The DSDM Agile Project Framework

Timeboxing

Extract

DSDM Agile Project Framework – to be published soon.

www.dsdm.org
**13.1 Introduction**

**Timeboxing is one of DSDM’s key Practices.**

DSDM defines a Timebox as a fixed period of time, at the end of which an objective has been met. The Timebox objective is usually completion of one or more deliverables. This ensures the focus for a Timebox is on achieving something complete and meaningful, rather than simply “being busy.” At the end of a Timebox, progress and success is measured by completion of products (Requirements or other deliverables) rather than completing a series of unrelated tasks.

The optimum length for a Timebox is typically between two and four weeks – long enough to achieve something useful, short enough to keep the team focused. On a very short and rapidly moving project, it is possible to have a Timebox as short as a day. In exceptional circumstances, a Timebox might be as long as six weeks. The disadvantage of longer Timeboxes is that the team may lose focus. By evolving the solution through a series of short Timeboxes, the team is able to more frequently assess their true progress – “What have we delivered?” If their progress is not meeting their own expectations, this provides early warning of problems, and an early opportunity to address the problems.

Timeboxing is more than just setting short time periods and partitioning the development work. It is a well defined process to support the creation of low-level products in an iterative but controlled fashion. Timeboxing incorporates frequent review points to ensure the quality of those products and the efficiency of the delivery process.

By managing on-time / on-target delivery at the lowest level (the Development Timebox), then on-time and on-target delivery at the higher levels (Increment and Project) can be assured. Initial MoSCoW prioritisation of the work within the Development Timebox and continual re-assessment of what can be achieved in its agreed timeframe ensures that Timeboxes finish on time, every time and deliver a working solution to meet business objectives and in line with business expectations - “No nasty surprises”.

The Increment and the Project can also be considered as Timeboxes, as they share the characteristics of delivering a fit-for-purpose solution in a pre-set timeframe. These higher level Timeboxes are managed through the control applied at the lower level – the Development Timebox. Unless qualified by Project- or Increment- the word Timebox will refer to a Development Timebox (i.e. covering the Evolutionary Development of the Solution).

**13.2 Timebox Options**

Every Timebox begins with a Kick-Off and ends with a Close-Out. Beyond this, DSDM recognises two styles of Timebox:

- A DSDM Structured Timebox
- A Free Format Timebox

The choice of Timebox style may be driven by factors such as the availability of the Business Ambassador and other business roles or the type of product being developed.

**13.3 A DSDM Structured Timebox**

This is the original DSDM-style Timebox, which provides a standard, repeatable internal structure to a Timebox.

The structure within a Timebox is very useful to allow forward planning of the times when the Business Ambassador will attend specific planning, feedback and review sessions. As well as these specific planned sessions, there is still an expectation of some day-to-day Business engagement e.g. attending Daily Stand-Ups and timely response to urgent questions. By projecting this structure forward to future Timeboxes, it then becomes possible to schedule the various Timebox ceremonies (Kick-Off, the three Reviews, Close-Out) for all the Timeboxes in the Increment. Where a Business Ambassador is trying to manage a very busy diary, this can be a great help.

The DSDM Structured Timebox also provides a rhythm or cadence to the Timebox, ensuring Iterative Development activity within the Timebox converges on an accurate solution. With this structure, the Solution Development Team (SDT) know when they should have completed their initial investigations (by the end of week one in a three week Timebox), they know when they should be nearing a conclusion and have their product nearly ready (by the end of week two in a three week Timebox). With this structure, the SDT know that the final few days are focused on final tweaks and fine-tuning to ensure the Timebox closes cleanly. At any point during the DSDM Structured Timebox, the whole SDT has visibility of progress and an early warning if the overall Timebox objectives are at risk.
A DSDM Structured Timebox comprises three main steps –

- Investigation
- Refinement
- Consolidation

Each of these steps ends with a Review.

Figure 13a: A DSDM Structured Timebox

<table>
<thead>
<tr>
<th>Timebox:</th>
<th>Nature of the work done</th>
<th>Suggested timescale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kick-Off</td>
<td>Short session for the Solution Development Team (SDT) to understand the Timebox objectives and accept them as realistic</td>
<td>Approx 1-3 hours for a 2-3 week Timebox</td>
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<tr>
<td>Investigation</td>
<td>The initial investigation includes confirmation of the detail of all the products to be delivered by this Timebox. Includes:</td>
<td>Approx. 10-20% of Timebox</td>
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<tr>
<td></td>
<td>• agreement on the Timebox deliverables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• agreement on the acceptance criteria for the deliverables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• quantitative measures that will prove success</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investigation ends with a Review which informs Refinement.</td>
<td></td>
</tr>
<tr>
<td>Refinement</td>
<td>Encompasses the bulk of the development and testing (technical and business testing) of the Timebox products, in line with agreed priorities.</td>
<td>Approx. 60-80% of Timebox</td>
</tr>
<tr>
<td></td>
<td>Refinement ends with a Review which informs Consolidation.</td>
<td></td>
</tr>
<tr>
<td>Consolidation</td>
<td>Ties up any loose ends related to Evolutionary Development and ensures all products meet their previously agreed acceptance criteria.</td>
<td>Approx. 10-20% of Timebox</td>
</tr>
<tr>
<td></td>
<td>Consolidation ends with a Review, which informs Close-Out.</td>
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</tr>
<tr>
<td>Close-Out</td>
<td>Formal acceptance of the Timebox deliverables by the Business Visionary and Technical Coordinator. This is followed by a short Timebox Retrospective Workshop, to learn from the Timebox and to take actions to improve future Timeboxes.</td>
<td>Approx 1-3 hours for a 2-3 week Timebox</td>
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</tbody>
</table>
13.3.1 Timebox Kick-Off

The aim of the Timebox Kick-Off is to:

- Review the Timebox objectives, as outlined in the Delivery Plan, to gain a common understanding of what is to be achieved.
- Ensure that it is still feasible within the Timebox to deliver what was initially expected at the Foundation phase, and to re-plan accordingly if this is no longer possible.
- Where possible, agree the acceptance criteria for each product to be delivered within the Timebox.
  - If it is not possible to agree this level of detail at the Timebox Kick-Off, then agreement can be deferred to the end of Investigation but, in this case, high-level acceptance criteria must be agreed until the additional detail is available. (Going into a Timebox without an understanding of the acceptance criteria is extremely risky.)
- Review the availability of all members of the SDT (including the Business roles) to participate in Timebox activities for this Timebox.
  - Commitment to delivery is based on a pre-agreed resource levels at the Project level. However an individual's availability can vary between one Timebox and another; for example: due to planned time off.
- Highlight any known dependencies (internal or external) that may affect this Timebox. The SDT could be dependent on
  - Internal - Other Solution Development Teams on this Project working concurrently in parallel Timeboxes
  - External - People or Projects outside our control that may impact this project.

The Kick-Off should be attended by all members of the Solution Development Team (including Business Ambassador(s)) who will be working in the Timebox as well as the Project Manager, the Technical Coordinator and the Business Visionary.

13.3.2 Step 1: Investigation

The aim of Investigation is to provide a firm foundation for the work to be carried out during Refinement and to clarify further the acceptance criteria. Investigation entails the SDT jointly investigating the detail of requirements and agreeing how these requirements will be met as part of the Evolving Solution. This detailed information may be captured as part of acceptance criteria, against individual Requirements/User Stories, or as an elaboration of the Prioritised Requirements List. Acceptance criteria should be confirmed as correct and providing appropriate coverage of the scope of each requirement. Whenever possible, an initial prototype of the solution is created to demonstrate an understanding of the Requirements/User Stories and to provide early visibility of the solution for assessment and feedback.

During Investigation, the entire team should work together on the full set of requirements agreed for the Timebox at the Kick-Off. It is necessary to understand the detail and priorities of the work intended for completion in the Timebox, so that informed decisions can be made later about which lower priority requirements may be dropped if necessary.

Some very early testing may be possible and is to be encouraged, but during Investigation the main test focus is for the Solution Tester to work with the Business Ambassador and the Business Analyst, as well as the rest of the SDT, to clarify acceptance criteria and to start planning testing for this Timebox.

At the end of Investigation the whole SDT review the following:

- Dependencies:
  - The team ensure they understand any dependencies within this Timebox on teams working in other parallel Timeboxes on this Project (concurrent teams) or elsewhere in the business, and between the requirements they are addressing.
- Timebox Plan:
  - The team informally review the work still to be done, and agree which members of the team will be working on what. This ensures that no single individual is overloaded. This informal review validates the Timebox Plan (or highlights if the Investigation work has shown that the Timebox Plan is no longer viable, so that remedial action can be taken – Fail Fast (See Iterative Development Chapter for full detail)
- Risks:
  - Based on the information gained from the Investigation, and risks recognised for this Timebox from the Delivery Plan and Risk log, the SDT analyse the risks associated with this Timebox and, on that basis, ensure an acceptable balance of requirements of differing priorities in accordance with the MoSCoW rules.

The feedback from this Review is captured as a Timebox Review (which can be as simple as a brief email, confirming what has been agreed). The Investigation feedback is used to drive the next step in the Timebox – Refinement – and ensures the SDT can fully commit to achieving the Timebox objectives, based on an enhanced level of understanding.
13.3.3 Step 2: Refinement

The aim of Refinement is to complete as much of the development work as possible, including testing the products(s). Development and testing are carried out iteratively; the primary objective is to meet the detailed acceptance criteria previously agreed (at the latest, by the end of Investigation) but also to keep the focus on the current business need. The order of the work should be driven by the MoSCoWed priorities for this Timebox but should be influenced by other factors, such as:

- a sensible development order from a technical perspective
- availability of specific resources such as Technical Advisors, Business Advisors
- any known cross-team dependencies.

Refinement ends with a Review with the Business Ambassador(s) and, where appropriate, other stakeholders, such as Business Advisors who have been actively involved in this Timebox, and the Business Visionary. By this point (end of Refinement) the work for this Timebox should be nearly ready. The Review determines what actions are necessary to achieve full completion of the work according to the acceptance criteria by the end of the Timebox. **No new work should be started after this point.** Final feedback (fixing minor outstanding issues) requested at this time should be carefully considered and prioritised. Any significant demand for change at this point often exposes a lack of appropriate involvement of Business roles previously during this Timebox - a lesson to be learned for the future.

This review would typically involve a demonstration of the product developed within the Timebox. The feedback from this Review is captured as a Timebox Review.

13.3.4 Step 3: Consolidation

During Consolidation, the actions agreed at the Refinement Review are carried out, together with final testing and any work required to satisfy organisational or project standards. Examples of this could be: holding a peer review, or migrating code to a different environment. Any final Quality Control checks are carried out by the SDT to ensure all Products or Requirements / User Stories meet the business need to an acceptable quality. Consolidation ends with a Review to check whether the Timebox objectives have been met. Any products not meeting the agreed acceptance criteria by this point (the end of the Timebox) are deemed not to have been delivered. These undelivered products remain open on the Prioritised Requirements List.

13.3.5 Timebox Close-Out

The primary aim of the Close-Out is to record formal sign-off or acceptance of all the products delivered from this Timebox. An important secondary aim is to determine what is to be done about work that was initially part of the Timebox but was not completed. Such work may be:

- considered for the next Timebox
- scheduled for some point later in the Increment or Project
- dropped from the Increment or Project.

If overall timescales are to be met, it is important to avoid the situation where unfinished work passes automatically into the next Timebox, without any consideration of the overall (Increment or Project) priorities. A final aim of the Close-Out is to look back on the Timebox, to see if there is anything that can be learned to make the development process and/or Timebox management process more effective in the future. This on-going process of holding a short Retrospective Workshop as part of each Timebox Close-Out has a number of benefits:

- To allow the team to learn from their experiences in this Timebox
- To recognise and build on the good experiences
- To define issues to be resolved in the next Timebox
- Where possible, each member of the SDT should volunteer to own at least one issue and to embed that change in the next Timebox
- To gather on-going information for use in the later, more formal Reviews (at the end of the Increment and at the end of the Project).

Where the Timebox has been successful and where the team is already established, this Retrospective workshop can be very short. If there have been problems during the Timebox, or if this is the first Timebox with a new team, the Retrospective workshop may need additional time.

Depending on the time needed for the Close-Out, it may be practical and sensible to run the Close-Out back-to-back with the Kick-Off session for the next Timebox.
13.4 A Free Format Timebox

The Free Format Timebox reflects the style used by other popular Agile approaches. A Free Format Timebox may be effective where the formality and structure of the DSDM Structured Timebox is not possible or helpful.

Typically 2-4 weeks

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**Figure 13b: A Free Format Timebox**

The Free Format Timebox also starts with a Kick-Off and finishes with a Close-Out. However in between, there may be any number of formal or informal review points. Typically the SDT will pick up one or more products or Requirements / User Stories and evolve these iteratively until completed. Completion means a product or Requirement / User story meets the previously agreed acceptance criteria. The SDT then pick up the next product or requirements / user stories and repeat the process. This Free Format style relies on the Business Ambassador being available consistently to review and provide feedback on an on-going basis.

<table>
<thead>
<tr>
<th>Timebox</th>
<th>Nature of the work done</th>
<th>Suggested timescale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kick-Off</td>
<td>Short session for the SDT to understand the Timebox objectives, to agree what work (requirements/user stories and products) will be taken on in this Timebox and agree their Timebox priorities, and to accept this workload as realistic.</td>
<td>3-4 hours</td>
</tr>
<tr>
<td>Iterative</td>
<td>Iterative development and testing of individual requirements / user stories and other products, as agreed in the Kick-Off and in a sequence driven by the agreed priorities for this Timebox.</td>
<td></td>
</tr>
<tr>
<td>Development</td>
<td>It may still be appropriate to informally adopt the concepts of Investigate, Refine, Consolidate to converge on the accurate solution for each individual requirement / user story or product, for example understanding the lower level detail and agreeing the acceptance criteria at the start of the development of a requirement / user story. This use of Investigate, Refine, Consolidate per requirement / user story helps to mitigate the risk of too many cycles of iteration as the product is elaborated.</td>
<td></td>
</tr>
<tr>
<td>Close-Out</td>
<td>Formal acceptance of the Timebox deliverables by the Business Visionary and Technical Coordinator. This is followed by a short Timebox Retrospective Workshop, to learn from the Timebox and to take actions to improve future Timeboxes.</td>
<td>1-3 hours</td>
</tr>
</tbody>
</table>
13.5 The Daily Stand-Up

A key and integral part of all Development Timeboxes, regardless of the style adopted, is the Daily Stand-Up. This is the Solution Development Team’s opportunity to share information with the whole team and to do any day-to-day re-planning and reorganising necessary when issues occur. However, it is important to emphasise that on-going informal communication goes on between all team members during the day as needed, and not just at the Daily Stand-Up.

On a daily basis, the SDT get together for a ‘Stand-Up’ session. The Stand-Up usually takes place at the same time and same place each day (with the Timebox Plan visible), so that others who are not part of the SDT may listen in. Normally facilitated by the Team Leader, the Stand-Up is a daily opportunity for everyone to understand progress against objectives at a detailed level and to expose issues and blockers that may be getting in the way.

The Stand-Up:

- Has the following active participants:
  - all members of the SDT, including Business Ambassador(s)
  - any Business Advisors actively involved in this Timebox
  - any Technical Advisors actively involved in this Timebox
- Typically uses a simple format in which each participant in turn describes:
  - What have I been doing since the last Stand-Up that helps achieve the Timebox objectives
  - What will I be doing between now and the next Stand-Up to help achieve the Timebox objectives
  - What problems, risks or issues (blockers) do I have that will prevent me or the team achieving the Timebox objectives
- Has a short and fixed duration – normally no longer than 15 minutes
  - 2 minutes per participant + 2 minutes is a good guide
- Is ideally held with all participants standing in a circle by their team board
  - This is sometimes called an Information Radiator.

Standing up re-enforces the desire to keep the session short and informal and to keep everyone focused.

- May be attended by other roles e.g.
  - The Business Visionary – in order to keep in touch with progress, to provide on-going visible support
  - The Project Manager – in order to observe progress and pick up escalated issues
  - The Technical Coordinator – in order to keep abreast of technical decisions and pick up escalated technical issues
- Teleconference Stand-Ups (Dial-ins) may be necessary where the team is split across multiple sites. However, for choice, this works better if groups at each site get together in a room and dial in to the groups at the other site(s). For Teleconference Stand-Ups, it becomes even more important to use the suggested format (as bulleted above) to provide a simple structure for the communications. For Teleconference Stand-Ups, the team need to decide how the team board will be used. In these circumstances, it may be an electronic version, rather than a physical area.

It is important that the Stand-Up is used to identify problems and to agree who needs to participate in solving any problems that arise. The Stand-Up should not attempt to solve these problems if reaching a resolution will take any more than a minute or two. It is common practice for problems to be taken off-line. This allows for follow-up discussions which are not run under Stand-Up guidelines and which only involve those who are directly impacted.

The Stand-Up also provides the primary mechanism for the SDT to track progress and exert the necessary flexibility and control over their work to ensure on-time delivery of the agreed products by the end of the Timebox.

Daily Stand-Ups are also an effective technique when used outside a Development Timebox, for example during Foundations, or in any circumstance where informal and on-going communication needs to be embedded as part of “the way we do things”.

13.6 Dealing with Change within a Timebox

Iterative Development is what enables a team to deliver a product that is genuinely fit for its intended purpose by the end of a Timebox. Converging on the accurate solution is achieved through constant refinement of the product, based on review by the Business, led by the Business Ambassador and supported by the Business Analyst. It is vital that the decisions about whether, at any given time, a solution appears right, or needs to change to make it right, are both quick and sure. If decision-making is not quick and sure, there is a real risk that significant time will be lost (by waiting for decisions to be made) or wasted (as a result of decisions being overturned). It is important that all members of the SDT are appropriately empowered to handle any change that falls within the agreed scope of the Timebox objectives, without the need for a formal change control process that reaches beyond the team.
As a rule of thumb, the following scenarios always mean a change of scope and therefore need more formal management (outside the empowerment of the SDT):

- Changing the breadth of the solution (i.e. adding to the high level requirements or removing Must Have requirements)
- Increasing the percentage of Must Have effort, either by introduction of new Must Have requirements, or by upgrading Won’t Have, Could Have or Should Have priorities to Must Haves

However, negotiation around the detail (the depth) of the solution can generally be handled by the empowered SDT, without the need for any escalation or formal approval by those outside the SDT.

Regardless of whether changes are deemed to impact scope or not, typically the SDT is empowered to operate within agreed boundaries without the need to escalate to the Project Manager or other Project level roles.

For example, following the Practice of MoSCoW, dropping a Could Have requirement from a Timebox (or even from an Increment or Project) is normally something that is only reported, rather than requiring permission. By comparison, significantly changing the meaning of a Must Have requirement often requires external guidance.

However, all changes to the content of a Timebox must be agreed and accepted by the SDT as a whole, and must not be simply imposed on them or décided by one individual member of the SDT in isolation.

Boundaries of empowerment should be established by the end of Foundations and reviewed for effectiveness on a regular basis (as a minimum at the end of each Timebox).

13.7 Planning and Scheduling Timeboxes

A primary purpose of the Delivery Plan (produced at the end of the Foundations phase) is to provide a schedule of the Increments that make up the project. For the current Increment (or for the Increment about to start) the Delivery Plan also shows the planned number and duration of the Timeboxes as well as defining at a high level the expected focus for each of those Timeboxes.

NB. The Delivery Plan does not show full Timebox detail – this detailed information appears in the Timebox Plan.

Unlike a traditional project plan, the Delivery Plan does not try to predict low-level detail far into the future, since this detail will not be known at this point and any attempts to predict this level of detail may give a false perception of confidence. Application of the Timeboxing Practice (described above) in conjunction with the Practice of MoSCoW prioritisation ensures each Development Timebox delivers a fit-for-purpose product in the agreed timeframe. As each Development Timebox delivers fit-for-purpose products on time, then this indicates that the Increment is on track and thus the Project as a whole is on track.

Figure 13c: DSDM Structured Timeboxes in the context of Increments and Project

When creating a schedule of Development Timeboxes and a strategy for Increments, the primary driver should always be the business priority. This is in line with DSDM’s Philosophy: “To focus on delivery of business value at the earliest opportunity”. However, it is advisable also to consider other factors when working out the Delivery Plan. Such other factors will include:

- Business and technical risk
- Solution architecture and external dependencies
- Ease of implementation and the drive for an early return on investment (ROI)
- Availability of critical or specialist resources
- Constraints associated with business process or corporate policy
- Quick wins
13.5 Summary

Timeboxing is one of DSDM’s key Practices and is used in combination with the Practice of MoSCoW prioritisation to ensure on-time delivery. At the lowest level, the Development Timebox maintains focus on delivery in the short term (weeks or even days). This provides control at the lowest level, as well as a clear indication of the health of the Project overall. If Development Timeboxes are successfully delivering the Must Haves and the Should Haves (the Expected Case) at the agreed time, then the estimating process is working well enough, the team is working effectively, the Delivery Plan is being validated and the risks are being managed. This Timebox-level confidence feeds upwards to instil confidence at the Increment level and the Project level.