Towards a WebRTC Roadmap

Purpose: This NIF form is to be used for the submission of New Ideas suggested for inclusion in the GN4 Phase1 and beyond proposals. Budget estimates, information about objectives, impact, benefits, etc. as well as scope must all be supplied.

Submit to: pmo@GÉANT.net by January 31st, 2014 with the subject label starting: GN4Input

Overview

Project Name:	Towards a WebRTC roadmap	**Project Proposer:**	Otto J Wittner, Jan Meijer, Stefan Otto - UNINETT Supported by SUNET, DeIC and CSC/FUNET.
Project Type: GN4 Phase1 or longer term	GN4 Phase 1	**Estimated Project Costs (best effort!)**	
Duration proposed	1 year	Manpower in person-months also identifying specific expertise required	18
Deliverables proposed (If any can be defined at this stage)	Report presenting a proposed roadmap for WebRTC deployment in European higher education & research	Hardware and equipment:	€20000
Milestones proposed (If any can be defined at this stage)	Q3 2015: draft report Q4 2015: final report	Other costs	Travel and workshops: €30000

1 Background and Reasoning

Provide background information and the context of the project. Explain the reason for the project. What do you want to be different? What do you hope to improve? Why is the project needed? This should be the reason for the project, not the solution.

WebRTC (**Web Real-Time Communication**) is a combined effort by the IETF and the W3C consortium to enable Real-Time Communications in web browsers: voice calling, video communication, and data sharing without plugins. The effort is supported by browser vendors Mozilla, Google and Opera.

The effort has been underway since 2011 and even though most standardization documents are still in a working draft stage most of them have reached rather mature states. FireFox, Chrome and Opera support WebRTC calls per today. The number of new services based on WebRTC is increasing as is the number of components (libraries, software MCUs etc.) that support WebRTC.

With the standardization effort maturing and WebRTC capabilities predicted to be available to over a billion endpoints by 2016 it is expected that a range of innovative new WebRTC-based services and solutions will surface. These will present new options for existing (SIP-based) infrastructures and web conferencing services but are also likely to give us an entirely new class of solutions to solve our real time communication challenges. With the HTML5 standardisation process we simultaneously witness an increase in overall feature-richness of the web. A feature-rich web complemented with real time communication capability will also offer the opportunity for a more component-based approach to including real time communication in all sorts of eLearning and eResearch web applications.

The combination of ubiquitous availability of standardised high quality capabilities atusers' endpoint devices combined with widely accepted open standards carries significant promise. Using the web as an application and service delivery model will allow for truly large scale deployments of one-to-one, one-to-many and many-to-many (video) communication at a very low price point.

The European HE&R community needs to position itself to realise the potential benefits of this new capability sooner rather than later. It should take an active approach to shape the market such that it also works for HE&R. This will require a good understanding of the technology, the market, service deployment scenarios, business models, infrastructure architectures and integration challenges with existing or legacy infrastructure as well as the institutional and end user perspective. A larger scale GN4 activity should be based on a systematic approach, a road map which this project intends to deliver.

The European academic sector should:

- Establish a common understanding of the way forward for WebRTC-based real time communication infrastructures in European HE&R and ensure it enables massive use of real time communication in its community whether based on NREN services or marked-provided services.
- Join in among the pioneer users and creators of new WebRTC-based tools and services
- Establish which WebRTC fora NRENs should establish a presence/position of influence
- Experiment with webRTC-solutions in educational and eResearch contexts
- Imagine future WebRTC-based NREN services and infrastructural components
- Engage with the emerging WebRTC market to ensure the HE&R perspective is plugged into early product development

NRENs in Europa and GEANT will likely be asked to provide infrastructure components and services such that use and innovation of tools and services based on the WebRTC standard can take place. Hence the NRENs and institutions need knowledge about resources required and potential business models. Localised activity is likely to emerge. The roadmap delivered by this project will ensure that there is an overall systematic and interoperable approach to WebRTC deployment and adoption in European HE&R.

2 Objectives, Impact and Benefits

Provide one or more bullet points to briefly describe the primary objective(s) of the project in terms of the desired outcomes. This should be expressed in the form: 'To ensure…', 'To implement…', 'To service...', 'To improve...', 'To innovate...', 'To optimize...', 'To save...', etc. For each objective mention the benefits to identified stakeholders (e.g. end-users, NRENs, large international research projects, industrial research partners, high level education, etc.) should be mentioned. A description of the expected overall impact must also be provided.

- To ensure the European NRENs are well positioned to realise the full potential of WebRTC technology for their community as the technology emerges in the years to come
- To take the first step towards ensuring European HE&R is in the forefront of the coming WebRTC wave, participating in shaping the marked using its power as a large user group with coherent demands and usage scenarios
- To propose a comprehensive roadmap for WebRTC development and deployment to European NRENs, Geant and the European HE&R community presenting an integrated view of the envisioned real time communication space from 2016-onwards. This roadmap should be executable in a WebRTC activity for GN4 phase 2
- To ensure the European HE&R community will grab the opportunity to deploy a truly large scale real time communication capability at a low price point
- To ensure European NRENs are engaged with relevant market parties developing WebRTC solutions and components

3 Scope

Describe the areas expected to be covered or impacted by the proposed activity, such as organisational areas, systems, processes, resources.. i.e. what is 'in scope'. This is not a list of what will be done but identifying the services, areas or what, will be affected.

Also please enumerate specific items which although they could perhaps be related are intentionally not addressed by your proposal ("Out of Scope").

1. In Scope

- Next generation web-meeting applications and services.
- One-to-one, one-to-many, many-to-many real time communication using web browser end points
- Interfacing with lecture recording infrastructures
- Interfacing with SIP, h323 videoconferencing as well as prorpietory web meeting tools
- Business models
- Interfacing with component-based web applications

- Identifying new use cases different from the classic video/audio communication solutions and evaluate their potential (e.g. browser based peer to peer communication / data-distribution)

2. Out of Scope

- Most other none WebRTC-features of the (living) HTML5 standard

4 General Information

Outline any potential issues, risks, dependencies, assumptions, constraints and limitations or any other points that may be useful to help assess the proposal.

- The project assumes a positive development and adoption of the WebRTC standardization. A sudden shift of interest away from WebRTC standardization by important contributers/players may influence the relevance of the project's outcomes significantly
- The project assumes that Microsoft's IE and Apple's Safari browsers will start to support standardized WebRTC functionality as the standard matures, like they have done with other HTML5 functionality
- If the global WebRTC product market and community develops at a slower pace than expected a roadmap to stimulate Web RTC adoption may be difficult to producero
- WebRTC has all the signs of a disruptive technology. It is likely WebRTC as a technology will challenge existing notions of how one-to-one, one-to-many and many-to-many synchronous communication is best serviced. Too early exposure of a WebRTC activity to entrenched beliefs may stifle its disruptive innovative potential