



Preliminary VitalNodes toolbox (mark 1) – based upon experiences gained with the pilot case Vienna

EUROPEAN COMMISSION

Horizon 2020

H2020-MG-2016-2017

GA No. 769458

Version: 1.0

Date: 31/01/2018

Authors: Kevin van der Linden and Raymond Linssen

The sole responsibility for the content of this document lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 769458

Document Control Page

Deliverable / Milestone number	VITALNODES D3.4		
Deliverable / Milestone title	Preliminary VitalNodes toolbox (mark 1) – based upon experiences gained with the pilot case Vienna		
Dissemination level	Public (PU)		
Lead participant	Rijkswaterstaat		
Written by	Kevin van der Linden (Rijkswaterstaat) Raymond Linssen (Rijkswaterstaat)		
Reviewed by	Susanne Boehler-Baedeker (Rupprecht Consult) Ricardo Poppeliers (Ecorys)		
Approved by	Sjaak van der Werf (Project Coordinator) Jos Arts (Innovation Manager)		
Brief description	Preliminary VitalNodes toolbox (mark 1) – based upon experiences gained with the pilot case Vienna		
Creation date	19 January 2018		
Version number	1.0		
Version date	31 January 2018		
Last modified by	Kevin van der Linden (Rijkswaterstaat)		
Rights	-		
Version	Date	Modified by	Comments
0.1	19 January	Kevin van der Linden	
1.0	31 January	Kevin van der Linden	

Executive summary

In the Vital Nodes project, workshops have been planned in the eight European urban nodes ('Tier 1 urban nodes'). The goals of the workshops are closely related to the main objectives of the VitalNodes project:

- Deliver validated recommendations for a more effective and sustainable integration of all 88 urban nodes into the TEN-T corridors focusing on freight logistics
- Establish a long-lasting European expert network based on existing (inter)national and regional networks for safeguarding long-term continuity in knowledge and implementation

Vital Nodes aims at organizing these workshops building upon the experience of the NUVit initiative by using the existing NUVit toolbox. This toolbox will be fine-tuned and enriched for VitalNodes by the results of the scan of solutions and their impact and the applications and results of the Tier 1, 2 and 3 workshops.

Integrating the existing NUVit toolbox into the VitalNodes toolbox relates impact tools and solutions (good practices) for stimulating intermodal urban freight logistics, for linking long-distance transport and last-mile freight logistics, for integrating urban nodes with the corridors and TEN-T networks, and for novel combinations of stakeholder groupings. The enriched toolbox should be discussed and further fine-tuned in cooperation with the growing VitalNodes network, thereby safeguarding its relevance to the various stakeholders in this network. As the VitalNodes project has only started recently, this report only contains a first preliminary version ('mark 1'), outlining the 'toolbox-under-construction', which is based on the NUVit toolbox and enriched with the first experiences gained in the Vienna urban node workshop.

In this report, the existing NUVit toolbox is described, including additions based on the results from the Vienna urban node workshop (WP2 and WP3). As already indicated, the toolbox is 'work in progress' and currently under development, aiming to grow in interaction with, and as a result of, the other VitalNodes workshops to be organised as part of WP3 (tier 1) and WP4 (tier 2 and 3).



Table of contents

1	Introduction	5
2	NUVit toolbox	7
2.1	Building the VitalNodes approach on the NUVit concept	7
2.2	Six dimensions	8
2.2.1	Spatial dimension	8
2.2.2	Network dimension	8
2.2.3	Time dimension	9
2.2.4	Value dimension	9
2.2.5	Institutional dimension	10
2.2.6	Implementation dimension	10
2.2.7	Relation between the six dimensions.....	11
3	Filling the toolbox	12
3.1	Intro.....	12
3.2	Fingerprint.....	12
3.3	Mapping and spatial design.....	14
3.4	Good practices	17
3.5	Appraisal framework.....	Error! Bookmark not defined.
3.6	Process/methodology of the workshops	17
4	Conclusions/follow-up.....	18



1 Introduction

VitalNodes has started to organize workshops for the urban node Vienna, building upon the experience of the NUVit initiative by using the existing NUVit toolbox. This toolbox will be fine-tuned and enriched for VitalNodes by the results of the scan of solutions and their impact and the applications and results of the Tier 1, 2 and 3 workshops.

Integrating the existing NUVit toolbox into the VitalNodes toolbox relates impact tools and solutions (good practices) for stimulating intermodal urban freight logistics, for linking long-distance transport and last-mile freight logistics, for integrating urban nodes with the corridors and TEN-T networks, and for novel combinations of stakeholder groupings. The enriched toolbox should be discussed and further fine-tuned in cooperation with the growing VitalNodes network. Thereby safeguarding its relevance to the various stakeholders in this network. As the VitalNodes project has only started recently, this report only contains a first preliminary version ('mark 1'), outlining the 'toolbox-under-construction', which is based on the NUVit toolbox and enriched with the first experiences gained in the Vienna urban node workshop.

The NUVit concept comprises 6 main dimensions:

- Network dimension, regarding multi-modal optimization, various spatial scales, and explicitly regards freight logistics
- Spatial dimension, regarding spatial concepts, synergy on accessibility
- Time dimension, regarding time linkages between short-term and long-term, strategy development
- Value dimension, regarding value creation, assessment and capturing of (combined) development
- Institutional dimension, regarding institutions, (multi-level) governance, organizational capacity
- Implementation dimension, regarding drivers, barriers, dissemination and communication

The various dimensions can be seen as the various compartments of the toolbox in which the various tools developed can be ordered, and which helps also the process of when and how to apply the various instruments available in the toolbox.

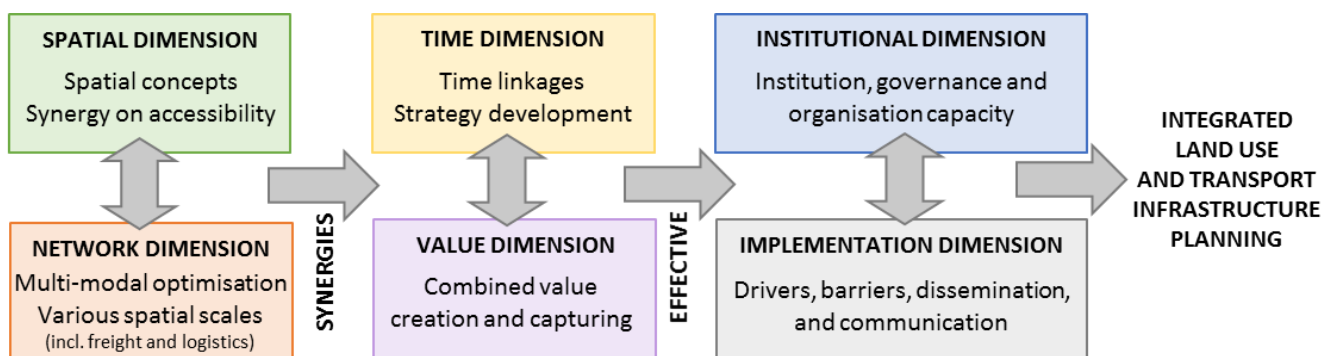


Figure 1 Linkages between different dimensions

The experiences gained with the NUVit approach show that the various dimensions are related in a logical way. The spatial and network dimensions regard the linkages between transport infrastructure, mobility and land-use. Resulting in potential synergies that have to be considered at which the time and value dimensions are relevant. Finally, this requires an adequate institutional and implementation



approach to become effective integrative planning. Therefore, transport infrastructure can be carefully coordinated with spatial developments resulting in tailor-made solutions to the local situation, enhanced vitality of regions and well-functioning (inter)national transport corridors and networks.

On basis of the experiences gained with the Vienna urban Node workshop it is clear that, in addition, the VitalNodes toolbox should focus on one or more of the aspects related to the 6 dimensions:

- Linking long-distance and last- mile freight logistics
- Defining the functional urban area
- Integrating urban nodes with the TEN-T networks/corridors
- Stimulating inter-, synchro- and multimodality
- Linking and combining different stakeholder groupings to get to integrated solutions
- Integrating land-use and infrastructure planning
- Short term and long-lasting benefits.

In chapter 2 the existing NUVit toolbox is described, chapter 3 include additions to this toolbox developed in interaction with the Vienna urban node workshop (WP2 and WP3). As already indicated, the toolbox is 'work in progress' and currently under development, aiming to grow in interaction with, and as a result of, the other VitalNodes workshops to be organised as part of WP3 (tier 1) and WP4 (tier 2 and 3).

2 NUVit toolbox

As discussed in chapter 1, the experiences from the NUVit initiative are taken as a starting point for the VitalNodes toolbox.

2.1 Building the VitalNodes approach on the NUVit concept

Challenges in integrating freight logistics of urban nodes into network corridors have a multi-dimensional character: not only network issues of the (freight logistic) transport and mobility system have to be considered, also spatial issues related to urban vitality (socio-economic development, spatial and environmental quality and liveability) have to be addressed, as well as issues of short-term and long-term development, value creation and capturing issues, multi-level governance and institutional issues, and issues related to implementation.

The VitalNodes approach used for this Coordination and Support Action (CSA) builds on Networking for Urban Vitality (NUVit), in which already much experience has been gained with an integrated spatial and infrastructure approach addressing these challenges. The NUVit concept that forms the basis for the VitalNodes approach takes these multiple dimensions explicitly into account that ensure the incorporation of the diverse features and problematics of the urban nodes.

The concept focuses on integrating land-use and infrastructure planning as both planning sectors have considerable impact on each other. The transport system affects a region's accessibility, which affects the planning of land-use in that region and the activities that will take place, which in turn will affect mobility and subsequently the further development of the transport system, thereby starting a new cycle – also known as the Land Use - Transport Feedback Cycle. Regarding these interactions, the approach focuses on the three geographical scales (levels) to address the challenge: local (intra-urban locations), urban-regions (the level of the Daily Urban System, peri-urban and regional level), and international (TEN-T) corridors.

The NUVit concept comprises the integration of six dimensions of mobility, land-use and infrastructure planning in such a way that synergy is created. These six dimensions are very closely related, so the value of this basic framework is the synergetic integration of the elements. This integration goes beyond a local SUMP (Sustainable Urban Mobility Plan) as regional and (inter)national mobility and infrastructure networks, as well as broader spatial opportunities, are taken into account.

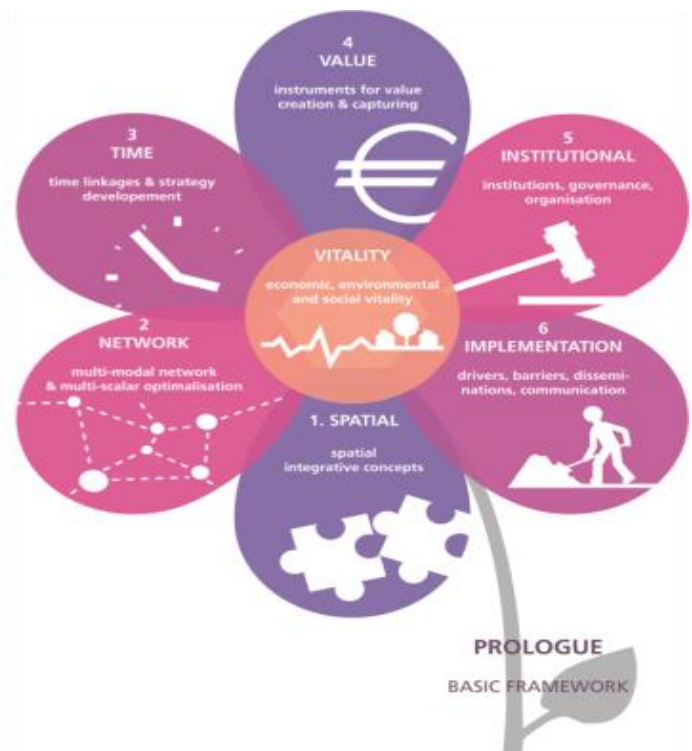


Figure 2 The six dimensions of NUVit applied in VitalNodes

2.2 Six dimensions

Hereafter, the six dimensions will be discussed with specific attention for freight logistic conform the focus of VitalNodes.

2.2.1 Spatial dimension

For this dimension critical aspects are the ability to deal with scale issues, transport analysis and spatial design as both a strategic and technical tool in order to achieve integrative spatial concepts (zooming in, zooming out between the three spatial scales). The freight transport sector is organized on a global scale, in which international trade via ports is the most important market. This global trade boils down to national, regional and local transport services and logistics. The spatial dimension relates to linking the local and regional, (inter)national transport services in the most optimal way. The search is for spatial concepts with synergetic effects on accessibility and freight logistics. Key concepts are transshipment points on a regional level (e.g. Distribution Centres) or on a local level (e.g. Urban Consolidation Centres), centralized vs decentralized freight logistic concepts, multi-modal freight and logistic terminals (road, rail, shipping, air transport), logistic clusters that combine transshipment with manufacturing and logistics services. Relating to both freight and passenger transport are relevant multimodal corridors, Transit Oriented Development (mixed-use residential-commercial area with optimally designed access to public transport), and area-oriented approaches (integration of infrastructure and other policy areas e.g. environment, housing, business, recreation).

Cases across Europe show that coordinated optimization of infrastructure and spatial development at the Daily Urban System level (e.g. an urban node) can be the key to safeguard corridor interests while solving local spatial conflicts in urban nodes. This not only relates to large investments in infrastructure. Small measures at local scale may help to solve bottlenecks at the Daily Urban System level and the corridor level. For instance, at urban ring roads often up to 30% of the traffic is local. ‘Shaving off’ some of this share by local and regional mobility measures may reduce traffic sufficiently to solve congestion bottlenecks at the urban ring road. If such a ring road is part of an (inter)national transport corridor such ‘smart acupuncture’ measures can be of importance to the (inter)national transport network.

2.2.2 Network dimension

This dimension relates to multimodal network optimization at various geographical scales: corridors at (inter)national level, Daily Urban Systems at metropolitan level and landscaping at local level (see also Figure 3). Translated to the VitalNodes CSA focus on freight and logistics this relates to:

1) Urban logistics dimension, including urban vehicle access regulation schemes; low emission zones; congestion charging; off hour deliveries;

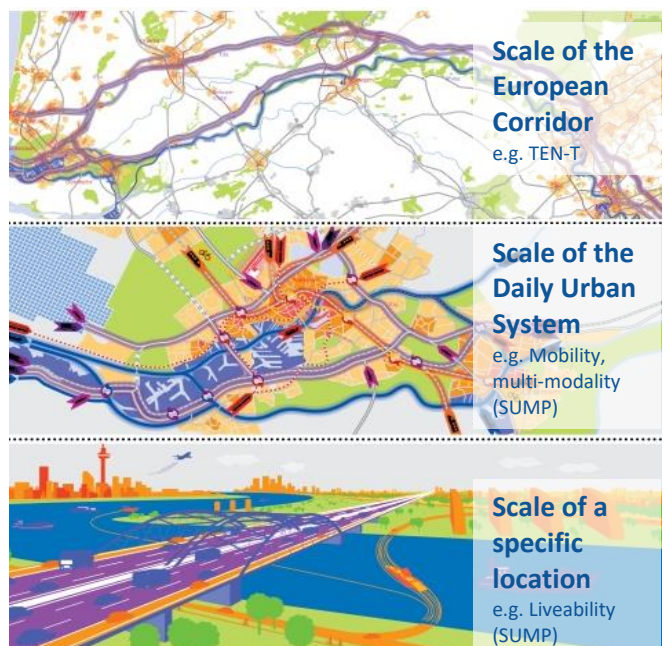


Figure 3 Linking different scales



logistics schemes for e-commerce; green and efficient urban logistics vehicles; use of IT (e.g. time windows, load factor, low emission zones, cargo bikes, urban consolidation centres); and

2) Long distance freight dimension, including: main function of a node (freight, passengers transport), type of logistics (service/industry, freight function (throughput/transfer, first-/last-mile), complexity of logistics activities (e.g. level of Value Added Logistics (VAL)/Value Added Services (VAS) activities, size of freight flows), type of freight (long distance, share of container/bulk). More in general, the network dimension relates to transport modes' seamless interconnections between infrastructures (at different levels; not only at the beginning and end of freight logistic chains but also in the intermediate connections, corridors for creating robust connectivity), optimising the use of existing infrastructures (traffic and mobility management, ITS; IT and data management), network analysis (multi-modal modelling) and improvement of network linkages ((re)development of infra links).

2.2.3 Time dimension

This dimension relates to linking the planning stages in a full life cycle. This asks for an examination of changes in use (new development, renewal, redevelopment), of changing lifestyles and their linkages to mobility (changing use of transport modes), of metabolic potentials (circular economy/cradle-to-cradle concepts, asset management, alternative fuels), and of linkages to mobility and accessibility (changing flows of people and goods). These analyses help to determine time linkages for a strategy development for transitions towards multi-modality and integration with land-use. More specifically regarding freight and logistics aspects the time dimension is mainly related to policies (e.g. urban access regulations; time windows and low emission zones), interactions between infrastructure and logistics (synchromodality, optimally flexible and sustainable deployment of different transport modes in a network for logistic operators) and logistics transport service providers' behaviour (logistics is a time-critical transport discipline, time is of essential value in business models: the value of time is high in relation to 24/7 operations and just-in-time delivery). E-commerce, as a fast-growing market segment, representing a more important market share. This is reflected in the physical-spatial reality by growing flows at corridor as well as the peri-urban and intra-urban level that ask for new approaches from policy makers, and innovative developments from transport practitioners.

2.2.4 Value dimension

This dimension relates to creating value, assessing value and capture value. In the VitalNodes toolbox we collect state-of-the-art models and approaches to assess value – e.g. Social Cost-Benefit Analysis, Life-Cycle Assessment, Environmental Assessment (EIA, SEA) – to create value and capture value in combined infrastructure and spatial development projects. Regarding freight and logistics, the value dimension relates closely to the importance of value-added logistics in urban freight transport chains. An optimized freight transport network links seamlessly the national/regional level with the urban level in transshipment points. These locations (e.g. Urban Consolidation Centers – UCC) could become viable as value is added to the products transshipped there. More in general, investments in transport infrastructure and logistics enhance accessibility of locations, beneficial to socio-economic development. This should be balanced with the potential negative impact of infrastructures and freight logistic flows at which spatial and environmental quality are important – relating this to the spatial dimension. Better coordination between transport infrastructure, freight logistics and spatial development provides socio-economic value not only within cities (enhanced competitiveness at intra-urban level; of one urban node)





but also between cities (at inter-urban level). Urban regions that are well connected by multi-modal infrastructure may act as one big agglomeration providing enhanced competitiveness – they ‘borrow size’ – which is relevant when integrating urban areas and network corridors.

2.2.5 Institutional dimension

This comprises analyzing different governance approaches and organizational framework at all institutional levels. With respect to logistics/freight aspects: urban freight transport is a niche discipline in the wide variety of transport services. This niche is confronted with a vast set of regulations: could be vehicle related (loading weight), emission related (EURO Norms), fuels related (alternative fuels directive), time related (time windows), incentive-based (e.g. subsidy schemes) or infrastructure related (e.g. UCC’s and loading bays). In VitalNodes the institutional dimension regards what institutional design is most effective for a certain case (urban node, grouping of urban nodes) to achieve integration of urban nodes in the network corridors and linking long-distance transport with last-mile freight-delivery. This entails also issues of institutional embedding, governance models as well as issues of the cultural setting, resulting in solutions for inter-governmental cooperation (public-public partnerships), market involvement (public-private partnerships), stakeholder engagement (users, citizens, interest groups), the governance of organizational networks, and smart mixes of these.

2.2.6 Implementation dimension

Finally, a critical aspect in innovation is deployment and implementation. The barriers with which professionals are confronted are numerous regarding freight logistics but also infrastructure and spatial development. This makes the implementation of measures not straightforward. The toolbox is a means to develop a clear mapping of barriers and measures (physical-spatial, institutional, social-economical, environmental/liveability). The toolbox is linking the different dimensions with each other to overcome ‘silo thinking’. An example are the differences in timing between (inert) infrastructures, (fast cycles in) freight and logistics, and (incremental) spatial development posing specific implementation issues to integrated solutions. This is also true for the differences in spatial level ((trans)national infra networks and freight transport vs. local spatial development and last-mile logistics) as well as differences in stakeholders involved (market, private parties vs governmental parties). Therefore, in the conceptual model explicit attention is paid to the implementation of the developed solutions for individual cases as well as of the VitalNodes conceptual framework and toolbox developed. This dimension includes making an inventory of implementation issues and drivers to tackle implementation barriers.

2.2.7 Relation between the six dimensions

In the figure 1 and text below a description is given from the relation between the six dimensions;

The experiences gained with the Vienna urban node workshop (see D3.1) confirm that the 6 dimensions are related in a logical way. The spatial and network dimensions regard the linkages between transport infrastructure, freight logistics and land-use. This includes innovative solutions for freight logistics. Combining spatial and network dimension results in potential synergies that have to be considered at which the time and value dimensions are important to analyse and discuss. Finally, to become effective integrative planning, it is needed to develop an adequate institutional approach and dealing with such implementation issues as barriers/drivers. Subsequently, transport infrastructure can be carefully coordinated with spatial developments resulting in tailor-made solutions to the local situation (landscaping, context sensitive design), enhanced vitality of regions (at the level of the Daily Urban System) and well-functioning (inter)national transport corridors and networks. Within the first VitalNodes workshop in Vienna, especially the spatial and network dimension have been discussed covered, resulting in insight in potential synergies, and related to this recommendations have been developed (see deliverable 3.1).

3 Filling the toolbox

3.1 Intro

Based on the content and the experiences gained with the Vienna urban node workshop, additions to this VitalNodes toolbox have been further developed. The enrichment of the VitalNodes toolbox is related to the earlier described six dimensions (Chapter 2 NUVit toolbox) and includes them in this chapter described as different instruments/tools:

- Fingerprint
- Mapping and spatial design
- Appraisal methodology
- Good practices
- Workshop format (see D3.2)

3.2 Fingerprint

In order to get better grip on the different scale levels and to subsequently enable a discussion about their interlinkages, an overview of facts and figures on different scale levels in relation to the specific urban node has been developed, the so called 'fingerprint'. The fingerprint works as a guiding methodology during the workshop and it enables distinguishing different types of urban nodes, due to the use of comparable data and standard categories. Also it will enable comparison between various urban nodes analysed by the VitalNodes project in the future (e.g. between the tier 1 urban nodes). Within the so-called fingerprint, data will be collected about the functional area of the urban node as well as the use of the networks related to freight and logistics.

The fingerprint contains information on the urban node, the corridors, the current and forecasted function on the corridor, traffic flows, modal shift – including forecast and challenges for the urban node. The information is categorized on successively three different scale levels: TEN-T corridor level, the urban regional/functional urban area/Daily Urban System level and local/city level (see also D3.2). Ideally facts and figures on the functional level are present, in case the urban node already has a clear definition of its functional region. Developments, characteristics and governance structures are included as well.

Urban nodes have very diverse geographical and infrastructural characteristics such as their size and location, their position on one or more TEN-T corridors, urban and regional and socio-economic developments, and the state of the art of their local and regional multimodal infrastructure networks. Based on the urban node's fingerprint, consisting of facts and figures relating to the urban node's freight and logistic situation on national, regional and local level, main challenges are addressed.

The fingerprint is a tool to support discussions between stakeholders during the workshops and to improve the understanding of the specific location and circumstances of the urban node, including challenges. Besides that, a categorisation of urban nodes can be made via a comparison of the different fingerprints. Each urban node fingerprint is based on European Commission definitions and data (EuroStat) to facilitate comparison. Based on these facts and figures the fingerprint is drafted and maps are developed.



Within the fingerprint instrument several tools are used /combined:

- Facts and figures
Containing an analysis of infra networks (regarding road, rail, navigation and aviation), traffic figures and trends for the various modalities – with a focus on freight/logistic relationships (source-destination), interrelationships of this with passengers traffic (also in relation to public transport and active modes), spatial lay-out of the area and trends, institutional framework. All of this at the three scales of corridor level, functional urban area, local/city/level in order to enable analysis and discussion about the interrelationships between the scales (zooming in and out).
- Challenges
Regarding infrastructure network, mobility, spatial lay-out, bottlenecks and development as well as institutional framework and development. This provides insights in the specific circumstances of an urban node and show the issues that need to be dealt with. A main focus is on freight and logistics, taking into account all other aspects analysed and mentioned (facts and figures).
- Drivers and barriers
Containing information as a result from interviews with key stakeholders and the workshop, giving insight to locally important aspects in relation to solution direction(s), possibilities and impossibilities. Including the needs regarding the various dimensions as well as the interrelations between these dimensions (see figure 1).
- Potential solutions
Indicating type of practise, description of the potential solutions, link with the urban node's challenge(s), impacts and contact person(s) as being good practices as result of previous experiences and outcomes of the urban node workshops.

3.3 Mapping and spatial design

One of the tools that is used during the Vienna workshop is spatial design, which covers the spatial dimension as described in the NUVit toolbox (paragraph 2.2.1.). The discipline covers multiple scales, from the local level to the regional (Daily Urban System) level and the corridor level. The interrelationship between these three levels not only addressed by spatial design but also by the use of ‘mapping’.

Mapping is an essential tool for working through the three different scale levels (zooming in and zooming out) and for analysing the interrelations between the scales. . Not only to collect information in a visual attractive and comprehensive way, but also to discuss challenges related to different policy sectors. On maps, the spatial context and the effect of occurring and important issues and challenges can be appointed during a discussion and workshop. In this way the effects on different scale levels can be made transparent in the way they are connected with each other.

Below are examples of maps on three levels, resulting from the Vienna workshops; local (inter-urban locations), urban-regions (the level of the Daily Urban System, peri-urban and regional level), and international (TEN-T) corridors.

Below the maps used in the Vienna workshop are included as examples of maps on the three different scale levels.

Corridor (international) level

On corridor level (see figure 4), the map includes information on the TEN-T corridors along which the urban node is located. In the case of Vienna, the Rhine-Danube corridor, the Orient/East-Med. Corridor and the Baltic Adriatic corridor. It shows the roads, rail-roads and waterways of the different corridors and airports, ports and rail-road terminals.

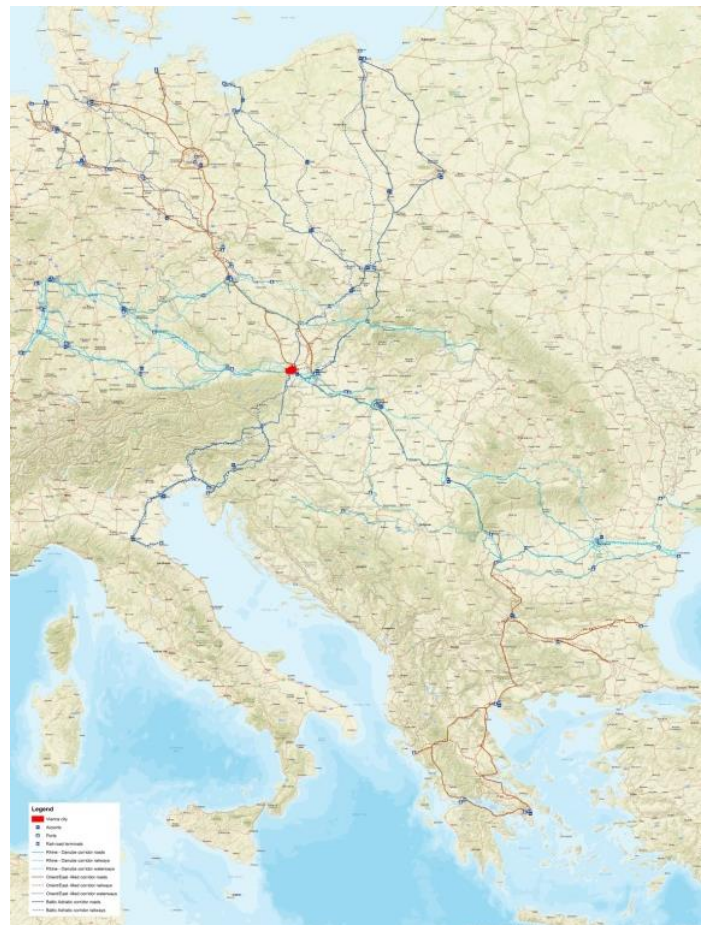


Figure 4 Map on international level (TEN-T corridor level)

Regional /urban node level

Development perspectives of Stadregion+
 Further development in coordination with the provinces' transport concepts

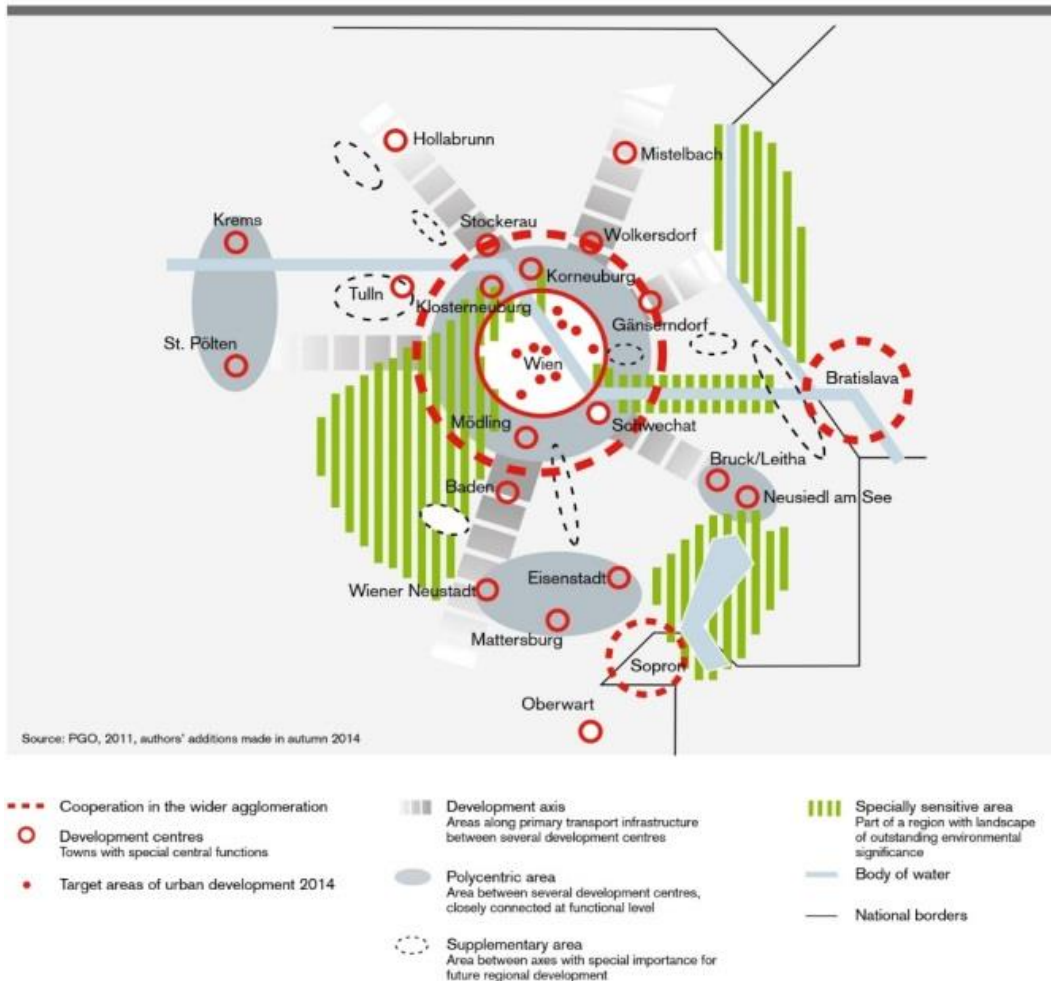
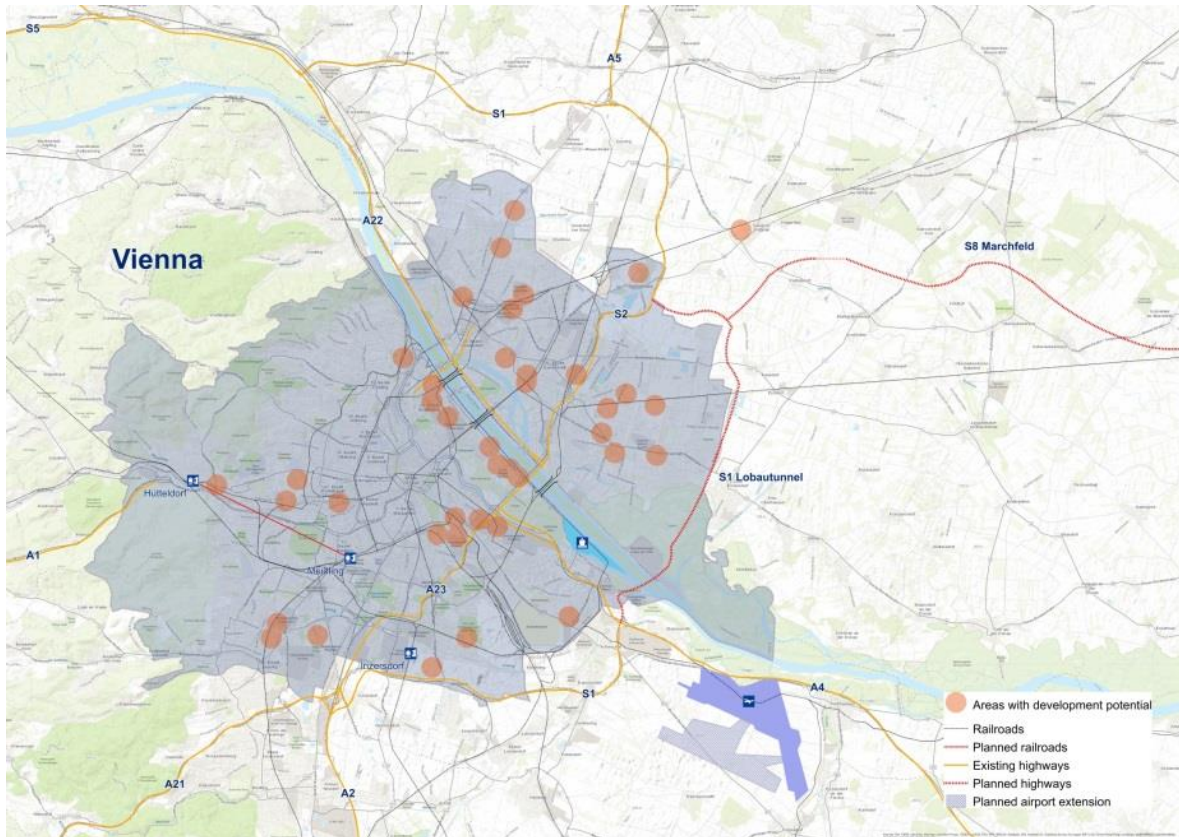


Figure 2 Map on the urban node (functional urban area) of Vienna

Figure 5 shows, as example from the Vienna workshop, the regional and functional urban area level map. The cooperation in the wider agglomeration of the urban node Vienna, the development centres (towns and special central functions), target areas for urban development, development axis, polycentric areas, supplementary areas, specially sensitive areas, water bodies and national borders are depicted are clarified. The regional/functional urban area scale shows the urban node by depicting the functional area. In the case of Vienna this includes among others the city of Bratislava in the east and St. Pölten and the Wienerwald in the west.

Local level



On the local (inter-urban locations) scale the railroads, planned railroads, existing highways, planned highways, airport, planned airport expansion and the inner city areas with development potential are shown (see figure 6). Additionally also the waterways, the administrative city borders and surrounding landscapes can be seen as well as the interrelation between the different aspects.

A more detailed description about the Vienna workshop and the discussion in which the maps are used can be found in deliverable 3.1 (D3.1).

3.4 Appraisal framework

Another additional tool is the use of an appraisal framework, described as a qualitative appraisal of impact of good practices/mechanism/solutions related to specific challenges.

Within the appraisal framework criteria are based on collected data on e.g. accessibility, safety, health, environment, value, noise, compactness, robustness, excitability and sustainability. During the first VitalNodes workshop in urban node Vienna those aspects are taken into account while looking at the specific situation, challenges and possible solutions.

This appraisal framework is in this stage of the project VitalNodes under development and will be worked out in detail in deliverable 2.1 (D2.1) – Appraisal methodology and guidelines on its application for WP3 and WP4 stakeholders/workshop participants. The content, experiences and input from the other urban node workshops are also important for this development.

3.5 Good practices

During the workshop the challenges of the urban node Vienna are discussed, while focusing on the impact of good practices / solution(s), drivers and barriers of the urban node and its stakeholders. The introduction of one or more European good practices will help the stakeholders in the urban node to make a mind shift from thinking in barriers and obstacles towards (potential) solutions and options. This stimulates the discussion and improves the creative process. Besides, several good practices connect local, regional and corridor level, stakeholders will get concrete input and inspiration from other European cities and regions on how the relation between the urban node (local, regional) and the corridor level might be improved.

Good practices are defined as practices and mechanisms that might help to solve a specific challenge with a specific impact. Desk research and interviews indicate that quantification of the impact as well as good practices are not easy to find, because integration of infrastructural, mobility and spatial development is a rather new field. To define a good practice it is required to have insight in the specific challenges and context of a node.

The collection of good practices builds on the experiences with, among others, NUVit and Fluxnet and continues through the VitalNodes workshops. In the workshop in Vienna, a few good practices are discovered, see for more detailed description deliverable 3.1 (D3.1).

3.6 Process/methodology of the workshops

With the organisation of the workshops, as it was done in Vienna during the VitalNodes project, several stakeholder groupings can be brought together to discuss good practices and share expertise. In deliverable 3.2 *Format for VitalNodes workshops for Tier 1 (and Tier 2 and 3) urban nodes and future cases* a more detailed description of the workshop methodology is provided.

The process of the workshop has several possibilities such as peer to peer review, roundtables, and more.

4 Conclusions/follow-up

As already indicated, the toolbox is 'in progress' and currently under development, aiming to grow in interaction with, and as a result of, the other VitalNodes workshops to be organised as part of WP3 (Tier 1) and WP4 (Tier 2 and 3). During those workshops in different urban nodes various challenges shall be addressed, resulting in validated recommendations to the urban nodes (D3.3, D4.2 and D4.3) and additions to the Final VitalNodes Toolbox (Mark 2) – based upon experiences gained with Tiers 1, 2 and 3' (deliverable D3.5).

To accomplish this objective, it will be necessary to establish a direct interrelation between the final VitalNodes toolbox (D3.5), the validated recommendations on the integration of the 8 individual urban nodes in the TEN-T network (D3.3), and the validated recommendations for Tier 2 and Tier 3 groups of urban nodes (D4.2 and D4.3).

In addition there will be also a strong relation with the deliverables D2.1 *Overview of solutions and their (potential) impact on accessibility, liveability, economy / profitability and vitality (safety, environment, health, noise) on the integration of urban nodes with TEN-T corridors* and deliverable D2.2 *Appraisal methodology and guidelines on its application for WP3 and WP4 stakeholders / workshop participants*.