

Making Off Shoring Work

By Dr Ant Kutschera, Principal Consultant, Business Agility

If the big trend in corporations' IT departments in the 1990s was out sourcing, then the big trend of the first decade of the 21st century is to send IT projects off shore. Companies see both of these exercises as a way to save money especially because charge rates for IT workers in off shore locations are low enough that the risks involved in such a huge operation are outweighed by the cost savings. The following paper discusses the things to expect when out sourcing your existing development/maintenance team, in particular off shore and how to ensure that this operation works successfully.

Off shoring is basically the next step after out sourcing. In fact, it is out sourcing, but to a cheaper country. However, off shoring can come with additional risks if the location is geographically or culturally distant from your company. This paper reflects on the scenario whereby a company has already out sourced much of their IT department, and is considering sending it off shore (or indeed allowing it to be sent off shore if the out sourcing partner is pushing for this to occur).

Start As You Mean To Go On

When outsourcing IT, your company cannot afford for this task to fail. The outsourcing operation consists basically of moving your Intellectual Property (IP) to a partner. No matter how much time and effort is spent in this operation, some of that IP will be

lost. When *off shoring*, the problem is compounded because of the geographical and cultural differences between your company and the off shore partner. For example the difference in time zones may make it very hard to have conference calls as frequently as required. Or the difference in cultures may mean it is harder to get the off shore workers to ask questions when they do not understand the problems they face.

So in either case, if the out sourcing/off shoring operation were to fail, your company would need to then invest time in retrieving the IP. Under normal circumstances, by the time the operation has failed, your company will have released the resources (staff!) who originally held the IP. So the problem becomes the fact that your company will be moving its IP twice. With each move it will no doubt lose some of the IP.

So if your company decides to go through this change, they must invest the time and effort required to make it a success.

The Handover

After your company finds its new partner, your IP needs to be handed over to them. Normally this is treated as a project in its own right. Each system needs to have a transition from the existing team to the new team. While this handover takes place, there is no time for further development phases (upgrades, maintenance, new projects, etc). Further more, it is likely that senior management will not want to start new projects while it is too risky to do so because the new team will not be familiar with the systems nor the development processes of your IT department (whether it is in house or out sourced). This risk is reduced if your company has already out sourced

and the off shore team has worked with your outsourcing partner (or is part of the same global outsourcing company), but be careful because there is no guarantee that this risk is actually reduced. Currently the rate of turn over of staff in off shore companies is huge because the market is so buoyant. Developers are finding that the quickest way to get a pay rise is to leave their current company and join a new one. Not only that, but there is no guarantee that the consultants of the out sourcing company who are on your site actually have experience of moving work off shore. Off shoring is still a new process and the number of people with its experience is small.

The best way to implement this first phase of off shoring is to have all of the off shore team present at your site¹. This allows them to personally meet with the business people that they will work with in the future. This is extremely important because to build a solid working relationship with someone who you only know over the phone is hard. It can be quite common under stressful conditions for managers and customers to get irate with the technical people supporting their systems when bugs occur. Having put a face to a name helps to smooth the relationship to such an extent that tempers are less likely to be lost and this obviously improves productivity greatly. No matter how much you like your staff and trust them to be good people, there are always individuals who hold prejudices. Getting to meet future colleagues face to face and

¹ Throughout this paper, the terms “on shore” and “off shore” are used to refer to the old and new teams respectively, irrespective of whether they are currently working in your offices or not, while the terms “on site” and “off site” are used to describe their physical locations, “off site” referring to their home location in another country.

allowing them to exchange cultural differences and learn about each others ways of life will help to eliminate these prejudices. And don't forget, off shore staff may too have prejudices which need eliminating! The author has seen examples of off shore staff refusing to work for female managers at the client company because they come from countries where it is less usual for women to work. In one case, the off shore person preferred to return home and leave the project than to continue working for a woman, probably facing the sack on their arrival home!

It is certainly more expensive to have the off shore team come to your company for this first phase, but it is definitely worth it. The skills they can learn during handover are infinitely better than if they could only learn over the phone. The cost of maintaining these off shore staff on site will still be less than having the same number of local staff on site.

As the hand over process goes on, more and more off shore staff can be returned to their home site. This process should be done in a staggered process. It is important not to keep the best of the off shore team on site. Staff with good communication skills as well as other staff with good technical skills are needed on both on and off site locations. What can be said is that when you only have a few technical staff and a few communicators left, it will be of benefit to keep the communicators on site. Note though, that it is unlikely that the entire off shore team will ever return to their home location. You will always need at least one technical staff member and one communicator on site, per project.

Maintenance and Upgrades

At the start of the hand over phase, when the off shore team are on site, a

good way to allow the new team to learn is to get them involved in the general maintenance and small upgrades which senior management *have* authorised during this period.

The fastest way for the new staff to learn your systems is for them to take the driving seat. If a new bug is reported by the business, it should be assigned to an off shore resource. That person should then work with an existing on site team member, but use them as a reference only. If the on site team member continues to carry out their role as they did before you started to off shore, there will be little knowledge transfer. The best way to learn the code/implementation details of a system is to start reading the code.

It is likely that the off shore partner will insist upon having up to date specification to hand, before the hand over phase is completed. Often this means that the off shore team wants the existing onsite team to ensure these documents are up to date. However, this does not work for several reasons:

- People do not like to update specifications
- If the specifications are not up to date, it is unlikely that they will be accurate after they are updated by someone who knows they are shortly leaving the project
- The staff leaving the project will be unmotivated and may resist helping the new team members because of jealousy or if they are trying to protect their livelihood

While this last item sounds unprofessional, the author has experienced this trait from people who seemed to be the most professional

team members before the words ‘off shoring’ were ever murmured.

For these reasons it is better to get the off shore team members to write a ‘knowledge transfer document’. This can be done by them reading the existing specifications and wherever they do not fully understand the system they should start to ask the existing on site staff for details. These details can be used to update the existing specifications too. The point of the knowledge transfer document is not as a back up to the old specification. Rather it can be used as an over view of your system which is used to give to new off shore team members who join the project at a later date. This is particularly important when your off shore partner is a large organisation where team members are regularly swapped around, or where your work loads vary and with each lull the staff are removed from the team until more work is available.

In fact one advantage of using off shore resources which can be as little as 10-20% of the cost of a local resource is that during these lull periods, it is so cheap to keep these staff on the project twiddling their thumbs that you do it, only so that the knowledge (IP) they have is not lost. Normally clients want to reduce the number of consultants on a project if there is no work for them. With off shore consultants, it can be worth keeping them to maintain the IP in the team.

New Projects

As the handover naturally nears completion, management should be able to gauge how the risk of passing new work to the off shore team is reducing. Measuring this reduced risk is somewhat subjective; however it can be done in a more quantitative method

using a questionnaire which both the off shore and existing on shore staff fill out. The questionnaire should contain questions whereby the staff member rates their understanding of different parts of the system and technologies being used. For each off shore member completing a questionnaire, an existing on shore member should also complete a corresponding questionnaire rating that off shore team member. This process should be completed weekly or bi-weekly and the results should be stored. You will then be able to gauge which parts of your system are well understood as well as which are the *better* off shore team members. Once you are happy that new projects can start because the off shore team members understand your systems and processes, you can inform senior management that your team is ready to commence development. At this stage you can also start to send some of the off shore team members back to their home site, where they can continue to maintain and upgrade your systems.

Once a new project does come in, the off shore team who are still on site can be used to do estimates of work and prototypes of the parts of the new system which are unclear or technically challenging. It is better to have the prototyping, estimating and technical problems solved on site where the client's management can keep an eye on its progress because these tasks tend to be about communication problems more than anything.

You should avoid *not* sending this new work to the off shore site. No matter how risky you think it may be, it will be better to start this process sooner rather than later, because you will be able to fix the problems in the process of sending work off shore sooner.

The first set of new projects should be estimated with a much more generous time line in place that you would usually have. Don't forget that the off shore staff are cheaper than you are used to, so it may not end up costing more to do the project, even if it takes three times longer.

Experienced staff from off shore companies will use a rule of thumb stating that work done off shore takes 150% to 200% of the time it takes to implement on site. But for these first few projects, allow even longer, because your management will need the time to learn the processes involved in sending work off shore. During these first projects, encourage the management to keep a firm eye on the estimates and how they compare to the reality of implementing off shore. This is not so that they can have a go at off shore staff productivity rates – on the contrary it is so that they can learn how to do accurate estimates for off shore work! This is the only way to ensure that future projects are estimated well and that off shoring is seen to be working by 'the business'.

The time taken for project management to really learn the off shoring process could easily be a year for medium sized projects. This is because it takes that long for the hand over phase to finish and for them to get back in to managing new projects with the new communication issues.

Ownership

Ownership of the software needs to be considered. Before off shoring commences, a company will own its software in terms of it being their responsibility to update specification, maintain the system, support it, etc. After any outsourcing or off shoring exercise, the ownership becomes cloudier. The team of management and

developers who are on site will not have developed the code and so will not be too familiar with it, so they will not really feel like they own the code, nor will they really be in a position to understand it without taking quite some time to learn it. On the other hand, the off site team will consider that they have delivered the code and washed their hands of it until it is next modified for a change / upgrade.

This problem is one of the reasons that keeping a few select off shore staff on site is advised. They will basically receive the deliverable from off shore and be in charge of its quality. First of all they should perform code reviews checking that the deliverable matches the coding standards in use. Secondly, they should be in charge of the integration testing where they will test that the deliverable works in the target environment, perhaps with multiple other systems developed by other teams. Again, this type of testing is normally made easier by ensuring that communication channels are open. So it is vital that the on site team handle this testing. Finally, the on site team needs to assist the users with User Acceptance Testing (UAT). In any of these testing phases it is the responsibility of the on site off shore team to understand the problems and communicate them back to the off site off shore development team. It is the responsibility of the project management team to schedule these fixes as well as inform the customer about when they will be fixed, based on estimates obtained from the off shore team.

Effectively, the on site off shore team will be ensuring that the specifications and other communication devices are good enough that the off site team can develop off shore. These specifications become contracts which the off shore

team are delivering against, just like if a company had some bespoke software developed for them off site by a software house. The integration testing which the on site team does is effectively their own form of UAT which satisfies them that the deliverable is ready for the customer UAT.

Use Technology

Use technology to reduce communication problems. Things like instant messaging, remote desktop access and electronic white boards are all useful tools for communicating ideas quickly between teams of people who are distributed over large physical distances. Voice over IP (VoIP) technology (making phone and conference or video conference calls across the internet) can also be used to reduce communication costs.

What to Expect

Based on experience of the author, the following is a list of things which you may discover with off shoring, which you had not thought of prior to experiencing it.

- Although English language skills are good, only maybe half of the developers will be easy to understand. General English written skills are poor.
- Do not expect skill levels to be as high as for western developers. Currently the off shore IT industry is booming so much, so that anyone with IT skills is hired off shore. It is also not a mature industry meaning that architect and team lead resources are scarce.
- Off shoring is acknowledged to work well for development where the process used is strict and simple. For example SAP

configuration, or development where a well understood model is used (e.g. building an EJB based on a strict interface specification) will work. Prototyping is definitely not recommended for off shoring.

- Project management needs to have a good understanding of exactly what tasks are undertaken off shore. It is easy for off shore developers to be side tracked into doing other work on different projects. The author once experienced a developer being charged at 100% rate to the client even though they were on a completely different project for a different client.
- Ensure that the off shore developers have access to your network. Allow a couple of months for this infrastructure to be put in place. Hire systems administrators with experience of VPNs and securing networks to work across the internet.
- A side effect of off shoring is improved documentation and testing! This is because the specification needed to send off shore will need to be good in order to reduce communication issues as highlighted throughout this paper.

Team Makeup

Making the development life cycle work in the scenario where project managers and business people are in a different location to the off shore team requires a few specific roles to be defined and filled. Each of these roles has different responsibilities. The author suggests the following team makeup.

- **Project management.** These should be employed by the

business. They should remain on site (apart from a few visits a year to the off shore development center to get to know the off shore team and keep a good relationship with them). A good project manager should have a good understanding of the business's needs and be able to communicate with business people on their level, and understand problems from their point of view

- **Development Team Leader / Architect.** This person can either be employed by the business, employed by a local consultancy, or employed by the off shore partner. However, they must remain on site at all times. They need the skills of any good architect and will be used for solving particularly challenging technical problems with the customer. They will also be used for estimating, so need to have an understanding of the time taken to do work off shore. They should perform quality assurance to ensure that the business is getting deliverables which meet the required standards. This person also helps project management to break tasks down into clearly defined steps which can be easily communicated off shore.
- **Communicator Facilitator.** This person is likely to work for the off shore company because they need to fully understand the mentality and culture of the off shore staff. This role involves staying on site for the duration of all projects. The person fulfilling this role has the responsibility of communicating all requirements specifications to

the off shore team. They act as the go-between between the on site project management and off shore developers. They should be involved in any and all conferencing between the project managers or the business and the development team.

- **Development Team.** This team should be located off site, except at the beginning of the off shoring exercise. They will have little communication with the business and their main task is to implement code, based upon the requirements and specifications supplied to them by the communicator facilitator. There will be a team leader who is part of this team, acting as a usual team leader.
- **UAT Testing Team.** This team is employed by the business, are working for the business users who will take delivery of the systems and are responsible for checking that all the requirements are fulfilled by the system before signing it off. This team works on site. Their communication with the development team is via issue tracking software and the communicator facilitator only.

Project management need to put these roles into their development process and have clear lines of communication for all parties explained (via a diagram!) in the process documentation.

Exercises

Off shoring is only really different than any other type of out sourcing because of the communication issues. Overcoming these issues is what takes project management time to understand in their own minds. There

are management exercises which you can get project management to do which will help explain the problems they are likely to face. The authors favourite is a game involving large Lego bricks. Get the project managers together for an afternoon of training and split them into two groups. Get one group to leave the room while the other group uses large paper and pens to come up with the design of a shape that they want to create using the Lego. It should resemble something realistic, for example a car or animal of some kind.

Next, get the managers who left the room to build the shape. They can do this only by using the paper which the first group wrote on and by using the phone. Depending upon how well the first team draws, you can get interesting results. Half way through the building of the shape, give the first team a change to the design, and get them to communicate it to the second team, again only with paper and the phone.

The point of the exercise is to show how hard it can be to get what you wanted based on limited communication. It's really an exercise in communication and should help teach the managers what is in stall for them on a project involving off shoring.

Team Building

On a typical project, any good manager knows about team building. Celebrating peoples birthdays with cake and a 10 minute party, or having a sunflower growing competition are the sorts of things which help teams get to know each other at a less professional level which helps them communicate over professional issues in a more efficient manner.

So when a project involves off shoring, there is no reason not to continue these types of exercise. If its someone's birthday, arrange for both the off shore and on shore teams to get a local speciality from the birthday persons home country. Then have a conference call with the entire team where you celebrate that persons birthday!

Each team should regularly send pictures of each other and their surroundings so that the teams get to know a little about where they work. If someone has a baby born in their family, send a picture to the entire team!

The point of team building is to get team members to know each other on a less formal level, so that they begin to understand each view point. When something goes wrong, like a bug appears which needs urgent attention, the team will be able to react quicker because they will have a better understanding of each other.

Success!

The final objective of any task like off shoring will be to measure its success, so show it made sense. If it does fail, the company needs to be able to reflect on the failure, learn from it and move on to turn around this failure and build a new success.

How can success be measured? This can be extremely hard... Software success isn't just about whether the project meets all its functional requirements. Nor is it just about whether the project was delivered on time. In fact software success can be attributed to factors like:

- Being good quality (measured by the number of known bugs)

- Meeting a percentage (hopefully 100%) of original requirements
- Showing a Return on Investment (ROI)
- Showing lower Total Cost of Ownership (TCO) compared to a predecessor
- Being delivered on time
- Having maintainable code

Success is not really a black and white thing. It depends upon the terms in which you aim to measure it – there are degrees of success. For example, a project meant to replace a legacy system may not save a company any money, nor may it meet all its additional requirements, but if it has a more maintainable code base, it could be deemed as a success.

Off shoring is equally subjective in terms of measuring success. The main objective of off shoring is normally to save a company money. If the company simply replaces all its current staff with an off shore team, they will achieve this objective because the daily cost of employing staff or consultants at the off shore location will be much less than that of local staff. But there are other factors which may mean that the picture of over all success is worse. These factors vary among projects and off shore companies, but you may find that quality of the deliverable is reduced meaning that UAT takes much longer. Or you may find that the time to deliver is much slower because of the communication problems discussed above. Local staff may become demoralised due to perhaps the loss of their colleagues/consultants whose jobs were off shored, or they may be constantly worried that their job will go next.

The best way to measure the success is to have a reference to grade it against.

By this it is meant that if you decide how to measure the success using factors like those above, and measure your company's software development before off shoring is started, you will have a reference point. It is even recommended that you measure the current performance in a variety of ways because you many not know how you want to measure success after off shoring (especially if it is you having to justify the off shoring after it has been implemented!).

Having this reference to compare later results to means that your company will be able to determine whether the off shoring is failing badly. If it is, remember that it costs far to much to reverse off shoring once the IP has been transferred to the off shore partner. So by measuring the success and knowing if things are not working, you will be able to address the problem and start to fix it as soon as possible.