



# Software Development Methodologies

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## Lecture 12

### Agile Methodologies: DSDM



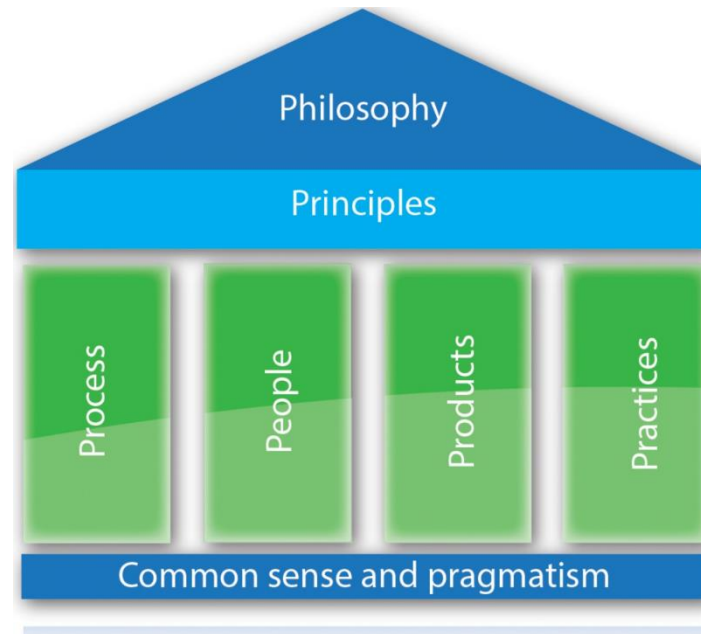
# Dynamic Systems Development Method (DSDM)

- First created in 1994 by a consortium of UK companies.
- Motivated by an ever-increasing need for a standard, generally-accepted RAD methodology.
- Starting with 16 UK companies, the consortium now has more than 1000 members, including industry giants such as IBM, Microsoft and Siemens.
- The framework proposed by DSDM is now considered the de facto standard for RAD.
- Since 2014, it is offered by the Agile Business Consortium as a flexible, customizable and non-proprietary process framework.



# DSDM Framework: Composition

- 1. Philosophy:** The best business value emerges when projects are aligned to clear business goals, deliver frequently and involve the collaboration of motivated and empowered people.
- 2. Principles:** The philosophy is supported by a set of eight principles that build the mindset and behaviors necessary to bring the philosophy alive.
- 3. Main Constituents:** The principles are supported by definition of and guidance on people, products, process and practices.
- 4. Ethos:** DSDM's approach and style has always been founded on an underlying ethos of common sense and pragmatism.





# DSDM: Principles

- 1. Focus on the business need**
- 2. Deliver on time**
- 3. Collaborate**
- 4. Never compromise quality**
- 5. Build incrementally from firm foundations**
- 6. Develop iteratively**
- 7. Communicate continuously and clearly**
- 8. Demonstrate control**



# DSDM: Instrumental Success Factors (ISFs)

- If these factors cannot be met, they represent a significant risk to DSDM:
  1. It is important that all project stakeholders and participants understand and accept the DSDM project approach.
  2. The Solution Development Team should be empowered, stable, skilled, and properly sized (seven +/- two people).
  3. The business should be actively engaged and should commit the necessary amount of time, at all levels, throughout the project.
  4. Ensuring that testing is fully embedded as part of the iterative and incremental development approach is of utmost importance.
  5. Project activity and progress should be made transparent through demos so that the business is always fully aware of the true state of the project.
  6. The Project Approach Questionnaire (PAQ) should be used to assess the options and risks of the DSDM process, and to then tailor the process accordingly.

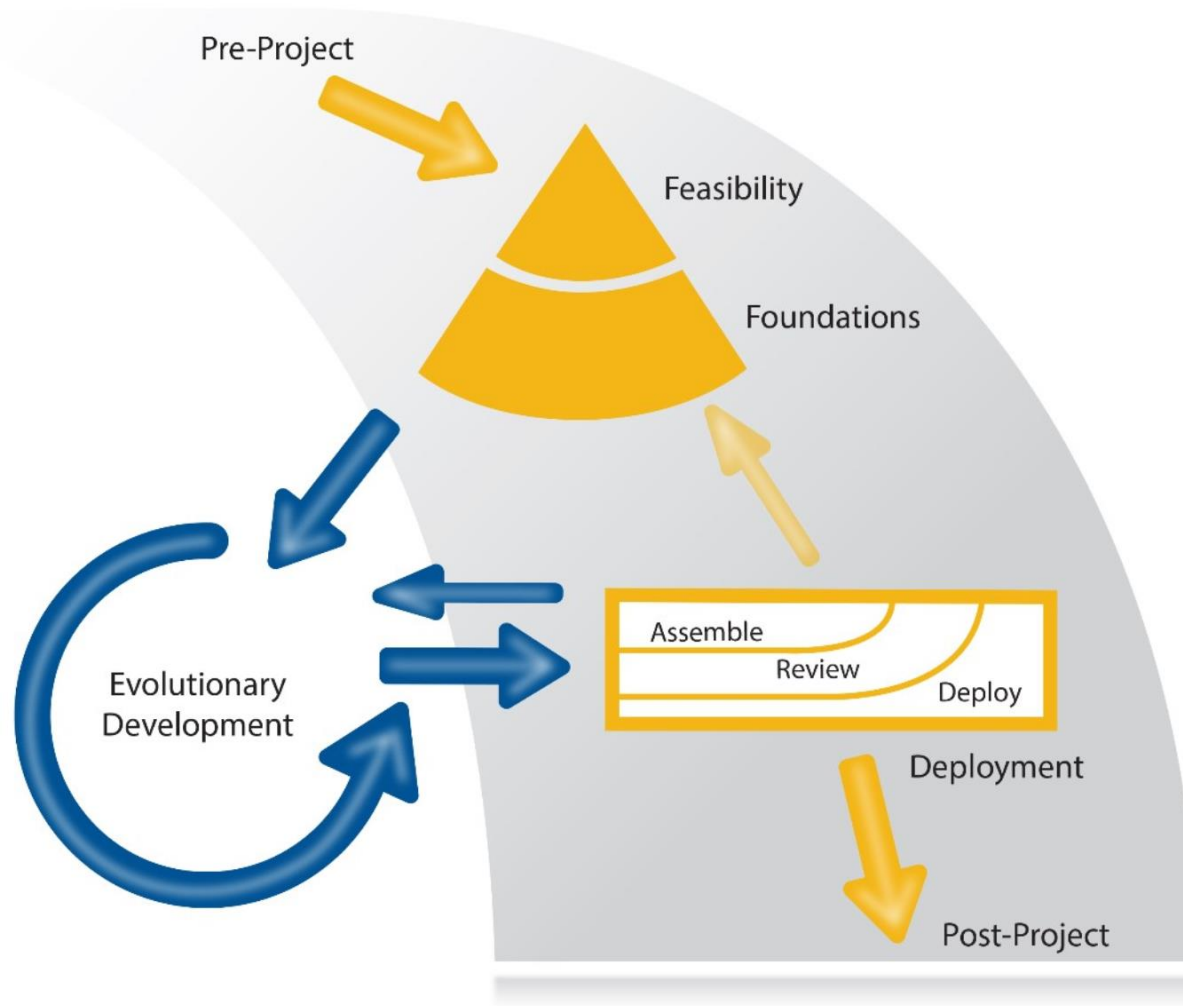


# DSDM: Process

1. *Pre-project*: ensures that only the right projects are started, and that they are set up correctly, based on a clearly defined business objective.
2. *Project-proper*, during which the four main phases of DSDM are applied; the first two sequentially at the start of the project, and the rest iteratively:
  1. *Sequential Phases*: studying the business domain and performing a preliminary analysis of the system:
    1. *Feasibility*
    2. *Foundations*
  2. *Iterative Phases (The Development Cycle)*: iterative and incremental analysis, design, coding and deployment of the system:
    1. *Evolutionary Development*
    2. *Deployment*
3. *Post-project*: After the final Deployment for a project, the Post-Project phase checks how well the expected business benefits have been met.



# DSDM: Process



[DSDM Consortium 2014]



# DSDM Process: Feasibility Phase

- The Feasibility phase is intended primarily to establish
  1. whether the proposed project is likely to be feasible from a technical perspective, and
  2. whether it appears cost-effective from a business perspective.
- The effort associated with Feasibility should be just enough to decide whether further investigation is justified, or whether the project should be stopped now.





# DSDM Process: Foundations Phase

- Intended to establish a fundamental (but not detailed) understanding of
  1. the business rationale for the project,
  2. the potential solution that will be created by the project, and
  3. how development and delivery of the solution will be managed.
  
- The aim is to understand the scope of work, how it will be carried out, by whom, when and where.
  - It also determines the lifecycle by agreeing on how the DSDM process will be applied to the specific needs of this project.
  - The detail associated with requirements, and how they should be met as part of the solution, is intentionally left until the next phase.
  
- It should last no longer than a few weeks - even for large and complex projects.
  
- It may sometimes be necessary to revisit Foundations after deployment;
  - for example, if the business environment is dynamic and the foundations are expected to encounter significant change.



# DSDM Process: Evolutionary Development Phase

- Building on the firm foundations that have been established, the purpose of this phase is to evolve the solution.
- Requires the Solution Development Team(s) to apply DSDM practices to converge on an accurate solution that meets the business need.
- Working within timeboxes, the Solution Development Team create Solution Increments, iteratively exploring the low-level detail of the requirements and testing continuously as they move forward.



# DSDM Process: Deployment Phase

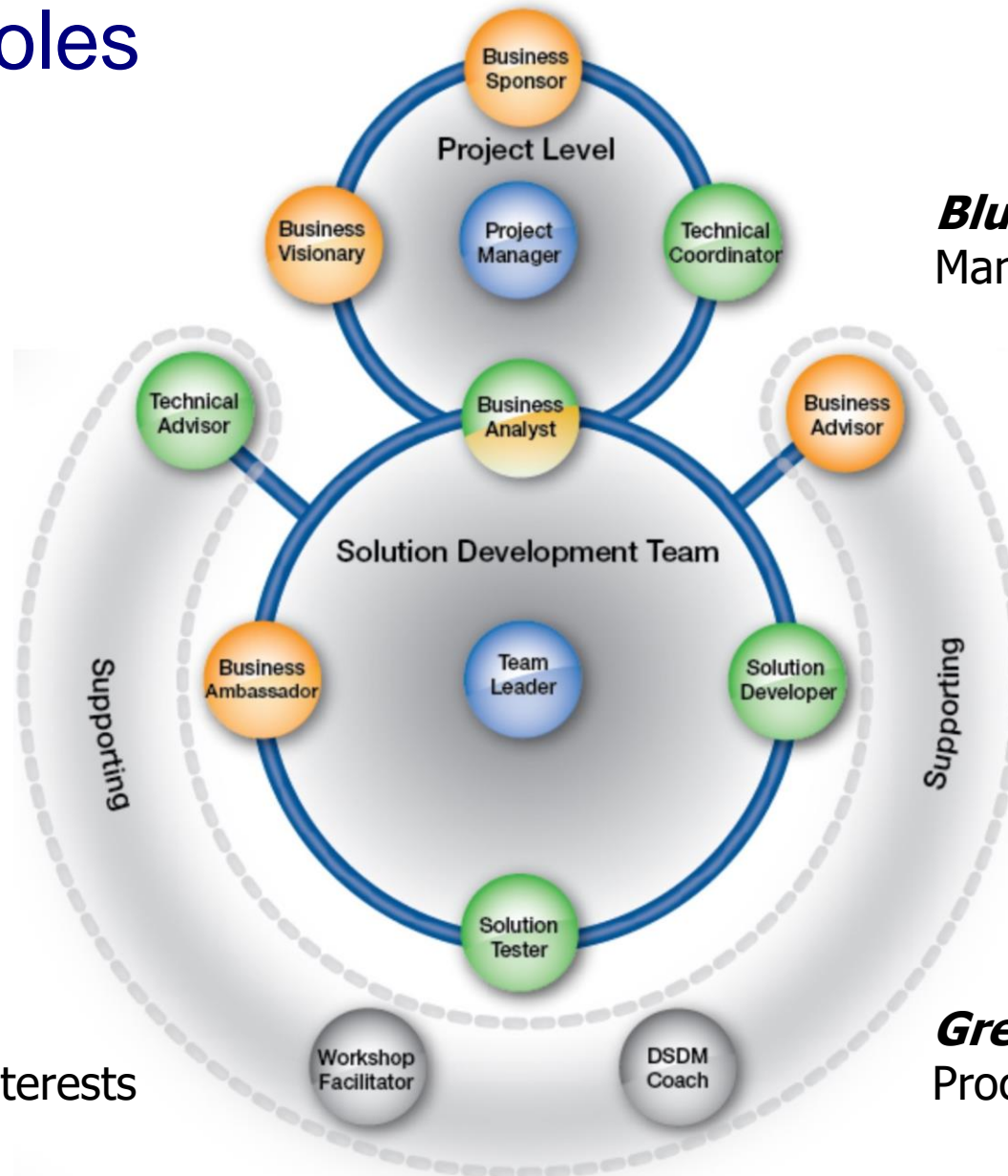
- The objective is to bring a baseline of the Evolving Solution into operational use.
  - The release that is deployed may be the final solution, or a subset of the final solution.
  
- The Deployment phase comprises three main activities:
  - **Assemble:** encompasses the work to combine what is to be released; e.g., assembling multiple Solution Increments into a single release.
  - **Review:** to ensure the proposed release meets the appropriate standards and is complete enough to be viable.
    - In a simple environment, this can be very informal (a basic checklist), but in a more complex environment, it may be as formal as a go/no-go workshop.
    - The team also carries out a retrospective for the Project Increment, focusing on ways of working and potential areas for improvement.
  - **Deploy:** The physical act of putting what has been assembled (the release) into operational use.
    - It includes any technical work, such as transfer of the solution into the user environment, but also the enactment of any plans for business change.



# DSDM: Roles

**Orange**  
Business Interests

**Blue**  
Management Interests

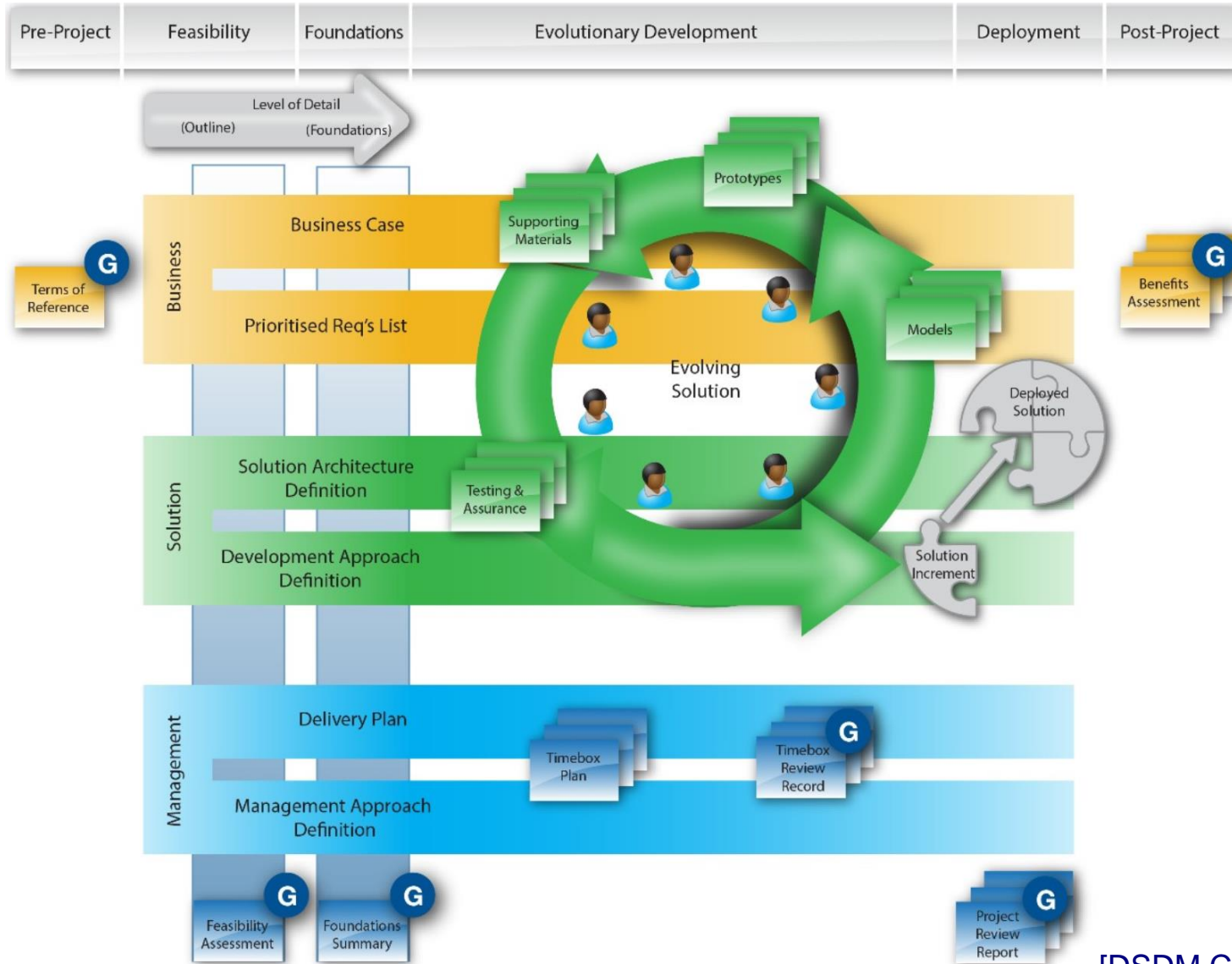


**Green**  
Solution/technical interests

**Grey**  
Process Interests



# DSDM: Products





# DSDM: Products (1)

1. **Terms of Reference:** High-level definition of the over-arching business driver for, and top-level objectives of, the project.
2. **Business Case:** Provides a vision and a justification for the project from a business perspective.
3. **Prioritized Requirements List (PRL):** High-level description of the requirements that the project needs to address, prioritized based on business value.
4. **Solution Architecture Definition:** High-level design framework for the solution, covering both business and technical aspects of the solution.
5. **Development Approach Definition:** High-level definition of the tools, techniques, customs, practices and standards that will be applied, including testing and review.
6. **Delivery Plan:** High-level schedule of Project Increments, and, at least for the first/imminent Increment, Timeboxes that make up that Increment.
7. **Management Approach Definition:** Reflects the approach to project management and considers how the project will be organized and planned, how stakeholders will be engaged, and how progress will be demonstrated.



## DSDM: Products (2)

8. **Feasibility Assessment:** Provides a snapshot of the evolving business, solution and management products at the end of the Feasibility phase.
9. **Foundation Summary:** Provides a snapshot of the evolving business, solution and management products at the end of the Foundations phase.
10. **Evolving Solution:** Made up of all components of the final solution and any intermediate deliverables necessary to detail the requirements and the solution.
11. **Timebox Plan:** Provides depth and detail for each Timebox in the Delivery Plan.
12. **Timebox Review Record:** Captures the feedback from each review in the Timebox.
13. **Project Review Report:** A single document that is updated at the end of each Project Increment by adding new sections pertinent to that Increment.
14. **Benefits Assessment:** Describes how the benefits have actually accrued, following a period of use in live operation.





# DSDM Practices

1. **Workshops:** A neutral Workshop Facilitator guides a group of Participants through a process which enables them to work together to achieve an agreed goal.
2. **MoSCoW Rules:** A technique for helping to understand and manage priorities.
3. **Iterative Development:** A collaborative process in which the Evolving Solution, or part of it, evolves from a high-level concept to something with business value.
4. **Modeling and Prototyping:** Designed to improve communications and prompt the right questions for checking that the solution being developed is what is required. DSDM does not prescribe any specific diagrams, but modeling is encouraged.
5. **Timeboxing:** Fixing the periods of time at the end of which an objective (usually completion of one or more deliverables) has been met.
  - 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.
6. **Collaboration and Communication:** Using prescribed techniques for enhancing teamwork and inter-team/intra-team communications.
7. **Requirements Engineering (as User Stories):** Capturing the requirements at a high level, early in the project, and eliciting further detail gradually as the project progresses, deliberately leaving the finer details as late as practicable.
8. **Project Planning and Control:** Incorporating detailed high-level to low-level planning and control activities into the process.





# DSDM: Strengths and Weaknesses

## ■ **Strengths**

- Iterative-incremental process
- Based on functional and structural modeling performed on the problem domain and the system
- Early specification of the physical architecture
- Flexible and configurable process
- Especially suitable for projects with highly volatile requirements, since it is easily adaptable
- Based on prioritization of requirements by categorizing them into specific types
- Design-based development



# DSDM: Strengths and Weaknesses

## ■ **Strengths (Contd.)**

- Carefully worked-out process
- Incorporating a *Suitability Filter* to make sure that the project can be carried out with DSDM
- Based on careful planning and control
- Scalability addressed
- Early and frequent releases
- Smooth transition from stage to stage
- Traceability to requirements achieved through requirements-driven development
- Active user involvement



## DSDM: Strengths and Weaknesses

### ■ ***Weaknesses***

- Limited applicability scope
- Stringent constraints on time and resources
- Lack of formalism



## Reference

- DSDM Consortium, *The DSDM Project Framework Handbook*, Agile Business Consortium, 2014, Published online at: <https://www.agilebusiness.org/resources/dsdm-handbooks/>, (last visited on: 29 November 2017).