

**Intergeo**

**Local Users Meetings  
(LUM)  
Report**

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<sup>1</sup> OJ L 79, 24.3.2005, p. 1.

# 1 Table of Contents

1. Table of Contents
2. Summary
3. LUMs: conception and commitments according to the DoW
  - 3.1 LUMs conception in the DoW
  - 3.2 LUMs commitments in the DoW
  - 3.3 Conclusions
4. LUMs in practice
  - 4.1 Some issues on LUMs
  - 4.2 LUMs in the progress reports
  - 4.3 Conclusions
5. LUMS: learning form experience
  - 5.1 LUMs: a questionnaire
  - 5.2 Conclusions
6. Conclusions and recommendations

## 2 Summary

The declared main goal of Intergeo is “to make digital content (*concerning Dynamic Geometry*) for mathematics teaching in Europe more accessible, usable and exploitable”. Thus, in order to answer as best as possible to the needs of the teachers and, in general, of the users, Intergeo’s official Description of Work (DoW) assigned a relevant role to community involvement at some of the project key steps, such as

- Collect and catalogue dynamic geometry constructions,
- Test the usability of the Intergeo platform and the resources available online,
- Adapt the platform and its tools to the different languages, curricula, education styles...

Moreover, as an expected result of Intergeo, the DoW mentioned the establishment of “...an on-line community of federated European Communities of Practices, of people who will have met each other at our training sessions and dissemination meetings, and will contribute to the advancement of a European community built around sound e-learning principles and best practices.”

In accordance with this context that praised and demanded participation, Intergeo work plan designed a complete workpackage (WP5, *Gathering Communities of Practice*) devoted to organize and to enhance teacher cooperation and support, with a load of 68 person/months distributed among the different partners of the consortium. This workpackage explicitly mentioned the organization of “seven local user meetings all over Europe (Lithuania, Poland, Czech Republic, Italy, Luxembourg, Spain, France) (*that*) will help to provide a complete European coverage”. A milestone (Month 9) was settled regarding the establishment of a common process for these Local User Meetings (LUMs, in short) and a report on the outcome from these LUMs was established for month 12, as deliverable D.5.2. For different circumstances (change of lead in the WP5, important LUM activity during the months 12-18 of the project) a postponement of this report for month 19 was proposed and accepted. Further details about DoW plans concerning LUMs are described in Section 3 below.

The concept of LUM was never clearly defined in the DoW. In our experience during these months trying to achieve the goals of WP5 concerning LUMs, we found out that there is a rich variety of ways to get in (and to keep in) touch with the communities of practice and we think they all deserve being reported here, although, perhaps, they can not be properly considered as LUMs. On the other hand, it turned out that it was not trivial to specify, depending on the time, language and place, the message we wanted to send from Intergeo to the teachers attending a LUM. The main reason for this difficulty was the timely coordination of the transmitted message with the current status of development of Intergeo platform’s features. Thus, we have considered it useful to devote Section 4 to discuss these issues that arose when attempting to carry out LUMs in practice.

The result of the joint efforts from the teams involved in the WP5 (all teams in the consortium except DFKI and M4M) has been the organization of 24 actions<sup>2</sup> calling for

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<sup>2</sup> I.e. LUMs in an extended sense, to be made precise in Section 4. We do not include here the mere dissemination actions, i.e. flyers, press notes, articles in teacher society journals, and the like.

participation in the Intergeo tasks to different kinds of dynamic geometry users and groups of practice. 18 of these can be properly catalogued as LUMs and included all the DoW required meetings. These gathering events have covered 11 European countries, far beyond the initial expected coverage and the requirements of the DoW. An estimated number of 1000 teachers have been reached, with circa 600 of them if we restrict to the meetings that followed the more traditional format. See Section 4.2. for details.

A questionnaire on the outcome of the standard LUMs has been developed by the authors of this report, and has been answered by each Intergeo responsible person in charge of the corresponding LUMs (see Section 5), providing a sound basis for the analysis of the different issues involved in this activity. Global conclusions are presented at Section 6. We can summarize them by stating that we have achieved more than the initial commitments (number and geographical distribution of LUMs) concerning this Intergeo task; but, also, that a better coordination among the different Intergeo tasks is desirable in order to optimize the output of the communities of practice around Dynamic Geometry.

### **3 Local Users Meetings: conception and commitments according to the DoW**

The section below provides information on the different goals and tasks of WP5, as stated in the official Description of Work (DoW) for Intergeo. Section 3.2 addresses the concrete commitments contained in the DoW regarding LUMs (geographical distribution, timing, milestones, deliverable D.5.2).

#### **3.1 LUMs conception in the DoW**

The first reference to local user meetings appears at the description of Workpackage 5, in the following terms:

##### ***Workpackage 5: Gathering Communities of Practice***

###### ***Objectives***

*In order to reach all countries of the EU, in particular the new member countries, this work package strives to gather key users of DGS in different areas of the EU. A network of early adopters will be identified, and this network will be solidified by adding more users from the same region, and by encouraging communication between these communities of practice.*

*Seven local user meetings all over Europe (Lithuania, Poland, Czech Republic, Italy, Luxembourg, Spain, France) will help to provide a complete European coverage. Teachers and Schools that are suitable for Quality assessment will be identified within the Communities of Practice.*

*User groups are not differentiated by the tools they use, but by their regional identification and thus the content they need. This also includes users from software that is not represented in the consortium.*

*Another objective is the acquisition of further content that is currently in the public domain or with unknown legal status. Users can submit content to be reviewed, and this content will be included either in the internal or external review process. We will offer means to easily apply*

*a Creative Commons or Public Domain license during submission, and content without IPR clearance or requiring a fee will be rejected.*

### **Description of Work**

- *Organise seven local meetings in countries.*
- *Collect statistical data regarding the usage of interactive geometry at the beginning, during, and at the end of the project.*
- *Identify testers for classroom experiments and translation (localisation of ontologies and web interface).*
- *Make the connection with networks of users that use geometry tools that were not developed within the consortium.*

It seems clear that the idea of a LUM that appears in the DoW, although not precise enough, was essentially that of an event attempting to gather users of DGS (Dynamic Geometry Systems) in different areas of the EU, with various levels of expertise, who could be willing to collaborate in some of the tasks of the project. These user groups or communities of practice would include authors of interactive geometry resources, mathematics teachers, representatives of schools, such as directors, department heads or coordinators, representatives of official education institutions involved in the development and practice of mathematics curricula, researchers in the area of didactics of mathematics, etc.

These initial communities of practice would start a fruitful communication and exchange of ideas between its members, related to their common interest in the effective use and dissemination of DGS, with the help of our project.

The members of the communities of practice could help in the following tasks:

- Provide information about the current level of use of DGS in their region or country schools
- Provide information about the regional needs, related to the local mathematics curricula or other particular aspects of the local education system, helping in this way to adapt Intergeo tools to their local context, curriculum and language.
- Incorporate new dynamic geometry content to the platform, in particular, that made from software not included in the Intergeo Consortium.
- Test dynamic geometry resources in the classroom
- Disseminate the platform
- Comment on positive and negative aspects of the project web operation

These tasks are mainly related to WP2, WP3, WP4 and WP6 and, of course, WP5.

### **3.2 LUMs: commitments in the DoW**

As mentioned above, in the DoW it was stated that seven local user meetings have got to occur in the first year of the project, taking place at

Luxembourg (responsible: University of Luxembourg)

Poland (responsible: University of Bayreuth)

Lithuania (responsible: University of South Bohemia)

Czech Republic (responsible: University of South Bohemia)

Spain (responsible: University of Cantabria)

Italy (responsible: Cabrilog)

France (responsible: Cabrilog)

See <http://intern.inter2geo.eu/node/201>

Although there was no precise deadline for organizing these LUMs, we can indirectly deduce that the DoW regarded the second half of the first year of the project as the most suitable period for holding these events. In fact, a milestone (Month 9) was settled in the DoW regarding the establishment of a common process for these local user meetings and a report on the outcome from these LUMs was established for month 12, as deliverable D.5.2.

Nevertheless, the WP5 team decided to continue organizing LUMs beyond the first year of the project, depending on the platform's progress and usability, so that teachers attending the more recent LUMs could provide feedback on the platform's enhanced features. This reason and the change of lead in WP5 around October 2008, supported the idea of asking for a postponement for the LUM report, so that it could include information on additional meetings taking place until March 2009. The proposal of this delay in the presentation of the D.5.2 report was accepted without problems by the corresponding EU officer.

### **3.3 Conclusions**

According to the DoW the LUMs are a key part of the project. They would initiate the formation of communities of practice, whose members would be well informed about the project, and they will cooperate in different ways in the development of various steps of the project, as users of DGS.

These initial communities of practice are expected to grow into a suitable number of active users of the Intergeo platform, during the three years of the EU project and in the future. Several reasons (keeping in contact with the communities, getting their feedback for the new features) support the idea of not restricting LUMs to a concrete period along the project life.

## **4 Putting LUMs in practice...**

The first semester of the project saw plenty of dissemination activities, spreading the news about Intergeo goals and proposals. The corresponding progress report (March 08) included a list of over a dozen Conferences participated during that period by Intergeo members, in order to present the project. It seems clear that all of these Conferences provided opportunities to disseminate news about Intergeo, but it is also clear that some of them were (by the characteristics of the audience, by the type of transmitted message, that is, when dissemination was accompanied by a call to participation in different tasks) in fact, early Local User Meetings.

Therefore, we have had to face quite early in the project some practical problems concerning the implementation of LUMs. Some of them, so to speak, are of conceptual character, related to the very definition of LUM. They are not important for the success of the project, but they are relevant for administrative purposes. For instance, this report is about

LUMs, but, what should be and what should be not called a LUM? A second and more serious issue about LUMs was that of establishing some general guidelines concerning the content of the message we wanted to communicate to the expected audience at a LUM. Do we want to tell them *all* to register at the Intergeo platform and to contribute *now* to the content repository and to start *now* shaping up an evaluation team? A third issue, somehow related to the last one, concerns the interdependency of LUMs and the development of the Intergeo platform...

Section 4.1 below reports on these issues, while Section 4.2 provides an extended list of LUMs, including many more than the “officially” (ie. as stated through the progress reports, see Section 5) recognised LUMs.

#### **4.1 Some issues on LUMs.**

It was mentioned above that the DoW idea of LUM is somehow fuzzy. On the one hand, the goals of a LUM are quite clear (see last paragraphs of 3.1) and it can be summarized (using sentences from the DoW) as follows: “An event attempting *to gather key users of DGS in different areas of the EU... in order to establish ... a network of early adopters will be identified, ... solidified by adding more users from the same region, ...encouraging communication between these communities of practice... as means for ... the acquisition of further content that is currently in the public domain or with unknown legal status... and in order to identify ...teachers and schools that are suitable for Quality assessment.*”

Now, there are many different events that, sharing these goals, could claim to be considered as LUMs: for instance, we could think of a LUM as an “ad hoc” meeting, specifically devised by some Intergeo team to gather dynamic geometry practitioners at a concrete location, region or country. But the notion of LUM could be also applicable to the participation of some Intergeo member at a teachers’ meeting of whatever kind, finding there an opportunity to include in the program a presentation of Intergeo’s aims and needs, with the purpose of establishing among the attendants a supporting group that could help providing/tagging/testing dynamic geometry constructions and so on.

On the other hand, sometimes Intergeo presence in different Conferences (totally or partially attended by teachers, among other professionals), had a plurality of goals, such as presenting some of the more technical solutions devised by the consortium concerning quality assessment, metadata, competencies, ontologies, etc., but also including among them the gathering of communities of practice. Of course, presenting a paper on some theoretical issues at a scientific conference is clearly different from presenting Intergeo at a meeting with a call for participation. But it is unclear whether or not we should consider some presentations, working groups, etc. at Conferences, having as secondary purpose the dissemination of Intergeo and the gathering of users for collaboration at some Intergeo goal, as LUMs. In fact, we have examples of meetings that have been listed both as Conferences and as LUMs in different progress reports (cf. Section 4.2).

Therefore it seems there is no clear borderline between Local User Meetings and Conferences, a term that has been used internally to describe a different type of Intergeo public activities. This confusing situation is still present, since, lacking a more precise categorisation, sometimes similar activities are differently classified in the Intergeo web, sometimes as LUMs, sometimes as “Conferences”. Thus, under the “Conferences” heading in the current platform there is a mixture of scientific presentations (on the development of e-learning tools) and true user meetings. As for this report, we have adopted in some sections

(such as the next one) the broader notion of LUM as any live event, devoted to demand, organize and enhance teacher cooperation and support concerning the goals of Intergeo.

A second issue we have had to face from the beginning was about the precise kind of message we (Intergeo presenters) had to transmit at one of these meetings. The need for such precision –for instance, to unify the terms for the required participation, bearing in mind that several different Intergeo members could be presenting LUMs in the same country--- arose already before the first progress report (March 2008), where it is stated that *...the second achievement (for WP5) has been done in the context of the organisation of the Local User Meetings. We have quickly identified the need to organise and structure our communication, in order to have consistency and impact in these user meetings, but as well to be in sync with the communication done from other work packages and from the project's main site.*

Thus, in March 2008, the leader of WP5, M. Ippersiel, posted at the internal Intergeo site the following recommendations for those members of Intergeo teams that would attend or organize a Local User Meeting:

*The local user meetings have a central role in gathering the community of practice. They intend to help providing a complete European coverage. The objectives of the Local User Meetings are:*

#### ***Present Intergeo***

*Those meetings need to present Intergeo to the users: The need of a common file format for interoperability, the need of a web platform to share resources, the need of the ontology and the curriculum mapping to share resources across all European countries.*

#### ***Collect new users and new figures***

*The Local User Meetings are a good way to reach power users and engage them into the project, in order to start the dissemination. We expect from the users present in those meetings to talk about Intergeo around them.*

#### ***Identify users for Quality Assessment***

*Local User Meetings have to identify schools suitable for Quality Assessment (WP6). We will have to identify teams and put them in relation with WP6. The resources on which the testers will work are to be defined, and the languages of those resources need to be checked as well. Of course, during the experimentation the resources need to be in the local language, but it may be the responsibility of the testers to translate them.*

#### ***Identify volunteers to help***

*Some work packages are counting on work to be done by some voluntary users. WP6 is handled in the previous point (for quality assessment).*

*In General:*

*It is assumed that we will translate the platform in English/French/German. We assume that users will help translating into other languages.*

*WP2 - Curriculum*

*Use the platform as much as possible, and evaluate the search.*

*We expect users to suggest their curriculum-source (textbooks, school-curriculum, region-level-curriculum...)*

*Encode local curriculum. The users here need to read English.*

*WP3 - Integration*

*WP4 - Platform*

*Users are expected to play with the platform and report any problem they encounter and suggest ideas for improvement.*

*We expect users to translate the platform in the different European languages. This will require from those translator-users a good knowledge of English. This translation will involve translation of other documents as well (for example, guidelines for quality...)*

*We expect users who uploaded content to update it (save their figures in the common file format, annotate it with the ontology)*

*Users are expected to talk about the platform to others, in conferences, blogs... We also highly expect users to insert appropriate links to their constructions' new home. Linking is essential to ensure Intergeo a long term visibility on the web.*

Encouraging teachers to register and to use the platform (and contributing to its expansion, through translations, up-loading new resources, etc.) was a high point during LUMs, as expressed above. But, the carefully prepared message given through the LUMs, along the Spring and Summer of 2008, relied essentially on the planned development of the Intergeo platform, since this platform was conceived in the LUMs strategy as the main way to attract, engage and keep in contact with the people who have attended one of these meetings and was willing to cooperate, shaping up, in this way, communities of practice.

Yet, the platform (its conception and features) evolved at its own pace. First of all, there was an identity issue. As stated in the recent progress report (March 2009): *...during the first year, the project homepage <http://inter2geo.eu> and the portal <http://i2geo.net> were two separate websites, which caused a lot of confusion, for users, reviewers, and also for ourselves. We decided to merge them into one, which was successfully done in early 2009. Since then, <http://i2geo.net> is the common entry point for everybody interested in either the project itself or the content we provide.*

Unfortunately, LUM responsables were not fully aware about this decision and its consequences. No matter how we define LUMs, around twenty meetings of that kind took place in the last six months of the first year, covering a dozen of European countries. And in these meetings a call (for registering, for submitting traces, for organizing evaluation trials) was disseminated, a call with information that turned out to be somehow outdated just after the LUM main season was over.

Moreover, the merging of both platforms and the establishment of final procedures for registering, submitting traces, etc. did not happen instantaneously. The first year progress report mentions that the migration started in September 2008, but *... Unfortunately, due to a wrong assessment of resources, the platform was not as operational as we hoped for, and we had to delay the deliverables that rely on the "platform available" milestone....These delays do impact the current constructions' contributions from the public and some partners which explains the beta stage displayed currently by the platform. The remedial action has been to delay the public appearance but not the metadata enrichment facilities thus leading to a stable public view only in the course of November.* But, concerning the most used features by the external users, such as the search engine, the November prevision was too optimistic and not totally accomplished till early 2009, as mentioned above. In fact, *...we decided to slow down the user acquisition during the first half of the second year, because we want to avoid users turning away due to technical problems during the beta phase* (from the Month 18 progress report).

On the other hand it happened that, along the first year of the project (in particular, during the LUM high season), the platform (the one that was being recommended to the external users to get into Intergeo) was not fully operative. As stated in the first year report

*“Due to late start of some developers and loss of others at some partners, the following features are not yet well developed:*

- construction services: set of tools for an easy introduction of interactive geometry construction within a Curriki resource*
- the translations uncompleted*
- the annotation possibilities are limited to French and some levels of English and Spanish*
- the search tool is not ready”*

Some consequences for these issues (delays in some key features for the first year platform, migration to a new one, long period of migration) are already mentioned in the first year report: *We have 109 registered web site users, 187 newsletter abonnents, and 64 registered members on the i2geo platform. In order to avoid double-counting users that have registered at both places, we give a conservative estimate of approximately 200 active users. This is only a fifth of the number of registered users we were trying to find.*

*Our analysis of this underachievement revealed that this is caused by the late arrival of the working platform. We did not announce the platform before October 2008, in order to avoid confusion or disappointment of future users due to bugs or missing features. So, we expect that we can increase this number soon...*

Yet, the March 2009 reports that *The work of incorporating the quality framework within the general curriki scheme turned out to take a lot of time. And because the availability of the platform is such a bottleneck, we invested a lot of person-month from the WP6 into the WP4 package. Nevertheless the organization of the quality evaluation in the classroom is behind the schedule because the platform is still not completely ready for ordinary teachers to be used. That means that the collection of quality tests in the classroom will happen later than planned...* Let us remark here that gathering evaluation of quality teams was one of the goals of LUMs.

Summarizing, many users that have been attracted to Intergeo through LUMs might have been actually not fully engaged because of the platform delayed features and/or because the late change of platform and working procedures. As argued below, we might have succeeded gathering communities, but we have not managed to get complete profit from their willingness to support us. In fact, we have received mails from Spanish and Portuguese teachers, in the Fall 2008, expressing their confusion about what they were supposed to do in order to follow the instructions received during LUMs. We should understand these troubles in a broader context of shared responsibility among all consortium members, considering that

- the DoW did not make many of the facets which slurp a lot of time in the platform construction: a cross-curriculum search tool, a sturdy internationalization support, or the realization of software services for the web-rendering of constructions.

- there were no established coordination procedures between a LUM being planned and relevant WPs (WP4, WP2, and WP6 in particular).

## **4.2 LUMs in the progress reports**

In this section we will provide some data, in a broader sense, about occurred LUMs. First, concerning man/months used in this task.

As stated above, LUMs have taken most of the WP5 effort during the first year of the project. Actually WP5 was assigned a total number of 68 man/months, distributed as shown

in the table below (first row). WP5 was lead by Cabrilog, “due to their long-standing contacts to education experts and existing user groups, as well as their experience in small and large conferences about geometry software and its use in teaching”<sup>3</sup>. This leadership ran smoothly during the first year of the project, but, for reasons external to the project, it had to be replaced by UCAN, a partner team with a large number of person/months assigned to this WP5.

Due to the change of the WP5 lead in October 2008, a reorganization of administration tasks was needed for the whole work package. Four person/months from Cabrilog were reassigned to UCAN, and this explains the two –seemingly identical– first rows in the table below.

Period	PM Total	PHSG	UM2	DFKI	CABRI	UBAY	ULUX	UCAN	TUE	M4M	USB
DoW	68,00	2,00	10,00	0,00	20,00	2,00	2,00	12,00	2,00	0,00	18,00
DoW	68,00	2,00	10,00	0,00	16,00	2,00	2,00	16,00	2,00	0,00	18,00
M1-M6	8,24	0,22	0,50	0,00	2,40	0,46	0,44	2,50	0,43	0,00	1,29
M7-M12	13,21	0,18	0,33	0,00	2,00	0,89	0,36	3,00	0,00	0,00	6,45
M13-M18	9,21	0,00	0,00	0,00	2,25	0,00	0,75	3,21	0,00	0,00	3,00

It is remarkable that over 30 man/months have been used in the WP5 package so far. The peak activity took place, as expected, during the second semester of 2008, since this period (around the summer season) has a higher concentration of teacher meetings all over Europe. This data provides indirect evidence about the fact that, up to now, WP5 has concentrated around LUMs, broadly considered.

If fact, the first semester report mentions the following list of Conferences:

Name	Location	Date
Unisciel day	FR - Paris	01-10-2007
APMEP annual meeting Association des Professeurs de Mathématiques de l'Enseignement Public	FR – Besançon	28-10-2007 to 31-10-2007
Geometrietagung	AT – Strobl	07-11-2007
Lyon IREM Université Claude Bernard	FR – Lyon	30-11-2007
Arbeitstagung AK MU&I	GER – Soest	29-09-2007
13. Mathematikertag	GER – Stuttgart	16-11-2007
The use of computers in Mathematics Teaching	CZ – Budějovicích	08-11-2007 to 10-11-2007
EDUCATICE	FR – Paris	21-11-2007
Digital libraries and technology-enhanced learning	LU – Luxembourg	17-12-2007 to 18-12-2007
BETT Award	UK - London	09-01-2008
3rd JEM Network Workshop	ES – Barcelona	31-01-2007 to 02-02-2008
eContentplus – Central Information Day	LU – Luxembourg	19-02-2008
Jornadas de la Sociedad Matematica de Profesores de Cantabria	ES – Santander	29-02-2008 to 01-03-2008

<sup>3</sup> From the DoW.

GDM – Tagung	HU – Budapest	13-03-2008 to 18-03-2008
5e Rencontre Internationale Pédagogie & Psychologie	LU – Luxembourg	13-03-2008 to 14-03-2008

Many of them could be considered as early LUMs, such as the Jornadass de la Sociedad Matematica de Profesores de Cantabria, gathering circa 30 teachers for the purpose of presenting the project and demanding their participation.

The second report, that corresponding to the second semester of the first year of the project, included the following list of LUMs during that period

Location	Date	Responsibility	General Remarks
SP – Castellon	25.04.2008 to 27.04.2008	University of Cantabria (Tomas Recio)	Will take benefit of VIII Jornades d'Educació Matemàtica.
PL - Chiechocinek	21.06.2008 to 24.06.2008	University of Bayreuth (Alfred Wassermann)	Presence at the National Polish Superkurs Meeting
PT - Coimbra	25.06.2008 to 28.06.2008	University of Cantabria (Tomas Recio)	Will take benefit of the ENSPM meeting (ENSPM Paper), organized by the SPM.
IT - Paderno del Grappa	25.08.2008 to 27.08.2008	Centro Ricerche Didattiche "Morin" (Giovanni Artico)	Will take benefit of a math teacher's meeting.
LT - Vilnius	26.08.2008 to 27.08.2008	University of South Bohemia (Pavel Pech)	
PT - Elvas	02.09.2008 to 04.09.2008	University of Cantabria (Tomas Recio)	Will take benefit of the "ProfMath" meeting, organized by the APM.
NO - Trondheim	11.09.2008	University of Cantabria (Tomas Recio)	Intergeo presentation at the <a href="#">4th JEM Workshop</a>
CZ - Horska Kvilda	22.09.2008 to 26.09.2008	University of South Bohemia (Pavel Pech)	This meeting will take benefit of Usage of Computers in Teaching Mathematics.
GER - Germany	27.09.2008 to 28.09.2008	University of Education Schwäbisch Gmünd (Ulli Kortenkamp)	Will take benefit of the AK MU&I meeting.

It should be remarked that the column of responsible persons just mentions the leader of the partner team in charge of organizing the corresponding LUM, not the actual person organizing it.

Moreover, the following Conferences –some of them real LUMs, such as TICE at Lille-- are also reported for that period:

Conference	Date	Activity	Participant	Location
EIEM	19.04.2008 to 20.04.2008	Talk - Intergeo Project Presentation	[CABRILOG] Colette Laborde	PT - Portugal
Unisciel days	03.06.2008 to 04.06.2008	Guest Auditor	[UMP2] Christian Mercat	FR - Nancy
Workshops on TICE, college level	04.06.2008 to 06.06.2008	Workshop	Sésamath - Benjamin Clerc	FR - Lille
Mathematics and ICT usage: results and perspectives	04.06.2008 to 06.06.2008	Guest Auditor: More than 20 years of dynamic geometry: usage evolution and questions for research.	[CABRILOG] Collette Laborde	FR - Lille
INRP days	18.06.2008 to 19.06.2008	Guest Auditor	[UMP2] Christian Mercat	FR – Lyon
ICME 11 - 11th international Congress on Mathematical Education	06.07.2008 to 13.07.2008	Poster Presentation in a special poster session on the subject of interactive geometry	[PHSG] Ulrich Kortenkamp, Axel Blessing, Christian Dohrmann; [ULUX] Yves Kreis; [CABRILOG] Colette Laborde, Jean-Marie Laborde; [M4M] Daniel Marques	MX – Monterrey
MKM 2008 – Mathematical Knowledge Management	28.07.2008 to 30.07.2008	Talk - Presentation of the (intended) Intergeo ontology and search tool.	[DFKI] Paul Libbrecht	UK – Birmingham
SE@M'08 - Second International Workshop on Search and Exchange of e-le@rning Materials	17.09.08	Talk - Cross curriculum search through the GeoSkills' Ontology.	[DFKI] Paul Libbrecht	NL - Maastricht

The activity during this central period included also presentations of Intergeo and a call for participation at teacher meetings such as EDUTEC 2008 (Information and Communication Technologies as a cultural bridge between Europe and Iberoamerica), held at Santiago de Compostela, Spain, on Sept. 3-5, 2008; at a DGS course held at the CEFIRE (Teacher Center for Formation and Resources) of Alicante, May 2008; at a GeoGebra course organized at Santiago de Compostela, attended by 20 teachers on May 29, 2008; with occasion of a Cabri 3D tutorial at the “IV Congreso de Educación Matemática” de Agapema (Galician Mathematical Society) held at Betanzos, Spain, on June 26-28, 2008; at the meeting “Inforensino”, held at Lugo (Spain), on Sept. 14, 2008; or at the “X Congreso de la Sociedad Castellano Leonesa de Educación Matemática”, with occasion of a GeoGebra tutorial, on Sept. 13, 2008, at Segovia, Spain.

Finally, from the third semester report we get the following list of organized LUMs: La Rochelle (France), Oct. 25-27, 2008, Luxembourg (March 10 and March 19, 2009), Constanta (Romania), Oct. 31-Nov. 2, 2008; Lyon (France), Jan. 28-31, 2009; and in different regions of Spain (Seville, Oct. 10-13, 2008; Murcia, Oct. 18, 2008; Leon, Nov. 3, 2008; Salamanca, Nov. 27, 2008; Canary Islands, Feb. 5, 2009; CIEM of Castro-Urdiales, March 26-29, 2009, etc.).

### **4.3 Conclusions**

Despite the different difficulties now successfully overcome, that we have detailed in this Section, the main goal, that of gathering communities of practice, has been achieved.

In fact, as described in the progress reports, at the end of March 2009 all planned LUMs in the DoW have had taken place in various places of Europe such as those in Castellon (Spain), Chiechocinek (Poland), Paderno del Grappa (Italy), Vilnius (Lithuania), Horska Kvilda (Czech Republic), La Rochelle (France) and Luxembourg.

LUMs were organized in 11 different European countries: Czech Republic, France, Italy, Lithuania, Luxemburg, Norway, Poland, Portugal, Romania, Slovakia, and Spain. In some of these countries, several LUMs have been organized during the 18 past months, especially in Spain, where many LUMs were organized.

The number of participants varied between 20 and 100 and in most of the meetings a decent number of people relevant for contributing to Intergeo in various ways (for details see §5.2) enrolled.

Some of these meetings have provided an opportunity to present dissemination papers on Intergeo or they have been the starting point for a publication in some Journal (generally related to a teachers association). A monographic volume (circa 200 pages long) at the journal of AGAPEMA (Galician Math Teachers Society) devoted to Dynamic Geometry has been written by a collection of authors under the generic name of “Colectivo Intergeo”, since most of them have been involved in the project. This is, indeed, a good example of the *gathering of communities of practice*. The issue is now submitted to the ANAYA editorial, one of the largest in Spain concerning textbooks, that happens to edit the AGAPEMA journal.

On the other hand, we have reported a lack of coordination between LUMs organizers and other relevant WPs. The result has been that the level of external participation in the different Intergeo tasks is not as high as it could have been. At this moment, with a more

stable and performing platform, and WP6 fully operational, we have a new opportunity to address the communities of practice, the ones established in the past and also new ones, by organizing further LUM, but this time with a more coordinated (among the different WPs) call for participation.

## 5 Local Users Meetings: learning from experience

### 5.1 LUMs: a questionnaire

In order to get more precise information on the LUMs, a questionnaire was designed within WP5 and sent to the Intergeo members in charge of the more representative LUMs. Questions were asked about

- the context of the LUM
- the participants
- the dynamic geometry software programs used by participants
- and the possible outcomes in terms of contributors to the project Intergeo.

Below is given the questionnaire as it was sent.

#### **Questionnaire**

*“This is a guide to help you provide information on the different Local User Meetings you have either attended or directly organized since the beginning of Intergeo (Oct. 2007).*

*Please fill free to comment about any relevant aspect on your own words. Fill one questionnaire per LUM.*

1. *Name of LUM*

*Place:*

*Dates:*

*Type (international, national, regional, local):*

2. *Have you essentially profited of an existing meeting (e.g. organizing a special session on a larger meeting, asking the organizers to invite you to give a talk, etc.) or have you specifically and on purpose organized such LUM?*

3. *If you have profited of an existing meeting, was it difficult for you to manage presenting Intergeo in this context? Comment, please.*

4. *Number of participants:*

*Give some rough idea of the professional activity of participants (primary or secondary school teachers, university professors, etc.) that attended your session.*

*List the regions or countries represented.*

5. *How much information on Intergeo did the participants had before the meeting?*

6. Software(s) that the participants use most (if you have, even indirect or estimative, information on this):

7. Did this LUM allow you to contact with users of Dynamic Geometry programs NOT in the consortium? Recall the consortium includes the following programs: Cinderella, Cabri, Geonext, GeoGebra, Geoplan/Geospace, TracenPoche, Wiris.

8. How many people were or would be willing to help in:

- assessing the quality of available resources on the website
- authoring resources
- translating material
- testing in classroom
- dissemination of the project

9. Possible comments and suggestions made by the participants about:

- the project
- the website
- the quality assessment questionnaire
- the search engine

10. Do you perceive the influence of this concrete LUM regarding the evaluation of quality tasks of WP6? (For instance, an evaluation group was formed by people attending this LUM).

11. Did you receive any feedback (even indirect) from participants, after attending to this LUM (that is, perhaps some weeks or months later)?

12. LUMs were one of the tasks for WP5, but the task load of this package also included

“Collect statistical data regarding the usage of interactive geometry at the beginning, during, and at the end of the project”

Any suggestion on how (past or future) LUMs, such as the one you are describing, may contribute to collect such data?

13. Other relevant impressions got at the LUM.”

## 5.2 Conclusions

18 answers to the questionnaire were received. A synthesis about the context, the participants and the software used by participants is given below in Table 1.

	Date	Type	Meeting specifically devoted to	Number of participa	Type of participants	Software used by participants
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			Intergeo or within a conference	nts		
Ceske Budejovice (Czech Republic)	8-10 2007	National	Conference on the use of computers in maths teaching	120	60% sec school teachers 20% university prof	Cabri
Santander (Spain)	29-02 & 1 03 2008	Regional	Mathematical Society of Teachers from Cantabria	30	Maths teachers	
Grevenmacher Luxemburg	10-3-2008	Local	Specific Integeo	21	Secondary school maths teachers	Geogebra
Lille (France)	4-6 06-2008	National	National Conference on the use of ICT in the teaching of maths	15	Secondary school maths teachers Researchers in math education Designers of DG software	- Cabri Géomètre - Geoplan - Geogebra - CarMetal - Tracenpoche - Declic
Ciechocinek (Poland)	21-24 6- 2008	National	National Polish Superkurs Meeting	30	All school maths teachers	Geonext, Geogebra, Autograph
Coimbra (Portugal)	25-28 06-2008	National	National Conference of Portuguese Mathematical Society	30		
Paderno del Grappa (Italy)	25-08-2008	National	Specific Integeo	70	Sec . school maths teachers Representative of the Ministry of Education	Cabri II Plus TI Inspire Geogebra
Vilnius (Lithuania)	26-27 8-2008	National	Part of the math teacher conference	28		Geometer Sketchpad national licence (used in 25% schools)
Elvas (Portugal)	2-4 09 2008	National	Portuguese Association of Maths teachers	20	Maths teachers	
Santiago de Compostela (Spain)	3-5 09 2008	International (Latin America, Spain)	EDUTEK 2008 (on technology)		Teachers	
Trondheim (Norway)	11-09-2008	National	Geogebra day	30		
Nitra (Slovakia)	18-9-2008	Local	Specific Integeo	10	Secondary and basic school teachers	Euklides Cabri (25% schools)
Ceske Budejovice (Czech Republic)	26-9-2008	Local National	Specific intergeo	10	Secondary school teachers	Cabrilog Geonext
Sevilla (Spain)	10-13 10-2008	Regional	XII CEAM Thales (Conference on Learning and Teaching	40	Secondary school teachers	

			Geometry)			
La Rochelle (France)	25-27 oct 2008	National	National conference of French association of math teachers 2 workshops not devoted specifically on Intergeo	25+25	Secondary school teachers Teacher educators	Cabri-Géomètre Geoplan Tracenpoche Geogebra CarMetal
Constanta (Romania)	31-10-2008	International and national	Elearning meeting	100	Secondary school teachers for the national event	No DG soft
Luxemburg	17-3-2009	Local	Specific Intergeo	21	Secondary school teachers	Geogebra
Castro Urdiales (Spain)	26-28 03 2009	National	Specific Intergeo on purpose with 2 Geogebra presentations	39	Sec school teachers (middle school) Advisers of Teacher Training Centers Univ. Prof Computer programmers	Cabri 92% Geogebra 89% Wiris 39% Cinderella 15%

**Table 1** – Synthesis about the context, participants and software in the LUMs

### Context in which the LUMs took place

Only 5 meetings were regional or local. The 13 other meetings were mainly national. Two of them had an international audience (in Romania and in Spain).

Five meetings were organized only for Intergeo. All the other ones took place within a conference at the national level under the format of a specific workshop for example. It was an easier way to disseminate the aims and work of Intergeo and to increase the number of possible contributors. The organizers of all these meetings welcomed the organisation of an Intergeo LUM within the conference. This confirms the general positive appreciation of Intergeo aims by the community of mathematics teachers in Europe.

It must be added that in some other meetings not included in Table 1, participants were informed about Intergeo, mainly in Spain. The quality questionnaire of WP6 gave rise to workshops, as for example in Cordoba (Argentina in the Iberocabri conference, September 2009) and at CERME (Conference of the European Research in Mathematics Education Association) in Lyon (January 2009).

### The participants of LUMs

As expected and planned, most of the participants were secondary school mathematics teachers. The LUMs usually attained an attendance of 20 to 30 people. Sometimes a large number of participants around 100 or more attended the LUM.

### Software used by the participants

Usually the software used by participants belong to the dynamic geometry software programs members of the consortium. Some additional programs are used such as Classpad, TI Inspire, Kid, DrGeo, CAR, Poly, Geometer Sketchpad (in 25% of schools in Lithuania), CarMetal, Declic (in France).

### Were participants already informed about Intergeo before the LUMs?

It seems that for all the first LUMs taking place in a country, participants had no information about Intergeo except in Lille (June 2008). In Lille, the participants were already informed about the common file format but underestimated the size of the platform for resources. When a second LUM took place in a country, a number of participants were already informed about Intergeo. For example, in the recent meeting of Castro Urdiales (March 2009), most of the participants had information and even some of them already participated in the project

### Outcomes of the LUMs

The LUMs taking place in the first year of the project could not demonstrate the platform as it was still under construction. They were mainly informative and this may have caused the problems to recruit possible contributors to the Intergeo project.

A high interest for dynamic geometry was generally demonstrated (even enthusiasm in the recent LUM in Castro Urdiales) and the LUMs raised interest for Intergeo. Several participants declared themselves as ready to contribute in various ways. Table 2 displays the number of participants for each type of contribution.

Volunteers for	assessing the quality of available resources on the website	authoring resources	translating material	testing in classroom	Disseminating the project
Czech Rep 2007	25	20	20	20	20
Czech Rep 2008	10	10	10	10	10
Vilnius (Lithuania)	5	4	2	4	10
Nitra (Slovakia)	5	4	3	5	10
Ciechocinek (Poland)	1 participant willing to participate in the project	0	2	2	0
Grevenmacher	3	8	0	1-2	15
Lille (France)	Commitment of 3 persons to fully participate in all aspects of the project				
Sevilla (Spain)	3	0	0	3	0
La Rochelle (France)	Commitment of 3 persons to fully participate in all aspects of the project				
Constanta (Romania)	0	0	some	some	some
Luxemburg	4	5	0	2-3	13
Castro Urdiales (Spain) (out of 26 answers)	16	10	5	15	13

**Table 2** – Commitment of LUMs participants for contributing to Intergeo

The most preferred ways of contributing are the dissemination of the project and the assessment of the quality of available resources, probably because they are less demanding than authoring resources or testing them in classrooms. The less preferred contribution is the translation of existing material, probably for language reasons.

This is to connect to the reluctance expressed by participants of using the Intergeo platform in English. It is clear that for most of the participants in countries like Lithuania, Poland, Czech Republic, Italy, Spain, and Portugal, English may be a barrier to access the content of the platform. As a consequence, it is very critical for the project to find human resources for translating the platform and the resources. Perhaps translating the platform into Russian could help reaching capable people in former Eastern Europe.

Yet, we might remark that for both the corpus of annotations and the platform, the translation process to several languages is correctly on-going. At this point we can mention that translations of the ontology have not been started. Reasons for this include delays in the platform, which have prevented users from getting familiar with the competencies, even to the point of not realizing there is something to translate there; and the technical nature of the task, which makes it not only necessary to know the languages but also to have a background in mathematics education.

It might also be mentioned that volunteers will have more ways to collaborate when additional functionalities appear in the platform; for instance, it is expected that soon it will be possible to contribute with national curricula and tables of contents of textbooks.

If the language problem is the major concern of the participants of LUMs, another problem arose at the Italian LUM. Italian teachers might already be solicited by other projects, for which they get financial compensation. As a consequence, there is a need to find incentives to get volunteers involved.

Let us mention that enrolled users from the meetings are already active and have been submitting traces. These traces may vary in terms of content and format. Some of them are reduced to a dynamic figure whereas other ones are long documents presenting a sequence of activities. Some participants in the Lille meeting in June 2008 appreciated the quality of some resources but were surprised by the heterogeneity of the resources. Note that in Spain, the dissemination of a submission protocol in various forums has made a big difference in the amount and quality of submitted traces. This certainly should be extended to other languages.

## **6 Local Users Meetings: conclusions and recommendations**

During these past 18 months, quite a few Intergeo team members have experienced the sweet moments and the hardships of organizing Local User Meetings over a great part of Europe, attempting to disseminate the news about Intergeo, shaping up some active groups for Dynamic Geometry practice and enrolling teachers in those tasks of Intergeo that required their participation.

The number and geographical coverage of the meetings has been quite reasonable, much beyond initial commitments, although it is obvious that achieving a truly European dimension will require further efforts (for instance, regarding Germany, U.K., Greece, Holland, etc.).

The main outcome of this consortium task has been, in our opinion, to promote, in general, the use of DGS programs of different kinds and to link that promotion campaign to Intergeo. Many teachers and administration officers (often involved in some of the teacher meetings we have attended), all over Europe, know now that there is an active EU supported team of reference for DGS matters.

We have had less success in organizing the concrete participation of these early communities of practice around Intergeo tasks. Some of the reasons for this, detailed in Section 4 in this report, are related to the delays in achieving the expected features of the Intergeo platform and to the change of platform in the Fall of 2008. The project needs to coordinate the actions of the different Workpackages better, to optimize the efforts of the different teams and to synchronize the agenda of the different tasks. This lesson should particularly be taken into consideration concerning the Quality Assessment period that is

about to start now. In particular, we suggest the sharing, among WPs, of LUMs presentation material, submitting to relevant work-packages leaders such texts as protocols for external users, so that they are validated for long-term relevance.

We have also learned that involving teachers in some structured way requires, in different aspects, to devote some financial resources (for instance, for translation tasks; or as a monetary compensation, which is common in Italy concerning research projects; or for taking care of travel expenses that teachers might require to work in the communities of supporters they have constituted, if we want to have an ample geographical coverage in case the population is disperse, as in Spain, etc.). These financial resources could be obtained from the Intergeo budget, but this poses, sometimes, administrative problems within each particular team, since these costs have not been explicitly regarded in the initial budget. Adopting some concrete and uniform measures on this issue could be helpful for the future of our impact in these rising communities of practice.