Chapter 9

Visual Process Support to Assist Users in Policy Making

Dirk Burkhardt
Fraunhofer Institute for Computer Graphics Research (IGD), Germany

Kawa Nazemi
Fraunhofer Institute for Computer Graphics Research (IGD), Germany

Jörn Kohlhammer
Fraunhofer Institute for Computer Graphics Research (IGD), Germany

ABSTRACT

The policy making process requires the involvement of various stakeholders, who bring in very heterogeneous experiences and skills concerning the policymaking domain, as well as experiences of ICT solutions. Current solutions are primarily designed to provide “one-solution-fits-all” answers, which in most cases fail the needs of all stakeholders. In this chapter, the authors introduce a new approach to assist users based on their tasks. Therefore, the system observes the interaction of the user and recognizes the current phase of the policymaking process and the profile of the user to assist him more sufficiently in solving his task. For this purpose, the system automatically enables or disables supporting features such as visualization, tools, and supporting techniques.

INTRODUCTION

Stakeholders often have to consider big data-sources during policy making, be it statistic data, social media data or something else. In most cases the stakeholder has to deal with complex systems, which allow on the one hand extensive analysis, but on the other hand require some amount of expert knowledge to use them correctly and effectively. Therefore, most visual information processing systems are balanced between little functionality but simple use, majorly focusing on experienced, but not expert users, and a high amount of functionality with high complexity which are therefore mostly designed for experts.

The major challenge between these two options, simple systems for ordinary users and complex systems for experts, is that especially if systems
are designed for a larger target user group, not all users are represented adequately. One alternative is to provide different systems (or different views and tools within the system for the different stereotypes of users) depending on the users’ expertise. However these systems are mostly not very efficient for all users. Usually the user group in the center of the spectrum between expert and novice users is in the uncomfortable situation of having to select one of the non-optimal two solutions. Additionally, this user group has to deal with the context change, if they switch between these two stereotype views, which come along with a hard break in the provided visual and interaction metaphors. Such stereotype programs are known also from daily use, e.g. some CD burning programs provide users a simple burning mode and, an advanced one. Both modes do look different and provide a different feature list.

Based on many of these kinds of experiences the user can be identified as the main actor, whose behavior should be the top priority during the concept and design phase. Considering the user-based aspects more sufficiently in computer systems, the development of user-centered systems or user-centered information visualization became more and more important. In contrast to other approaches the development is not only driven by the possibilities (e.g. what can be done with the data?), but also and even more important is that the user will be able to handle the system and solve his tasks. In order to better address the behaviors of the user, various strategies were developed to support him in solving the tasks. The solutions vary in their strictness, solutions like the implementation of shortcuts are useful features that might be used, but they can also be ignored. Other supporting solutions such as wizards are very strict, so the user has to follow without any option to break out of this routine. On the one hand such a strict user limitation can be annoying, if the user knows what to do and how to do it. That can result in situations where experts have to solve a task in a way that is not very efficient. On the other hand, such a strict user limitation often leads to a successful task solving, whereas additional useable features can be ineffective and therefore they imply the risk of failing.

In this chapter we describe a novel adaptive approach to support and assist the user during his task mainly based on the actual phase in the process, but even more based on the user’s behavior. For certain tasks and interactions of the user, different technical features that support and assist the user can be enabled or disabled. Such technical features can be, for example, visualization, which shows a specific issue more precisely. Furthermore, technical features can be tools, such as an editor or supporting techniques, e.g. recommender techniques or hint techniques. In fact, the user gets no stereotypic changing views, instead he gets additional features enabled or disabled in dependence of his work and his personal needs, so that the user does not lose track of his goal, just because of a clear understandable user-interface. In consequence, experts will get less restrictive features and tools that allow solving tasks more effective, whereas novices will mostly get restrictive features where they are more strictly guided through the task solving routine and get features and visualization recommended that i.e. other novices used to solve the task.

**CLASSIFICATION OF USER-ASSISTANT TECHNIQUES**

To avoid the risk that a user explores passing the aimed goal, approaches for supporting users through the interaction process within an application do exist. To allow a better overview we categorize the approaches into different groups, as
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