

Report from Things4Web conference June 25.-27. 2014

- Participants from 12 nations
- Creative Workshop Competition
- Presentation of the RealTimeWeb
- Nornir Development Kit Launch

The Things4Web Conference featured leading experts who held workshops and lectures on this year's theme. It was definitely an educational event for developers who work daily in the subject area. The conference was intentionally more of a workshop and more "hands-on" than we usually expect from such events.

The conference [Things4Web](#), held in Steinkjer from 25 - 27th June, gathered local and international experts in radio technology and cloud computing, discussing solutions for the Real Time Web. This new technology will be a part of the Smart City project, rolling out this autumn.



The conference was focused on issues and solutions for the Internet of Things. Norwegian company and host, Nornir AS, launched a new, exciting radio technology infrastructure for the Real Time Web. According to Håvard Belbo, CTO Science Park in Nord-Trøndelag: - We are situated in an outpost. But this small and transparent society makes the location very convenient for testing out large-scale innovative solutions. A step on the path towards "Steinkjer Smart City" and the deployment of the Real Time Web, the conference gathered private and public actors in welfare technology and urban development. They met with experts and business in radio technology and cloud computing to cooperate and establish contacts.

Nornir is a company on a mission to help partners and their clients take part in the evolution that is happening on the web. Nornir offers solutions for low energy devices and active RFID devices that enable two-way data communication on the Internet of Things. The company collaborates with the [Science Park in Nord-Trøndelag](#) and [Arena Smart Grid Services](#), a Norwegian cluster of businesses that are doing development and commercialisation of new and smart solutions in the energy sector.

The speeches at the conference covered subjects ranging from cyber-security for linked objects and low energy localisation of birds, to online blood pressure measurement and a family portal to help seniors stay at home longer. The presentations were thorough, and addressed the practical challenges developers face when developing new IOT / IOE solutions. For those familiar with the latest in machine-to-machine communications and platforms for



Cyber-security was a central subject at the Things4Web Conference

radio-tagged things that communicate on the web, it was a worthwhile event to take part in.

Interaction between objects will be as accessible as virtual information is today.

Tests in the local society

One reason for staging the conference in Mid-Norway is that Nornir is participating in [Demo Steinkjer](#), a national project established by [Nord-Trøndelag Elektrisitetsverk \(NTE\)](#) and The Norwegian Smart-grid Centre. Web-solutions and radio technology is essential to make this work. An operation HUB (DMS) has been installed for the project, and Nornir is placing out 35 gateways, each with a range of 1 km. NTE is eager to test some Nornir smart grid solutions.



Here new solutions for measuring and use of electricity will be tested in full scale.

Day 1: Security in Cyber-Space

Dr Asle Berger opened day 1 of the conference, a day geared towards hardcore programmers, scientists and architects working with issues related to the IOT / IOE. This year's theme was focused on IT security and the use of the web as infrastructure for IOT / IOE services.



Francis Melemedjian lectures about cyber security for connected objects.

Francis Melemedjian from [NTX Research](#) has worked for Hewlett-Packard's central telecommunications laboratory. Currently he is assisting multinational corporations with computer security. He pointed out that in France it has now been made prohibited to use static passwords to access medical information online. Automatically generated password containing a long string of letters and numbers will take years to decipher, he said. Francis was also pleased to be able to visit Steinkjer: – I am very happy to be here. Norway has a small population and a lot of

space. Norwegians are fond of new technologies. Here I have the opportunity to use present partners to test our technology in practice, said Melemedjian.

In open networks, security will always be an issue, and the conference also had posts from experts in cybersecurity. PhD Håvard Molland is cryptographer (code-breaker) and software developer at Opera Software, with a focus on networking and security. Molland's lecture was entitled "Lessons from the net about security and cryptography."



The big companies operating in cyber-space have other concerns than to take care of individual IT-security.



CTO of Synaptic Technologies, Henrik Silverkant, has more than 15 years of experience in IT security and development. He has his expertise in source code review, penetration testing, and reverse engineering. At the first day of Things4Web Henrik, who has worked the last 6 years developing the core of RTW, lectured about "OWASP top ten mobile".

Satisfied participants

The participants at the Thing4Web were pleased with the concept:

– It is a good idea bringing a lot of different competence to the conference. Together these experts cover a very wide area of knowledge, says Lars Rune Gjørund who runs the firm AV Sentralen. He emphasized the usefulness in that people with different skills and complementary knowledge can discuss solutions. – We talk together, exchange experiences and ideas. We should do this more often in Norway, it can create business value, says Gjørund.



Happy participants at the Things4Web conference.

CTO Tor Rune Skoglund in FourC combined participation at the conference with an annual meeting of Arena Smart Grid. – I am very pleased to experience that the speakers are able to present advanced technology in a down-to-earth way. The level of the speakers is very high, and to me the program contained a lot of new and interesting information. Case in point: Our company develops software for infrastructure, and today I have learnt something relevant to my business.

Day 2: Low Power Radio Technology

Day 2 was aimed at project managers, solution architects, webmasters and HW/SW developers. There were presentations of new development tools, services, and radio technology that can enrich your expertise on how technology evolves.

Michael André is CEO and co-founder of WizziLab, a company specialised in low power wireless communication. WizziLab develops a complete communication platform based on the DASH7 specification. André, who holds an M.S.E.E. with a specialisation in VLSI and a M.S. in Computer Science, is president of the [DASH7 Alliance](#) since May 2013. He explained how Low Power radio technology can be used to detect free spaces in an open, gigantic parking area.



Radio Technology experts Michael André, WizziLab, and Maarten Weyn, University of Antwerp, looking closer at a low power transmitter.

– We placed a sensor in the ground for each parking space. You cannot dig too deep, but at the same time the sensors must be covered so as not to receive wrong signals from people or other moving objects, says André.

Professor Maarten Weyn at the University of Antwerp, Belgium, holds a Ph.D. in Computer Science on the topic of Opportunistic Seamless Localization. At Things4Web conference he lectured about challenges with accurate calculation of distance to objects.

– Estimating distance to a fixed point is simple; it has a sender and an antenna, explains Weyn.

– When objects are moving, it is more complex. We have to consider different environments, terrain, buildings, other objects in metal and reflections. Weyn has collaborated with WizziLab for three years and finds it valuable that they can meet in Steinkjer to discuss relevant issues.

[Development kit](#)

During Things4Web Nornir presented a development kit. – Traditionally, it has taken months to set up a development base. With this set you are up and running in less than half an hour, says developer Colin Coleman. Different objects are connected wirelessly, without the need to develop software for this purpose. [More radios and gateways are connected to the web, and you can create a new service with its own data model.](#)



Product Manager Andreas Gyrrre, [Hospital Organizer AS](#), pitching a healthcare web-portal to help senior citizens stay longer at home.

[Speed Dating for healthcare enterprises](#)

The last part of Day 2 allowed small, innovative companies to pitch products and solutions. It is envisaged speed dating between companies. Arena Smart Grid Service was present to facilitate matchmaking of companies for various EU programs.

[Everybody can make their own app](#)

The Real Time Web enables machines to communicate with each other directly, while domain ownership and IPR is preserved in a decentralised, self-escalating network. The new network should not be perceived as a platform system; on the contrary it will work the way the web was meant to work.

– The RTW is a horizontal system using links, independent of operators. All you need to become part of RTW is a domain. You can create apps that are linked to your own domain. The imagination is the only limitation, says Levang.

Day 3: Exhibition in Municipal Hall

Workshop with realizable ideas

On Friday June 27th, Day 3 was an open exhibition of technology related to welfare technology, taking place in the Art Gallery and Town Hall. The conference presented a futuristic exhibition in the Municipal Hall, prototypes and gadgets were showcased and the audience could feel and touch innovations.

Companies with innovative solutions exhibited their products and services to the public. Parallel to this event a creative workshop was held, focusing on welfare technology. The participants were randomly placed in groups for an informal competition. The jury had a tough task selecting the winner, claiming that all the ideas should be possible to bring to market. Håvard Belboe was hoping this event will stimulate further innovation:

– The workshop was meant to discuss how to make use of the new technology.



You don't need to see a doctor for measuring your blood-pressure.



Competing teams at the creative workshop, discussing new solutions for welfare.

The RealTimeWeb

At Things4Web [Nornir](#) launched the RealTimeWeb, a selfscaling, event-driven net, developed by R&D company [Synaptic Technologies](#).



– The RTW is a Linked Data infrastructure that makes up a decentralized network. Data will be shared by links, allowing context-based distribution of real time data. This happens without the detour through web APIs and middleware development, says Levang.

– Developers will get access to register and set up domains where they can provide services for an open marketplace of data exchange. Intelligent objects will become online resources and part of this new, Real Time Web ecosystem.

Halfway to the future

Truls Berg, who has written the popular book “Halvveis til Fremtiden” (“Halfway to the future”), also spoke at the final day, presenting some interesting perspectives on economy, population and technological advances that are to be expected in the future.

Visionary author Truls Berg held a speech about the future and Norway's part in it. Watch an excerpt of his speech (in Norwegian) [here](#)



[Things4Web](#)

Things4Web in Steinkjer June 25.-27. 2014 was the first annual conference focused on the Internet of Things. The host is Nornir AS, and this year's conference was conducted in collaboration with Arena Smart Grid Services and the Science Park in Nord-Trøndelag.

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