10/9/2023

Charmain Lebelo

34687602

Table of Contents

[1 Introduction 3](#_Toc147593055)

[2 Results 4](#_Toc147593056)

[3 Questions to address 4](#_Toc147593057)

[3.1 Whether Software Development become an integral part of Project Management in South African Software Development Organisations, and where does software development fit into project management? 4](#_Toc147593058)

[3.1.1 Whether Software Development become an integral part of Project Management 4](#_Toc147593059)

[3.1.2 where does software development fit into project management? 5](#_Toc147593060)

[3.2 Which Project Management and Software Development methodologies are used mainly by South African Software Development Companies, and why? 5](#_Toc147593061)

[3.2.1 SDM 5](#_Toc147593062)

[3.2.2 Why? 6](#_Toc147593063)

[4 Best PM and Software Development Methodologies to use by the Computer Science and Information Systems Department. 6](#_Toc147593064)

[4.1 SDM: Agile 6](#_Toc147593065)

[4.2 PM: PRINCE2 6](#_Toc147593066)

[4.3 Unifying Agile and PRINCE2: A holistic approach 7](#_Toc147593067)

[5 Conclusion 7](#_Toc147593068)

# Introduction

Software Development Management (SDM) and Project Management (PM) hold pivotal roles within the software industry. These two facets are interlinked, significantly influencing the prosperous completion of software projects.

SDM is about how we make software applications. It helps us plan, watch, and control how software is made, making sure it does what it’s supposed to do, and is finished on time and without spending too much money. Here are some important parts of managing how software gets made:

* Requirements Analysis: Figuring out what the software needs to do.
* Design: Planning how the software will do these things.
* Implementation: Writing the software’s code.
* Testing: Checking that the software does what it should.
* Deployment: Letting people use the software.
* Maintenance: Keeping the software working well by fixing and updating it.

PM is a big idea about how to plan, do, control, and finish projects. It can be used in any kind of job where projects happen. When we talk about making software, project management helps us look after different things like:

* Scope Management: Keeping track of the work that needs to be done.
* Time Management: Making sure everything is done on schedule.
* Cost Management: Not spending too much money.
* Quality Management: Checking that the work is good.
* Human Resource Management: Looking after the team and what they do.
* Communication Management: Making sure everyone knows what’s happening.

SDM is a part of PM. Think of SDM like building a toy – it’s all about putting the pieces together in the right way (like coding and testing software). On the other hand, PM is like planning the whole toy-making workshop. It thinks about money (budget), time (schedule), who does what (resource allocation), avoiding problems (risk assessment), talking to all involved people (stakeholder communication), and more. In simple terms, Software Development Managers think about ‘how’ to make the software properly and quickly, Project managers think about ‘what’ the project should achieve, ‘when’ it should be done and ‘who’ will do the work.

Both kinds of managers need to work hand in hand. PM is not just for software – it’s a way of planning and doing projects in all kinds of industries and include managing many aspects like scope, time, cost, quality, people, communication, risks, and buying things.

# Results

The South African Software Development Organizations interviewed demonstrate a nuanced approach to ITPM and SD, often separating the two while favourably adopting Agile Methodologies and ensuring software security in remote work contexts. Though larger companies like “Entelect,” “Dell Technologies” and “BBD Software Development” may navigate through more varied methodologies and projects, smaller entities like “AVAV,” “Khaladayi Pty LTD,” and “Mpilo Technologies” also exhibit strategic methodology choices, aligning with both global trends and intrinsic organizational needs. This reflects a balance between adhering to recognized practices and accommodating unique project and organizational demands.

# Questions to address

## Whether Software Development become an integral part of Project Management in South African Software Development Organisations, and where does software development fit into project management?

### Whether Software Development become an integral part of Project Management

* **Yes**: From the companies interviewed, AVAV, Khaladayi Pty LTD, Dell Technologies and Mpilo Technologies do maintain a separation between IT Project Management (ITPM) and SDM.
* **No**: While BBD software Development, does not maintain such a separation.
* **Mixed**: And Entelect shows mixed responses, indicating there may be varied practices or perspectives within the company.

This shows that the integration of software development into project management is variable across organizations, not adhering to a single standard approach.

### Where does software development fit into project management?

* Predominant SDM

Different methodologies are embraced by the interviewed companies, such as Waterfall, Agile (Scrum), Extreme Programming, and even combinations thereof. This could suggest that SDM aligns with project management in diverse ways depending on the chosen methodology.

* Software suitability for security in remote working environments

All companies indicated that their software is well-suited to deal with security threats, especially in the context of remote work. This could imply a strategic fit where software development is managed in a way that aligns with broader project objectives, such as security, especially relevant in the current remote-working era.

* Software Tools

The companies use a variety of software tools for development and ensuring security, from specific software like Bitdefender to a broad array of development and security tools. Software tool choice and management could be seen as a crucial aspect where SDM intersects with broader project management, ensuring that’s the technical work aligns with broader project goals.

This companies exhibit a range of practices concerning the melding of software development and project management, with varied methodologies and strategic alignments in place. The integration and role of software development within project management are tailored to each organization’s specific needs and project demands, demonstrating a bespoke application of methodologies and tools across the industry.

## Which Project Management and Software Development methodologies are used mainly by South African Software Development Companies, and why?

### SDM

* Agile (Scrum): Notably used by Dell Technologies Entelect and Mpilo Technologies.
* Waterfall: Utilized by AVAV and Khaladayi Pty LTD.
* Mixed Methodologies: Such as a combination of Agile (Scrum), Rapid (RAD), and Dev Ops, are used by BBD Software Development

### Why?

* Agile (Scrum): Favoured for its flexibility and adaptability, crucial for managing changes and iterations in software development projects.
* Waterfall: Utilized for its structured and linear approach, which could be beneficial for projects with well-defined requirements and scopes.
* Mixed Methodologies: Employed to harness the benefits of various approaches and to adapt to different project need.

# Best PM and Software Development Methodologies to use by the Computer Science and Information Systems Department.

The optimal methodologies should cater to the varied nature of projects, uphold quality, and promote efficiency and innovation. In this context, a blend of Agile methodologies for SDM and the Prince2 framework for PM surfaces as a pragmatic approach.

## SDM: Agile

Agile is celebrated as a prudent choice for SDM due to its dynamic and iterative nature, particularly beneficial in environments that demand flexibility and continuous adaptation, such as research and development settings ([Highsmith and Cockburn 2001](#_ENREF_2)). The methodology champions iterative cycles and continuous feedback, ensuring that the development process is perpetually refined and realigned with evolving project requirements and stakeholder expectations. Agile facilitates a collaborative environment and prioritizes stakeholder involvement, ensuring that developed solutions are closely aligned with user needs and requirements. Furthermore, Agile provides a framework for a proactive risk management, enabling early identification and mitigation of issues or course corrections as needed, which is essential in environments that may encounter shifting requirements or unexpected findings ([Rubin 2013](#_ENREF_3)).

## PM: PRINCE2

PRINCE2 (Projects IN Controlled Environments) is distinguished for its structured and process-oriented approach to project management, providing a robust framework that ensures a standardized and consistent approach to managing projects. It facilitates thorough planning, monitoring, and controlling of all project aspects, ensuring they adhere to predefined quality standards and remain aligned with organizational objectives ([Bentley 2006](#_ENREF_1)). PRINCE2’s business case-driven approach ensures that projects are strategically aligned with organizational objectives, guaranteeing that resources and efforts are judiciously allocated and utilized. It also establishes a clear governance structure, providing mechanisms for oversight and ensuring that projects deliver value and quality throughout their lifecycle.

## Unifying Agile and PRINCE2: A holistic approach

Integrating Agile and PRINCE2 brings forth a holistic approach that combines the adaptive and iterative nature of Agile with the structured governance and control of PRINCE2, providing a comprehensive framework capable of managing diverse projects. The integration of Agile’s flexibility and stakeholder involvement with PRINCE2 strategic alignment and structured control ensures that projects can navigate through varied demands effectively, managing changes and stakeholder expectations while adhering to predefined quality standards and strategic objectives ([Vila Grau et al. 2022](#_ENREF_4)). This unified methodology ensures optimal resource utilization, risk management, and stakeholder satisfaction across various project contexts, ensuring that projects can adapt to evolving requirements while maintaining strategic alignment and control.

But it is important to note that there isn’t a one-size-fits-all approach when it comes to choosing project management and software development methodologies.

# Conclusion

South African Software Development Organizations, including notable companies such as “AVAV,” Khaladayi Pty LTD,” “Entelect,” “BBD Software Development,” and “Mpilo Technologies,” manifest a strategic melding of SDM and PM. These entities navigate through diverse methodologies, notably aligning with Agile and occasionally employing Waterfall, to adeptly balance flexibility and structured order in their project and SD pursuits. The criticality of software security, especially in the contemporary remote work contexts, is unanimously affirmed, highlighting a pervasive emphasis on cyber security. Various methodologies in SDM and PM are selectively applied, underscoring an adaptable and contextually apt approach that accommodates the intrinsic demands of distinct projects and organizational structures, thereby crafting a pragmatic pathway through the multifaceted realm of SD development in South Africa

# References

Bentley, C. (2006) *PRINCE2 Revealed,* 1st ed.*,* Burlington:Elsevier Ltd.

Highsmith, J. and Cockburn, A. (2001) 'Agile software development: the business of innovation', *IEEE Xplore,* 34(9), 120-127.

Rubin, K. S. (2013) *Essential Scrum: A Practical Guide to the Most Popular Agile Process,* Addison-Wesley.

Vila Grau, J. L., Capuz Rizo, S. and València, U. P. d. (2022) *HYBRID PROJECT MANAGEMENT ACCORDING TO THE PMBOK AND PRINCE2 MODELS* translated by Terrassa:ResearchGate.