

DELIVERABLE

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Table of Contents

Table of Contents	2
List of Tables	2
List of Figures	2
Revision History	3
Executive summary	4
1 Introduction	5
1.1 Methodology	5
2 Business models: a review	7
2.1 Open Source	7
2.2 Freemium	9
2.3 White label	12
3 Business model: narrowing down	14
4 Exploitation strategy	16
5 Conclusion and next steps	18
Appendix A: Business canvases	19
Open Source	19
Freemium	20
White Label	21
Appendix B: OTN audience segmentation	22
Appendix C: Individual exploitation plans	25

List of Tables

Table 1. Hypothetical OTN open source offering	8
Table 2. Hypothetical OTN freemium price plans	10
Table 3. Hypothetical OTN white label offering: Basic v. Pro	13
Table 4. Hypothetical OTN white label offering: Basic price	14
Table 5. Hypothetical OTN white label offering: Pro price	14
Table 6. Open source v. freemium: for & against	15

List of Figures

Figure 1. Osterwalder Business Model Canvas	6
Figure 2. OTN Twitter: Top 10 countries by number of followers	22
Figure 3. OTN LinkedIn: Top 10 countries by number of followers	22
Figure 4. OTN Twitter: Top five follower categories	23
Figure 5. OTN LinkedIn: Top five follower categories	23
Figure 6. OTN Twitter: Followers background	24
Figure 7. OTN LinkedIn: Followers background	24

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Executive summary

This deliverable is the first of two editions of the commercialisation plan that focuses on OTN sustainability after the project lifecycle. The aim of the first edition is to provide a ready canvas on which the concrete contours of the final, post-funding plan can easily be painted by the consortium in a few months' time. To achieve this aim the authors of this deliverable engaged in a close consultation with project partners with a dual purpose in mind: (1) to find out their views on the three business models proposed in D8.4 Market Analysis deliverable and (2) to understand how partners are planning to exploit OTN results after the end of the project.

Consultation on the first point resulted in the exclusion of white label solution as an immediate sustainability scenario, leaving open source and freemium on an almost equal footing as regards partner preference. In a poll organised at the end of consultation open source won by ten votes to seven. Because the margin was so small the consortium decided to keep both options on the table for now. Another reason why no particular model has been chosen is because more time is needed to weigh the pros and cons of alternative models, such as the one recommended by HSRS and UWB in which elements of both open source and freemium are present, and which supports OTN as part of a larger entity, namely Plan4All Association.

Consultation on the second point has led to the discovery of a rich variety of actions aimed at mainstreaming and multiplication of OTN results. These actions will need to be updated due to the evolving nature of the project which constantly opens new avenues for exploitation, but already they include examples such as emerging cooperation with Open Geospatial Consortium (OGC) that lend confidence in the long-term sustainability of project results and their influence in the pilot sites and beyond.

1 Introduction

OTN was created to address key challenges that hinder the use of geographic information in Europe. Standards and tools have been identified as two main issues around which these challenges revolve. Standards because they can be difficult to apply in practice, even by experienced users; tools because their features are often inaccessible to non-technical ordinary citizens - the greatest source of innovative potential in every country. OTN's response to these challenges has been the creation of collaborative virtual hubs where everyone from individuals to SMEs to city managers can access harmonised data and visualise it using simple tools. It is expected that insights and informed decisions - key outcomes of this process - would in turn stimulate demand for and re-use of publicly available information, ultimately creating more opportunities for collaboration and new service creation. To ensure that this momentum continues well after the final review OTN partners have already begun sketching the contours of commercialisation strategy that will guide them in the remaining months of the project and beyond. The final version of the strategy will be submitted at the very end (month 36). The aim of this deliverable is to prepare a canvas on which final and concrete sketches will be made as regards most suitable business model, its constituent parts and specific exploitation activities. It does so by building on and extending the body of knowledge generated during work carried out as part of D8.4 Market Analysis deliverable. The latter proposed three business models based on extensive primary and secondary research carried out by the OTN communication teams. These models are Open Source, Freemium and White Label; a brief description of each is provided below.

- *Open source.* According to this model, financial returns on open-source software come from selling services, such as training and support, rather than the software itself. This model suits the 'open' nature of the OTN project and may appeal especially to developers. The downside is that open source models and software, even when supported by a community of volunteers, still require a big company contributor to thrive.
- *Freemium.* OTN first identified this type of model in its Description of Work. However, the premium service at the time was anticipated to be related to business mentoring. Market research showed that demand for this type of mentoring services is not currently high, and therefore it would be difficult to attract significant revenue for sustainability using mentoring as a base for premium services. It may be better, from the sustainability point of view, to instead charge for enhanced analytical and visualisation functionalities, such as extra storage capacity, the number of layers that can be used for mash-ups, custom features and enhanced format support, among others.
- *White label.* In this model, a company produces a product that other companies or organisations rebrand and customize to their needs. This model has been mentioned by some of our pilot partners and influencers. However, as our research has shown, white label product portfolio requires high degree of technological sophistication, extensive GIS expertise and a leeway to offer a competitive price point.

To test the goodness of fit between these models and partners' view of their sustainability potential a special methodology was used and it is the aim of the next section to describe how it was applied in practice.

1.1 Methodology

This deliverable was written in close consultation with project partners who had to share their views on each of the outlined business models and form a core commercialisation team whose task is to make key sustainability decisions between now and the end of the project. The engagement of OTN partners proceeded in several stages. First, partners had to fill out three business canvases - one for each model - and propose one option that they think is most appropriate for OTN. The canvas template closely follows

that proposed by Alexander Osterwalder,¹ a renowned business theorist, and includes key building blocks - customers, key offering, activities and resources and finances - that are conducive to a successful market entry and sustainability. Then each partner had to complete an individual exploitation plan for the post-funding period. When outlining their plans partners were asked to focus on OTN contribution to their future work; OTN elements they would like to exploit; mainstreaming and multiplication activities they are planning to undertake; resources they are planning to commit and what, in their view, the anticipated outcomes of all these planned exploitation activities will be. The final stage - still ongoing - involved a number of online meetings between partners that expressed interest in joining the core commercialisation team. An online poll that was organised at the end of the consultation was part of this stage and its aim was to quantify partner preference as regards most suitable business model. The results of the vote were then used to make a final decision which favoured no particular model, although open source won by a small margin.

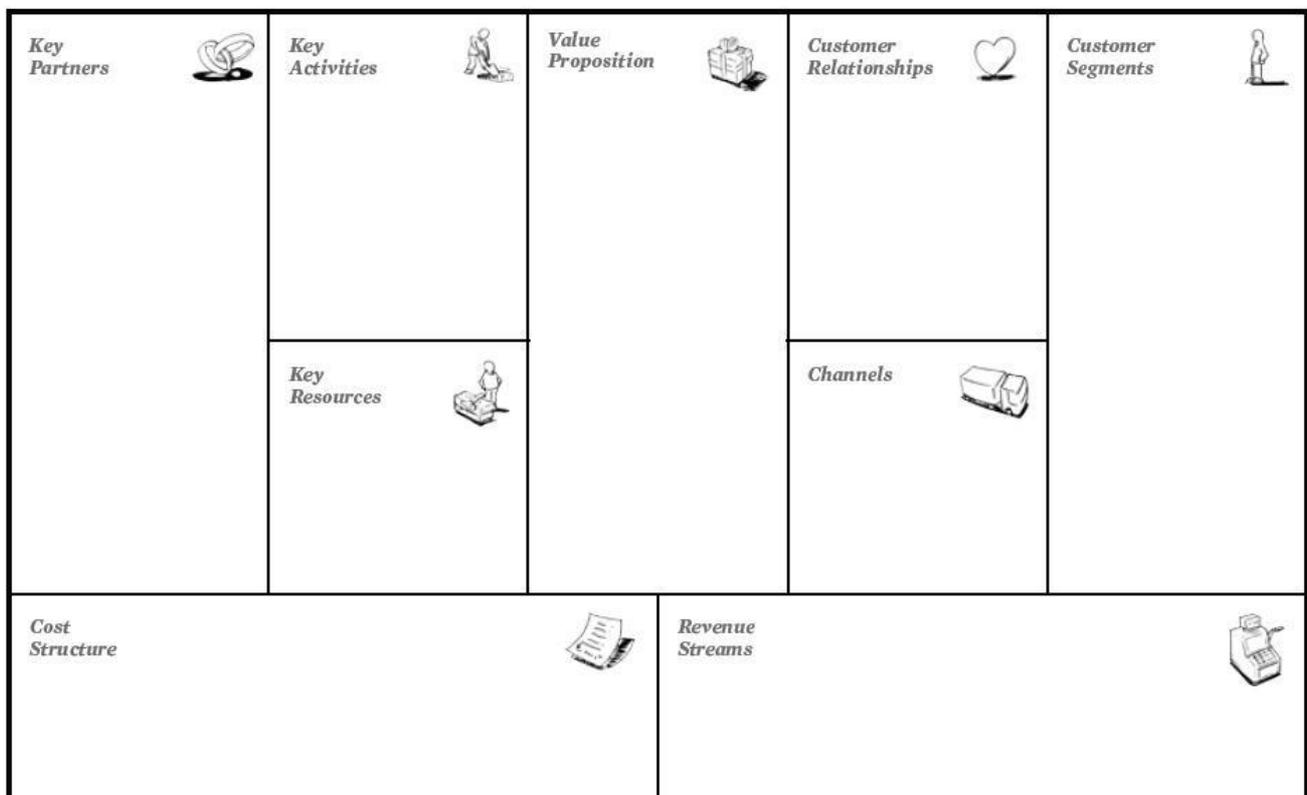


Figure 1. Osterwalder Business Model Canvas

As well as consulting partners, the communications team also conducted an audience segmentation of OTN Twitter and LinkedIn followers and, together with the rest of the consortium, engaged in talks with the prospective OTN adopters and partners. The latter groups include those who showed interest in OTN solution either at the project- or city-level. Currently, five cities have been involved in such talks - Edinburgh (UK), Ghent (BE), Lille (FR), Madrid (ES) and Sofia (BG) - and the number of projects and initiatives that have agreed to partner with OTN in one way or another also reached five by the end of 2015 - Open Geospatial Consortium,² Plan4All Association,³ SDI4Apps,⁴ FOODIE⁵ and ECIM.⁶ More on these

¹ <http://alexosterwalder.com/>

² www.opengeospatial.org/

³ <http://www.plan4all.eu/>

⁴ <http://sdi4apps.eu/>

⁵ <http://www.foodie-project.eu/>

⁶ <http://www.ecim-cities.eu/>

emerging opportunities will be said in Exploitation strategy and the results of audience segmentation are fully documented in Appendix B: OTN audience segmentation. The segmentation of social media followers was conducted to help the core commercialisation team better understand who, out there, likes OTN, where these people, companies, projects and bodies are based and what their areas of specialisation are. The results of segmentation analysis will prove particularly useful in writing the second edition of this deliverable as they contain information that can help refine the target audience and value proposition for it - two very important elements of any business model.

2 Business models: a review

2.1 Open Source

Broadly speaking, open source software is that which can be modified and shared in a publicly accessible way. Unlike proprietary products or projects, open source ones grant users access to program's functionality (i.e. source code) and allow them to distribute any enhancements or changes as they see fit as long as the open source principle is maintained. The overarching aim of all open source initiatives is to stimulate innovation by promoting open exchange and knowledge-sharing.

Businesses or initiatives that choose open source as a business model often grapple with the same question - how to maintain the solution's appeal while generating enough revenue for themselves? Financial returns for firms or projects that adopt open source business model do not come from conventional sources such as product sales or license renewals. Instead they come from software related services such as technical support, training, software customisation and troubleshooting, and additional sources like cloud computing, donations and crowdfunding. The sale of proprietary but optional extensions, plug-ins, add-ons, modules and data libraries can also be used as a source of revenue for these initiatives.

If OTN were to become one after the final review it too would need to answer that question. First attempt to do so was made during the partner consultation exercise that formed an integral part of the deliverable's methodology. Provided below are partners' answers to business canvas questions that focused on the following key areas: target audience, value proposition, customer interaction, activities & resources needed to maintain OTN value proposition to its customers and anticipated costs and revenue sources. A summary of these responses is available in table view in Open Source.

- *Target audience.* Partners answered the question “Who should OTN be targeting as customers if it adopts an Open Source business model?” differently. Nevertheless, all potential customers can be grouped into several main categories: developers, public institutions, including municipalities and planning offices, IT providers, GIS professionals and transport and logistic companies.
- *Value proposition.* To these groups of customers several value propositions could be made, with the main one being ‘data for all.’ In delivering its key messages, OTN should emphasise access to fresh, high quality harmonised data; easy-to-use services conducive to new service creation (e.g. GIS applications); available expert advice and of course the unique nature of OTN solution that acts as single point of contact for all transport-related data in a city or region. Also, since there are currently not many platforms that specialise in supplying transport and traffic related data either for free or at a cost, the post-funding management team would be well-advised to emphasise this aspect of OTN solution.
- *Customer interaction.* Different communication techniques would need to be used to reach this type of target audience and maintain a long-term relationship with it. In addition to attending special events (e.g. GIS conferences, hackathons) and using traditional communication channels such as blogs, newsletters and social media OTN post-funding management team would be well-advised to invest in a comprehensive FAQ section with additional video tutorials and step-by-step guides for website visitors. As far as developers in particular are concerned, OTN platform's

capacity to harvest data from many different sources may in itself be a powerful pull factor that will make them want to visit the platform time and time again.

- *Activities and resources.* As regards inputs required to sustain OTN as an open source solution and maintain its value proposition to the target audience, continuously updated datasets, committed contributors (e.g. developers, brand ambassadors), IPR ownership license, in-kind and technical expertise from partners - all have to be considered. Ultimately, these activities would be expected to lead to the increased attractiveness of OTN solution to old and new customers alike.
- *Costs.* To support the foregoing activities OTN would need to consider different costs, which fall broadly into five categories: development, support, management/administration, IT and marketing & dissemination. The actual size of these costs will become clearer towards the end of the project when OTN datasets, tools and services reach their final stage of development.
- *Revenue.* Based on partner consultation OTN revenue sources in the open source scenario would be no different from those of any other open source project. To cover the costs of maintaining open access to its code OTN would need to offer all or a combination of the following services at a cost: on-site installation and training, various data services (harmonisation, cleaning, modelling, advanced visualisation), custom installation, premier support, consulting, app development, hosting and project management, among others. Some partners also mentioned advertising as an alternative source of revenue.

A number of open-source web-mapping tools currently exist against which OTN would have to compete if it were to take a path in the same direction. Examples of potential competitors with similar use cases include Geomajas,⁷ Mapbender⁸ and MapFish.⁹ Comparable though they may be, these solutions provide scant information on their revenue model and pricing, which makes them not particularly useful as a financial point of reference for OTN. To get a better sense of potential revenue streams the authors had to look at competitors in the commercial sector and use their prices and services as a guide.

Table 1. Hypothetical OTN open source offering¹⁰

Product / service	Price excluding VAT
OTN Hub	Free
On-site installation & training (2-6h)	€500-1750
Hosting & technical support	€750-1200/month
Additional language pack	€600/year
App development	Depending on requirements
OTN data analyst	€98-124/hour
OTN developer	€102-156/hour
OTN project manager	€138-196/hour

⁷ <http://www.geomajas.org/geomajas>

⁸ <http://mapbender3.org/>

⁹ <http://www.mapfish.org/>

¹⁰ The pricing is based on the comparative analysis of GIS and data solutions providers like Esri and Socrata

2.2 Freemium

Internet has revolutionised many things, including geographic information systems (GIS). The creation of Xerox PARC Map Viewer in 1993 marked the beginning of Web GIS era¹¹ in which GIS technologies became more accessible to people in their homes, offices and, more recently, even on the go. The successful run of GIS in a web browser showed that it was possible to run GIS from any computer without having it locally installed - an advantage that desktop tools do not have.

Currently many online platforms exist that can produce more than just pretty maps, although conventionally GIS was used to make many different maps using different scales, themes and symbols. Analytical functionalities inherent in most GIS applications make the latter particularly useful for identifying hidden patterns and relationships - things that may not be readily apparent when using other statistical packages like Excel. Advanced features, however, are not usually available to users free of charge. Typically, freemium tools have several account types that vary in price. Free accounts offer to users the lowest storage space and the lowest number of layers available for mash-ups. They provide limited functionalities in terms of data analysis and visualisation and their format support is also limited. Advanced querying, geolocation, password protection, data synchronisation and technical support are among other things unavailable to free account holders.

If OTN is to become a freemium GIS platform it would need to consider the composition of each price plan as well as all the elements of the business canvass - that is, target audience, value proposition, customer interaction, activities and resources, costs and revenue sources. Using input from partner consultation this section looks at the business canvass elements of the freemium scenario, and is available in table view in the Freemium.

- *Target audience.* Users of freemium platform could be individuals (e.g. students, researchers) looking for a free or cheap way to create a visually appealing maps quickly and easily. It can also be businesses and public institutions, or different departments thereof, that are prepared to pay extra for expanded functionalities and services.
- *Value proposition.* To appeal to a broad user base OTN would need to offer a reliable basic account with relatively powerful tools for non-paying customers and a noticeable value for money for the paying ones. Access to open data which is aggregated, harmonised and ready-to-use is another key message that should be conveyed to both paying and non-paying customers.
- *Customer interaction.* To reach and maintain long-term relationship with this target audience OTN could use the same channels and techniques as in the open source scenario. New ones, however, would also need to be considered. For example, OTN could reward users who introduced friends to the platform or created the most popular map composition with a free price plan upgrade or a limited free access to some premier services. Special deals whereby certain premium plans can be tested free of charge for a limited period of time is another way of luring in more paying customers to the platform. Additionally, account managers may prove particularly useful when OTN reaches the critical mass of customers, thus ensuring that everyone has access to a single point of contact capable of offering personalised service and advice when they are needed most.
- *Activities and resources.* In terms of inputs needed to sustain freemium model, OTN team would have to ensure that basic account is stable and functioning well and that it has the right amount of bite-size features that can continuously attract new clients while at the same time being limited in their scope so as to encourage migration to premium plans. Ongoing competitor analysis is needed to make sure that OTN is not lagging behind other players as regards price point, account features and technical sophistication.

¹¹ Pinde Fu and Juilin Sun (2010). *Web GIS: Principles and Applications*. ESRI Press. California

- **Costs.** The costs of maintaining a freemium solution would be similar to those identified in the open source scenario: development, support, management administration, IT and marketing & dissemination. Some partners highlighted that costs for certain tasks like development would be higher than in the open source model since a lot more of this type of work would need to be done in-house. Additionally, reliable hardware infrastructure will inevitably increase the cost of maintenance and support - something that partners will need to factor in when making cost projections for the post-funding period if this scenario is adopted. As far as new costs are concerned, design and construction of SaaS platform for premium services are likely to be the main elements that will incur them.
- **Revenue.** OTN would need to provide stand-alone paid services - some of them may be free to more advanced account holders - to subsidise the bulk of free accounts registered on the platform. These services include but are not limited to data sourcing, data harmonisation, spatial analysis, on-site installation and configuration, training, hosting and project management.

An important thing to bear in mind when considering freemium as a business model is that none of the analysed competitors specialise in a particular type of data. True, they all have data libraries, but data per se is not their unique selling point - MangoMaps, for example, has only three datasets in its sample library; mapping and visualisation functions are, together with a range of expanded features available only to premium account holders. The reason for data neutrality must be explained by the competitors' desire to appeal to a broad user base rather than just those who seek datasets focusing on a particular policy area. Different priorities must also be at play here - rather than emphasise *what* (i.e. data) the competitors lure customers in with *how* (i.e. how this data can be stored, visualised, managed). For OTN, if it chooses to opt for the freemium model, this means that a question about rescinding its focus on transport data will become inevitable. Whether the status quo will prevail is something that the core commercialisation team will need to decide in the coming months.

Table 2. Hypothetical OTN freemium price plans¹²

	Basic	Professional	Business
General			
Cost	Free	€49/month	€99/month
Time	Unlimited	30-day free trial	30-day free trial
Datasets	Unlimited	Unlimited	Unlimited
Storage	500MB	2GB	5GB
Layers	Unlimited	Unlimited	Unlimited
Format support			
Vector data (SHP, CSV, KML, GeoJSON)	✓	✓	✓

¹² The composition and structure of price plans are based on comparative analysis of similar solutions, namely MangoMaps and CartoDB

Raster Data (GeoTIFF)			✓
Map tools			
Query		✓	✓
Measure		✓	✓
Print		✓	✓
Geolocation			✓
Location analysis			✓
Streetview			✓
Coordinate display			✓
Basemap switcher			✓
Visualisations			
Heatmap maps	✓	✓	✓
Thematic maps	✓	✓	✓
Category maps		✓	✓
Clustered Pushpins			✓
Security			
128-bit encryption	✓	✓	✓
Customisation			
Custom logo		✓	✓
Custom colour scheme		✓	✓
Custom layout		✓	✓
Watermark	✓		

Data management			
Add/edit/delete features		✓	✓
Edit geometry/attributes			✓

2.3 White label

Organisations seeking a near-complete control over the look and feel of the GIS product tend to opt for white label solutions such as those provided by Esri,¹³ Astun Technology¹⁴ or Getmapping.¹⁵ These solutions can be customised based on customer’s needs, which for some can be a public-facing portal for accessing transport data, and for others an improved inter-institutional communication, collaboration and decision-making. Whatever the needs, white-label products offered by companies active in this field have a modular architecture that enables customers to easily add new services and functionalities and also to integrate their systems with other servers - a process that helps promote data sharing culture across organisations.

Different options exist for generating revenue from the sale of white-label products. Esri’s ArcGIS Online, for example, offers an organisational plan that costs £2,000 plus VAT. This subscription allows access to up to five registered users and 2,500 worth of service credits. The latter are consumed when certain Esri cloud services are used, such as geocoding or spatial analysis, and can be bought in blocks of 1,000 for £82.50 plus VAT. Technical support is included as part of the subscription which must be renewed on a yearly basis.

Astun’s iShare in the Cloud (iSiC) solution is available in two versions: public and enterprise. iSiC public includes iShare Maps with public facing mapping portal and developer API, and Astun data services. iSiC enterprise includes the following additional options: access to iShare spatial data warehouse, connections for desktop GIS clients, such as MapInfo and QGIS, access to local systems through secure VPN and iShare GIS intranet, and user management via Active Directory. The prices for iSiC public version vary depending on the type and size of the organisation. A small local authority with a population of around 100,000 must pay a quarterly fee of £2,437. Entity like Greater London Authority can expect to pay five times as much. Equivalent figures for iSiC enterprise are £4,050 and £18,350. On-site training and consultancy are available at an extra cost.

If OTN were to emulate ArcGIS or Astun it would still need to consider the same set of business canvass elements as in the two other models. Presented below is partners’ vision of OTN according to white label scenario, also available in table view in White Label.

- *Target audience.* Customers of OTN white label solution would be public institutions, such as local or regional authorities, and large businesses. The limited nature of customer segment is largely determined by the cost of white label products and services wrapped around them. SMEs, for example, have neither need nor cash for a sophisticated solution that comes with a hefty price tag.
- *Value proposition.* If OTN were to enter this niche market it could consider several value propositions to its potential customers, including improved transparency and accountability through a public-facing GIS portal, better data-sharing culture within and between organisations thanks to GIS intranet and connectivity with external servers, and easy access to all data stored in one master repository which can be accessed from different clients.

¹³ <http://www.esri.com/software/arcgis/arcgisonline/purchase>

¹⁴ <https://astuntechnology.com/ishare/>

¹⁵ <http://www1.getmapping.com/GIS/Businesses>

- *Customer interaction.* White label customers require special attention. A team of dedicated account managers would need to be created to look after all existing relationships. To reach out to new customers sales and marketing team would need to attend special events focused on municipal and smart city services, targeting city and company representatives who understand the benefits of white label solutions and, more important, are prepared to pay for them.
- *Activities and resources.* Although white label is not a feasible option for OTN in the short to medium term the consortium could prepare for a competition in this market by taking a series of steps which include (a) building awareness around OTN solution and its benefits in existing cities and beyond; (b) testing white label offerings on current OTN adopters; and (c) investing in R&D with the view to bringing its IT systems in line with those of competitors.
- *Costs.* The costs of running a company specialising in white label GIS products and services include hosting, maintenance and support, development, sales and marketing, management administration, accounting and HR.
- *Revenue.* The sale of price plans, service credits and extra services would generate main income for OTN if it were to become a company akin to ArcGIS or Astun. For example, OTN could offer a basic white label offering that would include a public-facing mapping portal, developer API, normal (i.e. business hours only) customer support and 2500 worth of service credits. The latter could be “spent” on things like data analytics (e.g. 0.25 credits for geocoding or spatial analysis) and demographic mapping (e.g. 10 credits per 1000 map requests). A fee of, say, 100 euros could be charged for another batch of service credits and the annual cost of the basic price plan could be between €10,000 and €60,000, depending on organisation’s size or the size of its population (in the case of local authority). And advanced offering would include features like GIS intranet, spatial data warehouse and connectivity with desktop clients, as well as 24/7 premier customer support. Consultancy and other services that fall outside the scope of introductory training would need to be paid for separately.

In considering this business model it is important to keep in mind that competition with the likes of ArcGIS Online and Astun is as lucrative as it is challenging. White label products for private organisations or public institutions can generate significant financial returns for a company that sells them. However, it goes without saying that the company must have sufficient technological resources and extensive GIS expertise to be able to enter, let alone compete in, this specialised market. If OTN were to take a shot at this opportunity it would need to provide a full palette of options that typically accompany a solution of this type, including a comprehensive cloud infrastructure, spatial data warehouse, GIS intranet, state-of-the-art public facing mapping application and an API that enables organisations to share data with citizens while reducing interaction costs.

Table 3. Hypothetical OTN white label offering: Basic v. Pro¹⁶

	OTN White Label Basic	OTN White Label Pro
Public facing mapping portal	✓	✓
Developer API	✓	✓
GIS Intranet		✓

¹⁶ Based on comparative analysis of Astun and ArcGIS offerings

Data warehouse		✓
Desktop client connectivity (ArcGIS, MapInfo, QGIS)		✓
Support	Business hours	24/7
Service credits	2,500	10,000
Secure VPN		✓

Table 4. Hypothetical OTN white label offering: Basic price¹⁷

Organisation type	Population	Quarterly fee
Small municipality	Up to 125,000	€2,500
Medium municipality	125,001 to 250,000	€6,125
Large municipality	250,001 to 500,000	€9,650
Regional authority	500,001 to 100,0000	€12,050
National organisation	Over 100,0000	€15,000

Table 5. Hypothetical OTN white label offering: Pro price¹⁸

Organisation type	Population	Quarterly fee
Small municipality	Up to 125,000	€5,200
Medium municipality	125,001 to 250,000	€8,550
Large municipality	250,001 to 500,000	€11,700
Regional authority	500,001 to 100,0000	€15,325
National organisation	Over 100,0000	€17,500

3 Business model: narrowing down

The previous chapter looked in more detail at the three business models proposed in the market research deliverable: open source, freemium and white label. Using input from partner consultation a descriptive set

¹⁷ Based on comparative analysis of Astun plan

¹⁸ Ibid.

of six business canvas elements was provided for each model to help gauge their fit with OTN vision and capabilities. One immediate conclusion that can be drawn from partner consultation is that white label is not a feasible scenario for OTN, at this stage of development at least, because of the complex nature of white label-type products and services. Nevertheless, rather than burying these aspirations completely OTN partners and the post-funding management team should see this model as an ideal type, a long-term goal that can be achieved in several years' time if the required amount of investment is made in OTN's IT infrastructure, technical expertise and human resources. On the two other models partners' opinions were almost equally split. A poll conducted at the end of consultation revealed a slightly higher preference for open source model than a freemium one - ten votes versus seven, respectfully. As well as asking partners to cast a vote, the communications team asked partners to explain why they think a particular model is the most suitable. Their answers are presented in the table below.

	For	Against
Open Source	<ul style="list-style-type: none"> All components of the OTN hub solution except one are open source and non-proprietary. The only OTN component that is not fully open source yet is Micka, the metadata catalogue developed by the Czech partner HSRS. However, the company is currently considering making the catalogue freely accessible so it is likely that by the time OTN reaches sustainability phase it will be non-proprietary like all other components Open source business model can be particularly attractive to developers and data holders, and to GIS experts as well As an innovation project OTN should strive being open-source because it enables GIS experts, developers and public authorities to play an important and valuable role in the growth of OTN solution Through the development of innovative applications the project, its functionalities and services can be significantly expanded, allowing OTN to reach new audiences and attract different stakeholders The model will encourage providers, or would-be providers of open source data, to share it with OTN and subsequently promote the latter in their community 	<p>Stable and sufficient income flow may be hard to secure. Finding interested advertisers and organising training can be really time consuming and not always profitable</p>
Freemium	<ul style="list-style-type: none"> The model is well adapted to OTN skills and structure as it would, on one hand, further the exploitation of tools and mash-ups that can be created on the Hub and, on the other, let the consortium put in place an offer around business support with less commercial pressure than would be the case if open source model was adopted This model would exploit the needs of developers and start-ups, offering rich datasets at a really competitive price point 	<p>The model may partly cover costs, however OTN would first need to attract the critical mass of users in order to have a small percentage of them paying for premium account</p>

Table 6. Open source v. freemium: for & against

The table above shows that open source model has more arguments for it than the freemium one does. Together with the result of the vote this points to this model's greater appeal among partners. However, neither the arguments listed in the table nor the result of the vote were sufficient to sway the opinion of the core commercialisation team indubitably in open source's favour. For one, open source won by a margin of only three votes. For another, the proposal by some partners to consider conflating the two models resonated strongly with the members of core commercialisation team, who in turned agreed to explore this possibility further in the coming months. So it will not be this plan but the final one where the choice of the final business model is going to be presented. The final plan will also feature an updated strategy for the exploitation of OTN results. A mix of preliminary non-commercial exploitation activities that can help OTN results remain impactful in the pilot sites and beyond is described in the next chapter. Some of these exploitation activities, such as cooperation with Open Geospatial Consortium, a standard's body, will evolve considerably in the coming months. As OTN solution matures and reaches new heights new avenues for exploitation will emerge, necessitating an update of the planned activities described below.

4 Exploitation strategy

A successful exploitation strategy renders project results sustainable in the long-run and reinforces their impact beyond the scope of the original solution. When properly implemented, it can broaden the base of the original adopters and encourage existing ones to use the results more often. Two strategies - mainstreaming and multiplication - are usually used in tandem to achieve these outcomes. Mainstreaming is the process of bringing project results to the attention of appropriate decision makers, opinion-formers and other relevant actors in national or European systems. A well-designed mainstreaming strategy can inform policy and practice and can convince new actors to replicate project achievements in their respective environments. By contrast, multiplication is the process of transferring projects results to new beneficiaries as well as encouraging existing ones to use the results more often. It is not always easy to distinguish the effects of mainstreaming and multiplication activities on the end result of the project in question. Because of this, the same channels are used interchangeably to implement both strategies. Several such channels are described below. Input for this section was taken from individual exploitation plans provided by partners during the consultation stage that preceded this deliverable.

- *Dissemination.* The dissemination of OTN results is as important after the end of the project as it is during its lifecycle. Most partners mentioned national and international events as the most likely avenues for exploitation in the post-funding period. Some also indicated peer-reviewed articles and conference papers as well as various traditional means such as social media, newsletters, blogs, press releases and native websites as alternative options for exploitation.
- *Network organisations.* Network organisations can be used not only for reaching out to new beneficiaries but also for preserving project results in a way that is most conducive to sustainability. Several OTN partners are members of special clubs whose objectives include, inter alia, the preservation and promotion of the results of legacy projects. An example of one such club is Plan4all association of which the University of West Bohemia (UWB) and Help Service Remote Sensing (HSRS) are members. The association was set up by two (finished) projects - Plan4all and Plan4business - to act as a driving force for the sustainability of their results well after the final review. UWB reiterated its commitment to transfer OTN results to Plan4all association so as to ensure maximum uptake and re-use of its results in the post-funding period.
- *Standards bodies.* Standard setting organisations like OGC, of which HSRS is a member, are key influencers in the world of geospatial data and services. Working with them presents many opportunities for collaborators to influence the practices of individuals and entities around the world. It is small wonder then that OGC technical committee's acceptance of OTN proposal to start an ad-hoc working group on metadata standards for GEO and non-GEO data was greeted with much

enthusiasm by the consortium. The first ad-hoc meeting is slated for spring 2016 and is going to take place in Washington DC, US. Cooperation with OGC is an important step forward for OTN that seeks, inter alia, to influence data standards in pilot sites and beyond.

- *Product portfolio.* This channel involves including OTN elements into the product portfolio of individual partners to promote OTN-type offerings to persons or entities looking for competitive, easy-to-use solutions for data harmonisation, visualisation and analysis. Technical partners, namely Intrasoft and ATC, highlighted solution portfolio as their main channel for exploiting OTN tools and services. Closely bordering commercial exploitation, this channel can significantly raise the visibility of project results as sales and marketing teams of project partners actively engage in promotional activities while seeking out new opportunities for business development.
- *Teaching curricula.* Teaching curricula can serve as an effective channel for inculcating OTN principles in students interested in GIS, open data, transport solutions, stakeholder engagement and data harmonisation and visualisation techniques. OTN consortium includes academic partners who highlighted their willingness to weave OTN results into the teaching courses and curricula of their institutions. If this will come to pass OTN elements, data and services will be promoted to new beneficiaries in the student cohort who will be encouraged to use them in their projects and coursework.

5 Conclusion and next steps

This deliverable attempted to create a canvas on which more concrete contours of the post-funding commercialisation plan can be easily painted by OTN partners later on in the project lifecycle. It did so by narrowing down the number of business model options to two and by outlining preliminary channels for the exploitation of project results by OTN partners after the final review. The two contenders for OTN business model are open source and freemium. White label solution as provided by the likes of ESRI and Astun was deemed by project partners too demanding technologically, financially and skills-wise and therefore not worth investing in in the short to medium term. The other two models became finalists because they were seen as being more closely aligned with OTN's vision and spirit and because technologically they would be easier to implement and manage. Also from the financial point of view freemium and open source models were seen as a less risky investment than white label, hence the latter's exclusion. Which of the remaining two will be chosen in the end will depend on the decision of the core commercialisation team, a group comprising project partners who have agreed to steer the direction of OTN commercialisation plan in the final months of the project. The team did not make a final decision as regards most suitable business model at this stage because, although open source received a higher number of votes, the margin of three was not heavy enough to anchor the team's opinion in its favour. Another reason why a decision was deferred is because a proposal by HSRS and UWB to consider a hybrid model resonated strongly with the rest of the team, who showed great interest in exploring this option further in the coming months. During this period the core commercialisation team will be working assiduously on the second version of this deliverable which will feature a detailed business plan for the chosen model, a plan to go to market with clear management responsibilities, targets and costs, and an updated version of the exploitation strategy described in the previous chapter. To guide itself in the final leg of this journey the team has prepared a plan detailing steps that need to be taken between now and month 36 to make OTN commercialisation plan a success.

- M28 - Running a business model workshop with all partners to define commercialisation and go-to-market strategy for OTN
- M25-30 - Using the results of segmentation analysis to survey possible OTN adopters and ambassadors (see Appendix B: OTN audience segmentation)
- M24-36 - Using Pilots' feedback to refine OTN product portfolio
- M24-36 - Attending local, European and international events to help OTN results remain sustainable through mainstreaming and multiplication
- M24-36 - Holding monthly calls with members of the core commercialisation to discuss recent progress and agree and future steps
- M32-36 - Using Proof of Concept results to update relevant sections of the final commercialisation plan, in particular the Exploitation Strategy
- M36 - Final commercialisation plan featuring, inter alia, a go-to-market strategy with clear responsibilities, targets and costs submitted to EC

Appendix A: Business canvases

Open Source

Target audience	Value proposition	Customer interaction	Activities & resources
<ul style="list-style-type: none"> • developers • public institutions, including municipalities and planning offices • IT providers • GIS professionals • transport and logistic companies 	<ul style="list-style-type: none"> • 'data for all' • access to fresh, high quality harmonised data • easy-to-use services conducive to new service creation (e.g. GIS applications) • available expert advice • single point of contact for all transport-related data in a city or region 	<ul style="list-style-type: none"> • special events (e.g. GIS conferences, hackathons) • blogs, newsletters, social media • Support and advice, including through FAQ section, video tutorials and step-by-step documentation 	<ul style="list-style-type: none"> • continuously updated datasets • committed contributors (e.g. developers, brand ambassadors) • IPR ownership license • in-kind and technical expertise from partners
Revenue		Costs	
<ul style="list-style-type: none"> • on-site installation and training • data services such as harmonisation, cleaning, modelling, advanced visualisation etc. • custom installation • premier support • consulting • commercial app development • project management • advertising • hosting 		<ul style="list-style-type: none"> • development • support • management/administration • IT • marketing & dissemination 	

Freemium

Target audience	Value proposition	Customer interaction	Activities & resources
<ul style="list-style-type: none"> • students • researchers • businesses • public institutions or different departments thereof 	<ul style="list-style-type: none"> • reliable basic account with relatively powerful tools for non-paying customers • noticeable value for money for the paying ones • access to open data which is aggregated, harmonised and ready-to-use 	<ul style="list-style-type: none"> • free price plan upgrades • limited free access to some premier services • special deals whereby certain premium plans can be tested free of charge for a limited period of time • account managers to provide personalised service and advice to paying customers 	<ul style="list-style-type: none"> • ensuring that basic account is stable and functioning well • ensuring that basic account has the right amount of bite-size features that can continuously attract new clients while at the same time being limited in their scope so as to encourage migration to premium plans • ongoing competitor analysis with a special focus on price point, account features and technical sophistication of other market players
Revenue		Costs	
<ul style="list-style-type: none"> • price plans • data sourcing • data harmonisation • geocoding • spatial analysis • on-site installation and configuration • training • hosting • project management 		<ul style="list-style-type: none"> • development • support • management/administration • IT • marketing & dissemination 	

White Label

Target audience	Value proposition	Customer interaction	Activities & resources
<ul style="list-style-type: none"> public institutions (e.g. local or regional authorities) large businesses 	<ul style="list-style-type: none"> improved transparency and accountability through a public-facing GIS portal better data-sharing culture within and between organisations thanks to GIS intranet and connectivity with external servers easy access to all data stored in one master repository which is accessible from different clients 	<ul style="list-style-type: none"> a team of dedicated account managers to look after existing relationships new business development team 	<ul style="list-style-type: none"> building awareness around OTN solution and its benefits in existing cities and beyond testing white label offerings on current OTN adopters investing in R&D with the view to bringing its IT systems in line with those of competitors
Revenue		Costs	
<ul style="list-style-type: none"> price plans service credits premier support consultancy project management training data services 		<ul style="list-style-type: none"> hosting maintenance and support development sales and marketing management administration accounting HR 	

Appendix B: OTN audience segmentation

The communications team will use the results of audience segmentation to identify and survey people, companies, projects and institutions that may become potential OTN adopters or ambassadors. Audience segmentation was performed on OTN Twitter and LinkedIn followers, yielding two interesting sets of results.

OTN has 371 followers on Twitter and 161 on LinkedIn. Yet despite being more numerous OTN followers represent only 33 countries - 14 countries less than what LinkedIn ones represent.

When comparing the top 10 countries from which OTN followers (not related to the consortium) come, more dispersion is observed within Twitter audience than within a LinkedIn one.

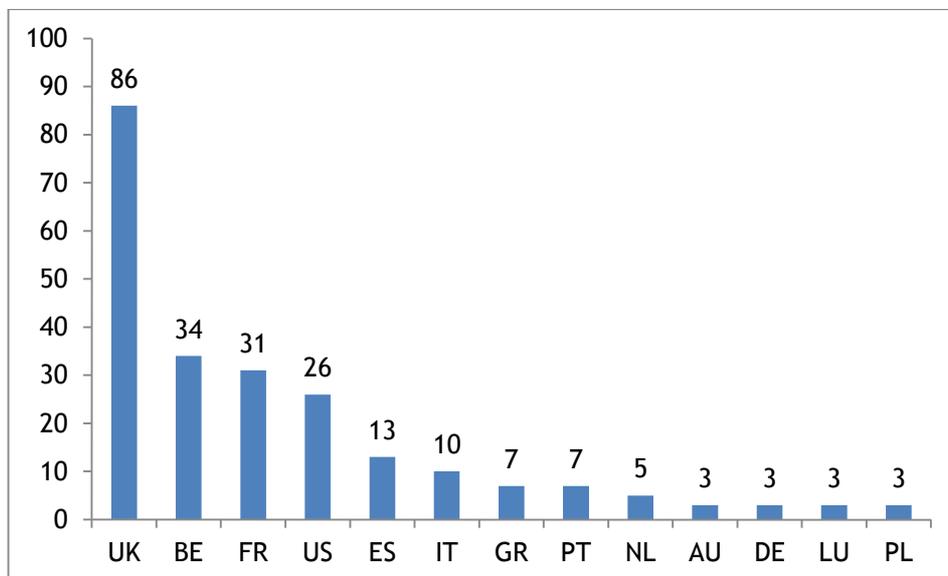


Figure 2. OTN Twitter: Top 10 countries by number of followers

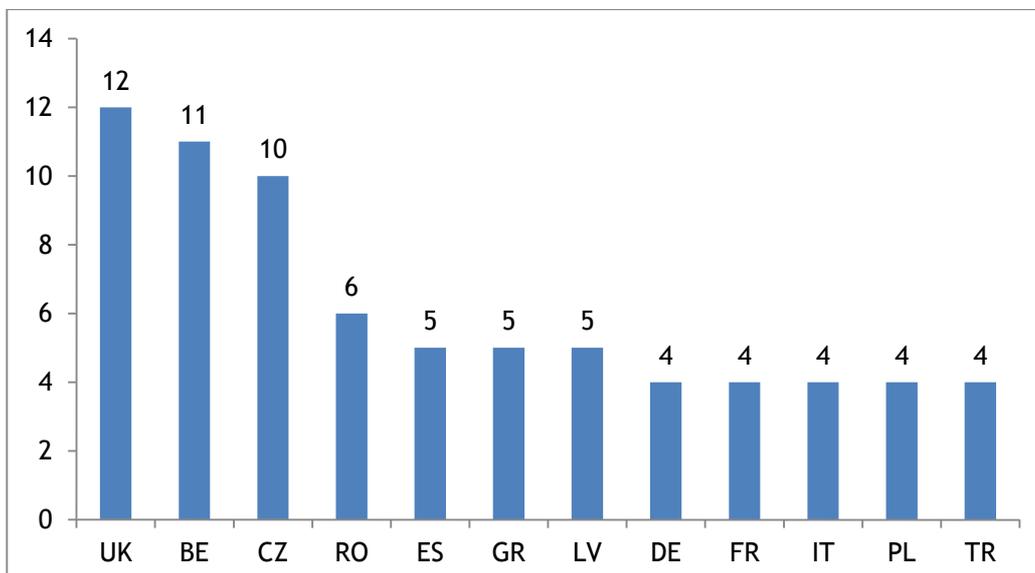


Figure 3. OTN LinkedIn: Top 10 countries by number of followers

OTN Twitter followers include, in the descending order, individuals, companies, projects, news outfits and events.

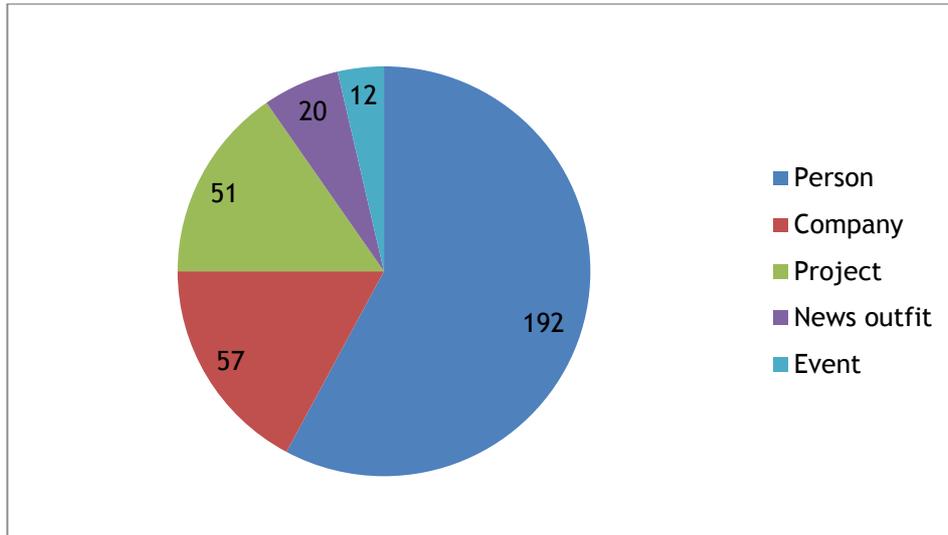


Figure 4. OTN Twitter: Top five follower categories

The largest OTN follower group on LinkedIn works in the private sector, followed by academia, government, non-profit and the public sector.

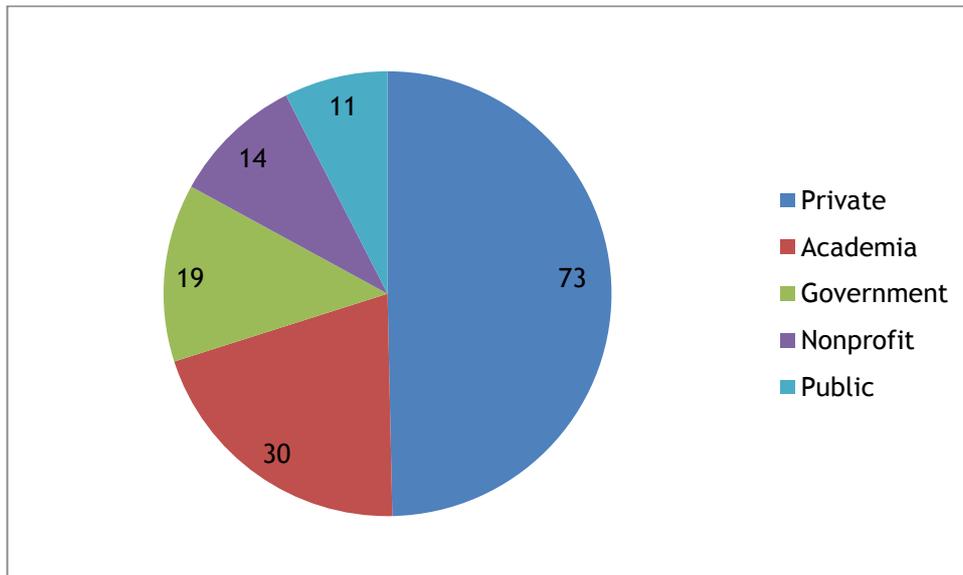


Figure 5. OTN LinkedIn: Top five follower categories

OTN followers on both channels come from a variety of different backgrounds. This difference is vividly encapsulated by the two word clouds presented below.

Appendix C: Individual exploitation plans

	Operational importance of OTN	Planned exploitation elements	Planned exploitation activities (mainstreaming)	Planned exploitation activities (multiplication)	Resources to be committed	Anticipated outcomes of exploitation activities
21c	Participation in OTN project can help 21c further cement its reputation as an SME with a well-rounded knowledge of open data, user engagement strategies and challenges facing transport and GIS sectors. With this badge 21c should find it easier to join new partnership opportunities e.g. H2020 calls focused on any of the following: mobility, smart city, open data, citizen-driven innovation and co-creation	The platform and its tools for uploading, visualising and analysing geospatial information. OTN-inspired Living Lab approach will also be exploited in all future work where user engagement is a formal requirement	<p>Promoting OTN results at different events that the company attends regularly in Europe and beyond</p> <p>Using OTN tools during hands-on workshops aimed at promoting data literacy, awareness about open data and non-commercial mapping and visualisation tools</p>	21c has built strong links with some OTN pilots (e.g. Birmingham) through participation in projects like MyN and ECIM and will leverage these relationships to help OTN expand its user base	21c team will dedicate its time and effort to ensure all envisaged exploitation activities reach the desired objectives in the post-funding period	<p>More people, SMEs and municipalities using OTN solution to address their own needs</p> <p>Greater understanding among decision-makers at national and EU level about the benefits of Open Data and freely accessible tools that can harmonise and visualise complex information hitherto available only to the expert community</p>
ATC	ATC has already partners from governmental sector such as cities, ministries and public organisations that could potentially be customers of OTNs products and services	The platform	We hope to add OTN to our solutions portfolio and include it in our marketing and sales activities	We hope to add OTN to our solutions portfolio and include it in our marketing and sales activities	Our sales, marketing and development teams	Enrich our solutions' portfolio and potentially increase the company's revenues

D8.5 Commercialisation Plan Draft

CEN	OTN will potentially off us the ability to engage with other transport providers in the region to provide	The API's and the core platform	Ongoing networking and communications	Researching more OTN data sources	Time and an agreed budget	Improved take up of public transport, more economical car journeys
CORVE	OTN can help us to expose the Flemish open data to a new community of inventive app builders. They can build market-oriented apps in a better more inventive way than we as a government organisation can	The OTN hub Advanced visualisation API's to make complex open data usable for citizens (for ex. Flemish traffic accidents)	Not decided yet. We will work further on making our open data interoperable (data and metadata) and we will use the concept of OTN in that respect	Ditto	Ditto	Increasing availability and use of open data Increasing number of professional apps using open data Increasing number of combined services build on top of open data sets Increased focus on making open data available for government organisations
EDIP	For EDIP as a private company is a work for OTN very inspiring, it is our first experience to work for European cities (We usually work for towns and cities, but only within the framework of Czech Republic). In these way we have chance to offer our services through the Europe. And the	In this project is EDIP specialized mainly for predicting traffic volume and for making traffic models and visualisation, so for EDIP are important all the data describing the transportation network	EDIP is a company dealing among other things with solving research traffic-engineering problems, so mainly for this reason is important to publish specialized articles in professional refereed Journals. One of these Journals we produced by ourselves,	The next part of EDIPs work is providing the specialized traffic-engineering services to the cities and towns, so this is a good opportunity to mention the possibilities of OTN project and explain how to use the results	EDIP is active in providing expertise and research in traffic-engineering. The results is able to offer to public and expert community	The main benefit could be that all the data dealing with traffic are acceptable by simply and understandable way through the all Europe. It is easy to work with it and the cities and towns can offer for their

D8.5 Commercialisation Plan Draft

	cooperation with the other partners in OTN project is useful as well and we can see there are some opportunities to cooperate with some of them		so we can easily inform about project results and explain the advantage of OTN project			citizens more services and based on these datasets
Exigen	Exigen is private software development Company and we are interested in finding new partners, markets and technologies.	The core platform and API's for geospatial information visualising and analysing.	Using and promote OTN tools in software development projects in which Exigen Services Latvia is participating	Using and promote OTN tools in software development projects in which Exigen Services Latvia is participating.	Software developers	Improve Exigen project portfolio with OTN tools and experience.
HSRS	HSRS is well established on Czech market. The intention is to enter markets in other countries in Europe and also outside. We are looking for cooperation to offer our services in other countries	Platform, and also all components of Platform. HSRS is using mixture of all three strategies offering Open Source, Offering Freemium Services but also provide integration for customers.	HSRS is planning to use number of option as cooperation with OGC, Plan4all membership, and GEOSS activity to enter global market but also trough cooperation with other partners.	We see also as extremely useful MoU with other project, because it will extend out exploitation potential. We are active in organising end user workshop, Hackathons and other activity supporting our product. We see as important participation on social networks	Open Source tools developers effort, marketing effort	We expect our profit from offering service through OTN platform, but OTN also helped us to improve our tools, which could be easy integrated into multiple solutions
iMinds	iMinds is an independent research organisation in Flanders, Belgium; and has a dual role in the project. iMinds MMLab is responsible for the DataTank integration and part of the metadata harmonization discussions, while iMinds SMIT is leading the	Academic findings in implementing the Living Lab methodology for scientific publications; validation of implementation of DataTank into OTN architecture - knowledge and	Promotion of usage of open data and Living Lab methodology in Flanders, e.g. at the biggest innovation conference in Flanders (iMinds the Conference)	n/a	Dissemination effort in terms of publications, and reaching out to new potential users in the proof-of-concept phase (e.g. contacts with ENOLL)	Social impact through the OTN solution: easy accessible to use solutions in transport for different citizen groups ; knowledge building on open data & open

D8.5 Commercialisation Plan Draft

	evaluation of the project and pilots using the Living lab methodology. OTN will offer us potentially new contacts with city administration who are interesting in applying open innovation paradigms in the co-creation of solutions	experience for further validation				innovation in smart city context; further exploitation of the DataTank
Intrasoft	INTRASOFT International has already established partnerships with public organizations and local authorities who can be potential customers of OTN solution and services	The integrated OTN platform which can potentially reinforce INTRASOFT's solutions portfolio through the offering of innovative and specialized applications and services not yet widely present in the market	Ditto: add OTN in our solutions' portfolio through the offering of innovative and specialized applications and services not yet widely present in the market	Ditto: add OTN in our solutions' portfolio through the offering of innovative and specialized applications and services not yet widely present in the market	ICT consultants, developers	Add OTN in our solutions' portfolio through the offering of innovative and specialized applications and services not yet widely present in the market and increase the company's revenues
ISP	New business opportunity for ISP. The SME is interested in establishing new partnerships. The ISP partner network can be an interesting marketing channel for OTN	Open Source GIS platform to harmonise, visualise and mash-up geo-data	Dissemination and marketing of project results at any occasion (conference, workshops etc.) Search for potential clients (for the white-label option)Use of our network to market the OTN product	Promo deals for existing OTN users (access to premium services), rewards for attracting new users etc.	Committing ISP resources for high-level management, business strategy development, and management of the technical team. Participation in the sales team activities	Spreading knowledge about open & geo-data Availability of a simple online tool to harmonise, visualise and mash-up geo-data for end-users
Issy	It might be a showroom for the City of Issy-les-Moulineaux	For us, OTN is a potential showroom for City datasets, consequently it would be fed by City data	Issy might help the project on communication purposes and to lead Cities to showcase OTN	Issy might help the project on communication purposes and to lead Cities to showcase	Support on Communication and data feeding	The real benefit would be to give tools to developers and start-ups, making easier their

D8.5 Commercialisation Plan Draft

			in National and European events	OTN in National and European events		business
Liberec	We are governmental body, we hope that people will use our data and application for crisis management that will arise from this project	Metadata catalogue to publish data, occasionally Map Creator to publish maps, and of course we will support our mobile app	Introduce this solution to colleagues, promote them for example on public GIS days	We will use services from OTN that will be stable and reliable. Also if it is needed reuse tools from the project	Administrative and political support	Work not done several times. Also awareness of people about certain important issues
UWB	UWB as a public university is mainly interested in finding new partners for innovative and applied research in the field of geomatics. OTN expanded this network of partners and set up a close cooperation with many of them	UWB will use mainly the aggregated data including data specifications (data models). Furthermore, UWB will exploit methodologies for predicting traffic volume and tools and algorithms for data analysis/visualisation	UWB will mainstream the knowledge gained in OTN into teaching courses and curricula. The data and services will be advertised between students who will be encouraged to use them for their theses and other works	UWB is a member of the Plan4all association, which is a non-profit association focused on open data for planning purposes. Two past projects including Plan4all and Plan4business set up this association which is preserving the project results. UWB would like to transfer the knowledge and data acquired in OTN into this association so it can be further maintained and reused	UWB as a university doesn't have financial resources to support the follow up activities. However, as a member of Plan4all, UWB is active in providing expertise for further development of the association. The Plan4all association actively collaborates with existing EU projects on open data maintenance and is searching for public and other funding	The main benefits will be an access to harmonised pan European datasets in the transport domain. This might not directly of benefit to cities as public authorities, but mainly for citizens, volunteers, app developers, students, researchers and other communities