International Federation of Surveyors
Fédération Internationale des Géomètres
Internationale Vereinigung der Vermessungsingenieure
FIG COMMISSION 2
Professional Education

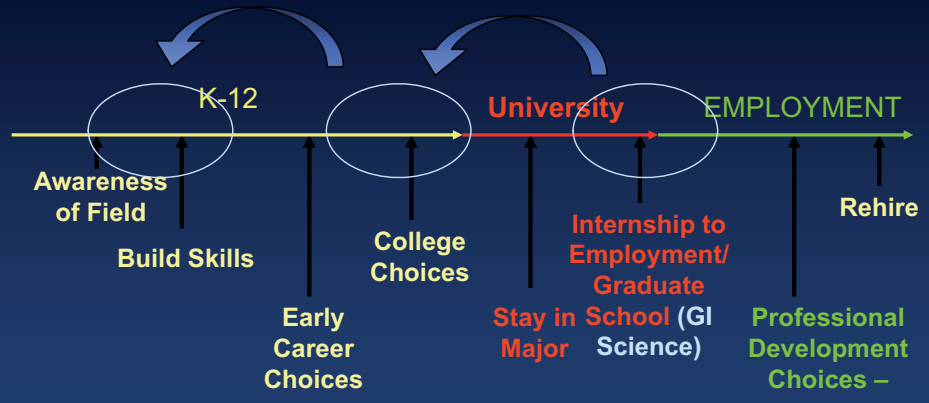
Marketing of Spatial Thinking, Professional (Surveying) Education, and GI Science

Michael Gould, PhD
Director of Education, ESRI

Overview

- Need for a spatially-aware population
- Progression or Cycle of GI learning
- Marketing messages
- Some Examples
- Emphasis on integration
  - Surveying with GIS
- What we are doing

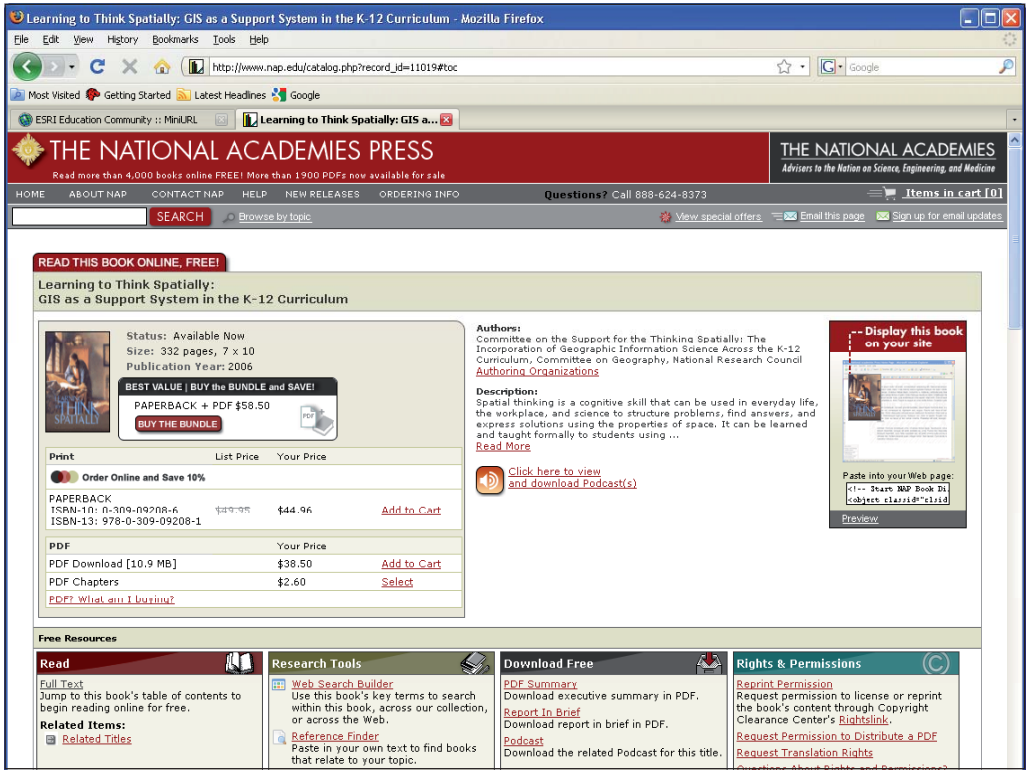
Average Age of Surveyors in USA is 57 – Building Programs for Lifelong Learning(?)

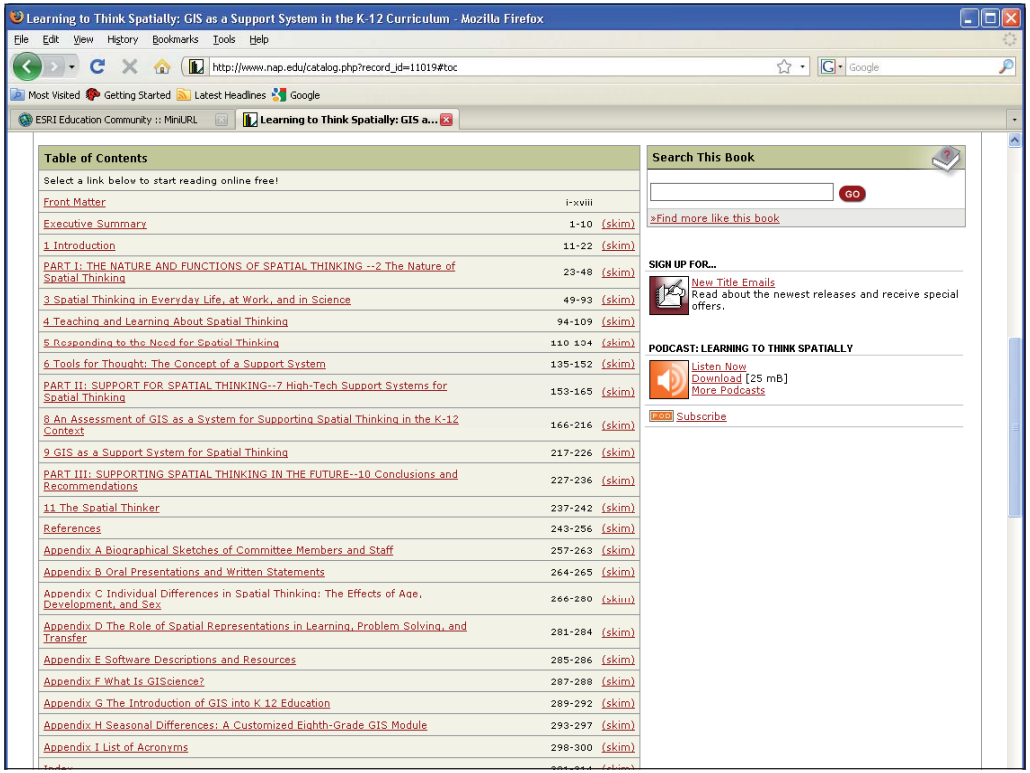


Joseph S.Toole
Associate Administrator of
Professional Development
Federal Highway Administration
January 11, 2004

Spatial Thinking

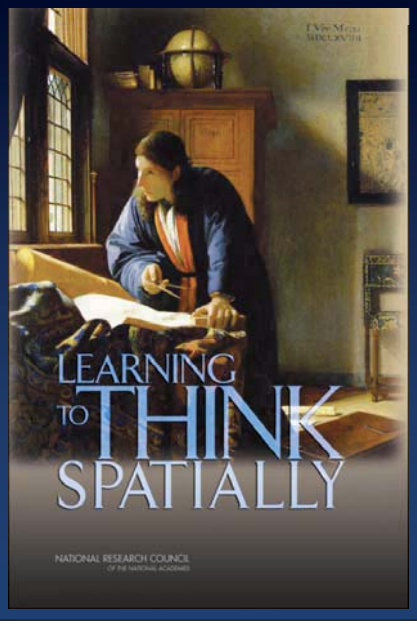
- One of Howard Gardner's 9 intelligences
  - **Spatial Intelligence**: the ability to represent the spatial world internally in your mind -- the way a sailor or airplane pilot navigates the large spatial world, or the way a chess player or sculptor represents a more circumscribed spatial world. Spatial intelligence can be used in the arts or in the sciences.
- Focus on spatial ways of thinking, in multiple secondary school courses e.g. Math, Art, History
- Later (near completion of high school) tools such as GPS, GIS can be introduced, to help connect spatial thinking to solving real problems
  - Bishop-Dunne HS (Dallas)





Need workforce to Think Spatially

- USA National Research Council report:
  - *Learning to Think Spatially: GIS as a Support System in the K-12 Curriculum*
  - Essential to every person and to the workforce
  - Needs to be taught across subjects
  - Problem solving integrator/facilitator
  - GIS can be significant



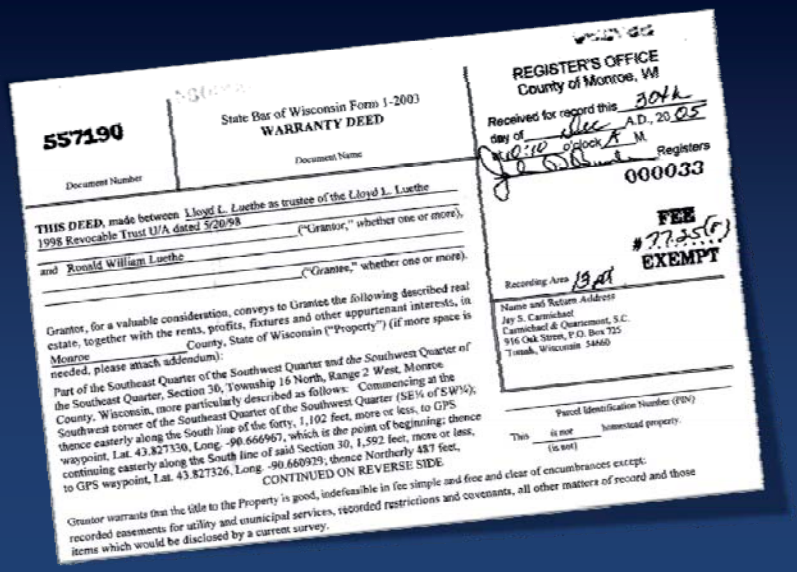
Spatial Thinking (2)

- Need to improve knowledge of peoples, cultures, religions, languages around the world
- US military "human terrain"
- The NRC book contains some good nuggets
- But we can do better! Marketing = message.
  - Simple, fun, relevant…
- Goal: prepare future problem-solvers
- Also prepare college students who know to look for study programs centered around spatial technology

Need for spatial professionals

- As always, spatial professionals needed to collect and exploit land-oriented data
- Technology is advancing, changing how this process happens
- Spatial experts need to be more versed in integrating technologies and methods
- Education tending toward multidisciplinary structure
- Studies and career options need to evolve as well

Technology impacts how we work (right or wrong)



557190

Document Number

State Bar of Wisconsin Form 1-2003
WARRANTY DEED

Document Name

REGISTER'S OFFICE
County of Monroe, WI
Received for record this 30th day of Dec A.D., 20 05
10:10 o'clock A M.
Register
000033

FEE
#7725(f)
EXEMPT

THIS DEED, made between Lloyd L. Luethe as trustee of the Lloyd L. Luethe 1998 Revocable Trust U/A dated 5/20/98 ("Grantor," whether one or more), and Ronald William Luethe ("Grantee," whether one or more).

Grantor, for a valuable consideration, conveys to Grantee the following described real estate, together with the rents, profits, fixtures and other appurtenant interests, in Monroe County, State of Wisconsin ("Property") (if more space is needed, please attach addendum):

Part of the Southeast Quarter of the Southwest Quarter and the Southwest Quarter of the Southeast Quarter, Section 30, Township 16 North, Range 2 West, Monroe County, Wisconsin, more particularly described as follows: Commencing at the Southwest corner of the Southeast Quarter of the Southwest Quarter (SE¼ of SW¼); thence easterly along the South line of the forty, 1,102 feet, more or less, to GPS waypoint, Lat. 43.827330, Long. -90.666967, which is the point of beginning; thence continuing easterly along the South line of said Section 30, 1,592 feet, more or less, to GPS waypoint, Lat. 43.827326, Long. -90.660929; thence Northerly 487 feet,

CONTINUED ON REVERSE SIDE

Recording Area 13

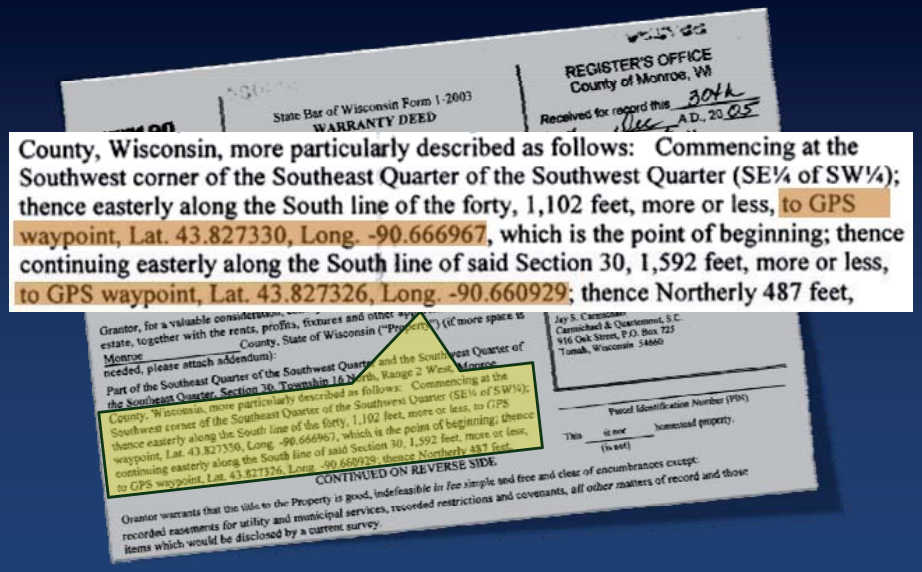
Name and Return Address
Jay S. Carmichael
Carmichael & Quarisemet, S.C.
916 Oak Street, P.O. Box 725
Tomah, Wisconsin 54660

Parcel Identification Number (PIN)

This is not (is not) homestead property.

Grantor warrants that the title to the Property is good, indefeasible in fee simple and free and clear of encumbrances except: recorded easements for utility and municipal services, recorded restrictions and covenants, all other matters of record and those items which would be disclosed by a current survey.

Technology impacts how we work (right or wrong)

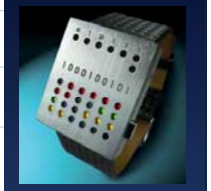


County, Wisconsin, more particularly described as follows: Commencing at the Southwest corner of the Southeast Quarter of the Southwest Quarter (SE¼ of SW¼); thence easterly along the South line of the forty, 1,102 feet, more or less, to GPS waypoint, Lat. 43.827330, Long. -90.666967, which is the point of beginning; thence continuing easterly along the South line of said Section 30, 1,592 feet, more or less, to GPS waypoint, Lat. 43.827326, Long. -90.660929; thence Northerly 487 feet,

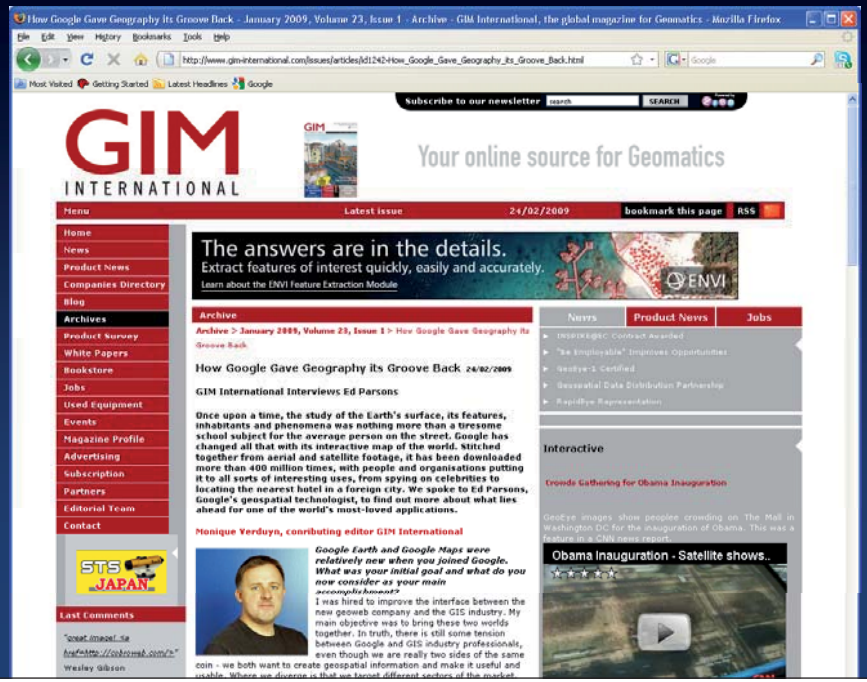
Precise Timing

. . . .for pennies.

Marcasite style watch Black Leather Band Sweep 2nd	Buy It Now	$2.99	$3.47	5d 23h 23m
V068 Disney Shrek Red Quartz Watch Bangle	Buy It Now	$1.00	$5.50	21h 15m
V076 Disney Shrek Pink Quartz Watch Bangle	Buy It Now	$1.00	$5.50	1d 04h 55m
mens watch	Buy It Now	$2.00	$4.50	3d 13h 27m
mens watch	Buy It Now	$2.00	$4.50	3d 13h 27m



Google effect



Parsons' quote

Q: Google is working towards information available anyhow, anywhere, on any platform. Will Google encourage or develop live mapping applications for surveyors?

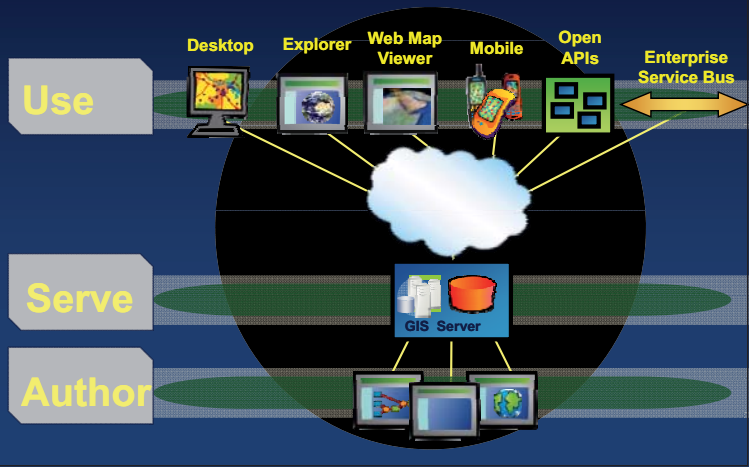
A: These days, anyone with a mobile phone is a surveyor, so if someone is out and about and discovers some feature that is not apparent in our maps, we will incorporate it and update our system. However, that is not strictly speaking *surveying* and we are not creating base data sets. That said, we have developed tools that are being used in parts of Africa and Asia simply because there is no other source of information available in these areas, but it is on a very small scale.

GIS Servers Work as a Complete System

Author once, use repetitively

Author/Serve/Use

- Maps
- Data
- Models
- Analysis
- Designs
- Globes
- Metadata

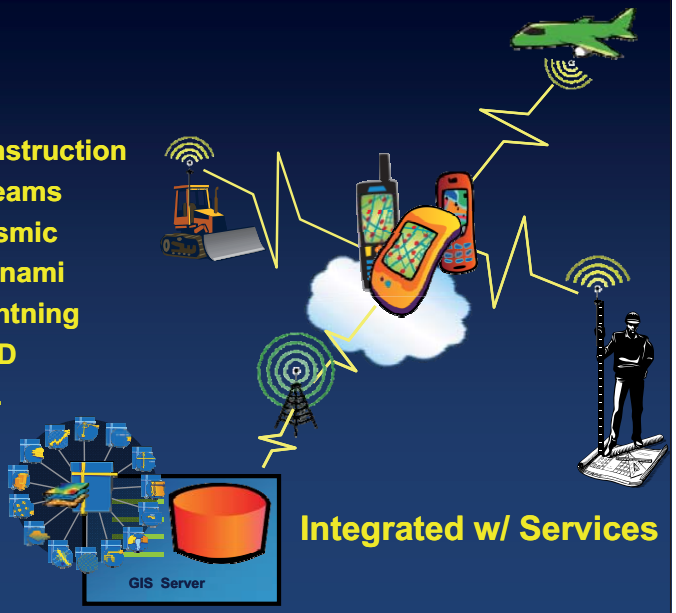


Server GIS Managing network of Sensors

Many ways to author data

Sensor Types

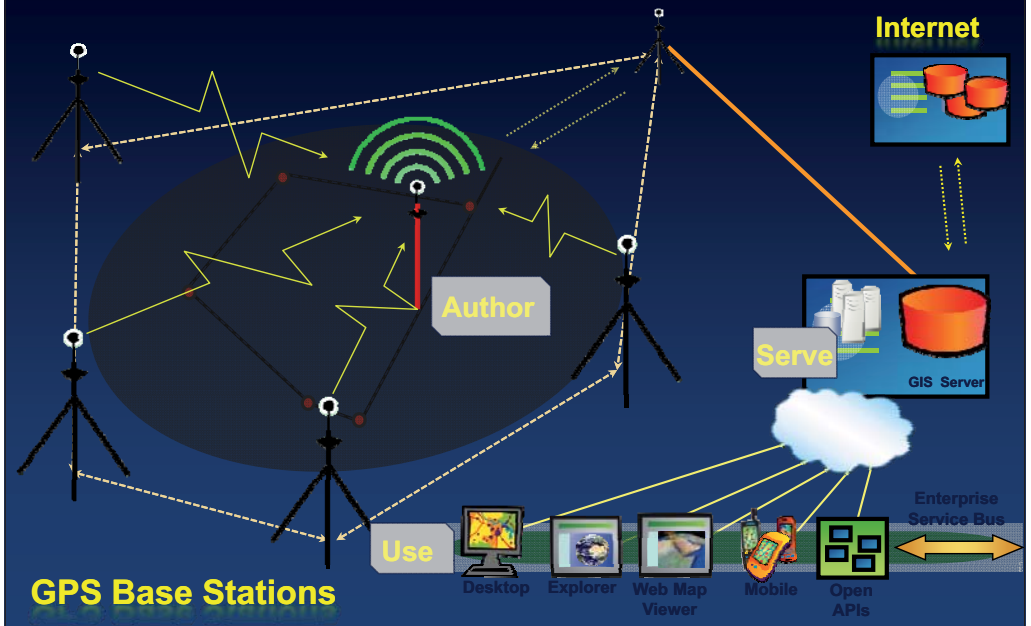
- Weather
- Monitors
- Satellites
- Aircraft
- Gravity
- Geophysical
- Census
- Demographic
- Business
- Infrastructure
- Surveying
- Real time Network
- Construction
- Streams
- Seismic
- Tsunami
- Lightning
- RFID
- Etc.



Integrated w/ Services

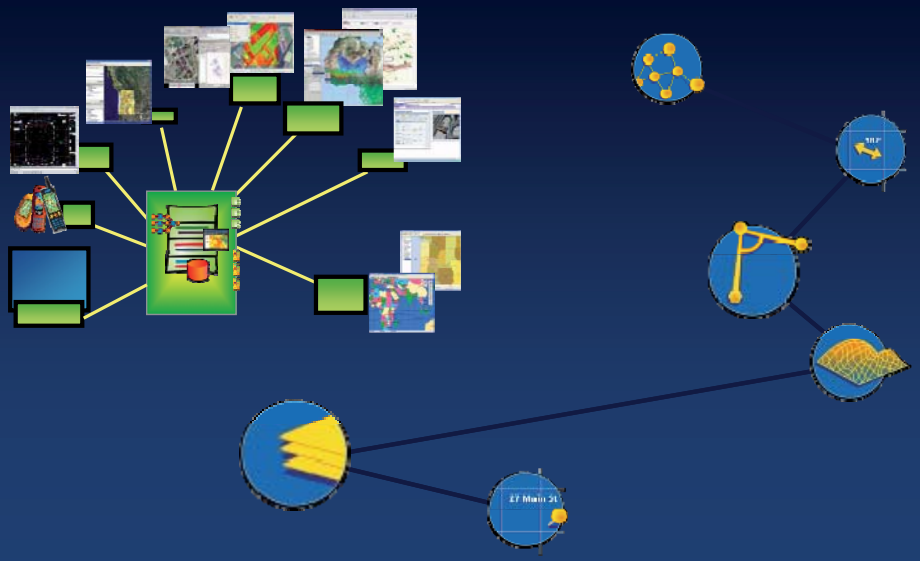
Server GIS Integrating Data

GIS Server integrates field positions



Data Integration

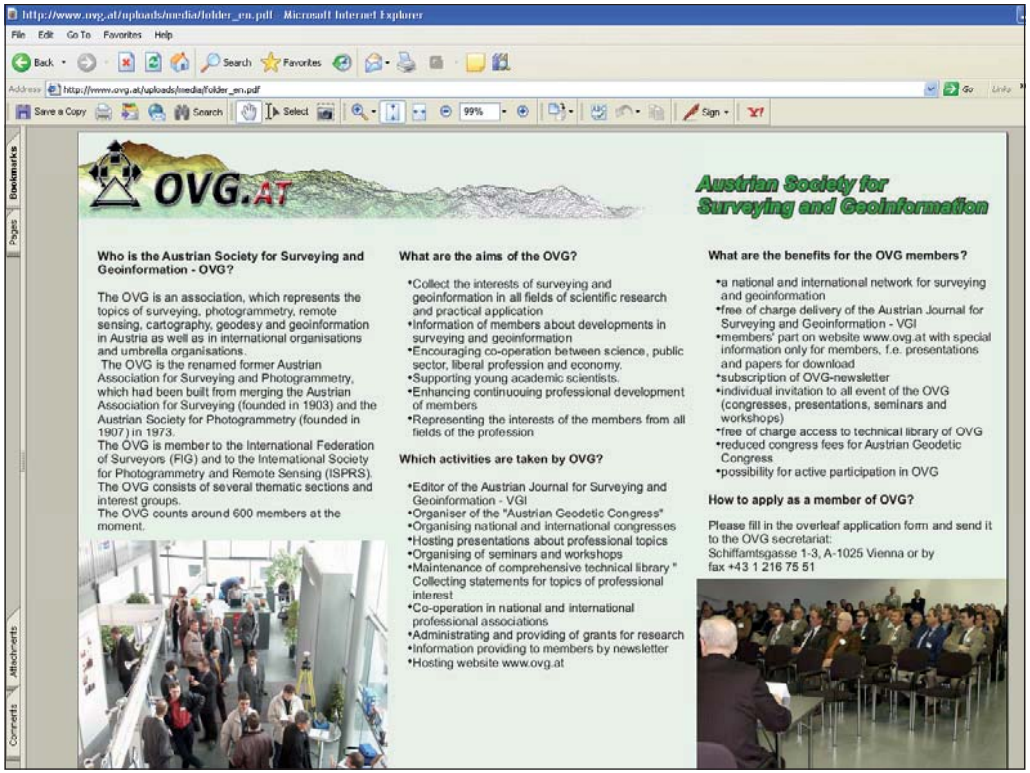
Data integration requires accurate data



GIS Users

Opportunities for surveyors

- Infrastructure management
- Asset management
- Utility distribution systems
- Transmission systems
- Facilities management
- Industrial facilities
- Environmental analysis
- Feasibility analysis
- Tax mapping
- Parcel management
- Zoning maps
- Addressing
- Emergency vehicle routing
- Land use planning
- Public safety
- Many, many more



OVG.AT

Austrian Society for Surveying and Geoinformation

Who is the Austrian Society for Surveying and Geoinformation - OVG?

The OVG is an association, which represents the topics of surveying, photogrammetry, remote sensing, cartography, geodesy and geoinformation in Austria as well as in international organisations and umbrella organisations.
The OVG is the renamed former Austrian Association for Surveying and Photogrammetry, which had been built from merging the Austrian Association for Surveying (founded in 1903) and the Austrian Society for Photogrammetry (founded in 1907) in 1973.
The OVG is member to the International Federation of Surveyors (FIG) and to the International Society for Photogrammetry and Remote Sensing (ISPRS).
The OVG consists of several thematic sections and interest groups.
The OVG counts around 600 members at the moment.

What are the aims of the OVG?

- Collect the interests of surveying and geoinformation in all fields of scientific research and practical application
- Information of members about developments in surveying and geoinformation
- Encouraging co-operation between science, public sector, liberal profession and economy.
- Supporting young academic scientists.
- Enhancing continuouing professional development of members
- Representing the interests of the members from all fields of the profession

Which activities are taken by OVG?

- Editor of the Austrian Journal for Surveying and Geoinformation - VGI
- Organiser of the "Austrian Geodetic Congress"
- Organising national and international congresses
- Hosting presentations about professional topics
- Organising of seminars and workshops
- Maintenance of comprehensive technical library " Collecting statements for topics of professional interest
- Co-operation in national and international professional associations
- Administrating and providing of grants for research
- Information providing to members by newsletter
- Hosting website www.ovg.at

What are the benefits for the OVG members?

- a national and international network for surveying and geoinformation
- free of charge delivery of the Austrian Journal for Surveying and Geoinformation - VGI
- members' part on website www.ovg.at with special information only for members, f.e. presentations and papers for download
- subscription of OVG-newsletter
- individual invitation to all event of the OVG (congresses, presentations, seminars and workshops)
- free of charge access to technical library of OVG
- reduced congress fees for Austrian Geodetic Congress
- possibility for active participation in OVG

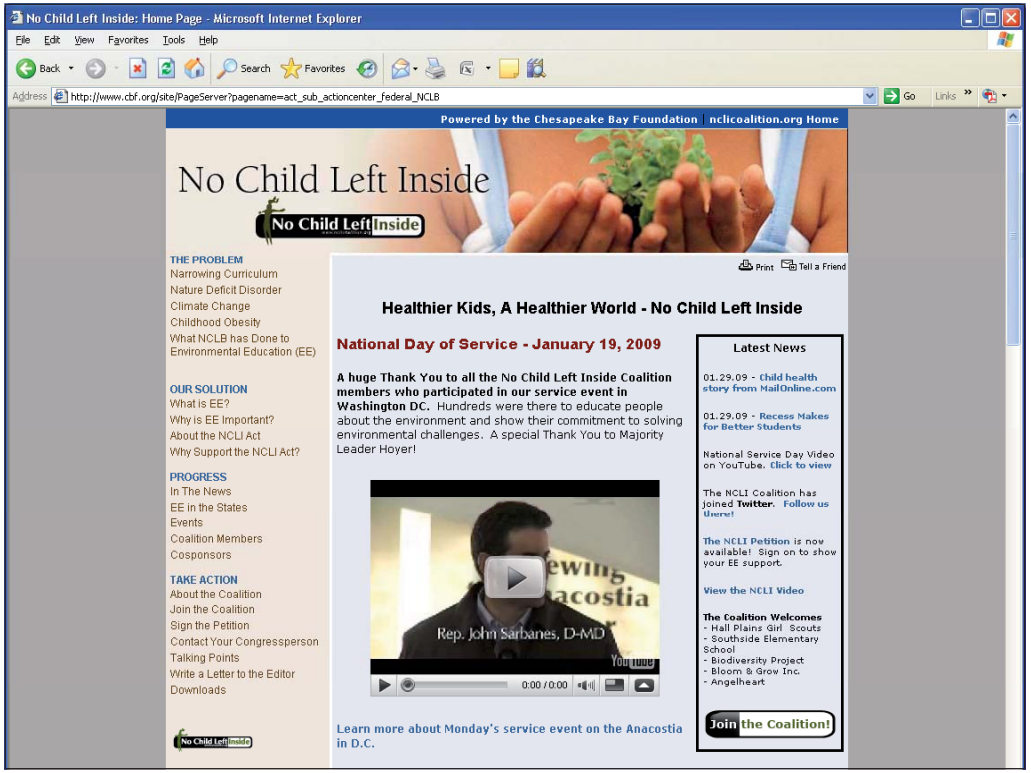
How to apply as a member of OVG?

Please fill in the overleaf application form and send it to the OVG secretariat:
Schiffamtsgasse 1-3, A-1025 Vienna or by fax +43 1 216 75 51

Marketing = message (perception)

Surveying = standing outside: sun, rain, snow,….

Many kids do not go outside ☹



Modern landscapes…..

FIG - Surveyor - A Definition

- A surveyor is a professional person with the academic qualifications and technical expertise to conduct one, or more, of the following activities;
  - to determine, measure and represent land, three-dimensional objects, point-fields and trajectories;
  - to assemble and interpret land and geographically related information,
  - to use that information for the planning and efficient administration of the land, the sea and any structures thereon; and,
  - to conduct research into the above practices and to develop them.

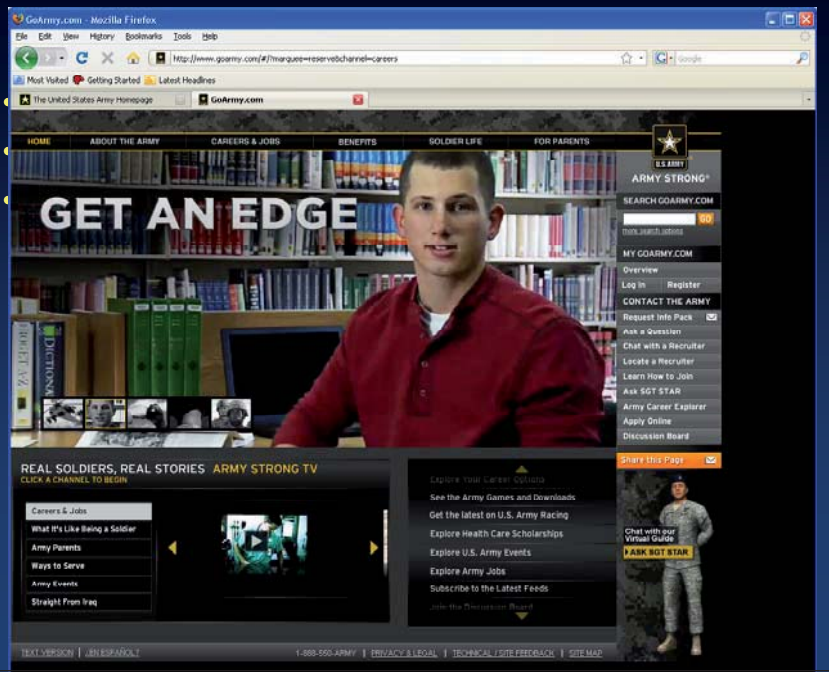
(http://www.fig.net)

GIS as an Integrating Design Platform

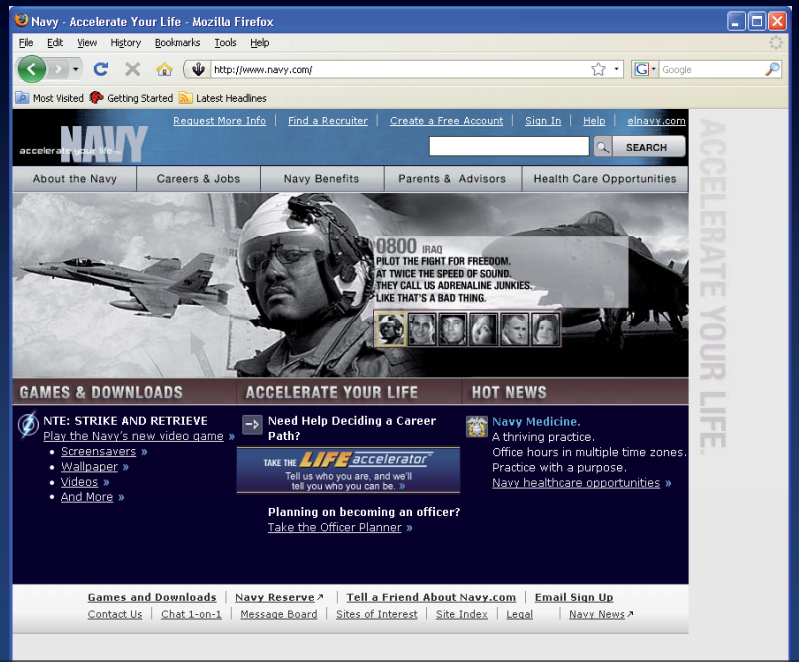
Common Language to Share, Analyze and Communicate Knowledge of the Natural and Built Environments

- Database Centric
  - Data Management
  - Query
  - Extensible
  - Useful Toolbox
- Integration
  - Visualization
  - Computability
- …Survey/Civil
- …CAFM

Marketing case study



From video games to ….



Bishop-Dunne high school Dallas, Texas

A group of students working at a command Post for a mock search and rescue training at one of our state Park s

A group of Search and Rescue team volunteers constructing hiking poles In the GIS lab.

****MISSING ENDANGERED ADULT****

Glenda Gail Furch
Fort Worth, Texas

Missing:	09/28/07
Age:	51
Birthdate:	06/07/1956
Sex:	Female
Race:	Black
Weight:	150 lbs.
Hair:	Brown
Eyes:	Brown
Height:	5' 3"

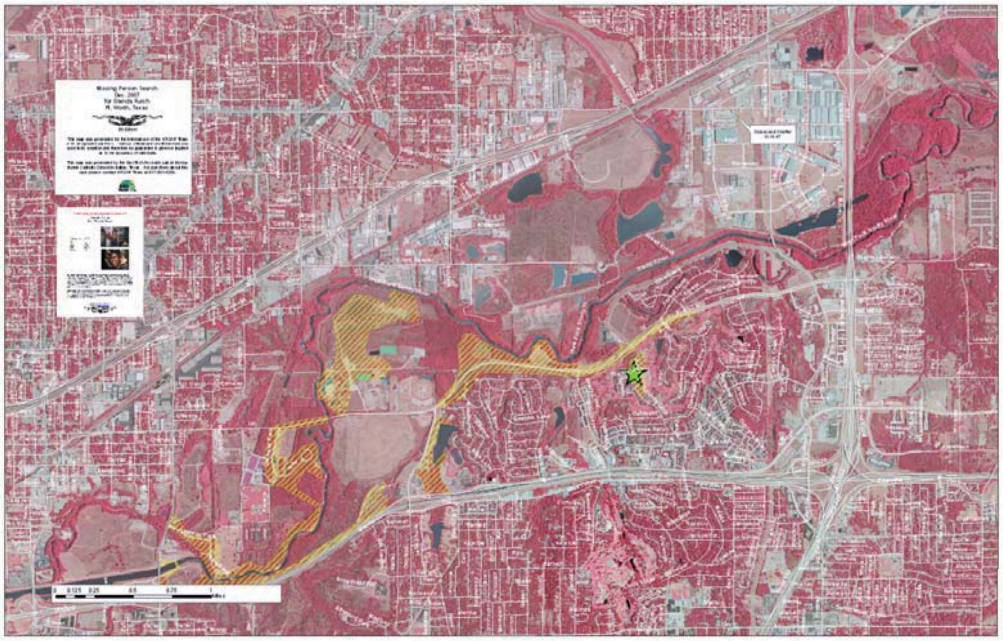
Glenda was last seen leaving her job at the General Motors plant in Arlington around 12:04AM 9/28/07. It is not known what clothing she was wearing. There were items stolen from her apartment along with her purse/cell phone. Her car was found by the Dallas Police Department severely burned on 10/03/2007 at around 3:00 AM at an abandoned car wash in the area of Hatcher Road, just south of Military Parkway.

ANYONE WITH INFORMATION of the whereabouts of Glenda Furch should contact the Fort Worth Police Department at (817) 335-4222; Crimestopers 817-469-8477 offering $1,000 reward or United Response Search and Rescue Team at (817) 501-9296 or (214) 687-7814
ALL CALLERS CAN REMAIN ANONYMOUS.

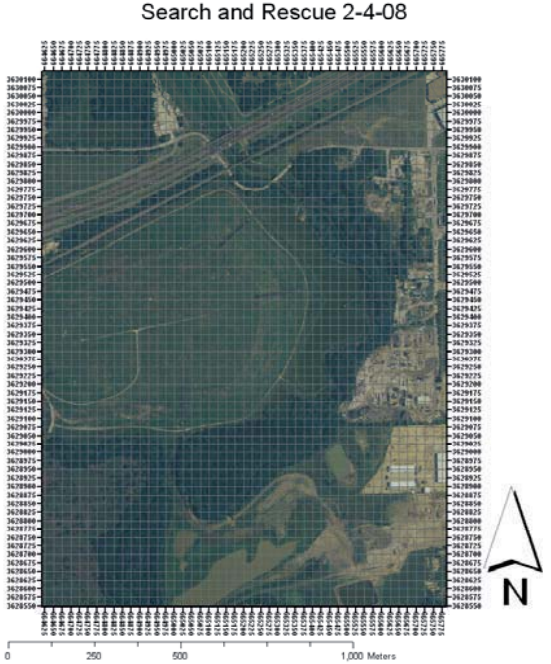
- Schepps Diary is Offering a $5,000 REWARD to any person with information that would lead to the arrest of the Person(s) responsible for this crime.
- Family is offering a REWARD to anyone that has information that will lead us to find Glenda.

URSARTEAM Case # UR10040754
Email: ursarteam@ursarteam.org
Website: www.ursarteam.org
Prepared by United Response Search and Rescue Team

A flyer for a recent case. Students cleared 3 fields for the Fort Worth, Texas police looking for Mrs. Furch. To this day she has not been found.

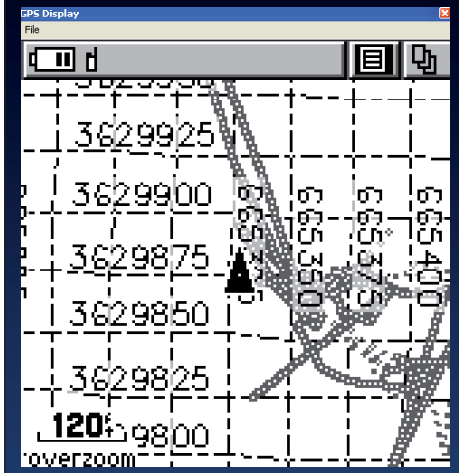


UTM Tics



This is a photo of the UTM Tic map. The map shows the 25 meter grid over the area that is being searched in the 2-4-08 Glenda Furch Search.

DNR Garmin



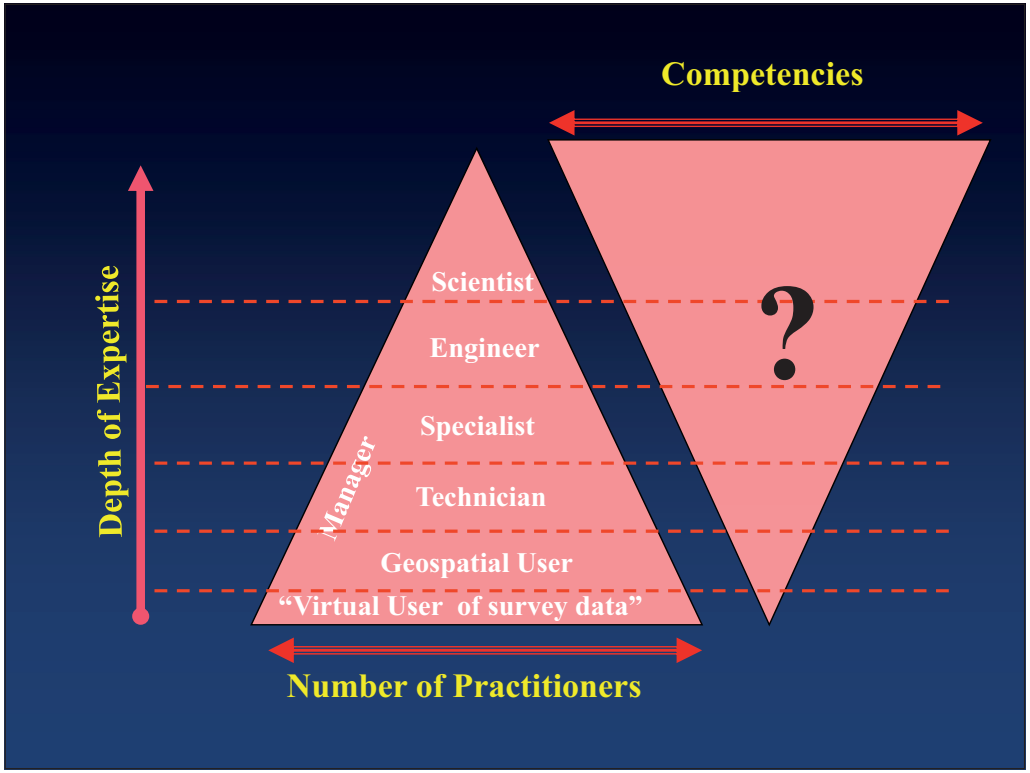
Using ArcMap students generate 25 meter UTM vector grids that are then uploaded into our Garmin RINO GPS's.

During a grid sweep of a pond this set of car keys were found and cataloged as possible evidence in the case.

Often the going it tough during our search operations due to rugged physical and man made challenges.

Lesson: integration

- Field work
- In-class data processing
- Problem solving
- Real-world problems
- Forensics! In High School…
- Posters, PPTs: marketing



Bologna Declaration (Erasmus and Socrates)

- European Credit Transfer and Accumulation System (ECTS)
- Aligning workload and credits to learning outcomes and competencies
  - 60 Credits for full academic year
  - ECTS Grading on a statistical basis – does NOT replace institution grade
  - Learning Outcomes - competency based system
  - 180 Credits for 3 year program for "first cycle degree" (Bachelor's Degree)
- In USA – new Policy to limit 4 year degrees to 120 units – what gets "cut out"?

ECTS

Grade Definition Percentage of students
A excellent - outstanding performance with only minor errors 10%
B very good - above the average standard with some errors 25%
C good - generally sound work with a number of notable errors 30%
D satisfactory - fair but with significant shortcomings 25%
E sufficient - performance meets the minimum criteria 10%
FX fail - some more work required before the credit can be awarded
F ail - considerable further work required

http://www.newdur.ac.uk/international/pages/ects_grading_scale.htm

New Grading Scale

by krikavla — last modified 5 February 2007 09:14

New study results evaluation

ECTS grade	points	mark	Czech-in words	English-in words
A	100-90	1.0	VÝBORNĚ	EXCELLENT
B	89-80	1.5	VELMI DOBŘE	VERY GOOD
C	79-70	2.0	DOBŘE	GOOD
D	69-60	2.5	USPOKOJIVĚ	SATISFACTORY
E	59-50	3	DOSTATEČNĚ	SUFFICIENT
F	49-0	4	NEDOSTATEČNĚ	FAILED

Discussion forum at http://forum.cvut.cz - forum studium

http://gama.fsv.cvut.cz/

Surveyors – academic qualification and expertise (FIG)

- Academic Disciplines:
  - mathematics, astronomy, geography, physics, mechanics, metrology, statistics, geophysics and other scientific disciplines.
- Technology and Tools:
  - verniers, micrometers and circles; standard units of measurement; temperature devices and scales; tables for trigonometric and logarithms; angle and distance measuring devices; calculating devices; barometric devices and use of their readings; the determination of gravity values; tools to determine and depiction of elevation.
- Now and future:
  - Computer science, database creation and management, GIS, Remote Sensing and GPS, satellite systems and ground based sensors and sensor webs, and . . . . . .

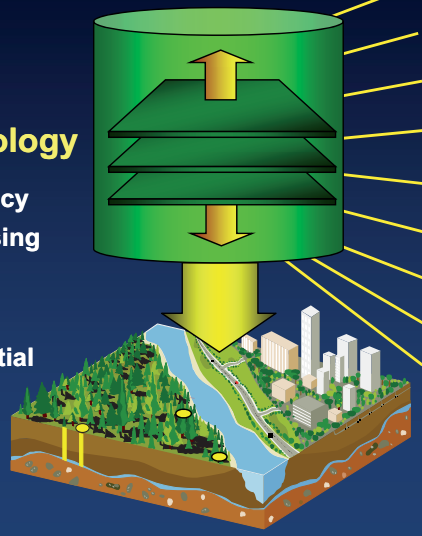
Integration and sharing of all types of data

Location Accuracy - Geography is a "Key"

Geospatial technology

- Positional accuracy
- GIS, Remote Sensing
- Spatial Analysis
- Visualization

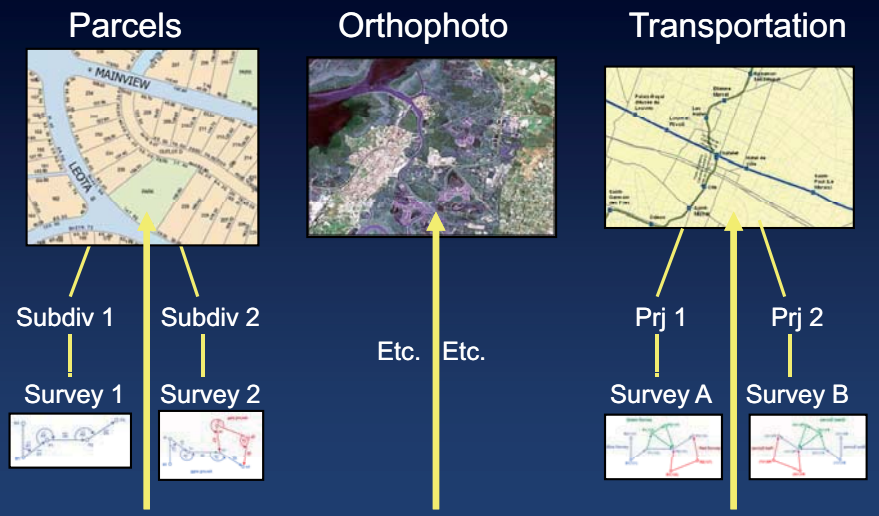
Surveying Is essential



- Social Factors
- Roads/Infrastructure
- Water
- Land Use/Land Cover
- Imagery
- Environment
- Base Maps
- Survey
- Control

. . . Integrating Disciplines and Programs

Cadastre, Roads, Orthophoto

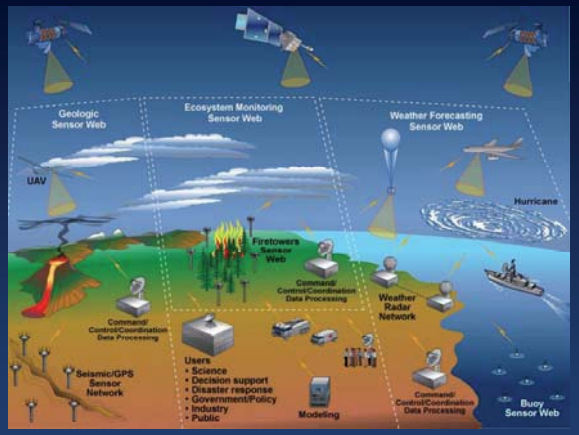


A framework onto which other layers can be positioned accurately

Sensor Networks
- Autonomous and interactive need positional accuracy

More Data, More Often, More comprehensive

- Traffic
- Weather
- Monitors
- Satellites
- Aircraft
- Mobile
- Census
- Demographic
- Business
- Infrastructure
- Surveying
- Design



- Streams
- Seismic
- Tsunami
- Crime
- Disease Surveillance
- RFID
- Etc.

Creating Curriculum, Models and Competencies

- Examples from GIS and Geospatial
  - NCGIA GIS Core Curriculum
    - 3 course with notes
  - University of Southern Mississippi Geospatial Workforce Model
  - UCGIS Model Curriculum and Body of Knowledge
  - DACUMS at the workforce level

University Consortium for Geographic Information Science

- UCGIS founded in 1994
- Now more then 70 member institutions and affiliate members including AGILE
- Focused on GIScience Research and support for programs
- Challenges defined in 1997
  - One Educational challenge lead to the proposal for a Model Curriculum

"GI S&T" Model Curricula

- Focus on undergraduate (4 year) education
  - Addressed Marble's "Rebuilding the Top of the Pyramid"
  - Attempt to recognize GI S&T within a broader academic context
- Domain of Model Curricula - GI S&T
  - Geographic Information Science
  - Geospatial Technologies
  - Applications of GI S&T
- Strawman document completed in June 2003 under Dr. Duane Marble by the UCGIS in
  - Work stalled due to lack of funding

Second Phase of UCGIS Model Curriculum Project

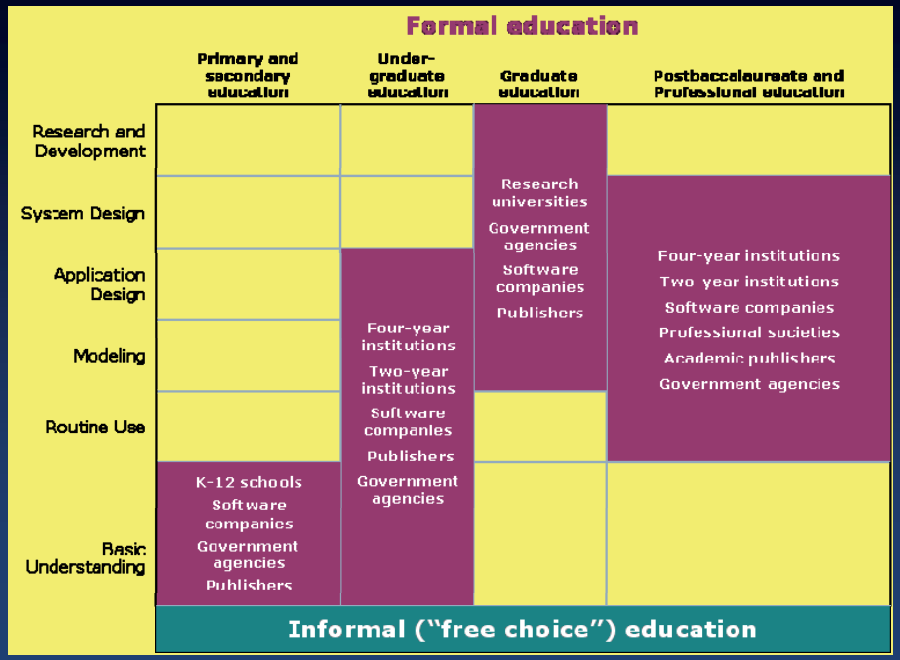
- Decision in 2004 to reinitiate effort under leadership of David DiBiase
  - Pennsylvania State University
  - Chair of Education Committee of UCGIS
- Formed a much smaller working group with a 3 year project proposal
- Limited Funding so redefined as a One Year effort to
  - Create a Body of Knowledge for GIS

How is the BoK different?

- GIS education must be addressed at more than the undergraduate level (4 year Bachelor Degree)
- Cross-cutting themes reintegrated into KAs
- Original Model Curriculum Sections (Paths, Mastery levels, pedagogy, implementation) moved to a future time
- Body of Knowledge now divided in 10 KA's
  - Knowledge Areas
    - Units
      - Topics
        - » Learning Objectives (modified Boom's Taxonomy)

    Key Readings

Scope of BoK expanded to include:



Ten KA's in the BoK – structured alphabetically

- AM. Analytical Methods (formerly Data Analysis)
- CF. Conceptual Foundations
- CV. Cartography and visualization
- DE. Design aspects
- DM. Data modeling
- DT. Data manipulation
- GC. Geocomputation
- GD. Geospatial data
- GS. GIS and Society
- OI. Organizational and institutional aspects

Example Unit, Topics, and Objectives

Unit AM4 Basic analytical operations *(core unit)*
This small set of analytical operations is so commonly applied to a broad range of problems that their inclusion in software products is often used to determine if that product is a "true" GIS. Concepts on which these operations are based are addressed in Unit CF3 Domains of geographic information and Unit CF5 Relationships.

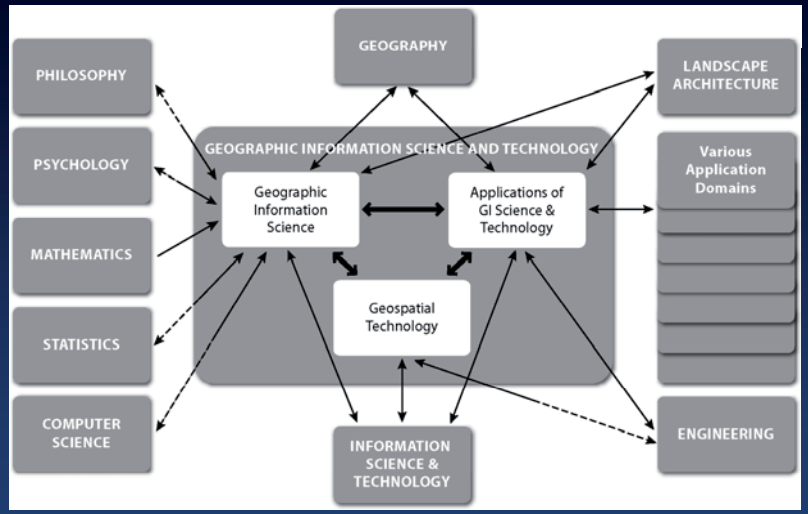
Topic AM4-3 Neighborhoods

- Discuss the role of Voronoi polygons as the dual graph of the Delaunay triangulation
- Explain how Voronoi polygons can be used to define neighborhoods around a set of points
- Outline methods that can be used to establish non-overlapping neighborhoods of similarity in raster datasets
- Create proximity polygons (Thiessen/Voronoi polygons) in point datasets
- Write algorithms to calculate neighborhood statistics (minimum, maximum, focal flow) using a moving window in raster datasets

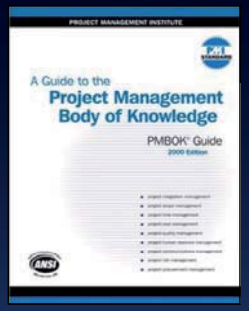
Topic AM4-4 Map algebra

- Describe how map algebra performs mathematical functions on raster grids
- Describe a real modeling situation in which map algebra would be used (e.g., site selection, climate classification, least-cost path)
- Explain the categories of map algebra operations (i.e., local, focal, zonal, and global functions)
- Explain why georegistration is a precondition to map algebra
- Perform a map algebra calculation using command line, form-based, and flow charting user interfaces

The GIS&T domain



Bodies of Knowledge in other domains



Second Edition of Body of Knowledge

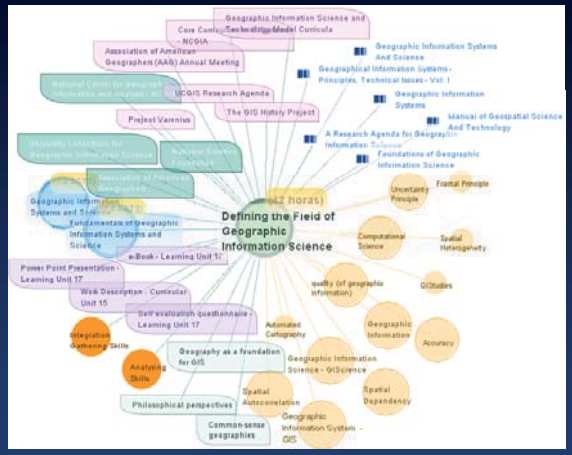
- First edition needs expansion
- Some topics very lightly covered
- Some topics missing
  - Technology and applications
- Needs Global Input for 2nd Edition
  - Contact David DiBiase
- Need "Pathways" for different Disciplines and Applications

Case of Universidade Nova de Lisboa

- All-out marketing study and multiple campaigns
- Search for new students
- Dissemination to key high schools
- Professional marketing, aimed at the real market (kids)
- Participation at job fairs in Portugal, other European, Brasil
- > Euro 25000 annually

Giving ontological meaning using a Semantic Network and a Visual Data Interaction Tool

Marco Painho
Director
Instituto Superior de
Estatística e Gestão de Informação
Universidade Nova de Lisboa
painho@isegi.unl.pt



EXPLORING GIS&T BoK USING THE GISCIENCE CURRICULA DEVELOPMENT MODEL

http://193.136.119.12:8080/examples/MESTRADO_spider_en/webapp/

Universidade Nova de Lisboa
INSTITUTO SUPERIOR DE ESTATÍSTICA E GESTÃO DE INFORMAÇÃO

2004
2005

ISEGI é aqui

Workshop:
Marketing of Geographic Information Institutes
Students acquisition

CASE STUDY: ISEGI-UNL

Marco PAINHO, Sónia Casqueira, Miguel Peixoto

painho@isegi.unl.pt
www.isegi.unl.pt/labnt

Institute for Statistics and Information Management
Universidade Nova de Lisboa

8th AGILE Conference on GIScience
Estoril, May 24-25, 2005

1. Creating and professionalizing a marketing function to attract students (1)

2004
2005

ISEGI ! é aqui

ISEGI's other courses

- Handled together by ISEGI and ADISEGI
  - 12 courses from 1 to 5 days long
  - Including 2 in GI
  - Non degree granting
- ADISEGI is a private, non-profit organization composed of

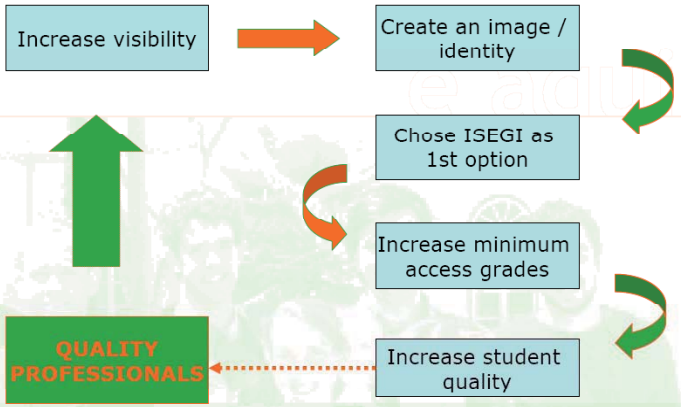
IBM, Fidelidade Mundial Seguros, hp invent, Banco de Portugal, accenture, edp, ESRI Portugal, IAPMEI, Instituto Nacional de Estatística Portugal, sas e-Intelligence, UNISYS

2. Marketing for degree in Information Management (7)

2004
2005

ISEGI ! é aqui

OBJECTIVES



2004
2005

ISEGI ! é aqui

GISBrasil 2004
4th edition

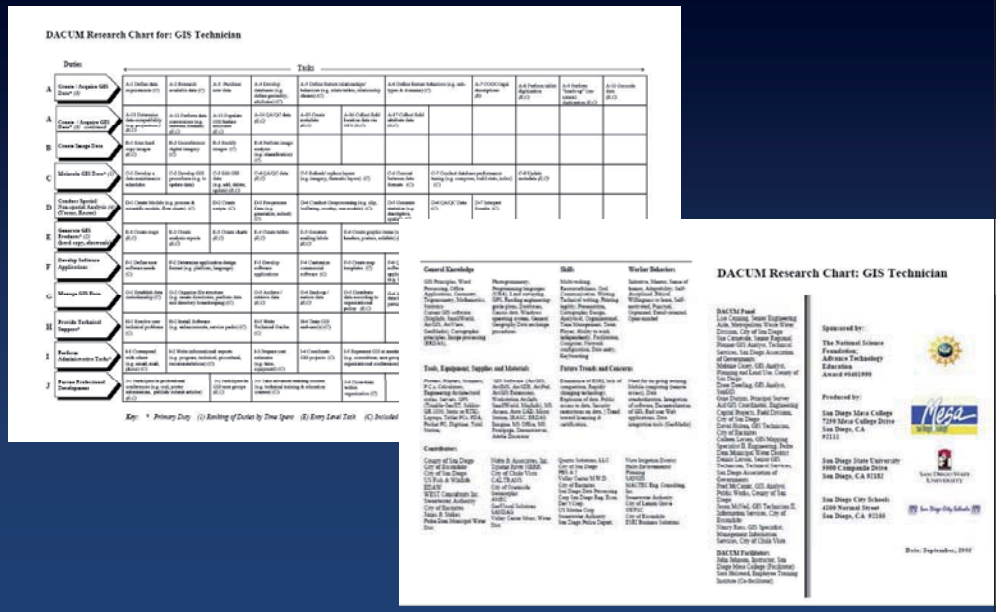
2004
2005

ISEGI ! é aqui

Other Initiatives

- USGIF (United State Geospatial Intelligence Foundation)
  - Need for more, better educated workforce GI Analysts
  - Accreditation of programs and recognition of student progress
  - Now online
  - http://www.usgif.org
- European Computer Drivers License for GIS
  - GIS, Cartography, Technology
  - Pilot announced in Italy

DACUM – Developing A Curriculum for a GIS Technician



A-2: Job Analysis

DACUM Research Chart for GIS Technician

Duties	Tasks				
A Create GIS Data* (3)	A-1 Define user(s) needs	A-2 Research existing data sources	A-3 Determine Data Structure e.g. database design, defining attributes, geometry, relating tables		A-4 Define Feature Relationships/ Behaviors
B Create Image Data	B-1 Scan images (E)	B-2 Georeference imagery	B-3 Rectify images	B-4 Perform Image Analysis e.g. classification	
C Maintain GIS Data* (1)	C-1 Develop a data maintenance schedule and procedures	C-2 Edit GIS data e.g. add, delete, update (E)	C-3 QA/QC Data (E)	C-4 Refresh/ Replace Layers e.g. imagery, thematic layers	C-5 Convert Data Format
D Conduct Spatial/ Nonspatial Analysis (4) (Vector, Raster)	D-1 Create Models e.g. process & scientific models, scripts, flow charts	D-2 Preprocess Data e.g. generalize, subset	D-3 Conduct Geoprocessing e.g. clip, buffering, overlay, run models, geocode data		D-4 Generate Statistics e.g. descriptive, spatial
E Generate GIS Products* (2) (hard copy, electronic)	E-1 Create maps (E)	E-2 Create Analysis Reports (E)	E-3 Create Charts (E)	E-4 Create Tables (E)	E-5 Generate mailing labels (E)
F Develop Software Applications	F-1 Define User Needs	F-2 Select Application Design e.g. platform, language	F-3 Develop Custom Applications	F-4 Customize Commercial Software	F-5 Create Map Templates
G	G-1 Establish	G-2 Organize File Structure	G-3 Archive (		G-4 Back-up (

SCID

SYSTEMATIC CURRICULUM & INSTRUCTIONAL DEVELOPMENT

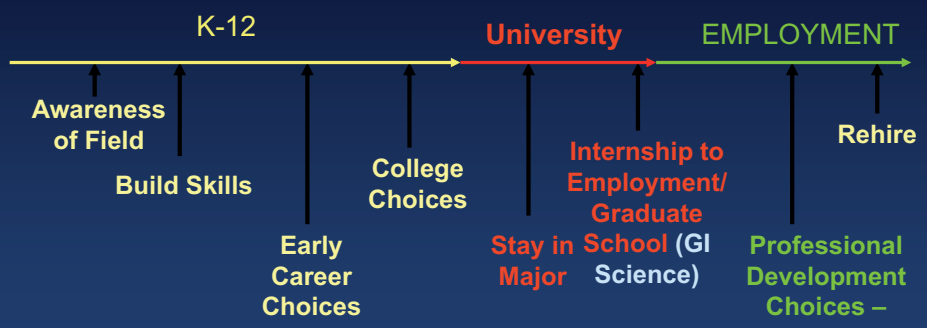
Major Components

Phases

- A - ANALYSIS: A-1 Conduct Needs Analysis → A-2 Conduct Job Analysis → A-3 Conduct Task Verification → A-4 Select Tasks for Training → A-5 Conduct Standard Task Analysis → A-6 Conduct Literacy Task Analysis
- B - DESIGN: B-1 Determine Training Approach → B-2 Develop Learning Objectives → B-3 Develop Performance Measures → B-4 Develop Training Plan
- C - DEVELOPMENT: C-1 Develop Competency Profile → C-2 Develop Learning Guides/Modules → C-3 Conduct Task Verification → C-4 Develop Lesson Plans → C-5 Develop Supportive Media → C-6 Pilot-Test/ Revise Materials
- D - IMPLEMENTATION: D-1 Conduct Needs Analysis → D-2 Conduct Job Analysis → D-3 Select Tasks for Training → D-4 Conduct Standard Task Analysis
- E - EVALUATION: E-1 Conduct Summative Evaluation → E-2 Analyze Information Collected → E-3 Initiate Corrective Actions

ormation on SCID, please contact Dr.
rton, 800-848-4815, Ext. 2-8481 or

Average Age of Surveyors in USA is 57 – Building Programs for Lifelong Learning



Joseph S.Toole
Associate Administrator of
Professional Development
Federal Highway Administration
January 11, 2004

Marketing the Program and the Career

- Need to capture interest on young students
- What's in a name? Geomatics?
- Mentor or provide outreach to young students
- Provide information on careers with income and benefits
  - Geodata integration!
- Connect with Industry
  - Curriculum design
  - Internships
  - Capstone Projects
- Connect with Professional Organizations

Some Ideas and challenges

- Capture what has been done
- Use the best part of many processes
  - BoK, DACUM, new tools, new names
- Share what is learned – FIG
- Integration (data) is the key!

What we are doing

- ESRI business up 10% last year
- January 2009 numbers also up, over Jan 2008
- Surveying/Cadastre, up 38%
  - Partly Google effect
  - Also new tools, double precision, etc.
- Focus on Infrastructure
  - US Stimulus Bill
  - A concern in general
  - Surveying plays major role
- Education focus at the company
  - Part of the company ethos
- Emphasis on promoting Spatial Thinking
- Support innovative Ed initiatives around the world
  - Nepal, Vietnam, Iraq, across Africa,…
  - Virtual Ed team (Europe)
- Participation in BoK2 and other similar projects
- Open to new ideas…

REMINDER:

Survey & Engineering GIS Summit
San Diego, July 11-14, 2009
www.esri.com/segsummit

International Federation of Surveyors
Fédération Internationale des Géomètres
Internationale Vereinigung der Vermessungsingenieure
FIG COMMISSION 2
Professional Education

Thank you for your attention

Michael Gould

mgould@esri.com