
Freshman Seminar Colloquia for Fall 2009

October 19, 2009

Surveying Engineering Technology:

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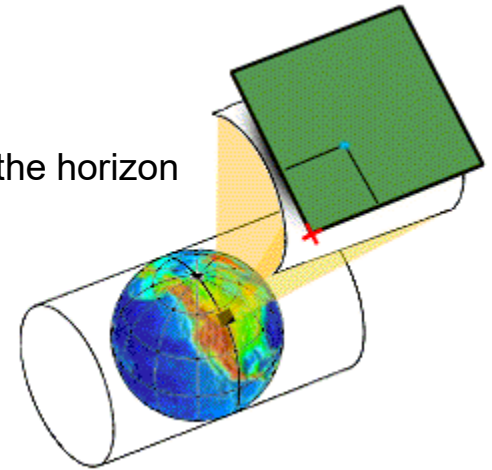
Outline

- **Introduction & Background**
 - **What is Surveying Engineering (SE)?**
 - **Utility of Geospatial Mapping Technologies (GMT)**
 - **Career Activity of Survey Engineering**
 - **Market Indicators and & Recommendations**
-

What is Surveying Engineering?

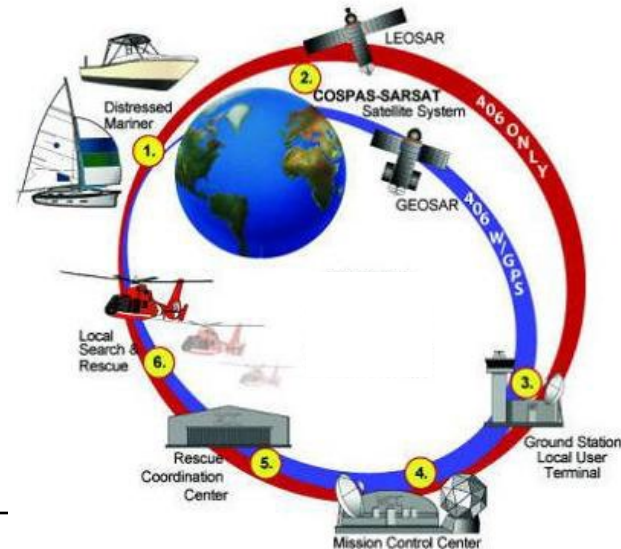
□ Surveying

- From French words “sur” means to see and “veir” means over the horizon
- Mapping shows spatial relationships - concepts of space (defined in Mathematics, Physics, Geography)
- Spatial Measurements - location of features



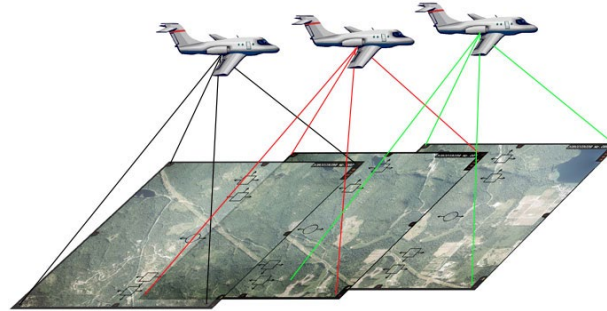
□ Technology

- Location, navigation, communication



Geospatial Mapping Technologies

□ Aerial Photography



□ Lasers (Hz & Vz)

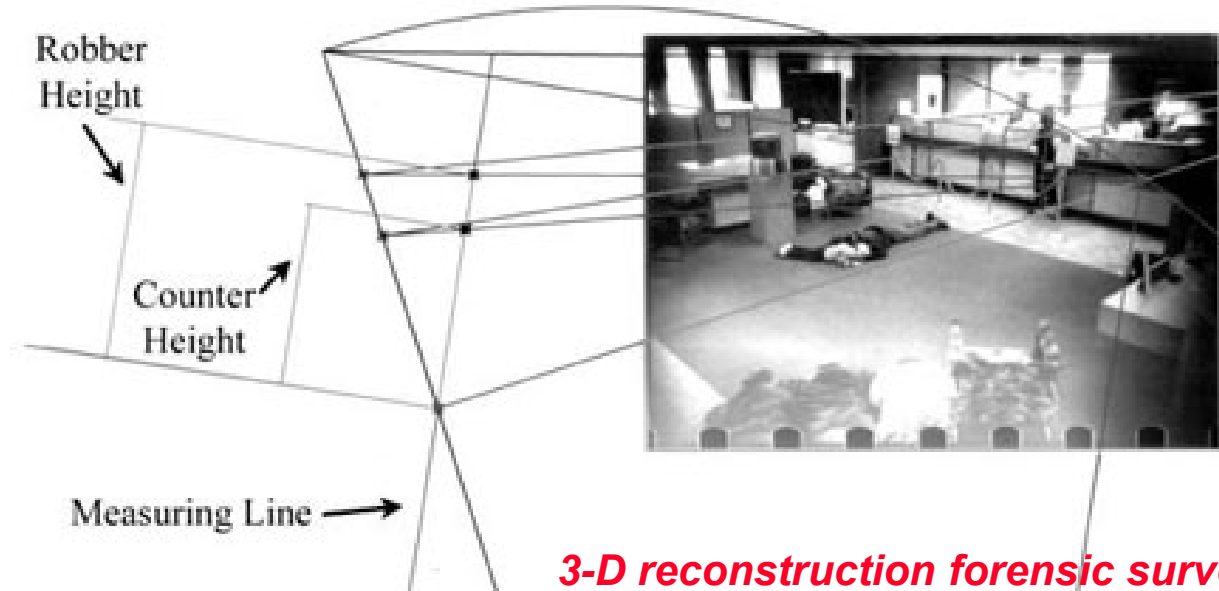
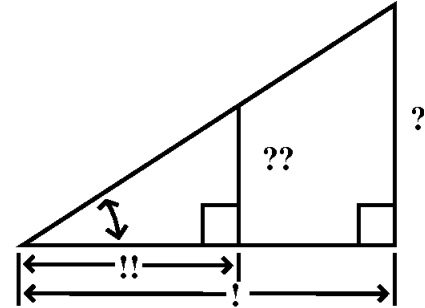
□ Remote Sensing & Scanners

□ Communication



Photogrammetry

Mathematical Principles using similar Triangles

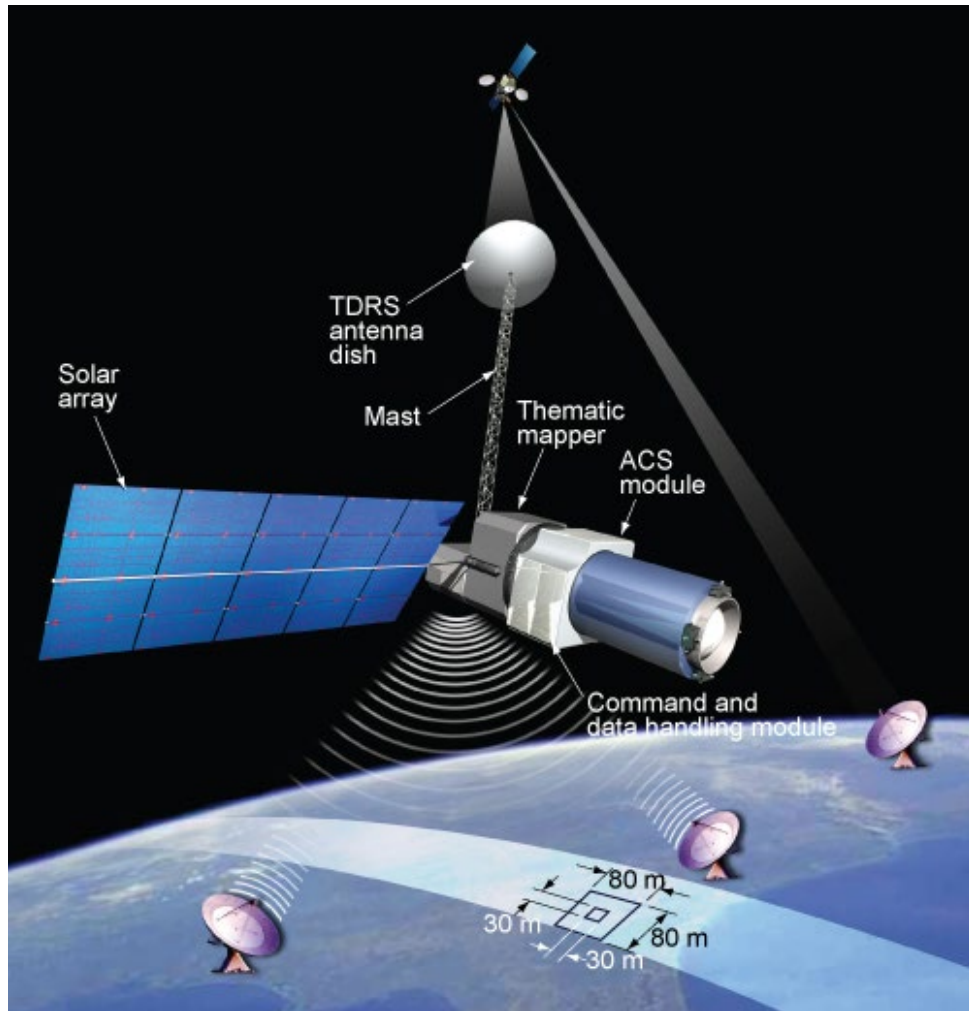


3-D reconstruction forensic survey

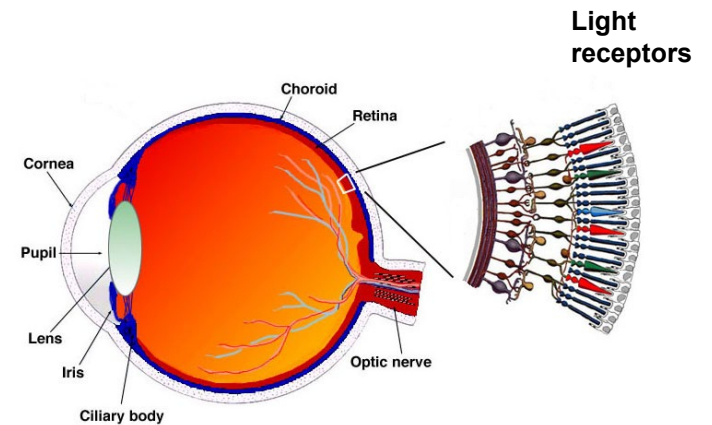
Lasers for Distance Measurements



Remote Sensing



Principles of
Remote Sensing
borrowed from human
vision

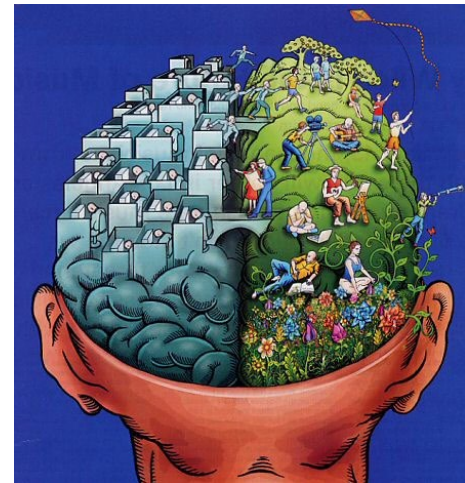


Communication

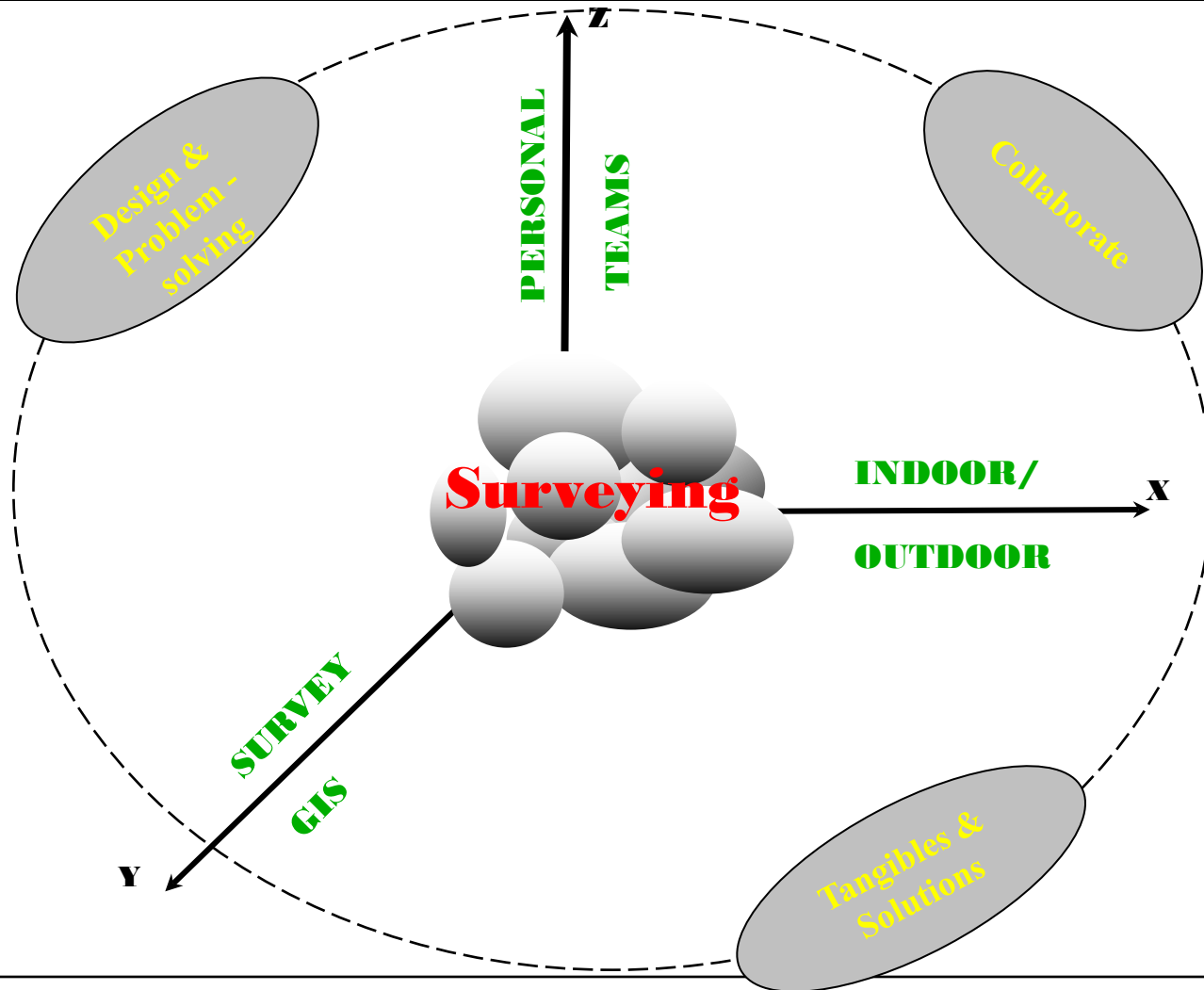


Career in Surveying Engineering?

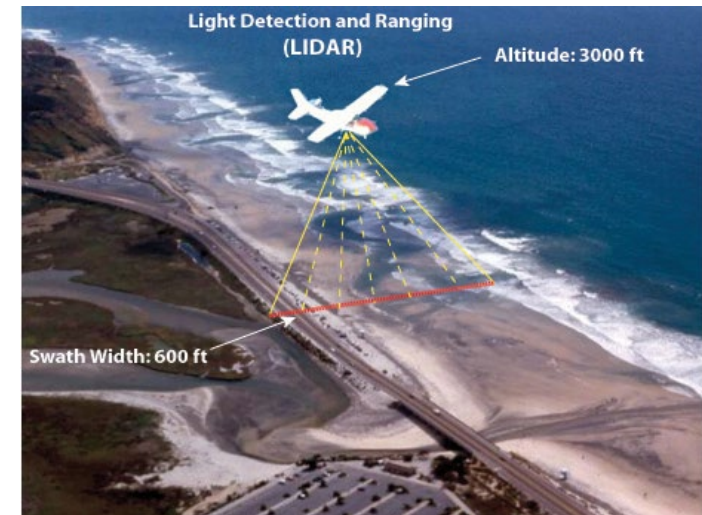
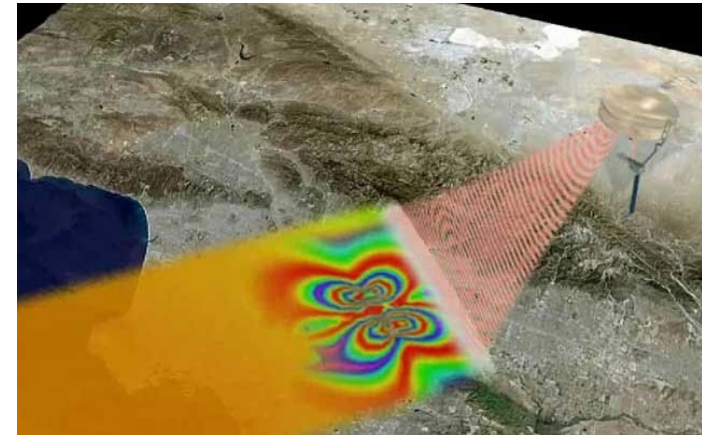
- Career decisions are extremely difficult
- Career motivation is different from previous generation
- Career aspiration is mediated by many (un)known factors



Components of Surveying Practice



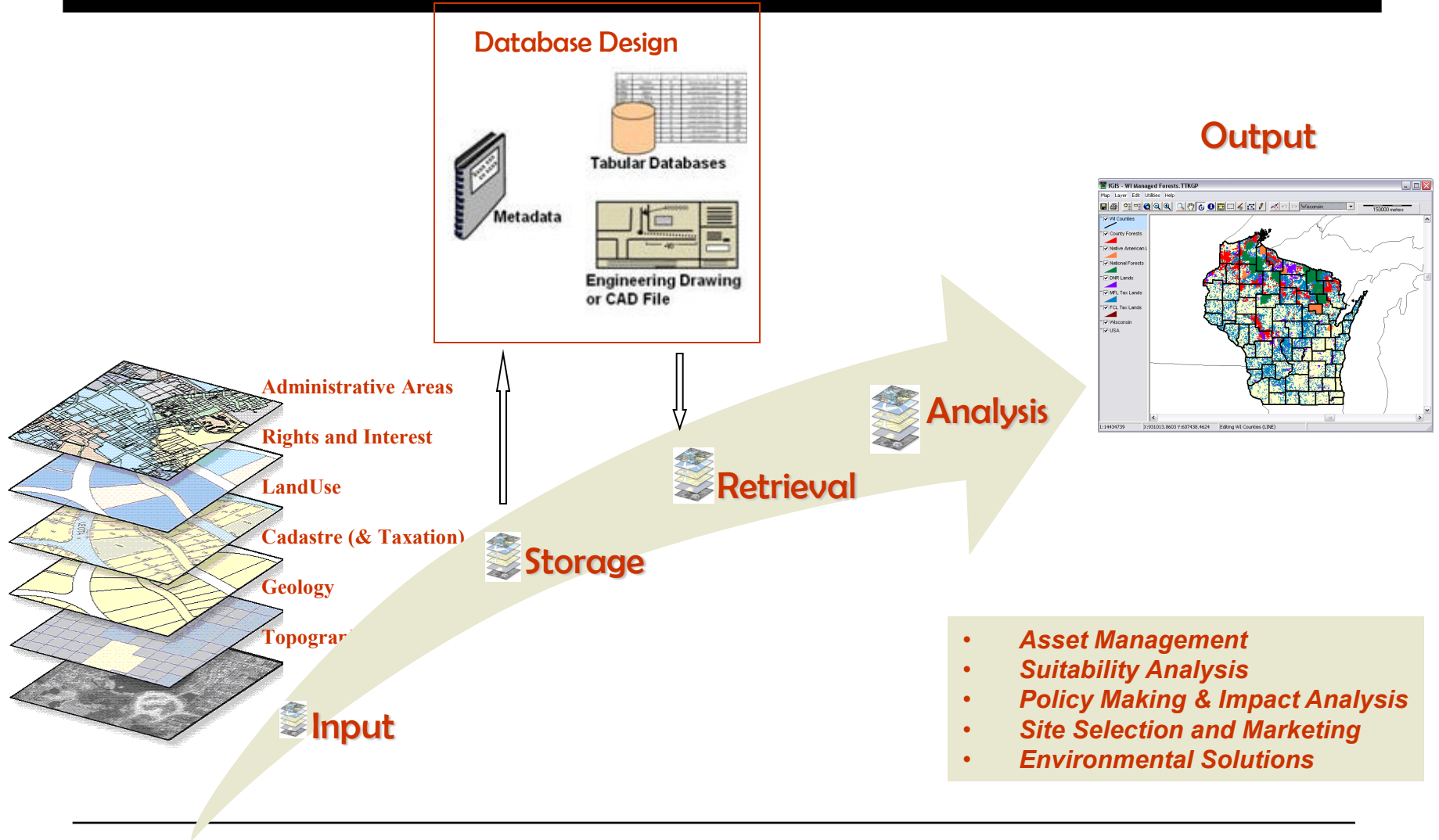
Utility of Geospatial Mapping Technology: *Infrastructure, Disaster Mitigation, Environment*



- ❑ **Infrastructure**
 - ❑ **Environmental Monitoring**
 - ❑ **Disaster mitigation**
 - ❑ **Health & Life**
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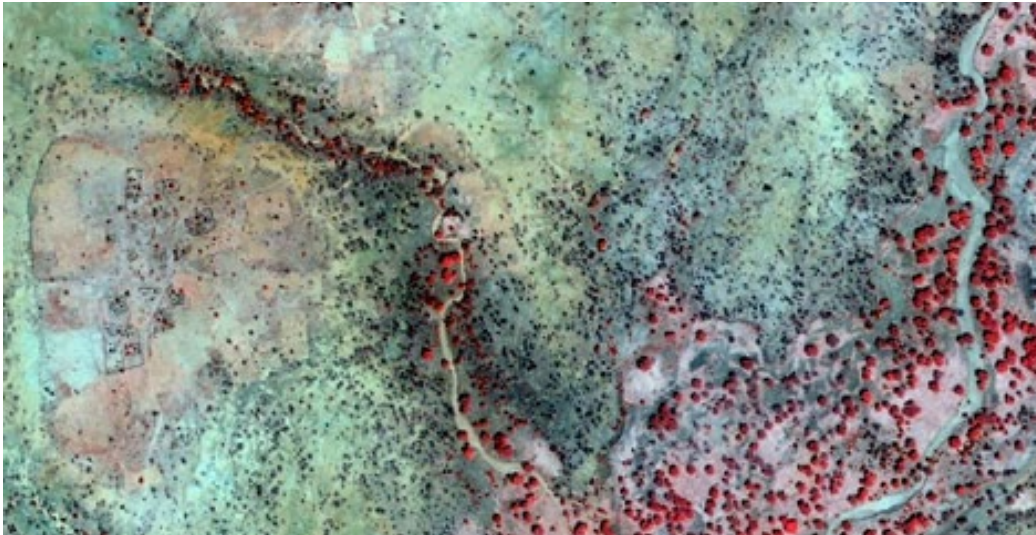


Computerized Geographic Information System



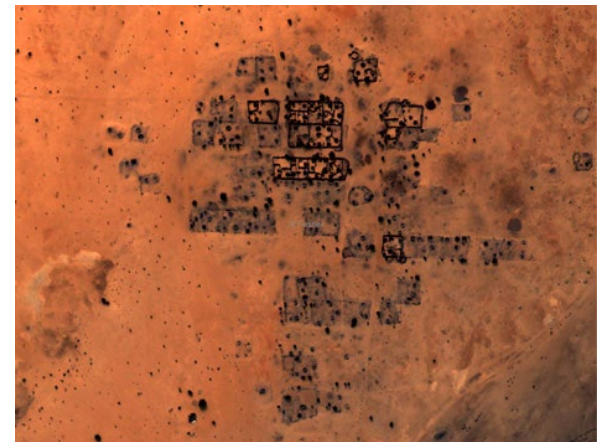
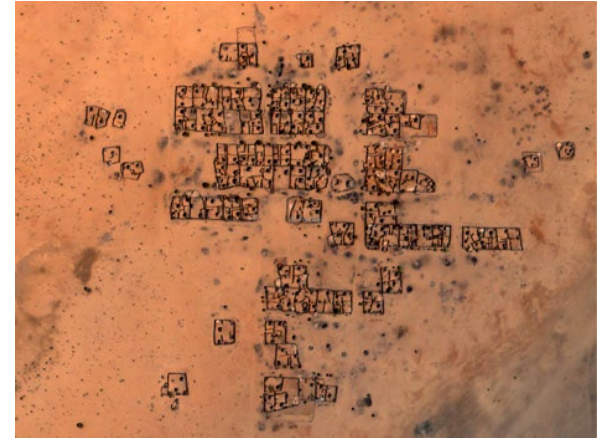
Applications of Geospatial Technology

Civilian Life & Environment



Madoua settlement (on the left) in eastern Chad

Satellite imagery, internet-integrated mapping or GPS are employed to detect, map and analyze human rights violations. Utility of widely available tools such as Google Earth to digitally capturing atrocities against civilians in trouble spots like Darfur, Zimbabwe, North Korea, the Gaza Strip and Burma



Analysis of before and after pictures
2004 - 2006 shows effects of destruction

Outlook & Recommendations

□ Ubiquitous GT - “household” names/items

- GPS Navigation (GARMIN, TOM-TOM etc.,)
- Over-the-horizon visualization (e.g., Google Earth™, Microsoft Bing)

□ Geospatial Industry Overview

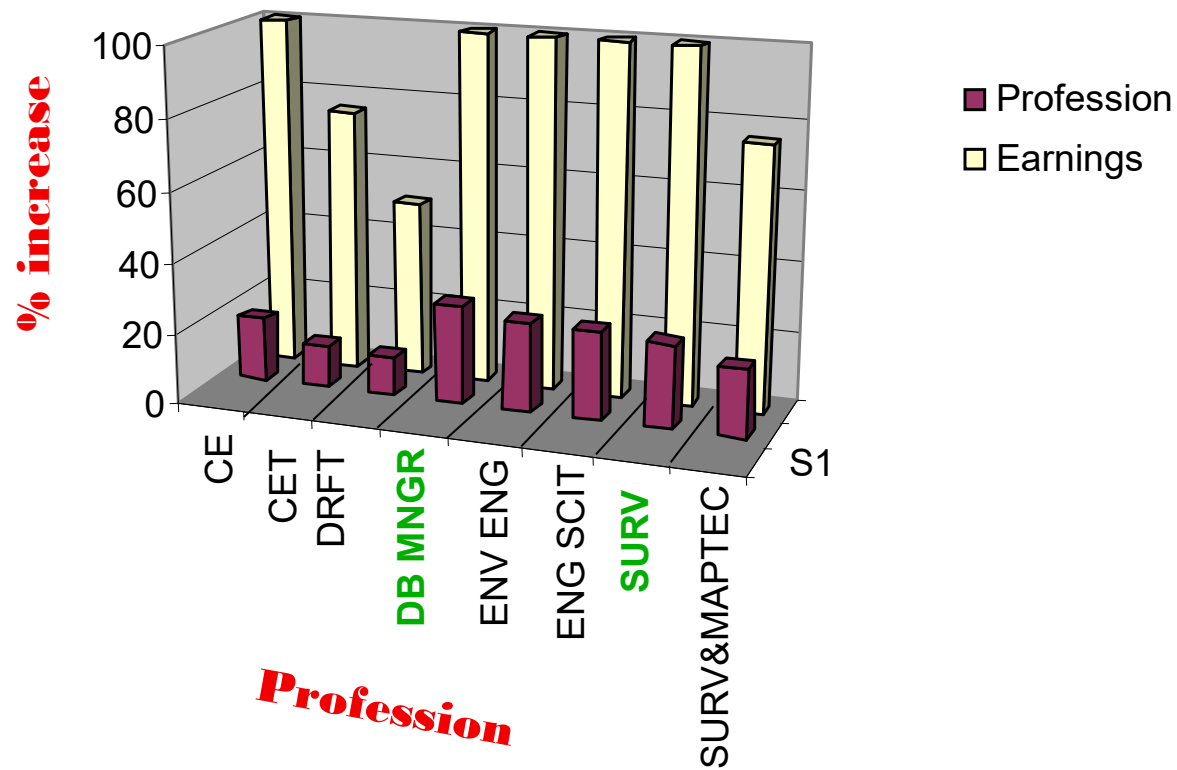
- <http://www.careervoyages.gov/geospatialtechnology-main.cfm>
10yr growth projects SE at 18-26% greatest potential for growth
- Satellite imagery, internet-integrated mapping with GPS

□ College Program Offerings

- 4 yr- **Surveying Engineering** Technology program
in department of Engineering Technology at NJIT
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General Market Indicators

US DOL OCCUPATION OUTLOOK
2006-2016



End

