Moving IT towards Olympic Performance

Report from a visit to the Technical Operations Center at the Vancouver 2010 Olympic Winter Games in, Canada.[i]

Failing IT projects – a fact of life or bad management?

A staggering sixty-two percent of all IT projects are not delivered on time and twenty-five percent of all IT projects are terminated before completion.[1] These are disturbing figures, but even more disturbing is that business managers and Boards of Directors tend to accept these figures as a norm, as something that is inescapable.

Although there are no figures available that are specific for IT in Higher Education, there is no reason to assume that they deviate from the aforementioned data. More worrisome however is that these figures have not changed much in the past decade.[2] Apparently the IT sector and its customers have a major problem managing IT projects. What is wrong with current IT project management? Can it be improved and if so, what should be changed?

There is a large amount of literature on how to setup, run and complete IT projects successfully, sometimes accompanied by showcase projects. These examples are usually one-off projects that could also be considered lucky because they did not encounter any big problems. However, there is an example of IT implementation with a *proven* track record in a crucial environment: the Olympic Games.

Why does the International Olympic Committee succeed where many others fail?

Everyone seems to understand that the IT for the Olympic Games simply must work. It is very obvious to all that you cannot ask Olympic athletes to put themselves on hold for a month or two because the IT is not ready yet. Neither does anyone question how crucial IT is for recording the achievements of these athletes. Yet, hardly anyone knows about the IT behind the Games. It is there and it works. That is, since Atos Origin became the IOC's worldwide IT partner in 2002.[3] Why is it that since then the IT for the Olympic Games has never ended up in the news for delaying the Games or for goofing up the results? What could we learn from the IT management for the Games?

True, the IT for the Olympic Games has a much larger audience and user group than an average university's e-mail, class scheduling or content management system. The 2010 Olympic Winter Games in Vancouver, Canada, were watched by an estimated 3.5 billion people all over the world.[4] This dramatically increases the pressure to deliver all IT on time and within specification.

So, is a huge audience all that it takes to successfully deliver IT? We do not think so. It may be an outstanding driver to excel, but it is not the reason for non-failure. Universities may be small communities, but there are still several thousand spectators who are hurt when IT fails. In order to compete on a global level, the Netherlands strives for the best possible support for their Olympic athletes, because even small errors can have large negative consequences. Similarly, to enable Higher Education to compete on an international level, Board member must raise their IT management to Olympic Games levels.

Since the Olympic Games of 2002 Atos Origin has been the worldwide IT partner of the International Olympic Committee (IOC). A small delegation from SURF[5] had the opportunity to visit Atos Origin's Technology Operations Center (TOC) in Vancouver and meet the Atos Origin project team during the Vancouver 2010 Olympic Winter Games to learn more about the way the IT is organized and run before and during the Olympic Games. In the remainder of this paper we summarize what we learned during our visit to the TOC at the Olympic Winter Games in Vancouver.

Some background figures

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[1] Dynamic Markets Limited, *IT Projects: Experience Certainty*, Commissioned by Tata Consultancy Services, Independent Market Research Report, August 2007.
[2] Al Neimat, T, *Why IT Projects Fail*, The PROJECT PERFECT White Paper Collection, October 2005.
[3] The IT received negative press during the 1996 Olympic Games in Atlanta.
[4] Horrow, R. & Swatek, K. *Olympic Games Continues Online Journey*, Newsfactor.com, March, 2010. URL: www.newsfactor.com/story.xhtml?story_id=0120013PEUDO&full_skip=1
[5] D. (Doekle) Terpstra, Dr. W.B.G. (Wim) Liebrand, Drs. ing. C.J. (Cees) Brouwer and Dr. L.A. (Leo) Plugge

Before we dive into the lessons learned, it is interesting to present the reader some figures to get a feel for the size of the Olympic Winter Games and the significance of the IT infrastructure for them.

The 2010 Olympic Winter Games featured fifteen sport disciplines with about 2,700 athletes participating from more than eighty countries. The 2010 Games were supported by twenty-five thousand volunteers.

The IT infrastructure for the 2010 Olympic Winter Games included eight hundred servers, six thousand computers, and four thousand printers. Furthermore, there were many so-called Result Terminals which include Commentator Information Systems[6] and INFO2010 intranet terminals.

The IT workforce consisted of over three thousand people, with an Atos Origin kernel of about one hundred staff members. Together they supported ten competition and nineteen non-competition venues, and six locations with IT facilities.

In short: the IT for the Vancouver 2010 Olympic Winter Games supported a business of about two-hundred thousand employees, and three and a half billion customers world wide, and had to operate 24/7. This feat is repeated every two years. Preparations for the London 2012 Olympic Summer Games are already at the halfway stage.

1. Operational excellence before innovation

The first of the four most striking impressions during the visit in Vancouver was that the IT infrastructure for the Olympic Games is top of the bill, but *proven* technology. Innovation of the IT infrastructure is not the primary goal of the Olympic Games. The primary goal is operational excellence, innovation is secondary. The IT infrastructure is innovated, but this is done in a very controlled and evolutionary manner under strict rules of change management. Any suggested change – no matter how small it might seem - is scrutinized to assess its impact on the objective: delivering reliable IT on time. If there is any doubt about the ability to deliver within schedule, then the proposed change is rejected and scheduled for the next Olympic Games. The impact assessment also includes the ability to train and test personnel in time for correct operation of the systems.

Lessons learned

A major lesson is that Board members of an organization must decide whether an IT project is working with a mission-critical business system or not. If they decide that it is a critical system, then operational excellence comes before innovation. You can still innovate, under the constraints of a very careful planning and risk management to minimize the chance of disruption. Innovation, or doing something that no-one has done before, is still possible, but you must remember that you will be your own guinea pig. To minimize risks you must decide if feature can go before function. Most people working in IT know about the risks of scope and feature creep, i.e., changing the scope or introducing new or changed features. When dealing with specifications, there must be a planned moment to freeze the design and start developing. Customers often try to exert pressure on this basic principle in order to introduce new demands. Typically, every organization believes that it is so unique and dynamic that a fixed functional specification is unattainable. However, generally this means that the organization's business processes are not documented well enough to establish good functional specifications. To deal with this, a thorough design phase is required and a procedure to assess the impact (i.e., required time and resources) of new demands on the project's ability to reach the deadline and deliver a reliable service.

Board members are ultimately responsible for deciding about weighing the risks involved, and for finding a balance between innovation and operational excellence. Their decisions must be made on the basis of a clear risk assessment and impacts of changes.

2. Partnership based on trust

It was the task of Atos Origin to design, build and operate the IT infrastructure for the Vancouver 2010 Olympic Winter Games. However, Atos Origin does not operate alone. The company works with a team of partners. The composition of this team depends on the choice of the location of the Games and the contracting decisions by the IOC.

Each partner has a contract with the IOC or the local organizing committee (OCOG). However, and this was the second most striking impression, there is no contract between Atos Origin and the partners to design, build and operate the IT infrastructure. The lack of

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[6] The Commentator Information System supports people who provide comment for television, radio, newspapers, etc.

additional contracts is not a hindrance for Atos Origin. Atos Origin shows that it is a very manageable model, if you invest a lot of time and effort to build good trust relations with each of the partners. This effort starts from the moment the partners are awarded a contract by the IOC or the OCOG, i.e., four years before each Olympic Games begin. It was interesting to learn that Atos Origin's Chief Technology Officer considers himself the *Chief Integrator* and who is primarily busy building trusted relations and integrating people and organizations.

One of the crucial documents for managing the project is a responsibility matrix that lists each partners' tasks within the project activities. However, even a responsibility matrix can have grey areas or insufficient detail. This is where the investment in building trusted relations pays off. When significant problems occur, then a 'gloves off' meeting is held to resolve the problem. The point of the meeting is not to identify the guilty party, but how each partner can assist in solving the problem.[7]

Lessons learned

Creating partnership and trust is the most important lesson we can draw from the way the IT infrastructure project for the Olympic Games is managed. How can this be translated to Higher Education which must comply with E.U. Procurement rules?

Partly this can be done by selecting one main contractor who deals with other partners. This main contractor is responsible for creating the required partnership and trust. The customer remains in the lead for top level decisions, but the day-to-day management is left to the main contractor.

Thus, selecting the appropriate main contractor becomes crucial. This must be done along the lines of EU Procurement rules. The lesson learned here is that the criteria for selecting partners must include questions about building partnership and trust, how risks are managed and problems are solved. However, including these criteria is not sufficient. There must also be a different weighing of the criteria, to avoid that cost criteria have the upper hand.

The main point for Board members is to be aware that a primarily cost driven selection will force potential IT partners to make choices that are primarily cost driven, i.e., you get what you bargain for. Costs are not to be neglected, but neither are crucial criteria such as people and partner management, risk management, and methods to comply with project plans and manage change.

3. Awareness of the importance of project phases and milestones

The third striking impression is the level of awareness among all participants at all ranks about the importance to stick to the project phases and milestones. As Atos Origin puts it: You can postpone a rocket launch, but not the Olympic Games.

This is where the leadership by one party pays off. Atos Origin has developed deep knowledge of the customer and its clients and the procedures and steps to get the IT infrastructure in place on time and according to the required specifications. Atos Origin also has the procedures in place for transferring knowledge and experience to the new partners and the thousands of volunteers who assist the kernel of IT staff.

It was revealing to see that the project plan by itself was not very different from any other IT project plan model. What was different was that each partner was made aware of the fact that there was no room for shortcuts. During the design of the project plan, no part or phase of the plan was left out or designed to be rushed through to save time or money. Risk management is considered one of the key processes implemented for the Olympic Games by Atos Origin.

Lessons learned

Every IT project plan must be complete and sound. No part can be left out or minimized to save money or time. Checking the completeness and soundness of a plan is comparable to ordering a safety check for your car before leaving on a long journey. Most projects are long and potentially dangerous journeys. Board members must be aware that their decision to proceed with a project must be based on such a check. Arguments to leave parts out of a project are usually based on some assumption that a) "It wont be necessary, because…" or b) "It's not that important, because…" Assumptions are not proof and are an extra risk in realizing the goals of the project. This awareness must be raised among all project participants, but in particular with Board members who make the go or no-go decisions.

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[7] In the literature this is called 'mutual performance monitoring' and 'back-up behavior'.

4. Testing everything, from systems to people

The final striking impression was the amount and type of testing done. Testing is never very popular, because it takes time and money without any visible result. In the case of the IT for the Olympic Games, testing was even more rigorous and meticulous than any testing we had seen before. Not only were the hardware and software tested, but there were also phases to test people and procedures. This type of testing is often not included in IT projects. Usually there is training *after* the project has been completed and most of the time this training ends up as if it were a test, revealing faulty procedures and inconveniences in the interface design. The project plan for the Olympic Games has two technical rehearsal phases for people and procedures, *after* the systems and software tests. For these technical rehearsals some six hundred scenarios are developed to determine if the procedures work and to test how people react to different situations. The scenarios are based on fictional and actual historic incidents. A total of approximately hundred thousand hours of testing are scheduled in the entire project before "going live".

All this does not mean that each Olympic Games is uneventful as far as IT is concerned, far from it. Each day there are about twelve million security incidents that trigger attention. Some of these events can be serious, but in every case the effort is to make sure that it does not affect the continuity of the games.

Lessons learned

Anything that can go wrong will—at the worst possible moment. Cutting corners in a project by leaving out testing procedures or underestimating information security risks is asking for disaster. Still this happens, again and again. We still see many projects that do *some* testing, but without load and stress tests to establish the system's baseline performance and breaking point. What we can learn from the Olympic Games is that testing cannot be skipped or negotiated. On the contrary. The current test practice in Higher Education IT-projects must be improved by including the testing of people, procedures and information security. Furthermore, an important part of this testing is not about avoiding errors, but how to deal with errors or possible security breaches without affecting the client/user. Errors will occur and much of the testing by Atos Origin is to determine if the procedures and people can handle them.

All of this testing will raise the *visible* costs of IT-projects, but it will also tremendously impact efficiency and effectiveness after delivery of the project. The process of creating test scenarios helps gaining insight in internal procedures and risks, and testing people will give more insight in their performance. Thus, testing will reduce the invisible post-project costs.

If this awareness is not found within the members of the Board, then it is unlikely that it will be present among the project participants. Risk management and thorough testing is a *conditio sine qua non* for business critical applications.

5. Concluding remarks

The level of expertise of the people working on the IT infrastructure for the Olympic Games is very high. Working for the Olympic Games is seen as a great honor and people put in a lot of effort to achieve excellent results. Higher Education institutions often experience difficulties to find expertise for project management, design, development, testing, etc. This may be one of two important differences between the Olympic Games and the realm of Higher Education. The other important difference is the way the contracting is done, i.e., the need to comply with European Procurement rules.

These differences challenge us to find ways to realize the same level of expertise, partnership and trust, but by different means. To create access to expertise, we could create pools of experts, actively transfer knowledge, and so forth. To create opportunities for partnerships and trust relations we are challenged to rethink tender selection criteria.

Maybe the most important overall finding during our visit was seeing that the outstanding achievement of Atos Origin and its partners is not the result of some mysterious ingredient. The achievements are the result of meticulous planning, hard work, no corner-cutting, testing, risk management and focusing on delivering quality on time.

Higher Education can raise the level of its IT to that of the Olympic Games by raising the awareness that an IT project is about more than features and costs alone.

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