<tr>
<td>2401 201995.535m 311469.941m</td>
<td>WA Willamette T24-1/2N R9W</td>
<td>4601</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19T4NR2WS21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Coordinate Types**
- Row 1: Column Headings, can be in any order
- Row 2: Latitude Longitude
- Row 3: Latitude Longitude without punctuation
- Row 4: UTM
- Row 5: MGRS
- Row 6: State Plane
- Row 7: Township and Range
- Row 8: Township and Range, BLM "Landkey" format
Questions?

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