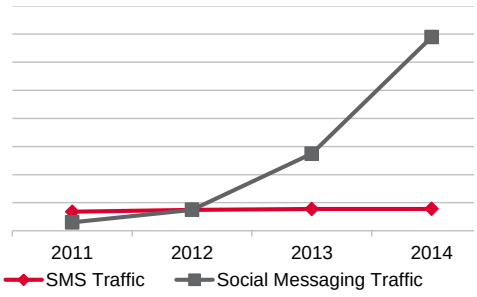
Decentralized Communication Services for Smart Cities

Trustful hyper-linked entities in dynamic networks

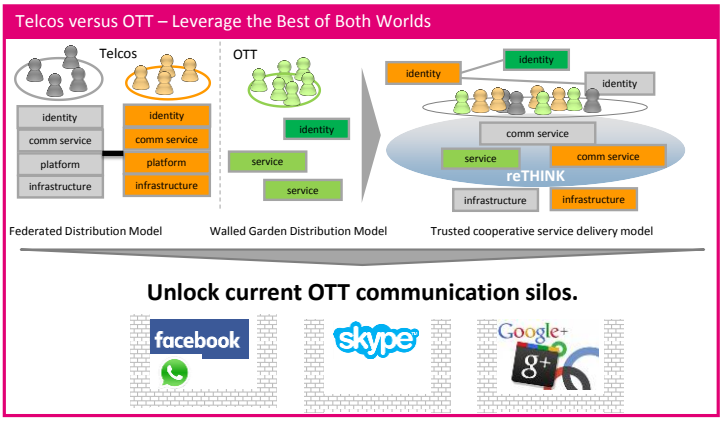
reTHINK motivation

Based on the Internet evolution, new centralized communication ecosystems like Skype or social networks like Facebook were established and are dominating the current landscape. Based on Over-The-Top (OTT) technologies, these new stakeholders establish an agile service and technology evolution path in combination with new business models.



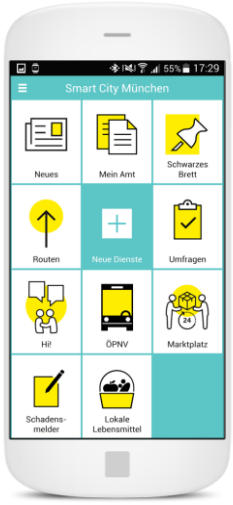
Social messaging exceeded *traditional* SMS traffic in 2012. Traditional telco operators still demonstrate appealing tardiness at offering any compelling bundle of voice, text and video messaging alternatives. OTT players, as highly disruptive forces, transform into rich media platforms.

Operators can return to future proof direct revenue models for own communication services. The OTT centric ecosystems are an opportunity for this, because they are *silos*. Communication only takes place within these closed environments and due to the critical mass that these ecosystems have reached, innovation only takes place inside. New stakeholders cannot compete in the market since innovation is shielded within established ecosystems. The core business model is the *naked user* and all users' private data has become the currency.



reTHINK overview & Smarter Together

reTHINK combines new concepts and existing technologies. It introduces interoperability by design, decentralised service delivery and reclaims user control over its data and privacy. It transforms standard telecommunication enabler technologies, such as privacy assertion, identity, Quality of Service and brokerage. reTHINK embraces hybrid service concepts for communication between humans and objects. It retains the data sovereignty with the user by decoupling identity and service.



reTHINK considers the interests of several stakeholders and enables new operation and business models by disrupting established communications business models and markets and potentially also the ones of the current OTTs. For developers reTHINK provides an ecosystem-agnostic communication environment enabling also hybrid services like human to machine communication. End-users are given the opportunity to create on demand services in their social context.

The concepts can be applied in most vertical markets such as in Industry 4.0 applications, enabling convergence of service domains and interoperability, as well as in future dynamic service environments for example in autonomous vehicles. The illustration shows the use of the framework in smart city applications enabled by the joint work on a *Smart City München Application* with the EU project Smarter Together and the reTHINK / T-Labs team.

reTHINK objectives

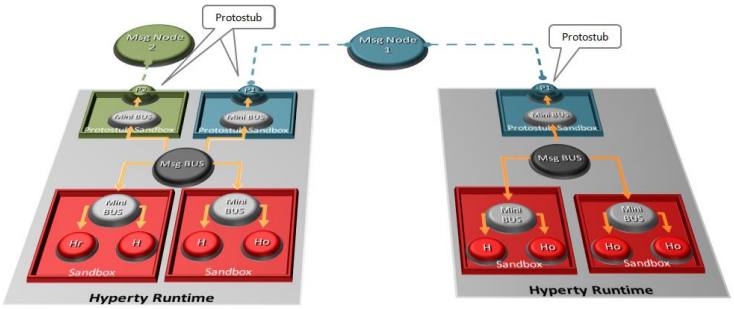
- Contextual social communication & participation
- Enable cross domain interaction in decentralized networks via the new "Hyperty" concept
- Bring & Manage Your Own Identity
- Trust & privacy mechanisms by design
- Use of social graphs for implied trust
- Discovery mechanism of humans and objects
- Facilitate human and IoT to form *hybrid communication*
- Non private data related business models to avoid the *naked user*

Hyper-linked Entities – Hyperties

The reTHINK Framework is a decentralised communication infrastructure (licensed under Apache 2.0) that enables developers to easily build and integrate communication services that are faster, more effective, more trustful and inherently inter-operable. Write once, deploy anywhere, together with seamless cross domain interoperability, gives developers and service providers much more freedom to really focus on users' expectations. The reTHINK framework is an alternative to

current dominant walled-garden communication networks that prevent new developers and new service providers from entering in the market and, at the same time, empowers the users with the choice and the management of their private data and identities.

The reTHINK Framework provides the tools to build a global decentralised network of hyperlinked entities (hyperties) that are executed at the edge and trustfully communicate through a messaging framework.



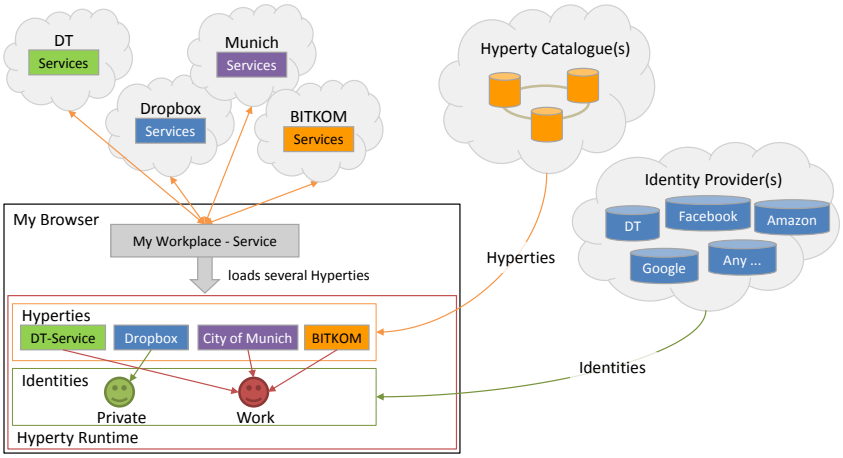
Hyperties are micro-services that can be deployed just in time to form complex services and applications and represent reusable building blocks, Each Hyperty provides a small set of business capabilities and do not depend on complex communication middleware.

Hyperties are inherently interoperable and are executed in devices on behalf of users through simple but sophisticated identity management techniques. Common data models are the only agreement needed for inherent interoperability.

Hyperty features

- protocol agnostic
- incorporating an agreed data model
- running in an execution environment
- inherently interoperable

Bring & Manage Your Own Identity



Using different identities in one service is not a problem. This feature is a core reTHINK capability. The framework decouples the user's identity from service and empowers the user to choose his identity provider and select his preferred identity, depending on the context of use (e.g. location, time, home, business, hobby…). Moreover, through a user-managed distributed directory, named Global Registry, he is reachable Anywhere Anytime and on Any device. The user can easily provision a new device or application to integrate reTHINK, thanks to this portability feature.

About reTHINK

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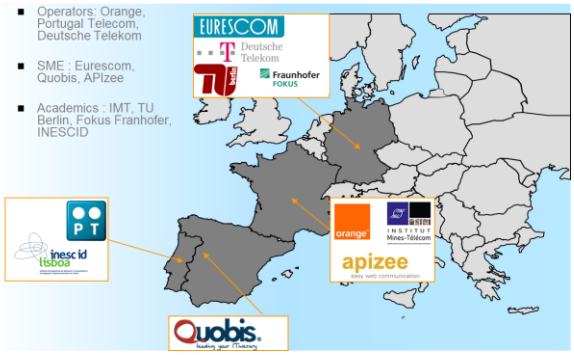

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More information

Webinars (https://www.youtube.com/channel/UC4xTKj2ZvhUyJosA_fLeAhg)

Demonstrations (https://hysmart.rethink.ptinovacao.pt/)

Available Hyperties (https://github.com/reTHINK-project/dev-hyperty)

Quick start to develop Hyperties (https://github.com/reTHINK-project/dev-hyperty-toolkit)

Quick start to develop Applications with Hyperties (https://github.com/reTHINK-project/dev-app)

Tutorials (https://github.com/reTHINK-project/specs/blob/master/tutorials/readme.md)

Complete Specifications (https://github.com/reTHINK-project/specs)

http://www.laboratories.telekom.com/public/English/Newsroom/news/Pages/mySMARTLife.aspx

www.rethink-project.eu