architectuRe for an Internet For Everybody

Sprawozdania

Informacje na temat projektu

RIFE

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[Strona internetowa projektu ↗]

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Periodic Reporting for period 2 - RIFE (architectuRe for an Internet For Everybody)

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Podsumowanie kontekstu i ogólnych celów projektu ⌄

The problem that RIFE addressed is that of providing affordable and sustainable access to the Internet by realising an architecture for an Internet for everybody that enables access to information and services at economically sustainable price points unmatched by today's technologies while also catering to challenges, such as intermittent connectivity, posed by the varying environmental

challenges that are imposed on those who want to connect.

The importance of the RIFE technology for society is to provide unserved communities, especially in remote areas, more low cost options. The everything-online approach of low-cost network routers enables communities and thus end users to build and deploy their own solutions, independent of third parties. In addition, new business models have emerged through RIFE and with the use of satellite communications, community operators can benefit from the backhaul capacity increase, the transit cost reduction and local services improvement depending on the transit contract conditions with the satellite operators.

The overall objectives are:

1. Develop the unifying RIFE architecture with a clear set of abstractions being exposed to applications.
2. Develop a set of RIFE networking technologies that provide connectivity economically cheaper than today's solutions.
3. Develop the RIFE prototype platform.
4. Deploy and evaluate the RIFE prototype in a real-world field trial.
5. Develop compelling RIFE applications and services.
6. Develop new business models for virtual network operators.
7. Establish RIFE as a key player in the wider community for an Internet for Everybody.

Prace wykonane od początku projektu do końca okresu sprawozdawczego oraz najważniejsze dotychczasowe rezultaty ⌄

RIFE defined the requirements for a unifying architecture, its interfaces towards applications as well as to its enabling networks aiming for fast adoption by developers as well as the networking community. This included developments on surrogacy, and RIFE's ICN/DTN architecture.

RIFE developed and specified a set of networking technologies that suitably demonstrated the ability to provide connectivity where otherwise impossible (through available Internet technology), while also providing the technological basis for evaluating the technical and economic feasibility of RIFE as a whole. This included technologies such as the development of a surrogate management solution which was integrated into the H2020 FLAME project for testing purposes, use of satellite communications to reduce bandwith capacity, and the development of the push/pull multicast content into the network edge.

RIFE utilised and extended existing platforms in the ICN and DTN (Delay-Tolerant Networking) space and integrated the networking technologies (see above) into a working prototype that was used for application development, a real-world trial to measure performance at scale. The emulation environments OpenSAND was used to test a low-cost "scavenger" service for satellite links.

RIFE deployed the RIFE prototype in an extension to the Guifi.Net network in Spain (Tarragona),

allowing for comparative studies in terms of usability, usages, cost benefits and technical viability with a manageable, yet realistic deployment within a selected user community in the order of 40 participating households.The Field Trial deployment in Tarragona involved end users and included 6 Supernodes, 15 access points, 2 AP-client emulators, 6 general purpose PCs, and more than 40 end-user nodes.

RIFE developed solutions both for existing and envisioned new services, which were integrated into the overall RIFE prototype and showcased in a Field Trial within the selected user community.

RIFE developed, deployed and evaluated a range of scenarios, underpinned with concrete business models for the involved players that can be utilised for the diffusion of the RIFE platform and technologies. These business models include a new satellite operator model that vertically integrates terrestrial access and satellite-based transit, and it also includes a new terrestrial operator model that deploys local services supporting community-generated content.

RIFE achieved being a key player in the wider community for an Internet for Everybody by producing during the project lifecycle 18 standardisation contributions, 32 scientific publications, and 32 disseminations activities (co-organisation of workshops, invited talks, keynote addresses, demos, conference booths, etc.) as described in D5.3 Dissemination Report (v1), D5.4 RIFE Standardisation Survey (v1) Y1, D5.5 Standarisation Survey (v2), D5.9 Dissemination Report (v2), and for a comprehensive exploitation plan by partners, refer to D5.10 (v2) Exploitation Plan.

Innowacyjność oraz oczekiwany potencjalny wpływ (w tym dotychczasowe znaczenie społeczno-gospodarcze i szersze implikacje społeczne projektu) ⌄

The socio-economic impact is comprehensively analysed and detailed in D4.2 Report on Socio economic validation. In short, RIFE technologies has the ability to accelerate the diffusion of broadband services in emerging markets and into rural areas as shown by the use of value network configurations (VNC), utilisation of terrestrial fronthaul as well as satellite backhaul capacities; these can also enable the deployment of services on the network edge; and allow the coexistence of ICN and IP systems. Based on these technical advantages, operators equipped with RIFE technologies on single network basis can potentially reduce transit costs, increase network efficiency, ensure QoS for local services, and enable slicing into ICN and IP networks.

Beyond the SOTA, RIFE results will be carried forwarded and propagated by academic partners as follows: UCAM through contributions to IRTF GAIA RG, 3 courses at TUM concentrating on RIFE technical and architectural results and use cases as well as advancing the Liberouter Do-It-Yourself networking project, 2 Masters' courses at Aalto entitled Operator Business and Value Network Design for Internet using the RIFE results along with new research collaborations and project opportunities. For the industrial partners, Avanti will use the developed technologies for the space segment to improve the end user Quality of Experience (QoE), and reduce their OPEX. Guifi.net will benefit from the RIFE improvements of the ground segment to also improve the QoE they offer to their users. This
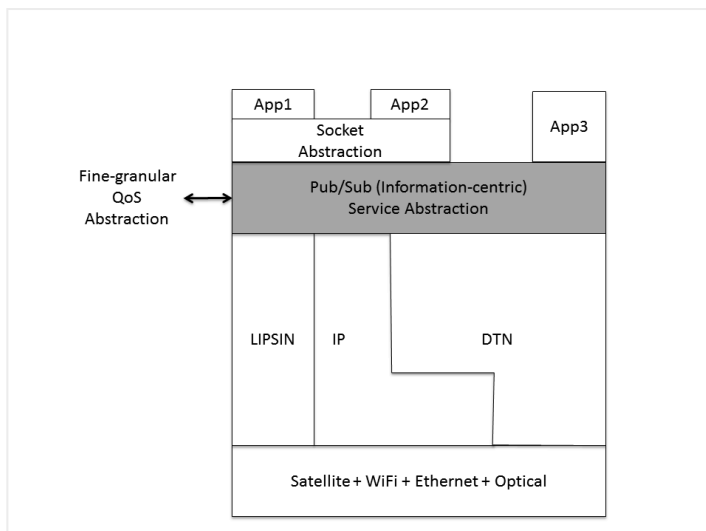
will enable Guifi.net to keep the costs of deployment at an affordable level for communities. InterDigital is planning to provide an advanced solution in critical areas of interest such as Edge Caching and service endpoint surrogacy.
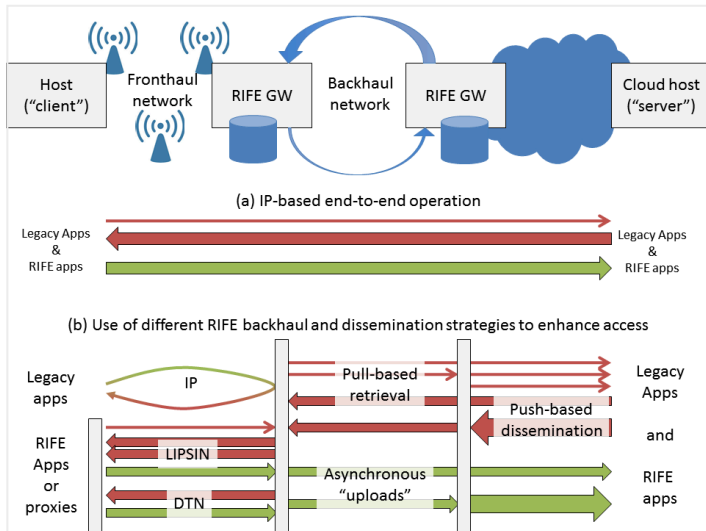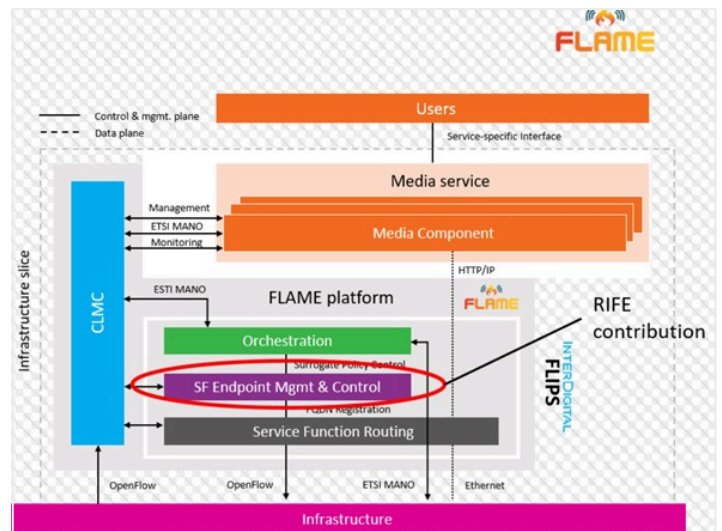

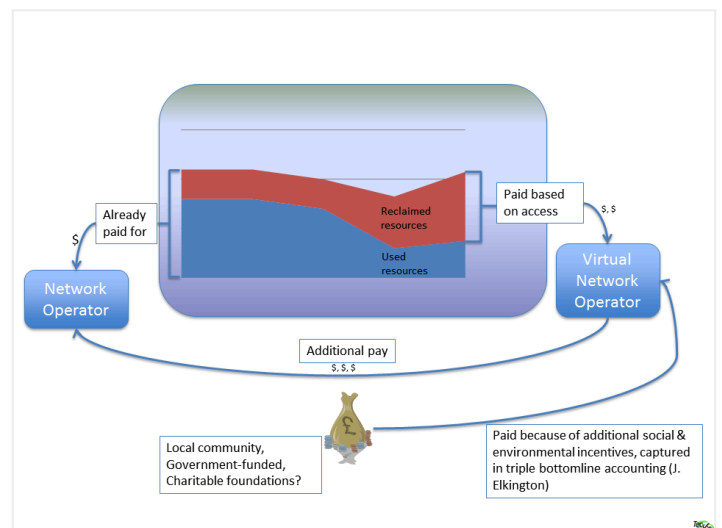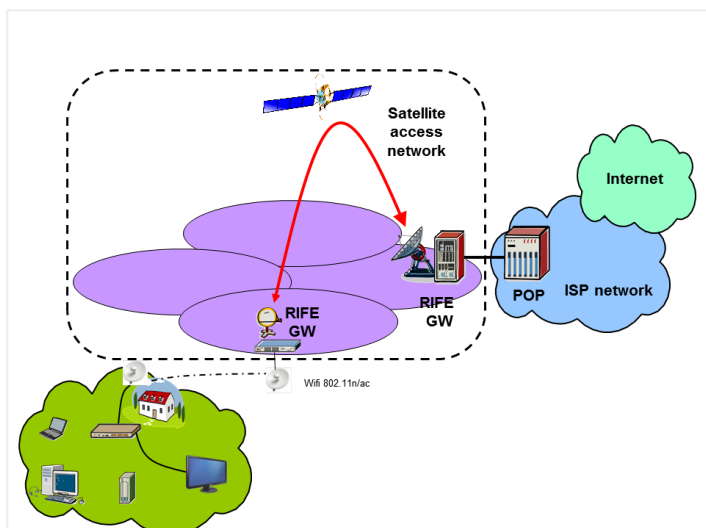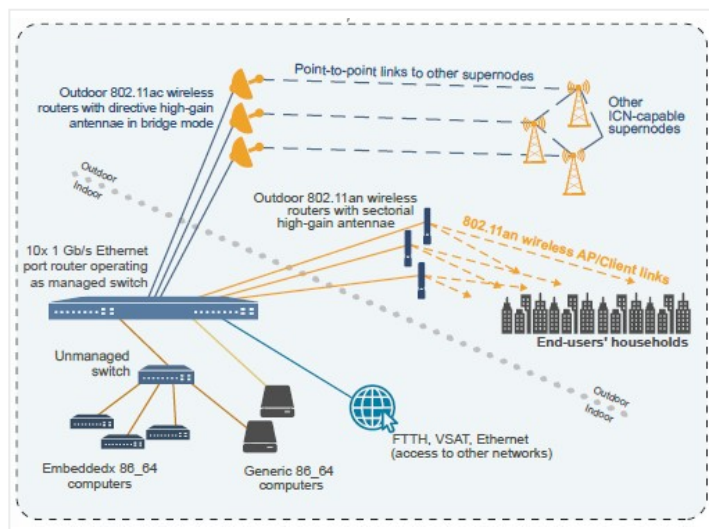Flexible RIFE-enabled Interaction
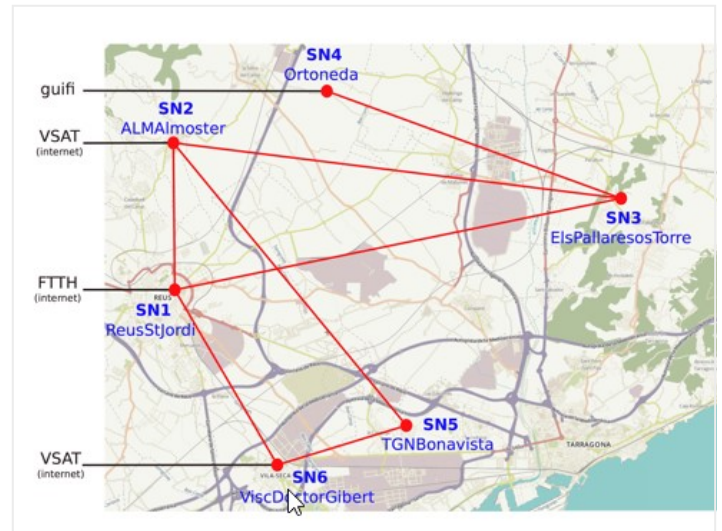
Field Trial Locations

RIFE Technical Platform

RIFE's contribution to another H2020 project called FLAME

Field Trial Components

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Permalink: https://cordis.europa.eu/project/id/644663/reporting/pl

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