Minitasking - a Visual Gnutella Client

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1. Introduction

The design process of Minitasking served as an analysis of the gnutella network, a very popular shared virtual space. Distributed systems are a good example to study how digital strategies of the living world were installed by different technical and human factors, who were merged in such a temporally space. A discussion about the potential and the limits of these systems has to refer to the flow and exchange of data, the rhythm of behavior, as well as the rules of a distributed network. These topics should be linked to other experimental cultures marked by a-, di- and polysynchronous rhythms and their (im)materiality.

2. Method

Minitasking is essentially concerned with how computers work, with data processing and their visualization for applications in collective and dynamic environments. The creation of software enables one to define and design the diverse modalities which determine information access, and we hope to gain insights into the features which distinguish these (computer) processes and how they affect distributed systems, actions and objectives.

Our starting point was the idea to incorporate the non-perceived elements of data processing into general use. We wanted to demonstrate the connection between standardisation and its potential through a completely modular software package. In effect we used an already existing system for a practical reason, it delivered the data, and we could add to an already existing technology. This was simultaneously the most difficult and the most exciting moment during the whole design process. We essentially had to concentrate on the functionality of the protocol, and in doing so we came up against certain limitations. The stream of data was our actual creative material. Our job was to get a new view of the specific characteristics of the protocol, to discover the hidden potential within the protocol.

Abstract

Minitasking\(^1\) is a graphical browser for surfing the Gnutella network. Relying on the peer-to-peer standard Gnutella, this application provides a visual manifestation of the properties of dynamic and temporarily created networks and introduces transparency to the exchange of data and network instability.

\(^1\)Download Minitasking at: http://www.minitasking.com
3. About the Protocol

Gnutella uses peer-to-peer technology (P2P). This is based on a protocol that without a control system in place is able to construct networks that cannot be controlled by simple mechanisms and filters. Every nodal point in this network automatically relays all information on nodes, files, and file sizes to new nodes that it recognizes. In fact the net is built up out of the incoming and outgoing connections. In this fashion, a dynamic network arises that constantly receives new nodes whilst also passing on others. These processes are based on a simple principle: a large number of computers are combined in a network that functions as a gateway to individual information sources.

In contrast to the Internet, enabled data can be accessed in real time without access being controlled by a central server. Every computer using the Gnutella protocol functions as both a client and a server and can download as well as upload data. In other words, participants registered in a P2P network can consume and produce information by being able to launch searches and download hit lists. This is also one of the important differences to the napster file sharing model, where downloads are always administered over a centralized server. Participants can also enable files for downloading themselves.

4. Visualization and the Interface

The Minitasking interface displays the individual view of a host, a single actors perspective, on the Gnutella network, the person who is connected to Gnutella through Minitasking. What one can see is not a hierarchy or totality, only a fragment of the net. Computers connected to the Gnutella network are represented as blue circles - the number of files served from each computer determines the size of the bubble, the transparency shows on which layer the host is located. The speed of the path corresponds to the real time stream of data, the direction is generated by the IP address. When you enter a query for a file, the query is color-coded, and Minitasking then graphically "zaps" other servants, visualizing how many matches that servant has with another bubble that matches the color of the query. At the same time, queries received from other servants float around the screen.

We translated the flow of data and messages into several graphic elements, mainly as a method of temporarily recording the results. So, it doesn't seem like a logistical plan, more like a path without a specific goal. You pass through individual stations, and it takes longer and longer from node to node. Then more space and more nets are

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acquired. Another idea was to map the dynamics of the network into a sound, to create an acoustic shape of the net.

The data flow, which actually is not very easy to simulate, varies widely according to the connection rate and bandwidth of the individual users. There are also often interruptions as the participants log on and off frequently. The structure changes constantly, as does the data input. Therefore the relative proportions are scalable.

We have developed a software package that takes data and produces a visual manifestation in order to introduce transparency to computing processes and protocol dynamics on the one hand, and heighten the sense of risk inherent in computing and decision making on the other. The visual operating interface displays only one of several possible test beds. It is meant to direct (and entice) the user to observe processes, select and exchange data so that criteria that will have an impact on the access to information as well as its production and dissemination can be discovered. For the development of knowledge on a digital basis, this study merely constitutes an initial attempt in the analysis of the processes in which knowledge is embedded.

5. Dynamics and Politics

Filesharing networks reveal a new relationship between information, knowledge and economy. Research has shown that the proportion of active, productive participants is much smaller than the much larger proportion of those who download data without offering any themselves. The data is then "externally" produced and is first multiplied through the "internal" exchange.3

In this way file sharing networks regulate the production of knowledge and the distinction between production and distribution media disappears. The exchange of data most of all means one thing: access to information and knowledge. This kind of idea exchange, may cause a conflict of value creation. In this case goods and knowledge would be regulated according to the same standard.

Minitasking is a visualisation of the data and processes and a tool for observation. The net is shown both as a material and as a mathematical infrastructure. It is necessary to tie down the specific process patterns which are played out in these outlined net structures. This is done in order to create connections to regional, cultural, global and other networks. Programs don’t have a physical site; their borders lie in the status of their information.

If you look at Minitasking as cartography, the spatial is mainly defined by the temporal aspect. Minitasking is a kind of time map, which notes phases, not necessarily areas.

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6. Conclusion

As an artistic and experimental approach Minitasking is a tool that introduces transparency on transformations and connects the separate levels of action. It is clear that not only the users create information, the technical standards organized the transformations of these networks as well. In this case a distinction between non-technical and technical factors, between human and non-human, physical and digital exist no longer. Instead of trying to differentiate these categories, users should be able to intervene to a greater extent in action complexes; in networks they must also work on the protocol level. The settings made by users have a direct or indirect effect on the structure as a whole. Ideally, the protocol would change continuously and automatically while being used. In this fashion, not only would a record be kept of the data, but one would be kept transparency, and the reference to technical foundations as factors in action taken in collective environments. We would agree with Pit Schultz who wrote some time ago:

"The dream is one of files that can organize themselves, that can communicate their importance to each other-and wouldn't it be nice if they themselves were aware of which interconnections are significant in which context and which are not.""}

The effects this could have on general considerations such as the value of information and communities can only be determined indirectly.

One question that comes to the fore is which semiotic systems and technical processes have to be implemented in order to display creative activities, despite a large degree of formalism, on different levels of action. These activities may provide further indications about the utilization of this knowledge. Just as the specific qualities of other soft, informative technologies have come to the fore, a still unfulfilled wish is that software will progress from the collective to the collaborative, its dynamics will become more differentiated, and the benefits and drawbacks of distributed and decentralized systems will be made recognizable.

\footnote{P. Schultz, "The Visual Semantification of Complex Networks" (June 2002), http://www.aec.at/festival2002/texte/schultz_e.asp}