

Improving the atlas experience: the use of annotations

Menno-Jan Kraak^a, Pei Nie^a, Jakob Listabarth^{a*}

^a Department of Geo-Information Processing, Faculty of Geo-Information Science and Earth Observation, University of Twente, Enschede, m.j.kraak@utwente.nl, p.nie@utwente.nl, j.listabarth@utwente.nl

* Corresponding author

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Abstract:

Atlases combine maps and other visual materials according to a predefined structure to reach specific objectives. Together the structure and objective provide the atlas narrative. The appearance of an atlas and its context affects how it can tell a story. The atlas can be printed on paper, or published online as an interactive atlas. Both have certain means to convey the story to the user. This often includes options to find locations, and to show and compare patterns. To explain patterns the maps can be accompanied by diagrams, text or images and – in the case of interactive atlases – by videos. Some online atlases even include links to related external resources.

The individual atlas maps are elements of the narrative and the user should be informed about relations among them. There are different ways to do this in paper and in online atlases. Respective examples are the physical order of the map pages or hyperlinks. However, each individual map or diagram also tells part of the narrative and users might need guidance in understanding these parts, to follow the narrative. Annotations can provide this guidance and facilitate a better understanding of certain map elements. Hence, annotations are important in several types of narrative visualizations (Segel and Heer, 2010). They can be found in products of renown atlas publishers such as *National Geographic* or *Dorling Kindersley*, as well as in maps of newspapers like *The New York Times* or *Guardian*.

An annotation, according to the dictionary, is a note added as comment or explanation. We suggest that map annotations need to hold additional information, which otherwise would not be explicitly in the map. They differ from labels in their content and length: labels usually are toponyms, typically not longer than a few words. Annotations in contrast, are more subjective and can consist of one or more sentences. They can even contain media such as videos, photos and drawings Kraak and Kveladze (2017).

Most frequent flight
Most flights where from NBO
(Kenia) to AMS (Netherlands).

Fact (A)

Airport hubs
DXB (Dubai) is not a typical ITC
destination but a transfer hub.

Explanatory (B)

↗ see page 12 for a detailed
map on flights in 2019 from
and to Asia.

Pointer internal (C)

↗ see itc.nl/global-impact/
for more information on
ITC's impact.

Pointer external (D)

Figure 1. Four types of annotations based on their content, visually differentiated through typography and color.

Map annotations in atlases have two main functions: they comment the data (basic statistic interpretation) or explain a pattern. Additionally, annotations can refer to other content, comment on the methodology used to create the visualization, or raise questions (Fig. 1). An example for a simple comment is highlighting the highest and lowest values. When explaining a pattern, they can reference to related (external) events that influenced the pattern. A reference to related content can point to map spreads, the index or the appendix.

In the following we will use the “The atlas of the world of ITC” as an example to explain considerations on how to implement annotations in atlases. This atlas will be published both on paper and online, and the objective is to demonstrate to a wide audience the impact of ITC’s capacity development interventions in education, research and institutional strengthening. To tell its story the atlas is structured in several sections. These include an introduction about the background of ITC, sections on education, research and institutional strengthening, as well as a section on cartography, explaining the different graphics used. Each map and diagram contributes to the overall story. The maps and diagrams express the geographic and thematic distribution of ITC activities over time. Its relevance is shown in context of national and international development agendas. The graphics assist to identify and analyse the best practices and lessons learned to be applied in future activities. Each topic is elaborated on a two-page atlas spread.

We create the maps and visualizations for the atlas in a data-driven manner (Listabarth and Kraak, 2022). This facilitates reproducibility and makes design decisions traceable. In addition, such a data-driven approach allows reusing certain

building blocks for maps and visualization for both the printed and the online atlas. Annotations will be one of these blocks, which should make them easy to add and adjust while editing the atlas.

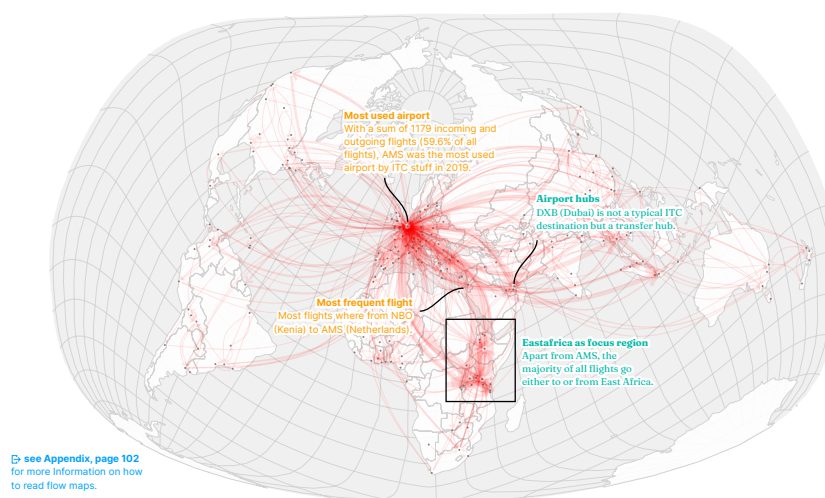


Figure 2. Static annotations can refer to points, lines, polygons or areas on the map.

Nevertheless, we have to be sparing with the use of annotations, especially in the paper version (Fig. 2). They should also not dominate the map view to avoid compelling guidance. For the online version we can afford more, since we do not have to show them all at once. Interactive annotations can be collapsed to small symbols and expanded only on demand. Annotations can also be used in form of a guided tour through the visual (Fig. 3): In such a tour the user can browse through the annotations one at a time and cancel the tour at any time. Grouping annotations into layers allows the user to toggle them on and off. However, also interactive annotations need to be designed carefully not to cover the original graphics too much while making the interface easy to use and accessible.

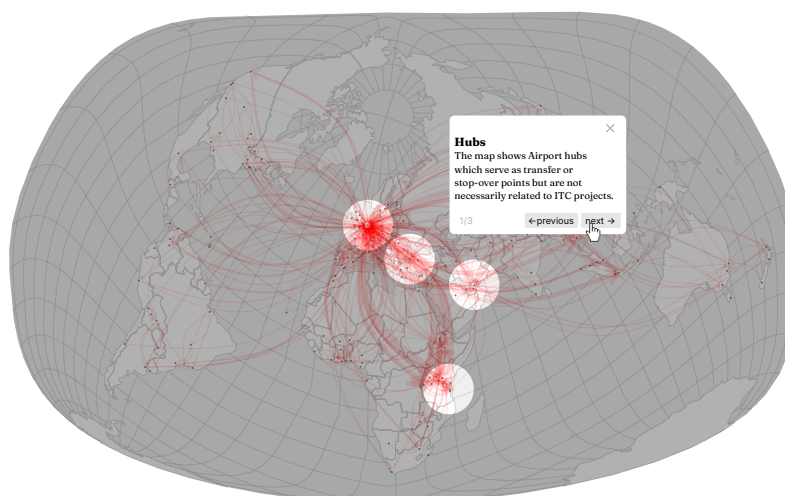


Figure 3. Interactive maps offer more possibilities for annotations compared to static print maps, e.g. using a storytelling approach.

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