Vconect Newsletter October 2013

Introduction

It has been an exciting year for the Vconect project. A full implementation of a Vconect system – client and server components – is up and running and being used for user trials this October.

The results of the trials will be reported soon. Insights gained from having the system functioning are feeding into our knowledge of network optimisation and communicating across the web. Further experimentation has helped generate new understanding of how group video chat can be improved for social media along with new concepts underpinning orchestration for natural multi-party audio-video conversations

We are also very privileged to be able to announce our showcase theatre production of Shakespeare's 'The Tempest', which will be produced in conjunction with the Cornwall production company Miracle, and Superfast Cornwall. The coproduction will culminate in a live production of a theatre play performed across two spaces in November 2014, all achieved using Vconect technology.

Miracle Theatre Company signed up to work with Vconect for 2014

Vconect is delighted to announce that it will be working with the Miracle Theatre Company, one of Britain's foremost outdoor theatre companies, in the development of its performance use case for the remainder of the Vconect project.

Miracle Theatre have a reputation for entertaining, intelligent, very funny and often startlingly original theatre that builds instant rapport with audiences. They have also shown considerable commitment to exploring the opportunity that technology, and film and streaming technologies in particular, can bring to their performances. As part of a Nesta funded R&D project, Miracle recently explored how to bring a stage play to audiences at home and in remote venues with their production of Samuel Beckett's "Waiting for Godot". Working with Vconect will allow them to explore how video streaming technology could enable a performance of a single play to be performed from two locations and to be relayed using streaming technology to yet others.

Miracle theatre Company's participation in Vconect is a project of Superfast Cornwall Labs. The Labs are pushing the boundaries of what is possible with superfast broadband through innovation and research projects with a broad set of partners, including University College Falmouth (UCF), other higher education establishments, Cornish businesses and Superfast Cornwall - a pioneering programme to bring superfast broadband to Cornwall and the Isles of Scilly (www.superfastcornwall.org).

Bill Scott, founder and artistic director of Miracle Theatre commented: *"This collaboration will allow us to explore new forms of theatrical performance, it's exciting and challenging – we are already enjoying it and looking forward to learning more through this collaboration"*. Vconect will work with Miracle to develop and address challenging but realistic use-cases that explore the way that ad hoc communication between groups (in this case both actors and audience) can be enhanced. The collaboration should culminate in an innovative performance of Shakespeare's "The Tempest" in the late summer of 2014.

Bill Scott – founder of Miracle Theatre Company

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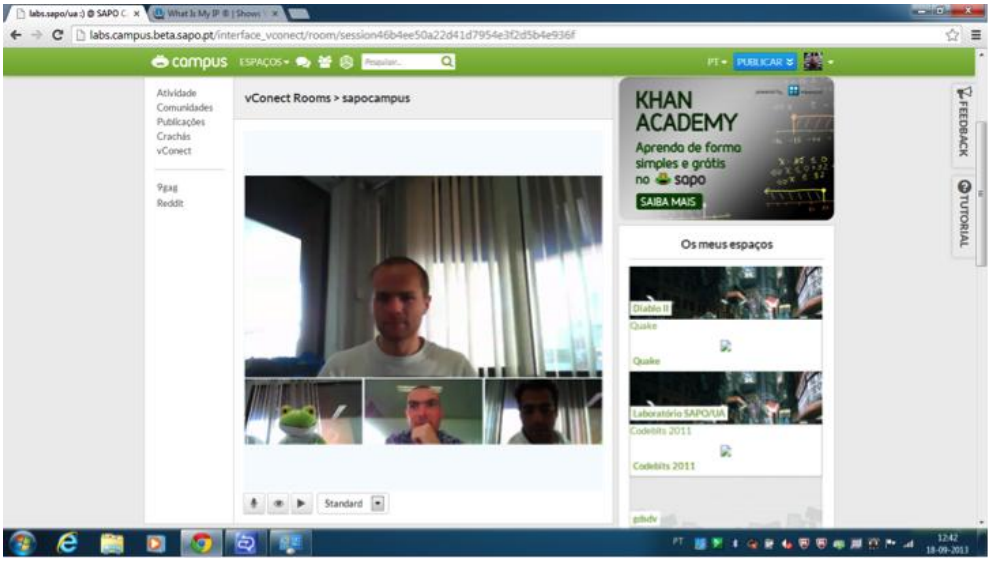
Vconect API published and implemented in SAPO Campus

The Vconect vision is the adoption of high-quality videoconferencing as a medium for mass communication within communities. One important aim of this is the integration of video conferencing into social networking services.

Since the start of the Vconect project there has been a remarkable increase in interest in this topic, most prominently visible through Google+ Hangouts and WebRTC. Though it is difficult for a European research project to compete on all grounds with such global industry efforts, there are many white spaces where value can be added. WebRTC, for example, is not supporting group communication very well while Hangouts cannot be integrated into other social networks easily. Vconect has as its aim to provide an open web interface similar to WebRTC while supporting video conferencing as efficiently as Hangouts. Such a web interface in turn could lead to more research opportunities by extending the platform's capabilities beyond the project, and allowing us to perform fundamental research into how to improve the user experience for dynamic communication structures and how to make more efficient use of network resources.



Vconect video client functioning inside SAPO Campus

We are happy to announce that the first successful implementation in a commercial social network of a Vconect browser plugin based on the Vconect API. This is in the SAPO Campus social network (see figure). This implementation will soon be used a large trial in October, conducted by SAPO (see below), which will explore the behaviour of a group of users using group video chat in a scenario encouraging an ad hoc form of behaviour.

For more information about the API please download "D2.3 - Open Reference Architecture and Deployment - Interim Specification" here. Developers are also encouraged to attend the 2014 Codebits Hackathon (10-12 April 2014) in Lisbon where Vconect server components and API will be available for experimentation.

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SAPO Campus Socialisation Experiments

SAPO is interested in learning how its SAPO Campus users interact with the platform, understanding their social network usage habits and hearing from users on potentially emerging realtime video communication and media sharing requirements. Of particular interest are the users' views on how they would see integration between their daily school social network and novel and groundbreaking videoconferencing functionality.

The already achieved integration of Vconect technology into SAPO Campus is enabling the project to conduct a series of experiments and field trials. We aim to support both educational scenarios - remote teaching and small ad hoc group interaction between students. In a way, Vconect's integration into SAPO Campus aims to cover the whole design space, from slow to fast turn taking, from individual to group telepresence.

We are about to carry out a medium scale experiment with a few dozens users who will be performing tasks involving the need to use both social networking features and videoconferencing functionality. The goal of this experiment is to study the interplay between social network and videoconference usage in order to understand how the social and video worlds could be successfully intertwined.

SAPO Campus developers

Through a mixture of rigorous lab-based condition testing and more free form open-ended interview feedback, the trial will evaluate the influence of integration of social network features and videoconference functionality on the user experience The conclusions will contribute towards improving a real product currently in use by over 5000 pilot users and which SAPO hopes will become a social network standard for schools in the near future.

Vconect explores screen layouts for group video chat

The Vconect consortium wanted to explore *how* a group video call is displayed might affect *how* involved individuals feel as well as the group as a whole. In a group video call the person who speaks is important to display of course but to be able to see the listeners is equally as important to a healthy conversation.

To distil user interface design requirements for ad hoc group video calls we conducted a laboratory study at BT's Adastral Park, Martlesham, UK where we compared three different ways of displaying a group call on a computer screen. These so called "View Modes" were:

- **Tiled**, participants could see every one including oneself in a mosaic of tiles, arranged in two rows of three equally sized tiles
- **Hangout style**, similar to Google Hangout where, based on voice detection, the active speaker was displayed in a main window and the five remaining participants were displayed as a row of five tiles at the bottom of the screen.
- **Full Screen**, again based on voice detection, participants only saw the active speaker as a full screen image.

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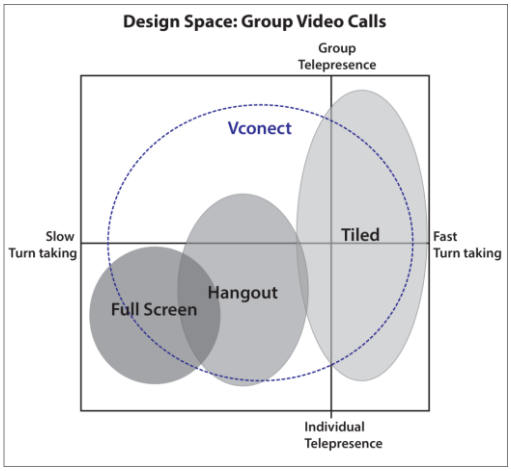
Participants try out the three view modes (left to right: Tiled, Hangout style, Full Screen)



Conclusions based on cluster analysis seemed to suggest the Tiled view mode is correlated to the use of social networking and is better suited to support fast turn taking, providing a sense of group cohesion whilst at the same time doing justice to individuals' presence in the group.

The Full Screen view mode is well suited to support for instance remote teaching, where there is mostly one person talking and an audience can see the facial expressions of the speaker in great detail, giving prominence to individual telepresence.

The Hangout style view mode is closely correlated to the Full Screen view mode but also allows to some extent to monitor the whole group.

New Coordinates for the next generation automatic orchestration

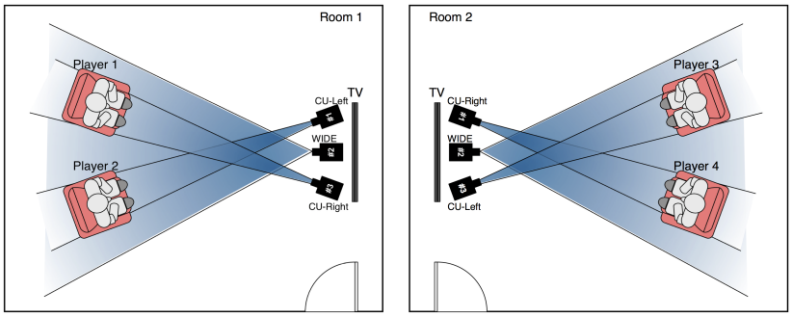


Figure 1 Room layout for orchestration experiments

Video communication is not just about the desktop and Vconect aims to explore the complexities of a broader vision involving theatre halls, living rooms as well as mobile devices. The team at Goldsmiths and at Falmouth recently carried out an experiment based on a communication between three typical living room setups – a large sofa with a couple of people, an easy chair and large television screen. Participants were invited to prioritise the qualities of their dream holiday and home in an informal context. They experienced two conditions in this more sit back experience - a split screen showing wide shots of the two other rooms and an orchestrated condition which provide an edited stream composed of wide shots and close up shots automatically chosen according to a voice activity cue which was transformed into conversation turn taking information.

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The participants reported some very interesting effects of the difference between the orchestrated and static conditions. Many enjoyed the feeling of intimacy that emerged from seeing the detail of the close up shots but, at the same time, might have felt that a different segmentation of the communication space had occurred, for example, it was felt possible to have a private communication within a room during orchestrated but not during a static screen. Another input was the fact that sometimes the rhythm of the communication was too fast for an edited mix. These insights, and other gained from the View Mode experiments, are beginning to suggest that different types of orchestration are appropriate for different contexts, and hence an automatic orchestrator will need to reason with communication contexts, level of intimacy between participants as well as screen layouts.

Towards the Service-Aware Network

Socially-aware multimedia services that include computer-mediated interaction, social networking and multimedia content can provide very rich experiences mirroring real life, but they have the potential to be both expensive (which is a problem for infrastructure providers) and complicated (which is a problem for users). Vconect's Service-Aware Network is a potential solution to the challenge of supporting communication between ad hoc groups, in which communication traffic across the network must be dynamically optimised in order to maintain Quality of Experience while minimising cost.

Vconect's researchers have made great progress this year towards turning the Service-Aware Network concept into reality. Here are some of our achievements:

The Service-Aware Network has the opportunity to measure Quality of Experience in ways which are much more relevant to a person's context, and to make decisions which take account of much higher-level knowledge than is available to a generic commercial product. We have developed a unique software testbed that allows for fine-grained control of different Quality of Experience factors, like delay, in video communication. The testbed has been used to conduct an extensive study with around 40 participants to investigate the effect of delay on group video chat. The results from this experiment are now being used to construct realistic models that map network delay with user's annoyance, and suggest that the role of each participant has a significant impact on their perception of delay. The Vconect team is now working with the International Telecommunications Union (ITU) to share its ongoing work and contribute towards future international standards in this area.

A significant milestone towards the practical implementation of the Service-Aware Network was reached with the first demonstration of a 'World Wide Vconect Web'. By implementing RTCP monitoring and firewall traversal within the prototype Vconect platform components, it has been possible to set up a distributed network of Video Routers in data centres across the globe. These Video Routers act as interconnected relays for video streams in a group chat session, and the whole system was configured to automatically maintain a high Quality of Experience (in this case by maintaining a low delay) while reducing the transmission cost (by splitting the streams out to each client as close to the destination as possible).

The likely future growth of web-based video chatroom services (using technologies such as HTML5 and WebRTC) could make the need to rapidly and dynamically reconfigure network components an attractive option to operators seeking to reduce costs while maintaining customer experience. The scalability of the Service-Aware Network is a difficult challenge to address practically in a research project, so Vconect has turned to simulation and data analysis in order to bridge its work on network optimisation for user trials with the conditions anticipated in a large scale deployment of similar services. The design of our simulation enables a wide range of inputs to be flexibly defined, including the demand model, the network and cost models, the orchestration model and a set of possible routing strategies. In the coming months we will run simulations of multiple independent chat sessions and hopefully identify the conditions under which the Service-Aware Network could provide the greatest commercial benefit.

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Award Winning Research

CWI and Vconect researcher Dick Bulterman has been awarded the SIGMM Award for Outstanding Technical Contributions to Multimedia Computing, Communications and Applications. Prof. Dr. Dick Bulterman is group leader of the Distributed and Interactive Systems group at CWI. His research interests are multimedia authoring and document processing. His recent research concerns socially-aware multimedia, interactive television, and media analysis. Click here for more info. The award was presented at the ACM International Conference on Multimedia 2013 that was held Oct 21–25, 2013 in Barcelona, Spain.

At **EuroITV 2013, in Como, Italy** Chen Wang, Pablo Cesar (both from CWI); and Erik Geelhoed, Ian Biscoe and Phil Stenton (all from Falmouth University) were awarded the 'best paper award' at the International Workshop on Interactive Content Consumption, held in conjunction with EuroITV 2013, in Como, Italy for their joint work on explored audience response obtained via biofeedback.

For a complete list of Vconect publications and demonstrations please visit
http://www.vconect-project.eu/publications.html

Upcoming Highlights

ICT Vilnius - November 6-7, 2013

The Vconect project will have a large demonstration based on its Performance Use Case at the upcoming EU ICT event in Vilnius on Nov 6-7. The project will offer visitors to the show the opportunity of enjoying a performance and rehearsals between an actors and a director across a video link with the UK as well as see the experience offered by the latest Vclients on desktop computers.

Codebits - April 10-12, 2014

Vconect is planning to be part of the three day Codebits 2014 Hackathon happening in parallel in Portugal and Brazil in April. The regularly attracts over 800 developers from all over the country, consists of a 48h hackathon, workshops, lectures and demos.

Vconect is a "Specific Targeted Research Project" (STREP) of the ICT (Information and Communications Technologies) Work Programme under the European Community's 7th Framework Programme (FP7). It addresses objective 1.5 ("Networked Media") under challenge 1 ("Pervasive and Trusted Network and Service Infrastructures").

The project is partly funded by the European Commission. Its overall budget is about 5.5 million euro.

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