Geoinformation Issues for Developing Countries

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by
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Technical Cooperation with the Developing Countries

The BEV (The German Advisory Group for Surveys and Geoinformation in Technical Cooperation for the Developing Countries) is active in Technical Cooperation Projects financed by the German KFW and GTZ and the World Bank.

Members of the BEV represent the administrative, the private and and the academic sectors.

German Technical Cooperation takes place in more than 30 countries, mainly in Cadastre and Land Management (e.g. Georgia, Cambodia, Mongolia, Namibia and in the Balkan Countries) or on planning jnformation systems (e.g. Albania).

Croatia

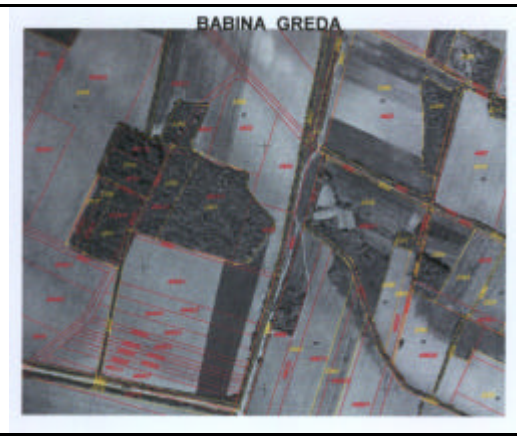
verification of cadastral maps by superposition with geocoded orthophotography

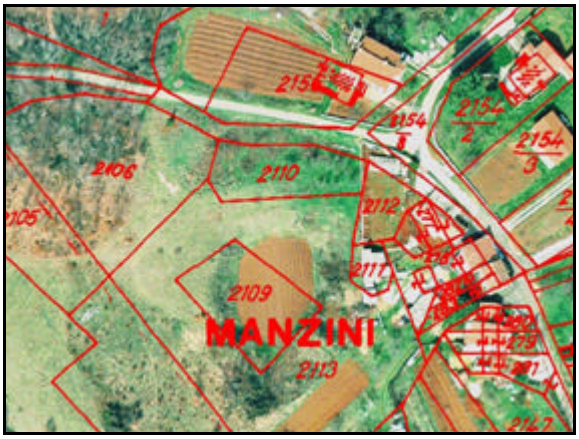
Georgia and Cambodia

adjudication of cadastral boundaries in the field using orthophotos on tablet computers, photography of ownership documents

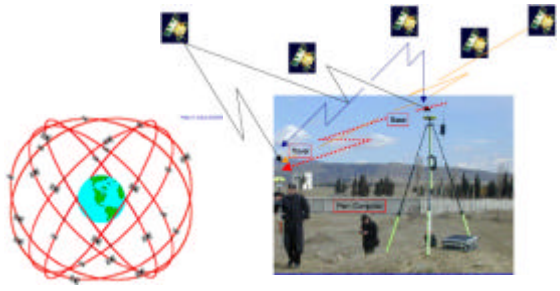
Albania

development of a Planning GIS on the basis of geocoded high resolution satellite images combinedwith field data collection on GPS controlled tablet PC´s





Used Technology – Georeferencing



Mobile Data Access

Compaq iPAQ Pocket PC
with „GNSS Internet Radio“

Nokia D211 GPRS modem

DGPS: 0.7 cent/min

GIS & DGPS:
Simultaneous Real-Time
Access to Distributed Data

An Urban GIS for Tirana, Albania

1. AvailableHigh Resolution Satellite Images
2. Referencing to ITRF
3. Collection of relevant municipal data
4. Scanning of analog data
5. Geocoding of scanned data
6. Introduction into ArcGIS geodatabase
7. Use of analysis capabilities
8. Digital Globe and Google Earth

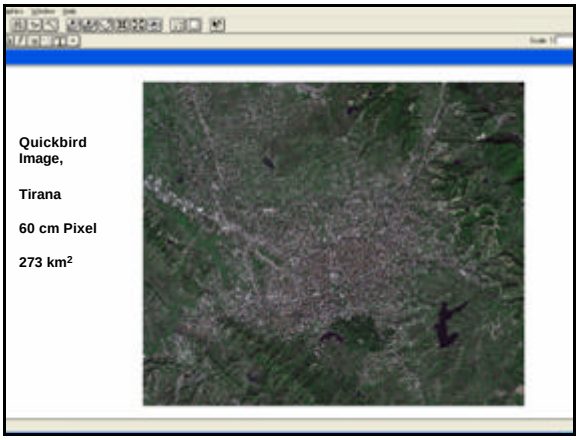
Examples shown for what can be done are from a World Bank Project for the Municipality of Tirana, Albania

Project execution: 6 months in 2005

acquired were:
1 Quickbird satellite image (273 km²) –orthoready product
1 server with ArcSDE linked to Oracle
2 ArcExplorer
10 ArcView

field survey:
ITRF connection for GPS/DGPS contracted for 4 primary points, densification via RTK to 60 control points for geocoding of satellite image,
detail survey with GPS linked field computer

cost: 200 000$ for 60 km²



Quickbird Image,

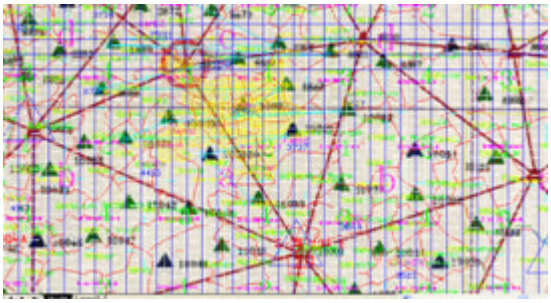
Tirana

60 cm Pixel

273 km²

GPS Network Supporting IGS (274 sites)

Geodetic Netwwork referenced to ITRF



original cadastral map 1:500 (1992) digitized to 1:2000 accuracy (1996)

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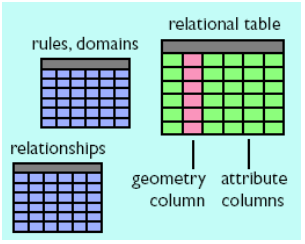
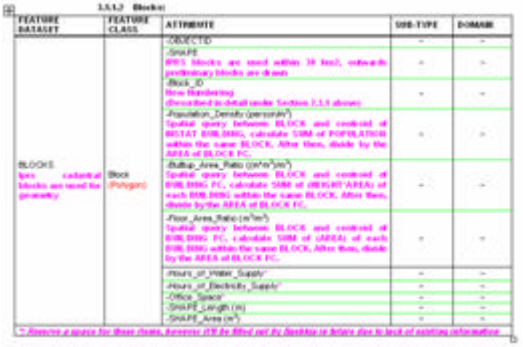
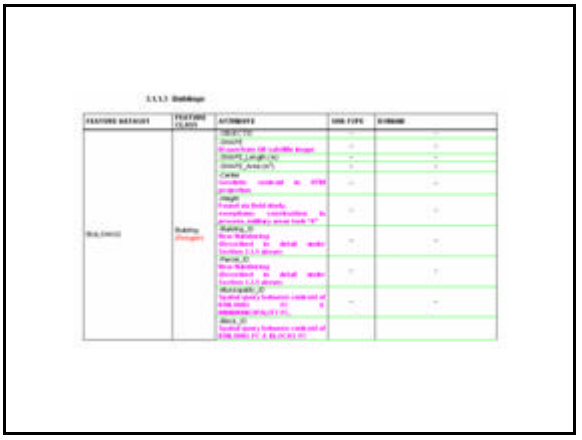
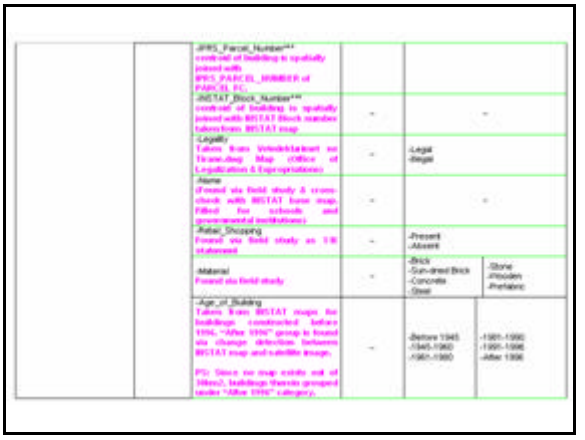
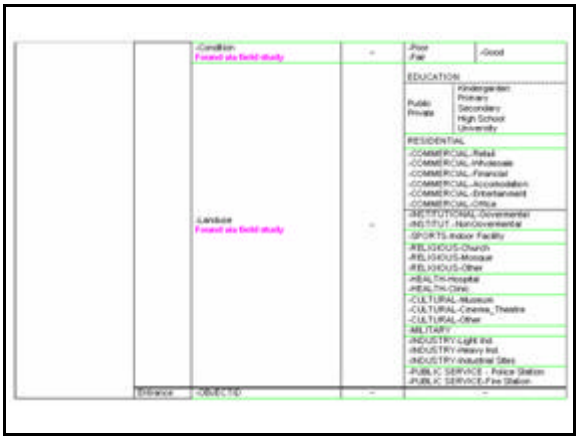
The geodatabase data model (3rd generation)

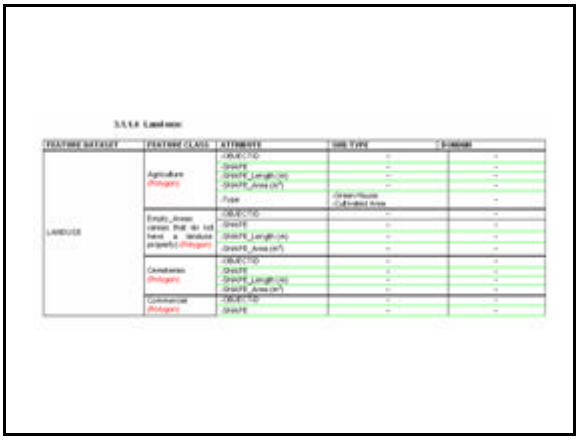




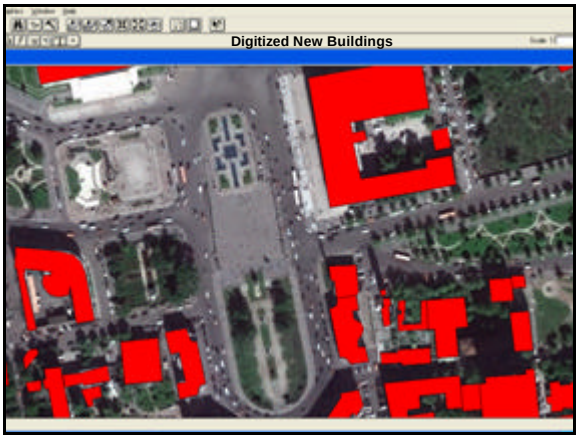


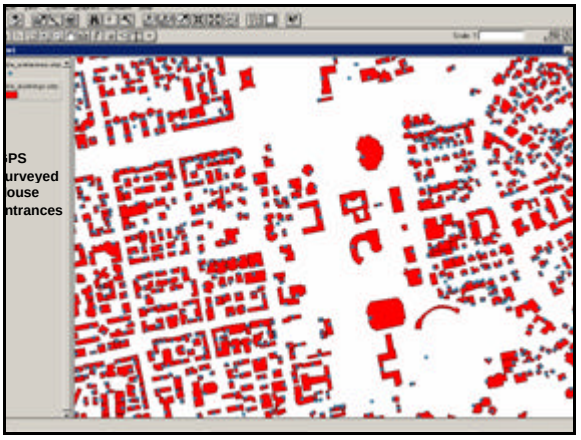







Digitization of New Buildings


Digitized New Buildings



PS
urveyed
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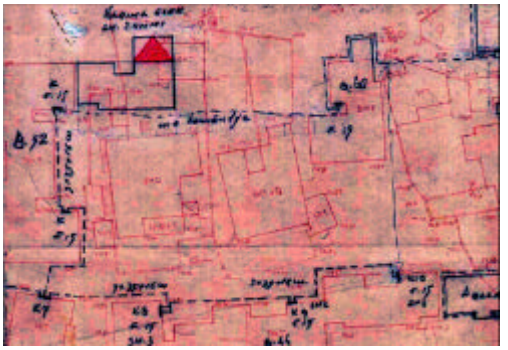
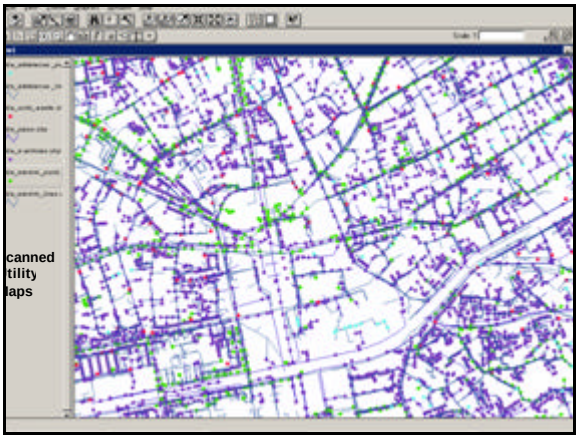
ntrances

Land
Use

Updating of New Buildings

Existing Electricity Maps



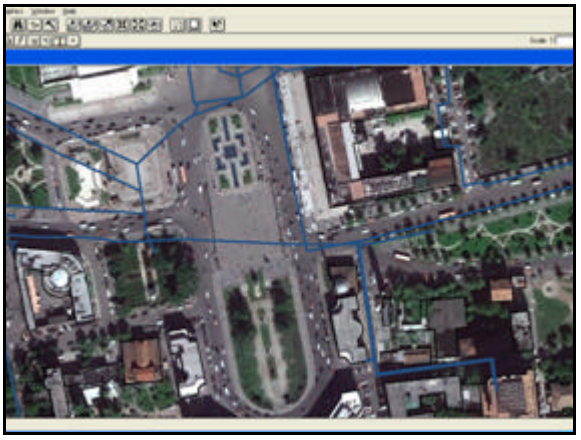


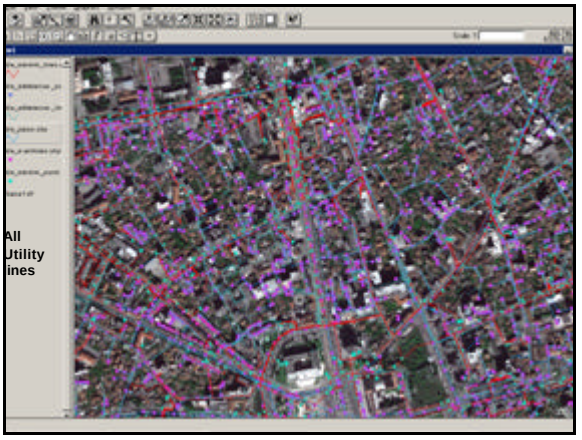
canned
tility
aps

3.1.1.5 Electricity:

FEATURE DATASET	FEATURE CLASS	ATTRIBUTE	SUB-TYPE	DOMAIN
ELECTRICITY	Law (Law)	-OBJECTID	–	–
		-SHAPE	–	–
		-SHAPE_Length-(m)	–	–
		-Type	–	-Overhead -Underground
		-Voltage	–	–
	Electrical_points (Point)	-OBJECTID	–	–
		-SHAPE	–	–
		-Type	Pole Manhole Transformer	–
	Electricity Service Area * (Polygon)	-OBJECTID	–	–
		-SHAPE	–	–
		-SHAPE_Length-(m)	–	–
		-SHAPE_Area-(m²)	–	–
		-Description	–	–

* Reserve a space for these items, however it'll be filled out by Sunkiss in future due to lack of existing information




All
Utility
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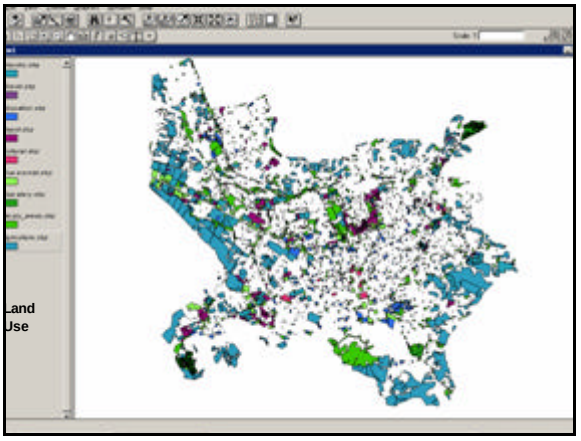
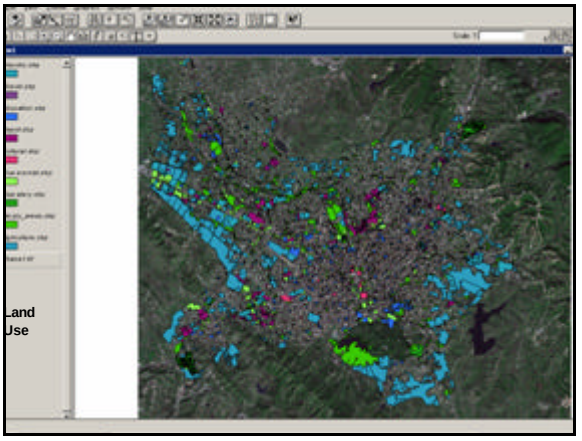
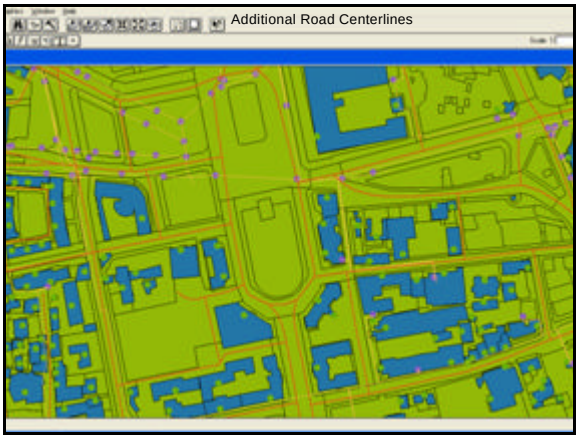

Land
Use


Land
Use


Additional Road Centerlines

Result of Project:

The Municipality of Tirana now has data to monitor and to plan urban development

- **quickly (6 months)**
- **inexpensively (2000 to 3000$ per square km)**
- **updatable every year (by newly ordered satellite image at cost of 5000$ and by local maintenance contract)**