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Leading from the Engine room

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ABSTRACT

This paper explores working relationships and leadership challenges facing those who work in teams to create simulation-based learning environments. Drawing on the authors' experiences, and relevant case studies, it explores tensions, triumphs and the ongoing learning involved in collaborative ventures producing effective online learning activities. The view is 'from the engine room' at the point where technology and design expertise reframe creative 'story boards' into 'interactive learning experiences'. Gaps between existing and emergent expertise can cause friction, especially when requirements associated with new skills are not understood or appreciated. We explore the potential for aware and conscious leadership of collaborative simulation design spaces engaging in a range of paradigmatic thinking and requiring productive harnessing of diversity.

Creating scenario based learning environments requires an understanding of both the content, and the array of learning pathways now available for assuring acquisition of new knowledge and insights. An appreciation of pitfalls likely to hinder this design process is particularly vital. The process usually begins with a learning concept derived from some identified need or goal, and progresses to development of a scenario for engaging and challenging learners using face-to-face or online formats. Scenarios are developed using specific, and specialised artefacts and technologies to create interactive learning environments, and the introduction of computer-based technologies makes the process even more complex, with highly specialised skills contributing particular elements. More and more people are involved at each step, and an increasing number of specialisations now contribute to the final product. We use existing Human Computer Interaction practices to explore the designer - developer interface and consider how to develop aware and conscious leadership from within this emergent complexity. Words penned by George Harrison (1967) aptly encapsulate our theme - "*We were talking about the space between us all*"

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1. INTRODUCTION

The development of technical solutions to human problems has been the study of Human Computer Interaction for many years. However while the computing students learn how to engage with the user and the client in a productive manner and to avoid ownership of an underdeveloped concept proposal, in general the people they will be working with have little idea of the software development process and what is required to enable this to function. It is important that whose who control the machine can talk to the people who are shaping the direction of a project. Equally important is the need for the non-technical team members to understand the work involved in designing and developing software and hardware required to turn their ides into functioning outcomes. In effect, they need at least a minimal understanding of the parameters of the machine

The projects we will focus on are those relating to the development of software for scenarios. This can be simple 'cutscenes' and videos for setting the scene for a discussion or immersive games for interaction in a simulation environment. Issues, examined in our case studies, include

1. The reuse of specialised artefacts
2. Working across cultures
3. Disagreements about project leadership and direction
4. Management of the product and its distribution

The paper includes the outline for a simulation via which people can place themselves in roles on a project team, and use the experience to investigate effective responses to issues that might arise in their projects.

2. BACKGROUND

Software development is one of the most versatile and pervasive forms of engineering. It has the flexibility of a human language in its design and scope, since it is, in effect, the rendition of a language (or languages). However few people understand how it works, and even fewer are aware of how software/hardware systems are created.

Given our collective experience in teaching the design and use of simulations across disciplines and domains, we present in this paper an exercise in immersion in the development of one such project.

3. CULTURE OF COLLABORATION

Skills required to be an effective team member are learnt through experience. In the same way, as we learn a profession we learn to understand the skills and processes of that profession. However it is evident that 'learning a profession' can inhibit understanding features of other domains of knowledge. Yet collaboration requires learning – and hearing - across domains and professional cultures. Thus even effective team workers must attend to understanding the limits and constraints imposed on the project from the perspective of the various experts from each specific domain.

Cross-disciplinary projects provide the opportunity to learn about other aspects of development. As in cultural training, the discussions involved in finalizing a design or improving a development require negotiation of knowledge and making sense of each other's perspectives. It is also important to avoid negotiating the details before having an understanding of the whole project. This is usual in project management, but even experienced team members may begin to engage with the details too early.

Too often team members fail to learn about each other's areas of expertise, ignoring the value of allocating time to understand and appreciate differences in perspective. A lack of computing skills, or absence of appreciation of the different requirements for working with computers versus working with people can create misunderstandings, delays and even abandonment of projects (in extreme cases). A particular cause of concern is the lack of computing awareness on the part of those commissioning software projects.

The projects we are concerned with here are simulations of various kinds. This incorporates development of simulations through software, including creation of environments, interaction aspects, the gamification features and scenarios to be experienced, and involves two modes of communication -

1. Working to extract intangibles - story tellers know the 'story concept' but not how to translate it into 'machine language' or software based product/s
2. Providing an immersive environment - the technical engineer understands the parameters of what can/cannot be done in various programs/platforms but not necessarily how to explain that to the story owner.

If either of these issues begins to arise the team may be 'talking past each other' in regard to terms, plans, project steps etc. while it is important for each team member to know their domain, it is equally vital that they realize the gaps in their own knowledge, and attend to establishing how each domain will affect the outcome of the project. It is especially important that technical staff can explain the limits of their expertise, without feeling that doing so may leads to doubts about their competence and subsequently having someone else called in to manage new components.

At the same time technical staff cannot be expected to know the whole project, nor should they be expected to do it all without access to specialist assistance they request. It is equally insensitive for non-technical team members to assume that their technically competent peers know everything, or know nothing. The first assumption can set up an individual to fail, while the second assumes they will inevitably fail. For instance most projects, of the type we are examining, will rely on use of many small demonstrations and workshop with stakeholders to identify emergent issues in the design/technology interface. Such sessions are not the final product, nor should they be considered such, and yet it is a frequent experience of technical experts to find themselves charged with 'neglect' or 'incompetence' when early prototypes are not exactly what is required. While authors accept extensive editing as a normal part of achieving a finished writing product, they may be less tolerant of waiting for similar processes to be completed for the technical aspects of a project. Technical success requires time to be spent on engaging sample groups of actual end-users in demonstrations, to ensure that issues such as those of usability are properly defined.

Another issue of concern arises where domains overlap. In project management each person has their preferred model of action sequencing, however some such modes are more suited to software development while others relate to managing people. For example, 'completing a list of tasks' sounds good to someone managing a people-based project. However, in agile software development a successful output may be defined as 'completion of user stories', the desired functional outcome from a user perspective. The list of programming of tasks will be spread cross development of a number of stories, such that the developer is focused on the amalgamation of tasks and how they combine to produce the desired user experience, they therefore pay less attention to completion of individual tasks.

Under such circumstances team members need to understand the limitations of their own experience and be able, and willing, to respect others'. So the team as a whole is learning about integrating technologies with scenarios, while the individuals are trying to develop their components for achieving tools to teach through simulation. To truly engage with the final simulation they will all need to learn how the separate components interact, and such learning requires finding common ground, the place where all parties are able to listen and communicate and understand each other.

1.1. Inhibitors to collaboration

A frequent problem facing newly formed teams concerns the question of how to be collaborative when each member is still trying to absorb the parameters delimiting the context of the activity ahead. Some behaviours will be driven by 'fear of the unknown' which Heron (1999) suggests can have a basis in such anxieties as 'personal hurt, particularly of childhood, that has been denied'. To survive emotionally such individuals may employ drastic action if they experience a sense of being 'under attack'. Heron suggests there are three forms of such anxiety: repressed grief, repressed fear and repressed anger (p 33-34). Such emotional baggage may be invisible until some external factor triggers an outburst that can have the capacity to derail an entire program, if not managed well.

In describing one such instance Leigh [2003] records how such a factor had serious and unintended consequences in a teaching context. Two years after a student had wrought extreme havoc in a class, she learned from the student's partner that the furore had arisen because of the person's fear of receiving (possibly adverse) public feedback and that this stemmed from anxieties rooted in the experience of being ridiculed in childhood. While that had been an emotional trigger, generating an extreme response, other less daunting but equally inhibiting fears can adversely impact the capacity of teams to cooperate. These will often include unexpressed fears about technology that can frustrate efforts to discuss technological boundaries to a project, and may be driven by unexpressed fears of being shown to be 'ignorant' of such factors.

4. UNDERSTANDING OUR KNOWLEDGE

There are inherent difficulties in coming to recognise what we don't know, and admitting this in project settings. Yet projects are an ideal context in which to expand our knowledge, and when proper acknowledgement is possible and appropriate support provided this can be done without introducing potentially grave errors. That is project teams s need to work as building their contexts as learning environments that are supportive, enact trust of others' intention and enjoy open discussion based on a shared intention to hear and accept for consideration all issues and complexities raised by others.

To support this process team members benefit from consciously building collaborative about how to address emerging awareness of limitations ability to comprehend what members with different perspectives of the project may be saying. Also essential is the

courage to ask questions and acknowledge ignorance early and often. The kind of 'naive enquirer' techniques described at such websites as 'Tune in Now' (2014) can be vital tools for reducing anxiety on the part of all team members and lead to an opening up of options and choices that will otherwise remain inaccessible.

4.1. LADDER OF INFERENCE

In making an effort to understand the world around us human being usually operate on beliefs, often unaware that they are 'beliefs' and not necessarily 'facts'.. Thus a key task for effective collaborators is to find those moments when their own beliefs are out of synchronisation with others in the conversation, and take action to fix the mis-matches.

The concept of the 'ladder of inference' shown in Figure 1 (Argyris and Schon, 1996) helps to guide the mental processes required to establish sufficient synchronisation to enable productive conversations. Teams need to be aware that this is possible, and important, and then consciously allocate time to assure everyone is clear on what is actually involved in the situation being considered. It is important to note that time spent explaining new, complex or previously unexplained concepts to fellow team members is also time spent clarifying our own ideas and practising the art of presenting them in a coherent manner. Because everyone think they are talking about the same thing (game, simulation, exercise, activity) it is easy to fail to see that the conversation is about different aspects of it, leading to failure to establish effective and collaborative work strategies.

In a world of cost-driven measures, projects are frequently driven by concerns about overall costs as ta factor better understood than real time requirements and technical constraints. Our experience of project teams in the simulation-games workspace, suggests it is vital to reach a shared understanding of, and agreement about, the intended outcomes as a key factor in shaping decision about time scope and quality. Mulligan (2010) describes a situation caused by choices made about two available options for visuals systems in a helicopter simulator. On this project the choice of a cheaper option created a system that did not fit the restrictions of the actual environment in which the simulation was to be used. In this case the decision involved choice of effective visual projection media for the simulation, given the off-set pilot seating and the higher field of view requirements in a dual pilot helicopter.

If teams do not keep the whole project in focus during the initial planning phases it is likely that some members are unprepared for engagement with materials or processes in which they do not feel expert. This can create disengagement, arguments and delays. Thus including time in the initial planning phases to reach agreement on how to negotiate knowledge, whenever the need becomes event, will better maintain progress and ensure an informed project team.

5. CASE STUDIES - MATCHING NEEDS / SHARING MEANING

We present below case studies of projects in which the authors have been involved and notes how various factors discussed above, influenced the outcome of these projects.

These cases provide insights into the kinds of problems that can arise when differences in needs and goals, as well as technical and professional interests and capabilities, are not predicted or prepared for adequately. It is important to note that all players involved in these cases were highly professional, concerned to create positive outcomes and well intentioned. The issues that arose when the various players came together are typical of factors that can unsettle and even derail the best planned design projects.

5.1. CASE 1

Although the events in this case study happened some time ago, they are still relevant to project groups where two parties are attempting to work together on a project requiring major shifts in perceptions on both sides. One party, in the project, was commissioning a video game for safety training in a complex, and potentially dangerous, workplace environment. The other party was providing the platform on which the game was to be built. One author's role was a temporary bridging one, intended only to conduct a workshop to help the commissioning agent's staff learn how to apply basic principles of simulation/game design to their specifications for the game.

During the workshop, it became apparent that staff were largely unaware of simulation design principles, and had little knowledge of the technical nature of the intended technical platform. Conversely the platform specialists assumed levels of knowledge about simulation, games design and the features of the particular platform, that were non-existent. The author had a brief window of opportunity to convince the technical specialists that their assumptions, if enacted, could bring disaster. In the time available it was only possible to demonstrate how such assumptions could damage the project and emphasise the need to re-think the manner they integrated the simulation into the platform in a manner that would maximize chances of making the project achievable.

Subsequent enquiries indicate that the project was eventually successful, and that the product itself was highly effective. However communication problems were ongoing and extensive, and matching needs and meaning continued to be problematic. It also adversely affected the final costs of the project.

5.2. CASE 2

In a similar case in a teaching and learning design project, the outcome was quite different. The educational and technical staff members were from different entities. The project involved re-purposing existing web service software and game editing tools with the goal of creating an online site for teaching about cultural competency. When the technical team did not receive the material needed to develop the underlying learning design, they sought clarification of the expected outcomes of the project.

The educational project leader had little engagement with the material, passing this task to other team members, while engaging non-team members, with little knowledge of the project, to assess development. There were few meetings between the educational and technical teams, and the overall project leader did not attend meetings that were attempting to rectify the knowledge gaps.

Attempts to mediate the emerging conflict between the two entities were less than successful as the mediator did not do an effective job of recording/reporting the outcomes of mediation. When the mediation process did not resolve the issue, the lead entity took legal action against the other university, but failed to provide any evidence of their claims.

Project members for both entities eventually arrived at a position where it became possible to 'blame' the other entity's team members for project failings. The educational team members asserted that the other entity's team members had failed their responsibilities in terms of the software development and team management. The technical team were not confident of the possibility of integration of the educational design and games, as originally intended and realized the educational team were feeling threatened in the environment of the project, but could do little to change this. Repeated requests for materials and advice, produced resources that were not appropriate to the methodology; and meeting requests were either denied or ineffective.

There were project outcomes eventually, but the resulting ill-feeling will take some time to dissipate. This scenario has to our knowledge

twice occurred in similar cross-entity projects and there is a continuing concern about the willingness of otherwise intelligent and committed individuals to explore relevant knowledge that appears to lie outside their domain of expertise.

5.3. CASE 3

A professional organisation had hosted professional skills development programs for several years, under the aegis of two of its members. They had then handed over management of the process to a committee of the professional body and stepped aside. The program, reviewed here, was being co-hosted by a university, a national entity, and local representatives, with remote help from the organisation's committee.

The goal was to provide an introduction to professional knowledge and expertise for local academics and other national and international participants. The program staff included the originators of the program, one of whom found the new format discomforting and appeared to disagree with the agreed goals, including adjustments to suit local conditions. Committee members, program staff members and the local hosts had difficulty achieving agreement at several points in the program, and it became clear that differences in cultural and professional perceptions lay at the heart of the problem.

Very different value systems and overt and covert goals brought the event close to disaster. Good will prevailed despite a tense atmosphere. The learning has been profound regarding future such events, especially in relation to having more detailed guidelines for hosts, staff and participants. Many years of experience in developing and presenting the annual program had given no warning of the way in which a major change in cultural context could adversely affect the structure and presentation of the learning program.

5.4. CASE 4

A software developer was hired on contract to develop a prototype system for used in teaching experiments. The system was innovative, and required the integration of many different components.

The teaching staff believed they were experienced in running software projects, however were largely unaware that their approach was different to the agile method used by the software developer.

The intended development process had already been established by the group, before the developer arrived and this was not explained until after work started. When the developer requested a different more open reporting system and timeline to fit with their understanding of the project and align with agile methods they were told that was not possible.

Before the developer was engaged, the teaching staff had assigned to a junior member the task of investigating the technology and software packages to be used. As the project got underway the developer began to establish that some of the initial choices were not feasible for scaling up to the full size project, or were not tested in time before integration into the full project, and that a highly creative but non-robust system was being expected to perform to rigid guidelines.

This caused time and cost over-runs and the developer had no structure in which to raise with the teaching staff how and why prior choices had led to these outcomes. As the project proceeded it became ever more evident that there was a widening gap in awareness about the impact of those initial choices. Although it seemed that everyone understood how a technical process is intimately related to the desired product, and that successful software creation and application is an art form, the various team members did not make the time or priority to achieve full agreement about how to proceed when the limitations of initial choices began impacting on the intended outcomes.

5.5. CASE 5

More than 20 separate, practice-based unit of study, in a post-graduate degree program, were to be created in an all-online format. The need had arisen from staffing difficulties linked to student locations on remote campuses. While the subjects are all designated as separate study units in the academic program, all involve a lot of common background knowledge, as well as common practice contextd. However this was not the perception of the program manager or the many sessional academic staff currently teaching the subjects on the main campus.

To put all the units online as separate courses for the very small number of users (between 2 and 20 students on 4 remote campuses) would be both expensive and time consuming, as well as continuing the false impression that the units have nothing in common.

An external assessor was asked to review the intended project format and report on the assumptions and constraints likely to impact the work involved. A total of 45 risk factors ranging from 'highly likely with extremely adverse' impacts to 'less likely but still adverse' impacts were identified, and mitigation strategies developed to reduce the overall riskiness of the project. These risk factors ranged from the project leader not being able to overcome pre-identified resistance from current teaching staff, increasing resistance on the part of these subject matter experts whose expertise would be needed to develop the new modes of learning, and the likelihood of the employer setting high implementation standards but not providing essential material and financial support.

The highest risk was seen to be the project leaders' lack of understanding about the very different modes of thinking about teaching and learning involved in producing successful, and effective, online learning modules. Their perception as expressed in initial meetings seemed to be that the task of the person/s charged with developing the new learning materials, web content and associated learning strategies was simply to provide helpful ideas about how to 'convert' existing materials. The external assessor, more aware of the actual complexity of what was involved, was anxious to convince the project leaders that they were asking for something entirely unlike anything they were used to providing to students. To achieved the desired outcomes existing materials could not usefully be converted to online courses, yet this was the intention.

At a rather fraught final meeting, the assessor expressed concern that the most likely outcome of the project as envisaged, was a technically supported version of academic courses similar to those provided to members of the relevant profession in the 1950's and 1960's. Such an outcome would be quite unsuitable in 21st century contexts.

Invited to be present at that meeting were two technically skilled and knowledgeable educational designers, one of whom had just been employed to undertake the majority of the work involved. These two very professional educational designers were initially reserved about how to comment on what was being discussed. It therefore took them a while to come to grips with both the technical complexity of the task as proposed, and find effective ways to convince the commissioning staff/project leaders to consider alternatives to what they were expecting to happen.

At the end of the session the compromise agreement was that the designated educational designer would conduct a three month review of requirements and by the end of that time would not be expected to have produced more than a project plan for what could happen next. This was very different from the hoped for tight completion of online units. However it did demonstrate both the project leaders' willingness to listen to the educational designers, and the capacity for the latter to demonstrate how their own expertise could contribute to changing much about what was understood about how learning happens online.

6. DISCUSSION

The issues raised in these case studies all relate to the importance of achieving shared understanding - early on the life of projects - about the various issues brought to the table by all the disciplines involved in simulation development programs. In what follows we briefly review four of these issues, and then propose a simulation process to enable project teams to address their potential impact on what leis ahead for the team.

6.1. TECHNOLOGY ISSUES

Achieving a balanced perspective shared by those who run a project, and those who understand the technology as well as the development requirements is clearly essential. Developers, designers and project managers all have their own way of working and imposing a one-size-fits-all approach will seldom be successful. The first priority needs to be assuring that team members are all able and welling to communicate about their own area of expertise, which will allow productivity to flow.

When project commissioning agents, or non-technical team leaders make decisions about technology to be used in a project without involving the developers or allowing sufficient time to develop prototypes or test out an initial theory, difficulties will eventually emerge. Too often the consequence of such decision man that the bulk of the project becomes a recovering operation to reduce the potentially disastrous impact of initial ill-informed decisions.

One process that addresses this risk in that developed in the discipline of Human Computer Interaction (see for example Rosson & Carroll 2001). Using this approach the designer produces a paper - based prototype to show the customer. This can easily be changed or even abandoned - at little cost - as the customer's needs are clarified through this exploratory stage. Similarly in a team the different stakeholders need to be able to monitor progress on the product and have scope and authority to add information as their understanding grows.

This allows both client and project team to make regular use of prototype demonstrations as the product is in development. Logically it cannot be assumed - by anyone - that the prototypes are fully functioning systems, nor that they can be produced on demand. As developer's project team progresses through the design, developing interdependent components, components will need to be regularly 'debugged'. Requesting demonstrations of a prototype, without sufficient warning, is akin to asking an editor to undertake a spell check while the author is still typing.

The complexity of software development is such that, despite appearances, engineers do not think in Python, Java etc! Software products may look easy to develop in the first rush of creativity, but they require use of a new (sometimes unfamiliar) logical language to talk to a machine, which is usually even more restrictive than the requirement for an author to use correct spelling, syntax and grammar. Learning new languages require practice, and in each new project, the topic to be expressed in this 'new' language will change.

1.1. CULTURAL ISSUES

Technology projects - and software ones in particular - are dealing with a range of different cultural concepts, including both social and work cultures. To communicate across these barriers involves trust and good will. Team members who feel insecure in their position in their own company, will have an impaired ability to learn and negotiate a project across disciplines.

With the increase in provision of training for improving cultural awareness (Kutay et al 2012), we consider that factors such as technological skills and digital literacy are also contributing to a new form of culture in workplaces.

6.2. LEADERSHIP ISSUES

Leading a group requires managing people's interactions, in this case people from diverse background and work focus. Also we are dealing with some common human errors that can be amplified by the cultural difference. For instance frustration at one's own errors leads to blaming or projection of the problem onto others. The manner in which frustration with team members is presented is often aggressive. This often does not raise the issue nor does it allow it to be solved.

An environment of trust where failing can be raised requires understanding what is the responsibility of each person and what are the interconnected parts. That is it requires understanding the environment in which you all work, the software as much as the product or teaching goals. It also requires that the leadership promote and model this engagement.

6.3. MANAGEMENT OF PRODUCT

It is important that the software product is not developed in isolation from the potential users, who may not be on the project team. They might include future clients who will have to be modelled through sampling via focus groups, who will then need to be available to test prototypes.

Regular product demonstrations may simply be of small components, which provides for formative assessment and can be used by the developer to raise issues needing decisions. If the team rewrites the project based on demonstrations that go beyond the scope in which it is presented, focus on the end product can be poorly formed, or lost.

The project leader is ultimately responsible for keep this end goal in focus, although all tea members will need ot refer to it in regard to working on their own tasks. This involves everyone understanding the big picture and how the components link and form part of a pattern. In this way avenues for re-use, of material and software, are open to the team.

7. SCENARIO

Following on from the previous case studies we offer a scenario-based exercise for development groups to use before they start working together on a project. This can be used as a risk mitigation strategy, incorporating various features from past teamwork experiences. If used prior to commencement it creates a less threatening environment than that likely to emerge as schedules pile up and deadlines loom. The design is based use of Tuckman and Jensen's concept of stages of development in group behaviour (Tuckman & Jensen 1977).

This model proposes that groups move sequentially, but not uniformly, through five stages, each having their own atmosphere, emotional demands and behavioural responses. These stages are commonly called - 'Forming' (caution, reserve and politeness are typical) 'Storming' (jockey for position, questions about power and authority are dominant) 'Norming' (the group has more or less settled into a routine and collaboration is more likely) 'Performing" (major effort, tight cohesion, and strong intra-group support is evident) 'Mourning' (a sense of loss is creeping in as the end of the project nears, previous attention to detail, and collaboration may be falling away). In the following activity the first three stages are enacted providing material for debriefing and discussion about who the team will deal with the issues in real time, as they arise during the project they are signing on to complete. The aim is to start the project more in the Performing mode of the particular team.

7.1. INTRODUCTION

A team consists of people from various disciplines and experiences. The scenario treats these as cultures. Each discipline group (culture) is invited to write down key aspects signifying the stereotypes of

their culture. For example software developers may be described as "*quiet, withdrawn, anti-social, hard-working, emotionally constant, highly focused on the task, and find it hard to see others' perspectives"*. in contrast designers may be identified as *"creative, unplanned, emotional, like to discuss ideas a lot, poor at listening to issues with their ideas, etc"*. Do not suggest such stereotypes, but allow each 'culture' to develop its own list.

Then the groups share their stereotypes. Even when each group has only one member, it is important that people see these stereotypes not as representing the individual, but are about the type of people and attitudes commonly perceived to characterise this role. The members of each group are to envisage themselves as this stereotype throughout the rest of the exercise. If there are many people in each group you may choose to put one person from each group into a team to form multiple teams for the next step.

The team/s then set up a project they wish to design and develop to the stage of a paper prototype. This exercise can be quite separate to the main project. For a software project this might be such as a phone app to arrange social functions for the team.

We consider next the stages to be followed, in terms of team formation, focusing on the development process.

7.2. FORMING

The team will now know each other as a stereotype. The next step is to establish team roles in the project - such as project leader, project manager, communications and administration, meeting note taker, etc. The team then needs to consider how the roles match the stereotypes and how each member will function in their roles.

The team then moves through the following stages of the project development within the available time. We recommend equal time to each stage.

1. Project scope – define outcome, stakeholders and possible hardware/software risks
2. Application function design - what will the software being developed actually do in terms of functions
3. Application interface design – what will the interface look like
4. Review – will the application achieve the goals

For each stage:

1. Initially divide the team into separate disciplines. If the team consists of individuals from separate disciplines, then members will spend a short time thinking of their own response before the next step.
2. Discuss and finalise ideas for each stage, considering the contribution of your discipline to that stage.
3. Provide a wrap up on where they are at and any risk involved in carrying out the decisions so far, before moving to next stage.

7.3. STORMING

During the project there will be differences of opinion over priorities and presentation. For each stage in step 2 the team members must adapt their actions so as to maintain their stereotype. It is important that people do not compromise on their discipline's approach for this to work. The team needs to consider the risks that might arise in implementing decisions made by other disciplines.

It is important to emphasise that when a member feels strongly about a point they express it, noting that this is a long project compressed into a short time frame, and emotions come and go during this time.

7.4. NORMING

The aim at the end of each stage of the activity is to understand the process the team has used to deal with the difficulty in designing, planning and making decision, across the range of disciplines represented.

7.5. DISCUSSION / DEBRIEFING

The particular aspects of communication that need to be practiced are listed below - these can also be sued a debriefing questions to help teams explore their action and interactions and build ways and means of reducing the risk of adverse action impeding project goals.

1. In a given conversation about an aspect of the project, how much does each person hear of the interchange? do they identify only the issues that relate directly to their work or all the issues and aspects? Would having some time during the negotiations to have some gossip or idle chit chat help people refocus and realise there are aspects they missed in the previous discussion?
2. What are the processes to use when a prior experience indicates that a proposed process does not work, or a certain function cannot be achieved in the software, but others in the team are convinced it is possible? Do you keep arguing the point, repeatedly come back to it at different meetings until all issues resolved, or can you use the separate roles to grant authority over different aspects of the project? This is a point that can be decided for future projects as well.
3. When people are convinced of an idea or an issue, they will tend to see any opposition or alternative view as the problem of the other party. It is tempting to project issues onto other people rather than acknowledging our own issues. In a team where people's understanding and experience are wildly different, this can have a severe effect on ongoing communication. Frustration is a part of the project, but must be seen as a transitory feature of any decision. how can the teams signal such frustrations in a timely manner and then address them effectively?

8. CONCLUSION

This work has emerged from on experiences in cross-disciplinary and cross-cultural projects. In particular we wish to acknowledge the experience gained from working with Indigenous people and their community in many of these projects and the especially difficult decision processes that involves. Dealing with Aboriginal and non-Aboriginal partners in a development project is a minor communication problem, compared to working with people who have little experience with computers and are entrenched in world view very different form your own.

One particular aspect that has influenced this paper and needs to be acknowledged before we end, is the approach used in an Australian Indigenous view of knowledge, which in general, considers knowledge as residing in 'place' and in objects rather than only in people. This perspective is quite different from more familiar western views about the collection, storing and manipulation of knowledge as decontextualised content, and encourages us to respect the existence of other views in our work, as well as an understanding of how technology of itself involves knowledge.

Alternative views of reality - cultural, technical and social - must be respected for project teams, of all types. to be able to move beyond the effect of trauma created by disastrous project experiences. When human being do not allow time to address or heal the, sometimes very painful, adverse impacts of ill-conceived projects (Lloyd, 2000) future efforts will be adversely affected, in ways that are not really forecast or predicted. As we noted above, such trauma can adversely influence peoples' ability to maintain an identity and keep control of their own contributions, including the work on projects which they are committed to completing and believe that they have negotiated with others.

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CONGRESS PROCEEDINGS

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SimHealth2016
INNOVATION • EDUCATION • RESEARCH

SimTecT2016
Asia-Pacific Simulation Training Conference & Exhibition

ISAGA

SimTecT2016
Asia-Pacific Simulation Training Conference & Exhibition

Message from the SimTecT 2016 Convenor

Welcome to the Australasian Simulation Congress for 2016.

For those who are here for the first time, SimTecT continues its tradition of showcasing the latest modelling, simulation and decision support technology and training Australasia has to offer.

For those who have participated previously, you'll find SimTecT continues to expand its horizons - exploring innovative methods and applications for real world problems.

The SimTecT 2016 stream theme is LEADING FOR THE FUTURE and the Organising Committee encourages presenters and attendees to share their expertise in leading — research, design, training and supporting technical operations in modelling and simulation.

This year SimTecT are honoured to welcome three international keynote speakers - Professors David Snowden, Edwin Galea and Shanchieh Yang.

The SimTecT team would also like to thank in advance a large number of invited guests, sponsors and volunteers for their contribution and assistance in making this week a success.

Thank you for joining us.

Nicole Jones de Rooy
SimTecT Convenor

Message from the SimTecT 2016 Paper Committee

Welcome to SimTecT 2016, the stream for all things technical and non-technical in technology and training. The theme this year is leadership, specifically around leading for the future, and we have a bumper crop of great papers showing how your simulation-based initiatives have impacted and are impacting the way we operate as a community. We also have some great workshops, and a selection of student posters with us this year too – plenty to stimulate your minds and assuage your cravings for knowledge!

This year is massive in more ways than one – we are part of the inaugural Australasian Simulation Congress with SimHealth and ISAGA, creating even more opportunities to connect, share perspectives across different industries, and have fun along the way. There is much to see and hear – be sure to download the app and plan your sessions to find which new dimensions can help you to achieve your research, education and personal development agendas over the coming years.

We look forward to meeting you at SimTecT 2016 for a wonderful week of ideas and discussion in merry Melbourne!

Dr Anjum Naweed
Scientific Convenor, SimTecT 2016

Dr Raymond Matthews
Co-Scientific Convenor, SimTecT 2016

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Message from the SimHealth 2016 Convenor

On behalf of the Organising Committee, I am delighted to welcome you to SimHealth 2016, the 12th Annual conference for the Australian Society for Simulation in Healthcare (ASSH).

As you can imagine, the committee has worked tirelessly to craft a rich program aimed at exploring the theme LEADING FOR THE FUTURE. What has become abundantly clear in the process of building this year's Congress is the leadership within the Healthcare Simulation Community as demonstrated by the quality and quantity of submissions. We see this year's Congress as an opportunity to gather, reflect, celebrate, explore and share new opportunities in the quest to develop safer patient care.

To help explore these issues, we have gathered a high quality group of international speakers including Professor William McGaghie, Dr Adam Cheng and Carrie Hamilton.

We look forward to learning from their work through the plenaries, panels and Master Classes they will contribute to over the coming days.

This year also marks an important event as three conferences (SimHealth, SimTecT and ISAGA) come together to form the first Australasian Simulation Congress (ASC), and of course we are in Melbourne, the world's most liveable city!

This amazing Congress would not be possible without the dedicated work of so many people. I would like to express my sincere thanks to the SimHealth Organising Committee, Professor Robert O'Brien, Jessica Stokes-Parish, Dr Cyle Sprick, Ingrid Wolfsberger, the team at Simulation Australasia, and the ASSH Executive Committee.

Julian van Dijk
SimHealth Convenor

Message from the SimHealth 2016 Papers Committee

Welcome to SimHealth 2016, the Health stream of the Australasian Simulation Congress (ASC). This year's theme is "Leading for the Future", an opportunity to reflect and share on how your simulation-based initiatives are impacting on how we operate as a health based simulation community. We will hear about work that is leading the way in which we think about and use simulation in improving patient safety, education and clinical outcomes.

Once again we have an impressive list of international and local speakers, increased numbers of interactive, hands on workshops and an incredible collection of research, education and technology innovations to share.

The creation of the ASC as a further development of the co-location with SimTecT concept this year will include hosting ISAGA. This produces a programme with increased opportunities for sharing experiences and perspectives across different industries. I look forward to meeting you at SimHealth 2016 for a wonderful week of ideas and discussion in the world's most liveable city of Melbourne.

Robert O'Brien
Scientific Convenor, SimHealth 2016

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Message from the ISAGA 2016 Convenor

On behalf of the ISAGA Executive Board, the Organising Committee and members, I am excited to welcome you to this inaugural Australasian Simulation Congress (ASC).

The Congress builds on the excellent work done over recent years to grow and broaden the participation of Australasian simulation practitioners. The co-hosting of ISAGA further expands this diversity and adds an international perspective ensuring that the ASC is firmly placed on the global calendar. ISAGA participants will benefit from this opportunity to engage with the dynamic Australasian community.

It is a privilege to welcome Dr Richard Satava to open the ISAGA stream and Dr Pascal Perez as our principal Keynote Speaker. I thank them both for their support. I also acknowledge and thank the other speakers and presenters who have taken time to contribute to the program.

Previous participants will notice a number of changes to the program. These innovations are aimed at creating situations where our community can collaborate, share ideas and experiences. The Congress offers many points of crossover between disciplines, demonstrating that we have more in common than our distinct terminology suggests. I encourage all delegates to explore areas of simulation outside their normal comfort zone and use the expanded program of social activities to make new friends and open new doors.

Finally, I thank the Simulation Australasia Board, the ISAGA Executive Board, the Simulation Australasia Staff, the ISAGA Team and the other ASC Convenors. I am confident the outcome of all the hard work is another positive step in the evolution of the Australasian simulation community and ISAGA.

Todd Mason
Convenor, ISAGA 2016

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Message from the ISAGA 2016 Papers Committee

Welcome to ASC 2016 - including the 46th international ISAGA conference.

ISAGA was convened in Australia in 1999, in Sydney. That year the Olympics Games were just over 12 months away and the theme was "Anticipate the Unexpected". This experience of working with Simulation Australasia in 2016 is one of those unexpected developments, which has occurred at a most important moment in time for both Organisations.

It is the first conference collaboration for both organisations. It is also the first time that a selection of the Simulation Australasia Congress papers will be published as a book. The best full papers submitted to ISAGA will be combined with the best Simtect full papers by Springer (http://www.springer.com/gp/) as an international book with a global reach.

As is usual the ISAGA papers cover a diverse array of themes with intriguing and interesting papers from more than 15 countries. We are delighted to be welcoming so many international guests to the 2016 Congress and especially pleased to be hosting a set of presentations about the use of simulation in Emergency Management in Australia.

Whether you are interested in simulation technology, the human dimensions of simulation or planning ahead via simulation I am sure there will be much to inform, educate and entertain you.

Check out the App to plan your daily schedule - and have as much fun as you can along the way.

Dr Elyssebeth Leigh
ISAGA Scientific convenor

ISAGA 2016 Review Committee

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