SWITCH

Volume 17
Number 4 *The data_flux project*

Article 1

2-16-2002

The data_flux project: Visualization of Vectored Streams in Networked Systems

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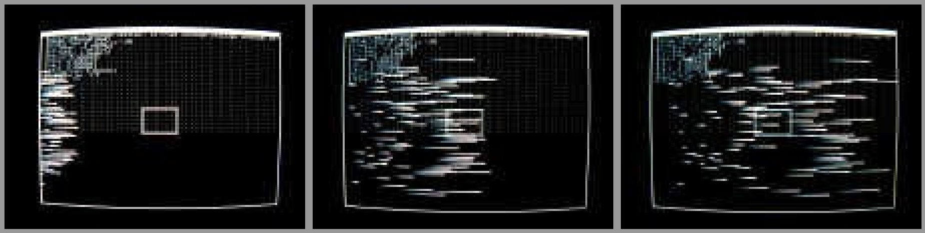
Visualization of Vectored Streams in Networked Systems

Stephan Hechenberger on Feb 16 2002 **the data_flux project**

In the course of a one semester lecture at the CADRE Laboratory for New Media the data_Flux_project has been realized. Its purpose is to seize the principles of networked systems and visualize date as it occures as network traffic.

The *data_flux project* implements a linear data processing route which resembles ways through the internet as they often emerge out of the otherwise net-like topology. This happens because major service providers first collect all the data packages of a certain area, send them over their backbone and redistribute them in another area. In that sense the implementation comprises several computers (nodes) which are connected in a linear fashion. Each node has a limited influence on a dataflow which streams through the whole network model. That influence determines how and when a particle in the stream is sent to the next node. The stream itself is visualized as particles moving from one side of the screen to the other side so that the impression of a continuous flow through all the nodes arises. The data flow and not the network topology or the single nodes are in the center of interest. Watching data from this vantage point an observer will be challenged to emerge insights in the nature of data and its independent behavior. It is yet another step away from the notion that data is the pixels on your screen.



The *data_flux software* is capable of depicting the principles of data according to our contemporary notion of network systems:(1) Data gets streamed through network peripherals, phone wires, satellite up/down links and gets acted on by an arbitrary number of nodes on its way from the sender to the receiver. (2) Data has long ago given up the dependence on a specific hardware. Pixels are not the bright dots on a computer screen any more in the same way as an IP-package is not about a certain configuration in a memory chip. Both have become concepts which are prevalent in their most abstract forms and are defined on an abstract metalevel.

> *"This software construct is about advocating the supremacy of new media concepts over their implementation."*

The data_Flux_project can be seen as a prerecorded video:

..::> full video

..::>multi-track video

(needs a fast computer otherwise synchronization will be off)

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Technical Description

The program which is running on each node is a multithreaded server/client implementation written in C with visual output to an openGL graphic engine. Currently thedata_Flux_software is running in the CADRE labs on SGI O2 workstations (IRIX OS) connected via 100Mbps ethernet. Although the network bandwidth needs are small to moderate, quite a lot processing power is needed to handle the openGL routines and all the particle streaming logic. It is conceivable to port the program to Linux and run the model on high end PCs. Preferable a number of five workstations should be arranged in one line with a relatively small space in between. Fast ethernet connection is needed between all of the nodes and internet access should be a matter of course. Currently the software samples local network traffic to generate the stream which could be everything from SQL requests to http-postings. As a basic principle the data source is not a decisive factor only a trendy one.

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::CrossReference

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