What is Google Earth?

Google Earth displays satellite images of varying resolution of the Earth's surface, allowing users to see things like cities and houses looking perpendicularly down or at an oblique angle, with perspective (see also bird's eye view). The degree of resolution available is based somewhat on the points of interest and popularity, but most land (except for some islands) is covered in at least 15 meters of resolution.   Melbourne, Victoria, Australia; Las Vegas, Nevada; and Cambridge, Cambridgeshire include examples of the highest resolution, at 15 cm (6 inches). Google Earth allows users to search for addresses for some countries, enter coordinates, or simply use the mouse to browse to a location.

For large parts of the surface of the Earth only 2D images are available, from almost vertical photography. Viewing this from an oblique angle, there is perspective in the sense that objects which are horizontally far away are seen smaller, but of course it is like viewing a large photograph, not quite like a 3D view.

For other parts of the surface of the Earth 3D images of terrain and buildings are available. Google Earth uses digital elevation model (DEM) data collected by NASA's Shuttle Radar Topography Mission (SRTM). This means one can view the Grand Canyon or Mount Everest in three dimensions, instead of 2D like other areas. Since November 2006, the 3D views of many mountains, including Mount Everest, have been improved by the use of supplementary DEM data to fill the gaps in SRTM coverage.

Download & install Google Earth:

http://www.google.com/earth/download/ge/agree.html
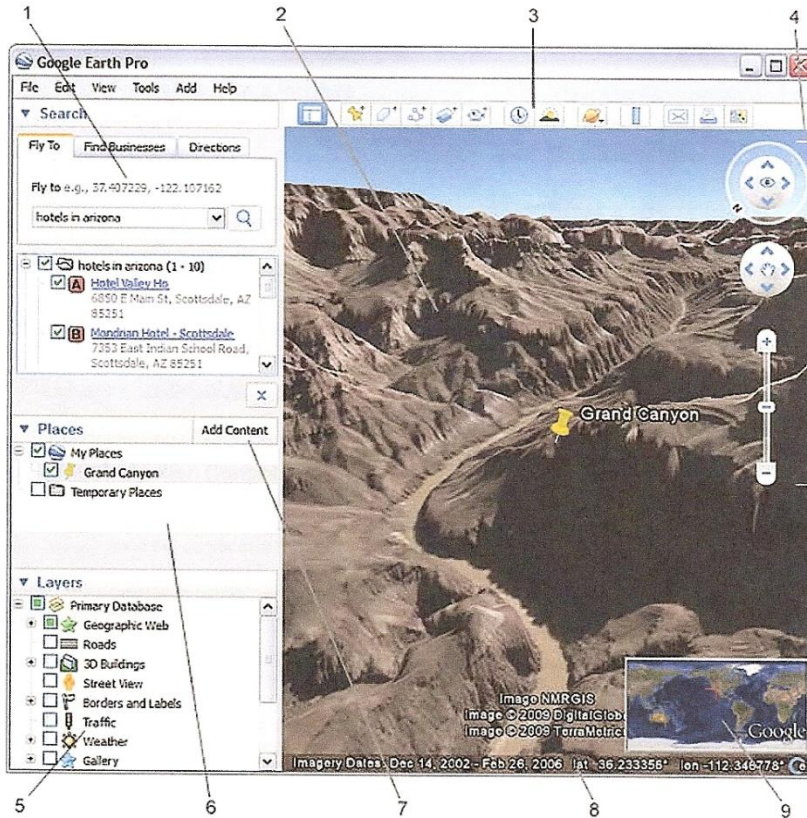
*Make sure these are unchecked if you want to keep Internet Explorer as your web browser.

Google Earth User Guide:

http://earth.google.com/userguide/v5/

Getting to Know Google Earth

The following diagram describes some of the features available in the main window of Google Earth:

1. **Search panel** - Use this to find places and directions and manage search results. Google Earth EC may display additional tabs here
2. **3D Viewer** - View the globe and its terrain in this window.
3. **Toolbar buttons** - See below.
4. **Navigation controls** - Use these to zoom, look and move around (see below).
5. **Layers panel** - Use this to display points of interest.
6. **Places panel** - Use this to locate, save, organize and revisit placemarks.
7. **Add Content** - Click this to import exciting content from the KML Gallery
8. **Status bar** - View coordinate, elevation, imagery date and streaming status here.
9. **Overview map** - Use this for an additional perspective of the Earth.

Click the following toolbar buttons to...

Conceal or the display the side bar

Add a placemark for a location

Add a polygon

Add a path (line or lines)

Add an image overlay on the Earth

Record a tour

Display historical imagery

Display sunlight across the landscape

View the sky, moon and planets

Measure a distance or area size

Email a view or image.

Print the current view of the Earth

Show the current view in Google Maps

Using the Navigation Controls

To view and use the navigation controls, move the cursor over right corner of the 3D viewer. After you start Google Earth and move the cursor over this area, the navigation controls fade from sight when you move the cursor elsewhere. To view these controls again, simply move the cursor over the right corner of the 3D viewer.

Note - If the navigation controls do not appear when you move the cursor over the right corner of the 3D viewer, click *View > Show Navigation > Automatically* and try again.

To hide or show the compass icon in the 3D viewer, click *View > Compass*. See also Showing or Hiding Items in the 3D Viewer.

The Google Earth navigation controls offer the same type of navigation action that you can achieve with mouse navigation. In addition, you can use the controls to zoom and swoop (perhaps for a perspective on terrain) or to rotate your view. The following diagram shows the controls and explains their functions.
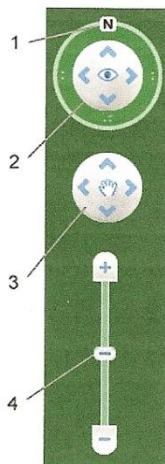
1. Click the north-up button to reset the view so that north is at the top of the screen. Click and drag the ring to rotate your view.

2. Use the Look joystick to look around from a single vantage point, as if you were turning your head. Click an arrow to look in that direction or continue to press down on the mouse button to change your view. After clicking an arrow, move the mouse around on the joystick to change the direction of motion.

3. Use the Move joystick to move your position from one place to another. Click an arrow to look in that direction or continue to press down on the mouse button to change your view. After clicking an arrow, move the mouse around on the joystick to change the direction of motion.

4. Use the zoom slider to zoom in or out (+ to zoom in, - to zoom out) or click the icons at the end of the slider. As you move closer to the ground, Google Earth swoops (tilts) to change your viewing angle to be parallel to the Earth's surface. You can turn off this automatic tilt (Tools > Options > Navigation > Navigation controls; Mac: Google Earth > Preferences > Navigation > Navigation controls).

You can also use the keyboard to control navigation. See 3D Viewer Navigation in Keyboard Controls for more information.

Downloading GPS Data Files

You can find existing GPS data files to import into GE on quite a number of websites. Two very good sites are

http://hikearizona.com/

http://www.aztrail.org/

To download a GPS file from these sites you must register a userid and password. Go to the site, find the GPS trail/hike you want to download and perform the download according to the directions of the particular site, saving the file (.gpx, kml, etc) to a specific location on your computer. It is from this location you will import the file into Google Earth as discussed in the next section.

h as when importing a track taken on foot, car, or bike. However, if your GPS track was recorded while traveling by air, such as hang gliding or flying on a plane, make sure this option is not selected so that your points appear as above-ground points.

Importing Existing GPS Data Files

You can import an existing GPS data file of any supported type (including GPX, Garmin GDB, NMEA log files, etc.) in one of the following ways:

- Go to **File** > **Open**, choose your data file, and press "Open."
- To import any of the file types listed above, just drag and drop it into Google Earth.
- Go to **Tools** > **GPS**, click the "Import from file" button. Browse to find your file, and press "Open."

When you import existing GPS data, select how you'd like to display the data from the options in this dialog box:
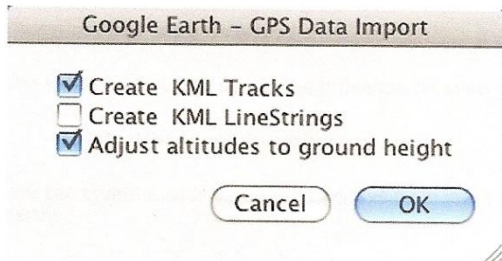
"Create KML Tracks" and "Adjust altitudes to ground height" are selected by default.

- **Create KML Tracks**

  Select "Create KML Tracks" to view your GPS data as a track. A track is a line of GPS data that includes a time element. If available in the source data, tracks can also store additional sensor data such as heart rate, cadence, temperature, and power. Plus, the tracks option will allow you to customize your icon.

  The tracks option is highly recommended if you are planning to view your data in Google Earth 5.2 or later, and is the best option to be used with the elevation profile feature in 5.2. Learn more about GPS tracks.

- **Create KML LineStrings**

  Select "Create KML LineStrings" to view your GPS data as a LineString. The LineStrings option is best for people who wish to import their data into Google Maps or other KML viewers. A LineString is a line of GPS data that doesn't have a time element associated with it. This option lets you see the individual points that make up your track. The points, however, do hold time information.

While this option does include elevation and location information, you must access it from within the balloon associated with each point rather than from the line.

- **Adjust Altitudes to Ground Height**

   Select "Adjust altitudes to ground height" to adjust all recorded points to ground level, such as when importing a track taken on foot, car, or bike. However, if your GPS track was recorded while traveling by air, such as hang gliding or flying on a plane, make sure this option is not selected so that your points appear as above-ground points.

Touring your imported Track/Path

You can now tour or "fly over" your imported track/path by selecting the track/path under "Temporary Places".

Then click the "generate tour button": , and a tour of your track/path plays automatically.

Save your imported Track/Path

Imported data is always placed in the Places Temporary Folder. If you want to save your imported data, move it to a folder in Places. If you forget to do this before you close GE, you will be asked if you want to save to the "My Places" folder.

Downloading Topo Overlays

The topo overlays you saw in the presentation were created and downloaded from

   http://www.gpsvisualizer.com/

You can create a wide variety of overlays from this site and automatically download them to "My Places" in Google Earth.