

New video streaming technology for mobile phones

July 10 2013

VTT Technical Research Centre of Finland has developed a new architecture for better-quality video streaming on mobile phones and across wireless networks. The new architecture is based on utilising information gathered and combined from the video application, the network and the mobile phone. For example, information concerning quality, price and availability can be combined and utilised directly to better the service. This means better-quality videos and easier access for consumers, and users may even benefit from the new technology financially. From the perspective of operators and service providers, the new technology allows them to improve the quality of video streams without having to invest in new network capacity, giving them a cost-effective way to boost customer satisfaction.

The volume of data transmitted across wireless and [mobile networks](#) continues to grow at a rapid rate. Videos already account for most of this [data traffic](#), and their share is expected to grow even bigger in the near future. The [architecture](#) described in the dissertation of VTT's Senior Scientist Tiia Ojanperä is designed to optimise video streaming according to [network](#) capacity in order to achieve constant quality and efficient network resource usage.

The methods developed make use of versatile information obtained from the video application, the network and the mobile phone. The gathered information concerns, for example, the quality of service requirements of the [video stream](#) and the availability of the networks. Collecting, transmitting and utilising the information particularly enhance video

streaming services in wireless networks. This process is called cross-layer optimisation, and it is especially useful for improving the quality of video streaming across wireless networks. Video streaming refers to making videos available for users to begin viewing even before the entire video file has been downloaded from the internet. Video streaming is used in applications such as online [video conferencing](#) and the provision of television programmes and films online.

Better quality even in congested networks

Thanks to the new architecture, video stream transfer speeds can be adjusted more efficiently to network resources available. This means that the quality of the video stream will not become unacceptable even when the transfer speed of a wireless connection suddenly changes due to congestion.

The new architecture is also ideal for multi-access environments. In multi-access environments, video stream transfer speeds and therefore quality can be maximised by means of optimised handovers and concurrent utilisation of multiple access networks. If the current network connection is insufficient for video streaming, the task of receiving the stream can be handed over to another network or multiple networks used to receive the stream concurrently.

Financial benefits for both consumers and service providers

The new architecture gives users and operators more control over the network connectivity used for accessing the video services. For example, if a user is forced to stream a video using a network connection that is expensive to use or has limited capacity, the user can choose to only receive an adapted, poorer-quality version of the stream via that

connection. If a more affordable network becomes available during streaming, the architecture automatically switches to that network to give the user access to a high-quality version of the stream.

From the perspective of operators and service providers, ensuring the satisfaction of video streaming customers is now more important than ever, as [wireless networks](#) struggle under ever-increasing data traffic volumes. The new architecture allows operators and service providers to boost [customer satisfaction](#) without having to invest in new network capacity. The new architecture also gives [service providers](#) opportunities to develop new video streaming applications.

Provided by VTT Technical Research Centre of Finland

Citation: New video streaming technology for mobile phones (2013, July 10) retrieved 27 April 2024 from <https://phys.org/news/2013-07-video-streaming-technology-mobile.html>

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