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BIRGIT – training on Building InfoRmation
models integrated with Geographical
InformaTion

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PR2 – Localization of existing courses

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Short Description:

The goal of this activity is to localise existing educational materials, according to specific needs of the training providers with the idea of reusing these adapted materials in their training offers. The localisation processes focus on adapting free and open licensed educational materials and deal mainly with translation of text lectures by using the Digital Europe eTranslation service. In total 3 courses were translated to English and eight courses were localised and translated to local languages.

Keywords:

BIRGIT Project, BIM and GIS integration, vocational training, translation, localisation

Dissemination Level

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RE	Restricted to other programme participants (including Commission services and project reviewers)	
CO	Confidential, only for members of the consortium (including EACEA and Commission services and project reviewers)	

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1. Introduction

1.1. The BIRGIT project

Both in the public and private sectors, the construction and geospatial industries are demanding new approaches for urban planning, asset design and management. Digitization is one of the key developments to reduce costs, environmental impact and carbon footprints. One of the fundamental approaches in this development is by bringing together Building Information Modelling (BIM) and Geographic Information Systems (GIS) technologies. By connecting construction and geospatial information management, we can increase the efficiency of the construction processes, improve transparency and reliability, and better manage assets such as buildings, roads, and other essential public facilities.

There is a lack of skilled personnel and VET courses addressing the competencies required to achieve BIM-GIS integration. Existing VET programs across Europe for civil engineers, architects, land surveyors, geographers and other professionals working on the built environment and urban management, usually include courses in BIM or GIS, but not their intersection. As a consequence, professionals of these domains rarely know how to solve problems where a unified approach to BIM and GIS data management are needed.

The industry is however moving fast and new technologies are now being implemented within private companies and public authorities. This development clearly characterises one structural problem in the current education system, namely that new technologies and collaboration patterns put new requirements on education providers, who often have difficulties in coping with these requirements and a fast changing society.

The project's main objective is to bridge the gap between supply and demand of these skills by improving the quality of the existing VET offer by providing new courses. New learning materials aiming at developing the necessary skills to integrate BIM and GIS will be developed. This material will specify learning outcomes addressing the achievement of knowledge on methods and mechanisms (mostly software tools and data modelling) but also on practical application cases. The expected general impact will be the improvement of quality of the VET programs within the partnership and the possibility of using these courses by other training providers as well.

Project results (PRs) are following:

- PR1 Industry requirements on BIM-GIS training programs and courses
- PR2 Localization of existing courses
- PR3 Development of new courses
- PR4 Testing and updating of learning material

1.2. PR2 Localisation of existing courses

The goal of this activity is to localise a set of existing courses, according to specific needs of the training providers aiming to implement the courses in their training offers. The term "localization"



means in this context that courses are translated and modified to meet national and local needs. The localisation process may include activities such as translation of text, inclusion of local data sets, localization of multimedia resources as well as other types of modifications.

The main target group of the results is training providers within the participating countries. Since all learning material will be provided under an open licence (CC) and in English as the common denominator, the potential of transferability is maximised. The main impact of the target groups will be that the training offers of the target groups are enriched and the costs for adding new courses into their curricula is expected to be reduced.

1.3. Structure of the document

The document is organised as follows:

Chapter 2 describes, at a general level, the methodology used for localising existing courses in BIM and GIS.

The development work is structured into three different activities. The first activity, led by Forma.Azione, (T2.1 – Translation of the learning material into English) is described in chapter 3. The second activity (T2.2 – Localization of data sets and text), led by University North, is described in chapter 4.

The third activity (T2.3 – Preparation of subtitles) was only partly completed. The reason was simply that the learning materials to be localised did not include any multimedia resources, so the usage of subtitles was not needed. This is described in more detail in chapter 5 and the activity leader is Ocellus. In chapters 3 – 5, the methodologies applied in each activity are described in more detail, as well as their results and conclusions. Finally, in chapter 6, the entire results are summarised and discussed together with main conclusions.



2. Methodology

As mentioned, the goal of this activity is to localise a set of courses, according to specific needs of the training providers participating in the project. The work is building on the results of previous activities, mainly PR1 where for instance the needs of the future employers are specified and existing learning materials are identified. The work was organised into three different tasks, where each task had a dedicated task leader and pre-defined goals.

The first task was T2.1: Translation of the learning material into English. Since some existing courses are given in the local languages, the corresponding learning material needed to be translated into English, at least the lecturing parts. It turned out that no practical parts were included in the learning material to be translated, leaving the question of translating exercises and assignments out of the scope. The results of this task are lectures and other written material in the English language. The leader of this task was FORMA.Azione, with contributions by Novogit, AIN, and Ocellus

The second task was T2.2: Localisation of learning material and data sets. The input to this task were the lectures produced by T2.1 and additional learning material already available in English. Similar procedures as in task T2.1 were applied, although in the opposite direction (from English to local language). The leader of this task was UniNorth, with contributions by GISIG, Ocellus, Forma.Azione and AIN

The third task was T2.3: Preparation of subtitles for the lectures. In case the lectures of the learning material were provided as recorded lectures, subtitles were planned to be added for increased usability among students having other mother tongues. This also means that the approach may be of value also to immigrant students, although that is not the prime focus of this project. Since no recorded lectures were localised, there was no need for subtitles. However, there might be a need for creating subtitles in PR3, so it was decided to move this task to that PR.



3. Translation of learning material into English

3.1. Methodology

The translation of learning material into English has been coordinated by FORMA.Azione through the following process: Input to this task was a list of existing learning materials identified in PR1. Each partner then identified which learning materials they were interested to use in their own training. This led to a first list of existing materials to be used in future training, regardless of their original language. This means that some materials were already available in English, thus not requiring to be passed through the T2.1 process.

For all other relevant learning resources being available in any partner language (Spanish and Italian), the translation process into English was carried out using the Digital Europe eTranslation service (https://commission.europa.eu/resources-partners/etranslation_en), which is a cutting-edge neural machine translation service provided by the European Commission.

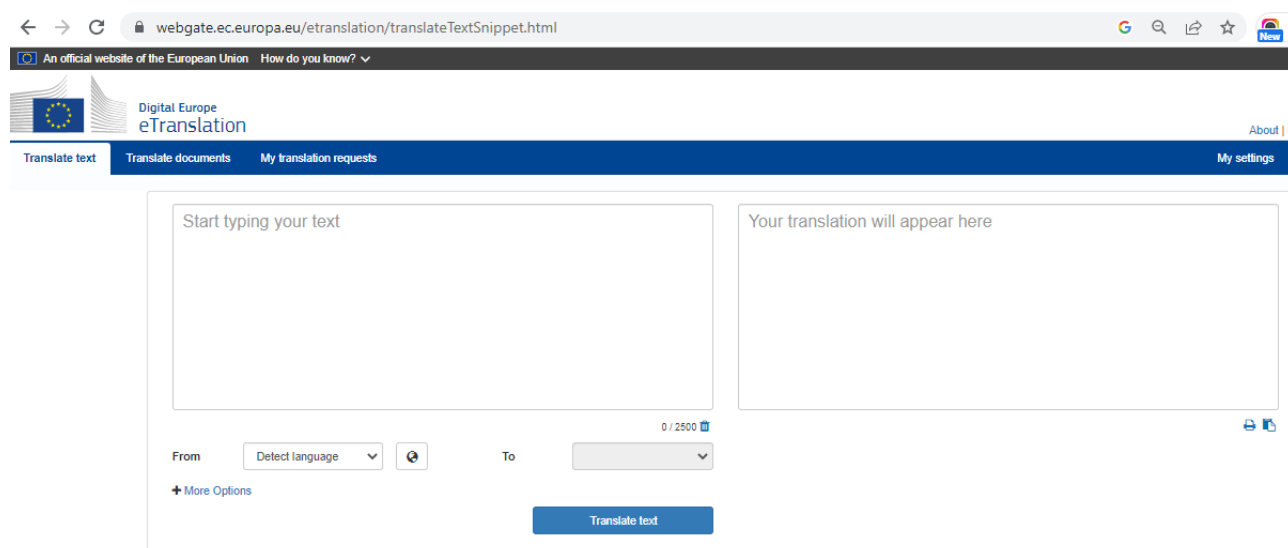


Figure 3.1. Digital Europe eTranslation service

By using this eTranslation service, BIRGIT partners were able to make raw translations of all the learning materials available. These materials were then revised by the project partners according to the following criteria:

- revision of technical jargons which require domain knowledge for a proper translation
- revision of text inside graphs and images which the e-translator service could not recognise as text to be translated;
- revision of abbreviations and/or other schemes usually used to make PPT presentations more attractive for the audience's attention, but sometimes not clear and less self-explanatory.



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Technical jargon has therefore been passed through a verification process with the support of the professionals within the partnership, or other external contributors such as the teachers/trainers or authors of the learning materials.

Graphs and images have been treated with two different approaches, either scouted online to find the corresponding English version or first translated and then completely re-designed.

Abbreviations and/or schemes have been double-checked by FORMA.Azione together with technical partners so as to avoid misunderstanding or lack of relevant contents.



3.2. Results

The translations of learning material into English are summarised in table T3.1 below

Table T3.1: Summary of translation activities of each partner.

Learning material	Provider/ Author(s)	Original Language	Adapted and translated into:	Available from
BIM Coordinator	FORMA.Azione- GioveInformatica /Authors Nissim, Gragnani, Minnucci Associati	Italian	English	9 January 2023
BIM Introduction	AIN	Spanish	English	16 February 2023
Construction monitoring and building condition assessment, Applied geomatics and Spatial planning	UNINorth	Croatian	English	Still under development. As soon as the material is developed, it will be translated into English.

3.3. Discussion and conclusions

Task T2.1 has led to an adoption and translation of existing learning materials needed by each partner for updating and innovating their learning offer, according to students' needs and the perspective the organisations have in differentiating their future learning offer.

To be able to fully exploit existing learning materials, FORMA.Azione has decided to wait for the materials still under development by UniNorth, because their prospective learners, being professionals already working in the construction sector, are expected to be interested in the contents of that course. That will also allow FORMA.Azione to distinguish more its training offer in comparison with other local VET providers.



4. Localisation of data sets and text

4.1. Methodology

Most of the partners expressed a need for the localisation of existing training materials. Existing materials available to be reused in the project consisted mostly of stand alone presentations (ppt/pptx or pdf) without concrete data sets that can be used for practical training exercises. This is a general major lack of the existing learning materials used in this project.

The localisation was a two-step process as shown in figure 4.1.

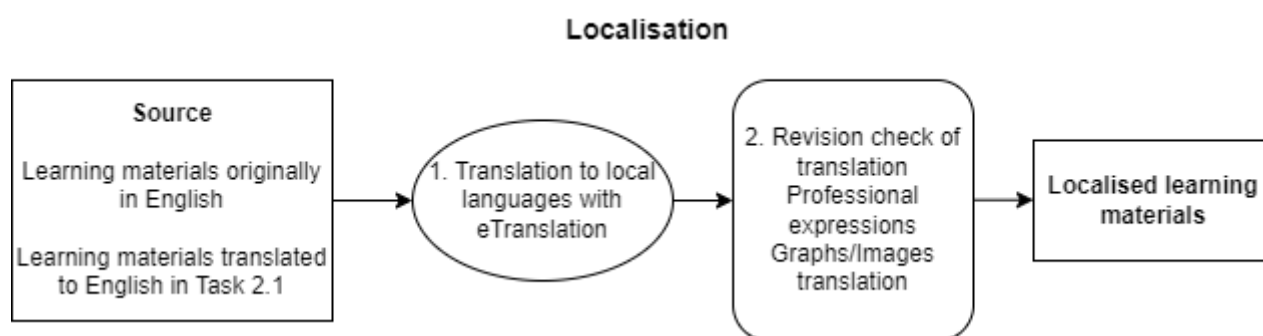


Figure 4.1. Localisation methodology

Task T2.2 included activities of translation and adaptation of existing learning material to local requirements. The first step was localisation from materials available originally in English or translated into English in Task T2.1. For the translation to local language, the EC tool eTranslation was used. The tool has some deficiencies, as already mentioned in chapter 3. In short, the results of automatic translation were not fully satisfying, especially graphs and images which were afterwards translated and localised manually. However, the tool enables translation of whole files (e.g. ppt, doc, xls, pdf, and other text formats) which is a great advantage. As it is written on the eTranslation web page: *“eTranslation produces raw machine translations. Use it to get the gist of a text or as the starting point for a human-quality translation. If you need a perfectly accurate, high-quality translation, the text still needs to be revised by a skilled professional translator”*. In other words, the result is not final and ready to use, but some additional effort is needed. This was in fact another challenge for localisation in step 2 especially with professional expressions (technical jargon) in order to localise them to local languages. Both activities, images and professional expressions, certainly increased the consumption of time resources for all involved partners.

Regarding graphs and images, the same approach was used as in Task T2.1. Most of the images were completely re-designed and adapted to local needs and requirements determined by partners involved in this activity.

4.2. Results



The table below summarises localisation activities of each partner.

Learning material	Localised by	Translation	Comments
Introduction to GIS	AIN	EN/SP	
BIM Coordinator	AIN	EN/SP	
Construction monitoring and building condition assessment, Applied geomatics and Spatial planning	Forma.Azione	Italian, once the English version is available	
Introduction to GIS	GISIG	EN/IT	
Introduction to BIM	UNIN	EN/HR	
Introduction to BIM in infrastructures	UNIN	EN/HR	



BIM Coordinator	UNIN	EN/HR	
BIM Coordinator (FORMA.Azione/Giove Informatica) and BIM Introduction (from GISIG)	Ocellus	EN/SE	Since practical exercises and content relevant to BIM-GIS interaction will be added later, the consortium decided that this part of work will be included in PR3, Development of new courses.

All localised material is archived in the common project repository on MS Teams. Individual materials are saved by project partners.

4.3. Conclusions

The results of Task T2.2 are learning materials localised to local languages and adapted to partners needs. The input for localisation were learning materials originally available in English and materials translated to English in Task T2.1. Methodology for localisation was a two step process including 1) translation to local languages and 2) translation checks, revision and adaptation.

The final localised materials consist of mainly PowerPoint presentations without real data sets that can be used as a demo for future training purposes. The plan is to develop such datasets in the PR3.



5. Preparation of subtitles

In the project work plan (DoW), there is also an additional task specified, namely Task T2.3. "Preparation of subtitles for the lectures". The motivation for this was as follows: "In case the lectures of the learning material are provided as recorded lectures, subtitles may be added for increased usability among students having other mother tongues".

Nevertheless, the localised courses were all in the form of .pdf slide sets with no additional recordings. Consequently, there was no material to add subtitles to. In addition, Ocellus as the planned Task 2.3. leader also decided to adapt and further develop the localised courses on BIM to create a BIM Introduction course according to the company's teaching needs. As it means supplementary work, this course will be counted in the PR3, even-though its development is already ongoing.

This adapted course is planned, in comparison to the localised courses, to include explanatory text / speech / recordings. Therefore, translation to other local languages as well as adding subtitles will be highly relevant in the later stages of the adaptation. An English version will also be available in order to ensure wide use.

To be prepared and avoid delays later on, possible formats, multimedia use, teaching platforms etc. have been discussed on the regular Teams meetings as well as on TMP in Perugia. The goal is to specify the best practice from all project partners. It turned out that it is GISIG using the widest spectrum of teaching techniques who will be highly involved in this task, together with the task leader Ocellus. An information-rich presentation about GISIGs experience in course development is available to all project partners via Teams and can be viewed.

In conclusion, this task, T2.3., has been started, but also postponed to PR3, as it will be extended and solved simultaneously with the development of new courses. That is even beneficial for the whole project, as the techniques are highly relevant for all the courses we are going to develop in the project.

6. Discussion and conclusions

As mentioned in the introductory chapter, the goal of this activity is to localise a set of existing courses, according to specific needs of the training providers aiming to implement the courses in their training offers. In the project description (DoW - Description of Work), three performance indicators are specified, namely

- I2.1: Number of learning materials translated into English
- I2.2: Number of learning materials being localised
- I2.3: Number of lectures being subtitled in at least one non-English language

There are no additional target values specified for these indicators, but they anyway represent valid measures about the performance of the activities. Another important indicator, not pre-specified, is the involvement of each training provider in the execution of the task.



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In total, two courses were translated from the national language (IT and ES) to English and one additional course is under translation (HR). All training providers except Ocellus participated in this task. For the second part of the activity, in total eight courses were localised, including a translation from English to IT, HR, ES and SE. All training providers participated in this task.

Task T2.3. was aimed to deal with creation of subtitles for recorded lectures. Although existing learning material of interest did not have any voice recordings, the usage of subtitles is considered to be of interest for the partnership in the following activities. A review of existing technologies has been started, but also postponed to PR3, as it will be extended and solved simultaneously with the development of new courses.



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