

Hybrid communication

Igor Passchier

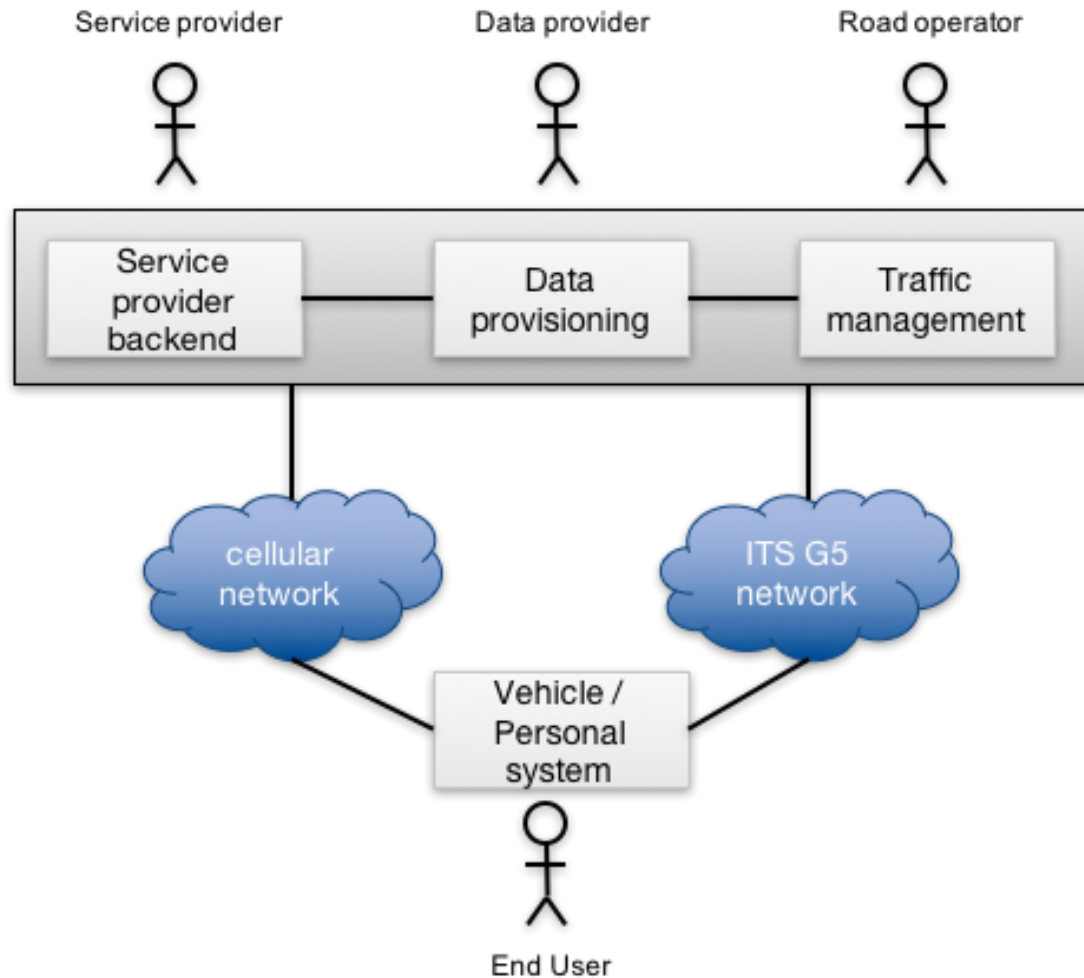


- What is hybrid communication
 - The usage of multiple communication networks for specific services
- Why hybrid communication
 - To improve the quality of services that are delivered via the hybrid communication network
- How can Hybrid communication improve quality of service
 - Better geographical coverage
 - Optimized end-to-end delay
 - Intelligent distribution of data over multiple networks, to improve the performance of the individual networks (especially the most critical network) → offloading

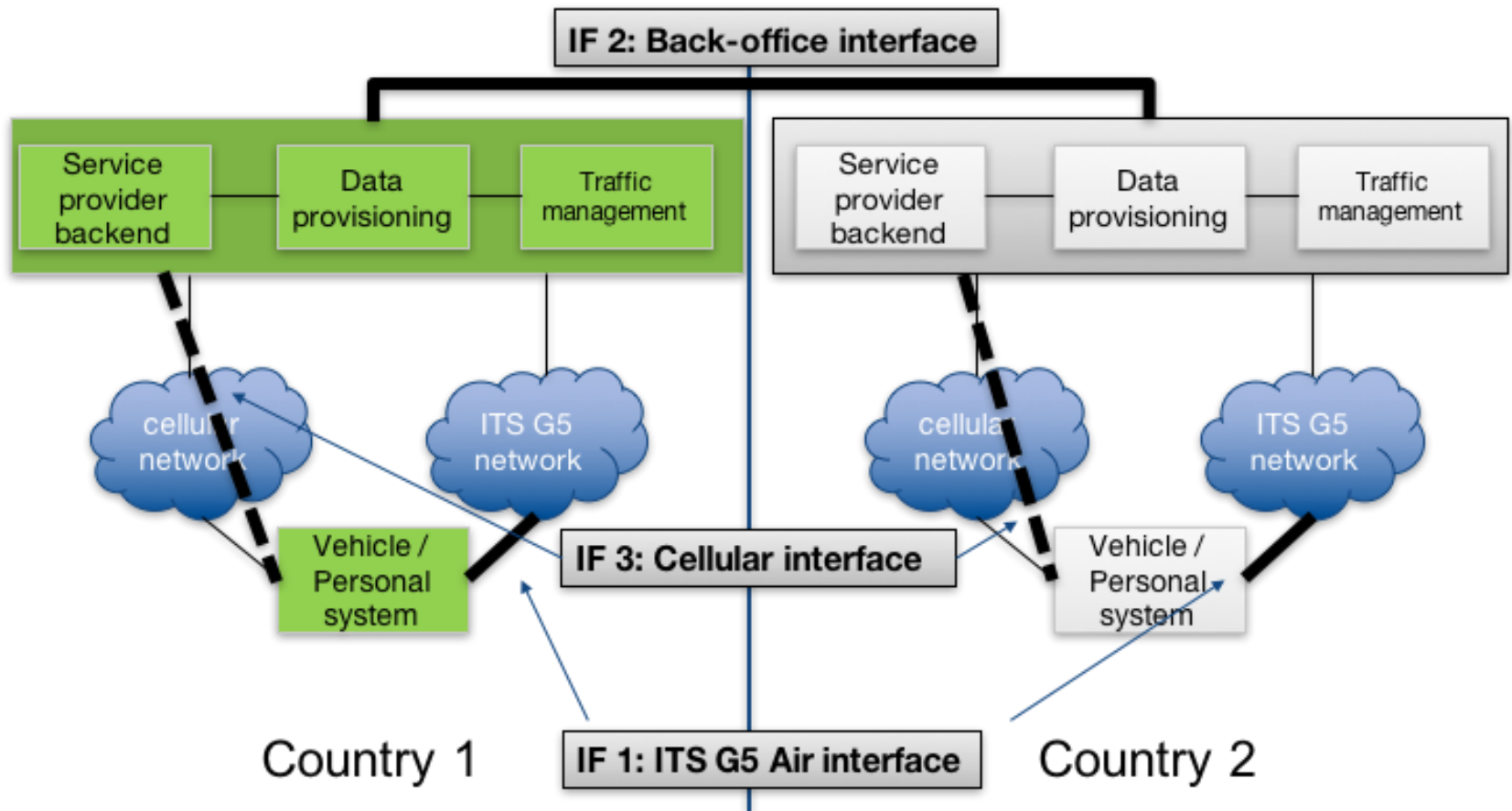


- Limited scope
 - Only ITS G5 and cellular networks
 - No differentiation to cellular technologies
 - Limited set of services (now: IVS, RWW, GLOSA)
 - Focus on International interoperability alone, not on a complete end-to-end solution

Abstraction of hybrid communication

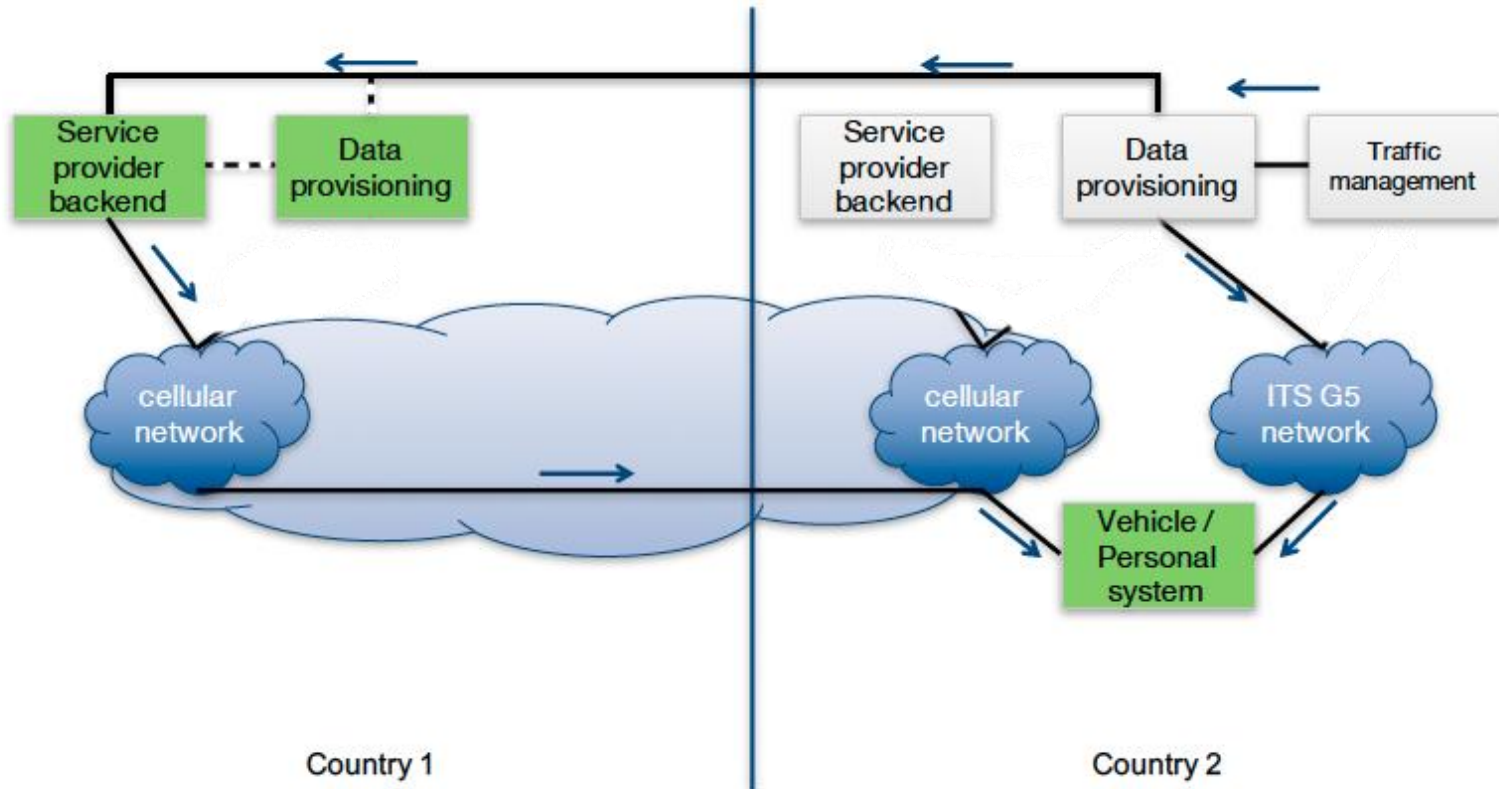


Interoperability interface definitions



- IF 1: ITS G5 air interface. Main focus on profiling messages
- IF2: back office interface. New specifications defined, strongly based on NL input
- IF3: end-device to back office interface: out of scope

Example usage of IF1 and IF2



- Messages
 - ASN.1 encoded DENM, MAP, SPAT and IVS messages
 - Profiles identical to IF1
- Communication protocol
 - AMQP based
 - 1 broker per geographical region/country
 - Filtering based on routing key
 - Message type
 - Message version
 - Party responsible for the content
 - Geographical location, based on quad-keys

- Specifications and example implementations available
- To be implemented and tested in in the coming 6 months
- To be extended with additional services and security/authentication



BACKUP



End of Oct:	Details IF2 specs agreed within 2.1b
Nov:	IF2 specs reviewed by external stakeholders/national projects
End of Nov Dec:	Specs V1.0 ready to be approved by the CMT
Dec-April May*:	implement Hybride IF2 per country (national projects)
June 2018*:	Hybrid IF2 test per country
June 2018*:	Include lessons learned from national implementations and tests in IF2 specs (V1.1)
Jan-Aug 2018*:	Prepare testfest (2.1b: provide test specs)
Sept Oct 2018*:	Hybrid Testfest in UK (Task of 2.2, based on V1.1)
Oct Nov 2018*:	Include lessons learned in IF2 specs (V1.2)
*to be confirmed	
NL organize an ITS-G5 GLOSA pre-test to validate ITS-G5 specification and GLOSA profile. This would be a limited test fest (June 2018)	

- Additional services (together with 2.1d)
 - Only MCTO and PVD?
 - Unclear what is exactly required
 - MCTO: is anything specific required from 2.1b, or is it fully specified in 2.1d
 - PVD: more fundamental discussion required on what data is exchanged, and with what purpose. Can be CAM and/or DENM based.
- Per-message authentication (together with 2.1c)
 - Waiting for plan to approach this
 - Basically: objectives (what is the goal of the per-message authentication, what issue is being solved). Then, a technical solution has to be drafted.
- Integration of v1.2
 - To be done after hybrid testfest

Specs v2 indicative time planning

Nov 2017- April 2018*	Develop v2 specs
Apr-Sept 2018*:	implement per country (national projects)
Okt2018*:	test per country
Nov2018*:	Include lessons learned from national tests in specs V2.1
Nov2018*:	Integrate V1.2 in V2.1
Jan 2019*:	Final test fest
March 2019*:	Include lessons learned in final specs V2.2

* Indication of timelines