

# **GIPSIE: Lessons learned from promoting interoperability in Europe**

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## **ABSTRACT**

Interoperability is crucial for the future viability of the GIS industry. Europeans feel a lack of sufficient organisation and access to the international interoperability specification. Full participation and integration of European interests into the process is the best chance to gain competitiveness.

This fact is recognised, among others, by the European Commission, who put much effort into stimulating developments in this field. Both the ESPRIT and the Info2000 research programmes are funding projects in the domain of GIS development. The motivation for such stimulation is found in the fact that between 1995 and 1996 the European GI-industry has lost 5% of market share in its home market, which grew by 18%. Especially to small and medium size enterprises (SMEs), interoperability and OpenGIS<sup>1</sup> offer opportunities to regain market share for their GI-software and -services.

Under the ESPRIT programme, the GIPSIE project is responsible for stimulating the European GI-industry by enhancing its participation in the OpenGIS process. This paper focuses on the “what, why and how” of the GIPSIE project, as well as the experiences from the project.

After a short introduction into the current development of the European GI-market, the mission, aims and means of GIPSIE are explained. The positioning of GIPSIE between the OpenGIS Consortium (OGC) and the European GI-community is described, as well as the achievements during the first year of the project.

The experiences encountered after one year of the project are summed up. GIPSIE succeeds very well in providing information about the OpenGIS process to the European GI-community. On the other hand, it turns out that it is very hard to achieve active feedback and participation from European players. In this respect, there may be a role for regional representation to funnel feedback to the consortium much more effectively than individual organisations can.

We expect the lessons learned through GIPSIE to be useful for further stimulating the development and adoption of OpenGIS specifications, not only in Europe, but also in other parts of the world such as New Zealand, Australia and Asia.

**Keywords and phrases:** GIPSIE, OpenGIS, Interoperability, OGC, European GI-market, business opportunities

## **1.0 THE EUROPEAN GI-MARKET**

Expectations about the growth of the GI-market are high. A recent study has shown that the total revenues in the European GI-market will grow from around 450 Million US\$ in 1994 to over 1400 US\$ in 2004 (Lawrence,

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<sup>1</sup> OpenGIS<sup>®</sup> is a trademark or registered trademark of Open GIS Consortium, Inc. in the United States and in other countries

1999). This means a tripling of the market in just 10 years time. Similar numbers are found for the GI-services and GI-data market.

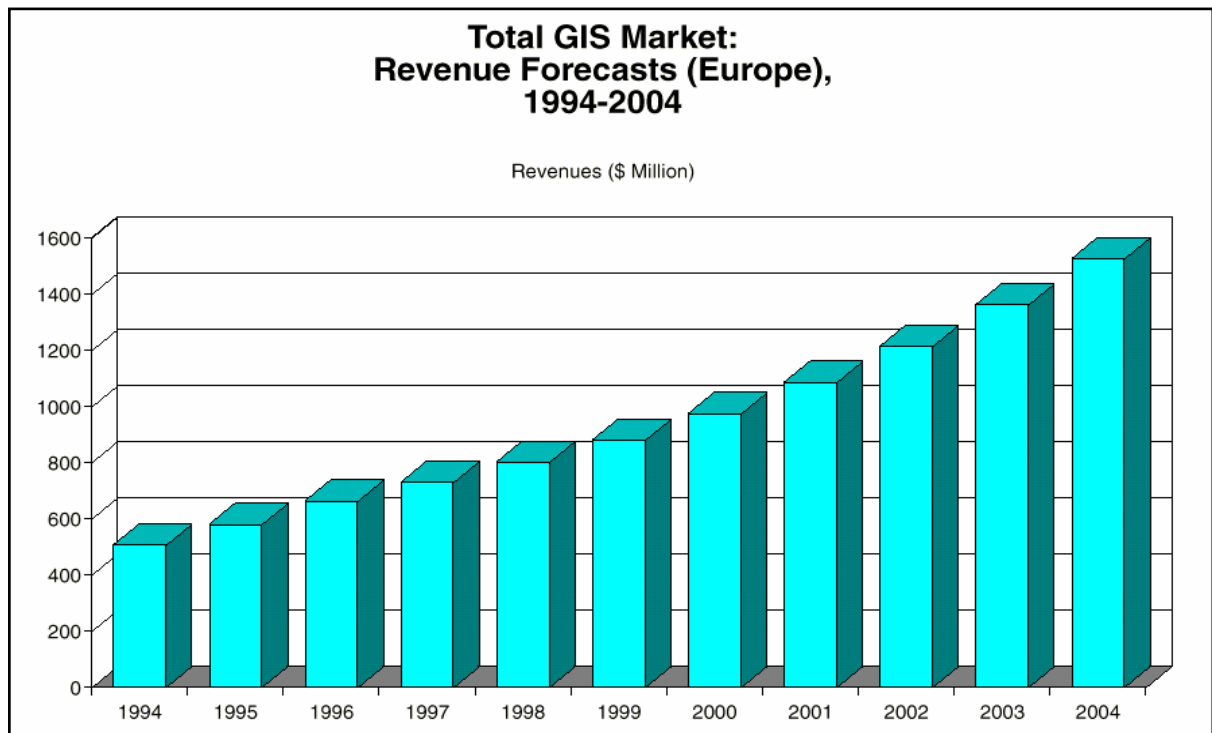


Figure 1: Estimated growth of European GIS-market, source: Lawrence (1999)

In this growing market, we see that between 1995 and 1996, from the top 30 GIS software companies, European businesses have lost no less than 5% market-share in their home market, which grew by 18% (Dataquest, 1997). One of the reasons for this is that it is becoming increasingly harder to compete with the large, non-European, GI-corporations offering total solutions. Many small and medium enterprises (SME's) simply do not have the mass to offer software and services to their customers at this scale.

The strength of the European Industry lies at a different level. European businesses are generally small and specialised. They cannot, and should not, try to compete with the GIS giants. Instead, they should focus on their strength: building software, selling data and offering services for specific user communities. One essential element is needed to achieve this goal: interoperable geoinformation<sup>2</sup>. Then, and only then, can SMEs afford to focus on their core business, plugging their products into other interoperable components, and conquering their place in the global GI-market.

## 2.0 GIPSIE: WHAT?

GIS Interoperability Project Stimulating the Industry in Europe (GIPSIE) is a project in the field of Geoinformation, funded by the European Commission (Directorate General 13: "Information Society") under Esprit, the EU information technologies programme. The project took off in June 1998, and has a duration of 24 months. GIPSIE's aim is to promote interoperability in the field of GI for European companies, as well as to participate actively in the Open GIS Consortium (OGC). GIPSIE will help European industry to co-operate, and it will contribute specific European demands and expertise into the OpenGIS process.

GIPSIE is established as a working group, co-ordinated by the Technical University of Vienna. The partners of the working group are partly from industry, partly from research:

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<sup>2</sup> **Interoperability** - The ability for a system or components of a system to provide information portability, interapplication and cooperative process control. Interoperability, in the context of the OpenGIS Specification, is software components operating reciprocally (working with each other) to overcome tedious batch conversion tasks, import/export obstacles, and distributed resource access barriers imposed by heterogeneous processing environments and heterogeneous data. (Buehler and McKee, 1998)

- SICAD Geoinformatics (Germany);
- Intergraph Europe (Netherlands);
- Laser-Scan Ltd. (UK);
- Space Applications Institute of the Joint Research Centre (Italy);
- Institute for Geoinformatics of the University Münster (Germany);
- Department of Geoinformation of the Technical University Vienna (Austria);
- Open GIS Consortium (USA).

### **3.0 GIPSIE: WHY?**

There are three issues that form the motivation for the GIPSIE project:

- the European GI-industry is losing market share,
- the importance of representation of European interests within OGC and
- exploiting the European potential in the OpenGIS process

Although interoperability and OpenGIS concern everyone who is in the GI-market, it particularly concerns Europe (see section 1). On the one hand, the GI-market is, also for European companies, a world-wide market. However, in this expanding market, European GI-businesses are losing market-share. It is becoming increasingly harder to compete with large GI-corporations offering total solutions. OpenGIS offers Small and Medium Enterprises (SMEs) the opportunity to focus on their core business and conquer their own market niche. That is a consequence of modularization and the concept of configurable components. But only a small number of European companies is actually represented within OGC. SMEs often feel overcharged to participate actively in OGC, with its frequent meetings all over the world.

On the other hand, it is to be expected that Europe has special demands or interests, which should influence the development of a world-wide standard. Examples here could be multi-language support, catalogue services, adaptability to various national mapping standards, semantic issues and so on. A ‘voice of Europe’ is required in OGC, to make sure these issues get sufficient attention.

And last but not least, Europe has something to offer to the OpenGIS process. Europe offers a market-, industry- and research potential, which cannot and should not be ignored by OGC.

### **4.0 GIPSIE: HOW?**

The GIPSIE mission is to:

“Create a bridge between the Open GIS consortium (OGC) and the European GI-community”

This means setting up a communication channel, a bi-directional information exchange, between the European GI-community and OGC, thereby lowering the threshold for Europeans to learn about, and participate in, the OpenGIS process.

The GIPSIE-mission translates into four main tasks. These tasks are:

- Inform the European GI-community about OpenGIS;
- Represent European interests within OGC;
- Provide a discussion forum on OpenGIS issues;
- Co-ordinate European contributions to OpenGIS specification development.

Four instruments have been established to achieve these tasks (see figure 2):

- The European Special Interest Group (European SIG) within OGC;
- The GIPSIE Information Service (GIPSIE-IS);
- Technical debriefings;
- GIPSIE Information Days.

The working of these instruments will be explained in the next sections.

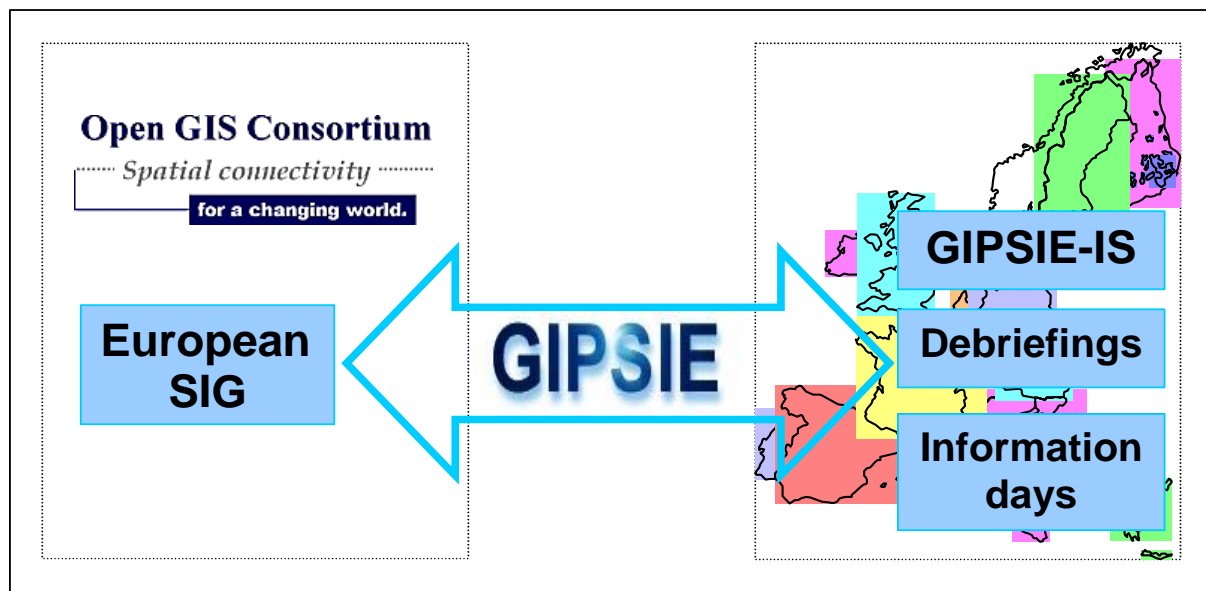


Figure 2: The GIPSIE position

#### 4.1 European Special Interest Group

The European Special Interest Group, or European SIG, is designed for members of the OpenGIS Consortium who have an interest in the European GI-business. It is an integral part of OGC and functions at the Management Committee level.

The objectives of the European SIG are:

1. To unite the European GI-industry and establish a channel to communicate European interoperability issues to the OpenGIS Consortium and vice versa;
2. To identify issues which relate to the interests and concerns of European of the OpenGIS Consortium and which have significance for the growth development of the OpenGIS process;
3. To define and explain these issues, and to recommend an appropriate organisational approach to deal with them e.g. commission white papers, recommend Technical Committee (TC) SIGs, do research, etc.

The European SIG thereby performs the GIPSIE tasks of representing European (business) interests in OGC, and co-ordinating European issues and contributions.

#### 4.2 GIPSIE Information Service

The GIPSIE Information Service, or GIPSIE-IS, is an OpenGIS discussion forum in the form of an E-mail list. Its goals are:

- To form an OpenGIS discussion forum for all interested parties (particularly non-OGC members);
- To be a medium for information distribution on interoperability issues;
- To function as an OpenGIS news service;

- To form opinions on current interoperability issues.

Currently GIPSIE-IS has over one hundred subscribers, and is still growing. The list performs the GIPSIE tasks of informing the European GI-community about OpenGIS developments, as well as providing a discussion forum on OpenGIS issues. For information on how to join GIPSIE-IS, see the contact addresses in the references.

### **4.3 Technical Debriefings**

The first main task if GIPSIE is “Information dissemination”, that is informing the European GI-community about the OpenGIS process.

One important way in which information dissemination takes place is through so-called “technical debriefings”. Debriefings organise the flow of information from OGC to the European industry at a technical level. They present the results of the OGC meetings, give overview information about new products, and give access channels to specific information. At each bi-monthly meeting of the OGC technical committee, GIPSIE representatives summarise the technical developments and publish them on the GIPSIE web site. In this way, non-members, as well as OGC members who were not able to attend, can keep an overview of the progress in the specification of the interoperability standards.

GIPSIE has been producing technical debriefings since December 1998. They can be found at the GIPSIE web site (see contact addresses in the references).

### **4.4 Information Days**

General information days are intended for higher level management to inform about OpenGIS and interoperable GIS components. The meetings cover non-technical information in the national or regional language. The aim is to inform the GI-industry, users and potential users about benefits from participation in OpenGIS, to raise awareness about OpenGIS, and to collect special regional requirements to feed back into the OGC process.

The information days thereby mainly perform the first GIPSIE task of informing the European GI-community about OpenGIS.

## **5.0 ACHIEVEMENTS**

GIPSIE is operating since June 1998. At the time of writing (September 1999):

- The European Special Interest Group has been established;
- Five information days, in different European countries have been held, with a total attendance of over 400;
- Five debriefings of OGC Technical Committee meetings have been published;
- A shortlist of specific European interoperability topics has been created for discussion with OGC;
- OGC has acquired more than 25 new European members since GIPSIE started, 16 of which are from the GI-industry;
- The GIPSIE Information Service (GIPSIE-IS) was started, with over 100 subscriptions. A first success of GIPSIE-IS was registered last summer. A participant from Sweden started a discussion on the merits of including Z-values in the OpenGIS Simple Features specifications. As a result, there is now a change proposal on the table to alter the specifications accordingly;

The ultimate goal of GIPSIE, stimulating the industry in Europe, is of course far from being fulfilled in one and a half years. Nevertheless, we see that the instruments chosen for this task are working and that progress is being made.

## **6.0 EXPERIENCES AND LESSONS LEARNED**

After more than a year of GIPSIE and considerable achievements, it is time to ask the question: “In how far is the GIPSIE mission being achieved”. And subsequently: “What are the consequences for GIPSIE”.

Looking back at the GIPSIE mission statement: "Create a bridge between the Open GIS consortium (OGC) and the European GI-community", GIPSIE intends to build a bi-directional information channel between Europe and OGC. The main conclusion that can be drawn at this point is that GIPSIE has succeeded in establishing this channel, but the direction of flow is unbalanced.

The instruments that GIPSIE uses to channel the information flow succeed quite well in getting the OpenGIS message to the European GI-community. There is considerable interest in the GIPSIE information days and technical debriefings. Conversely, the GIPSIE Information Service functions, together with the European SIG, as a medium for the flow in the other direction. Although both institutions are established, they are not operating as actively as the other ones. The GIPSIE-IS subscription is indeed over 100, but the traffic in this group is limited. At this stage, the European SIG has relatively little European representing to do.

This pattern of interest in OpenGIS, but little active participation, can also be illustrated by the example of the UK based "Association of Geographic Information" (AGI). AGI has a membership of more than 1100 firms, government organisations and individuals, all willing to pay a membership fee to have AGI represent their interests. In contrast with this, OGC has only 8 UK-members. A similar pattern can be seen in many European countries. Most organisations do not have the awareness, manpower or motivation to invest in an OGC membership. An investment which is more than just the annual membership fee. For active participation, significant human and travel resources are required.

Apparently, for many people in Europe, OpenGIS is still a distant concept, which results in a "wait-and-see" mentality. This is in no small part due to the fact that for a very long time there were simply no interoperable GIS applications to be demonstrated. Without tangible products, the message is hard to communicate, even to a willing audience.

Another factor that plays a role is that active participation in OGC by non-native English speakers is somewhat of a problem. English is the working language during the TC-meetings, and members not having full grasp of the language have found this a barrier to take part in the discussions. This aspect also strengthens the impression - albeit not always justified- that OGC is a USA-UK dominated consortium.

So what are the consequences for GIPSIE from these observations?

First of all, it seems that there is a potential role here for national GI-bodies. Institutions like for instance AGI in the UK, RAVI in the Netherlands or CNIG in Portugal are in a position to represent their members in OGC, transmit the OpenGIS message in local language and send representatives to OGC meetings to save cost.

At this point in time however, none of these European organisations have taken up OGC membership. Not that this is without precedent. The Australian "WWW mapping consortium", has made a successful submission to become a full member of OGC, with particular emphasis on the Web Mapping component. GIPSIE will need to look into the prospects that these national bodies can offer.

Secondly, GIPSIE should strive for using tangible interoperable GI-products in communicating with its target audience. There's no substitute for a good demo. Luckily, at August 1999 TC-meeting, OGC could applaud two new prototypes of interoperable components: spatial catalog services and access to distributed grid coverages. Moreover, in September, the Web Mapping Testbed (WMT) team will have a prototype integrated WWW-mapping client available for demonstration. These developments hopefully can help OGC and OpenGIS lose some of its "vapourware image". For this reason, GIPSIE has taken the initiative to develop a WMT demonstration for the European situation.

## **7.0 CONCLUSION**

It is crucial for the European GI-industry to be involved in OpenGIS. GIPSIE's task is to stimulate this involvement by informing Europe about OpenGIS, representing European interests in OGC and by providing a European discussion forum on OpenGIS. To achieve its goals, GIPSIE has established a European Special Interest Group within OGC, as well as the GIPSIE information service, is organising information days throughout Europe and publishes bi-monthly technical debriefings on the development of OpenGIS specifications.

Now that the project has been running for over a year, we can sum up the lessons learned by GIPSIE:

- There is a requirement for local representation to communicate about OpenGIS in local language and culture;

- Many organisations cannot or do not want to participate actively in OGC. This can be overcome by a group of smaller players getting together, like the Australian WWW mapping consortium;
- There is an important role to be played for regional or national GI-organisations concerning the two points mentioned above;
- The availability of tangible products, prototypes and demonstrations makes transferring the OpenGIS message to the GI-community a much more effective exercise, and will hopefully promote a more active standpoint from the European GI-industry.

How can the GIPSIE experiences be used for the Australasian situation?

On September 8<sup>th</sup>, 1999, out of a total of 187, there were 23 OGC members from Australia, 1 from New Zealand and 19 from the rest of Asia (mainly Japan). This is less than the total European participation (56), and thereby definitely below par.

This paper has hopefully made it obvious that both OGC and the Australasian GI-industry would benefit from increased OpenGIS awareness and participation in the region. Some initiatives are already taking place to achieve this. Within OGC, a Japanese regional SIG, similar to the European SIG, is in the making. It will perform a combined Europe-SIG and GIPSIE communication-role. The Australian WWW mapping consortium as another initiative has already been mentioned.

There are a number of national and regional GI-bodies that could take up the role of *bi-directional soundbox*. AURISA for instance, the Australasian Urban and Regional Information Systems Association, claims it “is the principal authoritative source of information in the Australian, New Zealand and Asia-Pacific Region for urban and regional information systems with an emphasis on spatial information systems policy, applications and technology” (AURISA, 1999). This makes AURISA one candidate for fulfilling the regional role. But there are of course many other contenders.

## ACKNOWLEDGEMENTS

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### Contacts

- For general questions about GIPSIE: <<mailto:gipsie.info@geoinfo.tuwien.ac.at>>
- The GIPSIE homepage is at: <<http://gipsie.uni-muenster.de>>
- GIPSIE Technical Debriefings: <[http://gipsie.uni-muenster.de/interest\\_group/debriefing\\_form.htm](http://gipsie.uni-muenster.de/interest_group/debriefing_form.htm)>
- For information about GIPSIE-IS: <[http://gipsie.uni-muenster.de/interest\\_group/discussion.htm](http://gipsie.uni-muenster.de/interest_group/discussion.htm)>

- The OpenGIS Consortium:  
<<http://www.opengis.org> >
- The Australian WWW mapping consortium:  
<<http://www.auslig.gov.au/asdi/awwwmc.htm>>
- The ESPRIT programme of the European Union  
<<http://www.cordis.lu/esprit/home.html>>
- EU Info2000 page  
<<http://www2.echo.lu/info2000>>