



White Paper
Guidelines for Applying DSDM in an Offshore
Environment

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I Introduction

I.1 Purpose

This document provides guidance for working with DSDM projects involving offshore organisations.

Offshore development is defined as:

A project whereby a **development process**, which is the responsibility of one organisation, is performed by **another organisation** at a **separate location**

In this context, an offshore organisation is defined as an organisation that is separately located from the organisation commissioning the work. This could equally apply to a company overseas as to one in the same country, but significantly remote from the commissioning company. It could also apply to a development in one company within one country but with the team split across multiple sites. Hence all these examples could be classed as offshore:

- A Dutch organisation contracting with an organisation in India to do development on its behalf.
- A multinational organisation developing in-house but where some work is carried out in the UK and some in America, or where the users are from multiple locations.
- A London-based organisation working with a software house in another part of the UK.

The main focus of the paper is on the first type of scenario but much of the guidance will be applicable to the other two.

I.2 Audience

This document is meant for anyone who may be embarking on, or thinking about, a DSDM project in collaboration with an offshore organisation. It is aimed at:

- Project and Business Managers with DSDM knowledge who wish to understand how to use DSDM in an offshore environment.
- Technical personnel (Developers, Technical Coordinators, Testers) with knowledge of DSDM wishing to understand the key technical aspects.

The paper assumes knowledge of DSDM and would refer the reader to the DSDM online manual.

I.3 The contents of the paper

The paper first discusses why a variant of DSDM is required, i.e. the need for DSDM-O. It then offers detailed guidance to assist an organisation in its move to working with offshore organisations in the sections described below.

- *Applying the DSDM principles* provides guidance about how best to apply the principles in onshore/offshore working environments.
- *People* cover the additional responsibilities for existing DSDM roles and define some further roles for effective offshore working.
- *The DSDM-O Process* gives guidance as to how the standard DSDM lifecycle is affected by offshore working.
- *Communication, Quality, Vendor Selection and Risks in DSDM-O* describes the specific areas to address in these areas and gives some guidance on them. Detailed checklists are provided in Appendices A-D.
- *Tools and techniques* covers particular aspects of this topic that require special consideration in offshore projects. A summary list of tools and techniques is contained in an Appendix E. All terminology is standard DSDM (roles, phases etc.) unless specifically stated otherwise.

2 Why DSDM-O?

2.1 Offshore Rationale

There is nothing new in contracting separate organisations to carry out all or part of the work on a project, and DSDM has offered guidance in previous white papers on dealing with contractual arrangements and how the vendor selection process may work. What has changed in the past few years is the ability to utilise previously unavailable supplies of development expertise at a vastly reduced cost, such as those in the Indian subcontinent.

Offshore is therefore now often seen as a cost-, time- and resource-effective approach to systems development, and certainly seems to offer significant advantages, including:

- More resources for critical functions
- Competitive edge in the market by quicker, cheaper development
- Faster response to market changes
- Increased focus on the market and customers
- Supply of the development skills that the customer needs
- More value for money (lower, very competitive professional charges)
- Extended work hours due to difference in time zones between offshore and onshore locations
- Access to a large development workforce.

When considering offshore, however, the hidden overheads should not be ignored, for instance:

- Increased customer management required to coordinate the development resources
- Communication requirements
- Legal and contractual implications
- Costs of travel, fast data links, etc.
- Building duplicate infrastructures
- The ability of the offshore company to deliver
- Software licensing costs.

2.2 The need for a DSDM Approach

Offshore would appear to work well with a Waterfall systems development paradigm. The customer could define its requirement and maybe also design, send out the Requirements Specification for vendor selection, select the offshore supplier and “throw the development over the wall”.

However, this brings with it all the problems that DSDM seeks to avoid: lack of user involvement, limited opportunities for cooperation and collaboration, systems of poor quality that don’t meet user requirements, etc. These are all problems that this offshore working group has encountered.

Would it therefore not make sense to change the paradigm and enter into a different approach? One where the users can be involved throughout, where there is cooperation and collaboration, where the products are fit for purpose because the testing is integrated? But there is nothing *new* here – this is exactly what DSDM advocates in its principles and critical success factors.

So why do we need this paper at all? Is it sufficient to locate a copy of the DSDM manual and operate in that way? Possibly yes, but the working group has identified some areas where particular care and attention is required and offers some guidance in these areas.

2.3 The Key Areas to Consider

One of the DSDM Critical Success Factors (CSFs) is co-location. This is obviously not possible in an offshore environment. Therefore some key areas need to be considered to achieve this CSF as nearly as possible arise in the offshore world, notably:

- Contracts Management that supports a collaborative relationship
- How to achieve good communication and understanding in a diverse cultural environment.
- Ensuring the quality of the product and check-pointing (“delivery on time”) regime.

3 Applying the DSDM principles

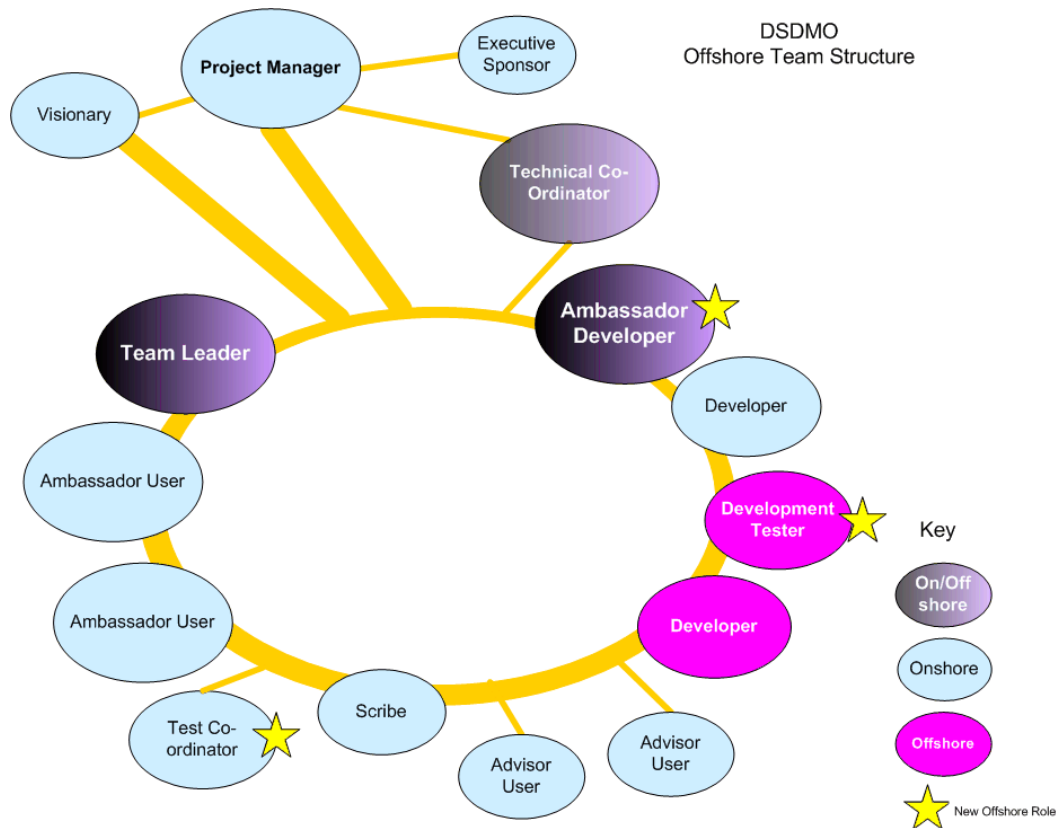
In this section, we will explore how the DSDM principles can help and guide those working within an offshore environment. Sometimes a slightly different application of the principles might apply.

Key to success in applying the principles is that both organisations operate with and understand DSDM. This may mean that either organisation needs to be trained in DSDM before work can commence: one organisation should be fully conversant with DSDM. We will concentrate on those key areas to consider defined in section 2.3.

Active user involvement is imperative

The remoteness of the teams, whether thousands of miles or a few miles down the road, means that active involvement can become difficult, not only for the Ambassador and Advisor Users but also for the Developers, who can become very isolated from the business drivers. The key to successful DSDM offshore will be to remove this isolation wherever possible. Later, we explore communication techniques but we concentrate on teams here.

As in standard DSDM, every attempt should be made to operate as one team. The following diagram illustrates how this could be achieved.



Note: One person may hold more than one role, and roles are not necessarily full-time.

The challenge is to understand how to get a good working relationship (and communication) particularly between the Ambassador User(s) and the Developers. All team members, including the Ambassador User(s) and the Developer(s) should be involved throughout, including any checkpoint meetings, prototype review meetings, workshops etc. This is explored further in Section 6.1.

A face-to-face kick-off workshop is an excellent tool for building relationships. It gets people understanding each other, understanding requirements, forming relationships, etc. – something that is nearly impossible through any other medium.

DSDM Teams must be empowered to make decisions

This DSDM principle doesn't change in an offshore project, but is perhaps challenging to achieve across different cultural environments. Often empowerment is shunned and the Developers only want to do "as you say". Find as many ways of instilling the empowerment culture as possible – bringing Developers on-site for an extended period can work well, as confidence grows.

Instilling confidence

Developers, if they are not part of the onshore organisation, may not have much, or indeed any, business knowledge, or their knowledge is not related specifically to this organisation.

Business knowledge and therefore confidence may build up in the offshore company after a longstanding relationship, but this would be lost to the onshore organisation in the event of a termination of the partnership. The key message is the first time will require extra effort to achieve good levels of business knowledge; subsequent engagements should be easier.

As always, the people making business-related decisions should be the business representatives and, conversely, technical people are the best ones to make technical decisions.

The focus is on frequent delivery of products

Increased Frequency

In an ideal DSDM project, the Ambassador User would see the system evolve almost every day and have continuous input to its development through being a core part of the development team. Since the Ambassador Users are distant from the development, it is important that they see intermediate products as frequently as possible to demonstrate progress in the right direction.

Frequent deliveries are also a valuable tool to the Project Manager who can interpret no new, approved products as meaning no progress. He or she can also use frequent checkpoint/wash-up meetings to keep development on course, involving all interested parties, particularly the Ambassador User.

These mechanisms provide strong controls in offshore developments since they avoid the "black hole" where nothing appears until all development has been completed, and hence help to ensure that the development will meet the requirements.

Fitness for business purpose is the essential criterion for acceptance of deliverables

This principle becomes very important in an offshore environment since it ensures the criteria for acceptance are understood and agreed. These criteria will form a basis for testing and reviews. For offshore developments, the reviews are likely to be electronic (sending prototypes to a local site, reviewing them and sending back comments), however this will require tools such as a virtual project room, videoconferencing, etc.

Iterative and incremental development is necessary to converge on an accurate business solution

This principle removes the ambiguities by ensuring frequent and comprehensive feedback in the understanding of requirements. It also provides the opportunities to decide if the project has gained enough business benefit. However, it is important that the technology and communication supports this way of working (see *Section 6.1 Communication*) and this could mean that the benefits of going offshore are reduced by the cost of such overheads.

All changes during development are reversible

This principle is critical for offshore, since multiple-site development will require strong configuration management and the same configuration management tools available to, and used by, all team

members wherever they are located. A project portal together with a configuration tool is recommended.

Contracts with offshore parties must enable changes to be reversed: otherwise there may be costs associated with doing so. This, amongst other reasons implies the need for a collaborative contract, set up during the Feasibility or Business Studies.

Requirements are baselined at a high level

Consistency of message over multiple sites – how is it not compromised?

The requirements form the basis of the contract with the offshore company and therefore the baselining becomes even more important. Involvement by the offshore party in the development of the Prioritised Requirements List would be very advantageous.

Sites working separately may not realise the differences of interpretation that are creeping in. Visibility and common understanding are essential, hence the overall requirements must be available to, and understood by, all team members, emphasising the importance of communication between the Visionary, the Ambassador User and the Developers, and the need for an electronic system for storing the requirements that is available at all locations.

Written requirements can be difficult to understand, particularly given different cultures and languages. Hence it is important that the Ambassador User and others explain the requirements to team members at all locations, including representatives of the offshore development team(s). In this paper, such representatives are called “Ambassador Developers”. This role starts in the Business Study or, possibly the Functional Model Iteration, and is important through to Implementation. Techniques such as Automated Acceptance Testing (as used in XP) also help to clarify requirements.

Testing is integrated throughout the lifecycle

This principle serves offshore well since frequent testing/reviews of interim products and prototypes will keep development in line with the requirements as they evolve. This implies that relevant products must be available electronically in known locations (e.g. an electronic project room), with electronic tools for recording comments, issues, etc.

If this is a new relationship, experience shows that it may be necessary to duplicate the Tester role both onshore and offshore (see 4.2). The onshore tester role (called the Test Coordinator in this paper) will advise and support the Ambassador User in testing and will help to coordinate testing activities between locations. As the relationship develops, the dependency on the onshore role may diminish, however the Ambassador User’s traditional role remains the same with regard to testing.

The DSDM testing principles are as important as ever:

- Benefit Driven
- Error Centric
- Fit for Purpose
- Independent
- Repeatable
- Integrated through Lifecycle

Repeatable implies that the use of automated tools would be useful. Communication of issues is vital and may require frequent telephone calls at key times. Timeliness of testing and feedback are important and should occur as soon as possible taking into account any time zone differences.

Effective management of open issues is essential and the issues should be visible to all relevant parties. A testing tool might be advantageous in this process.

A collaborative and co-operative approach between all stakeholders is essential Champion and sponsorship from both ends

As with any DSDM project, it is important that both parties are signed up at a senior level to working in a collaborative and co-operative way. In offshore projects, failure to achieve this commitment is a major risk. As usual, education of management personnel early in the project to agree their roles and responsibilities is essential. Of course, the onshore and offshore parties have different objectives for the outcome of the project: the offshore company will be focussing on payment for a delivered product and the onshore company on a fit-for-purpose, on-time business product developed with minimum costs. The challenge will be to manage the expectations of both parties while maintaining the collaborative nature of the team(s).

Offshore site has to be involved throughout

The formation and retention of a collaborative team as early as possible is vital. In an offshore environment not everyone can be co-located so we have to ensure the communication methods are embedded as soon as possible.

Since there is more than one location involved, the project may end up with more than one plan. This should be avoided. The Project Manager must ensure that everyone works together to come up with an agreed plan, consistent for all sites. This must be kept visible at the same version at all sites throughout the project.

4 People

4.1 Standard DSDM Roles in an Offshore Development Environment

The main benefits of the DSDM approach arise from business users (customers) being closely involved in the development teams. In an offshore team situation where the development team is remote, several existing roles have additional responsibilities as shown below and require additional skills in order to provide a solid structure for a DSDM project that maximises the benefit of user involvement.

DSDM Role	Additional Responsibilities
Executive Sponsor	<ul style="list-style-type: none"> • Ensure that contract negotiation results in a commercially acceptable yet cooperative and collaborative contract. • Agreement of the final contract with offshore specifics addressed. • Take a more pro-active assurance role. • Make the collaborative contract work. • Resolve escalated issues between onshore and offshore, usually with offshore counterpart (Offshore Senior Supplier). In most cases these are financial or timeline issues.
Visionary	<ul style="list-style-type: none"> • For each business-critical timebox, review the timebox plan. In offshore situations review the distribution and alignment of activities and deliverables between onshore and offshore. • Resolve escalated business issues between offshore and onshore teams. • Attend business-critical, face-to-face meetings with onshore and offshore teams. • Escalate issues as necessary to Executive Sponsor or Executive Offshore Supplier • Approve changes from the business point of view
Technical Co-ordinator	<ul style="list-style-type: none"> • Ensure all standards, guidelines, process and tools are defined and applied in all locations. • Create and maintain integration plan/infrastructure (build environments). • Inform both onshore and offshore teams of technical issues, decisions and assumptions. • Work with offshore and onshore teams to ensure the delivered software conforms to the System Architecture Definition and meets the non-functional requirements. • Ensure that non-functional requirements are met both onshore and offshore. Communicate changes in non-functional requirements to all parties. • Resolve technical questions with both onshore and offshore Developers. • Provide the “glue” between onshore and offshore teams on technical questions. • Work with onshore QA and offshore QA to make sure that they review and audit in line with the technical strategies of the project. • Be able to communicate efficiently with onshore and offshore teams (and, if necessary, acquire the technical means to do so). • Ensure that the infrastructure for both development and testing is available both onshore and offshore. In addition, ensure that required secure links between onshore and offshore are available. This infrastructure consists at least of hardware, development software, configuration management software, requirements management software and communication links. • Ensure that onshore and offshore use compatible hardware and software. Resolve issues in this area.
Team Leader	<ul style="list-style-type: none"> • Work at one location, either onshore or offshore. • Attend key face-to-face meetings. • Be aware of cultural differences.

DSDM Role	Additional Responsibilities
	<ul style="list-style-type: none"> • Have a strong focus on having Developers who are committed to developing a system for a remote client. • Ensure that the Project Manager and Team Leader(s) at the other location are fully aware of the progress in the local team. • Work with the Technical Co-ordinator to resolve and prevent technical issues.
Advisor User	<ul style="list-style-type: none"> • Provide knowledge and skills to both onshore and offshore teams if requested by the project team. Note: Face-to-face meetings with offshore team will take place only in exceptional cases.
Facilitator	<ul style="list-style-type: none"> • Have knowledge, or at least awareness, of cultural differences. • Be skilled in facilitating the different cultures. • Facilitate workshops using teleconferencing and videoconferencing facilities. • Facilitate retrospective workshops (review at end of timebox). • Capture lessons learned of what's working, not working, in the area of collaboration and cooperation.
Scribe	<ul style="list-style-type: none"> • Keep the virtual project room clean. • Be aware of cultural differences and document items in such a way that is understandable to both onshore and offshore teams. Ensure that documentation is culturally neutral (e.g. not offensive to either party). • Be responsible for keeping the project documentation up to date and available both onshore and offshore, e.g. by maintaining a knowledge-sharing portal.
Other roles	<ul style="list-style-type: none"> • Be aware of cultural differences. Because they operate at one location, no more extra offshore activities. • Attend teleconferences and videoconferences, sometimes outside normal working hours/ during anti-social hours because of time differences. Note: It may be necessary to attend key meetings at other locations.

4.2 Additional Offshore Roles

Additional roles as listed in the table below are also required to address the fact that an offshore party is another organisation with different business interests and goals.

DSDM-O Role	Responsibilities
Ambassador Developer	<ul style="list-style-type: none"> • Could be a Developer working on onshore business site. • Represent the offshore organisation, in particular the offshore Developers and Testers. • Be onshore for the duration of the project to liaise with the onshore users, e.g. in demonstrations of products created offshore, deal with ambiguities and communicate the messages to the offshore organisation.
Senior Offshore Supplier	<ul style="list-style-type: none"> • Resolve escalated issues between onshore and offshore, usually with Executive Sponsor. In most cases these are financial or timeline issues. • Approve the feasibility of changes • Senior supplier on Project Board
Offshore Technical Coordinator	<ul style="list-style-type: none"> • Liaise with onshore technical co-ordinator on establishment and maintenance of effective technical infrastructure. Note: There maybe less need for this role if good technology solutions for communication are in place (virtual clean room, for example).
Onshore Ambassador User working offshore	<ul style="list-style-type: none"> • Represent business at the offshore site. Note: There may be less need for this role if good technology solutions for communication are in place (virtual clean room, for example).
Support and Maintenance Team representatives	Note: Since the development is performed at a remote location, people can be less aware of the need to involve support and maintenance support and maintenance representatives as early as possible in the development process.

DSDM-O Role	Responsibilities
Test Co-ordinator	<ul style="list-style-type: none"> • Co-ordinate testing to prevent duplication of effort since tests take place at several locations. • Ensure products are meeting technical quality criteria when delivered from offshore – required early in the relationship <p>Note: The need for this role probably diminishes with a maturing relationship.</p>

There are two further roles that will be useful but are not core:

Additional DSDM-O Role	Responsibilities
Contracts Manager	<ul style="list-style-type: none"> • Handle all contractual issues with the external organisation. • Be experienced in dealing with the country in question. (Err on the side of caution – advisory role)
Off-Shore expert	<ul style="list-style-type: none"> • Provide advice through personal experience in projects with offshore companies in general and the chosen country in particular.

5 The DSDM-O Process

This section discusses the effects on the phases of the standard DSDM lifecycle of working with offshore parties. It identifies the products, challenges, risks, roles and responsibilities that change or are new. The diagram in each phase shows the differences graphically.

Note: There are no special considerations in the Pre-Project phase, other than to consider developing the proposed system offshore.

5.1 Feasibility Study

The main addition to standard DSDM during the Feasibility Study is the decision on whether or not offshore is a viable option. The decision to go offshore may not actually be made during this phase, but the option will be discussed. For instance, if the project is to use an existing offshore partner, this is the time to review lessons learned on past projects. If an organisation is completely new to offshore work, it would be wise to run a separate project to determine its viability for the organisation in general.

Since DSDM-O involves at least two different organisations that are physically separate, it is necessary to understand the cultural differences and determine the best collaborative environment for a DSDM project. This will need work, so plan it, and act upon it.

The diagram shows the key differences for offshore projects.

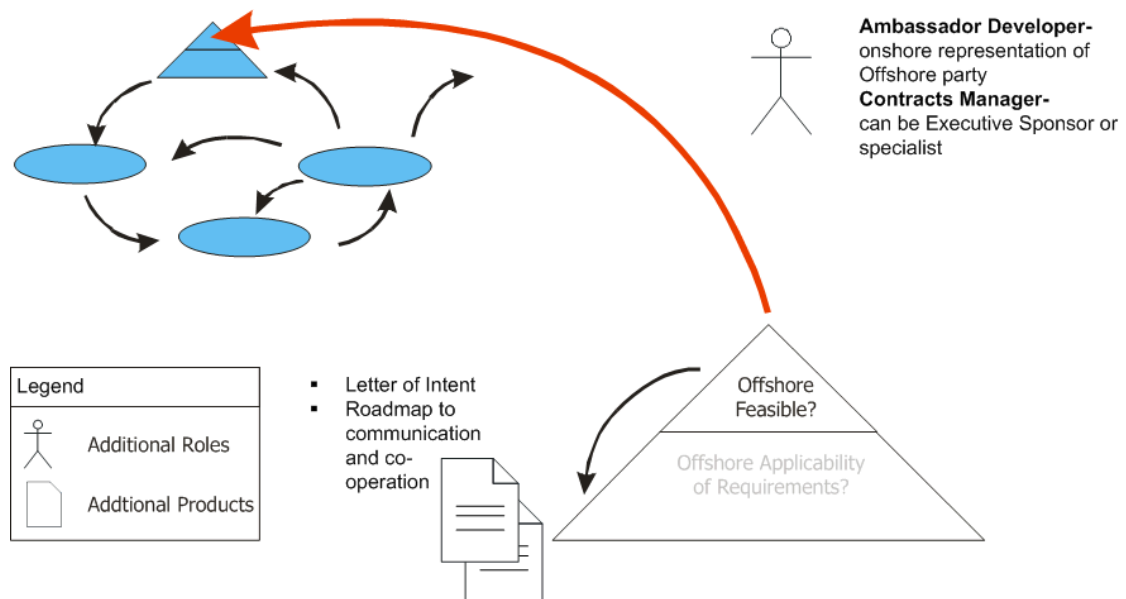


Figure 1: Effect of DSDMO on the Feasibility Study.

Roles

The following are the additional responsibilities for existing DSDM roles.

DSDM Role	Additional Responsibilities
Visionary	Vendor selection criteria. Define approach to relationship with supplier
Project Manager	Vendor analysis/ Gap Analysis (cultural methods) Examine specific risks of offshore
Technical Co-ordinator	Communication and Development Infrastructure – both on and offshore.

Product

There are some products that should be considered for inclusion in this phase.

Product	Explanation
Offshore vendor Selection check-list	See section on Vendor Selection
Initial Contract (draft) or letter of intent	Agreement to proceed with offshore party and terms and conditions
Road map to communication/co-operation	Adding to standard communication plan, specific approaches to communication in offshore environment
Proposed off-shore partners	List of offshore vendors that may be approached if decision not already made
Technical environment outlined for offshore integration	Requirements of development and other environments at the offshore site and how this integrates with onshore environment.

5.2 Business Study

The Business Study will usually be the first phase in which the offshore party is involved. It is therefore a good time to ensure that communication between the parties is working and that there is an environment of collaboration and cooperation. The Business Study produces the Prioritised Requirements List: in offshore, this will be examined to determine which of the requirements will be addressed offshore.

The Business Study also produces the Development Plan: it is important that the offshore party has sufficient representation to ensure the timescales, etc. within the plan are realistic and feasible.

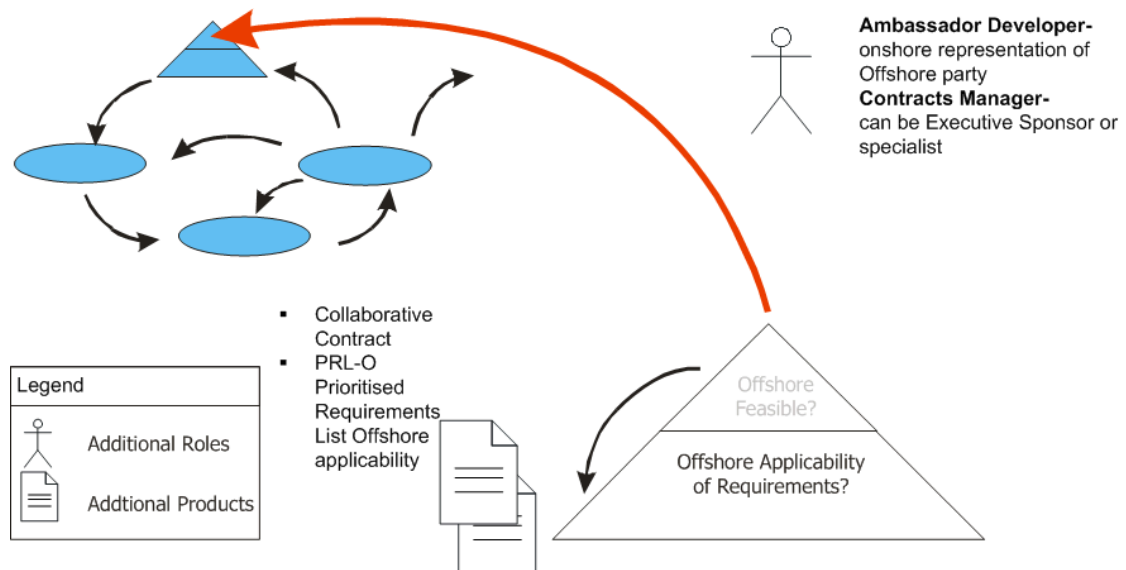


Figure 2: Effect of Offshore on the Business Study.

Roles

The following are the additional responsibilities for existing DSDM roles.

DSDM Role	Additional Responsibilities
Visionary	Determine offshore empowerment level Decide on feasibility and viability of requirements for offshore (indicated on Prioritised Requirements List and part of prioritisation)
Project Manager	Create offshore communication roadmap Agree the Development Plan with the offshore company

Products

The following products are affected by, or are new because of, offshore.

Products	Explanation
Prioritised Requirements List - O	Standard Prioritised Requirements List but with an indication of whether the product is to be produced by offshore party or not.
Collaborative Contract	Contract supporting DSDM no-blame culture, cooperation and collaboration.

5.3 Functional Model Iteration

It is often at this point that offshore working really begins, with the teams of users and developers needing to work closely together while being geographically separated. Whether thousands of miles or just tens, separation can lead to a different mindset in the teams, a loss of communication and a tendency to make assumptions. It is a project management task to make sure that the team is in fact working as one team. Do not underestimate the need for face-to-face communication, or at least video/telephone conferences during this phase.

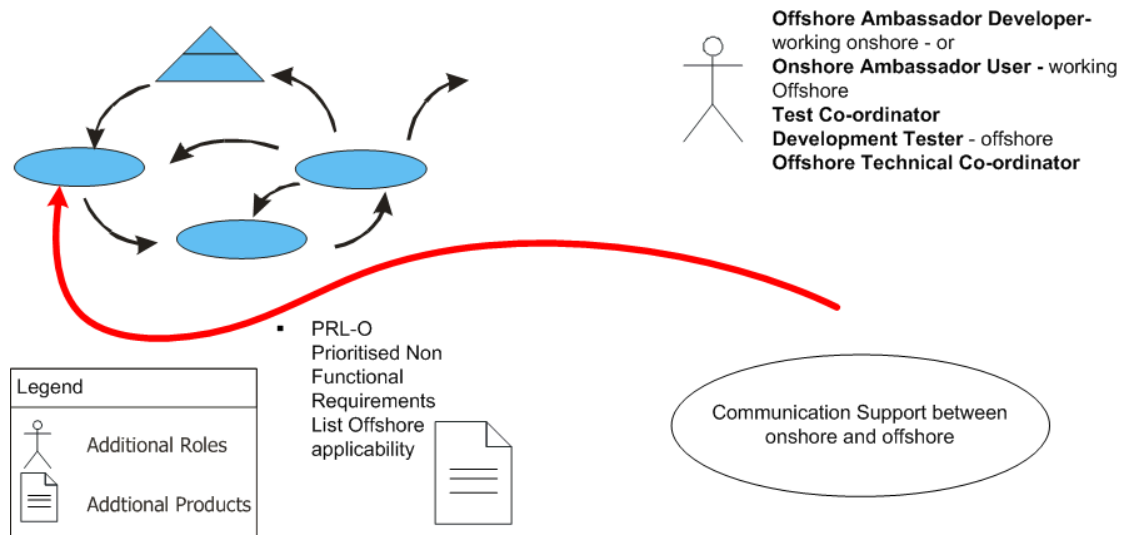


Figure 3: Effect of Offshore on the Functional Model Iteration phase

Roles

The following are the additional responsibilities for existing DSDM roles.

DSDM Role	Additional Responsibilities
Visionary	Keep both on-shore and off-shore business focussed
Ambassador User	Travel as necessary Be available for Video / Teleconferences, maybe out of hours
Project Manager	Manage "virtual daily meetings" on/offshore
Developer	Travel as necessary Be available for Video / Teleconferences, maybe out of hours

The standard DSDM Tester role is divided as shown below.

DSDM-O Role	Additional Responsibilities
Test Coordinator (onshore)	Assist Ambassador User in user acceptance testing
Development Tester (offshore)	All other Tester responsibilities

Products

The following products are affected by offshore.

Product	Explanation
Prioritised Requirements List – O including Non Functional Requirements	Standard Prioritised Requirements List but with an indication of whether the product is to be produced by offshore party or not.

5.4 Design and Build Iteration

The key to a successful Design and Build Iteration phase in an offshore project is to ensure that the communication and support tools and environments enable the developers offshore and the users onshore to effectively converge on a solution that is fit for purpose. This may involve frequent site visits (if the distances are not too great) and will certainly require many video and telephone conferences. DSDM-O identifies some extra roles that can help in this process: these are as defined earlier in section 4.2.

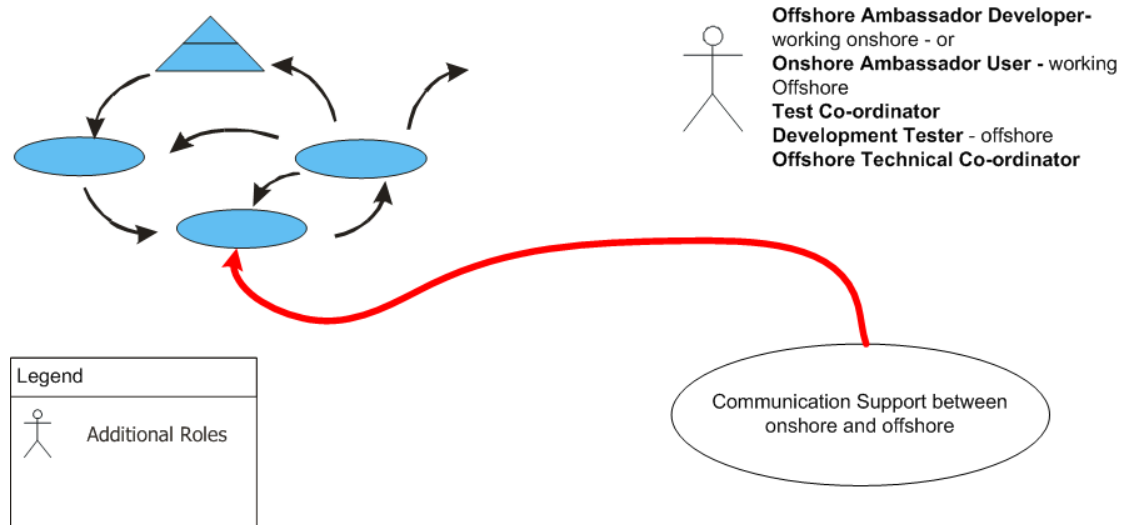


Figure 4: Effect of Offshore on the Design and Build Iteration phase

Roles

The following are the additional responsibilities for existing DSDM roles.

DSDM Role	Additional Responsibilities
Ambassador User	Attend meetings both onshore and offshore (maybe electronically) to ensure that requirements are met. Create functional changes and track progress both onshore and offshore.
Project Manager	Overcome cultural differences between onshore and offshore parties Ensure that both onshore and offshore parties are aware of all assumptions and decisions made.

Products

The Design and Build Iteration does not have offshore-specific products. An offshore situation only defines where they are produced.

The only other offshore consideration for products is that they must have a nominated owner in the project environment. This owner may be either onshore or offshore.

5.5 Implementation

There are few differences during this phase between normal DSDM and DSDM-O. The following should be noted however:

- An offshore technical representative should be available onshore to ensure a smooth transition to production, and to accommodate knowledge transfer from the vendor to the customer.
- If development has been carried out in an offshore development environment, any differences and dependencies in architectures may surface during this phase, although this testing should have been built into the Test Strategy within the Development Plan.
- Time differences may cause delays in critical support and these should be catered for.

5.6 Post Project

The Post Project phase will always be onshore. There is no variation from standard DSDM, although the offshore vendor should be involved in any future changes and in determination of lessons learned.

6 Communication, Quality, Vendor Selection and Risks

6.1 Communication

Effective communication is very important in any DSDM project. In offshore projects it takes on a new level of importance. The key aim is to ensure the user requirements are understood and developed correctly. To achieve this, face-to-face communication may be vital at key points, for instance project kick-off, the development of the Prioritised Requirements List, etc.

There are a number of considerations when thinking about offshore communication. These include:

- Practical logistics, e.g. time taken for travel between locations
- Time zone differences
- Public holidays and religious events, especially when organising face-to-face meetings
- Vaccinations needed
- Cultural differences (e.g. women's ability to move around in some countries may limit who can be sent)
- As well as the "soft" communication devices, the physical infrastructure for telecommunications must be robust enough for the traffic that it is expected to handle.

Certain environments become very important, these include:

- Electronic rooms
- Email
- Electronic issues logs etc.
- Electronic reviews through collaboration tools
- Videoconferencing and teleconferencing facilities

Appendix A gives some guidance on the best forms of communication for various DSDM products, techniques and processes within an offshore environment.

6.2 Quality

The DSDM manual provides guidance on quality in general. These standard DSDM Quality Guidelines apply in DSDM-O, but some are harder to achieve, and this document generally addresses these, and there is a quality theme throughout the document. The checklist in Appendix B indicates some particular quality aspects that, whilst not specific to DSDM-O, require consideration.

6.3 Vendor Selection Process and Contract Management

Most organisations will already have defined vendor selection procedures. DSDM-O identifies some more areas that should be considered. These are summarised in Appendix C, which could be used as useful checklist.

6.4 Risks

Appendix D contains checklists of general risks in offshore projects and risks that are specific to a particular DSDM-O phase. Each risk is classified as business, management or technical and mitigation strategies are suggested.

7 Tools and Techniques

DSDM identifies tools and techniques that are crucial within a DSDM project. Offshore brings the need for other tools, mainly because of the remoteness of the parties. The following are seen as very important:

- Face-to-face meetings
- Videoconferencing
- Teleconferencing
- Remote Meeting Software
- Requirements Management Tools
- Electronic Project Rooms
- Issue management tools
- Software Configuration Management (SCM) tools

Some further tools would also be useful e.g.:

- Software to take charge of a remote PC, so Developers can demonstrate prototypes directly to users (business prototype, rather than usability is usually demonstrated by Developer).
- Use of photographs, storyboards, swim lanes, records made of mind maps, activity models, etc. in workshop sessions are often more understandable than minutes as they are a contemporaneous record of the workshop session.

Whilst the following are generic development standards, they become very important in offshore, particularly if development is split:

- Naming conventions (how to name a class, a method, an integration adapter, etc.)
- Documentation conventions (define appropriate format and name for a document)
- Coding conventions so that the remote team and the onshore team can read, develop, review each other's code
- Common object, common dictionary

Appendix E gives more detailed guidance on tools and techniques.

Contributors

This paper has been produced from contributions made by members of the DSDM and Offshore Software Development Task Group.

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In addition many people within the DSDM community have contributed to improve the quality of this whitepaper by acting as reviewers on intermediate products. Final editing of the Whitepaper has been done by Jennifer Stapleton.

Appendix A: Communication

Key Areas of Communication	Preferred Media	Comments
Formation of the Business Area Definition	<ul style="list-style-type: none"> • Face-to-face workshop • Then through electronic project room (EP-room) 	<p>At least one face-to-face workshop with key onshore and offshore team members, users, project manager, key developers. This will help form the project team and also help remove ambiguities – also helps with the Prioritised Requirements List. Refinement can be done through a project room and teleconferences or videoconferences.</p> <p>The Ambassador Developer and Offshore Ambassador User roles become important here.</p>
Formation of the Systems Architecture Definition	<ul style="list-style-type: none"> • Possible face-to-face with onshore/offshore technical coordinators • Tele/video conferences with desktop collaboration tools 	<p>A chance for the technical coordinators at all locations to get to know each other.</p>
Formation of the Development Plan	<ul style="list-style-type: none"> • Tele/video conference and EP-room 	<p>Whilst this probably could be done through telephone / video, it would be an opportunity for the PM and the TL from the offshore site to really work together and get a good understanding of each other, the constraints and barriers, etc.</p> <p>It is important that the offshore contingent agrees with the timescales, etc. within the plan. The Ambassador Developer role can help to achieve this.</p>
Prioritised Requirements List	<ul style="list-style-type: none"> • Face-to-face 	<p>It is very important for all to understand the requirements and priorities, hence there is a big risk if this isn't done face to face. This workshop can be amalgamated with that for creating Business Area Definition to reduce travel costs.</p>
Functional Model including: <ul style="list-style-type: none"> • Document management • Prototypes management • Configuration Management • Prototyping Reviews 	<ul style="list-style-type: none"> • Face-to-face at key points • Portal / EP-room • E-collaboration • Tele/video conference 	<p>Prototype reviews will need at least teleconference facilities with a desktop collaboration tool.</p> <p>Plan some face-to-face at key reviews. However, face-to-face meetings should only be used when travel costs are not prohibitive. Use of the Ambassador Developer role onshore should alleviate this problem.</p>
Deliverables Management: <ul style="list-style-type: none"> • Version control • Software Configuration • Change Management 	<ul style="list-style-type: none"> • EP-room / Software • Configuration management tool • Teleconferences 	<p>SCM tools become very important. They must be sharable between remote locations on different time zones. It is important that the technical co-ordinators at each location are communicating with each other. Changes will need discussion by the relevant personnel both on and offshore.</p>
Project Management: <ul style="list-style-type: none"> • Risk Management • Project Status • Issue Management • Communication Management 	<ul style="list-style-type: none"> • Regular team checkpoint meetings via tele / video conferences • EP-room for documents / issues management. 	<p>Tele conferences should / could be daily at key points – equivalent to wash up meetings.</p> <p>EP-rooms are ideal for consolidating all status and issue information. An issue management tool is also useful.</p>
Quality Management:	<ul style="list-style-type: none"> • Prototype review sessions – 	<p>Tool for tracking status of test issues – configuration management tool for producing new</p>

Key Areas of Communication	Preferred Media	Comments
<ul style="list-style-type: none"> • Test record/ issues • Review docs • Tested System 	<p>tele/video with desktop collaboration tool.</p> <ul style="list-style-type: none"> • Test records etc. in EP-room. 	<p>releases.</p>
<p>Workshops</p>	<ul style="list-style-type: none"> • Face-to-face on priority issues. • Tele / Video conferences 	<p>Teleconferencing and videoconferencing workshops can work if well facilitated, with a good agenda. If people already know each other from previous face-to-face meetings, they work better.</p> <p>Tools such as interactive whiteboard can support videoconferencing.</p> <p>The workshops include all those normally associated with DSDM and particularly iteration and timebox planning meetings.</p>

In addition to communication related to products, processes and techniques, there are other key communications that should take place. The following table describes these. Note: Some of these, such as stakeholders to the Project Board, are not specific to DSDM-O.

Type of communication	Subjects	Frequency	Preferred Media
Stakeholders to Project Board	Issues Business Changes	As required	Face to face
Executive Sponsor / Visionary to Ambassador User	Changes in requirements, Total Cost of Ownership (TCO) and Return on Investment (ROI) related issues	As required	Face to face
Ambassador Users to Developers	To scope, specify, clarify requirements (functional and non-functional)	Constant	Initial face-to-face workshop followed by regular tele/video conferences using collaboration tools (electronic whiteboards etc.)
Project Manager to Project Board	Progress, issues, risks, actions	As agreed by Project Board	Email, face-to-face
Project manager to team	Progress, issues, risks, actions	Weekly at least; daily at key times	Tele/video plus collaboration tools – occasional face-to-face meeting at important points
Communication between Developers	Development progress, issues, risks, actions, technical details	Daily and constant	Face-to-face Tele/video conferences for split developments. Ambassador Developer becomes important.

Appendix B: Quality Considerations

Category	Quality Consideration	Priority	Status
	Quality Description		
General			
	Test principle: test must be repeatable --> must have the ability to test both on and offshore and these must ensure that the onsite and offshore environments are synchronised		
	Are priorities being adhered to both on- and offshore?		
	Are timeboxes being respected both on- and offshore?		
	Are comments from prototype reviews being incorporated by offshore?		
	Are all DSDM-O roles allocated to the team? If not, are there any risks associated with this omission?		
	Is user involvement working?		
	How well are on- and offshore people working together?		
Communication management			
	Is an effective Communication Plan established for both on and offshore?		
	Is communication between the Executive Sponsor, Project Manager and Contract Manager clearly defined?		
Content management, configuration management, archiving and registrations			
	Is there a clear definition of the software products to be delivered by the onsite and offshore team, e.g. Iteration plan, BAD, SAD, a working prototype?		
	Is there a clear definition of the hardware products to be delivered, by the onsite and offshore team and coordinated by the technical coordinators?		
	Are the development environment and tools agreed and in place? Without naming these tools, the onsite and offshore must have an agreement on these tools.		
	Are the test environment and tools agreed and in place? Without naming these tools, the onsite and offshore must have an agreement on these tools.		
	Are the development environment documentation standards agreed and operational – on and offshore?		
	Are the test environment documentation agreed and operational – on and offshore?		
	Are configuration items uniquely identified, especially when the offshore and the onsite team are working with the same code base?		
	Is there a clear definition of the configuration of end products, especially when the offshore and the site team are working with the same code base?		
	Is the development status of configuration items (tested, released, accepted, draft, final) available to all members of the project?		
	Are all changes to a configuration item identifiable?		
	Are the change control procedures understood by all parties?		
	Is document distribution to all parties being performed as defined in the Communication Plan?		
	Are there suitable measures for information security, if contractually agreed?		

Category	Quality Consideration	Priority	Status
	Quality Description		
	Are there suitable measures for traceability, if contractually agreed?		

Appendix C: Vendor Selection

Areas for Consideration during Vendor Selection					
Nr	Category	Description	Points	Priority	Status
	Co-location	The vendor should be prepared to let their employees travel as much as necessary.			
	Decision-making and escalation power	In the SLA/Contract with the vendor, there should be an agreement on the levels of decision-making and escalation (roles, what to do, consequences, etc.).			
	Team stability	The vendor should commit to delivering a stable offshore team. This should be put in the SLA. If the team is not stable. Then this is considered a project risk.			
	Supportive commercial relationship	Both partners must be able to prove they can work together. SLA/Contract should support this. The vendor must be able to give references of supportive collaboration with other projects.			
	DSDM accepted	The vendor MUST be able to prove they have worked in an agile environment. If not, this is a big project risk!			
	Culture	Ideally the vendor is used to working with organisations from the customer's culture and vice versa.			
	Maturity in prototyping	The vendor should be able to handle the required prototyping tools and techniques.			
	Alignment onshore and offshore	The vendor should have experience of development platforms required by the customer, and of working with dual environments on- and offshore.			
	Ability to deliver frequently	The vendor must be able to deliver intermediate products as well as final products, including dealing effectively with configuration management.			

Appendix D: Risks

This table covers general risks in DSDM-O projects. Further tables below cover risks that are specific to a particular phase of DSDM-O.

Risk	Mitigation	Business, Management, Technical
Overestimating the business knowledge of the vendor	<ul style="list-style-type: none"> Investigate and test business knowledge as part of contract negotiation 	Management
Unrecognised differences (e.g. cultural)	<ul style="list-style-type: none"> Analysis of differences between cultures 	Management
Risk of miscommunication, due to remoteness	<ul style="list-style-type: none"> Face-to-face meetings for vendor selection All roles that require face-to-face contact must be able and willing to travel 	Business
No mutual understanding of project goals	<ul style="list-style-type: none"> Face-to-face meetings for vendor selection Right level of documentation 	Business/Management
Data security/protection	<ul style="list-style-type: none"> Contractual agreement (Non-Disclosure Agreements etc) 	Management
Over-estimate of offshore DSDM knowledge (either side)	<ul style="list-style-type: none"> Gap analysis and selection criteria 	Management
Different legal systems	<ul style="list-style-type: none"> Contractual expertise brought in 	Management
Lack of communication or Miscommunication	<ul style="list-style-type: none"> Need to agree one common language for requirements Sufficient effective face-to-face meetings or tele/videoconferences Investment in virtual work areas 	Business
Lack of executive power to support offshore project progress	<ul style="list-style-type: none"> Right contractual governance Communications roadmap 	Management/Business
Insufficient developer knowledge of the business domain	<ul style="list-style-type: none"> Training, face-to-face meetings, virtual tools 	Business
Executing control over contracts or contracts being too restrictive for the offshore situation	<ul style="list-style-type: none"> Continuous, collaborative contract, Accept variable scope 	Management
Collaboration tools not good enough or not properly tested beforehand.	<ul style="list-style-type: none"> Investigate tools early (feasibility study) Set standards for “virtual project room” Set up, train, prototype 	Technical
Lack of training in collaboration tools leading to inconsistent use, misuse or avoidance of use by some people	<ul style="list-style-type: none"> Set standards for “virtual project room” Set up, train, prototype 	Technical
Unclear, and no common understanding of, all processes/functions, all data.	<ul style="list-style-type: none"> Modelling/diagramming and even just simple sketches, of the system, photographs and pictures of the system location, can help tremendously here 	Business
Time differences	<ul style="list-style-type: none"> Narrowing the “time-slot” for effective face-to-face teleconferencing or videoconferencing 	Management
Acceptance criteria not established, cultural commitment	<ul style="list-style-type: none"> Ensure cultural commitment to acceptance criteria 	Management

Risk	Mitigation	Business, Management, Technical
Integration between multi-site teams.	<ul style="list-style-type: none"> • Use distributed continuous integration • Run both build and run tests 	Technical
<p>Lack of understanding of both functional and non-functional requirements and their priorities.</p> <p>Functionality does not comply with the needs of the business.</p>	<ul style="list-style-type: none"> • Send ambassador user, advisor user, technical co-ordinator and possibly Developers to both sites to ensure that requirements are well understood. • Develop incrementally and iteratively to create the opportunity to overcome misalignments. • Let team members go through a learning curve and realise that not everybody has the same understanding of the requirements. • In brown-field situations, let team members first fix or amend existing code before taking up new functionality. 	Business/Technical
<p>Ambassador User keeps too much knowledge to his or her self, making the project dependent on the knowledge (and the unwritten requirements) of one person.</p> <p>Ambassador User does not want to travel between onshore and offshore.</p>	<ul style="list-style-type: none"> • Create an Ambassador User team, part of which can be onshore and part of which can be offshore. 	Business
<p>Project Manager or Technical Co-ordinator does not have enough experience in offshore projects.</p>	<ul style="list-style-type: none"> • Let the project manager and technical co-ordinator spend time offshore to meet offshore team face to face. This will accelerate any future communication needed. 	Management
<p>Onshore or offshore team have different cultural values in controlling the project.</p>	<ul style="list-style-type: none"> • Recognise the differences and encourage teams to overcome the differences. 	Management
<p>Lack of communication on issues, actions, decisions and risks.</p>	<ul style="list-style-type: none"> • Clear communication with both onshore and offshore teams on the status of the project. • Create project portal on which issues, actions, decisions and risks can be published. 	Management/Business
<p>Timeboxes defined in the timebox plan cannot be met due to offshore issues.</p>	<ul style="list-style-type: none"> • Incorporate overhead into the timebox plan. Communicate the timebox plan and track and trace progress at onshore and at offshore. 	Business/Technical

Feasibility Study Risks

The following risk is only relevant if the offshore organisation is involved in the Feasibility Study phase.

Risk	Mitigation	Business, Management, Technical
Over estimating of offshore savings (offshore may look a cheaper option than it is in reality)	Build experience in small steps Discuss with other companies Take up references/investigate proven track record.	Management

Business Study Risks

Risk	Mitigation	Business, Management, Technical
Business people making technical decisions	Make it easy for business people to access technical people	Business/Technical
Technical people making business decisions	Make it easy for technical people to access business people	Business/Technical
Optimistic estimates due to commercial cultural drive; timebox planning biased; offshore not involved in the Prioritised Requirements List	Get them involved Offshore and onshore estimating, with tool support to aid negotiation (probabilities of estimate accuracy) Collaborative, cooperative contract.	Management

Functional Model Iteration Risks

Risk	Mitigation	Business, Management, Technical
Development prototype takes longer than expected due to difficulty getting right people together or not being able to be physically together	Realistic scheduling Good supportive communications tools	Management
Lack of developer and user contact leads to misinterpreted requirements	Regular reviews and test script feedback sessions	Management/Business
Offshore unwillingness to raise questions or inability to see that questions should be raised because of lack of contact or culture. Misunderstanding of requirements	Good facilitation, with cultural insight Regular retrospective facilitation Short timeboxes	Management/Business
Development goes off track due to remoteness and the deviation is not spotted early.	Progress/check-pointing regimes need to be stricter and more formal in this environment	Management
Lack of one agreed visible plan (each "side" working to its own plan).	Integrate plans of onshore and offshore teams	Management

Design and Build Iteration Risks

Risk	Mitigation	Business, Management, Technical
Miscommunication between onshore and offshore teams	Document all assumptions decisions and requirements	Management
Testing at offshore and testing at onshore are not synchronised. Tests are either performed at neither location or are performed twice. In addition, test cases on both sides are different. (Applies to every DSDM project but has bigger impact in an offshore situation)	Derive the test cases directly from the requirements, before the requirements are built. This ensures that the requirements are well understood before they are built. Agree tests between on- and offshore and then the test co-ordinator ensures one set of tests is published in the EP-room.	Management/Technical
Defects cannot be reproduced any more due to a changed system/environment.	Make sure that the environments onshore and offshore are synchronised. Relate testing to releases through Configuration Management tools.	Technical
Quality of deliverables from offshore does not meet the expectations.	Frequent delivery from offshore Offshore/Onshore QA conducts continuous reviews Incremental and iterative development process. Define coding and naming standards and make sure that these standards are followed both onshore and offshore.	Management/Technical
Team members located offshore are not empowered to take small decisions. Too many approvals are needed from onshore. No progress in the project.	Define empowerment of team members. Define clear escalation paths for decisions that must be escalated.	Management
Danger of scope creep increases dramatically by going offshore	Standard Project Management in DSDM	Management/Business

Implementation Risks

There are no specific risks in DSDM-O for the Implementation phase.

Appendix E: Tools and Techniques

Type of Tool / Technique	Explanation
Development tool	The actual code is developed in this tool. It must be applicable and understandable to both on- and offshore.
Design and Prototyping tools	In offshore projects, communication is centred more on tangible products than discussing ideas. So design and prototyping tools are important to create these products. Although using these tools is not unique to offshore, they play a much more important role in the communication between the teams.
Configuration Management tool	Onshore and offshore publish all their deliverables in this tool so that all team members have access to the latest version of each deliverable. Releases are also defined in this tool. So a CM tool is very important and must be accessible by all team members whether or not offshore. In practice, a configuration management environment could be made up of a number of tools.
Automatic Build, Release and Deployment tool	A version of the system, capable of being run in the production environment is released from the development environment by using a configuration management method and compiled, built and assembled into a deployable package. In a multi-site environment such a tool is essential in obtaining predictable results. In some organisations, it is mandatory that such a tool be used for promoting software to production environments.
Test management tool	To ensure that both onshore and offshore teams have the same understanding of test findings and to ensure test principles of DSDM, a test management tool is advisable.
Requirements management tool	To ensure that both onshore and offshore have the same understanding of requirements and their dynamics, a requirements management tool is advisable. An important feature of a requirements management tool is traceability. It provides traceability from requirements to other requirements, use cases, test cases and other deliverables and assets. When requirements change, traceability will quickly show what deliverables are affected by the change. A requirements management tool cannot, however, prevent misunderstandings in requirements. It is an enabler for publishing versions of the requirements.
Synchronisation tools	To provide synchronised environments between onshore and offshore, synchronisation tools are very useful. For each type of deliverable a synchronisation strategy must be determined.
Communication and collaboration tools	To enable communication between offshore and onshore, it is vital that communication channels are in place.
Project Management tools	Tools that assist the project manager and team leaders across the locations in managing the project. In an offshore situation, these tools are more important since they provide a single access point for Project Management information.
Continuous Integration	This technique provides an environment that allows easy updates and rebuilds both onshore and offshore.
Cultural Awareness Workshops	To overcome cultural differences one or more workshops should be held. These cultural workshops must be able to ensure and encourage an active communication between onshore and offshore. These workshops are different from the Development Workshops.
Workshops	Workshops are still extremely important!
Test Automation Tools	If tests are to be repeatable they need to be automated. These range from unit testing tools through to automated acceptance testing tools