

Internet service prevents cable tangle in presentations at conferences

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No cable tangle anymore: screen contents can be shifted freely to any terminal's display and even shown on large-scale monitor walls. Credit: Uwe Bellhäuser

To connect a laptop to an additional monitor, projector or even to a monitor wall, a special cable was required, until now. Researchers of the Saarland University's Intel Visual Computing Institute overcome this obstacle by linking computer and monitor via an 'Internet Service'. By this means, a screen's contents can be shifted freely to any terminal's display and even shown on large-scale monitor walls. The Saarland University's scientists present their results for the first time at stand F34, in hall 9 at the computer fair Cebit. The trade show takes place in Hannover from March 6 to 10.

"Some try to play it off with a joke at their own expense; others wish the ground would open and swallow them up. So it happens every day during

innumerable meetings," comments Philipp Slusallek, professor of [computer graphics](#) at the Saarland University and scientific director in the German Research Center for [Artificial Intelligence](#) (DFKI). More and more embarrassing moments pass, until the person giving the talk finds the right cable to connect the [projector](#) and the presentation can finally be seen by everyone else.

Philipp Slusallek and his team wanted to cope with this cable tangle, and found an answer to the issue. Their solution even extends to the possibility of visualizing three-dimensional content on large monitor walls. "The approach is so simple," explains Alexander Löffler, who, jointly with researchers of the [Intel Visual Computing](#) Institute, developed the relevant software 'NetVFB'. Once installed on the computer, every application is compatible. The application's monitor image can be shown in the "virtual frame buffer," with the result that it is visible as a service on the network. The monitors in the conference room are also shown as services on the network. Löffler adds: "Now it is possible to show the presentation at the touch of a button on the requested display, enabled by a an Internet transmission."

But there is more to come. With the new software, different laptop users' screen images can be displayed on just one monitor. Due to the fact that the virtual frame buffer can be shown on numerous displays at the same time, it is also possible to observe and control a presentation via smartphone. The software can also be applied outside of conferences. Since modern LCD displays have a marginal width of only two or three millimeters, you can use them to build huge monitor walls with high resolution at low cost. Even if these monitors consist of more than 20 displays, one [laptop](#) is sufficient to control the content displayed on them through a regular WLAN connection. Up to now, this has been possible only with a considerable amount of hardware. Therefore, the innovative approach of the Saarbrücken computer scientists is also interesting in terms of perimeter advertising in sports stadiums or interactive displays

in shops.

"On such monitor walls we even can show 3D movies like Avatar," Löffler adds. If you use shutter glasses on that occasion, all monitors have to show the image for the right and for the left eye at exactly the same time, to ensure the desired spatial impression. "We accomplish this synchronization by controlling the hardware for the graphics output," Löffler explains.

Internally, the software uses optimized video transmission protocols to transfer the synchronized image data directly from the virtual frame buffer to the displays. In the conventional approach, the unpacked display content is transferred sixty times per second via cable for diverse standards, such as VGA, DVI or HDMI, to the monitor. Particularly on high resolution displays, numerous gigabytes per second can easily result. With the Saarbrücken computer scientists' approach, however, only the individually changed data, additionally compressed, needs to be sent. That reduces the effort to a fraction of what it was. In this way, it's technically possible to transfer screen images to or from the displays of mobile terminals. The researchers use this technology, for instance, to work on a way to transmit the navigation monitor of a smart phone to the electronic display of a car's dashboard. Thus, it could enable a new type of user interface beyond the automotive world.

Provided by Saarland University

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