Having a Foot on Each Shore –
Bridging Global Software Development in the Case of SMEs

Ita Richardson
Lero, University of Limerick, Ireland
itta.richardson@ul.ie

Gabriela Avram
Lero, University of Limerick, Ireland
gabriela.avram@ul.ie

Sadhana Deshpande
Lero, University of Limerick, Ireland
sadhana.deshpande@ul.ie

Valentine Casey
Lero, University of Limerick, Ireland
val.casey@ul.ie

Abstract

In a globalised world economy, small and medium-sized companies (SMEs) are now entering the global software engineering (GSE) arena, but their involvement is more often opportunistic than carefully planned. Considered until a few years ago a major destination for outsourcing/offshoring, Ireland is now moving toward a dual role. Small Irish companies are becoming aware of the opportunities provided by offshoring their software development activities and are beginning to harvest the benefits.

Two case studies were undertaken in two small Irish companies that have offshored their software development to subsidiaries in Romania and India respectively.

Building on Lings’ [1] reference model for distributed development, the current paper aims at illustrating particular ways of putting these strategies into practice in the case of small companies by relaying on people who can bridge the two cultures. Our paper demonstrates that, once particular strategies are implemented, small companies can also benefit from offshoring.

1. The Irish Bridge

Considered until a few years ago as a major destination for outsourcing/offshoring - together with India and Israel [2]- Ireland is now moving towards a different role in the globalised world economy. [3] No longer a low-cost destination [4], Ireland is becoming a strategic one for reasons of its accumulated expertise, geographical position and low company tax level. It also continues to benefit from its ‘near shore’ status, ascribed to its linguistic and cultural similarities to the U.S. [3] [6].

In this context, a number of studies have focused on the ability of Irish subsidiaries of multinational companies to intermediate (bridge) the collaboration between other subsidiaries around the world. Irish subsidiaries of multinational companies for many years were at the receiving end of offshoring. They are now leveraging the accumulated expertise in managing work they send offshore [7]. Millewski et al. [8] study the case of a team in an Irish subsidiary that gradually takes up an “information bridging” role between members of the team in the US and others in an Indian subsidiary. Both these studies focus on multinational companies. While there has been a major experience gain from receiving in offshoring/outsourcing relationships, this gain is not confined to big companies. We can see that it has also proliferated in the Irish business environment. As this paper shows, small Irish companies are beginning to harvest the benefits of the opportunities provided by offshoring their software development activities.

2. The Importance of SMEs for the Irish Economy

In Ireland, almost 99% of companies are small firms that employ less than 50 people, which account for over 68% of private sector employment. While these statistics reflect overall small firm growth in Ireland, the development agency, Forfás, indicated that certain sectors are critical to the continued success of the Irish economy [9]. One such sector is the Information and Communications Technology sector. This sector employs an estimated 92,000 people within 1,300 companies, with a combined estimated turnover of €52 billion for the year 2003 [10]. However a further requirement for small firms is that they have growth potential, and [11] indicate that the employment contribution of Irish small firms is only 11% compared with an EU average of 15%. Other government initiatives are focusing on the further establishment and increased growth of indigenous
firms in this sector to ensure that a greater level of enterprising activity can be achieved [12].

The success of the growth to date of the ICT sector in Ireland is attributed to a number of factors which include upgrading of Ireland’s telecommunications infrastructure, low corporation tax, English speaking workforce, availability of highly qualified and educated workforce, a strong indigenous firm base and deployment of EU structural and cohesion funds to Ireland [9][13][14].

Furthermore a consequence of Ireland’s rapid economic progress over the past decade has been an increase in Ireland’s cost base to a point where Ireland is no longer a competitive location for many of the traditional manufacturing companies. Simultaneously, Ireland is facing increasing competition for inward foreign direct investment (FDI) for low added-value manufacturing-oriented activities from Eastern Europe and Asia. This reinforces the need to compensate for the demise for FDI in traditional sectors by increasing the number of indigenous firms in growth sectors such as ICT. Revenue increases within the software sector are dependant on software companies, both future and established, benefiting from new challenges and opportunities available in the marketplace. To do this, these software development companies need to understand the opportunities and threats which exist within the world of software development [15]. Opportunities include the development growth in specific domains such as the automotive and medical device industries, where many products are now software focused. Threats include the increasing competition from low-cost economies (e.g. India, China, Eastern European countries) which are becoming more accessible due to globalisation. However, if harnessed properly, the growth of the Irish software industry, and particularly the small firm sector, can benefit from the cost-effectiveness of globalisation. Consequently, there is an increase in the number of Irish companies establishing subsidiaries in these countries. However, globalisation within software development companies is not an easy task. And, with the different requirements that small firms have [16], taking on the global economy is a further challenge that they have to face.

3. Challenges of Effective Offshoring

Software development today is considered a globally sourced commodity [5] [17]. The popularity of this strategy is ascribed to organizations endeavouring to gain and maintain competitive advantage from the globalisation of software development [18][19]. The potential for achieving this advantage is attributed to the benefits provided by labour arbitrage, which offers the opportunity for reduced development costs [20][21]. This is facilitated by the availability of well educated and technically competent software engineers in low cost centres internationally [22][24]. It is a commonly held view that these savings can be coupled with the opportunity for round the clock development. The logic underpinning this approach is that these cost savings and the temporal differences between locations can facilitate competitive pricing and reduce time to market and thus enable companies to compete more effectively [25][26].

Some of the difficulties encountered when implementing a Global Software Development (GSD) strategy include such factors as the problem of understanding requirements, testing of systems and the coordination of these types of projects [27][28]. These difficulties are further compounded by cultural and language differences, lack of communication, geographical and temporal distance from the customer, different process maturity levels, development and testing tools, standards, technical ability and experience. As a result the management of globally distributed software development projects is a difficult and complex task [29][30].

Distance has been identified in the GSD literature as a key problem, introducing barriers and complexity into the management of globally distributed projects [22][31][32]. This can be directly ascribed to the fact that there are four key elements to distance in this context. Geographical distance introduces physical separation between team members [27]. Temporal distance hinders and limits opportunities for direct contact and cooperation [33]. Linguistic distance limits the ability for coherent communication to take place [19]. Cultural distance negatively impacts on the level of understanding and appreciation of the activities and efforts of remote teams [34]. Coordination, visibility, communication and cooperation are all negatively impacted by geographical, temporal, linguistic and cultural distance [35].

There are several characteristics that differentiate the activity of small companies from what happens in large companies: the hierarchy is flat, everybody knows everybody, even if they work from different
The projects undertaken are usually small scale, the complexity is lower. Managers and employees communicate constantly, and most of the internal communication is informal. Ongoing communication and reduced personnel turnover support trust being built over time. As mentioned in [5], “cooperation amongst a group of individuals is greatly facilitated if they have established personal bonds and know one another very well”. Employees tend to develop shared understandings; for long projects, this tendency can also extend to customer representatives.

4. The Research Project

Although GSD implementation presents challenges about which they must become aware, increasingly, small companies in Ireland are establishing subsidiaries in other countries. This research project aims to study how small companies in Ireland are setting up in the global environment. To do this, we carried out qualitative research in two Irish small companies, both of which have subsidiaries abroad - Finesoft has a subsidiary in Romania and Gaelic Systems has a subsidiary in India. In both cases, we did exploratory case studies, using semi-structured interviews, observation in Irish and Romanian locations and document collection. We carried out a total of eight interviews (4 in Gaelic Systems, 4 in Finesoft) based on a semi-structured questionnaire. In Gaelic Systems, we interviewed the Chief Executive Officer, the Engineering Director, an Indian software developer based in Ireland, and an Indian software developer who was visiting Ireland. In Finesoft we interviewed the two co-owners (and managers), and two of the Romanian developers. We analysed the data using coding, and using this analysis, mapped the findings to the Lings reference model for successful distributed development of software systems [1].

4.1 Case Study – Finesoft

Finesoft was established in January 2006 in Dublin, Ireland. The owners - Seamus and Anna - had worked together for 4 years in an Irish company providing software applications for Telecom and media companies. Previously, Seamus had been a project manager and Anna (originally from Romania) was an experienced software developer who worked on his team. Leaving their employment, they decided to set up their own company in January 2006. They hired 4 developers and took on project manager roles. To ensure the growth of the company, they tried to recruit new developers in Ireland, but failed. Consequently, Anna identified a small company with 5 employees in Bucharest, Romania which they acquired. In December 2007, there were 19 people working in the company’s offices in Romania, and 3 project managers (including the 2 owners) in Dublin, with Anna travelling between Dublin and Bucharest more frequently. Besides managing specific projects, the two business owners were actively involved in acquiring new projects and expanding their activities.

The company’s customer base is expanding steadily. The work on a new version of the product initially outsourced to the company by a customer in Dublin is continuing, in parallel with maintenance work for the current version. A group of 4 developers is assigned in Romania to this project and they are working very close with a development team on the customer side based in Ireland. The company has another contract with the development unit of a Danish company; 3 dedicated developers are working on this project, which is a one-off communication project.

Finesoft has appointed a sales representative in the US (on the West Coast) who is focused on acquiring new contracts. Currently, Finesoft is providing support for an US Telecom remotely (through its Romanian developers), and is installing financial applications for 3 other companies in US. Recently, a new contract with a UK company has been signed. Occasionally, they do work on projects for Irish or Romanian customers - but this is not their actual focus.

Being an Irish-based company provides credibility on the international arena. In doing business, Irish companies have the reputation of being stable and reliable, while the Romanian business environment is still considered unstable and emergent. Having a development division in Romania is a signal for the customers that the company could offer quality work at a lower price than other competitors. Having a foot on each shore also inspires confidence in the way the company is dealing with cross-cultural communication.

4.2 Case Study – Gaelic Systems Development

Gaelic Systems Development was established over 25 years ago and develops both hardware and software products. The original entrepreneurs are no longer with the company of which Martin is Chief Executive Officer. The Engineering Director is Pádraig, who has responsibility for all software and hardware development within the company. During the past 25 years, Gaelic Systems has varied in size from 6 to 50 employees. In early 2007, they had 8 employees, 4 of whom were developers. While they had established a market in which they could grow, they needed to acquire venture capital. This is a common problem faced by many small Irish software development companies. Thus, they established a relationship with Hatthi, a large Indian company, who were looking for
an acquisition in Europe, and were also aligned to Gaelic Systems in their product base. Since Gaelic Systems were acquired by Hathhi, they have maintained their identity and autonomy. Martin continues to run the company, and they have set up an Offshore Development Centre (ODC) in Cochin, India. Pádraig now manages a development group of 15 people, 11 of whom are employed in India. The advantages which the company has achieved through its partnership with Hathhi are that they have been able to expand their development activities and a new marketplace has opened up for the Irish company. Recently, Pádraig employed Sameer, an Indian software manager who had recently moved to Ireland and in now based in Gaelic Systems in Ireland.

5. A Reference Model for Distributed Development

Lings et al. presented a reference model for distributed development [1], which was developed from eight case studies they carried out on this topic, including both large and medium-size companies. For each global software development setting, (distribution over a temporal distance/ distribution within one country - including intra-European), the authors have presented ‘ideal-type’ organisations within their reference models. The concerning strategies they present are:

- Having a clear distribution rationale;
- Clarifying all understandings;
- Leveraging modularity;
- Using cultural mediation;
- Facilitating human communication;
- Managing processes;
- Developing a sense of teamness;
- Encouraging temporary collocation;
- Addressing heterogeneity;
- Developing an effective tool base.

For each of the researched case studies, we present how they are performing compared to the concerning strategy as presented by Lings et al. Given the Irish Government development strategy, we are interested in working with Irish SMEs to ensure that they perform efficient Global Software Development. The model developed by Lings et al. [1] is based on a number of small and large case studies, and therefore provides a basis for us to research whether the two companies which we have studied are performing well.

5. 1. Having a clear distribution rationale

According to Lings et al. [1], “not all projects and not all collaboration contexts are equally amenable to DD” (distributed development). Therefore, organisations should consider the type of project to be distributed and take considerations such as temporal distance, capability levels, and stability and decomposition of project into account.

When distributing projects within Gaelic Systems, management decisions were taken as to what parts of the project life-cycle to distribute. Product development and management is split between Gaelic Systems and the ODC, while requirements and design specification are retained in Ireland. Implementation is carried out in India. Furthermore, management discussed the distribution of particular product lines, and according to Padraig, Gaelic Systems have retained specific product lines “from customer point of view” and also for reasons “like security, confidentiality and intellectual property rights”.

In the Finesoft case, the distribution rationale was clear from the very beginning. The difficulty of finding developers in Ireland was the basis for the decision to move development as a whole to Romania. The project management work is done from both Ireland and Romania as Anna is travelling periodically between the two locations, while the software development work is only done in Romania, taking advantage of the highly skilled employee base and the lower costs.

5.2. Clarifying all understandings

It is important that before any project begins, all parties within a distributed team have clarified commitments, project goals and project targets. Documentation of processes should be produced.

In Finesoft, the two managers/co-owners have worked together on the same team and location for four years before starting this company. Their shared values and understandings were at the origin of the company creation. While they also employ other project managers, they are highly involved in every project and communicate permanently with each other. They usually have a Skype channel opened between them for most of the day. Anna communicates constantly with the developers, making sure that the projects stay on the right track. The two managers are also negotiating with their customers the project goals, targets and the commitments of both sides.

In Gaelic Systems, Pádraig has regular contact with Satish, the Indian-based project manager. They hold a weekly teleconference and Sameer (who is based in Ireland) joins these to help ensure that there are no communication problems. If there are sales representatives or people from India on-site in Ireland to carry out training, they usually attend the meetings. These meetings focus on project progress to date and on issues that may arise. The participants discuss how tasks achieved compared with planned tasks and they also decide what needs to be done the following week.
Pádraig mentioned that teleconferences are difficult because Indians speak with a different accent than Irish people. Too many teleconferences are being discouraged and for this reason there is regular e-mail communication between all levels within the company.

5.3. Leveraging modularity

Lings et al. [1] suggest that “for software development work ensure that the architecture of the system is consistent with the distributed structure of the team”. Therefore, they suggest that the architecture of the system is broken down so that the work can be effectively partitioned across sites.

In the case of Finesoft, modularity leveraging is mostly an issue solved between the Romanian developers’ team and the customer team collaborating over distance. The software architecture and development activities are located in Romania, and the developers are assigned to specific projects. The only ones working across projects are the managers.

In Gaelic Systems, projects have been split up based around the product life-cycle and, to date, this has allowed for effective development.

5.4. Using cultural mediation

Within the concept of cultural mediation is that people from other cultures are aligned to the project teams. This may be through a person from one culture spending some time immersed in the other culture, through a person from one culture moving permanently to the other team or through management rotating between teams.

In the Finesoft case, it is obvious that Anna had the role of bridging the two cultures. Having lived in both countries, she was perfectly aware of the similarities and differences. Seamus told us that before meeting Anna, he knew almost nothing about Romanians; 20 years ago, the idea of collaborating with Romanians would have been totally strange to him. Before his first visit to Bucharest, he expected Romanians to be “more animated, more exuberant, more…Latin!”; actually he discovered people were quite reserved. Seamus now perceives the Romanian developers as being highly motivated, and having a great desire to be successful; he noted that they “would work 24 hours to get the work done”, praised their work ethic and the fact that Romanians, just like the Irish, have a broad ranging education and believe in its importance. He also mentioned the openness of Romanians and their desire to learn (“tell me how to do it and I’ll do it”). Anna said that the period she spent working as a developer in Ireland gave her the opportunity to learn about the Irish and their way of doing business. The most notable difference she noted when she started her collaboration with Romanian developers was their lack of entrepreneurial/business culture and business communication skills, compared to the Irish.

From Pádraig’s perspective, he can see that there is cheaper labour available in India, and that Gaelic Systems “should not be constrained by resources”. They can now think about increasing their employee pool. However, they have to be aware of socio-cultural difference - “they are very different but this has not affected the business” He thinks that “Irish/European people are more direct while Indian people are very political and very careful with hierarchical structure”. None of the Irish management in Gaelic Systems had previous experience working with an Indian company. Therefore, when the opportunity arose to employ Sameer, a former Hatthi employee who had moved to Ireland for personal reasons, Gaelic Systems took it up. His main role is to overcome the communication gap within the teams based in Ireland and at the ODC. He takes care of the customer needs, understands them properly and conveys them to the development teams in India. He takes care of the daily requirements of customers, the team members in Ireland and India and also is part of the weekly meetings. He is aware of the situation in both countries and also has knowledge of working practices in India. From the engineering perspective, the relationship between Gaelic Systems and Hatthi is at an early stage, but having Sameer involved is helping to ensure that the relationship is successful.

5.5. Facilitating human communication

As face-to-face communication cannot take place in the distributed situation, Lings et al. [1] suggest that other methods of communication should be introduced. This may include a mediator during conference calls, language classes and increasing any opportunity to have face-to-face meetings.

For Finesoft there seemed to be no problems with using English for communication. All the Romanian developers have good English skills. However, one of challenges was the shortcomings in email business communication on the developers’ side. Both Seamus and Anna complained that sometimes the developers’ emails addressed to customers are difficult to understand and occasionally misunderstandings occur. Anna also emphasized that she has to point out the situations when sending an email is necessary to the developers and that she sometimes has to rephrase what they wrote, while in Ireland any junior developer would master these business communication skills. The developers are encouraged to talk directly to the customers (on the phone or on Skype) for maintaining a common awareness on the situation and avoiding misunderstandings that might emerge from ill-structured emails.
Initially, the Irish customer saw working with Romanians as an issue, as Irish people commonly do not speak any other language than English; they had quite a hard time communicating with the Romanian team because of their previous prejudices but after the first interactions and especially after visiting Romania, their worries disappeared. In time, communication improved, including events from their personal lives, like: "my son is going to college" or "my dog just died". (Seamus). For communication, the team, their managers and the customers use Skype (both text and voice), email, Virtual Private Networks (VPN) and external IPs. There is a 2 hours time difference between Ireland and Romania, and 1 hour between Romania and Central Europe, but the Romanian developers agreed to work Irish hours in order to maximize the time overlap.

Gaelic Systems have been bringing ODC-based Indian engineers to Ireland for training. They spend about 6 months there and then return to work in India. As mentioned previously, Sameer is Indian and is based in Ireland, so he is a link between both countries. While in Ireland, the Indian developers work with those based in Ireland and learn about the products and development methods used. The time difference between the Irish and Indian development group is 4.5 - 5.5 hours (dependent on time of year) so there is up to ½ day overlap. However, the Indians “work day and night so they don’t mind us contacting them late in the evenings, they tend to be online late in the evenings. They work long hours anyway”. There is huge competition among employees within Hatthi. There is no official work on Saturday, but still people do come to work and also sometimes work on Sunday. As a result of the level of communication which takes place which includes the teleconference which takes place once a week, e-mail and numerous telephone calls, there have been no difficulties thus far in the relationship.

5.6. Managing process

The process should be managed by “one, identified project leader with full responsibility” who should be supplemented with “team and local project managers”. Regular communication and reporting should be put in place, along with synchronisation of the development due dates.

At Finesoft, every project is lead by a project manager (Seamus and another PM from Ireland, Anna from Ireland or Romania). The number of projects running in parallel is relatively small, and the developers are each dedicated to specific projects. While on the technical side, the developers work very well independently, the business communication needs permanent monitoring.

Gaelic Systems is now a company within a group of Hatthi companies, but has its own management structure. While all of the Hatthi companies have a common ownership, there is no central management team, and internally Gaelic Systems continues reporting as it did when it was an independent company. From an engineering perspective, those developers employed in the ODC in India report to Satish, the Indian project manager based in India. Satish reports to Pádraig, the Engineering Director in Ireland.

Furthermore, Gaelic Systems is now considering the implementation of high-maturity processes. Hatthi is a CMMI Level 5 organisation and Gaelic Systems is ISO9000-2000 certified. It has been recognised that there is “some disconnection”, and processes are being run in parallel.

5.7. Developing a sense of teamness

Teamness needs to be developed within teams [27]. This can be done through the provision of a team web page and information such as local holidays. Furthermore, a good communication strategy needs to be put in place with regular reporting and updates about projects.

The two developers we interviewed in Bucharest perceived Finesoft as a good working environment, with “nice people, supportive managers, good salaries”, and they both mentioned it was good to be working there. They were working in a tightly-knit team with the customers’ representatives in Ireland. On several occasions when the customer representatives were mentioned in the interviews, the responses emphasized that they were actually considered and treated as partners. They perceived their Irish counterparts as working even harder than they did themselves. Both had the chance to travel to Ireland and meet their counterparts on the customer site. An Irish developer spent a week working with them in Bucharest when a milestone was approaching, and we were told that from the very first moment she wasn’t perceived as a foreigner or a customer representative, but as a fellow developer. Sometimes, people put 9-10 hours in instead of eight, but this is done on a case-by-case basis. They got to know the timetable of Irish commuter trains their counterparts are taking, the Irish National holidays and the exact problems their Irish colleagues were working on. Plans for annual vacations and days off are shared between the two teams, allowing for work redistribution.

Through the visits of the Indian developers to Ireland, developers are getting to know each other in both sites. There are also regular visits by Pádraig and Martin to India, so they know their counterparts there. Pádraig and Martin are responsible for the employment
of the Indian team members. Additionally, Sameer’s presence in Gaelic Systems in Ireland is helping to strengthen the links between the groups.

5.8. Encouraging temporary collocation

Individuals on teams should have the opportunity to meet each other, not only at management level, but at developer level as well. “Front-loading travel” should help the team from the outset, as do initial projects sessions which allow team members to meet personally.

In the case of Finesoft, the project managers in Ireland work merely from home, but the Romanian developers prefer the infrastructure and the team interaction in their Bucharest office and very seldom choose to work from home. Before August 2007, Anna used to spend about one-third of her time in Romania. However, more recently she spent almost all her time on the Romanian site, making efforts to grow the Romanian team. Seamus visits the Romanian site regularly, usually once a month. On several occasions, representatives of the customers had travelled to Romania to meet with the Romanian developers. While these visits also contributed to solving technical problems, their main purpose was to show the customer how the developers worked and build trust between the two teams. The two managers believe that socializing, getting the chance to see each other’s work environment and communicating directly are ingredients of lasting partnerships. It is also considered useful for developers on both Finesoft’s side and on the customers’ side to travel to work with the partners in their own environment for limited periods of time.

To date, travel from Gaelic Systems to India has been limited to management personnel. However, this is seen as important from the point of view of their customer market: “Knowledge of the Indian market would have been nil for us before this acquisition for our product of software development tools, probably India is next to China. We never understood the market there but with this acquisition we have now”. Indians travel to Ireland for training and to work with the developers so that they can develop an understanding of the products.

5.9. Addressing heterogeneity

It is beneficial if teams can use similar processes and tools [27], [36]. These should be agreed jointly by the centre’s involved in the distributed development, ensuring that there is a sense of ownership within all sites. Furthermore, where local terms and concepts exist, these should be understood by all.

In the case of technological compatibility, Gaelic Systems had to upgrade PCs in India as some of the Gaelic Systems projects required higher specification to carry out development. Once this was recognised, it was addressed immediately.

At Finesoft, the use of Skype for communication is generalised and project managers and developers usually open channels with their customers all day long. Virtual Private Networks and private IPs are used for sharing the results of the work with the customers.

5.10. Developing an effective tool base

In successful distributed development, “tools take-up is low” apart from configuration management tools. In this environment it is important to ensure that tools which “address real problems” are used, suggest Lings et al (2007)[1].

Finesoft is specialised in software for telecommunications and web design. They use an appropriate portfolio of tools to operate in this field. When working with customers who have preferences for different tools, they adopt those tools in order to be able to work effectively with the customer and fulfill the specified requirements.

From the process perspective, Gaelic Systems have upgraded their configuration management systems, as their previous one which was sufficient in a local development environment needed to be upgraded for the new distributed environment.

6. Discussion

Due to the importance of global software development and of small software firms to the Irish economy, we felt that it was important to examine how such small firms are coping with global software development strategies. We examined two case studies, both of which come from a different background, but both of which have, to date, successfully worked in a global development environment.

Entry to the global market, has, in both cases, been by accident rather than by design, and we see that this has been more opportunistic rather than it being an alternative carefully planned for.

In the case of Gaelic Systems, they were under pressure to sell the company as they faced huge problems with their current investors such as - “No assistance in Marketing and our location is not great; ... we are not in a silicon valley.” Also, they were not getting research and development assistance. At the same time, Hatthi was looking for acquisitions in Europe, and Gaelic Systems fitted the profile. From Gaelic Systems’ perspective, offshoring part of its software development activities was a consequence of the acquisition by an Indian company.
From the perspective of Finesoft, the managers were trying to extend the activity and acquire more customers, but could not find enough developers in Ireland. The idea of using Romanian developers emerged, and the Romanian manager tapped into a pool of resources to which she had access and with whom she had good relationships.

Regardless of the entry reasons, from what we have seen, the two Irish companies with whom we carried out the case studies are implementing global software development successfully. This needs to be looked at again when the relationships mature, but, at least we can say that they are building on a solid foundation. Developers and project managers in Ireland have learned a lot from being a destination for outsourcing (the idea of the Irish bridge) and we observe that a sort of common awareness on the do’s and don’ts of outsourcing/offshoring is permeating the software development community in Ireland.

The two companies have adopted cost-saving solutions by establishing development groups in countries with lower costs. In both situations, there was a trigger for selecting that specific destination: one of the managers being originally from Romania in the case of Finesoft, and the acquisition by an Indian company in the case of Gaelic Systems. Beside the cost-saving advantages, working across cultures usually presents huge challenges. Having on board people who can bridge the two cultures (Anna in the case of Finesoft and Sameer in the case of Gaelic Systems) and serve as “cultural liaisons” [22][37] has helped the two companies to cope better with these challenges.

7. Performance against Reference Model

In both the companies the management had a clear distribution rationale, both from the strategic and customer perspective. Particular product lines were retained in Ireland by Gaelic Systems while, in Finesoft’s case, only software development work was carried out in Romania.

To ensure clarification of understanding management in both cases maintain constant communication with the project managers at the offshore development centres about project progress. There is a clear hierarchy of communication among the team members. Planned tasks and achievements are discussed regularly.

Both companies demonstrate that they leverage modularity. In Finesoft, managers are working across the projects while the system architecture and development is carried out at Romania site. In Gaelic Systems, projects are split and work is packaged to reduce the need for coordination.

In both cases that we studied, cultural mediation is undertaken. Anna from Finesoft is ‘liaison’ between the Romanian and Irish culture and is effectively managing both sites and helping developers from Romania to enhance the business communication skills with customers. In Gaelic Systems a former Indian Hathan employee, Sameer, has a role to overcome the communication gap within the teams based in Ireland and at the ODC. Team members from the offshore unit visit Ireland regularly, and Irish management visit the Indian site.

Various technologies are used to support human communication. Weekly teleconferences, frequent daily emails and instant messaging are used for constant communication. One-to-one communication is encouraged with communication protocols set in both synchronous and asynchronous style. Both companies use facilitators (Anna and Sameer) in teleconferences to reduce misunderstandings and smooth conflicts.

To manage processes there is a need for appropriate team structure with project managers taking the full responsibility for each project. In each of Finesoft and Gaelic Systems there were structured managed project teams who communicate regularly.

Each of the two software companies were aware of the need to develop a sense of teamness. Regular visits occur between the sites. In Finesoft Anna is seen as a ‘link’ between the teams while in Gaelic Systems Sameer undertakes this role.

The importance of temporary collocation is evident within both companies. In Finesoft, Anna spends much of her time on the Romanian site to support team growth. Seamus also visits Romania once a month and customer representatives travel to meet developers. In Gaelic Systems, travel to India has been limited to management personnel, whereas the Indians travel to Ireland for training and to work with Irish developers. For the managers in Gaelic Systems, this has helped them to gain extensive knowledge of the large Indian market which otherwise would not have been possible.

There are advantages to be gained when heterogeneity is addressed. Enforcing common tools and processes makes collaboration easier, but there is a recognised cost. Ensuring that hardware and software is similar across sites is particularly important for Gaelic Systems, given their current market and product. They are also interested in standardising processes across sites.

It is also important for globalised companies to develop an effective tool base. Both companies have set up particular systems and tools for use within the organisations. These help to support the distributed environment in which they now operate.
8. Conclusion

Unlike much of the cases in the global software literature, these companies are small, employing less than ten people each in Ireland. Regardless, they have managed to set up a good global software engineering infrastructure. This, in turn, demonstrates that where the correct strategies are put in place, small companies can also gain benefits from globalization. We believe it is important to show that benefits of globalization can be realized by small as well as large companies.

Oftentimes, small firms’ outsourcing relationships are merely based on good personal relationships and the formation of customer-vendor virtual teams. This results in the creation of social capital. Uninterrupted communication and on site visits are contributing a lot to the creation of real partnerships; yes, crises still happen, but people are there to solve them.

9. Acknowledgements

This research is supported by the Science Foundation Ireland funded projects, Global Software Development in Small to Medium Sized Enterprises (GSD for SMEs) grant number 03/IN3/1408C and Social, Organisational and Cultural Aspects of Global Software Development (SocGSD), grant number 03/IN3/1408C, within Lero - the Irish Software Engineering Research Centre (http://www.lero.ie).

We would like to also thank the managers and employees of BestSoft Consulting for their support.

10. References


