



Strategic planning framework for low demand and rural areas

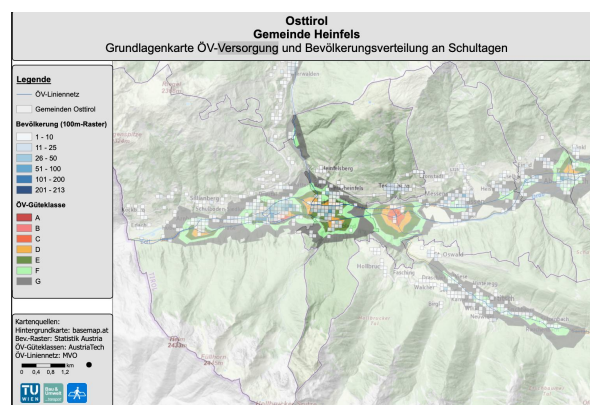
Step by Step guidance

How to promote and coordinate a network of DRT and other services, enhancing accessibility in peripheral and rural regions? - Planning of DRT services in a peripheral region's low demand and rural areas

Summary

The strategic planning framework is designed for peripheral and rural regions with mountainous geography, where dispersed settlements and seasonal tourism create complex mobility needs. In the pilot area of East Tyrol where it was co-designed and tested, it addresses mobility along the main valley corridors, in peripheral settlements, and in side valleys that are not adequately served by conventional bus or rail lines. Its application covers both daily mobility and seasonal tourism demand. Beyond East Tyrol, the model provides transferable insights for other alpine regions and rural areas in Europe facing similar demographic and geographic challenges.

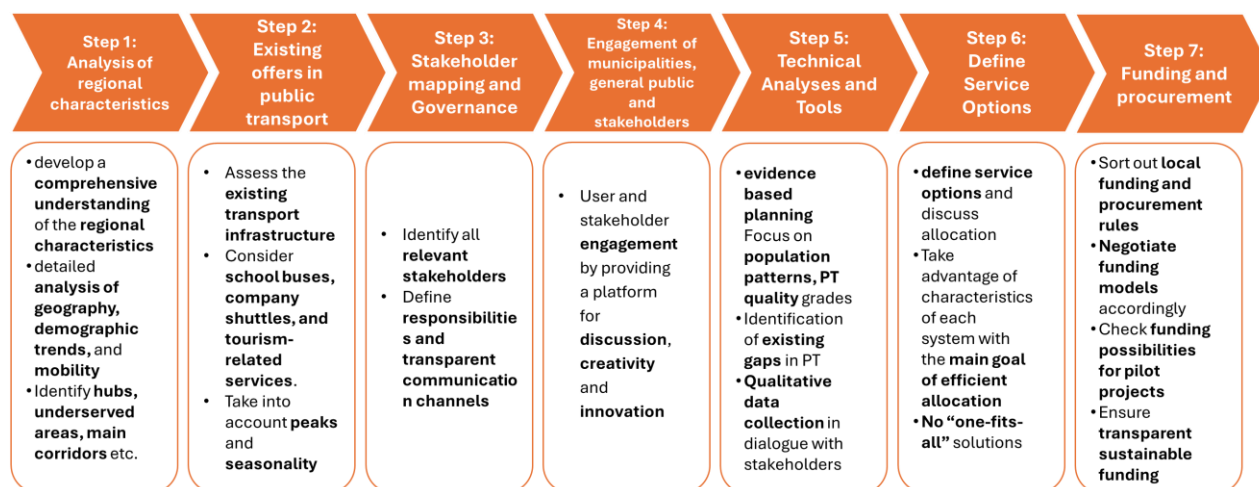
DREAM_PACE pilot areas: Osttirol (AT)



Ref. DREAM_PACE deliverables:

[D1.2.4 Co-designed solutions blueprint of coordinated DRT implemented / tested through pilot activities](#)

Flowchart





Introduction

Demand Responsive Transport (DRT) can be a promising tool to complement traditional public transport (PT). The following steps provide guidance on how to approach the planning process of implementing DRT-Systems into public transport in rural and peripheral regions.

The concept focuses on three key challenges:

- the difficulties posed by mountainous geography and widely dispersed settlements
- the financial and logistical constraints resulting from low population density
- and the pronounced peaks and troughs in demand caused by seasonal tourism.

To address these, the document highlights a series of strategic solutions like strengthening backbone services in valley corridors, introducing flexible DRT in underserved areas and others.

The following sections present the strategic planning steps in a stepwise approach. Each step is illustrated with insights from East Tyrol, which serve as inspiration and example for other rural regions.



Step 1: Analysis of regional characteristics

Actions:

- develop a **comprehensive understanding** of the **regional characteristics**.
- detailed **analysis of geography, settlement structures, demographic trends, and patterns of mobility demand**
- Identify **hubs, underserved areas, main corridors** etc.

Tools:

- GIS mapping
- Local visits

In East Tyrol, this meant looking at a region composed of 33 municipalities spread across three major valleys. The city of Lienz serves as the administrative and economic hub, but many smaller settlements are situated far from the main transport corridors. Tools such as Geographic Information System (GIS) mapping allowed planners to visualise these dispersions and identify which areas were underserved. Municipalities like Heinfels and Stronach, for instance, were revealed as blind spots in the existing transport network.



Figure 1: Impression of East Tyrol ©TVB Osttirol/Peter Maier



Step 2: Existing offer in public transport

Actions:

- Assess the **existing transport infrastructure** by evaluating backbone services such as railways and main bus lines
- Also take into account **school buses, company shuttles, and tourism-related services**.
- Goal: create a **complete picture** of what is already available, where redundancies exist, and where integration is lacking
- Take into account peaks and seasonality

Tools:

- Current PT offer and schedules
- Dialogue with public transport authorities and operators
- Local visits

In East Tyrol, the Drautalbahn railway and the bus system along the valley floors form the backbone of the regional network. These services are robust in terms of spatial coverage, but frequency and reliability remain limited. Moreover, seasonal variations caused by tourism heavily affect demand and ask for adjustments in the offered amount of busses. These fluctuations undermine the economic viability of conventional services and highlight the need for flexible solutions.

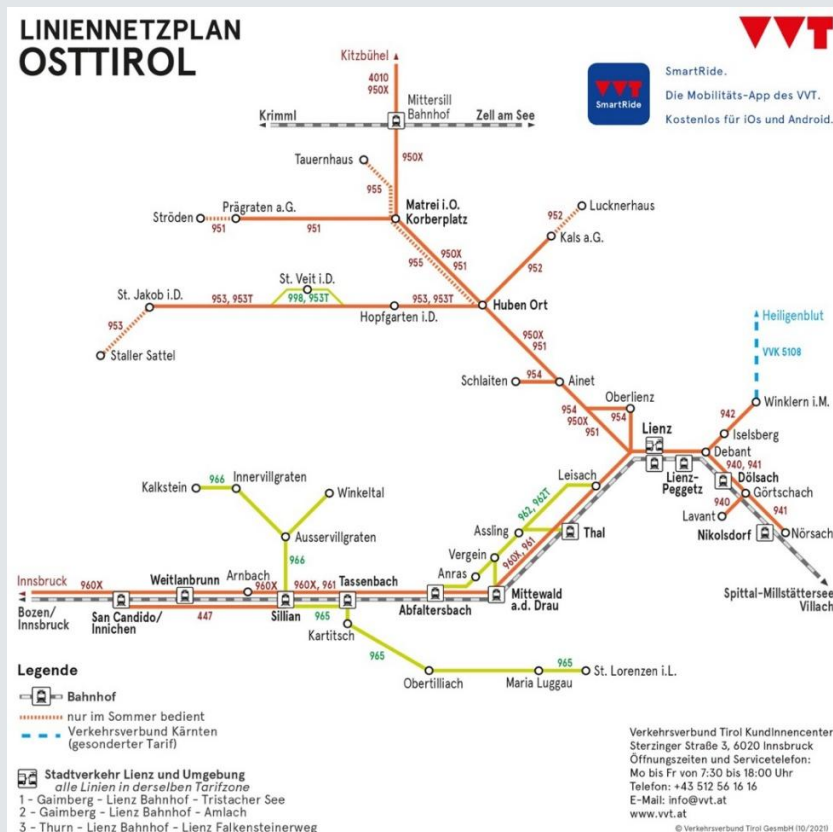


Figure 2: Route map East Tyrol ©VVT



Special Case: Tourism - take into account peaks, seasons and hotspots.

In the below figure 3, there overnight stays in East Tyrol in Summer are highlighted in a bubble chart to illustrate the touristic potential for PT.

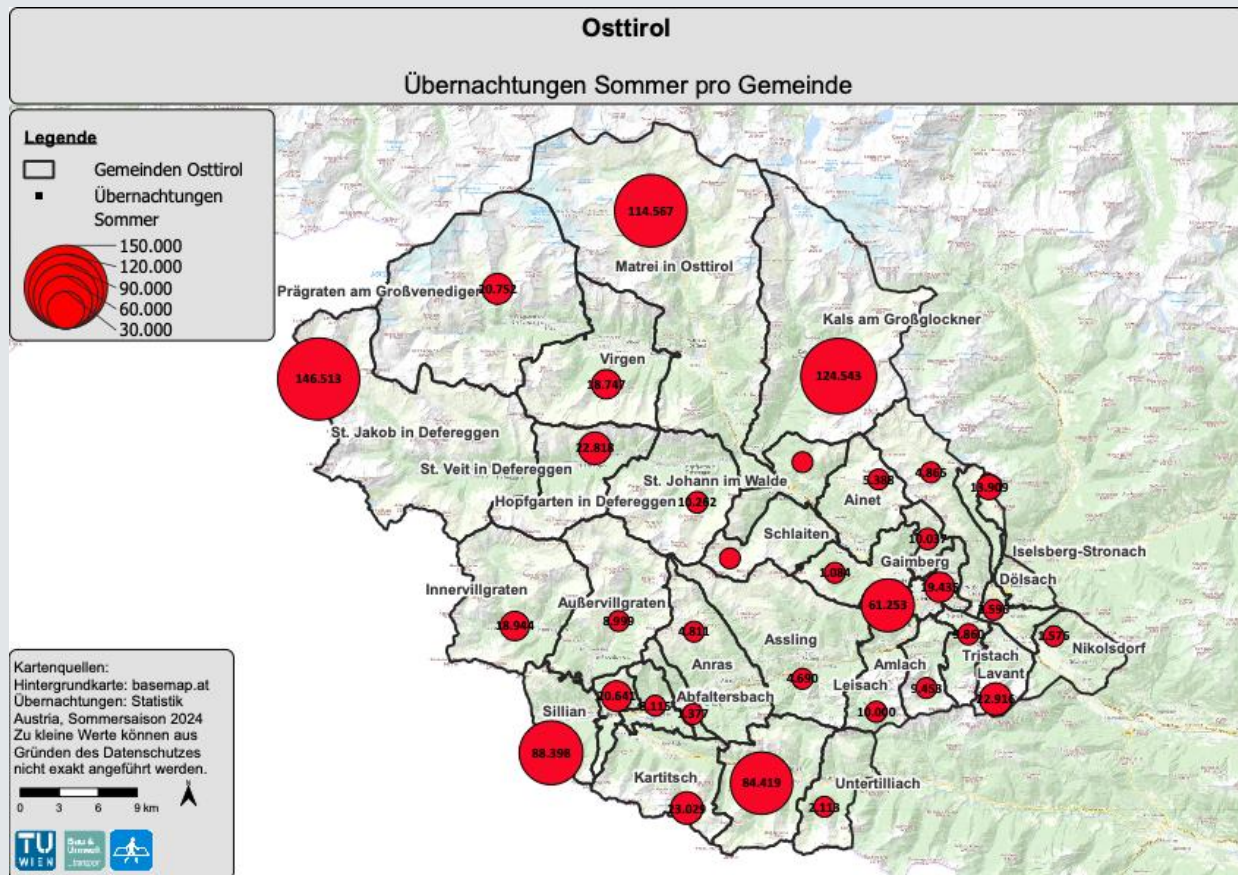


Figure 3: bubble chart of overnight stays in East Tyrol per municipality



Step 3: Stakeholder mapping and Governance

Actions:

- Identify all **relevant stakeholders** like public transport authorities, municipalities, private operators, employers, schools, tourism boards, and social service providers. All of them play roles in shaping mobility **demand and supply**.
- Define responsibilities and transparent communication channels. These are essential to prevent duplication, conflict, or neglect.

Tools:

- Dialogue, discussion and networking

In East Tyrol, the Verkehrsverbund Tirol (VVT) acts as the regional public transport authority, setting the framework for services and coordinating with municipalities. This Scheme varies from region to region.

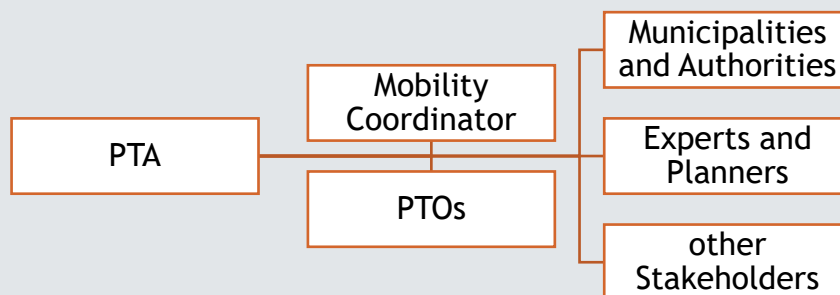


Figure 4: simplified governance scheme in East Tyrol



Step 4: Engagement of municipalities, general public and stakeholders

Actions:

- User and stakeholder engagement by providing a platform for discussion, creativity and innovation.

Tools:

- Workshops
- Living labs
- World café
- Bilateral discussions

In total five living labs were held during the project lifetime in East Tyrol. They started off with a general perspective on PT in East Tyrol and developed a more specific view in cooperation with experts towards the end. The dates and topics discussed during the individual living labs were the following:

Date	Topics discussed
1 st living lab: DEC 11 th 2023	Stakeholder Mapping, Awareness and Engagement, Synergies with other modes of transport
2 nd living lab: Feb 22 nd 2024	Scenario development, schedules and offers in early and late hours, unifying Apps, broadening accessibility
3 rd living lab: JUN 17 th 2024	DRT integration to PT, extending DRTs, comparison to best practices, prioritization of solutions
4 th living lab: MAY 6 th 2025	Discussion of first results, Company transport integration, planned knowledge exchange by study tour, funding opportunities
5 th living lab: JUN 25 th 2025	Discussion of results, presentation of DRT-solutions by experts, identification of most relevant approaching points and next steps

Table 1: Dates and topics of Living Labs



Step 5: Technical Analyses and Tools

Actions:

- Evidence based planning by technical analyses
- Focus on population patterns, PT quality grades,
- Identification of existing gaps in PT
- Qualitative data collection in dialogue with stakeholders, for example municipality profiles (see table 3 below)

Tools:

- GIS mapping
- Demand modelling
- Projection of potential users
- Data can also be useable as powerful communication-tool as seen in the examples below.
- External Experts can help in realising this step

In the below figure, population (white-blue squares) and PT-quality grades (red-green-grey areas) were cross-cut. By doing so, it is easily recognizable which settlements are outside of the areas served by PT. Therefore, the potential areas for an improved PT- or DRT system are identified.

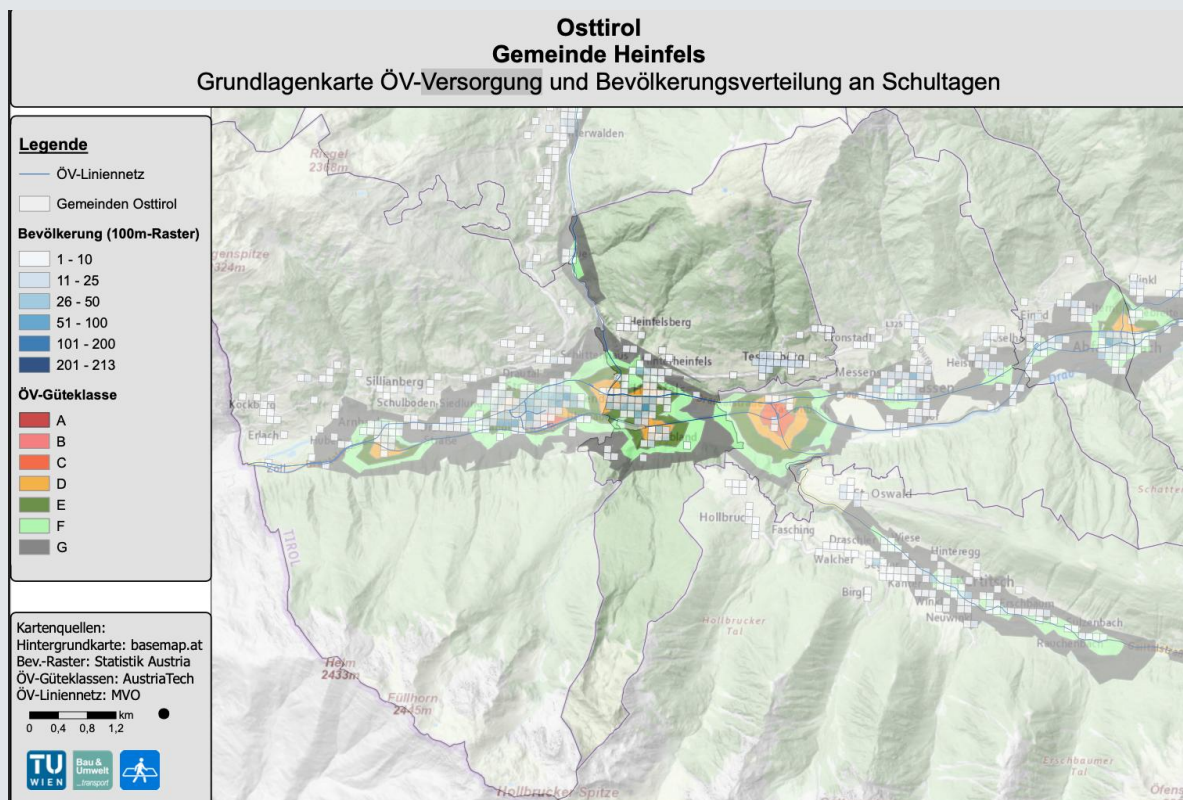


Figure 5: GIS Analysis of population and PT-quality grade cross-cut



Out of this analysis, we could learn that over 16% of the region's population is living outside of any PT quality grade and is thereby not unserved by public transport. Another 46% are only served in the two lowest quality grades out of seven, as the below table illustrates:

PT-quality grade	Sum population	% of total population
A	426	0,9
B	1027	2,1
C	2046	4,2
D	6909	14,1
E	7719	15,8
F	12056	24,7
G	10777	22,1
außerhalb	7895	16,2
	48855	

based on 100m-scheme of PT-quality grade in 2024 and population in 2024

Table 2: percentage of population served by PT-quality grades

Inhabitants	1015
Distance to region's capital city and mobility hub	29 km
Schools and kindergartens	Kindergarten, Hort, Volksschule, Ganztagesbetreuung in Tessenberg mit 4 Gemeinden, Abfaltersbach, Strassen, Heinfels, Sillian bis 16/17:30 Uhr, ergänzt durch betrieblichen Kinderhort mit Einbindung großer Betriebe, Transport durch Gemeinden/Freiwillige ehrenamtlich, Fahrzeug zur Verfügung von Hella, Ausweitung wünschenswert
Touristic attractions and hotspots	Wanderwege, Burg Heinfels, Skigebiet Thurmtaler, Loacker inkl Moccheria Café (ca. 420 Mitarbeiter insgesamt), Drauradweg
Current PT offer	960X (IBK-Lienz): ganzjährig, 4x täglich 961 (Sillian-Lienz): ganzjährig, Mo-Fr 7x täglich, Sa 2x, So nicht 965 (Obertilliach-Sillian): ganzjährig, stündlich 966: ganzjährig, Mo-Fr quasi stündlich, Sa 8x, So 6x, ins Villgratental Bahnhof Heinfels: S2, 1x stündlich je Richtung, Grundsätzlich gute Nachfrage Nightliner 901N: Fr und Sa Nacht und vor Feiertagen 4x pro Nacht zw 20:30 und 4:30 Uhr Tessenberg bisher keine Anbindung, ca 200 Einwohner!
Objectives and wishes of municipality and residents	Schließung Lücke Bahnhof-Buslinien, z.B. 965 (häufigste Taktung) Gastronomie bei Burg öffnet am 1.5.2026 Runde Tessenberg, Heinfels, Strassen Hintenburg, Burg, Loacker (?) Werkverkehr Loacker, Hella usw Haltestellenname Abzw. Villgratental(?) Tessenberg Anbindung/Angebot

Table 3: Example of municipailty profile



Step 6: Define Service Options

Actions:

- Define service options and discuss optimal allocation of fitting systems like fixed route PT and - DRT, area-based DRT, local initiatives, sharing systems etc.
- Take advantage of certain characteristics of each system with the main goal of efficient allocation
- No “one-fits-all” solutions

Tools:

- Discussions with Planners, Operators, stakeholders
- Living Labs
- Workshops

In East Tyrol, the RegioAST service represents a line-based approach, while the RegioFlink and Postbus Shuttle operate area-based. The experience shows that while area-based services increase coverage and accessibility, they require greater coordination and are more complex to manage.



Figure 6: line based DRT in East Tyrol (RegioAST) ©TVB Osttirol/VVT/Johannes Plattner



Step 7: Funding and procurement

Actions:

- Sort out local funding and procurement rules
- Negotiate funding models accordingly
- Check funding possibilities for pilot projects
- Take care of transparent and sustainable funding for long term security

Tools:

- Federal fundings
- State fundings
- Local foundations
- Sponsors
- Volunteers

In East Tyrol, the funding model of the public transport authority VVT comes into play in which the VVT contributed 75% of costs, with municipalities covering the remaining 25% (see figure 7 below). For additional services, the split is at around two-thirds to one-third. Such clarity reduces conflict and allows municipalities to plan reliably.

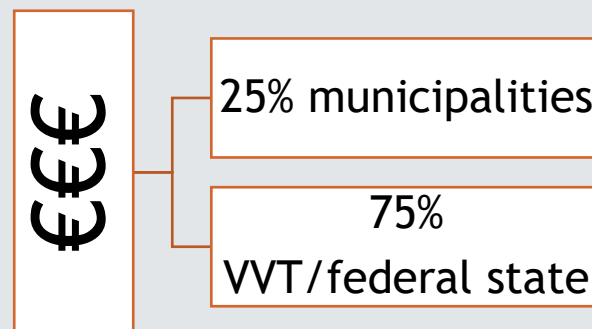


Figure 7: Funding key in East Tyrol



Conclusions

The implementation of Demand Responsive Transport (DRT) in rural and mountainous regions requires a balanced mix of technical precision, stakeholder engagement, and pragmatic governance. The step-by-step approach presented in this document shows that successful planning depends not on a single solution, but on a coherent process integrating spatial analyses, participatory dialogue, and flexible service design.

The East Tyrol experience illustrates how GIS-based assessments, living labs, and strong municipal cooperation can together build a foundation for realistic and inclusive mobility strategies. DRT can only unfold its full potential when anchored in an existing backbone of public transport, coordinated through transparent governance, and supported by stable funding structures. The regional mobility coordinator plays a central role in aligning the various actors, ensuring communication, and maintaining long-term commitment beyond pilot phases.

Moreover, continuous monitoring and adaptive planning are essential. Mobility needs, demographic structures, and digital tools evolve quickly; planning frameworks must therefore remain open to iteration and innovation. Integrating user feedback, testing new booking technologies, and maintaining cooperation across municipal and sectoral borders will be key to resilience and efficiency.

Ultimately, demand-responsive mobility is not only a transport measure but a cornerstone of regional cohesion and quality of life. By combining analytical tools with participatory processes and shared responsibility, regions like East Tyrol can bridge accessibility gaps, strengthen public transport ecosystems, and contribute to sustainable, inclusive rural development.