Hybrid project management as a new form of project management

Natasa Koceska[*1], Saso Koceski[1]

[1] University Goce Delchev- Shtip, Republic of North Macedonia

*Corresponding author E-mail: natasa.koceska@ugd.edu.mk

Abstract

Hybrid project management has gained significant popularity in recent years. Combining multiple project management methodologies, hybrid project management incorporates advantages from other, more-established methodologies. While the term hybrid refers to any new methodology created from combining two or more existing methodologies, in practice, the hybrid approach generally unites Agile methods with the more-traditional Waterfall model. Hybrid project management follows the structure from traditional project management and flexibility from agile project management. Combining both traditional and agile techniques resolve many situations during project development and can achieve success. This article explains the hybrid project management approach and its advantages over Waterfall and Agile methods.

Keywords: *Traditional Project Management, Waterfall model, Agile methodology, Scrum, Kanban, Hybrid project management.*

Introduction

Delivering projects on time, on budget, and on quality has been and will always be the core challenge every project manager faces. The implementation of different project methodologies such as traditional and agile does not always give the overall benefits what the project managers are expecting. The lack of effective usage of project management methodology leads to poor performance of the projects (McHugh and Hogan, 2011). Project managers needs to choose the proper methodology to gain the project success. However, one project management methodology does not fit all. For complex projects with a need of planning on the front part and agility on the developing part, traditional (structured) or agile methods are not sufficient. In situations like this, the hybrid project management methodology is a good and efficient alternative.

A hybrid model was proposed by Hayata and Han (Hayata & Han, 2011), by mixing both the agile-scrum (Maneva et al., 2017) and waterfall methodologies (Salah et al., 2017). While the term hybrid project management refers to any new methodology created from combining two or more existing methodologies, in practice, the hybrid approach generally unites Agile methods with the more-traditional Waterfall model. The hybrid approach follows the structure

from traditional project management and flexibility from agile project management (Smith and Lewis, 2011). The benefits of a hybrid approach would be focusing on business value, time and costs, customizing the project management methodology to the problem rather than using a single approach and enhancing the quality on complex projects (Baird and Riggins, 2012; Karlstrom and Runeson, 2005; Vinekar et al., 2006, Fewell, 2017; Salah et al., 2017). The hybrid project management approach is often considered for projects to increase stakeholder feedback and reduce the risk and uncertainties (Archer and Kaufman, 2013; Jaziri et al., 2018).

This article explains the hybrid project management approach and its advantages over Waterfall and Agile methods.

Traditional Project Management Approach

Traditional project management methodologies were introduced during the second half of the 19th century, as prescribed models and procedures to manage various projects (Špundak, 2014). In the traditional project management approach, methods and procedures are applied uniformly. It is a linear approach where processes occur in a predictable sequence. The main idea behind defining the rules and methods in advance is to get the defined and clear project boundaries without any changes. The Waterfall model is denoted as the most recognizable traditional model (Baird and Riggins, 2012; Tonnquist, 2012). It is a sequential development planning model, where activities are performed step by step, reducing the risks and uncertainties. Each planned activity should be completed and approved before moving on to the next activity, creating no overlaps of different phases (Tonnquist, 2012). The waterfall model comes with very inflexible pre–requirements, i.e., gaining knowledge about the project requirements, the possible solution, and goals from the beginning of the project. This method is beneficial for industries where technology and requirements remain unchanged during the whole project. On the other hand, in industries like IT, with a rapid change in technology, especially in AI and its application in multiple fields (Koceski and Petreska, 2012; Koceski and Koceska, 2012; Koceski et al., 2014; Serafimov et al., 2012; Koceska and Koceski, 2014), it is very likely that customer requirements will change over time. In those situations, the waterfall model is not very efficient. Changing the project objectives, also require restructuring teams, workflows, milestones, and the entire plan, which is very time and cost consuming. So, the biggest challenge with traditional project management is effectively adapting to changes during a project.

Agile Project Management Approach

Agile project management is a newer methodology that relies on smaller groups and interactive releases throughout a project. Rather than the traditional, rigid model, agile requires team collaboration, outside feedback and flexibility to be successful. Agile project management is an incremental and non-linear approach to project management. It focuses on breaking down large projects into more manageable tasks, which are completed in short iterations throughout the project life cycle, and delivered to the customer. Teams that adopt this methodology are able to complete work faster, adapt to changing project requirements, and optimize their workflow.

Agile approach empowers people involved in the process; builds accountability; encourages diversity of ideas; allows early release of benefits; and promotes continuous improvement. It allows decisions to be tested and rejected early with feedback loops providing benefits that are not as evident in waterfall. In addition, it helps deliver change when requirements are uncertain, helps build client and user engagement by focusing on what is most beneficial, changes are incremental improvements that can help support cultural change. Agile can help with decision making as feedback loops help save money, reinvest and realise quick wins.
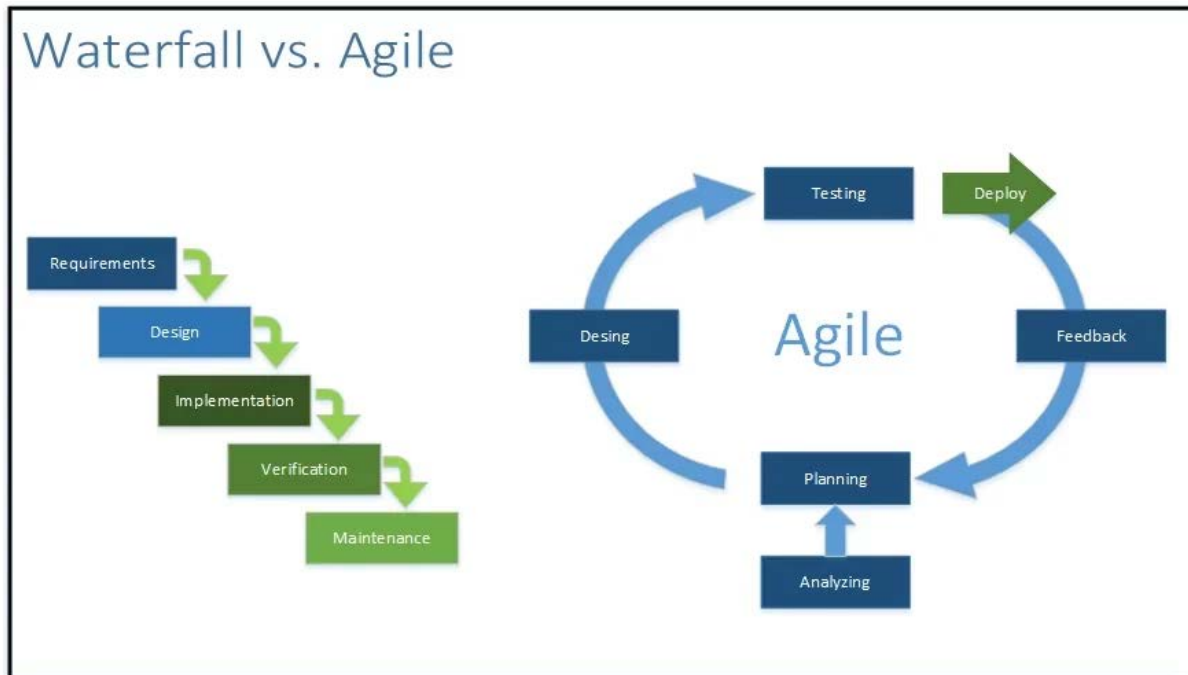

FIG 1. WATERFALL VS AGILE METHODOLOGY

Hybrid project management

Hybrid project management as a concept is not clearly defined in the project management world. The simple definition is that it is a combination of two different methodologies or systems, to create a new and better project management model. It uses elements from each model in order to increase efficiency throughout the software development life cycle.

Hybrid project management is often confused with blended project management. However, blended approaches merge multiple approaches from same category into one. So, it is possible to create blended agile approaches that combine elements of, for example, Sscrum and Kanban. (Scrumban), or Scrum and Extreme programming-XP (ScrumXP). On the other hand, mixing traditional and agile approach, results in hybrid approach in project management.
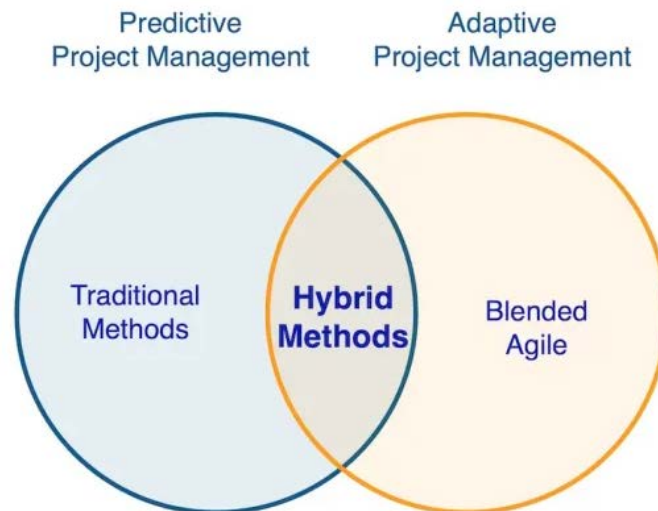
FIG. 2. ILLUSTRATIVE REPRESENTATION OF HYBRID AND BLENDED METHODS.

The hybrid methodology can be a tailored approach that can be changed and altered according to the project needs and requirements. It attempts to use the advantage of one method to balance the disadvantage of others and vice versa.

Scrumban

Scrumban is a project management framework that combines important features of two popular agile methodologies: Scrum and Kanban (Kirovska and Koceski, 2015; Maneva et al., 2016). The Scrumban framework merges the structure and predictable routines of Scrum with Kanban's flexibility to make teams more agile, efficient, and productive (Markovski et al., 2013). It is a good replacement when traditional Scrum methodology doesn't work. In a Scrumban hybrid approach, the features of each method are brought on board. This methodology requires compromising some features to accommodate others. A Scrumban approach requires a high level of transparency and self-managed solid teams.

It is a great solution for teams who need the structure of Scrum with the flexibility of a flow-based method, or for teams who are looking to transition from Scrum to Kanban.

ScrumXP

ScrumXP combines some features of Scrum methodology and Extreme programming-XP, which is another popular agile methodology. XP has laid out some very effective engineering practices that teams practicing Scrum can greatly benefit from. Teams can begin with Scrum and continuously improve by including the robust core XP engineering practices, like pair programming, code refactoring, small releases etc. - not because it is mandated, but because it is found to be effective. Although, interaction with the customer is through a product owner, the Scrum teams can borrow the customer centric approach of XP to remain aligned with customer expectations. In fact, ScrumXP provides the best of both worlds.

OPENTCQ

The OPENTCQ is a hybrid framework, customized from a unified process and the agile model. The model focuses on solving the change management problem. Changes in requirements are difficult to handle by traditional methods because of their rigidity. These changes can be time expensive and lead to overhead costs. On the other hand, in agile, a very skilled team is needed to incorporate the changes during the process. Otherwise, a trade-off between time, cost, and quality has to be made. In this model, the Waterfall method is scaled by introducing a unified process. This increases the agility of the Waterfall method, and changes can be adapted in iterations. At each iteration time, cost and quality are measured and recalculated (Janjua et al.,2016). Some project managers claim that OPENTCQ is better suited for change handling than Scrum and Kanban.

Water–Scrum-Fall

Water-Scrum-Fall is a compound term formed from Waterfall and Scrum. This hybrid approach, which embraces traditional and agile development principles, is also called 'Wagile'. The concept has been proposed by Dave West in 2011 (West, 2011). In Water–Scrum–Fall model the "water" part defines the upfront work, including tasks like requirement analysis, plan building, as well as resource and budget planning. The "scrum" part is used for the development team, to conduct the development phase with the scrum rules and produce product increments in small iteration, including testing. The "fall" part in this method is used for setting the limit to the frequency of software releases. This method shows how combining classic and agile methodologies can lead to a win–win situation. This hybrid methodology allows teams to use whatever techniques best meet the needs to solve the task at hand, at any certain time.

Waterfall–Up–Front and Waterfall–At–End (WUPWAE)

The terms waterfall–up–front and waterfall–at–end is first coined by Cohn in 2009 (Cohn, 2009). It refers to a situation when agile and waterfall coexist. It embeds the scrum rules and framework into the classic waterfall approach. In this method, the framework is divided into two parts. The first part is the part with a high level of abstraction, which needs much planning. The second one, is with a lower level of abstraction, where more flexibility or agility is required. The waterfall–up–front approach can be used when starting a project where more planning is needed and requirements are discussed. This is important because it will lead to contract binding. The development team can use the Scrum framework and rules at the time of development. Coming close to the end, the waterfall–at–end can be applied, which will facilitate the testing and acceptance phase. This hybrid method is also called the "Hybrid V-model".

Benefits of Hybrid Project management

By combining Agile and Waterfall methodologies, hybrid project management offers several clear advantages.

- Compatibility - taking the best of both worlds, and allowing for significant project-specific customization, hybrid project management can be easily applied to essentially any team of any size, in practically any industry. This compatibility often makes it the go-to methodology for organizations that need to be able to address a range of project types.

- Clarity of responsibilities - hybrid project management clearly maps out entire projects from beginning to end, detailing the full scope of the project and the responsibilities of those who are seeing it through to completion. Employees, managers, and key stakeholders can see immediately where the project is right now, what next steps must be completed to move it forward, and who is involved at each step of the way.

- Detailed planning - along with identifying responsibilities, the planning aspect of hybrid project management allows businesses to create detailed plans and accurate cost estimates. Stages are attached to specific deliverables and a clear review process, and predefined sprints enable new features to be delivered quickly and predictably.

- Flexibility - taking full advantage of Agile's increased adaptability, hybrid project management allows teams to easily reassess projects mid-development, pivoting where necessary to better address emergent issues and shifting priorities.

Conclusion

In recent years, hybrid project management has gained significant popularity among project managers owing to competitive markets, high customer expectations, and increasingly complex projects. A key benefit of hybrid is that it can be customized for any project. Since hybrid brings the waterfall elements from manufacturing and agile elements from software development, this methodology is compatible with industries and teams of all types and sizes. It also offers the option to reuse software code from past similar projects and finetune it to the needs of future projects, allowing more speed and flexibility.

Hybrid methodologies accept the fluidity of projects and allow for a more flexible approach to project planning and work management. The bottom line is that the more ways you have to approach a problem, the better chance you have of resolving it.

REFERENCES

Archer, S., Kaufman, C., 2013. Accelerating outcomes with a hybrid approach within a waterfall Environment.

Baird, A., Riggins, F.J., 2012. Planning and Sprinting: Use of a Hybrid Project Management Methodology within a CIS Capstone Course.

Cohn, M. 2009. "Succeeding with Agile: Software Development Using Scrum." Addison-Wesley Professional. Boston, Massachusetts, USA.

Fewell, J., 2017. Hybrid PM Approaches Can Sow Confusion; But Can Deliver Value.

Janjua, J.I., Ali, A., and Chaudhry, M.U. 2016. "OPENTCQ: Towards Change Management in Hybrid Agile Model." In Proceedings of the 7th Int. Conference on Computing Communication and Networking Technologies (ICCCNT' 16). Association for Computing Machinery, NY, USA, Article 38, 1 8.

Jaziri, R., Boussaffa, A., EI-Mahjoub, O., 2018. (PDF) Proposition of A Hybrid Methodology of Project Management.

Hayata, T., & Han, J. (2011). A hybrid model for IT project with Scrum. In Proceedings of 2011 IEEE International Conference on Service Operations, Logistics and Informatics, SOLI, 285–290.

Karlstrom, D., Runeson, P., 2005. Combining Agile Methods with Stage-Gate Project Management. IEEE Softw. 22, 43–49.

Kirovska, Nevenka and Koceski, Saso (2015) "Usage of Kanban methodology at software development teams". Journal of Applied Economics and Business, 3 (3). pp. 25-34. ISSN 1857-8721

Koceska, Natasa, and Saso Koceski. "Financial-Economic Time Series Modeling and Prediction Techniques– Review." Journal of Applied Economics and Business 2, no. 4 (2014): 28-33.

Koceski, Saso, and Biljana Petrevska. "Empirical evidence of contribution to e-tourism by application of personalized tourism recommendation system." Annals of the Alexandru Ioan Cuza University-Economics 59, no. 1 (2012): 363-374.

Koceski, Saso, Natasa Koceska, and Ivica Kocev. "Design and evaluation of cell phone pointing interface for robot control." International Journal of Advanced Robotic Systems 9, no. 4 (2012): 135.

Koceski, Saso, Stojanche Panov, Natasa Koceska, Pierluigi Beomonte Zobel, and Francesco Durante. "A novel quad harmony search algorithm for grid-based path finding." International Journal of Advanced Robotic Systems 11, no. 9 (2014): 144.

Maneva, Magdalena and Koceska, Natasa and Koceski, Saso (2016) Introduction of Kanban methodology and its usage in software development. In: ITRO 2016, 10 June 2016, Zrenjanin, Serbia.

Maneva, Magdalena and Koceska, Natasa and Koceski, Saso (2017) Measuring agility in agile methodologies. Journal of Applied Economics and Business, 5 (3). pp. 21-30. ISSN 1857- 8721

Markovski, Goran and Koceska, Natasa and Koceski, Saso (2013) Improving enterprise efficiency using IT collaboration systems. Journal of Applied Economics and Business, 1 (4). pp. 95-103. ISSN 1857- 8721

McHugh, O., Hogan, M., 2011. Investigating the rationale for adopting an internationally-recognised project management methodology in Ireland: The view of the project manager. Int. J. Proj.Manag. 29, 637–646.

Salah, A., Ramadan, N., Ahmed, H., 2017. Towards a Hybrid Approach for Software Project Management using Ontology Alignment. Int. J. Comput. Appl. 168, 12–19.

Serafimov, Kire, Dimitrija Angelkov, Natasa Koceska, and Saso Koceski. "Using mobile-phone accelerometer for gestural control of soccer robots." In Embedded Computing (MECO), 2012 Mediterranean Conference on, Bar, Montenegro, pp. 140- 143. 2012.

Smith, W.K., Lewis, M.W., 2011. Toward a Theory of Paradox: A Dynamic equilibrium Model of Organizing. Acad. Manag. Rev. 36, 381–403.

Tonnquist, B. (2008). Project management: A guide to the theory and practice of project, Program and portfolio management and business change. Bonnier utbildning.

Vinekar, V., Slinkman, C.W., Nerur, S., 2006. Can Agile and Traditional Systems Development Approaches Coexist? An Ambidextrous View. Inf. Syst. Manag. 23, 31–42.

West, D. 2011 "Water-Scrum-Fall is the reality of agile for most organizations today". Technical report, Forrester.

Špundak, M., 2014. Mixed Agile/Traditional Project Management Methodology – Reality or Illusion? Procedia - Soc. Behav. Sci. 119, 939–948.