 **MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES OF UKRAINE**
State Service on Geodesy, Cartography and Cadastre

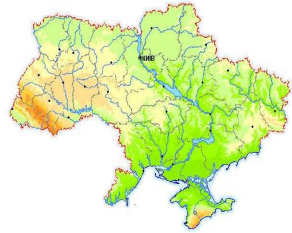
STATE AND PROSPECTS OF MAPPING IN UKRAINE



Durban - 2003

The description of the object of mapping

- **Area – 603 700 sq. km**
- **Population – 49 200 000**
- **24 Regions and AR Crimea**
- **499 admin. districts**
- **30212 settlements, including 1358 cities and towns**
- **72 000 rivers (total length more than 240 000 km)**

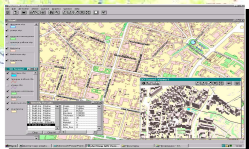


Cartographic supply of Ukraine

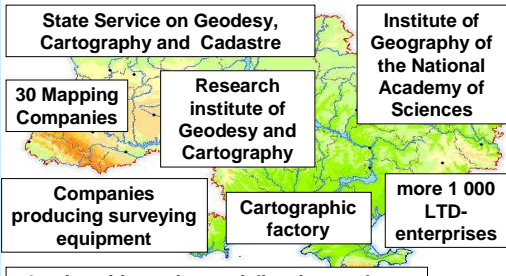
Topographical maps in standard scales:

- 1:1 000 000 – 9 sheets
- 1:500 000 – 26 sheets
- 1:250 000 – 156 sheets
- 1:100 000 – 538 sheets
- 1:50 000 – 2000 sheets
- 1:25 000 – 8000 sheets
- 1:10 000 – 30 000 sheets

Plans in the scales 1: 5 000 and 1: 2 000 for all the cities and towns – more than 350 000 sheets



The infrastructure of mapping ...




- State Service on Geodesy, Cartography and Cadastre
- Institute of Geography of the National Academy of Sciences
- 30 Mapping Companies
- Research institute of Geodesy and Cartography
- Companies producing surveying equipment
- Cartographic factory
- more 1 000 LTD-enterprises
- 6 universities train specialists in geodesy, cartography and cadastre

Problems of mapping in Ukraine...

Updating of cartographical materials

- Economic reforms
- Administrative-territorial reform
- Land reform
- Renaming of large quantity of geographical names
- Economic problems of transitions period of formation of independent state


All this has accelerated the “ageing” of cartographical materials



GEOINFORMATION MAPPING...

Geoinformational Mapping- based on the basis of geographical data, digital methods of topographic/geodetic and GPS measurements, remote sensing and digital photogrammetry

GIM results and environment of functioning are spatial databases

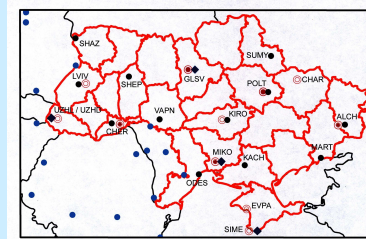


Infrastructure GIS Mapping ...

- Fundamental network of GPS-stations
- Bank of geographical data
- Unified system of classification and encoding of topographical objects and their attributes in bases of digital maps
- Network of regional centers responsible for cartographic support
- State Cartographic Fund
- Technological basis of geoinformation mapping



Fundamental network of GPS-stations in Ukraine...



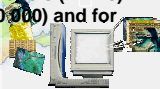
КАРТОГРАМА РОЗМІЩЕННЯ ПУНКТІВ ФУНДАМЕНТАЛЬНОЇ GPS МЕРЕЖІ УКРАЇНИ

Умовні позначення:

- - Пункти фундаментальної мережі які спостерігаються за програмою EUREF
- ◆ - Пункти включені до мережі EURN
- - Перманентні станції польових та включені до мережі IGS
- - Перманентні станції які плануються відкрити
- - EUREF пункти за межами України

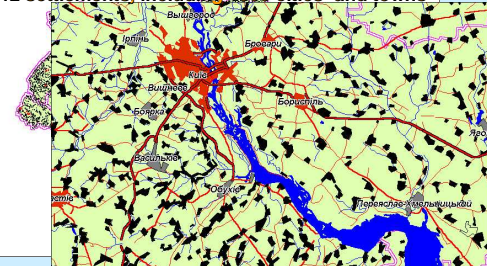
Bank of the geographical data...

- Gedetic network Database
- Digital maps in the scale 1:200 000 (for territory of Ukraine)
- Digital maps in the scale 1:10 000 (for large cities)
- Digital orthophotomaps in the scale 1:2 000 for single territories
- Database of digital elevation models (DEMs) for all territory of Ukraine (1:200 000) and for large cities (1:10 000)

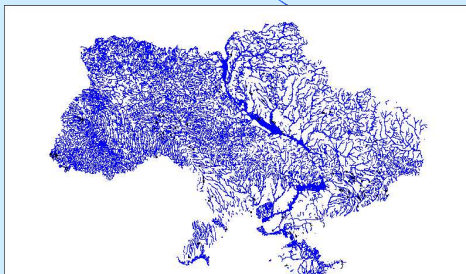


Bank of the geographical data (settlements and administrative boundaries)

30212 settlements, including 1358 cities and towns

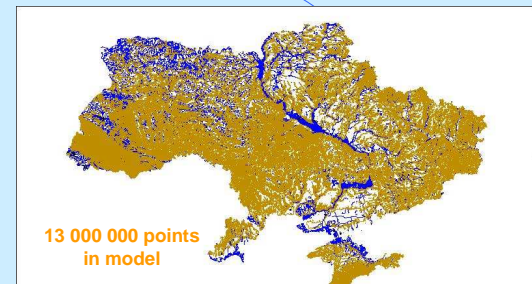


Bank of geographical data (rivers)



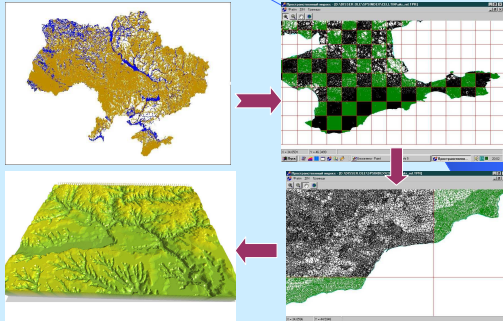
72 000 rivers (total length more than 240 000 km)

Bank of the geographical data (DEM)



13 000 000 points
in model

Process of development of DEM



The technological basis of GIS mapping in Ukraine...

- GIS-tools from Intergraph, ESRI, MapInfo, AutoDesk
- Oracle Database
- Digital photogrammetric systems produced in Ukraine (Production and Research Company "Geosystem")



Digital photogrammetric system (GEOSYSTEM Com., Ukraine)



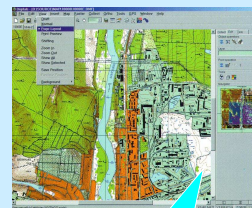
Analytical photogrammetric station "Stereograph"



Digital photogrammetric station "DELTA"

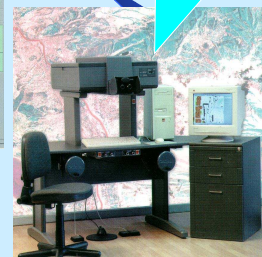
Used in Ukraine and exported to CIS-countries, USA, Great Britain, Sweden, Spain, Italy, South Korea, China, Mexico, Egypt etc.

"GEOSYSTEM" Com. (Ukraine)



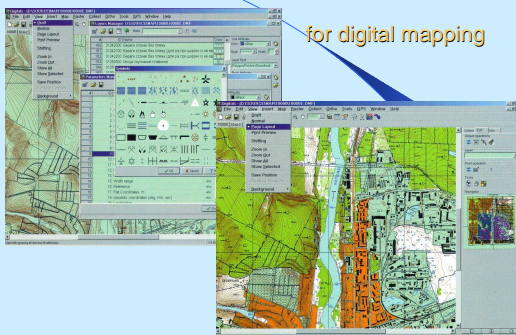
Special software for digital mapping "DIGITALS"

Analytical photogrammetric station "Stereograph"

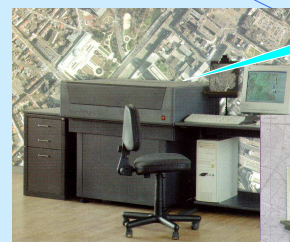


Software "DIGITALS"

for digital mapping



"GEOSYSTEM" Com. (Ukraine)

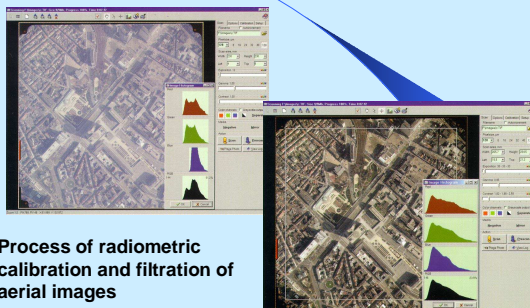


Digital color scanner "DELTA"

Digital photogrammetric station "DELTA"

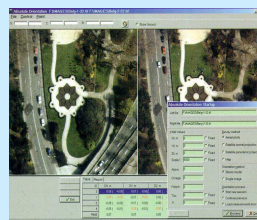


Software for color scanner "Delta":

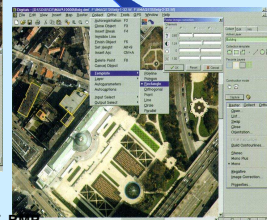


Process of radiometric calibration and filtration of aerial images

Software for digital station "Delta"



For processing of aerial images, creation of digital orthophotomaps and DEMs

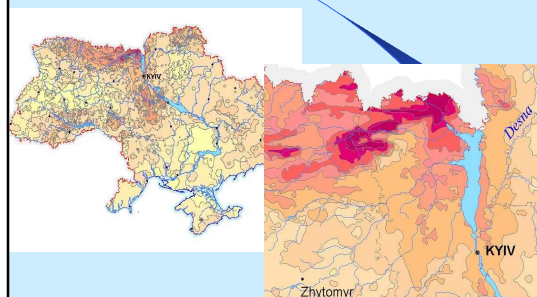


Multifunction, Windows98/NT/2000, TIFF, BMP, DXF+DBF, MID/MIF, ASII formats, network mode, scanning server with database of digital images

Samples of applying of GIS mapping in Ukraine...

- ✓GIS for ecological monitoring in Chernobyl zone
- ✓GIS for tracing under mobile objects in Chernobyl zone
- ✓GIS for emission monitoring
- ✓Land inventory and land cadastre
- ✓Application of DEMs for calculation of zones of radio visibility
- ✓Simulation of zones of possible flooding
- ✓GIS for hydrometeorological service of Ukraine
- ✓Computerized National Atlas of Ukraine on CD
- ✓Informational and reference GIS for large cities on CD
- ✓Web-mapping
- ✓etc.

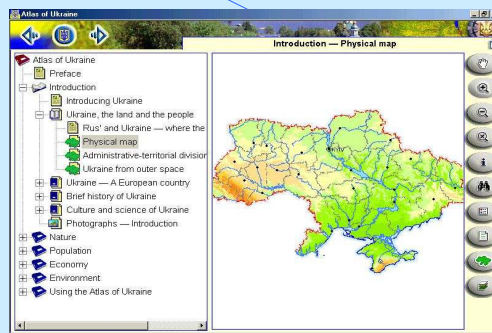
GIS for ecological monitoring in Chernobyl zone



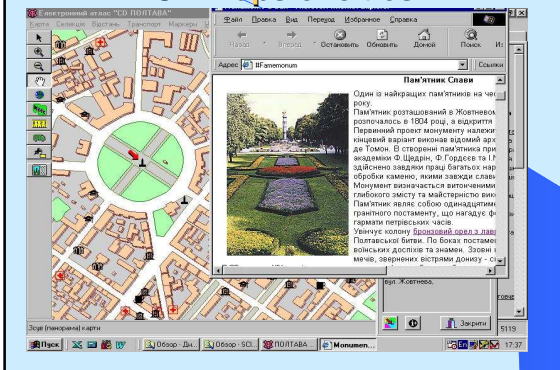
Land cadastre



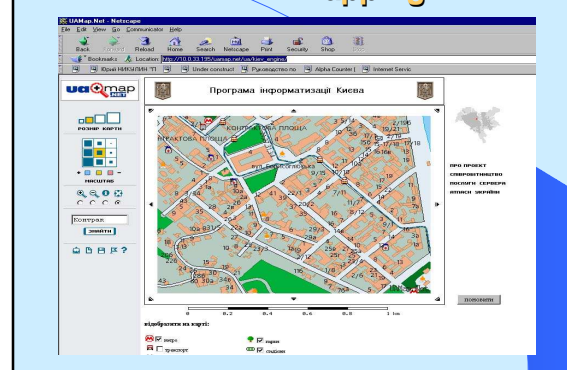
Atlas of Ukraine



CD maps of cities



WEB Mapping



International co-operation

- Canadian-Ukrainian, Swedish-Ukrainian, Ukrainian-French projects on development of systems of land and other real property registration

- Canadian-Ukrainian project "GIS-Chornobyl"

- MapBSR

- Swedish-Ukrainian project "Capacity Building for the Implementation of National Spatial Data Infrastructure"

- EuroGlobalMap

- etc.

Ukraine from outer space

