NeTIRail

Needs Tailored Interoperable Railway

Railway & Society

Societal impact of railway innovations (WP5)

NeTIRail-INFRA final conference

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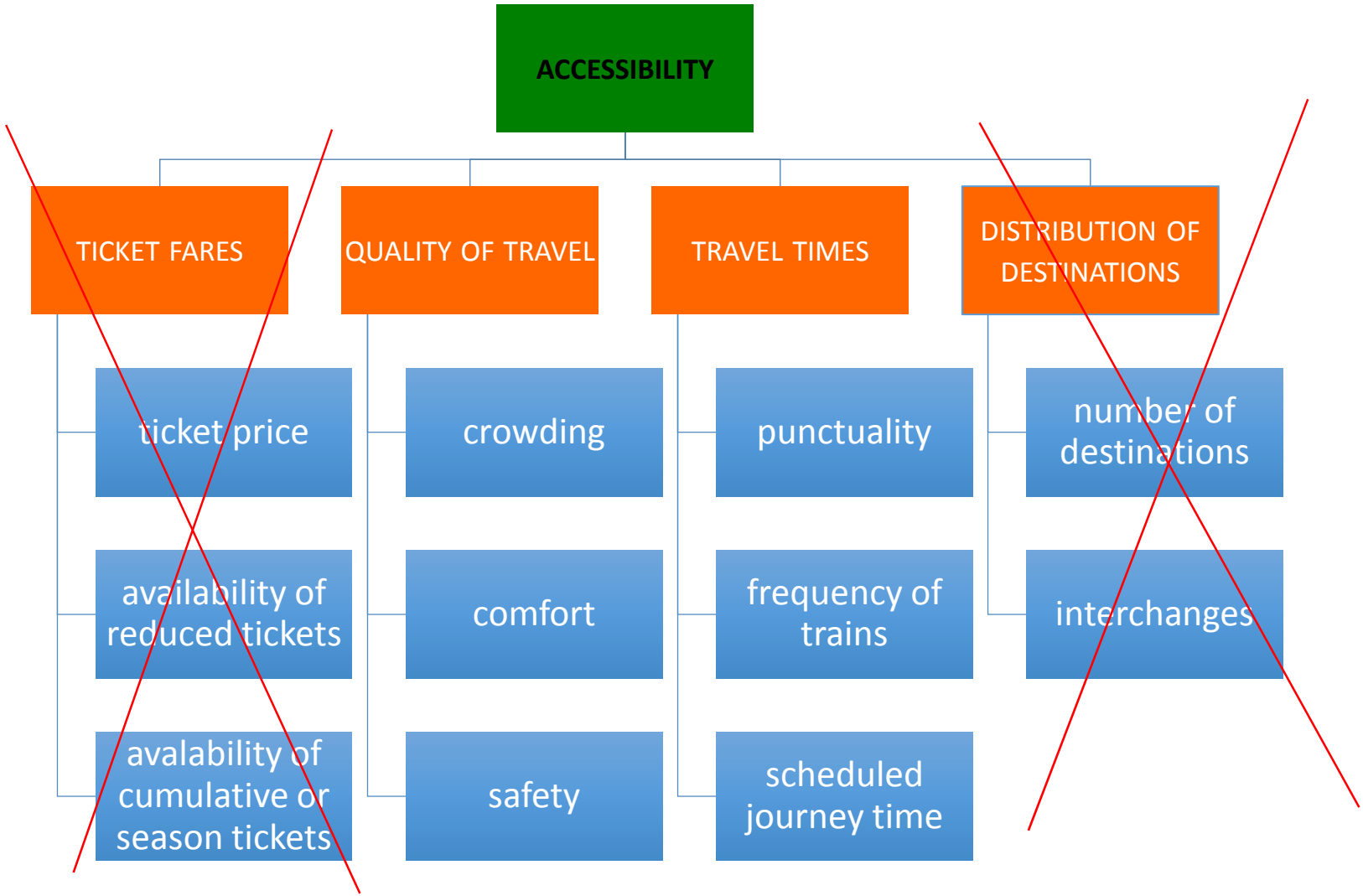
Aims of societal analysis:

- Assess societal impact of railway [illegible] that **cannot be monetized** and thereof escapes cost-benefit assessment
- Integrate matters of equality and fairness into the analysis
- Enable informed decision making about transport **innovation by providing a more** comprehensive picture of expected **benefits and costs**

Steps:

1. Establish focus: accessibility for passengers
2. Wide survey on passengers' use of train and perceptions on the NeTIRail-INFRA case-study lines
3. Assessment (overall qualitative but with quantitative elements) of innovations benefits (methodology and realisation)
4. Integration with economic cost-benefit analysis
5. Illustration of results into the GIS web tool developed in WP6

Value-tree for accessibility



2nd Step: user surveys

- When: June-December 2016;
- Where:

Bartolomeu-Zărneşti line (Romania)

Ljubljana-Kamnik line (Slovenia)

Pivka – Ilirska Bistrica line (Slovenia)

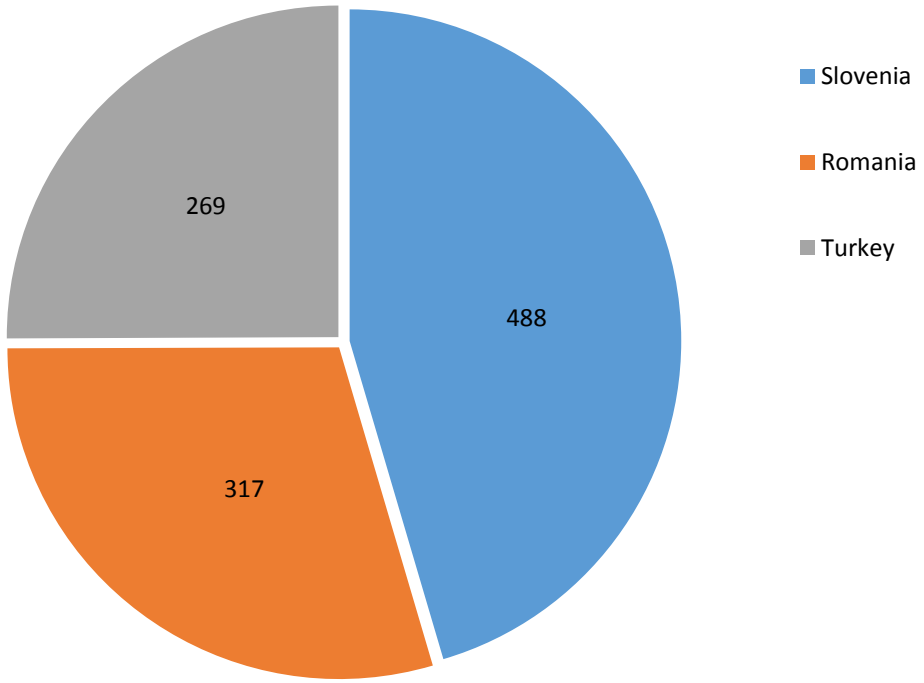
Ankara- Kayaş line (Turkey)

Divriği- Malatya line (Turkey)

- Total number of analysed questionnaires: 1074

Questionnaires collected

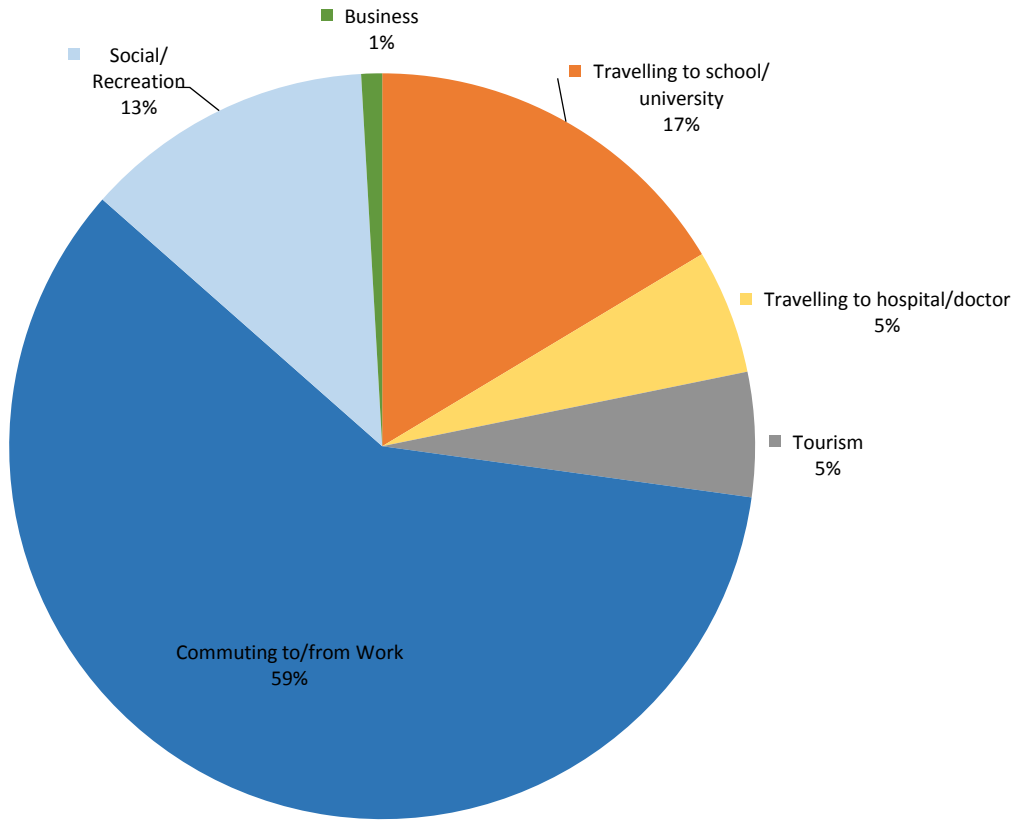
Total number of interviews included in the analysis: 1074



Key Findings: purpose of journey

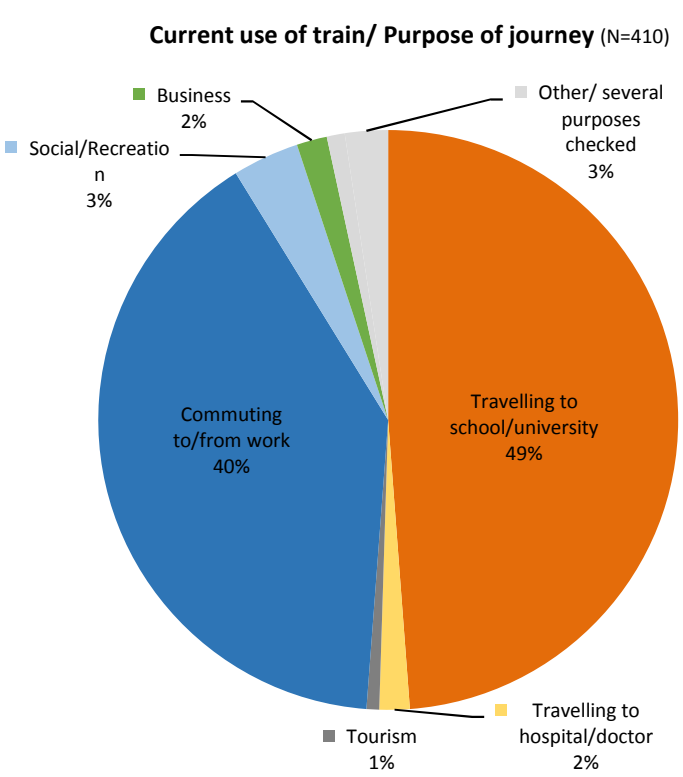
Romania: Bartolomeu-Zărneşti line

Current use of train / Purpose of journey (N=317)

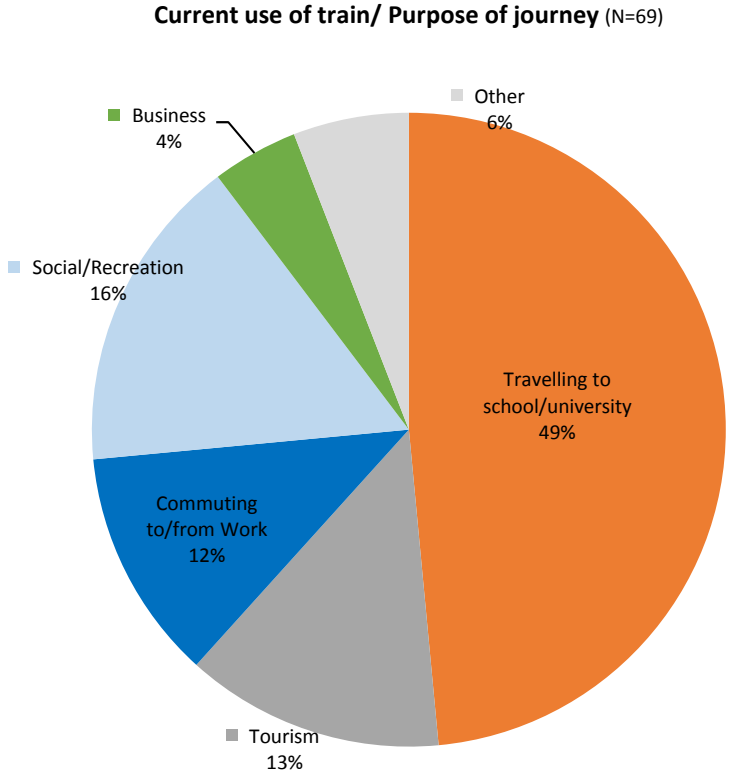


Key Findings: purpose of journey

Slovenia: Ljubljana-Kamnik line



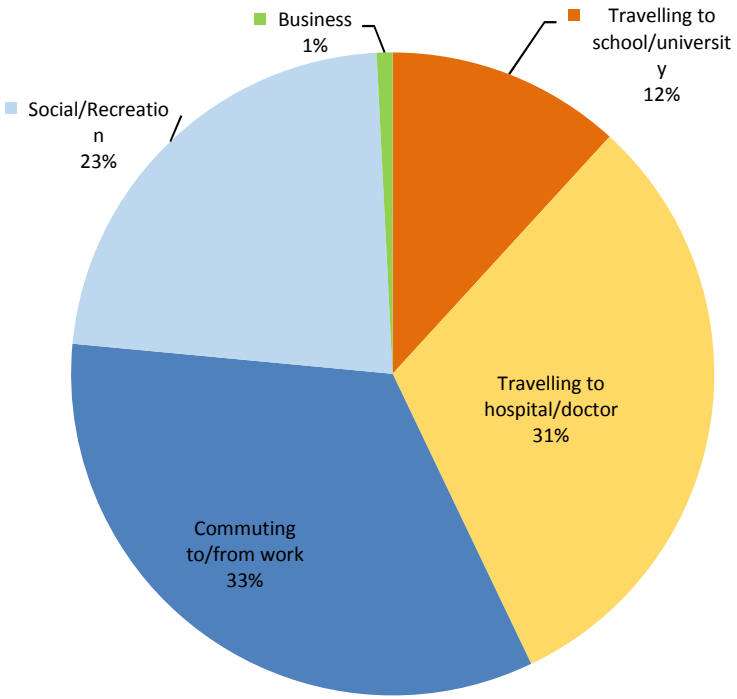
Slovenia: Pivka – Ilirska Bistrica line



Key Findings: purpose of journey

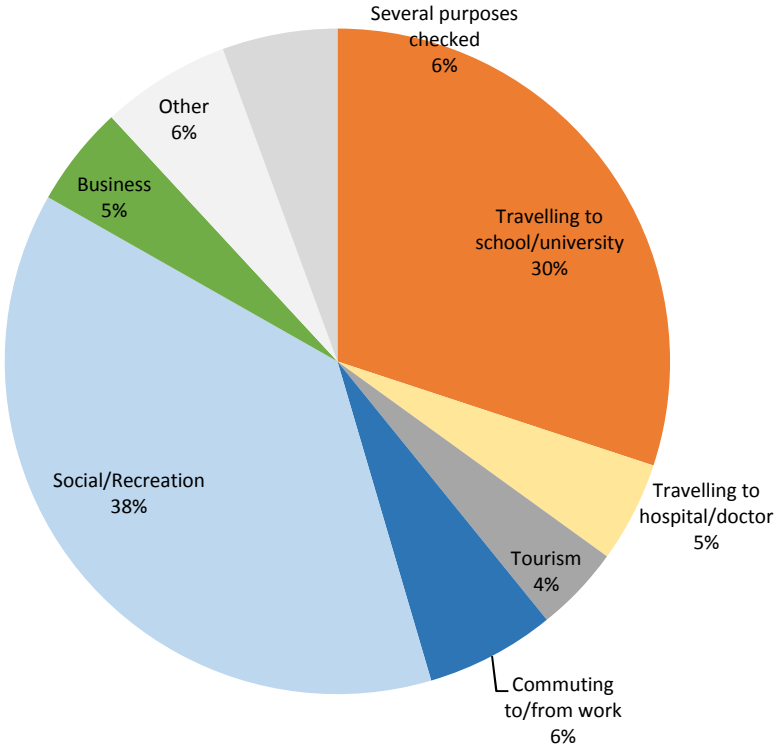
Turkey: Sincan / Ankara – Kayaş line

Current use of train/ Purpose of journey (N=119)



Turkey: Divriği – Malatya line

Current use of train/ Purpose of journey (N=143)



Key Findings: passengers' perceptions

Importance

Line	Most important	2nd aspect	3rd aspect	4th aspect	5th aspect	6th aspect
Bartolomeu-Zărneşti (Romania)	Punctuality 77% (very) important	Travel time 74% (very) important	Frequency 72% (very) important	-	-	
Ljubljana-Kamnik (Slovenia)	Punctuality 90% (very) important	Frequency 88% (very) important	Travel time 87% (very) important	Safety 84% (very) important	Crowding 70% (very) important	
Pivka – Ilirska Bistrica (Slovenia)	Safety 90% (very) important	Travel time 83% (very) important	Punctuality 78% (very) important	-	-	
Sincan / Ankara – Kayaş (Turkey)	Safety 100% (very) important	Comfort 92% (very) important	Travel time 91% (very) important	Frequency 90% (very) important	Punctuality 89% (very) important	Crowding 73% (very) important
Divriği – Malatya (Turkey)	Comfort and safety 90% (very) important		Travel time 82% (very) important	Punctuality 73% (very) important	Frequency 71% (very) important	

Key Findings: passengers' perceptions

Satisfaction

Line	Dissatisfaction higher	2nd aspect	3rd aspect		
Bartolomeu-Zărneşti (Romania)	-	-	-		
Ljubljana-Kamnink (Slovenia)	Crowding 22% (very) dissatisfied vs. 46% (very) satisfied	Travel time 20% (very) dissatisfied vs. 53% (very) satisfied	Frequency 19% (very) dissatisfied vs. 49% (very) satisfied		
Pivka – Ilirska Bistrica (Slovenia)	Frequency 42% (very) dissatisfied vs. 26% (very) satisfied	Travel time 38% (very) dissatisfied vs. 30% (very) satisfied	Interchanges 30% (very) dissatisfied vs. 42% (very) satisfied		
Sincan / Ankara – Kayaş (Turkey)	Crowding 39% (very) dissatisfied vs. 44% (very) satisfied	-	-		
Divriği – Malatya (Turkey)	Travel time 38% (very) dissatisfied vs. 39% (very) satisfied	Punctuality 37% (very) dissatisfied vs. 43% (very) satisfied	Frequency 36% (very) dissatisfied vs. 44% (very) satisfied	Interchanges 27% (very) dissatisfied vs. 53% (very) satisfied	Crowding 24% (very) dissatisfied vs. 56% (very) satisfied

3rd Step: Assessment of innovations benefits

- Each innovation analysed in the context of a NeTIRail case-study line (same as CBA).

Social assessment

=

score “accessibility”

(including perceptions and innovations’ impact)

X

score “route”

(including train use characteristics)

Assessment: example

Example: Task 4.2: Axle box acceleration (ABA) for regional lines, on-train monitoring applied to the line Bartolomeu-Zărneşti

Score "accessibility"

	Elements	Impact	Score "impact"	Perceptions: discrepancy between importance and satisfaction	Score "perceptions"	Final element's score (multiplication of the score „impact" by the score „perceptions")	Final indicator's score (average of the elements' scores)	Final innovation's score "accessibility" (sum of the indicators' scores)
INDICATOR QUALITY OF TRAVEL	Crowding	None	0	0 ≤ x ≤ 10%	1	0	1	1,75
	Comfort	None	0	0 ≤ x ≤ 10%	1	0		
	Safety	High	2	10% < x < 20%	1,5	3		
INDICATOR TRAVEL TIMES	Punctuality	Medium	1,5	10% < x < 20%	1,5	2,25	0,75	
	Frequency of trains	None	0	0 ≤ x ≤ 10%	1	0		
	Scheduled journey times	None	0	0 ≤ x ≤ 10%	1	0		

Score "route"

Aspects	Survey results	Value assigned	Final score "route" (sum of the aspects' scores)
Purpose	> 75%	2	2,75
Regular users	> 50%	0,25	
Only train	> 50%	0,25	
No alternatives	> 5%	0,25	

Final score:

1,75 x 2,75=

4,81

Overall considerations

- Final scores are indicative
- Methodology applied for a specific case-study line, but results can be generalised
- Overall evaluation is qualitative
- Final output (ideally): sort of priority-scale for innovations

4th Step: Integrate societal assessment and CBA

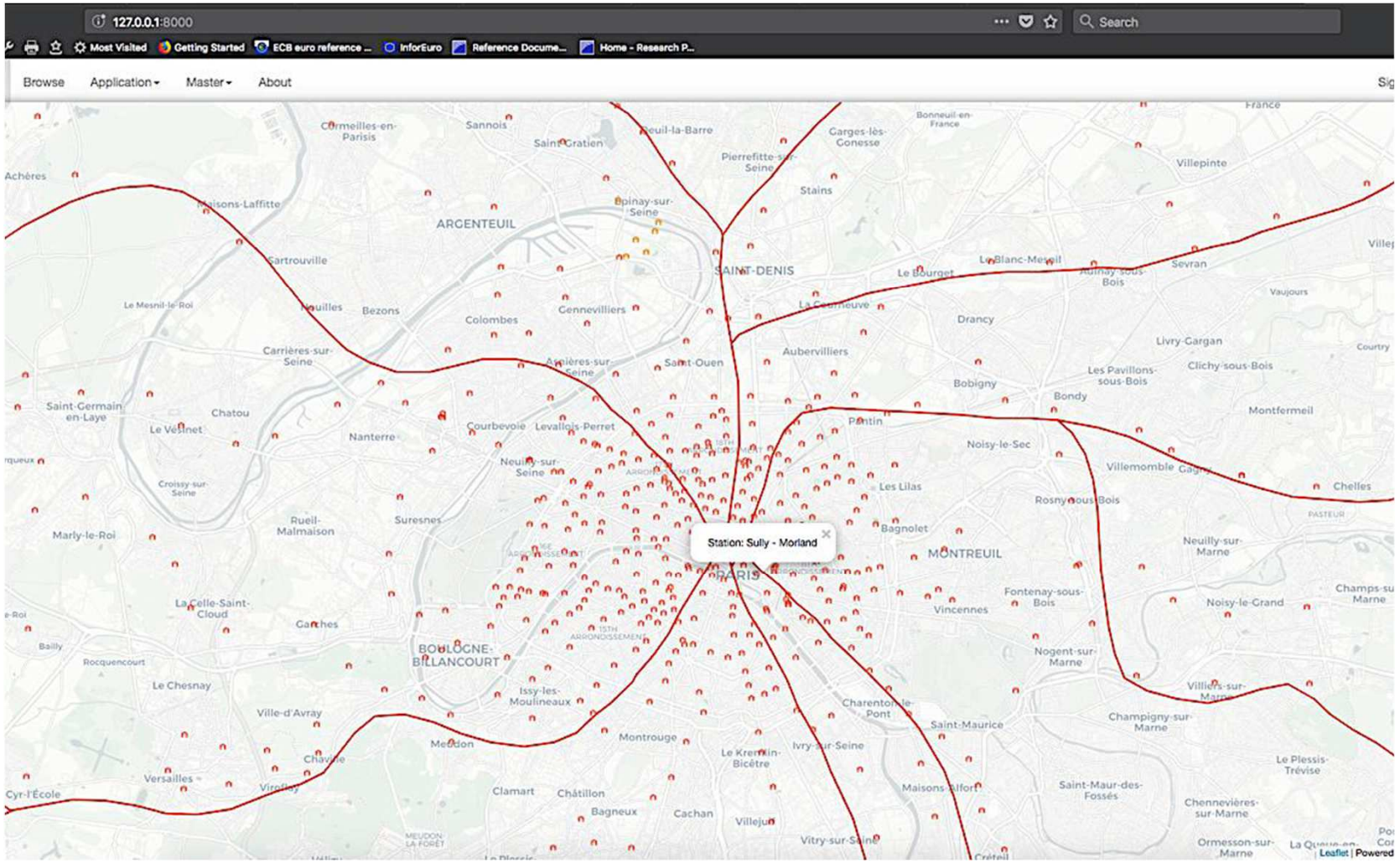
How:

Integrate = narrative about pros and cons of each innovation from an economic and a societal perspective. No quantitative balancing along the lines "CBA vs SIA", although each assessment separately is (also) a quantitative one.

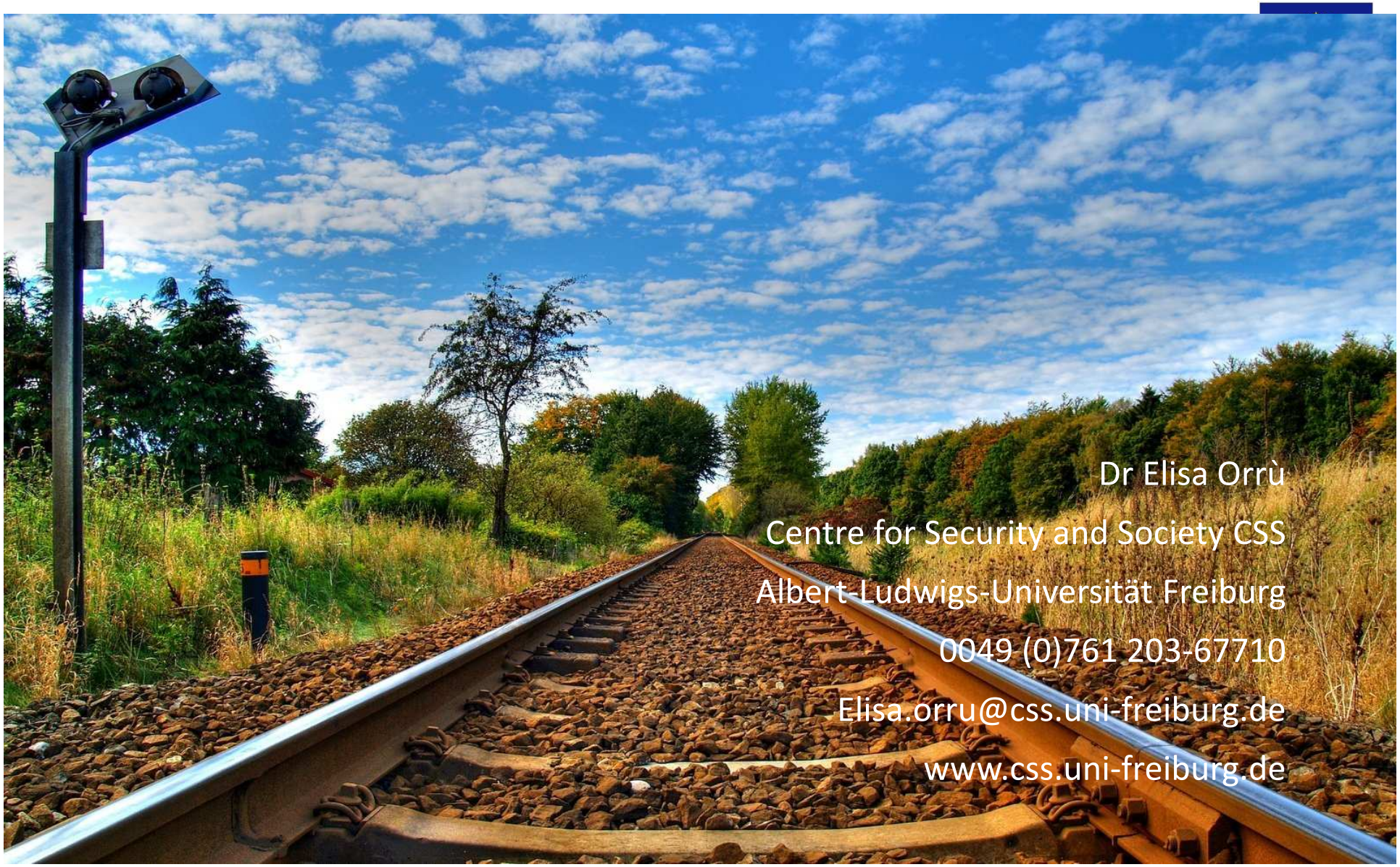
- Example from a conclusion of the integration of CBA and SIA for the Task 4.2 innovation "Axle box acceleration (ABA) for regional lines, on-train monitoring":

"Like all WP 4 innovations, the ABA system is particularly useful on secondary lines, where modern rolling stock is rarely used. The ABA system is a relatively expensive one-off investment but with clear returns in the long term and with additional benefits in terms of punctuality and safety. From a societal point of view, due to its positive effects on punctuality, this innovation seems to be particularly meaningful on routes used by commuters who put high value on this aspect."

5th Step: Illustration in GIS web-tool



Thank you!



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