Introduction to ArcGIS

Planetary Data Analysis

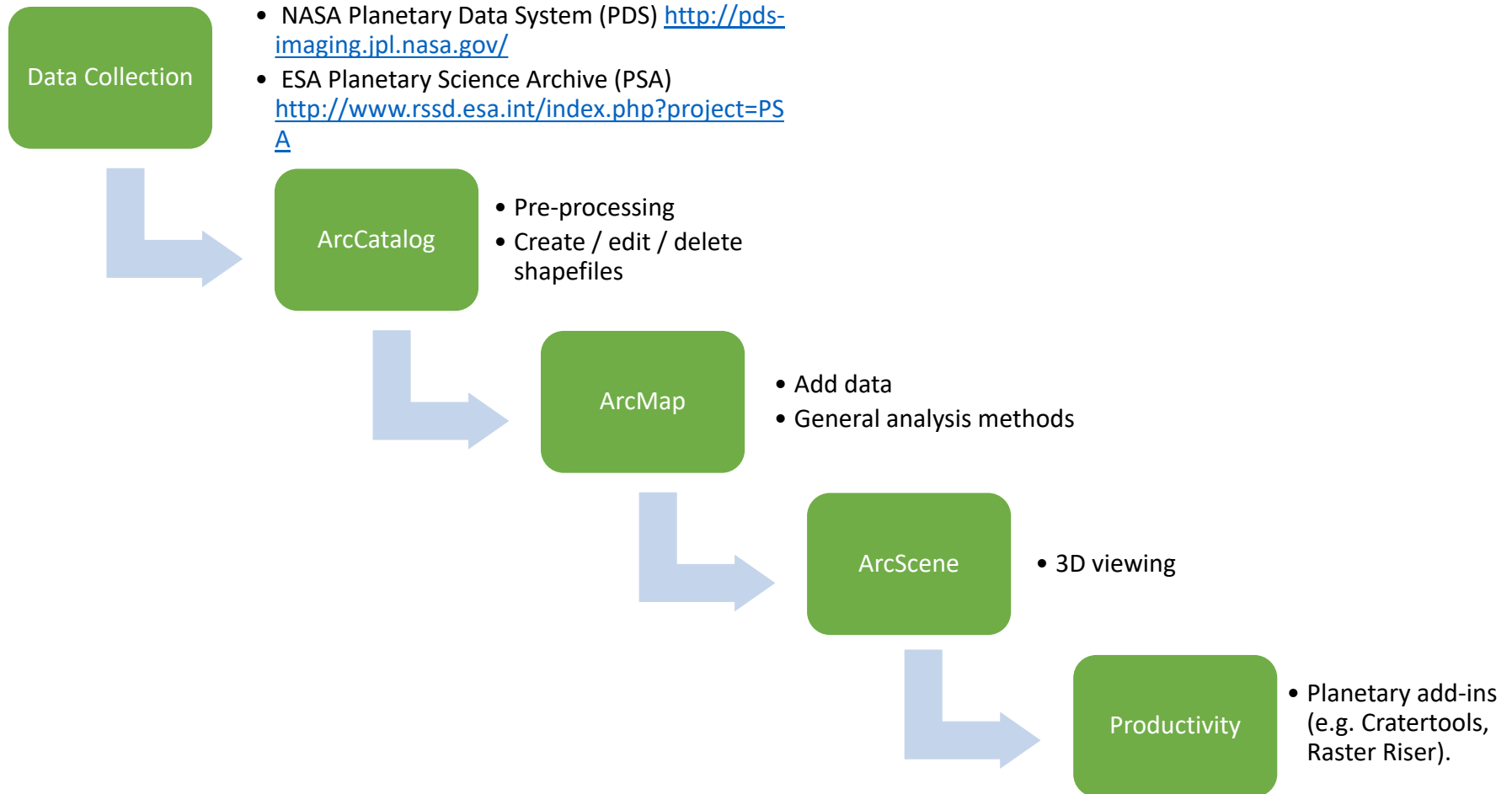### Peter Fawdon

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Outline of Session

Data Collection

- NASA Planetary Data System (PDS) http://pds-imaging.jpl.nasa.gov/
- ESA Planetary Science Archive (PSA) http://www.rssd.esa.int/index.php?project=PSA

ArcCatalog

- Pre-processing
- Create / edit / delete shapefiles

ArcMap

- Add data
- General analysis methods

ArcScene

- 3D viewing

Productivity

- Planetary add-ins (e.g. Cratertools, Raster Riser).

USGS Stereo DTM Method

- ArcGIS is a commercial software suite
  - Arguably industry-standard
  - Use became much more widespread in Planetary community with v10

- Main disadvantage is cost of software (and bugs!)
  - Open source alternatives (e.g. GrassGIS, QGIS, etc.)

- Many different sources of data and guidance, some of best are here:
  - http://webgis.wr.usgs.gov/   (SUPERCEDED)
  - http://astrogeology.usgs.gov/facilities/mrctr-gis-lab

- First port of call could be the USGS FTP site:
  - ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars

- Good start is to download the USGS pre-assembled global GIS packages
  - e.g. latest (v21) Mars GIS package is ~28 GB when unzipped!

- We will start from a blank project, but can take data from global GIS as base.

Typical ArcGIS data flow

1. Identify data in region of interest
   - Access the PDS   (Imaging, Geosciences, ESA PSA)
   - Or use tools to help   (e.g. Mars Orbital Data Explorer, HiRISE, HRSCview, Google Mars)

2. Download data
   - E.g. Trent here big package:
     (ftp://pdsimage2.wr.usgs.gov/pub/pigpen/mars/Global_GIS_Mars/MarsGIS_Equi0_v21.zip)
   - http://astrogeology.usgs.gov/search

3. Add data to ArcGIS
   - Think about project projection before adding data (the Big USGS package has man suitable map projection in a projection folder.

4. Change appearance of data in ArcMap
   - Right-click is your friend!

5. Typical analysis methods
   - Interrogate topographic data (profile, hillshade, contour, slope, identify)
   - Measure features
   - Shapefiles (create, add, edit)
   - Other common Toolboxes

2. Planetary add-ins
   - HRSC tools: Cratertools and CraterStats
   - USGS tools: Raster Riser

Other useful tools (not exhaustive)

- USGS ISIS Support [Forum](#)

- USGS planetary GIS [tutorials](#)
  - Many fantastic guides!

- USGS [Map Projection on the](#)Web
  - If data not GIS-ready

Don't be afraid to look for a you tube video or email us if you have any questions or want any advice!