

FOT-Net Evaluation methodology, Leeds, 3. Feb 2015

Study design in the NordicWay project

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The NordicWay project

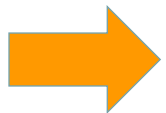
- Pre-deployment piloting of C-ITS services in the Nordic countries
- Collaboration between public and private partners
- Co-financed by the EU within the Connecting Europe Facility programme

Project goal:

Enable vehicles to communicate **safety hazard** and **road status information**

- Using **cellular networks** (3G and LTE/4G)
- Offering **interoperable services** to the users
- On a **cooperative road corridor** through Finland, Sweden, Denmark and Norway

Evaluate **technical performance**, **impacts** and **user acceptance**

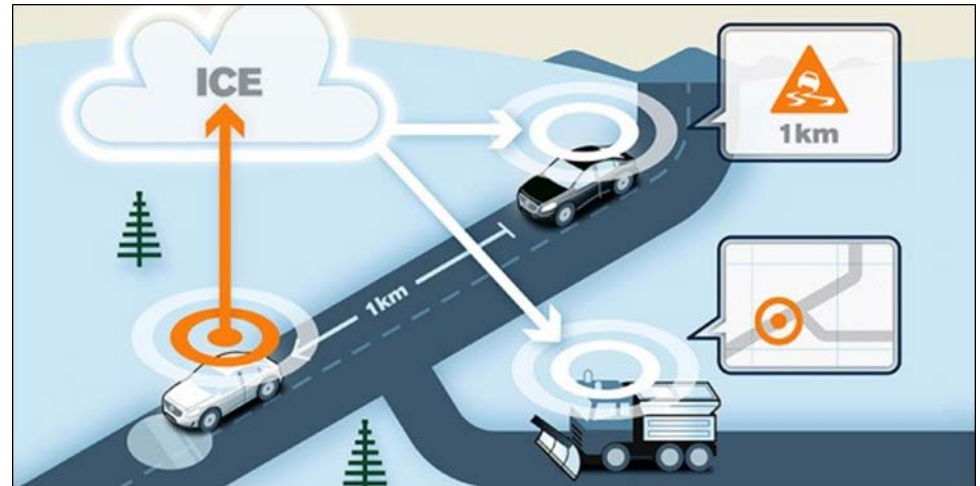


Preparing for automation of road traffic

Three core services

The project focuses on applications within three core C-ITS services:

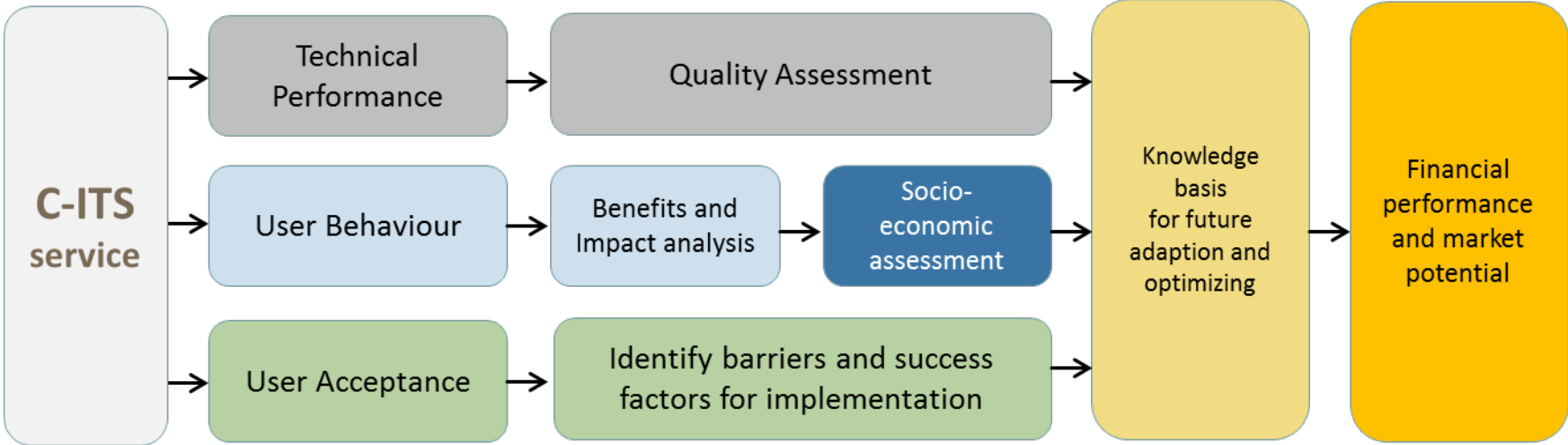
1. Cooperative hazardous location warning
2. Cooperative weather and slippery road warnings
3. Probe data services (sub-system)



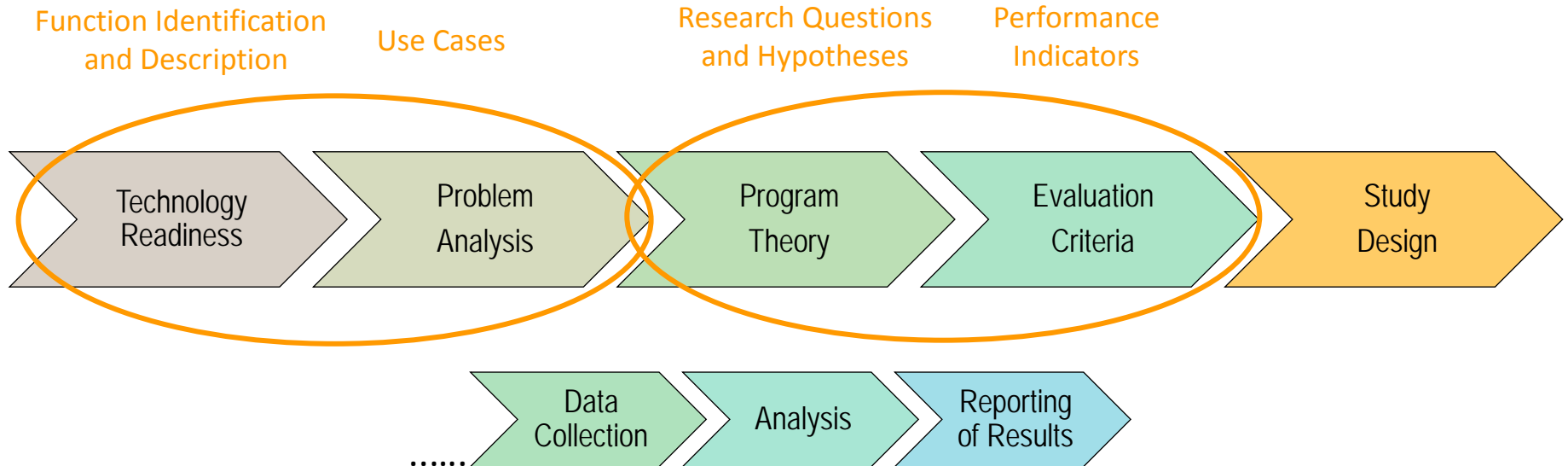
C-ITS Road Status Information (source: Volvo)

These services are piloted and evaluated separately by the individual national partners, and a synthesis of the NordicWay project results will be composed – resulting in a **roadmap for the next phase large scale deployment**.

Structural evaluation approach



Evaluation steps



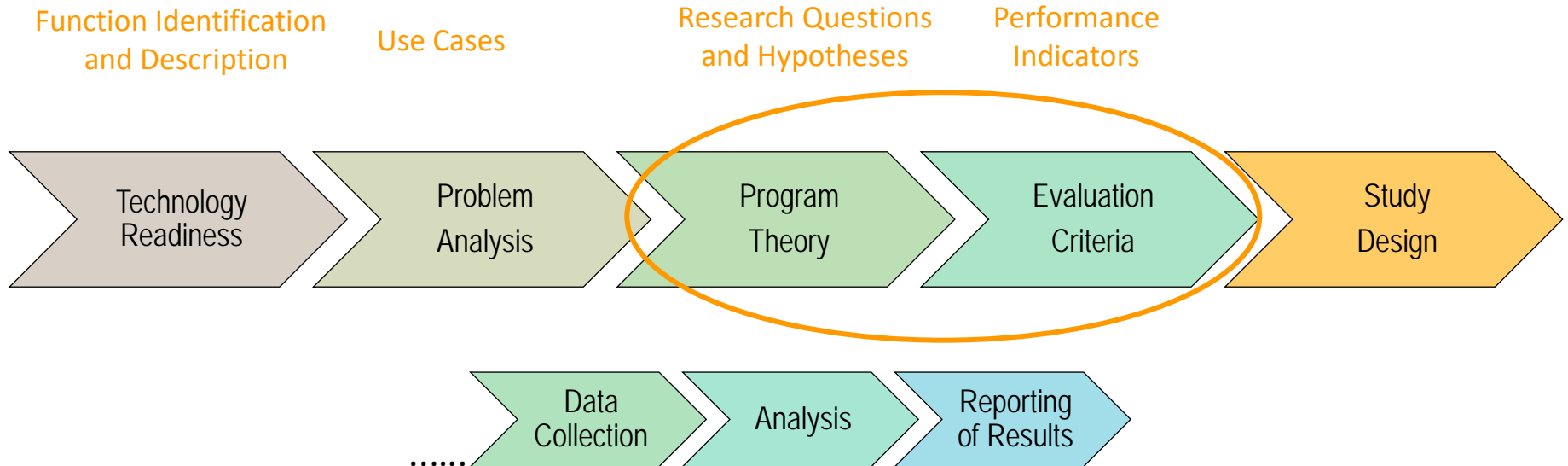
Technology readiness and problem analysis

TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9
Basic principles observed	Technology concept formulated	Experimental proof of concept	Technology validated in lab	Technology validated in relevant environment	Technology demonstrated in relevant environment	System prototype demonstrated in operational environment	System complete and qualified	Actual system proven in operational environment
Concept development			Proof of principle			Proof of performance		

Problem analysis based on official meetings, workshops and stakeholder interviews

Identify the underlying problems and that are sought to be solved with the current C-ITS services

Evaluation steps



Program theory

The program theory is established in order to identify the **objectives** and the **causal mechanisms** between the C-ITS service and the expected results and outcome.

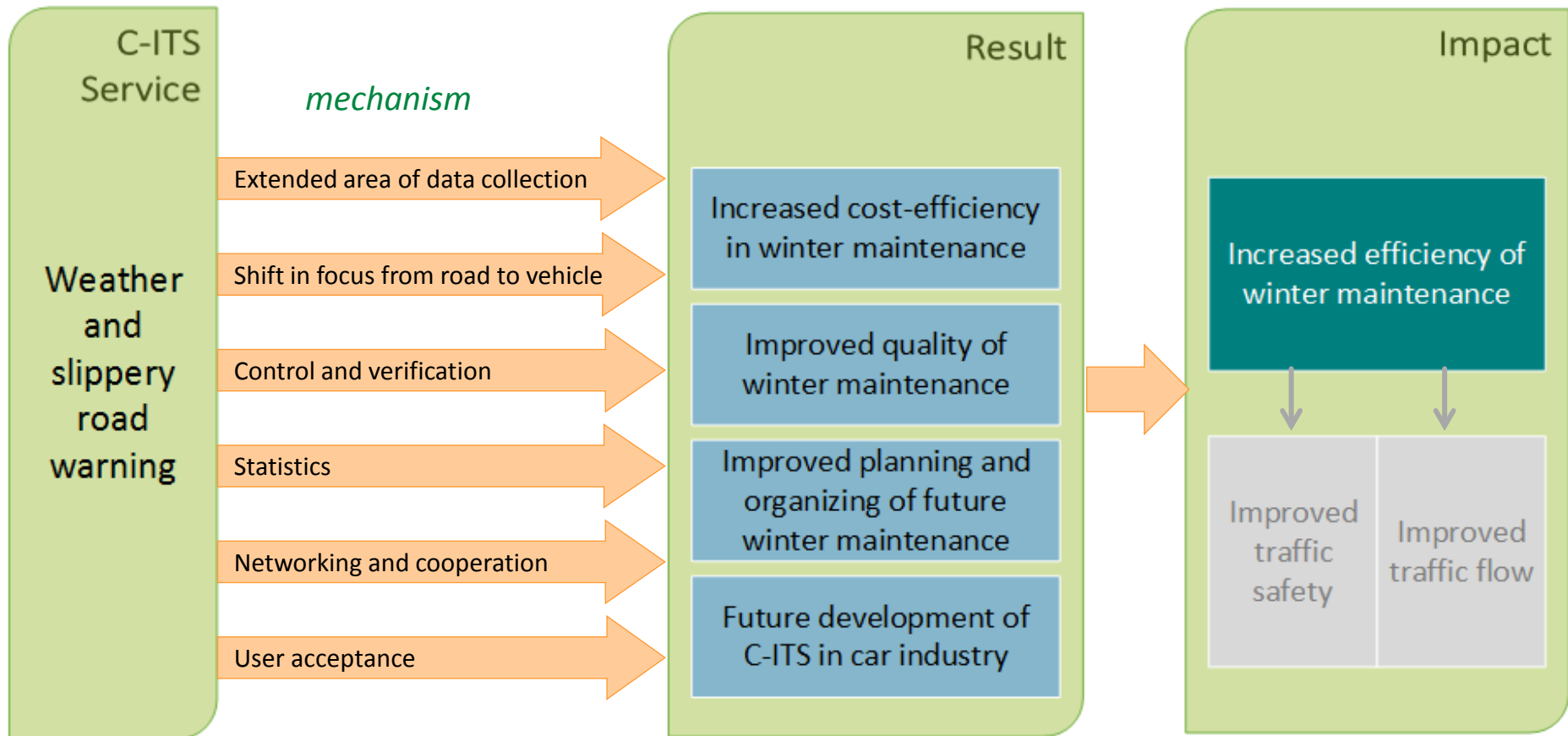


The program theory represent the logical foundation (rationale) of the implementation of the C-ITS scheme: **How the intervention is expected lead to its effects and in which conditions it would do so.**

Program theory

Example from the Norwegian pilot

The **Research Questions, Evaluation Criteria** and **Key Performance Indicators** could be derived from the program theory



Study design

Partner	Data flow	C-ITS technology	Pilot size	Study design
Finland	- Vehicles to TMC - TMC to vehicles	Mobile app.	1000 vehicles	Naturalistic driving study + complementary controlled driving tests
Norway	- Vehicles to TMC (uplink)	In vehicle sensors	500 vehicles	Naturalistic driving study + complementary controlled driving tests
Sweden	- Vehicles to TMC - TMC to vehicles	To be decided	75 vehicles	Naturalistic driving study + complementary controlled driving tests
Denmark	- TMC to vehicles (downlink)	To be decided	To be decided	Technical performance only

Pilots and C-ITS services have different objectives, technology maturity and deployment characteristics, and although utilizing a common evaluation framework - the evaluation design may vary between pilots.

Thank you for your attention!

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