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SMART COMMUTING

European Union
European Regional
Development Fund

Accessibility improvement for railway

SMART COMMUTING Training Seminar in Vienna

Fabian Dorner and Takeru Shibayama

Vienna University of Technology

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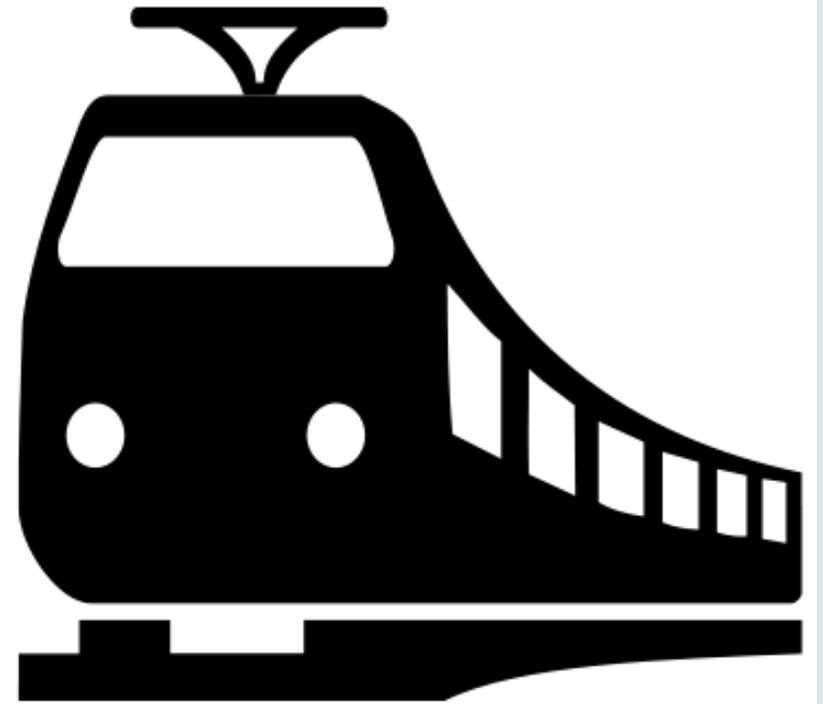
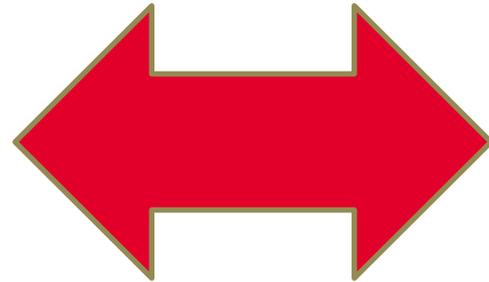
Part 1:

What can we do to improve the accessibility to the railway station?

Aim



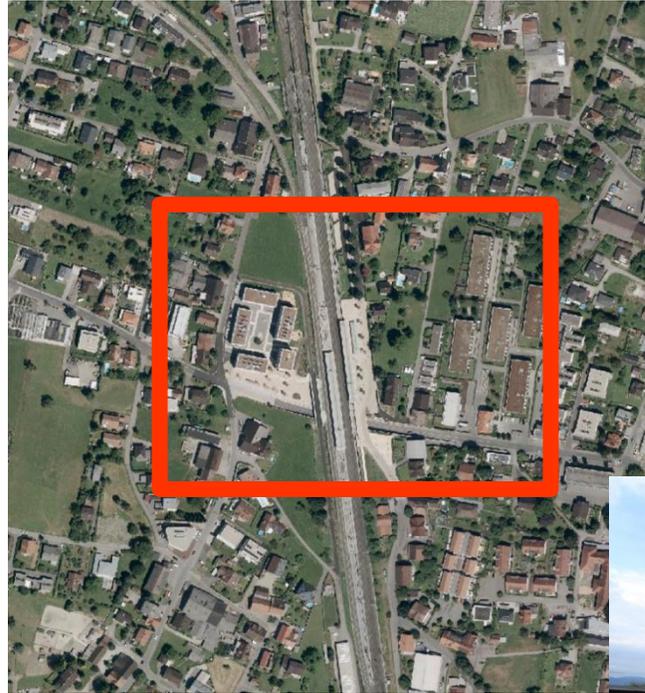
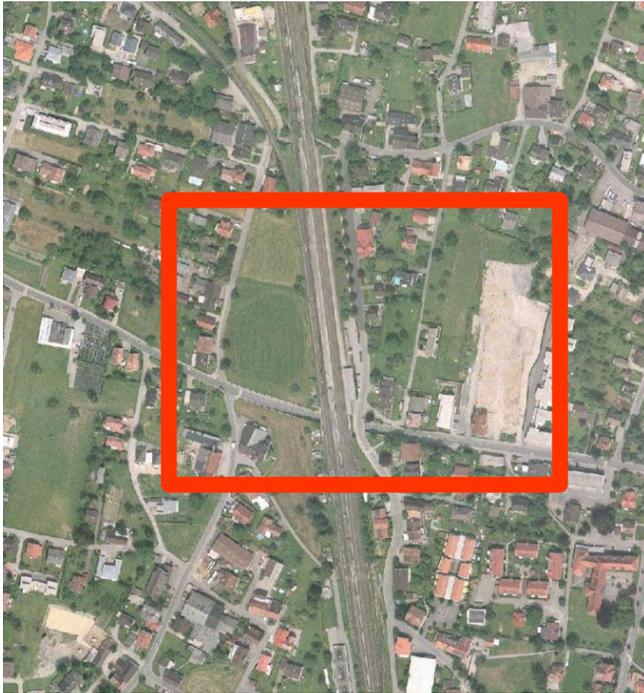
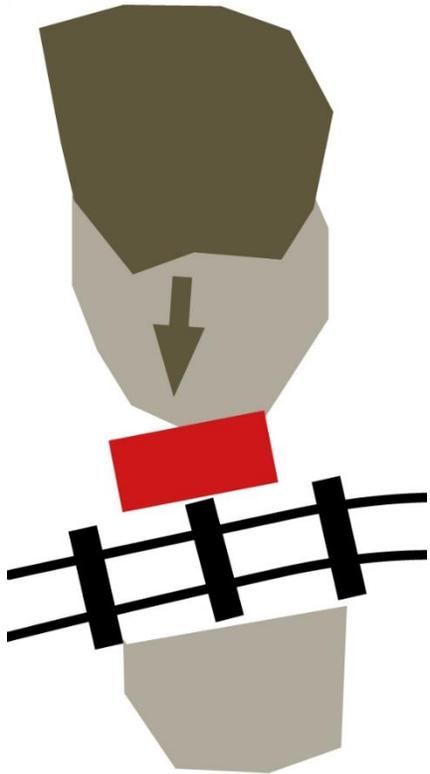
Aim



4 Strategies

Strategy

Strategy 1: Transit-oriented Development



Lauterach, Vorarlberg
(Western Austria)

Aerial Photo: Vorarlberg Atlas



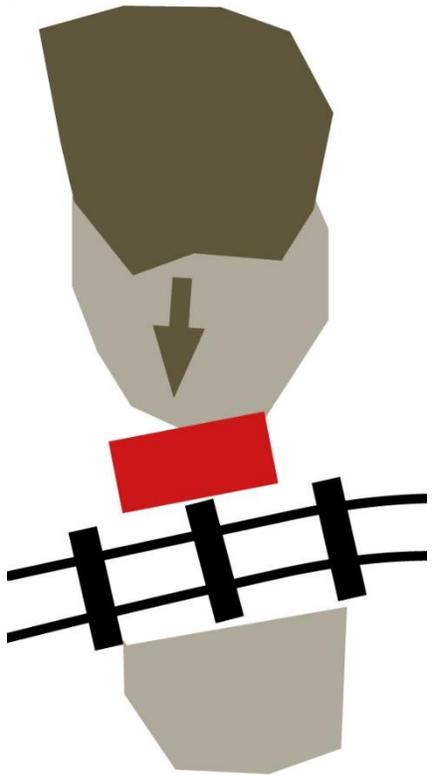
Transit-oriented Development

Success factors

- Raising awareness and knowledge among planners and mayors
- Cooperation on FUA/regional level
- Cooperation with investors and property owners

Acting

- Redensification of station areas
- Making use of spatial planning instruments



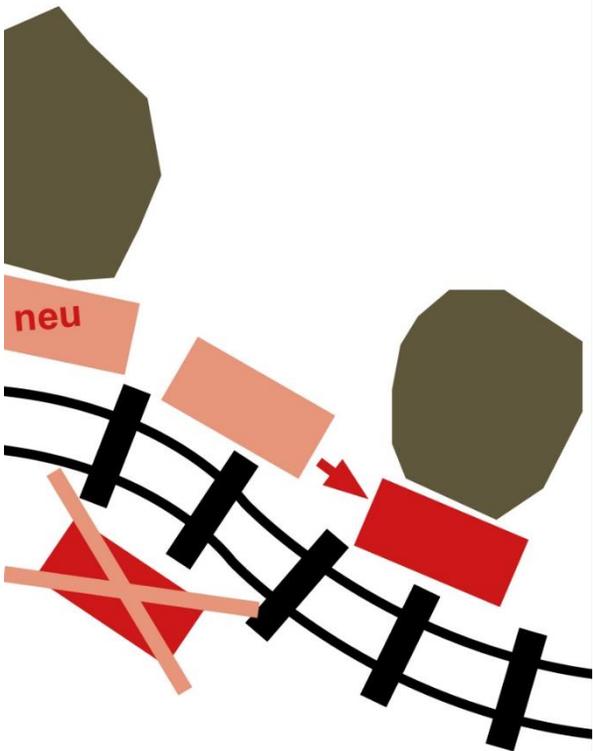
Strategy 2: Adaption of Station Network

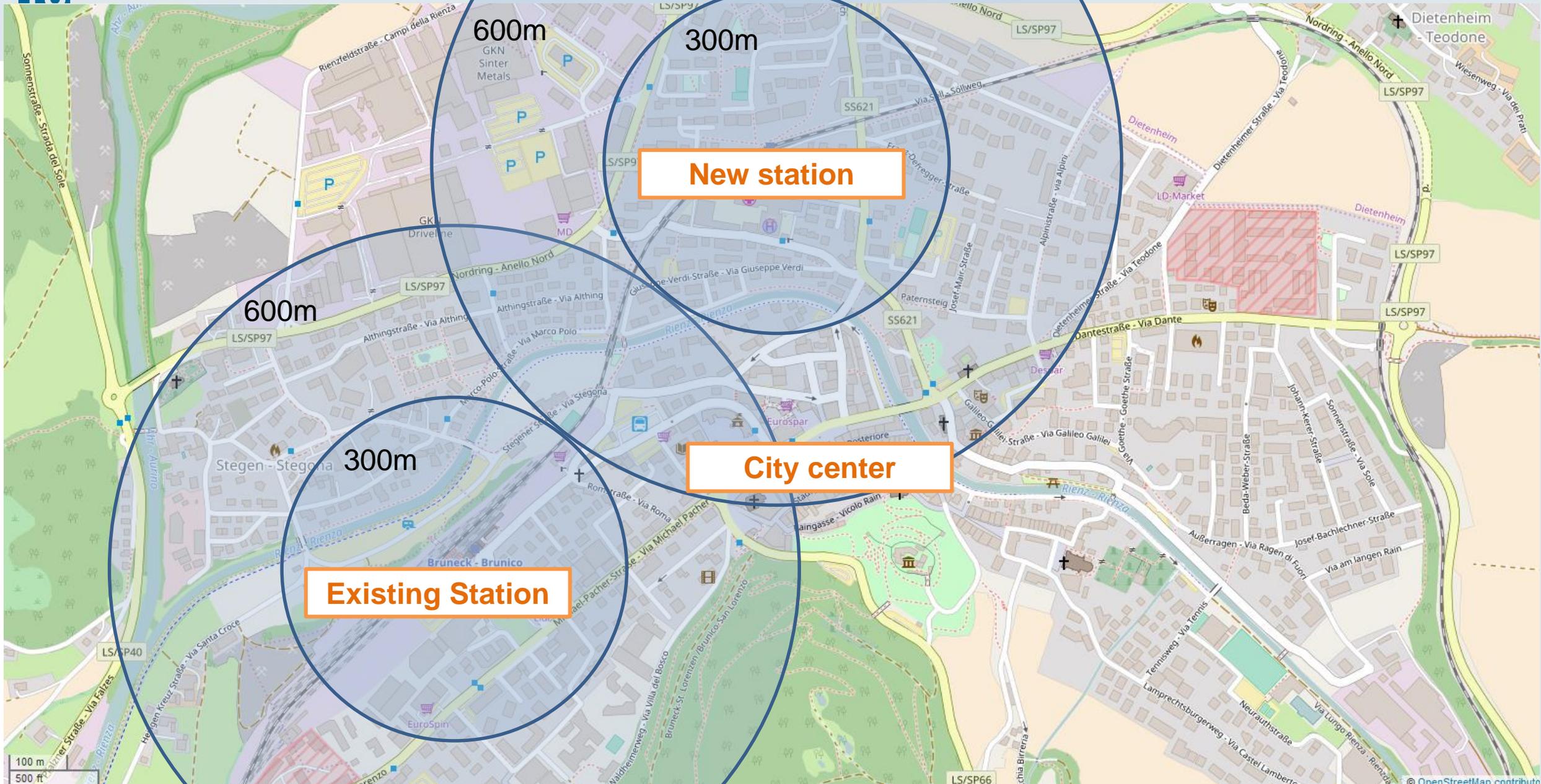
Realistic distance to reach to a railway station

~300m on foot: highly acceptable;

~600m on foot: to some extent;

Next page: Example of Bruneck/Brunico





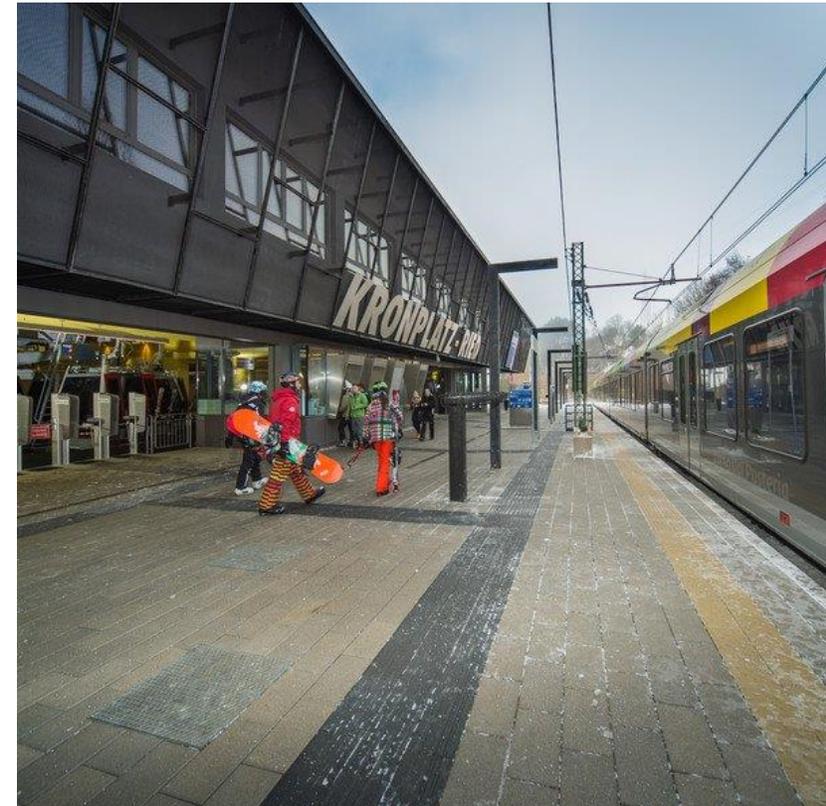
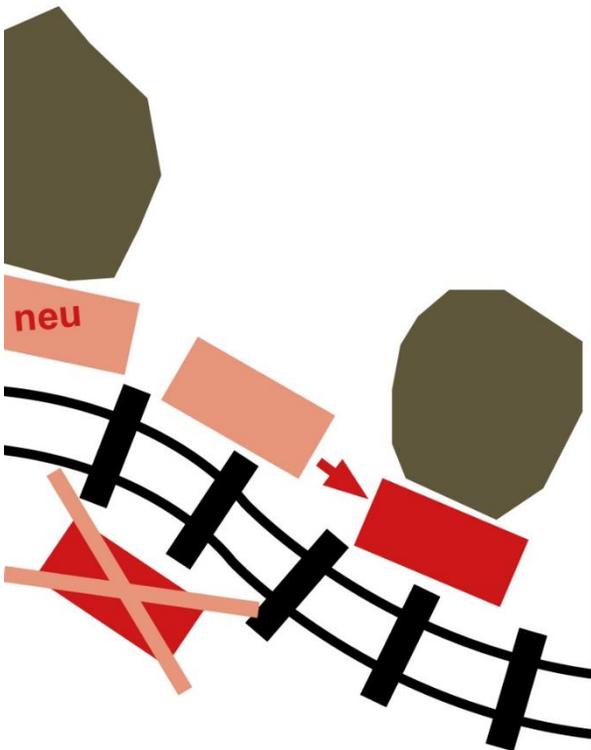
Adaption of Station Network

Options for Stations

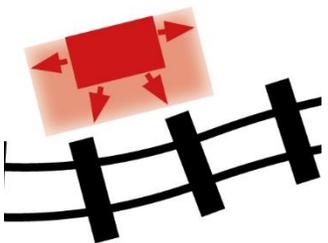
- Adding
- Reactivating
- Moving existing ones

Demand arises from:

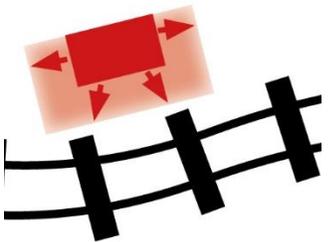
- Housing areas
- Schools, hospitals etc.
- Workplaces
- Tourist attractions



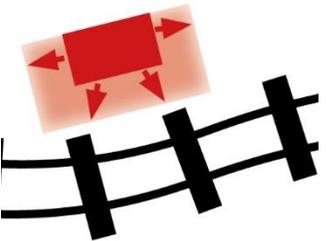
Strategy 3: Upgrade of Stations



Strategy 3: Upgrade of Stations



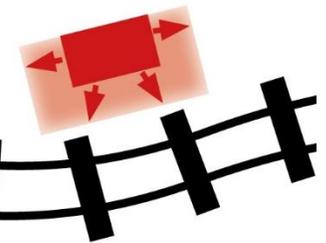
Strategy 3: Upgrade of Stations



Strategy 3: Upgrade of Stations



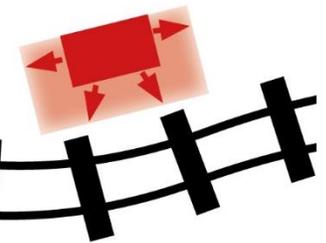
Source: Takeru Shibayama



Upgrade of Stations

Services for passengers

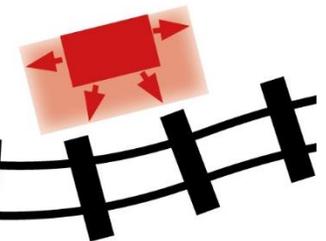
- **Comfort**: roof, bench, signs, ...
- Ticket sales (limited time) / Ticket Vending Machines (24h)
- Passenger information (displayed)
- Accessibility for people with disability
- (User perception of) Safety
- WC
- ...



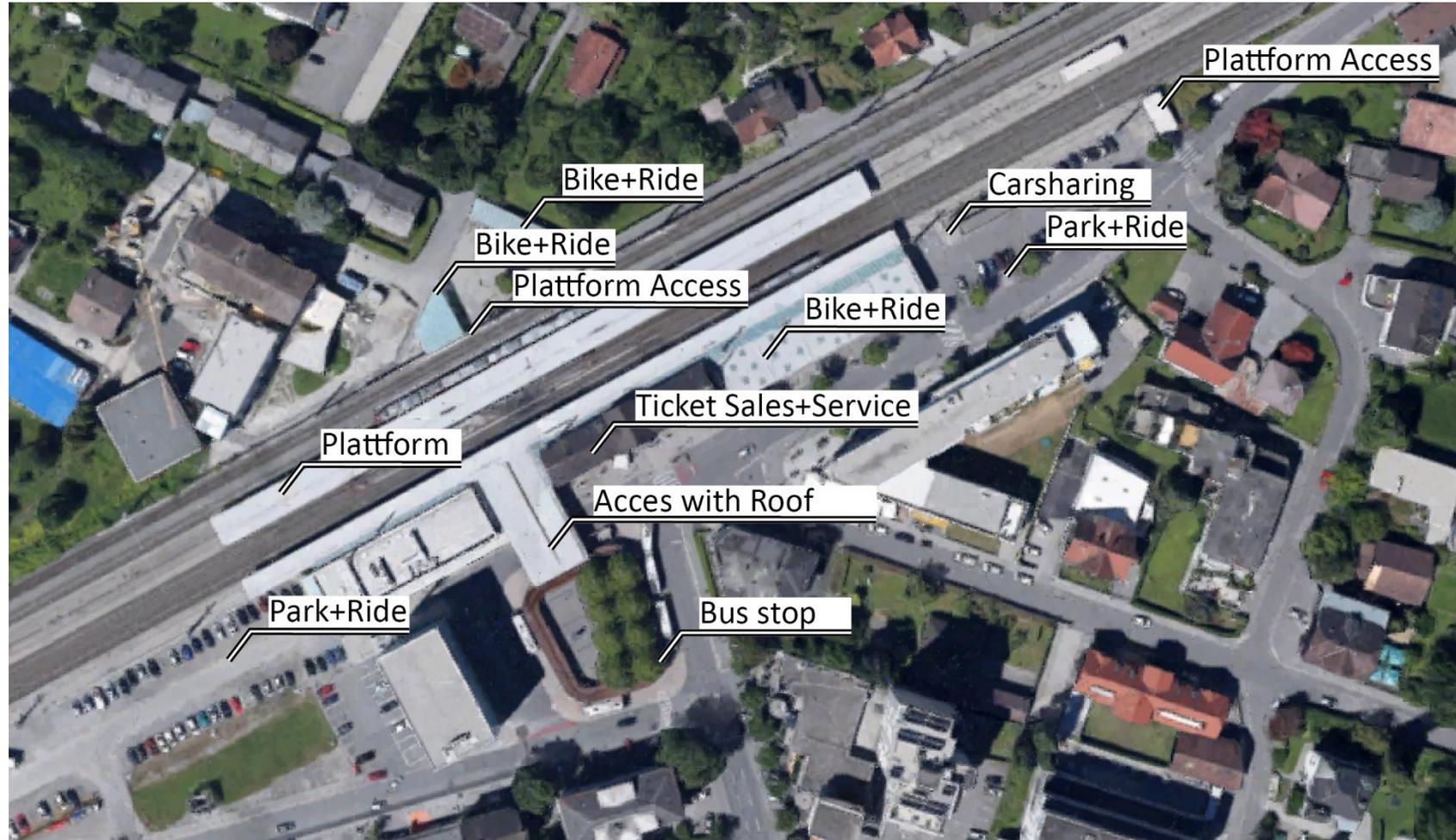
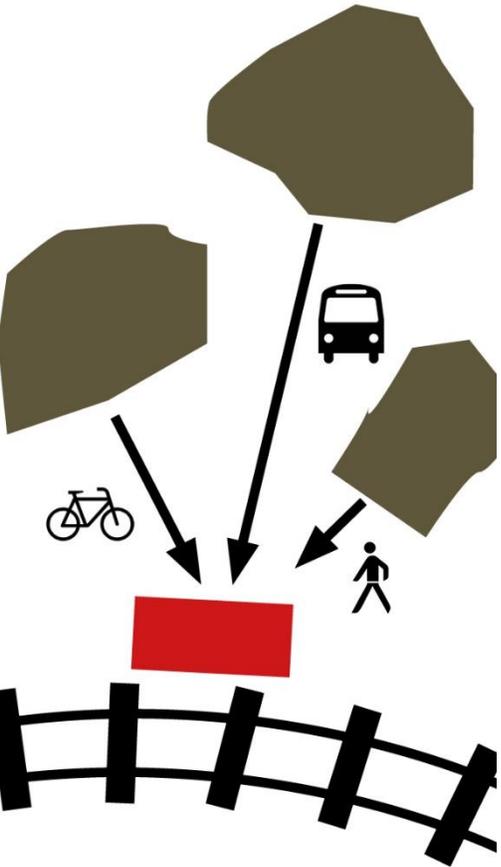
Upgrade of Stations

Raising station attractiveness through attraction of additional visitors, providing **additional services**

- Shopping facilities
- Services (rental, parcel pick-up/drop off)
- Community facilities (kindergarten, medical services)
- Cafés, Restaurants
- Tourist information
- ...



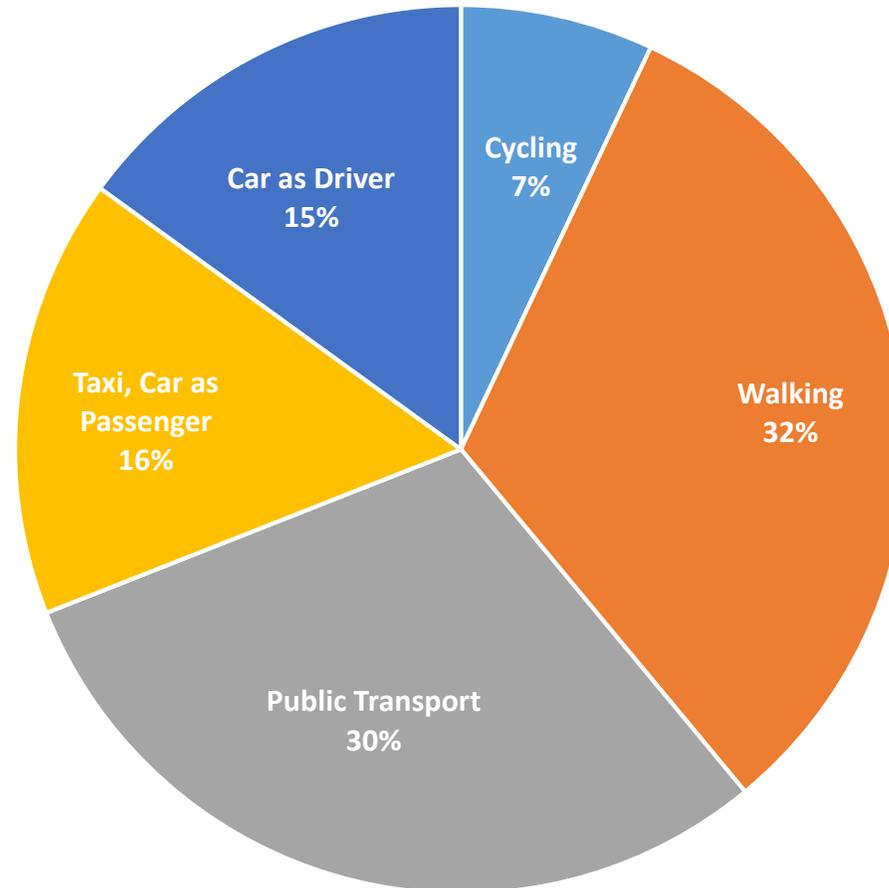
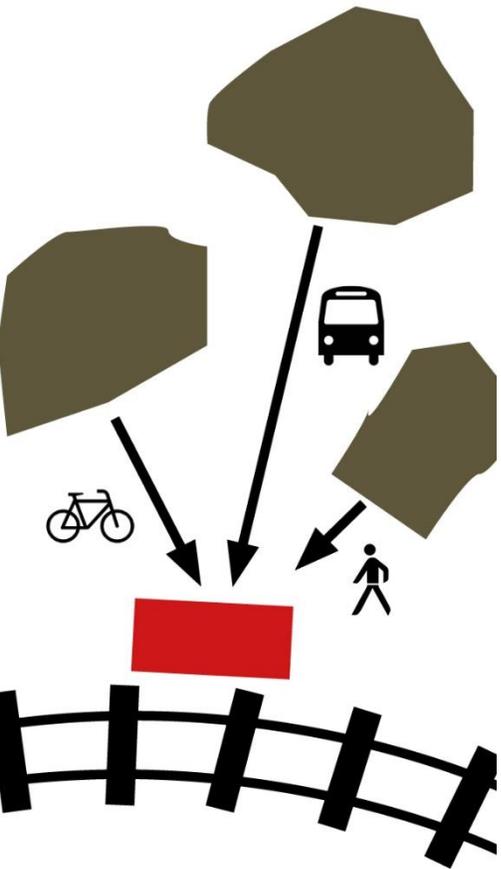
Strategy 4: Improvement of Feeder Modes



Source aerial image: Google Maps

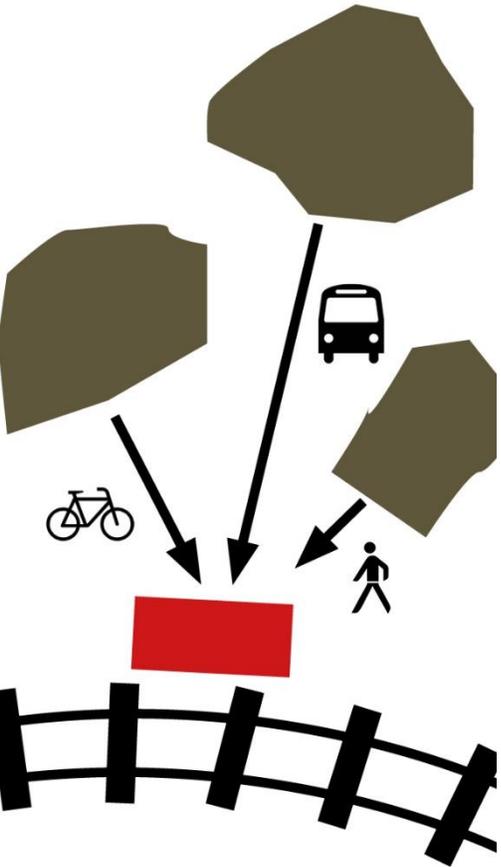
Modal Split in Railway Station Access in Austria (2014)

Modal Split in Station-Access in Austria (VCÖ Bahntest 2014)



Strategy 4: Improvement of Feeder Modes

- Improvement of stations for intermodal connection



Strategy 4: Improvement of Feeder Modes

Improvement of walkability:

Pedestrians: direct, comfortable and safe routes, interesting and varied design



Strategy 4: Improvement of Feeder Modes

Cyclists: direct and safe routes, right of way at crossings



Strategy 4: Improvement of Feeder Modes

Public Transport

18



Wolfurt - Lauterach - Hard - Lustenau

L A N D B U S
UNTERLAND

Telefon 05572/32300

	Montag - Freitag				Samstag				Sonn- und Feiertag			
	von	Takt	bis		von	Takt	bis		von	Takt	bis	
Wolfurt Ach	6.04	.04	.34	18.34	19.34	20.34	21.34		7.34	.34	21.34	
· Inselstraße	6.05	.05	.35	18.35	19.35	20.35	21.35		7.35	.35	21.35	
· Dorfzentrum	6.06	.06	.36	18.36	19.36	20.36	21.36		7.36	.36	21.36	
· Cubus	6.07	.07	.37	18.37	19.37	20.37	21.37		7.37	.37	21.37	
· Schmerzenbildstraße	6.08	.08	.38	18.38	19.38	20.38	21.38		7.38	.38	21.38	
Lauterach Hubertusweg	6.08	.08	.38	18.38	19.38	20.38	21.38		7.38	.38	21.38	
· Morgenstraße	6.09	.09	.39	18.39	19.39	20.39	21.39		7.39	.39	21.39	
· Langegasse	6.10	.10	.40	18.40	19.40	20.40	21.40		7.40	.40	21.40	
· Rathaus	6.12	.12	.42	18.42	19.42	20.42	21.42		7.42	.42	21.42	
· Karl-Höll-Straße	6.13	.13	.43	18.43	19.43	20.43	21.43		7.43	.43	21.43	
· Lerchenpark	6.14	.14	.44	18.44	19.44	20.44	21.44		7.44	.44	21.44	
S1 von Dornbirn an	6.09	.09	.39	18.39	19.39	20.39	21.39		7.39	.39	21.39	
· Bahnhof	5.14	.14	.44	18.44	19.44	20.44	21.44		7.44	.44	21.44	
S1 nach Dornbirn ab	6.19	.19	.49	18.49	19.49	20.49	21.49		7.49	.49	21.49	
· Alter Sternen	6.15	.15	.45	18.45	19.45	20.45	21.45		7.45	.45	21.45	
· Weingartstraße	6.15	.15	.45	18.45	19.45	20.45	21.45		7.45	.45	21.45	
· Bleichweg	6.16	.16	.46	18.46	19.46	20.46	21.46		7.46	.46	21.46	
· Lerchenau	6.17	.17	.47	18.47	19.47	20.47	21.47		7.47	.47	21.47	
Hard Falkenweg	6.18	.18	.48	18.48	19.48	20.48	21.48		7.48	.48	21.48	
· Mühlestraße	6.19	.19	.49	18.49	19.49	20.49	21.49		7.49	.49	21.49	
· Wirke	6.21	.21	.51	18.51	19.51	20.51	21.51		7.51	.51	21.51	
· Rathaus	6.22	.22	.52	18.52	19.52	20.52	21.52		7.52	.52	21.52	
· Brückenwaage	6.23	.23	.53	18.53	19.53	20.53	21.53		7.53	.53	21.53	
· Gasthaus Sternen	5.46	6.24	.24	18.54	19.54	20.54	21.54		7.54	.54	21.54	
· Bahnhof					19.56	20.56	21.56		7.56	.56	21.56	
S3 nach Bregenz ab					20.02	21.02	22.02		8.02	.02	21.02	
· Industrie Nord	5.47	6.25	.25	18.55								
· Industrie Mitte	5.48	6.26	.26	18.56								
· Industrie Süd	5.48	6.26	.26	18.56								
Fußbach Alpa	5.50	6.28	.28	18.58								
Lustenau Bahnhof	5.53	6.31	.31	19.01								
S1a nach Lustenau ab		6.31	.31	19.01								



Part 2:

How can we assess the accessibility to the railway station to understand potentials and chances?

Goals

Assessment of Quality of accessibility and integration in urban context of stations

- Understanding: railway stations as integral part of the urban structure and the transport system
- → Relevant to the Strategies 1 (Transit-Oriented Development), 2 (Adaption of Station Network) and 4 (Improvement of feeder modes)
- → Not relevant to Strategy 3 (Building and station services)

Revealing Chances and Potentials for raising accessibility

- Extension of accessibility analysis
- No demand prediction possible

Assessment Process

- 1) Entering qualitative and quantitative indicators for existing situation and planned measures - ! some indicators require analyses on site !
 - 2) Calculation for a indicator-based score (0 – 100)
 - 3) Weighting + Calculation of overall score (0 – 100)
- Comparison between current situation and improvement by planned measures

Type of fields:

Description/Weighting	Input Field	Output Field (Score)
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Example: Assessment of Public Transport Access Quality (Current Situation)

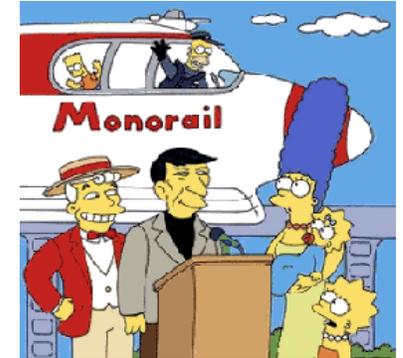
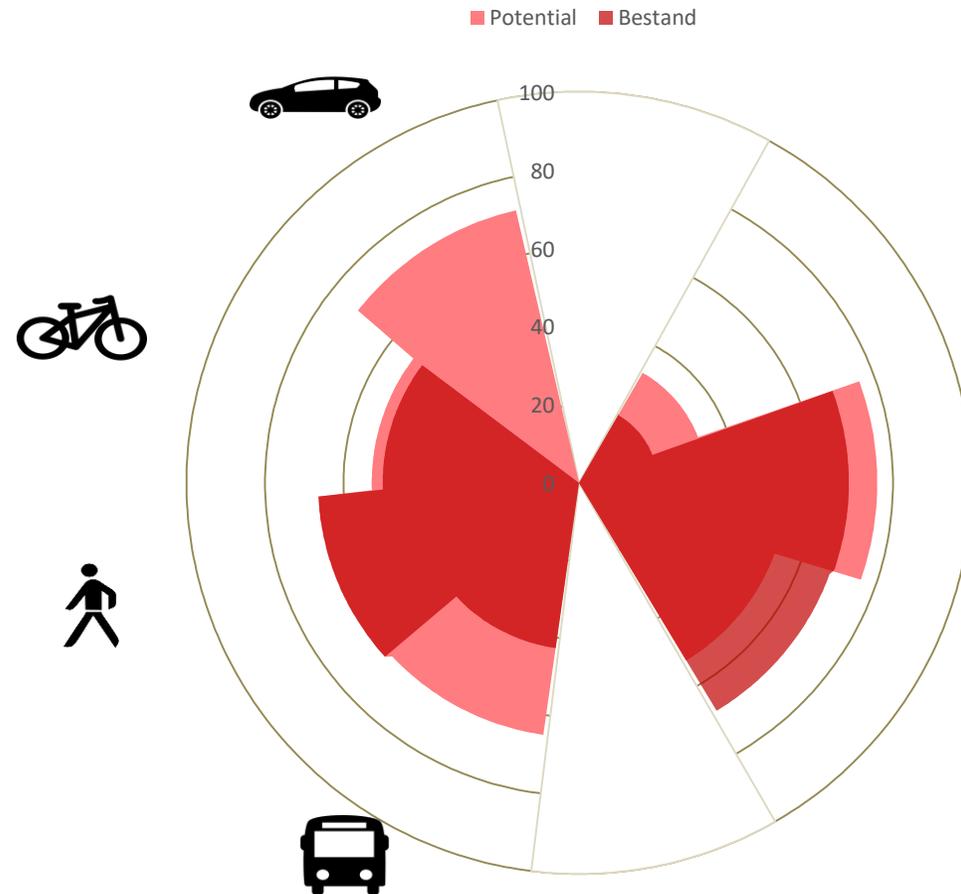
Description	Spatial focus	Current Situation			
		Input	Indicator Score	Weighting	Overall Score
Number of Arrivals and Departures per (working) day	Public transport stops in max. distance of 100m from station building and/or access to plattform	30-39	30	40%	43
Hours of operation per week – Sum of numbers of hours between first and last arrival/departure on every day of operation along the week		140	83	20%	
Clock-face schedule (yes/no) – at least 10 arrivals/departures on the same minute per day		nein	0	10%	
average transfer time bus/tram etc. – train		10-19 min	70	20%	

Example: Assessment of Public Transport Access Quality (Planned Measures)

Description	Spatial focus	Potential (after implementation of measures)			
		Input	Indicator Score	Weighting	Overall Score
Number of Arrivals and Departures per (working) day	Public transport stops in max. distance of 100m from station building and/or access to plattform	40-49	40	40%	63
Hours of operation per week – Sum of numbers of hours between first and last arrival/departure on every day of operation along the week		140	83	20%	
Clock-face schedule (yes/no) – at least 10 arrivals/departures on the same minute per day		ja	100	10%	
average transfer time bus/tram etc. – train		0-9 min	100	20%	

Output

Station Profile Springfield Monorail Station



Density

Use mix

integration in urban space



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Group work: accessibility improvement of public transport and location of workplaces

SMART COMMUTING Training Seminar in Vienna

Takeru Shibayama

Vienna University of Technology

What VUT asked you to bring with you....

- Cartographic / topographical map of your FUA, with the location of the large employers indicated;
- Map with all public transport lines (including railway);
- Map with the main streets used by private vehicles;

What we do now:

- 10:30 – 12:00: Group work
- *(light lunch)*
- 13:00 – 14:30: Presentation of results

Tasks for Group Work (1): c.a. 30 min

1. Identify the locations of railway stations, bus/tram stops
 - Using the cartographic map and the map of public transport line
2. On Cartographic Map, make 300m and 600m circles from:
 - Railway stations;
 - Bus / tram stops;
3. Answer the following questions (next page)

Tasks for Group Work (1): c.a. 30 min

Questions:

- Which part of the city center is NOT covered within the 300m / 600m circle?
- About how many % of population is NOT covered within the 300m / 600m circle?
- Which important employers & schools are in the 300m / 600m circle? Which important employers & schools are out of these circles?
- Which part of the FUA should be further developed to make urban development closer to the public transport? (*Strategy 1*)
- Can you add / reactivate / relocate stations or bus/tram stops to offer better coverage? (*Strategy 2*)

Tasks for Group Work (2): c.a. 60 min

- a) Select two important train station or bus/tram stop in your FUA (Station Type A);
- b) Select two train station or bus/tram stop closest to the largest employers or schools (Station Type B);
- c) Select two train station or bus/tram stop for residential area (Station Type C);

For Types A, B, and C, please assess (1):

Does each station offer good comfort & convenience? (*Strategy 3*)

- (1) Ticket vending machine / counter?
- (2) Roofed waiting area with benches on the platform?
- (3) Is real-time passenger information provided on display?
- (4) Is accessibility for people with mobility impairment (disability) given?
 - Can people with wheelchair / baby buggies easily get on the train?
 - Can they reach to the station easily?
- (5) Do passenger have safe feeling at the station / stop?
- (6) Is there clean and usable WC?

For Types A, B, and C, please assess (2):

Does each station offer convenient timetable? (*Service level of PT*)

- How many local and regional trains, and local bus comes to the station?
- What is the service hours on weekdays? On the weekend?
- Is the schedule of different types of public transport e.g. trains and buses convenient for changing? Or do passengers have to wait for a long time?

For Group B, assess additionally:

- How far is it from the station / stop to the employee / pupil entrance?
- Is there any barrier between the station/stop and the employer/school?
 - Natural barrier e.g. River & Artificial barrier e.g. road with heavy traffic
- What is the walking comfort on this route?
 - Comfortable: enough side walk, good lighting, few steps & stairs, well signposted, cozy to walk;
 - Middle: between them;
 - Not comfortable: narrow or no sidewalk, no lighting, many steps & stairs, no signs, not cozy to walk;
- Does the timetable match with the shift / operating / school hours?

(Strategy 4)

Group Presentation

- Present the results from the Group Works (1) and (2)
- 10 min per Group + 5 min discussion
- You may use:
 - Maps you brought with;
 - Flipchart paper, Post-it;