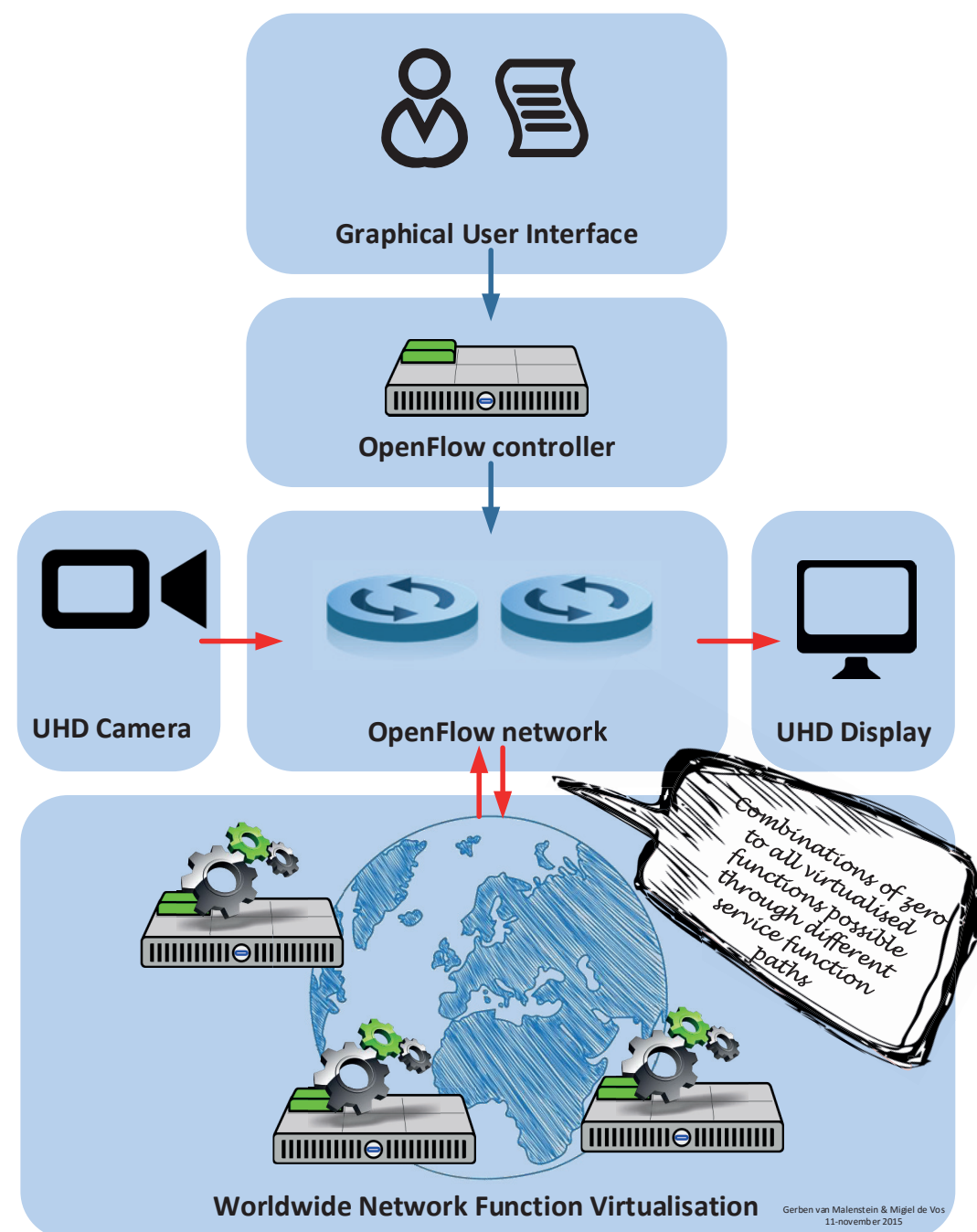


REAL-TIME WORLDWIDE SERVICE FUNCTION CHAINING USING A PROGRAMMABLE NETWORK WITH NETWORK FUNCTION VIRTUALISATION

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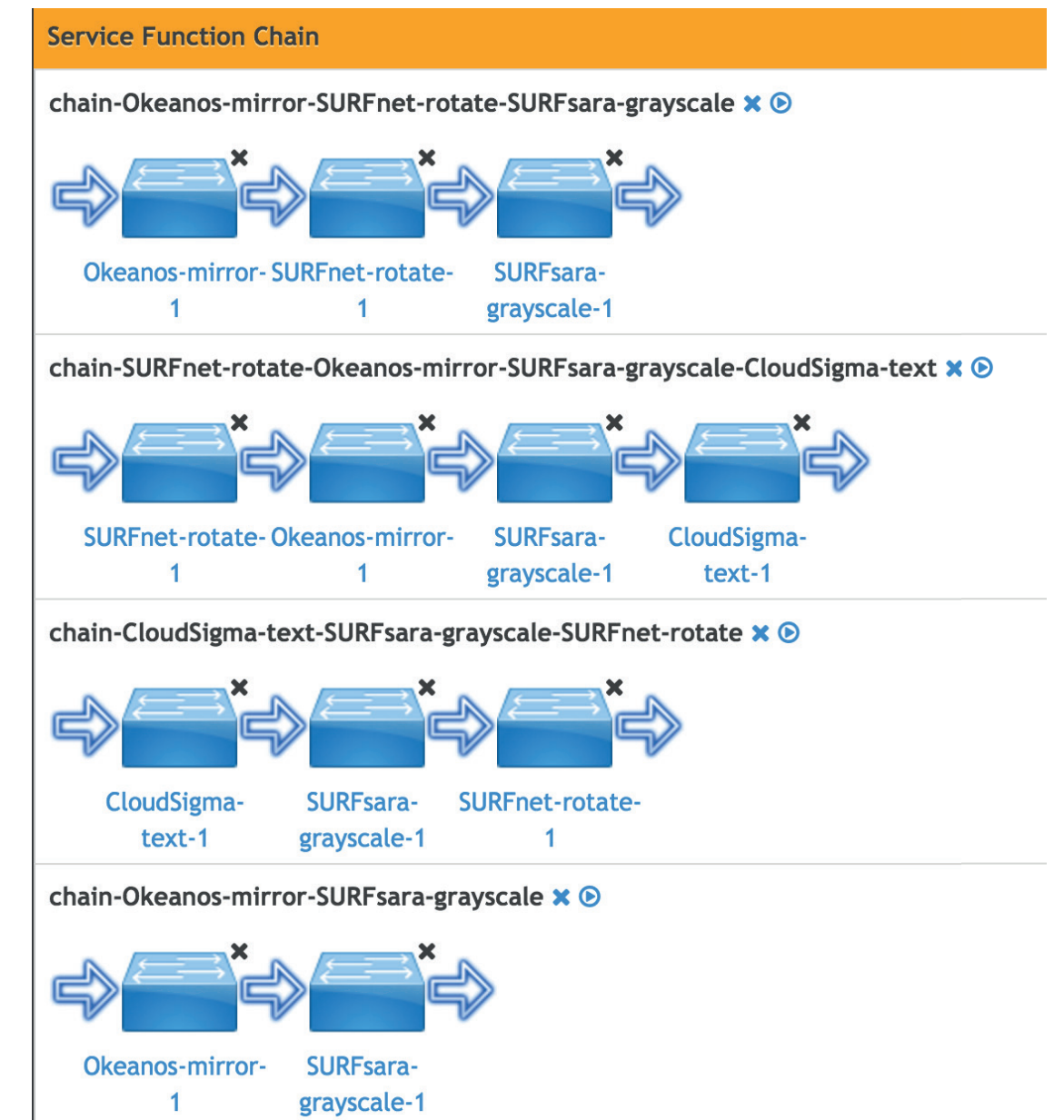
OVERVIEW

The goal of our demonstration is to show Network Functions Virtualization (NFV) in a real-time environment. During this demonstration we are showing the possibilities of a programmable network. Visitors of our booth may alter the network path in real-time. Traffic will follow the user-selected path through zero or more network functions. This is also known as Service Function Chaining (SFC).



CHAINING NETWORK FUNCTIONS

In most cases network functions are implemented by virtual machines with a specific task to manipulate network traffic in a transparent way and then forward it. Such a task could be rate limiting, firewalling, intrusion detection, et cetera. Traffic can be forwarded through multiple functions, effectively creating a chain. When one or more of these chains are created, traffic can be steered through these so-called service function paths.



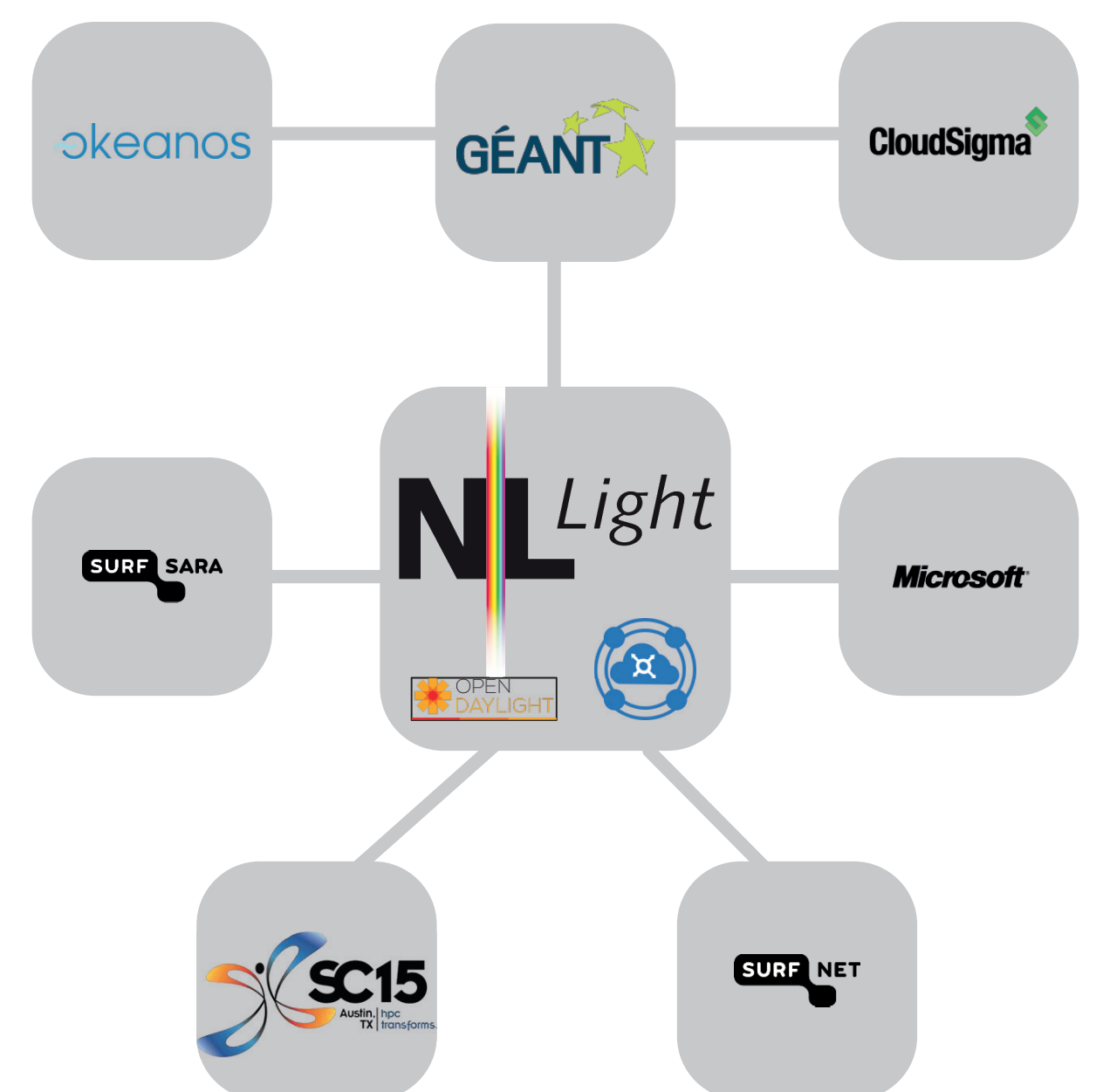
IMPLEMENTATION

While a UHD camera at the SURF booth in Texas captures visitors at our booth, a NFV-capable setup in the Netherlands receives the output and applies various video effects on the fly. The manipulated video stream is then returned to the SURF booth, where it is displayed on a UHD screen. The user can choose several video transformations in a control GUI, redirecting the stream through different network functions in Europe. In our demonstration, the following video transformations have been implemented: insert text, insert logo, grayscale, mirror and flip.



NETWORK SETUP

The SC'15 booth in Austin, Texas has a point to point connection to the NetherLight SDN platform in Amsterdam. This SDN platform is controlled by the OpenDayLight controller instance. Since NetherLight is an Open Cloud eXchange (OCX), cloud service providers are directly connected. The GÉANT OCX (gOCX) infrastructure model is distributed over the GÉANT core network and several NRENs. This allows cloud providers to make physical connectivity at one of OCX locations and have access to the entire GÉANT/NREN user community. Participating service providers for this demonstration are SURFsara (Netherlands), Okeanos (Greece), Microsoft (Netherlands), CloudSigma (Switzerland) and the SURFnet testbed (Netherlands).



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SURF is the collaborative ICT organisation for Dutch research and higher education. SURF offers scientists, students and lecturers in the Netherlands access to the best possible network, data storage and compute resources and technical advice and support.

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