

## A CARTOGRAPHIC ENVIRONMENT FOR MAKING ANIMATED MAPS

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Compared to conventional static maps, animated maps are more complicated and laborious to create. This can be attributed to mainly two reasons: a pragmatic one i.e. the nature of map themes (spatiotemporal) and a practical one i.e. the lack of suitable mapping tools.

Widely used tools (such as GIS, graphics editing and drawing programs etc.) offer possibilities for creating static maps of high quality; for the creation of animated maps, however, convenient cartographic tools seem still to be a necessity. Reasons for this lack of cartographically oriented means for animated mapping are, mainly the abovementioned demanding nature of dynamic phenomena, but also the fact that this is a relatively new area, compared to other achievements in Cartography. Therefore, although remarkable novelties were introduced in the field, the tools developed so far for creating animated maps are application-oriented rather than general-purpose. Summarizing the progress that has been made during the past couple of decades, with respect to animated-mapping tools, we can distinguish between mainly two “streams” of products / tools:

i. Dedicated Mapping / Visualization tools developed for use by specialists and for specific themes (i.e. data exploration, revealing unknowns in data, offering high interaction and mostly for “private” use, such as in research or academic environments –examples include tools such as MigMap and MapTime, modules in systems such as TEMPEST, STEM, Timemap, CommonGIS, GeoVista Studio and a few commercial packages such as STIS and STARS).

ii. Generic, i.e. multimedia software packages, originally not intended for Cartography, which, however, were used for mapping (with Flash being the prominent example here) resulting in maps for communication purposes mostly (i.e. maps to be used by the general public).

It is true that generic multimedia software can result in animated maps of high quality and emphasize the artistic nature of Cartography. It is also true, however, that mastering multimedia tools for creating animated maps is a rather tedious task, often discouraging animated map production. At the same time there is an increasing use of and demand for animated maps, especially for non-specialized audiences and with themes of general interest such as historical, cultural, environmental.

The gap, therefore, existing between (i) and (ii) above, i.e. between dedicated visualization tools for specialists and multimedia non-mapping packages respectively, requires the development of tools for cartographically oriented animated map production; they should be relatively easy to use by cartographers and/or essentially cartographically literate mapmakers and users. The development of a cartographic environment that will provide such tools, facilitating thus the creation of animated maps is the subject of this paper; the intended outcome are maps for educational / informative / communication purposes addressed to the general public.

In order to develop such an environment the first step is to organize, analyze and classify the factors affecting animated map compilation. A review of animated cartographic design has provided the basis for classifying animated maps according to the types of changes mapped and the dimensions of spatial phenomena represented: this leads to a more detailed description and analysis of animated map symbolization with respect to change representation, in order to parameterize the respective animated map factors.

At operational level three basic steps are followed. In the first one the user imports the necessary data in a specific format, with timestamps indicating start- and end time of each record. At input stage the user is guided through a wizard menu in order to provide additional information necessary for map compilation. At the second step the data are processed and types of animations are suggested to the user, with editing possibilities available. In the final stage the application is planned to export the animated map in different formats according to its use. Java based open source software is being used for programming the application environment.

Research on the described subject is an on-going task. An evaluation by users is planned at a later stage.