

CHALLENGES FOR NATIONAL ATLAS-PUBLICATIONS. THE APPROACH OF THE NATIONAL ATLAS OF GERMANY.

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1. SETTING THE STAGE

The publication of the 12th volume of the National Atlas of Germany in 2007 set a final point to a project in which more than 600 scientists of various disciplines had taken part. Through a period 10 years, more than 2000 printed pages and more than 4000 maps and graphics had been published - on paper and on CD-Rom.

For many national atlas projects laid out as long-term and large scale tasks, the publication of an editions final volume, CD or map of one edition is a point in time at which sometimes even bigger challenges then in the production process itself appear. A quick glance at some examples shows that some atlas projects have been developed steadily over decades in multiple editions where others just ran out of steam after completing their first edition.

2. THE ATLAS AGENCIES

The tasks atlas agencies (or atlas offices, Ormeling 2009) are facing in producing a national atlas can be described in a complex framework (fig.1) comprising institutional and financial dependencies, changing geographic focuses (new geographies), innovations in media, and users demands.

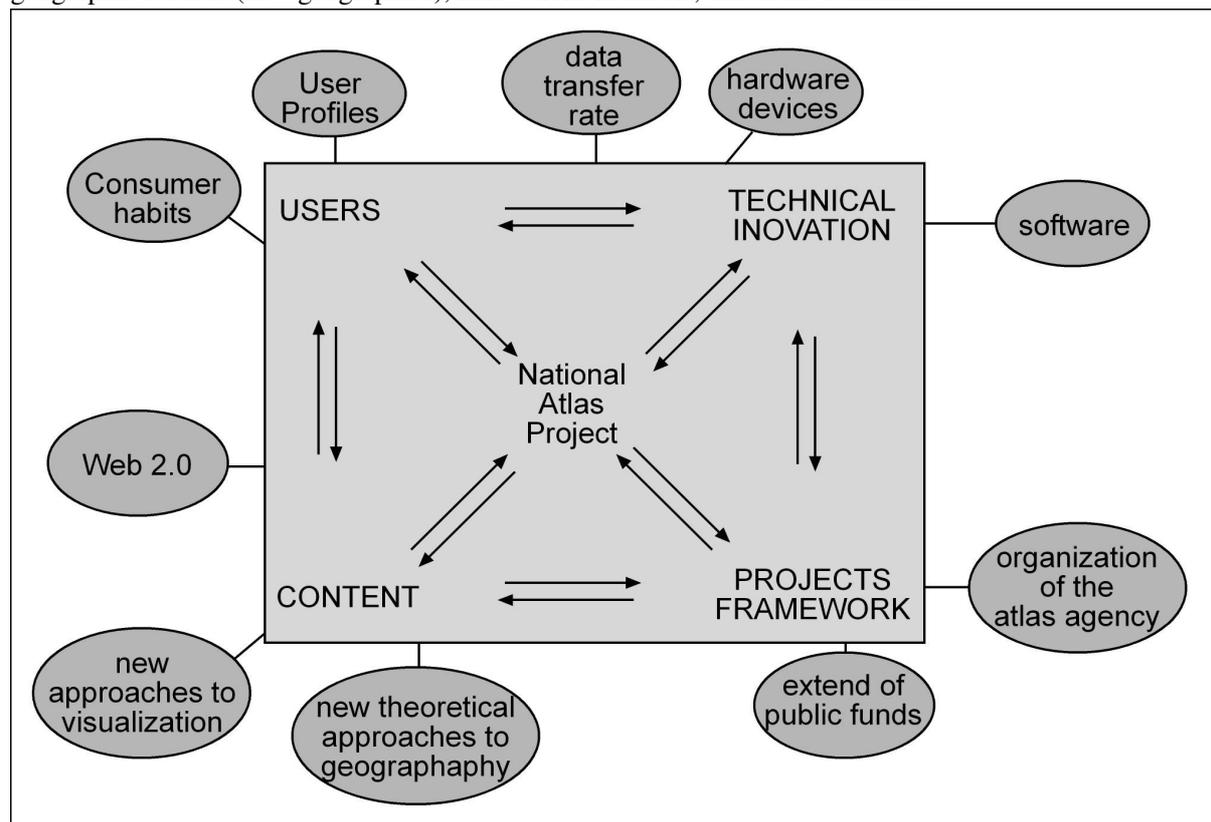


Figure 1: National atlas projects – a framework for analysis

2.1 Organisation and finance

All atlas agencies are different (ICA Commission on National and Regional Atlases 1998). In some fortunate cases the production of a national atlas is valued as a national task, so they can be organized within public authorities (e.g. U.S. Geological Survey, Natural Resources Canada). This ensures a long term development of publications which allows a regular output of revised and updated editions as well as constant updates on internet publications.

Some atlases are the product of public-private-partnership, where in most cases print, marketing and sales will be handled by private publishers (e.g. Atlas of Canada, Nationalatlas of Germany). It is necessary to

point out, that the partnership often only comprises print and distribution. The institutional costs of the atlas agency which is responsible for design, concept, coordination and data visualization are mostly covered by public funds. This kind of organization implies certain license questions, which may retard the further development of the atlas-project.

The exception from the above mentioned standards is the National Atlas of the Netherlands, which is completely produced by Wolters Noordhoff Publishers including the conceptual design and data exploration and cartography.

Although the results of visualizing the comprehensive national data may be important for planning, research and of course the general public, most atlas agencies will disappear after having finished just one edition. In most cases due to a lack of further financial support.

For the National Atlas of Germany the Leibniz-Institute for Regional Geography has been acting as atlas agency, consulting a data related, a geographical and a cartographical advisory board. After finishing the last volume of the atlas first edition (12 Volumes and CDs) the atlas agency was closed, the staffs for further work on the atlas was cut down on 10%, the advisory boards were disbanded. In this case of a non permanent atlas agency the threat of losing expertise and a working infrastructure is obvious. Further maintenance (updating), development and diversification of the product could be one strategy to raise public funds.

2.2 Content

Unless the territory of a country has changed, the maintenance work on an existing atlas should concentrate on data updates, textual revisions and technical upgrading. With the spatial turn in social sciences and cultural studies a new understanding of space is increasingly affecting the thematic approach of national atlases. New topics already appeared (e. g. virtual regions, literary spaces – Piatti 2008) requiring new means of depiction which are likely to disintegrate the thematic focus of traditional national atlases. In times of globalization and devolution, most topics in human geography have to be considered in terms of trans-border processes (e. g. cross-border commuting) which will stretch the term “national” and leading towards regional atlases (Tirol Atlas, Aistleitner 2009).

In recent years national atlases had to compete with the products of national statistical divisions, governmental planning agencies, or health departments. Often working as data providers for atlas agencies themselves, these institutions now mostly using interactive mapping-systems to depict their statistical spatial data on the fly. This may lead to a new perspective, either to implement new geospatial data infrastructures (Aditya and Kraak 2006) or to minimize the appearance of simple statistic maps in national atlases.

2.3 Innovation

Since the appearance of the first internet-based national atlas in 1994, innumerable “new” techniques for web mapping has appeared, have become standards, ex-standards and sometimes have quietly disappeared again. On the hardware side, new in- and output devices are presented every three months and are on the shelf three months later (e. g. the i-revolution). These constantly changing technical realities strongly affect further editions and public reception of large-scale atlas projects.

For the National Atlas of Germany the decision to use Macromedia Flash for interactive maps on CD also affected the maps and applications following up. A change for a different cartographic web-application would imply a fundamental, time consuming change in the maintenance and actualization process of a current atlas – in most cases it would be simply the challenge to produce a whole new product (for a recent overview on cartographic web applications cf. Schnabel 2009).

2.4 Users - no audience, no applause

It is been more than 100 years since the first national atlas was published on behalf of the Geographical Society of Finland in 1899. Since then, the development of national atlases was not always driven by their users. Browsing through works on the conception and feature changes of national atlases since the end of the 19th century (e.g. Saliscev 1972, Witschel 1998) one can identify a consistent increase in the number of potential users.

Starting as vehicles for politically motivated representational functions (Finland 1899, Kanada 1906) national atlases then became a valuable cartographic aid for decision-making in political and economic planning (USSR 1937). In the 60/70s they became more problem-oriented and thus more complex – in cartographic depiction as in thematic specialization, addressing researchers and planners. In the 80s and 90s the atlas agencies focused on a multifunctional approach with smaller scales. National atlases rather became educational material or coffee table books for citizens interested in their countries geographic realities than large exquisite foliants in the shelves of more and more underfunded libraries. In addition new

electronic media (CD-Rom, Internet) were added, focusing on new users. With 27% of the world's population having access to the internet (at least 70% in developed countries) the potential "new audience" is now vast but by no means endless if one can specify target groups.

As for most other atlas projects focusing on a printed or CD version which, because of the high costs, is mostly acquired by libraries there has been no user opinion survey of the German national atlas. Further development had to rely on theory driven assumptions, the marginal user feedback and the experience of other atlas projects.

3. NATIONAL ATLAS OF GERMANY - FOLLOW-UP PUBLICATIONS

Year	Name	Media	Character	Content	Technical aspects	Production remark
2004	National atlas (NA) of Germany – a selection	CD	Multimedia CD	Thematic articles, static and interaktive maps, graphics and animations, text	CD-based webserver, Flash CMS, Flash maps	Produced for the IGU-Congress 8/2004 Glasgow
2006	"Was ist deutsch"	Standalone application/ Internet		Thematic blocks, interactive maps, graphics and animations	Flash CMS, Flash maps	Produced for the exhibition "Was ist Deutsch" (What's german)
2007	East-West-East Migration	Standalone application/ Internet		Interactive maps, graphics and animations	Flash CMS, flash maps	Produced for the permanent exhibition, Foundation Haus der Geschichte der Bundesrepublik Deutschland
2008	<i>nationalatlas aktuell</i>	Internet	Scientific internet journal	Thematic articles, maps and graphics, complete pdf-download	Typo 4 CMS, static Flash-maps, pdf	Continuous, self contained publication, 2010 within the framework of <i>nationalatlas.de</i>
2009	<i>germany in maps</i>	CD/ Internet	Multimedia CD / Internet application	Thematic blocks, short interpretative texts, interactive maps, graphics and animations	Database driven Flash CMS, Flash maps	Produced as CD for IGU-Congress 8/2008 Tunis, 2010 adapted for the framework of <i>nationalatlas.de</i>
2010	Deutschlandatlas	Print	Abridged, revised and actualized edition of NA Germany	Thematic blocks, interpretative texts, maps and graphics	Print	Produced in cooperation with WBG (Scientific Book Club)
2011	<i>nationalatlas.de</i>	Internet	Internet portal as framework for the follow up products of NA Germany, information platform on atlases an atlas related cartographical aspects	Aggregation of project information on NA Germany, NA aktuell, germany in maps, graphics & maps archive, complete view-only modul of NA Germany (planned), news, reviews and links on/to atlas and mapping projects	Customized CMS	Free for use

Table 1: Follow-up applications of the National Atlas of Germany

Finishing the first edition of the National Atlas of Germany has lead to numerous questions concerning future users of future products and publications:

- What opportunities and obstacles can be identified developing a new atlas-product that is based upon the actualization of mostly conventional content, using new cartographic visualization methods?
- Is there "one single product" that matches all users' expectations or does one need to diversify the output as much as possible?
- What evolves from the idea of a national atlas regarding the interconnection of content and actualization, innumerable users' expectations and their differentiated perception of innovations?

Some principles were leading the way for the development of the different spin-off products following the first edition of the atlas:

- The development should prefer evolution to redevelopment using already existing resources.
- The development should incorporate designing multiple interfaces to offer a range of services.
- All products of the package should deploy the same principles of publication in combining maps, graphics and interpretive texts.
- Continuous user feedback is essential for atlas success.
- The development must respond to user demands.

The first spin-off product was published even before finishing the first edition. The CD “National Atlas of Germany – a selection” was developed as an abridged English edition (20 themes), presented at the IGU-Congress 2004 in Glasgow, comprising Flash maps from the view only module as well as the interactive mapping module of the original CD-edition (tab.1).

Based on the Flash techniques used on the CD-edition two interactive animations applications (“Was ist deutsch”, “East-West-East-Migrations”) were produced in the ensuing period and were presented in different exhibitions as touch screen applications.

Meanwhile the demand for maps of the already completed National atlas rose, pointing out some of the possible user groups for further developments: media (further external use of thematic maps on newsworthy subjects) and schoolteachers (actualizing contents of teaching lessons). As disseminators of information these two were leading the way to the following projects.

3.1 nationalatlas aktuell

The objectives for the development of the periodical online-journal *nationalatlas aktuell* (fig.2) have been rather pragmatic. First, there was the idea of updating maps and texts on specific, rapidly changing topics of the printed edition as continuous supplement. Second, in light of the identified user groups the development of an online-platform seemed most desirable. Third, the pool of roughly 500 German-speaking geographers and experts from related disciplines that have contributed to the first edition was an important resource to be kept.

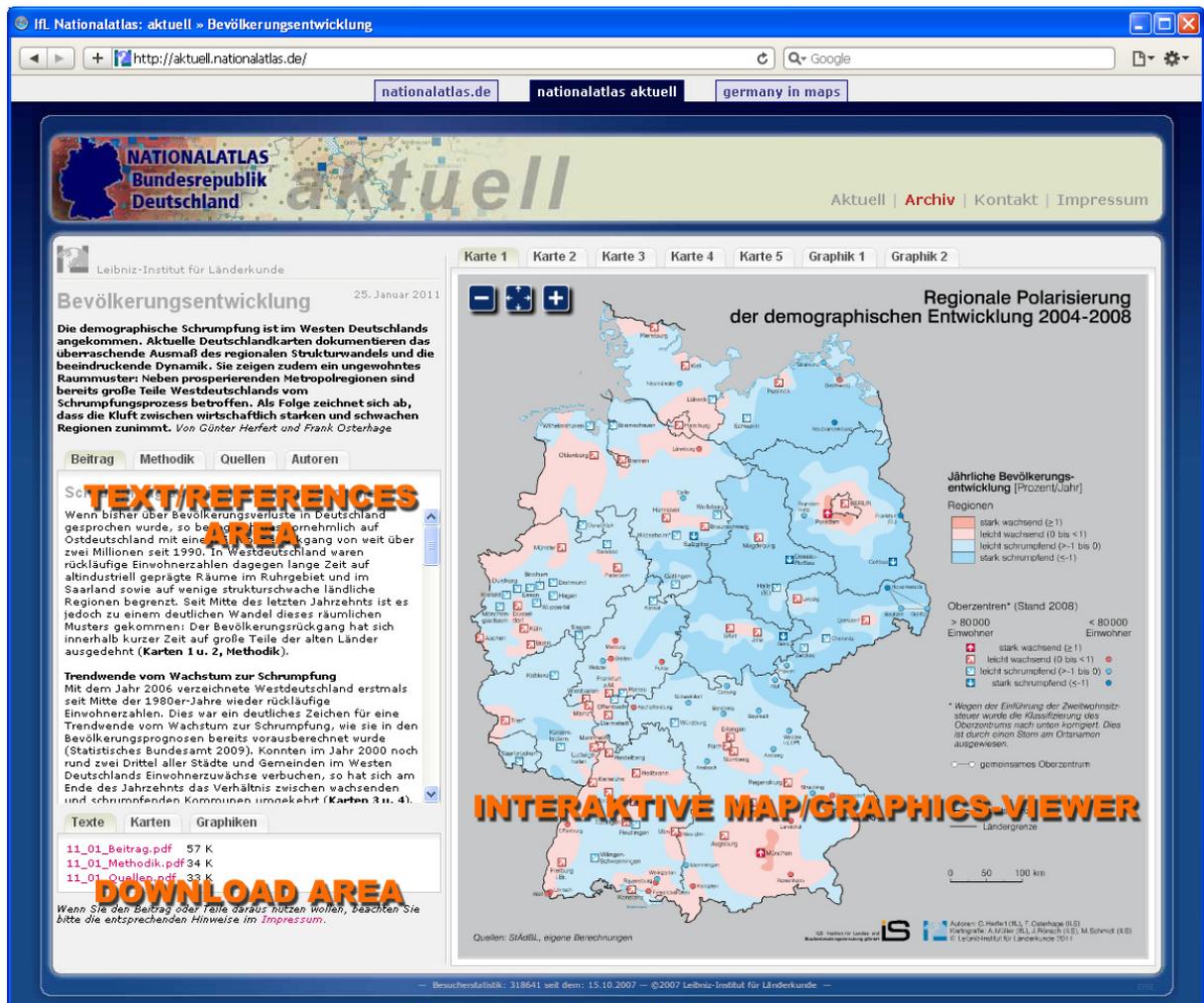


Figure 2: Narrated screenshot of nationalatlas aktuell

Launched in 2008 *nationalatlas aktuell* already published 43 new articles that deployed the same principles of publication as the printed edition. Using the framework of a content management system (CMS)(Typo3) the initial generation of maps and graphics is produced by the same means as in the printed edition, using Adobe Illustrator and the Mapublisher plugin (fig.3). Map and data are sent to a specific author, who is writing an interpretive text and, if necessary, adds graphics and data for additional maps, which will be visualized as described above. The maps are converted into swf-files for use in a Flex/Flash based map-compiler, which processes map and legend separately. This allows the editor to add or remove layers for the final display in a Flash based map-viewer interface with low interaction level (cf. Crampton 2002). With editorial amendments the article is published using the CMS. In addition the whole article is converted into a pdf-file for a complete download.

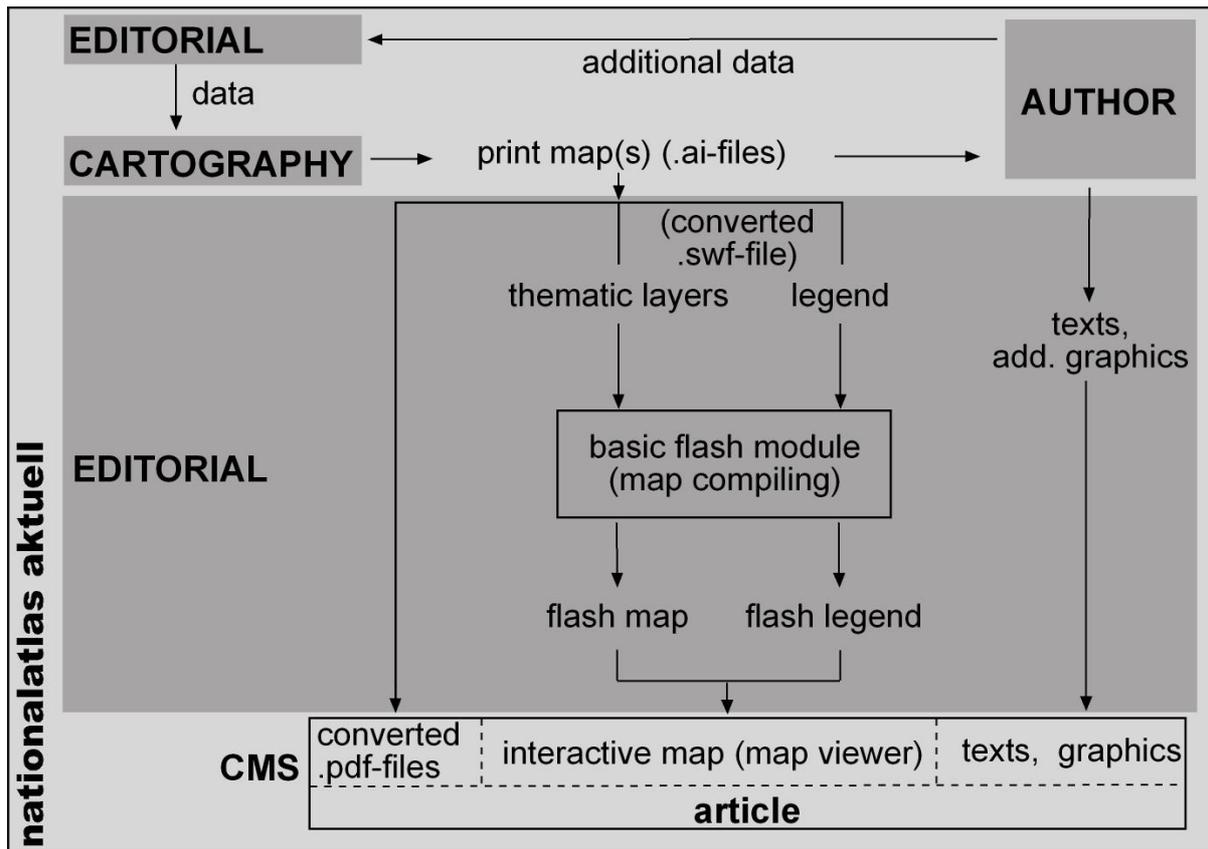


Figure 3: nationalatlas aktuell: sequence diagram of data use and workflow

The further development of *nationalatlas aktuell* will involve more interactive a comprehensive rebuilt of the editors map-compiler and so adding more interactive functions to the map-viewer. On the content side there will be a download of teaching-units, mainly for the German geographical education. For that reason a teacher advisory board has been installed to concretize special topics and the character of depiction for classes.

3.2 germany in maps

The idea for *germany in maps (GIM)* came up with the preparation for the IGU-Congress 2008 in Tunisia. Like the contribution in 2004, a CD-production was intended. GIM was laid out as download-teaching-unit bearing an important chance to take influence on the image of Germany abroad. Since teaching staff all over the world has to face units about Germany or about the European Union, the importance of information, split up into easily understandable and graphically well equipped topics was obvious (Hanewinkel and Tzschaschel 2005). The selection of topics focused on the basics of a comprehensive regional geography using a simplified structure adapted from the volumes of the printed edition.

Split into nine sections *GIM* provides a spatially impression of life in Germany and its physical, social and economic background using more than 100 maps, graphics and animations (fig.4).

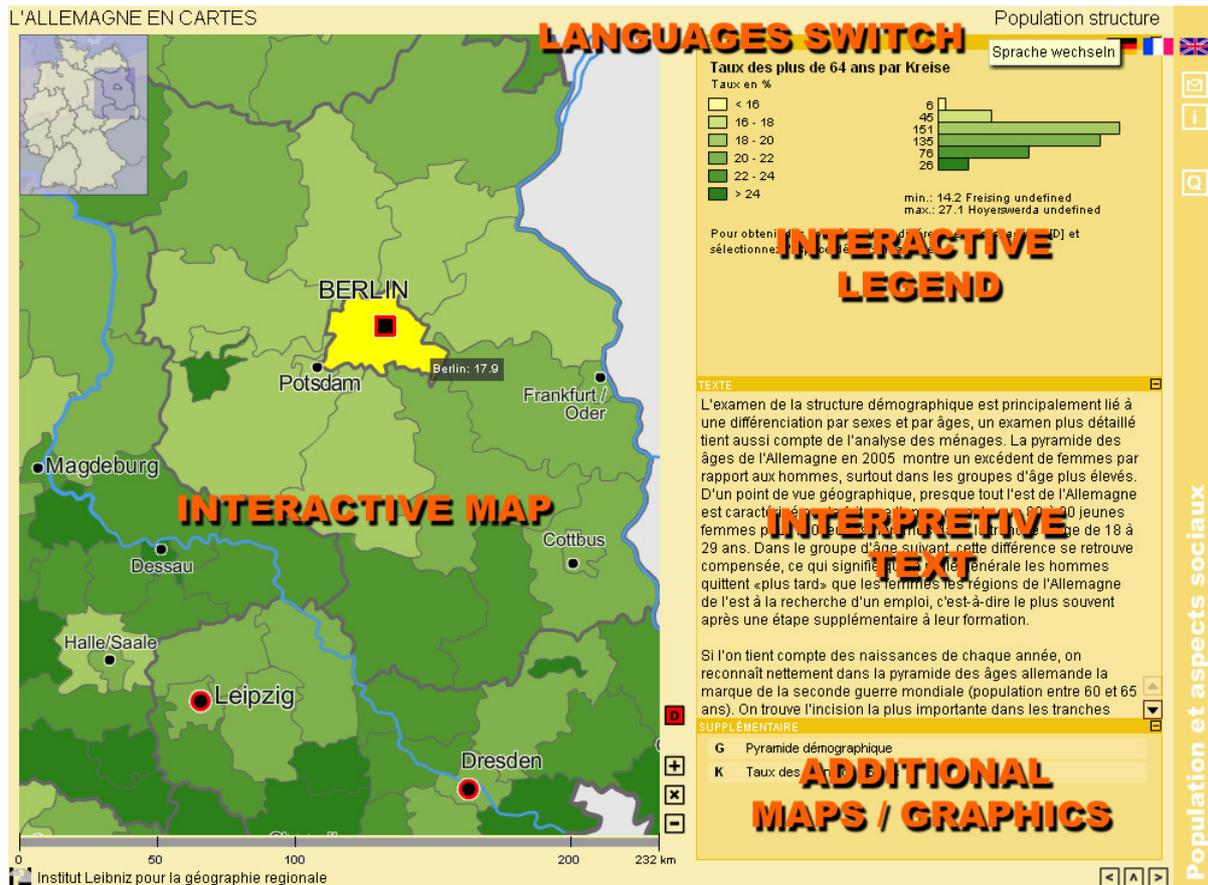


Figure 4: Narrated screenshot of germany in maps

Rather than using a multimedia application authoring platform *GIM* was produced as database driven internet/standalone application using Flash as customized content management system and for the visualization with interactive maps, graphics and texts. The basic deployment goal was a database driven application, which could comprise new interactive maps/graphics, static maps/graphics from the first edition, modules with interactive animations and separate developed map-features.

The backend of the CMS (fig.5) included a database communication interface for the input of control data, texts, statistical data for interactive map content and pictures. Most important was the possibility to provide an online database for the internet version and a dataset (xml-files) for the offline-version on CD. Both can be generated via php from the separate offline-database.

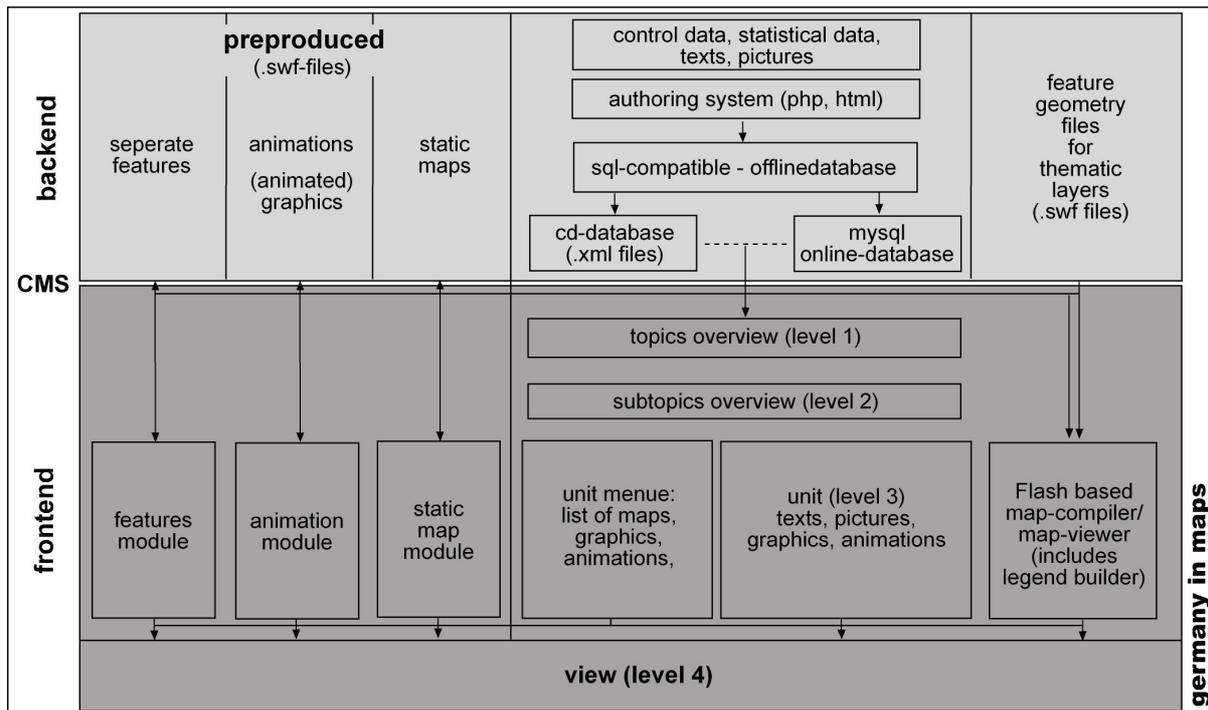


Figure 5: germany in maps: sequence diagram of data use and workflow

The better part of the maps is produced on the fly in the map-compiler/map viewer using geometry files and statistic data for thematic layers. On the other hand some of the already built maps of the printed edition of the German national atlas have been modified for use in a “static-map” module offering none or just simple interaction possibilities. Since all animations have been designed separately, often by different programmers, the animation module just fits in the Flash file to a specific viewing port of the user interface using encapsulation techniques. Thus all possible interdependencies between the components were reduced to a minimum.

Again the presentation of the topics is following the publication principles in combining maps, graphics and interpretive texts. *GIM* included some new features like a module for the countrywise comparison of the basic statistic figures like area, population and GDP (fig.6). The comparative module presents maps as equal area cartograms (density-equalising maps), so the cartogram re-sizes each territory according to the variable being mapped.

GIM can be used through every browser via flash-plugin. Since March 2009, the complete offline-Version is available as download and has been retrieved more than 10.000 times.

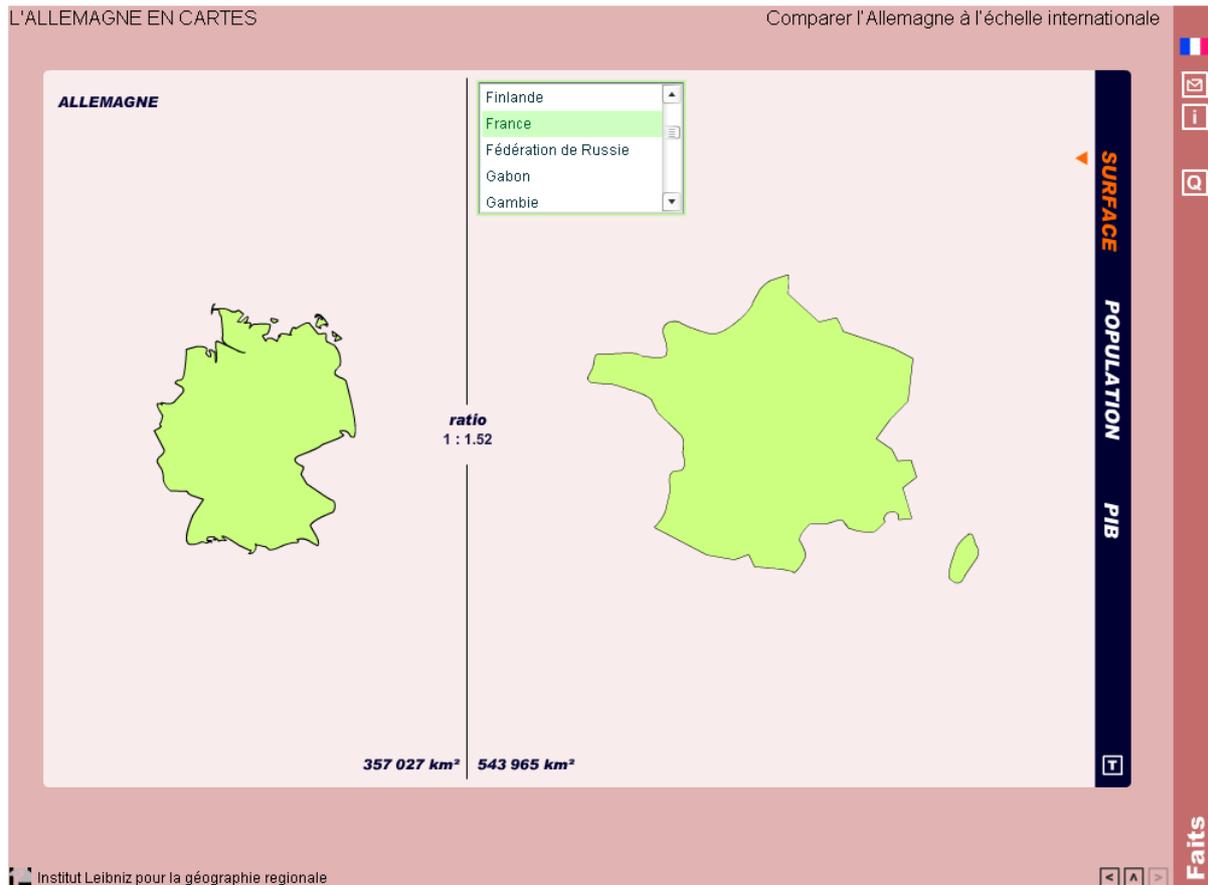


Figure 6: germany in maps: module for countrywise comparison

4. NATIONALATLAS.DE - GET THE SPIN-OFF BACK

Over the last four years the diversification of the spin-off projects of the National Atlas of Germany has broadened the view for different user groups, which had not been targeted while producing the first printed edition. The use of internet techniques, the search for a framework to update the printed maps, and the adoption of different animation techniques for mapping purposes has also led to a basket full of applications slowly losing their corporate identity.

In January 2011 *nationalatlas.de* started as bilingual web portal, serving as virtual container for the publications based on the principles of the National Atlas of Germany with the long-term objective to present users one single website to start browsing through the complete content.

nationalatlas.de is divided in specific parts (fig.7):

1. *nationalatlas aktuell* will be redesigned and integrated into the CMS of *nationalatlas.de*. It will remain as online journal with added articles on a monthly basis.
2. *germany in maps* will be actualized and revised on an episodic basis, adding maps and animations to the already existing units. The topics structure will remain the same.
3. National atlas of Germany will comprise all material related to the publishing of the first edition. This part will focus on the project history, conceptual design organization of the atlas agency. It will also include a complete overview of the cartographic fundamentals of the atlas and the design of the CD-Version.
4. Using the structures of a scientific blog the web portal includes a comprehensive compilation of national map collections/atlas with references and contents. All entries are illustrated with sample scans or photographs of the specific atlas. This will give the potential user an idea of the depiction and gives further information for use. Where possible, the actual website is specified.
5. Users will find an investigatable archive with full-text search and thematic index, enclosing all maps, animations, graphics published in the National Atlas of Germany - now free for educational use. This will be supplemented by the single articles of all twelve volumes when the latest edition will be out of print. This part will remain static content.
6. The editorial staff will review online and print atlases on a regular basis.

7. A weekly editorial will discuss the efforts in the work on national/thematic atlases and is differentiating between online and print publications for better structuring. This column will show latest details of projects that have already been completed or are still in working progress. They are focusing on technical innovations in cartographic visualization. Where possible, official publications and working papers covering the project will be cited.

8. *nationalatlas.de* is announcing new publications (print, CD/DVD, online) and therefore press releases will be published to spread information on atlas projects.

9. A weekly link will connect to websites and projects and directly to maps, that are presenting new means of cartographic or statistic depiction

With this news-blog *nationalatlas.de* is trying to put a strong focus on international projects to disseminate the knowledge of different types of atlas publications, cartographic design and visualization.

For this reason the contribution of information from other atlas agencies is highly appreciated.



Figure 7: Narrated screenshot of *nationalatlas.de*

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