BULGARIAN CARTOGRAPHY: FROM PAPER TO VIRTUAL REALITY
National Report, 2007

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MAPPING OF BALKAN PENINSULA AND BULGARIA
The period of Russian-Turkish war in 1877-78 and years of establishing of new Bulgarian state on Balkan Peninsula can be considered as the beginning of modern Bulgarian cartography.

Russian topographic corps did the first detailed measurements and large-scale mapping.
Result of the topographic-geodetic works is multisheets map of the country in the scale 1:42 000.
- maps in the scale 1:126 000
- 1:210 000 and other

Old maps collected in the Bulgarian museums and monasteries
- map archive of National Library, National and regional Museums, private collections, General Department of Archives at the council of Ministry of Republic of Bulgaria

The first globe was created by Nestor Rikaki and it is kept in Rila Monastery and its copy in National Museum of History in Sofia.

HERE ARE CARTOGRAPHICAL EDUCATIONAL CENTERS IN BULGARIA:
- University of Architecture, Civil Engineering and Geodesy, Sofia
- Sofia University "St. Kl. Ohridski"
- National Military University "V. Levski", V. Tarnovo
- Southwest University, Blagoevgrad
- University of Forestry, Sofia

University of Architecture, Civil Engineering and Geodesy, Faculty of Geodesy, Department of Photogrammetry and cartography has the following subjects in educational process:
- Photogrammetry (1.4)
- Cartography (1. 10) - Cartography 1 (map project)
- Cartography 2
- Visualization of Geospatial Data
- Project in cartography
- Map production
- Thematic cartography
- Virtual cartographic modeling
- Geographic mapping
- Cartographic standards
- ArcGIS mapping
We are living in a time of rich information society in a global world with many communication possibilities. Cartography is developing incredibly in the technology aspect. Old paper version products started to be not enough attractive to students, especially in high education. The tasks of cartographers should be to find closer way of communication with students in geographical lessons and this could be achieved by quality information representation and attractiveness of cartographic products.

**Situation in Bulgaria**

5-6 years ago
- not satisfying - old contents and design
- school curriculum was changed some times during the last 15 years
- cartographic firms have not been able to give what was necessary for the educational process
- still nowadays many schools have old wall maps with old contents, cartographic information and design; other ones do not have maps for every continent

**Example – why do we need a new Atlas for 7 grade**
- Bulgaria in European Union
- the examinations in Geography
- the complicated school curriculum approved by Ministry of Education
- The outline maps are used very successfully for assimilation of knowledge

**Levels of geography education**

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<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
<th>High</th>
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<tbody>
<tr>
<td>1-4 grade</td>
<td>5 grade</td>
<td>6 grade</td>
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<td>3-4 grade</td>
<td>6 grade</td>
<td>7 grade</td>
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<td>7 grade</td>
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<td>8 grade</td>
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**Sources for Atlas creation**
- Curriculum in Geography
- Min 3-4 text books in geography
- Existing maps and atlases for these ages
- GIS vector data for the territory
- Statistical data, raster data (photos, pictures), etc.

**Who participates in the process**
- Cartographers – authors and mapmakers
- Specialists in GIS
- Geographers, expert’s advice
- Schoolteachers - ideas and efforts
- University professors as reviewers
- Professional artists
- Designers
- Ministry of Education

1. How can we start?
2. Are there any reasons to change the exciting old Atlas?
3. Who are our users?
4. Do we have enough data base?
5. Do we have a team of experts?
6. Do we have a technology for realization of our project?
7. How to get to our users?
Students’ help in maps and Atlases designing

- The purpose - find a way for the best communication with students
- Children’s knowledge and information - use in the process of maps and Atlases designing
- “The cartographer must learn how the non-cartographer draws a map, what they want to communicate, what symbolism they use and what is their logic” Morita, T.1997

How to get to our users?

Experimental work with children in maps making for their education

- 80 (first and second school year) pupils in Sofia
- Children are not acquainted with the use and reading of maps
- Children show great interest for the experiments and have a desire and possibility to use maps

Symbols are drawn by a student 7 years old

Barbara Petchenik Competition in National level Bulgaria in ICA

- Primary schools cartographic products are often designed by children’s drawing from local entries to the Barbara Petchenik map competition
- Example: Atlas for 3-4 grade – themes of geography and history