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3 minute read Updated: September 04, 2018 Harwinder Singh Some PMP aspirants get confused with the difference between Progressive Elaboration and Rolling Wave Planning. The concepts are so similar that the confusion is legitimate. So, lets understand these concepts and look at the differences (or similarities). Well look at a third concept - Prototyping - while we are at it, all with the help of some easy to understand examples to reinforce the concepts.What is Progressive Elaboration?Planning is an iterative process. Often times, its difficult to do detailed planning of a project in the beginning. As the project evolves, and more specific and accurate details are available, the planning gets more detailed. With each successive iteration of the planning process, the project plan becomes more elaborate and complete. This approach to planning is known as Progressive Elaboration.According to the PMBOK Guide, 6th Edition:Progressive elaboration involves continuously improving and detailing a plan as more detailed and specific information and more accurate estimates become available. Progressive elaboration allows a project management team to define work and manage it to a greater level of detail as the project evolves.Two forms of Progressive ElaborationThe PMBOK Guide, 6th Edition mentions two forms of Progressive Elaboration - Rolling Wave Planning and Prototypes.What is Rolling Wave Planning?Rolling Wave Planning is one of the techniques in the Define Activities process under Project Schedule Management. In this technique, detailed planning is done for activities in near term and high-level planning for activities to be performed far away in the future. As the project progresses, and requirements become more clear, more detailed planning is done for the work packages at lower levels of the WBS.What better way to understand a concept than looking at an example. Lets say you want to visit India on vacation and your objective is to have fun and explore the country. However, youve never been there before. You do however know some places of interest like The Taj Mahal. Initially, you decide that youll leave on Dec 20 and return on Jan 04. You book your flight tickets and hotel room in New Delhi (one of the cities with an International Airports). Once you reach New Delhi, you talk to the locals and figure out all the places of interest. Then you plan your days, like when you want to visit each place, how you are going to get there, where youll stay, what youll do there, etc. Your plans become more detailed as days progress. This is an example of Rolling Wave Planning.What are Prototypes?Prototypes are a technique in the Collect Requirements process under Project Scope Management. Prototyping is a method of obtaining early feedback on requirements by providing a tangible working model or a mock-up of the expected product before actually building it. It gives stakeholders an opportunity to test and experiment with a model of their final product and give them a way to visualize their end product. Prototypes help to identify problems early in the project and reduce project risks.Lets take an example again. Your company wants to build a commercially viable model of a Hydrogen-powered car. Initially, your researchers build several working models (prototypes) of the car, maybe of a smaller size, to conduct experiments and check the feasibility of the project. Based upon the results of the feasibility studies, your company decides whether to move forward with or kill the project.SummaryRolling Wave Planning and Prototyping are forms of Progressive Elaboration.Image credit: Flickr / 92334668@N07Progressive elaboration is a process of the Project Planning Process Group set out in the Project Management Institutes Project Management Body of Knowledge (PMBOK Guide, 6th edition, ch. 3). It refers to the ongoing improvement of a project plan based on new learnings and insights obtained during the project lifecycle.If you have come across changes and ambiguities in project you have managed, you will likely find that you have already used one or more of the examples of progressive elaboration introduced in this article. However, you might not have called this progressive elaboration, so read on for a further demystifying of this term.The concept of progressive elaboration takes into account that an initial project plan is usually developed at a very early point in a project lifecycle. Detailed requirements and potential impediments are not yet known at that stage. Therefore, setting up an initial project plan requires assumptions and rough estimates. Over time, initially unknown activities and requirements become clearer and need to be reflected in a refined project plan. This process is called progressive elaboration.The PMBOK defines progressive elaboration asthe iterative process of increasing the level of detail in a project management plan as greater amounts of information and more accurate estimates become available.Source: PMBOK, 6th edition, glossary.While this definition emphasizes the iterative aspect of progressive elaboration, this process is not limited to iterative project management approaches. Progressive elaboration also occurs in predictive and waterfall projects as well as in agile projects and, subsequently, in hybrid approaches. Read on to find some examples of this definition.Rolling wave planning is a technique that emphasizes 2 different levels of how details are reflected in a project plan. Short-term work and deliverables are planned in detail while mid- to long-term work is planned on a rather high-level. The missing details are incorporated when they become clearer as the project approaches the respective stage.The PMBOK suggests that rolling wave planning be applied to work packages, planning packages and release planning in predictive as well as agile projects (PMBOK, 6th edition, ch. 6.2.2.3).A change request as a part of the change control process requires a project manager to deal with a potential and if it is approved an actual change to the initial plan. The identification of a need to change the plan as well as the subsequent amendment to the project plan are examples of progressive elaboration throughout the project.While this is a procedure described in the PMBOK (ch. 6.2.3.4), change requests may not be the most ideal way of incorporating progressive elaboration in a project in practice. This is because of the efforts required and resources involved to prepare and obtain approvals for changes.Ideally, a project is planned in a way that an increasing level of detail can be incorporated into the project plan by adding details to the existing planning items rather than processing them as formal changes (as long as it is in line with the project objectives and communication). However, if progressive elaboration requires relevant changes to the project plan, the integrated change control process is the right way to process them.In large, complex or long-term waterfall-like projects, reflecting on the project plan (and baseline) and re-planning activities and elements of the work breakdown structure (if necessary) are often inevitable. This is because of the ambiguity and unknown aspects of the endeavor at the time of the initial planning.Examples of such projects are large construction, infrastructure, research & development or large IT projects. Building an airport, introducing a new ERP or Core-Banking-System, or developing new medicine come with such a complexity and unpredictability of some items that a detailed planning at the initiation stage may not be appropriate by any means. Nevertheless, stakeholders usually require a long-term plan for those projects which requires project manager to plan based on assumptions and, to some extent, with placeholders and buffers.The rolling wave planning technique can be an option to resolve this trade-off. Also, more predictive or less critical activities can be planned in more detail for the entire project lifecycle while less predictive and more ambiguous items are planned according to the rolling wave technique.A prototype can be a good facilitator for the projects process of learning, refining requirements and adjusting the plan accordingly. If a waterfall-based or iterative software development project uses a mock-up to test assumptions related to the use of the software, user feedback on those mock-ups may lead to comprehensive changes to the project plan. Thus, learnings from interactions with users need to be incorporated into the project as a form of progressive elaboration of the project plan.Backlog Maintenance in Agile ProjectsAs the Agile Manifesto defines embracing change as one of its principles, progressive elaboration is basically built-in in agile projects. This is obvious for Scrum, for instance, but also many other agile project methodologies and frameworks. Short iterations and development cycles as well as a prioritized list (a backlog) of product requirements that is maintained and refined on an ongoing basis ensure the projects adaptability to new insights and requirements.Thereby, delivering increments, seeking feedback and adjusting the backlog frequently are examples of progressive elaboration in agile projects.If you have been working on real-life projects for some time, you might find some of these examples familiar. In fact, the term progressive elaboration is only the name tag of an actual core activity of project planning: incorporating details or changes into the project plan once they become known to the project management.The rolling wave planning technique is a common way of doing this in waterfall projects, but also other types of projects. Also, change management and processing of change requests are to some extent examples of progressive elaboration.Agile projects with their natural openness to changes reflect progressive elaboration in both their structure as well as their tools and techniques. Structurally, short iterations and the regular delivery of increments as well as feedback on them facilitate the learning process of a project and naturally lead to changes. The backlog of product requirements supports the timely incorporation of these changes without the need for change requests or change control processes.While an agile methodology might be more appropriate for projects subject to many changes, project managers are, in reality, sometimes required to manage non-predictive endeavors with a waterfall project approach. If this is true for our project, make sure you apply or continue to apply progressive elaboration to your project planning approach in order to incorporate upcoming changes iteratively. Understanding the Elaboration Phase in Unified Process Frameworks is key to refining requirements, running thorough technical investigations, and creating meaningful wireframes before development begins.Nine out of ten new clients start with questions like:"How long will it take?""How much will it cost?"To answer these accurately, we need clarity on scope, technical details, usage scenarios, and any required integrations. That's why we include an Elaboration Phase at the start of every product development cycle.What is the Elaboration Phase?The elaboration phase is a pre-development stage designed to define the project scope, clarify requirements, and map out user flows. It provides the information needed to reliably estimate development time and cost.During this phase, our team analyses technical details, creates wireframes, and outlines a high-level solution architecture. The client receives a clear explanation of proposed technologies and strategies for potential challenges, helping set realistic expectations and prepare for the next stages.Elaboration StagesThe elaboration phase typically takes 2 weeks to 2 months, depending on the projects complexity. It is a paid service involving a product/project manager and development team specialists.1. Requirements ClarificationWe begin by analysing the clients needs. A product manager or business analyst then works closely with the client to define the project scope and gather all relevant input.Clients are encouraged to share their vision, key features, core functionality, and guiding principles. We collect this information through a structured Q&A session, carefully documenting every detail, because each element can influence the direction and success of the product.2. Wireframing and PrototypingWireframes visually outline the products structure, features, and user flows. These are created by the product manager or UX designer using tools like Figma or InVision. We can also deliver a clickable prototype for demos, user testing, or fundraising purposes if needed.3. Technical SpecificationOur solution architects or senior developers define technical requirements and propose a high-level solution architecture, including recommended technologies and infrastructure setup.4. Feature Breakdown and EstimationThe project is broken down into features. Designers and developers estimate each task individually. The project manager then organises everything into a structured roadmap with milestones and timelines.5. Requirements Documentation and ProposalThe product manager gathers all the information from the previous steps into the high-level requirements document and the Development Phase proposal.The final documentation typically includes:Project overviewProposed solution architecture and infrastructureKey features and user flowsDesign referencesRequired third-party integrationsOut-of-scope features (for future releases)Recommended team compositionTime and cost estimateDevelopment roadmap and timelineWhy Is It Beneficial to Both Customers and Developers?For developers, it means fewer surprises and a better ability to plan and deliver. With detailed input and clear expectations, we can avoid scope creep, reduce risks, and provide accurate estimates.For customers, it brings clarity, confidence, and control. Youll get a realistic plan, understand what resources you need, and be better equipped for fundraising or team planning. Solid documentation and wireframes also make communicating your vision easier to investors or partners.The PMI framework of project management consists of 49 processes which are categorized in 10 knowledge areas as set out in the Project Management Body of Knowledge (PMBOK, 6th edition). This is based on the philosophy that project management consists of a one-off and recurring processes for which the PMBOK describes common good practices.When youare managing aproject in line with the PMI methodology or when you are preparing for yourCAPM or PMP certification exam, you will need to be familiar with theseprocesses and knowledge areas.This article provides you with an overview of the 10 knowledge areas and 49 processes in a nutshell (source: PMBOK, 6th ed.)Thefollowing table contains the 10 knowledge areas and the 49 processes: 1) Project Integration Management Develop Project Charter; Develop Project Management Plan; Direct and Manage Project Work; Manage Project Knowledge; Monitor and Control Project Work; Perform Integrated Change Control; Close Project or Phase. 2) Project Scope Management Plan Scope Management; Collect Requirements; Define Scope; Create WBS; Validate Scope; Control Scope. 3) Project Schedule Management Plan Schedule Management; Define Activities; Sequence Activities; Estimate Activity Durations; Develop Schedule; Control Schedule. 4) Project Cost Management Plan Cost Management; Estimate Costs; Determine Budget; Control Costs. 5) Project Quality Management Plan Quality Management; Manage Quality; Control Quality. 6) Project Resource Management Plan Resource Management; Estimate Activity Resources; Acquire Resources; Develop Team; Manage Team; Control Resources. 7) Project Communications Management Plan Communications Management; Manage Communications; Monitor Communications. 8) Project Risk Management Plan Risk Management; Identify Risks; Perform Qualitative Risk Analysis; Perform Quantitative Risk Analysis; Plan Risk Responses; Implement Risk Responses; Monitor Risks. 9) Project Procurement Management Plan Procurement Management; Conduct Procurements; Control Procurements. 10) Project Stakeholder Management Identify Stakeholders; Plan Stakeholder Engagement; Manage Stakeholder Engagement; Monitor Stakeholder Engagement.Read on tofind a short description of each of these processes in a nutshell.In thisprocess, a project charter is developed that authorizes the project and linksit with the strategic objectives of the organization.Frequency: onceor at specified points during the projectThe contentand goal of this process are defining, preparing and coordinating all plan components,Frequency: onceor at specified points during the projectThisprocess comprises leading and performing the work that was defined in theproject management plan as well as implementing approved changes,Frequency: ongoingThis process describes the use of existing and the creation of new pieces of knowledge in order to achieve the project objectives and support organizational learning.Frequency: ongoingIn thisprocess, the overall progress is tracked, reviewed and reported to meet theperformance objectives defined in the project management plan.Frequency: ongoingThe contentof this process is reviewing all change requests, getting approval for changes,and managing changes to deliverables, documents and plans. This also includesthe communication of those changes.Frequency: ongoingIn theclose process, all activities of a project, a phase or a contract arefinalized. This includes archiving project or phase information as well asreleasing team resourcesFrequency: onceor at specified points during the projectThe goal of this process is to create a scope managementplan that sets out the framework of the definition, validation and controllingof the project and product scope.Frequency: once or at specified points during the projectIn this process, the determination, documentation, andmanagement of stakeholder needs and requirements are performed in order to meetthe project objectives. This process helps create the foundation of the projectand product scope.Frequency: once or at specified points during the projectThis process is about developing a detailed description ofthe project and product, incl. the result boundaries and acceptance criteria.Frequency: n/aCreating the work breakdown structure means breaking downproject deliverables and project work into relatively small and manageablecomponents.Frequency: once or at specified points during the projectThis process formalizes the acceptance of the completed project deliverables. It sets out the objectivity and the procedure of acceptance of the final product based on the acceptance of each deliverable.Frequency: when necessaryThis process sets out the monitoring of the project statusand product scope as well as the management of changes to the scope baseline.It also ensures that the scope baseline is accurately maintained and updated ongoing.Frequency: ongoingThis process contains the establishment of policies,procedures, and documentation of the project schedule management.Frequency: once or at specified points during the projectIn this process, the actions needed to produce the projectdeliverables are identified and defined.Frequency: ongoingThis process comprises the identification and documentation of the relationships among the project activities.Frequency: ongoingIn this process, the durations to perform each activity areestimated.Frequency: ongoingWhen developing the project schedule, activity sequences,durations, resource requirements, and schedule constraints are taken intoconsideration.Frequency: ongoingThis process defines the monitoring of the project status inorder to update the project schedule as well as the management of changes tothe schedule baseline.Frequency: ongoingThis process is about defining the approaches and proceduresto estimate, budget, manage, monitor and control project costs.Frequency: n/aIn this process, an approximation of the cost of requiredresources is estimated.Frequency: when necessaryAggregation of the estimated cost of all activities and workpackages which is the foundation of the authorized cost baseline.Frequency: once or at specified points during the projectThis process is about monitoring, managing and updating actual and planned project costs as well as the cost baseline.Frequency: ongoingIn this process, quality requirements and standards areidentified. One of the outputs is the documentation of how they are maintained ongoing.Frequency: once or at specified points during the projectThis process is the transformation of the quality management plan into individual activities that incorporate the quality requirements/standards into the project. Thus, it facilitates achieving the quality goals and identifying ineffective processes and causes of poor quality.Frequency: ongoingThe content of this process is the monitoring andcontrolling of the results of quality management activities. This also includesverifying that project deliverables and the project work are in line with therequirements for final acceptance.Frequency: ongoingThis process is about defining how the team and physical resources will be estimated, acquired, managed, and used during the project.Frequency: once or at specified points during the projectThis process contains the estimation of the team headcountand physical resources that are needed to perform project work.Frequency: recurring, when necessaryIn this process, team members are hired and on-boarded and physical resources are acquired. This includes the selection of sources as well as the assignment of resources to specific activities.Frequency: when necessaryThis process aims to improve skills and competencies,interactions and the environment of project teams in order to enhance theoverall project performance.Frequency: ongoingThis process includes performance tracking, feedback, andmanagement of changes and adjustments to the project team.Frequency: ongoingThis process helps ensure that the physical resources are available and utilized as planned. This may also include corrective actions if required.Frequency: ongoingIn this process, the approach and plan for projectcommunications are developed. Thereby, stakeholders and the projectsinformation needs as well as available organizational assets are taken intoaccount.Frequency: recurring, when necessaryManage communications is the ongoing process of ensuringtimely and appropriate communication in order to facilitate an efficient andeffective information flow between the project team and stakeholders.Frequency: ongoingThis process makes sure that the information needs of theproject and the stakeholders are met properly and timely.Frequency: ongoingThis process comprises the planning of risk management activities for the project which includes tailoring of risk management considerations to the individual situation.Frequency: once or at specified points during the projectThis process focuses on identifying and documentingindividual risks as well as sources of overall project risks.Frequency: ongoingIn the process of qualitative risk analysis, the probabilityand the potential impact of individual project risks are assessed, which is thebasis for their prioritization.Frequency: ongoingThis process consists of statistical analyses (e.g. MonteCarlo simulation) of identified individual project risks and other sources ofambiguity or uncertainty. This is typically not applied to small or lesscritical projects.Frequency: ongoingIn this process, the ways to address overall and individualproject risks are identified and assessed, incl. definition of activities aspotential risk responses.Frequency: ongoingThis process is conducted when risks require a response,i.e. the previously selected risk responses (activities) are implemented.Frequency: ongoingIn this process, risk responses and identified risks are monitored and tracked. In addition, new risks are identified and assessed.Frequency: ongoingPlanning procurement management includes documenting the wayproject procurement decisions are made, specifying the approach and identifyingpotential sellers.Frequency: once or at specified points during the projectThis process comprises selecting a seller and implementingthe agreements and contracts for delivery.Frequency: recurring, when necessaryIn this process, procurement relationships are managed andcontract performance is monitored. This may also extend to changes andcorrections as well as closing out contracts.Frequency: when necessaryThis process implies identifying stakeholders and theirrespective interests, involvement, power, and potential impact on the project.Frequency: recurring, when necessaryThis planning process is about developing how to involvestakeholders and how to interact effectively with them during the project.Frequency: recurring, when necessaryThe management of stakeholder engagement includescommunicating and working with stakeholders to meet their needs andexpectations. The goal of this process is to ensure their support and reduceresistance from stakeholders.Frequency: ongoingThis process describes the monitoring of relationships andthe adjustment of strategies in order to engage stakeholders in an optimal way.Frequency: ongoing Businesses thrive and survive off the back of effective project management.Success for companies of all sizes, from small to medium-sized enterprises (SMEs) to solo entrepreneurs, boils down to it. Often working with limited resources, tight budgets, and high stakes, finding the right balance between flexibility and control is crucial.Thats where progressive elaboration comes in an approach that can revolutionize your project management style and help your business soar to new heights.Progressive elaboration is not just another buzzword; its a powerful project management technique that adapts to the changing landscape of your project, ensuring that youre always one step ahead.In this article, well demystify progressive elaboration, explore its benefits, and offer practical tips on integrating it into your business.So grab a cup of coffee, sit back, and dive into the world of progressive elaboration and how it can elevate your project management game.What Does Progressive Elaboration Mean in Project Management?Progressive elaboration is a project management technique that involves continuously refining and improving project plans as more information becomes available and uncertainties are resolved.In essence, it recognizes that a projects scope, objectives, and deliverables might not be fully defined or understood at the outset and may change as the project progresses.By embracing this uncertainty, progressive elaboration allows project teams to adapt to new information and changing circumstances, ultimately leading to better project outcomes.Heres how it works in more detail:Iterative planning and continuous refinementAt the heart of progressive elaboration lies the concept of iterative planning.Instead of trying to create a comprehensive and detailed plan at the beginning of a project, project managers and teams using progressive elaboration focus on developing a high-level plan that outlines the projects overall goals and scope.This initial plan is then progressively refined and updated as more information becomes available, new requirements emerge, and potential risks are identified.Continuous refinement is essential to the success of progressive elaboration.As a project progresses, the team should regularly revisit and revise the plan, adjusting as needed to account for new data, changing conditions, and stakeholder feedback. This iterative approach ensures that the project remains aligned with its objectives and adapts to the dynamic nature of the business environment.Balancing flexibility and controlOne of the primary challenges in project management is finding the right balance between flexibility and control.While its essential to have a structured approach to managing projects, being flexible can help a projects ability to adapt to changing circumstances or take advantage of new opportunities.Progressive elaboration addresses this challenge by allowing project teams to maintain control over the projects overall direction while remaining flexible enough to respond to new information and evolving conditions.In a progressively elaborated project, the team clearly focuses on the projects objectives. It continuously evaluates its progress toward achieving those goals.At the same time, the team remains open to revising the plan as needed and making adjustments to the projects scope, schedule, or resources to better align with current conditions and stakeholder expectations. This balance between flexibility and control enables progressive elaboration to deliver successful project outcomes in an ever-changing business landscape.Benefits of Using Progressive Elaboration in Project ManagementThere are plenty of theories about the best way to run your projects, so what makes progressive elaboration planning so special?Well, lets take a look at some of the benefits of this approach:Improved accuracy in project planning and executionIncorporating ongoing refinement of project plans leads to progressive elaboration helping teams create more accurate and realistic goals that better reflect the evolving nature of the project.As new information emerges and assumptions are clarified, the project plan can be adjusted accordingly. This continuous improvement leads to more effective decision-making and improved project execution.In turn, this reduces the risk of encountering unexpected roadblocks or delays, ensuring that the project stays on track and delivers the desired outcomes.Enhanced adaptability to changes and uncertainties:Almost every business faces unprecedented levels of change as the consumer landscape evolves. Factors such as market fluctuations, technological advancements, and changing customer preferences can significantly impact a projects scope, requirements, or timeline.Progressive elaboration enables project teams to nimbly respond to new information, shifting priorities, and unforeseen challenges. Embracing uncertainty and adapting project plans as needed helps teams stay ahead of the curve and successfully navigate the complexities of an ever-changing landscape.Efficient resource allocation and cost control:Resource management is a critical aspect of project management, especially for SMEs and entrepreneurs who often face budgetary constraints.Progressive elaboration helps teams allocate resources more efficiently by continuously revising project plans to align with current conditions. An iterative approach allows project managers to identify and address potential bottlenecks, redistribute resources as needed, and optimize task assignments.As a result, teams can control project costs more effectively, ensuring that the project stays within budget while still delivering the desired results.Increased stakeholder engagement and satisfaction:Stakeholder satisfaction is a key determinant of project success. The iterative nature of progressive elaboration encourages more frequent and meaningful collaboration with stakeholders, fostering a sense of ownership and commitment to the projects goals.Involving stakeholders in the decision-making process and consistently considering their needs and expectations is an excellent way for project teams to build trust and ensure that all parties are aligned with the projects objectives. This collaborative approach leads to higher stakeholder satisfaction, better decision-making, and, ultimately, a greater likelihood of project success.Improved Goal Setting with SMART Criteria:Progressive elaboration goes hand-in-hand with effective goal setting, which is essential for guiding a project toward success.One popular method for creating well-defined goals is to use the SMART criteria, ensuring that objectives are Specific, Measurable, Achievable, Relevant, and Time-bound.Specific: Progressive elaboration encourages project teams to define clear and specific objectives that address the projects purpose and desired outcomes. By establishing specific goals, teams can focus efforts and maintain a clear direction throughout the project.Measurable: Measurable goals provide a means for tracking progress and evaluating the success of a project. Progressive elaboration enables teams to refine these metrics over time, ensuring they remain relevant and aligned with the projects evolving objectives.Achievable: As project plans are iteratively updated, teams can reassess the feasibility of their goals and adjust them accordingly. This helps ensure that goals remain achievable and realistic, setting the project up for success.Relevant: Progressive elaboration helps keep project goals relevant by continuously revisiting and adjusting them in response to new information or changing circumstances. This ensures the project remains focused on delivering value and meeting stakeholder expectations.Time-bound: Establishing deadlines is crucial for maintaining momentum and ensuring timely project completion. Progressive elaboration supports creating time-bound goals by enabling teams to refine schedules and timelines as the project progresses, accommodating possible changes and uncertainties.Incorporating SMART goals into the progressive elaboration process helps project teams set clear, well-defined objectives that can be effectively managed and achieved. By combining the adaptability of progressive elaboration with the structured approach of SMART goal setting, SMEs and entrepreneurs can further enhance their project management capabilities and drive their projects toward success.Practical Applications of Progressive ElaborationNow that weve looked at the benefits of introducing progressive elaboration planning into your project management, lets take a close look at how that would work in reality:Agile methodologiesProgressive elaboration is a cornerstone of Agile project management methodologies, such as Scrum and Kanban.Agile approaches prioritize flexibility, collaboration, and iterative planning, which are crucial for projects characterized by high levels of uncertainty or rapidly changing requirements.In Agile environments, progressive elaboration helps teams adapt to change quickly, ensuring they can deliver valuable results and stay competitive in their respective industries.New product developmentNew product development is an inherently uncertain process, with requirements and specifications often evolving as customer needs, market conditions, and technological advancements become clearer.Progressive elaboration equips product development teams to continuously adapt to these changes and refine their plans. As new insights are revealed, teams can adjust the development process accordingly, increasing the likelihood of a successful product launch and achieving a better product-market fit.Business process improvementContinuous improvement of business processes is essential for organizations to maintain efficiency and stay competitive. Progressive elaboration can be applied to this ongoing optimization by iteratively refining process maps, identifying bottlenecks, and implementing improvements.Evaluating and adjusting processes regularly will help organizations increase efficiency, reduce costs, and enhance overall performance, contributing to long-term success.Change management initiativesChange management initiatives often entail navigating a complex web of stakeholder needs, resource constraints, and shifting priorities. Progressive elaboration aids change management teams in creating flexible plans that can be adapted as new information emerges or circumstances change.Enabling teams to adjust their strategies and tactics in response to evolving conditions will see the progressive elaboration strategy increase the chances of a successful transformation, leading to a more resilient and adaptable organization.Marketing and campaign planningIn the fast-paced world of marketing, trends, target audiences, and competitive landscapes can shift rapidly.Progressive elaboration allows marketing teams to create adaptable campaign plans that can be refined and optimized as new data and insights become available. This approach ensures that marketing efforts remain focused and effective, maximizing return on investment and helping businesses reach their target audiences more efficiently.Technology implementation projectsTechnology implementation projects, such as software development or infrastructure upgrades, often involve numerous uncertainties and evolving requirements. Progressive elaboration provides a framework for technology teams to manage these complexities by continuously refining their plans and adapting to new information.This flexibility helps ensure that technology projects deliver maximum value and meet the organizations strategic goals.Leveraging the versatility of progressive elaboration will be a key component for helping businesses and entrepreneurs more effectively manage various types of projects, adapt to change, and achieve their business goals in a dynamic and competitive landscape.How To Implement Progressive ElaborationIf youre interested in including progressive elaboration in your projects, here are the steps involved:Setting clear project objectives and scopeThe first step towards implementing progressive elaboration is establishing well-defined project objectives and scope. This foundation sets the projects direction and provides a reference point for future refinements.To do this effectively, engage stakeholders in defining objectives aligned with overall business goals.Also, ensure that the project scope is realistic and achievable, considering the available resources, expertise, and time constraints. By establishing clear objectives and scope, teams can maintain focus and make informed decisions throughout the project lifecycle.Adopting an iterative planning process:Break down the project into smaller, manageable components and establish milestones and checkpoints to track progress. These milestones will serve as opportunities to review and adjust project plans based on new information or changing circumstances.Divide the project into smaller parts. Teams can more effectively monitor progress and make necessary adjustments promptly.Schedule regular meetings or workshops to revisit and update project plans. During these sessions, discuss any new information, priority changes, or unforeseen challenges that may have arisen since the last review.Use this information to refine project plans, ensuring they align with the projects objectives and the evolving context.Incorporating feedback loops and lessons learnedEstablish a process for capturing feedback and lessons learned throughout the project. This can include regular team meetings, stakeholder debriefs, or post-mortems after key milestones.Encourage team members and stakeholders to openly share their insights, ideas, and concerns. Use this feedback to inform future iterations of project plans, promoting continuous improvement and learning.Fostering a culture of collaboration and open communicationCultivating a collaborative and open work environment is essential for successfully implementing progressive elaboration. Encourage team members to share their thoughts, concerns, and ideas without fear of judgment or retribution.Ensure that communication channels are accessible and transparent, facilitating the free flow of information across the team.Fostering a culture of collaboration and open communication helps to get the best out of your teams. They can better navigate the uncertainties and complexities inherent in projects, leveraging the full potential of progressive elaboration to drive project success.Types of Progressive ElaborationProgressive elaboration can take various forms, depending on the project context and specific needs of the organization.Two common approaches to progressive elaboration are rolling wave planning and prototyping. Each method offers unique advantages and can be particularly beneficial in different scenarios.Rolling Wave PlanningRolling wave planning is a technique that involves planning the project in stages, with detailed planning done for the near-term work and high-level planning for future work. This approach allows teams to adapt their plans based on the latest information and changing circumstances, ensuring that the project remains relevant and responsive to evolving needs.Key features of rolling wave planning include:Incremental Planning: Teams plan the project in increments, focusing on detailed planning for the immediate future while maintaining a high-level view of the overall project.Adaptable Schedules: As new information becomes available or circumstances change, teams can adjust their schedules accordingly, ensuring the project remains on track and aligned with its objectives.Flexibility: Rolling wave planning encourages a flexible approach to project management, allowing teams to respond to changes and uncertainties more effectively.PrototypingPrototyping is another approach to progressive elaboration that involves creating a preliminary version or model of a product, process, or system to test its feasibility, functionality, and performance. This approach allows teams to learn from their mistakes, refine their designs, and iteratively improve the final product or solution.Key features of prototyping include:Iterative Development: Teams create multiple iterations of a prototype, refining the design based on feedback and lessons learned from previous versions.Early Feedback: Prototyping enables teams to gather valuable feedback from stakeholders and end-users early in the project, helping to identify potential issues and opportunities for improvement.Risk Reduction: By testing and refining prototypes, teams can reduce the risks associated with launching a new product, service, or system, ensuring a higher likelihood of success.Enhanced Collaboration: Prototyping encourages collaboration among team members and stakeholders, fostering a shared understanding of the projects goals, requirements, and constraints.Both rolling wave planning and prototyping are effective methods for implementing progressive elaboration in project management.Choosing the appropriate approach depends on the nature of the project, the organizations needs, and the specific challenges that the team faces. Organizations can better manage the uncertainties inherent in projects and drive them toward success by leveraging these processes.Examples of Progressive Elaboration by IndustryMany industries could benefit from adopting an agile progressive elaboration approach to their business.Here are some of the industries that have substantial uses cases:Software DevelopmentIn the software development industry, progressive elaboration is often used in Agile methodologies like Scrum and Kanban.Developers create a minimum viable product (MVP) in the initial stages and iteratively enhance it based on user feedback and market requirements. By incorporating new features, fixing bugs, and optimizing performance over time, the software product becomes more refined and better suited to user needs.ConstructionIn construction projects, progressive elaboration can be employed during the design and planning stages.As more information becomes available or requirements change, architects and engineers can modify the designs and construction plans accordingly. This flexibility allows for more accurate cost estimation, better resource allocation, and a smoother construction process.Marketing CampaignsWhen launching a new marketing campaign, progressive elaboration can help optimize the campaigns effectiveness over time.Marketers can start with a basic campaign concept and then iteratively refine the messaging, creative assets, and targeting based on the performance data and audience feedback. This approach allows for more effective marketing strategies and better return on investment (ROI).Event PlanningFor large-scale events such as conferences, trade shows, or festivals, progressive elaboration can be a valuable tool in the planning process.As the event date approaches, organizers can continuously refine the event schedule, logistics, and promotional activities based on new information, feedback from stakeholders, or changes in circumstances. This iterative approach enables more efficient event management and enhances the overall event experience for attendees.Research and Development (R&D)In the R&D process, progressive elaboration can be applied to the development of new technologies or products.Researchers can start with a basic concept or prototype and then iterate upon it based on the findings from their experiments and testing. This approach allows for more informed decision-making and reduces the risk of costly failures, leading to more successful innovations.Progressive elaboration is a powerful and flexible approach to project management that allows businesses to adapt and refine their projects over time. For all kinds of companies, it offers a practical and effective way to manage projects in a fast-paced and ever-changing environment.Remember, project management is not just about achieving the desired outcomes but also about learning from the process and continuously improving.So, embrace progressive elaboration and enjoy the benefits it brings to your business!Understanding the Elaboration Phase in Unified Process Frameworks is key to refining requirements, running thorough technical investigations, and creating meaningful wireframes before development begins.Nine out of ten new clients start with questions like:"How long will it take?""How much will it cost?"To answer these accurately, we need clarity on scope, technical details, usage scenarios, and any required integrations. That's why we include an Elaboration Phase at the start of every product development cycle.What is the Elaboration Phase?The elaboration phase is a pre-development stage designed to define the project scope, clarify requirements, and map out user flows. It provides the information needed to reliably estimate development time and cost.During this phase, our team analyses technical details, creates wireframes, and outlines a high-level solution architecture. The client receives a clear explanation of proposed technologies and strategies for potential challenges, helping set realistic expectations and prepare for the next stages.Elaboration StagesThe elaboration phase typically takes 2 weeks to 2 months, depending on the projects complexity. It is a paid service involving a product/project manager and development team specialists.1. Requirements ClarificationWe begin by analysing the clients needs. A product manager or business analyst then works closely with the client to define the project scope and gather all relevant input.Clients are encouraged to share their vision, key features, core functionality, and guiding principles. We collect this information through a structured Q&A session, carefully documenting every detail, because each element can influence the direction and success of the product.2. Wireframing and PrototypingWireframes visually outline the products structure, features, and user flows. These are created by the product manager or UX designer using tools like Figma or InVision. We can also deliver a clickable prototype for demos, user testing, or fundraising purposes if needed.3. Technical SpecificationOur solution architects or senior developers define technical requirements and propose a high-level solution architecture, including recommended technologies and infrastructure setup.4. Feature Breakdown and EstimationThe project is broken down into features. Designers and developers estimate each task individually. The project manager then organises everything into a structured roadmap with milestones and timelines.5. Requirements Documentation and ProposalThe product manager gathers all the information from the previous steps into the high-level requirements document and the Development Phase proposal.The final documentation typically includes:Project overviewProposed solution architecture and infrastructureKey features and user flowsDesign referencesRequired third-party integrationsOut-of-scope features (for future releases)Recommended team compositionTime and cost estimateDevelopment roadmap and timelineWhy Is It Beneficial to Both Customers and Developers?For developers, it means fewer surprises and a better ability to plan and deliver. With detailed input and clear expectations, we can avoid scope creep, reduce risks, and provide accurate estimates.For customers, it brings clarity, confidence, and control. Youll get a realistic plan, understand what resources you need, and be better equipped for fundraising or team planning. Solid documentation and wireframes also make communicating your vision easier to investors or partners.When you determinethe sequence of activities in a project you need to pay attention todependencies between these activities. Some activities might requirepredecessor or successor activities to be completed or started before they canbe started or completed themselves. According to the Guide to the ProjectManagement Body of Knowledge (PMBOK, 6thed., ch. 6.3.2), this is done by applying atechnique called precedence diagramming method (PDM).In thisarticle, you will learn what PDM is about, incl. the logical relationshipscovered by the method and an example of its use in practice.PDM is a scheduling technique of the sequence activities process in PMI methodology. The precedence diagramming method can be used for creating a project schedule network diagram which is an output of this process that is used as an input for the develop schedule process (PMBOK, ch. 6.3.2, 6.5).The method involvesthe identification and visualization of the sequence and dependencies ofactivities in a project or a part of a project, such as a workstream or a work package.The modelcan reflect 4 types of dependencies also referred to as logical relationships that are introduced in the next section. These dependencies form theconnection between successor activities and predecessor activities which areshown as nodes in the diagram. This is similar to the activity-on-node oractivity-on arrow method yet more flexible as it allows overlaps of activities(source). The 4 typesof logical relationships in the precedence diagraming method are:Finish-to-Start (FS)dependency,Finish-to-Finish (FF)dependency,Start-to-Start (SS)dependency, andStart-to-Finish (SF).You can memorize the concept as follows: The first part (finish in finish-to-start, for instance) refers to the status the predecessor activity must obtain for the successor activity to achieve the status expressed in the second part (start in FS).Read on for a definition and illustration ofeach of these types. In the next section, we are sharing an example of thesedependencies in practice.If activities are linked through more than onelogical relationship the more important one should be prioritized to avoid complexityand circular references in the diagram.If activities can start earlier or need to be delayed in a sequence, so-called leads and lags need to be incorporated. Learn more about leads and lags in this article.If twoactivities are linked by a finish-to-start dependency, this means that thepredecessor activity must be completed before the successor activity can start. Under thistype of logical relationship, a successor activity requires the predecessoractivity to be finished before it can be completed.This typeof dependency can also coincide with start-to-start relationships of the sameactivities. If twoactivities are connected through a start-to-start dependency, this means thatthe predecessor activity must have started before the successor activity canstart. Thislogical relationship requires that a predecessor activity must have startedbefore the successor activity can be finished. In practice, this type ofdependency does not occur very often which is also acknowledged by the PMBOK. Thisexample of PDM modeling refers to a fictional software development project.However, you can replace the IT-related aspects with activities from otherareas such as construction, research and development, strategy development andimplementation, etc. As for many project management techniques, PDM as a methodcan be applied to almost any kind of project.The first 4 activities and durations in this example are consistent with the example presented in our article on leads and lags, so you can compare the results and differences between both techniques.The projectinvolves designing, developing, implementing, testing and deploying an ITsolution. For the sake of conciseness, we will only sequence the followingdesign and development activities for 2 modules:technical design ofmodule A (duration: 10 days),technical design ofmodule B (duration: 5 days),development of module A(duration: 15 days),development of module B(duration: 20 days), anddevelopment of feature Fin module B (duration: 1 day).The technical dependencies are:The technical design ofmodule B cannot finish until the technical design of module A has beencompleted.The technical designs ofmodule A must be completed before the module A development can start.The technical designs ofmodule B must be completed before the module B development can start.The development of moduleB can only be started when the development of module A has been started.The development offeature F cannot be finished before the development of module B has started(although it can be developed independently, it needs to be integrated intomodule B)For the creation of the PDM, these technicalinterdependencies need to be translated into logical relationships such as FS,FF, SS and SF. This is illustrated in the following table. Technical dependencies Logical relationship The technical design of module B cannot finish until the technical design of module A has been completed. Activity (1) is predecessor of activity (2) in a finish-to-finish (FF) dependency (There could also be a start-to-start (SS) dependency between (1) and (2) but the FF relationship is prioritized as its impact is higher) The technical designs of module A must be completed before module A development can start. Activity (1) is predec

stakeholder.In the monitoring processes, the shareholders actual engagement level is subsequently compared with the initially desired level of involvement. Thus, gaps (if any) can be identified and tackled by the project manager.In this example, we are looking at the stakeholders of a fictive Finance software transformation project.The list of stakeholders consists of:Chief financial officer (sponsor),Chief executive officer,Chief information officer,Head of accounting,Head of regulatory reporting,Users of the new systems,IT architects,Internal Audit,External Auditors,etc.When creating the stakeholder engagement assessment matrix, e.g. in the process plan stakeholder engagement, a project manager should refer to the stakeholder engagement plan for the desired level of engagement.The desired level (D) of engagement is then incorporated into the stakeholder engagement matrix:StakeholderUnawareResistantNeutralSupportiveLeadingChief financial officer (sponsor)DChief executive officerDChief information officerDHead of accountingDHead of regulatory reportingDUsers of the new systemDIT architectsDInternal AuditDExternal AuditorsDWhen monitoring the actual stakeholder engagement, the project manager adds the observed current level (C) of engagement for each stakeholder:StakeholderUnawareResistantNeutralSupportiveLeadingChief financial officer (sponsor)C DChief executive officerCDChief information officerC DHead of accounting C DHead of regulatory reportingCDUsers of the new systemCDIT architectsCDInternal AuditC DExternal AuditorsCDAs discussed before, the stakeholder engagement assessment matrix helps identify gaps between desired and actual engagement levels of stakeholders.Looking at the matrix in this example, it becomes obvious that such a gap exists among certain stakeholders of this project:The CEO could be more supportive. The same holds for the head of regulatory reporting and the organizations IT architects. External auditors have not been involved yet despite deemed necessary in the stakeholder engagement plan.Lastly, users of the new system developed resistance against the transformation while their support would be needed to ensure a smooth deployment and use of the new system.These gaps are the areas where a project manager should improve his/her stakeholder engagement management going forward.In the context of stakeholder engagement management, several obstacles and challenges can occur in practice.One of the most relevant issues (from my perspective) is that project documents can easily be accessed by team members and stakeholders (source: PMP Study Guide by K. Heldman).In other words, if you document the stakeholder classification and engagement in accordance with the PMBOK, you must bear in mind that this can become known to the stakeholders and other people inside and outside an organization.In some projects, this may create a tradeoff between active stakeholder engagement management, its proper documentation, and the potential political implications of it. Working with stakeholders tends to require a certain level of diplomacy. For the stakeholder engagement assessment matrix, a simple example is replacing the categories unaware, resistant, neutral, supportive, leading with a neutral numeric scale.Another obstacle in the area of stakeholder management is the limitations to a project managers knowledge, skills, and time when it comes to properly analyze all (relevant) stakeholders of a project (source). Nevertheless, a comprehensive stakeholder analysis is the basis of a sound stakeholder engagement plan. If the analysis is not done properly, it will also impact the value of the stakeholder engagement matrix for the project.Stakeholder management tends to be challenging and often requires a lot of time, dedication, skill, and patience from a project manager. Despite its obstacles, it is well worth the investment though, as several studies have proven (such as this one about early stakeholder involvement in complex infrastructure projects).Whether you are working on a stakeholder engagement assessment matrix in a project or whether you are preparing your PMP exam we hope you have found this article useful.Make sure that you also familiarize yourself with the other stakeholder and communication management processes and techniques, e.g. the concept of the number of communication channels. Bottom-up estimating is a technique that involves estimations on a granular level for parts of a project. These are then aggregated to a total estimate for the entire project. It is often referred to as one of the most accurate ways of estimating. Estimating cost, duration or resource requirements of a project typically starts with a rough order of magnitude in the beginning. This is followed by more accurate estimates later in a project.In this article, we will introduce theconcept, cover the differences and interdependencies with other estimationtechniques and provide guidance to and an example of bottom-up estimating inprojects.Bottom-up estimating is a technique in project management for estimating the costs or duration of projects and parts of a project (PMBOK, 6thedition, ch. 6.4.2.5, ch. 7.2.2.4). The term bottom-up estimating gives a hint about the underlying concept: costs, durations or resource requirements are estimated at a very granular level. This means that the estimation is done for work packages (some might suggest activities though) which are the lowest and most detailed level of a work breakdown structure (WBS). Bottom-estimating is done at the lowest level of the work breakdown structure.While the estimation is performed at thelevel of activities or work packages, the estimate for the whole project is thesum of all granular estimates.The bottom-up estimation technique is alsoreferred to as deterministic or detailed estimating PMI Practice Standard forProject Estimating, 2ndedition, ch. 4.2.3). Itis often used as the so-called definitive estimate a type of cost estimate that comes with an accuracy between -5% and +10% according to the ProjectManagement Institute (PMI).Analogous (top-down) and parametricestimating as well as expert judgment can be applied at any level ofgranularity. In contrast, the bottom-up estimation technique typically implieshat it relates to the smallest component type in a project (e.g. work packagesand activities).However, teams can also make use of thosetechniques when doing bottom-up estimating. The duration of an activity, forinstance, could be determined through analogous estimating by using theduration of similar historical activities. The resource needs could bedetermined through parametric estimating, based on observed parameters such asconstruction material per square foot or lines of code per developer and hour.Expert judgment can also be used where sensible.Read our detailed articles to learn more about analogous and parametricestimating.The following instruction relates toestimations for the most granular component level of a project (e.g. a workpackage or an activity). In projects that apply PMI methodology, thesecomponents have been identified in the processes create WBS (PMBOK,ch. 5.4) and define activities (PMBOK, ch. 6.2).The results of these granular estimationsare then rolled up to calculate the estimate for the whole project.There are three types of bottom-upestimates:Estimating the resource needs (PMBOK process estimate activity resources, ch. 9.2),Estimating the time needed(duration) (PMBOK process estimate activity duration, ch. 6.4),Estimating the costs (PMBOK process estimate costs, ch. 7.2).There are some interdependencies betweenthese estimations: The duration of an activity typically depends on theresources assigned to the activity. The cost estimates are then calculated bymultiplying the resource units with the time and the price per unit.This section discusses a practical exampleof the application of the bottom-up estimation technique. The example is basedon the following work breakdown structure: Sample work breakdown structure (click to enlarge).The work package owners are asked toestimate the resource needs (headcount), the duration and the total costs foreach activity under their work package.The following figure shows the granularestimates for the activities, their aggregation to the work package level andthe entire project. Example of the aggregation of bottom-up estimates (click to enlarge).The requirements management team, forinstance, might have used analogous estimating. In that case, they estimatedtheir resource, time and budget needs based on observed values from previousworkshops and specifications. Thus, they came up with estimates of 12 persons,29 days and $104,400 for their workstream.The testing team, on the other hand, mightknow how many test cases a person usually creates per day and how many cases ateam member normally completes per day. They multiply these parameters with thenumber of expected test cases in the current project, i. e. they are applyingthe parametric estimating technique.The light-blue rows in the above table showthe estimates on the work package level (i.e. the sum of the estimates of theactivities). The dark-blue lines represent the second level of aggregation thesum of resources, costs and duration on a phase level (equivalent level to thatof deliverables in other WBS types).The orange cells contain the totalaggregates for the whole project: a total headcount of 47, a sum of time neededof 274 days (which is not necessarily the project duration, see explanationbelow) and total cost of $893,700.Note that the numbers of headcount and timeare only the sums of the respective granular estimates. In reality, theheadcount might be lower as some team members could work in differentactivities and work packages. For instance, a business analyst who writesspecifications could also be deployed for testing in a later project phase.The sum of the duration estimates of all activities does not necessarily equal the total duration of the project. This is because scheduling may lead to parallel activities or waiting time that is not estimated on the activity level. This is actually a part of the development of the overall schedule.Bottom-up estimates can be veryaccurate. This is because team members are estimating the piece of work theyare responsible for. As they typically have the most knowledge of their workpackage, their estimates tend to be much more accurate than top-down estimates.Estimation errors can balanceout across the components of a project. If the time or cost of one work packagehas been underestimated, for instance, this could be offset by anoverestimation of another work package. Such errors might therefore notnecessarily impact the budget baseline at the project level.Bottom-up estimating can beused in conjunction with other estimation techniques, e.g. the activity durationcould be obtained through parametric or analogous estimating.The underlying assumption isthat the project estimate consists of the sum of its pieces. This may ignoreoverhead and integration efforts that may occur in addition to the work definedin activities. This holds for large and complex projects, in particular.The bottom-up estimation itselfrequires a lot more resources than other techniques such as analogous estimating(top-down estimation).The cost estimation is based onthe duration estimate. Both rely on the estimated resource requirements. Thus,an estimation error there would lead to inaccurate time and cost estimates aswell.In practice, bottom-up estimatescan be prone to the bias or the interests of the estimators. While this appliesto all types of estimates (to some extent), it may be less manageable inbottom-up estimating. This is because these estimations are usually done by manydifferent estimators, i.e. those responsible for a work package.Bottom-up estimating can be a very accuratemethod to determine the definitive estimate of a project. It requires a certainamount of resources and an established work breakdown structure. The projectmust have been broken down to the work package and activities level before youcan apply this technique.Apart from estimating resources, time andcosts for the planned work of a project, this technique can also be used toassess change requests, e.g. in the course of a cost-benefitanalysis of such changes.There are also several other techniques to estimate the costs or duration of projects and their components. Make sure you read our article on cost estimating and estimating activity durations to get an overview and comparison of the different approaches.Whether you need to assess the value ofdifferent project alternatives, investment options or assets, you will likely wantto use an NPV calculator. Fill in the discount rate, the investment, yourprojected cash flows and the estimated residual value (if any). The calculatorwill discount the net cash flows based on your parameters and provide you withthe Net Present Value of your series of cash flows. The net present value method is one of the most common types of quantitative cost-benefit analysis. Discounting cash flows and computing the NPV is an ideal approach to compare the cash flow series of different investment or project alternatives. For instance, if you need to compare several project options with different initial investment amounts and benefits that materialize at different points in time, the NPV will provide you with certain comparability of their quantitative assessment. The Net Present Value is also mentioned as one of the potential project success measures in PMIs Project Management Body of Knowledge (source: PMBOK, 6th ed., part 1, ch. 1.2.6.4, p. 34). However, the NPV calculation requires anumber of assumptions and the method itself comes with certain advantages anddisadvantages. Therefore, make sure that you interpret and communicate thecalculated NPV together with those assumptions and potential weaknesses of the calculation. What Is the Net Present Value (NPV) & How Is It Calculated? For the calculation of the Net PresentValue, the following parameters are required. Set a discount or interest rate which willbe used to discount the projected net cash flows. Typical examples are capitalcost or target return rates of companies (often used for assessment of projects)or market interest rates (plus a risk premium). Fill in the amount of the initialinvestment as a negative cash flow (i.e. an outflow). This number can reflectany investment of resources, e.g. cash outflows as well as cost and expenses orother consumptions of resources. Once you have chosen the number of years(max. 10), you are asked to fill in the projected net cash flows for eachperiod. Refer to your business forecast and calculate the net cash flow bysumming the projected inflows (positive) and outflows (negative) for each year.The projected net cash flow can be negative or positive. If you expect your asset to have aremaining market value, yield a perpetuity or cause disposal cost (negative), computethe residual value and add it here. The residual value will be discounted as anin- or outflow at the end of the last year of your projection. Fill in the number of years, discount rate, initial investment, projected net cash flows and estimated residual value. The calculator computes the net present value of your series of cash flows automatically. You have successfully calculated the net present value. Make sure you are familiar with all the assumptions and pros and cons of the NPV method. There are also other approaches to cost-benefit analyses that you might want to consider as well. If you are preparing for your PMPcertification exam, you can use this calculator to train your NPV calculationskills. Just assume some input parameters yourself, calculate the NPV using pen,paper and a pocket calculator and compare your results with this calculator. We hope you like our NPV calculator. If youhave feedback for us or suggestions for new or enhanced features, let us know!Before you begin developing the schedule of a project, you need to know the expected durations of all activities of a project. Project management frameworks such as the PMIs PMBOK contain different tools and techniques for estimating durations. The expected amount of time for the completion of an activity is the basis for developing the project schedule. It can also serve as an input for estimation of the cost of an activity, depending on the type of the activity and the estimation technique.In thisarticle, we introduce the concept of estimating activity durations, the toolsand techniques and the typical uses in project management.The purpose of estimating activity durations is to determine the amount of time it takes to complete an activity. Estimate activity durations is a process of the Project Schedule Management knowledge area according to PMIs Guide to the Project Management Body of Knowledge (PMBOK, 6thed., ch. 6.4).This process requires several input parameters, which include, in particular, the scopeof work and the list and characteristics of planned activities as well as theresources that are deployed to perform the work.The PMBOKlistsexpert judgment,analogous estimating,parametric estimating,bottom-up estimating, andthree-point estimationas techniquesto determine duration estimates. Read on for an overview of these estimationtechniques.Theestimation of durations is normally done on the level of activities (see belowimage). Determining the total duration of a work package or the whole projectrequires scheduling of activities, taking their individual durations intoaccount. The level at which activity durations are estimated.Thisincludes the consideration of dependencies between activities and often involvesthe development of a critical path (the longest chain of activities to achieve thedesired outcome). It is therefore typically not accurate to simply calculatethe sum of activity durations if you determine the duration of work packages orwhole projects. This is because the sum of activity durations may overstate (sometimesunderstate) the total time to completion of a project as some activities canrun in parallel while others are dependent on the completion of a precedingactivity.The basisof estimates is a documented set of assumptions and constraints that underlay aduration estimate. This document also describes the methods applied to producean estimate, the range of potential outcomes as well as the confidence of theestimate(s).This documentation is important in projects for several reasons. It makes the constraints and assumptions transparent that have been considered for the estimation. Once an assumption becomes invalid, this may trigger the need for a new estimation. A project manager can also use these documents to ensure consistency across the different activities in a project, as a justification for the project schedule and for the communication with stakeholders.The estimation process requires some input information and documents and implies the use of oneor multiple estimation techniques. The following subsections elaborate on theserequirements.Theestimation of activity durations should generally be done by the person who isthe most familiar with the activitys type of work. This is even more importantif an estimation technique is used that relies on the expertise and experienceof the estimator(s) instead of historical data.The outputof duration estimations is always a number of time periods (e.g. days, weeks,months; source).The level of confidence and whether it is a single estimate or a range dependon the estimation technique that is applied.Regardlessof the estimation technique, it is good practice that a document accompaniesthe estimated number that sets out all underlying assumptions and constraints, theestimate ranges and the expected level of accuracy. In PMI terminology, thisdocument is called the basis of estimates.The PMBOK lists a number of inputs which are grouped under the project management plan, project documents, enterprise environmental factors and organizational process assets. While the knowledge of the complete list is likely relevant for project management exams (you will find it in ch. 6.4.2 of the PMBOK), an estimation can be done with the following minimum key input parameters:list of activities and theirattributes,assigned resources (material andteam members, incl. availability and skills), andhistorical data (for some estimationmethods).The more information you can consider such as risk register orenterprise environment factors the better your estimates.Thefollowing table summarizes the most common estimation techniques that are alsointroduced in the PMBOK.Follow the links in the references row of the table to read more about the respective method (incl. examples). You can also use our project management calculators to calculate final duration estimates. Expert Judgement Analogous Estimating Parametric Estimating Bottom-up Estimating Three-Point Estimating Input Data Expertise and experience of the experts Historic or market data: Values of previous similar projects Historic or market data: Parameters and values of similar projects Scope of work, activities Estimation techniques Method Experts estimate the time it takes to complete the work in scope, either as a top-down or a bottom-up estimate Adoption and adjustment of historical duration observations for similar types of activities (top-down) Using the historical durations per parameter unit to determine the expected duration of future activities Estimation of durations at a granular level (e.g. activities or below) and aggregate them to higher levels Three-point duration estimates consist of optimistic, pessimistic and most likely estimates. They can be converted into final estimates with a triangular or PERT/Beta distribution Output Type Several Duration estimate for an activity Duration estimate for an activity Final duration estimates for activities*, standard deviations of estimates References PMBOK, ch. 4.1.2.1, ch. 6.4.2.1 PMBOK, ch. 6.4.2.2 Article incl. example;5-step guide PMBOK, ch. 6.4.2.3 Article incl. example PMBOK, ch. 6.4.2.5, Article incl. example PMBOK, ch. 6.4.2.4; Article Calculator*ThePERT method can also be used for scheduling multiple activities which howeveris not in the scope of this article.According to the PMI, activity duration estimates are subject to progressive elaboration. This implies that they could be rather rough estimates at the initial stage of scheduling the project. During the course of the project, they are then enhanced and become more accurate as more information and details are known.Expert judgmentmeans that an estimator or a group of estimators determine the expectedduration of an activity based on their experience and expertise in therespective area.Theaccuracy of these types of estimates can vary greatly. It depends on the characteristicsof the work and the experience of the estimators.Expert judgmentcan also be applied to supplement one of the other types of estimates, e.g. incases where historical data are only applicable for portions of the work.Analogous estimating is a technique that involves using either historical data or the experience of estimatorsto determine the expected duration of an activity. It is also referred to astop-down estimating.Read more details and an example here.The Parametricestimating technique makes use of historical data and statistical approaches topredict the durations of planned activities.This can beone of the most accurate methods if the data availability, quality andstatistical correlations are strong. However, it may require some efforts and resourcesto perform the estimation.You will find more explanations and an example in this article.As the namesuggests, this technique requires determining three different duration estimates:an optimistic,a pessimistic, anda most likely estimate.It can be used as a range estimate or further processed, e.g. by calculating a final estimate using a triangular or Pert distribution.As durationestimations relate to activities, the bottom-up estimation technique is implicitlythe main approach for activity durations. Activities are typically the mostgranular planning components of a project. However, even activities can be furtherbroken up, e.g. into steps or procedures, to increase the accuracy of anestimate.Thetechnique suggests that those who are responsible for the execution of work arealso estimating the duration of that work.For the estimation of project cost, thegranular estimates are rolled up to determine the total cost estimate of theentire project. However, doing this for the project schedule is more complex.It actually requires some scheduling techniques to account for activities interdependenciesand the options to have activities running in parallel.You can read more in this guide to bottom-up estimating (incl. examples).The aforementionedestimation techniques come with their own way of computation. Parametricestimation requires a statistical correlation and subsequent calculation (rangingfrom a rule of three to complex statistical models). Expert judgment and analogous estimating are typically done without calculations.Whenreferring to the formula of duration estimates, people usually think of the three-pointestimation method.Assuming atriangular distribution of the three estimates the calculation of the finalestimate is:E = (O + M + P) / 3where: E = Expected amount of time using three-point estimation, O = Optimistic duration estimate, M = Most likely duration estimate, P = Pessimistic duration estimate. Perficient has a team of consultants and strategy professionals that will help guide you through the journey of figuring our what you are really trying to achieve and what technology will get you there. After the platform or technology solution is selected, we usually plan for an Elaboration.An Elaboration is a phase of the delivery engagement where we create our initial project plan by reviewing the business requirements and elaborating on what the requirements are to fulfill those requirements. First and foremost, it must be said that Elaborations are not mutually exclusive to humongous multi-million dollar engagements. An Elaboration is something all projects require because we want to make sure we are taking the proper steps to fulfill the vision youve worked so hard to build up to this point.Depending on the size of the engagement, an Elaboration could take a half day, five days, two weeks or a month! Honestly, it varies from project to project but, no matter what, it is the most important part of the project because it kicks off the process of building the requirements to achieve your business objective. This is why an Elaboration is so important; it bridges the gap between the ideas and the execution. As consultants we bring experience and expertise but we cannot possibly know what your vision is by simply reading a business requirements document. We need to hear them from you. We need to collaborate together, draw ideas on a whiteboard and collectively challenge each other in order to get to know the real story behind your vision.Here are some keys to having a successful Elaboration:Assign a main stakeholder that casts and maintains a vision.Its important that the main stakeholder be involved, or a person be assigned as the voice of the stakeholder. This role will help to settle disputes, approve all final scope and align the internal team before, during and after the Elaboration.Align your team before the Elaboration begins.Prepare your team, then review the preparation and then have a prep session before the Elaboration. Joking aside, its important to ensure your team has a good fundamental understanding of the upcoming goals for the Elaboration. Even though at times strong personalities cannot be contained and interventions happen, properly preparing your team helps make for a more productive onsite session overall. Perficient will make every effort to make sure that the main objectives are stated clearly at the beginning of the engagement.Foster a strong relationship with your assigned Program MangerThe program manager assigned to your project is your main point of contact. They know every aspect of the project budget, are the final managers of scope and are ultimately in charge of maintaining the direction of the Elaboration. Your program manager will work hard to be very clear, keep everyone on task, they will work hard to be transparent on how things are going during the Elaboration and they will raise the red flag as soon as things do not align with the business objectives. Lastly, they are acutely aware of constraints and will work to balance creative thinking with the realities of budget and time to delivery. A strong relationship is important to ensure all parties can speak openly and honestly about any topic that needs to be discussed during the Elaboration.Make sure the area where the Elaboration is happening is tuned for successGreat things happen when you have a whiteboard, fresh markers, a projector and space to collaborate (not to mention hot and cold refreshments and a steady stream of snacks). While we havent yet reached the point where we require beanbags and ping pong tables (kidding), in reality, we are going to be together in a room all day and its the nature of the engagement to jump up and whiteboard out an idea or project something for the group to see. Its this kind of shared collaboration that leads to the creation of a common vision that the team can rally around.Make sure the proper people are availableIts not often that we have the entire project team together in one spot to discuss a project. Perficient will make every effort to build an agenda so you can plan ahead with your team and start booking appointments on calendars. That said, let your team know that we will be in town and prepare them to be pulled into the Elaboration space if needed. It is possible to meet after we have left your offices but its better for that person to join when an idea or question is fresh in everyones mind.Communicate, communicate, communicate, communicateWe live and breathe on communication and you should expect that we are going to make sure youre up to speed every step of the way and, throughout this process, you will receive a high amount of communication. To give some examples:At the time the delivery team receives the signed engagement, within 24 hours, you will receive an email from the assigned Program Manager introducing themselves and outlining next steps.As we lead up to the Elaboration, you will receive weekly updates on how the team is doing as we prepare for our meeting.During the Elaboration you will receive clear direction on how things are progressing and, afterwards, next steps we need to take.After the Elaboration, if regular meeting times are not already setup, you will receive ad-hoc requests to meet to clarify requirements as well as weekly updates on how the team is progressing as we finalizing the requirements gathered on-site.When the contracts and project requirement documents are complete, you will be asked to join a meeting where we walk through the final Functional Design Document and Project Statement of Work.Finally, any consultant worth their weight in craft beer (paying homage to my hometown, Milwaukee, WI) will tell you that an Elaboration is not a sure-fire way to guarantee project success and its expected that there will be challenges along the way. In a world where budgets are tight and every dollar spent needs to contribute to the bottom line as fast as possible, you cannot afford to get it wrong; especially before weve even started. After the project starts, business could change direction, scope will change, ideas fleshed out in the Elaboration will develop further and will require change; however, the best way to manage this change is to have a thorough review and discussion around your initial business requirements. This initial direction, discovered thorugh Elaboration, solidifies initial scope, establishes a budget, builds a team and gets the project off in the proper direction. In todaysfast-changing world, project-based working becomes increasingly important.Technology challenges and even disrupt incumbent companies in almost allindustry sectors. Globalization, international trade and the unpredictablepolitical developments in these and other areas pose a threat but also anopportunity for the way companies do their business. To ensure success andviability, companies need to change as well and one part of thistransformation is the inevitable shift from line organizations to project oreven agile organizations.Thiswebsite aims to help (project) managers, executives and experts deal with theexpectations and challenges of project-based working. My articles cover highlyrelevant project management topics and provide practical advice and usefulexamples.There arenumerous project management certifications out there. Some of them are based onsophisticated and complex project management frameworks and a heavy-weightmethodology. They come with a high reputation but require considerablefinancial and time commitments. While these certifications pay off quite wellfor experienced project managers, they might be oversized for beginners (theirrequirements might even be to high) and for people who only casually take onproject management responsibilities.Project-Management.infois supposed to be a helpful tool for exactly these project management newbies.While I have personally gone multiple times through preparation andcertification processes (read more below), I have also gathered comprehensiveexperience in practical day-to-day project management.This iswhat I will share with you on this site: project management best practices, myown practical experience and the amount of theory that is necessary tounderstand the underlying concepts, values and ideas.Whether youare looking for examples and explanations in the course of your exampreparation or whether you seek tips and advice for a practical challenge inyour job I hope you will find my content helpful.I am a PMI-certified Project Management Professional (PMP) and Agile Certified Practitioner (PMI-ACP). I am also a holder of a Professional Scrum Master I (PSM I) certificate by Scrum.org. More than 15 years ago, I started my career with a bank. Later, I moved on to working on internal projects. More than 10 years ago, I switched sides and joined a consulting firm. So far, I have been working in more than 30 projects with different clients in the US, Europe and Asia.Most of my projects required me to work in a role comprising of project management responsibilities but also including technical and operational contributions to the project work (e.g. as a business analyst, test lead and analyst and subject matter expert). Feel freeto reach out to me at any time! I will be happy to share my thoughts onchallenges or problems you are facing in your projects. Please do also not hesitateif you want to share different views or opinions with me or suggest new topicsor articles for my website.You canreach me using the contact form on my contact page.Lastly, ifyou find our articles useful, please go ahead and share them with yourcolleagues and friends and spread your word.If you areowner of a topic-related website yourself and like our articles, feel free tolink to them on your site! Progressive elaboration lets project managers refine and improve plans as projects progress. Its about staying flexible and adaptable. This approach keeps projects aligned with changes and addresses new requirements effectively.New insights often emerge as projects move forward. This requires adjustments and enhancements. Progressive elaboration lets managers use these insights to make better decisions, optimizing outcomes.Keeping stakeholders involved is key to successful progressive elaboration. Their feedback allows for necessary changes. Documenting changes and reasons for them maintains transparency and provides a history.This approach is great for projects with lots of uncertainty or long timelines. Its often used in big projects like construction or IT. Regular re-planning helps deal with the unknowns, ensuring success.Progressive ElaborationIn agile management, progressive elaboration involves backlog maintenance and rolling wave planning. Backlog maintenance incorporates new insights into the project. Rolling wave planning helps focus on immediate tasks while keeping an eye on future goals. This clarity allows for better planning and execution.Prototyping is another helpful method. It involves making small models to gather user feedback. This helps identify improvements, making comprehensive changes based on user needs.In essence, progressive elaboration is a dynamic, iterative way to manage projects. It allows for adjustments based on new information, leading to continuous improvement. Techniques like rolling wave planning and prototyping help managers handle uncertainty and deliver successful projects.What Does Progressive Elaboration Mean?Progressive elaboration involves refining project details as you learn more. Its a major idea in the Project Management Body of Knowledge (PMBOK). Its also linked with the Project Management Institute (PMI).Projects often start with uncertainties. Its hard to make a detailed plan right away. With progressive elaboration, managers start simple. They then add details iteratively.In early stages, the team sets main goals and deliverables. They add specific details as they learn more. This makes projects more adaptable to change.There are many benefits to this method. It makes projects more flexible and reduces redoing work. It also keeps stakeholders involved, manages risks better, and allows for more realistic planning. Projects can save on costs and time too. Managers can better control the projects direction and improve quality over time.Progressive elaboration is key in many project management methods. In Agile, like Scrum, it involves updating a backlog based on feedback. In Waterfall, it helps refine plans as the project evolves.Its a core concept in project management. It helps projects adapt, set clear goals, manage risks, and stay flexible. This approach helps project managers deal with project challenges. It leads to successful project outcomes.Progressive Elaboration in PMI MethodologyProgressive elaboration plays a big role in project management, especially for the Project Management Institute (PMI). According to the PMIs Project Management Body of Knowledge (PMBOK), its essential for making detailed and correct plans step by step.This method means always making the project plan better as we learn more. It fits the way many software teams work, doing a bit at a time. They plan, work, then plan again based on what theyve learned.At first, project plans dont have every detail. They start simple, with just enough info to see the big tasks and what depends on what. As the project moves forward, each version of the plan gets more detailed, focusing on the next set of tasks.This constant updating helps PMI project managers adapt as they go. They expect to find new issues and are ready to change the plan. Adding details bit by bit is a smart way to deal with changes and sharpen the project goals.Examples of Progressive Elaboration in Different Project SituationsProgressive elaboration helps teams improve their project management. This method involves constantly updating project plans to meet new insights and needs. It leads to greater success and happier stakeholders. Heres how it works in various project scenarios: Rolling Wave Planning is a key part of progressive elaboration. This tactic plans projects step by step, focusing first on upcoming tasks. Teams then adjust longer-term goals as they learn more. It balances current needs with the flexibility for future changes. Regularly updating project plans is another facet of progressive elaboration. Teams adjust their plans as new info comes in or things change. This method helps align project goals with new requirements, cutting down risks and leading to success. Prototyping is crucial in developing new products. Its about making test models to get feedback, leading to better project results. Getting stakeholders involved early and using their feedback improves the final outcome. This ensures the end product fulfills user expectations. Agile project teams use progressive elaboration through backlog management. They keep updating and prioritizing their to-do list according to new needs and market trends. This ongoing process helps in fine-tuning the project, ensuring it meets goals and pleases stakeholders.These scenarios show how flexible and effective progressive elaboration can be. It empowers teams to handle uncertainty and change, leading to project success and stakeholder satisfaction.Rolling Wave Planning as a Type of Progressive ElaborationRolling wave planning is a way to manage projects that fit under progressive elaboration. Its perfect for projects where things are uncertain and managing risks well is key. This method divides the planning into smaller parts or waves, making it easier to handle changes.Unlike other plans that try to set everything from the start, rolling wave planning starts with near-term plans. Planning for the future remains at a higher level. This helps when you dont have all the info at first or the goals and timelines arent clear. With rolling wave planning, teams can reach long-term goals faster by focusing on what needs doing now.Setting priorities is a big plus of rolling wave planning. It thinks about whats important now, more than the end goals. This helps teams know what to do first and how it fits with the final goal. This makes it easier to use resources well and make smart choices.Rolling wave planning also sparks innovation. Teams can change their plans as they learn more. This encourages being flexible and creative. It brings new solutions and helps with new challenges. Planning this way means always getting better and improving the projects results.But, rolling wave planning has its challenges too. The chance of running into unexpected problems can go up. This makes handling risks well even more crucial. Project managers need to be ready and tackle issues early to keep the project on track.Applying Rolling Wave PlanningTo apply rolling wave planning, start by figuring out the project needs. Then, break the project into phases for better structure. Start with detailed planning for whats coming up soon. As things move forward, planning gets more detailed, helping to judge what can really be done with what you have.The Project Management Body of Knowledge (PMBOK) describes rolling wave planning as a way to plan that updates as work moves on. It works for both regular and agile projects. This shows how flexible and useful rolling wave planning is across different ways of managing projects.In the end, rolling wave planning is a strong method for managing projects when things keep changing. By focusing on whats urgent, encouraging new ideas, and being flexible, it helps projects succeed. Yet, its important to remember the challenges and risks and deal with them well.Change Requests as a Result of Progressive ElaborationChange requests are key in the progressive elaboration process of project management. As projects grow and details change, stakeholders often see the need for modifications. These might be due to new facts, changed priorities, or outside influences affecting the project.These requests let project managers adapt to new needs. They arent just sticking to the first plan. Instead, teams see these requests as chances to make the project better and overcome new obstacles.When a change request comes in, the project manager reviews its impact on the project. This means looking at how feasible the change is and what risks it brings. Careful analysis helps decide if the change will help the project succeed.Approved changes mean the project plans need an update. This includes changes to the scope, time, and cost plans. Updating these plans makes sure everyone knows whats new and aims for these updated goals.The project team has a structured way to handle change requests. This usually means meeting with a board of key people and experts. They look at each requests effects and decide if it fits the projects goals.Change requests are vital for project management. They help capture new needs and deal with shifts in the project landscape. By seeing these requests as chances for betterment, managers steer the project to success.Regular Re-planning of Project ActivitiesProject management thrives on being able to adapt, especially with big and involved projects. When you start planning, you might not know everything. This makes it super important for managers to keep re-planning activities in their projects. Regular re-planning keeps the project moving smoothly as things change. It also makes sure the project can always get better and run more effectively.Regular re-planning means looking over and updating the project plan and work setup. Teams can then handle project risks better and make sure their project ends successfully. Its about staying on top of everything and making changes when theyre needed.The reason we do regular re-planning is because of progressive elaboration. As a project moves forward, everyone understands it more clearly. This understanding lets managers tweak the project based on the latest info they have. Its a smart way to keep improving how a project is going.During the project, activities need constant review and tuning. With regular checks and updates, managers can keep the project aligned with goals and expectations. This helps a project adjust well to any new changes.Regular re-planning lets teams tackle issues that come up in project management. It cleans up unnecessary tasks and organizes the work better. This approach makes sure tasks flow well together. It also helps in planning more accurately, avoiding expectations that arent realistic.Another plus is it gives a sense of control in situations that are hard to predict. By keeping the project plan current, managers can make smart, informed choices. This helps guide the project in the right direction.But remember, a project plan quickly becomes outdated if it isnt kept up-to-date. Once a plan is made, ignoring problems doesnt help. Thats why thinking of re-planning as part of the projects ongoing tasks is crucial. Its not just one phase but a continuous effort.When re-planning, its important to think about how much detail is needed in the plans. This includes being precise about how long things will take and how to check if everythings on track. This careful monitoring helps manage the project well.Prototyping for Progressive ElaborationPrototyping is key in progressive elaboration, especially in software projects. It involves making simple models to test and show clients. This helps teams get valuable feedback and find issues early. By doing this over and over, they can fix problems, get new ideas, and improve.Prototypes help teams update their plans based on what users say and changing needs. As more info is known, these models are updated. This makes sure the plan grows to meet stakeholder expectations.Prototyping makes it easier for teams to adapt to new needs and changes in the market. It helps make planning more realistic by using the latest info. This saves time and resources. It also lets teams focus on what brings the most value to stakeholders.Also, prototyping helps teams work better with stakeholders. It gives a clear look at what the project will be like. This makes it easier for stakeholders to give feedback. It helps make sure the final product is what they want. This makes the project more likely to succeed and get better results.Backlog Maintenance in Agile ProjectsBacklog maintenance is key in agile projects. It helps with ongoing development. The 2020 Standish Group Chaos Study shows agile projects are more successful than traditional ones. Success comes from planning flexibly, delivering continuously, and meeting customer needs.The product backlog is a collection of requirements and user stories. Its updated often based on new information and feedback. This way, teams can keep up with changing needs and add value.Agile methods rely on teamwork, involving everyone like product owners and team members. This makes sure the backlog shows what the whole team wants. It helps them choose the most important tasks.The Role of Backlog Maintenance in Agile ProjectsBacklog maintenance helps agile teams to:Keep priorities straight with feedback and market changes.Make big tasks into smaller, doable stories for easier testing and development.Spot dependencies, risks, and chances throughout the project.Keep everyone up to date, helping them make smart choices.Manage changes well by fitting in new needs and adjusting as needed.Get the team on the same page, understanding project goals together.Backlog maintenance is a constant in agile projects. It involves planning at all levels like release and daily tasks. Its based on agile principles like being open, checking often, and adjusting as needed.With ongoing backlog upkeep, agile teams deliver bite-sized value, keeping customers happy. By always tweaking the backlog, they aim for project success and put customers first in decisions.ConclusionIn summary, progressive elaboration is essential in project management. It lets project managers kickstart projects early, even without full details. This strategy has many benefits. It allows for flexible planning and reduces unnecessary work.It averts early problems and enhances teamwork. It also makes the project less risky. By using this method, managers can get things right, use resources wisely, and keep the team happy. It also speeds up the delivery of value to clients.Progressive elaboration works well with agile methods. Agile focuses on adapting to change and making software in short cycles. It also involves getting feedback regularly. An example of this is developing a new product, starting simple, testing it, and improving it bit by bit.Rolling wave planning is a part of progressive elaboration. It plans the project in stages, detailing more as it progresses. Knowing about progressive elaboration and rolling wave planning is key for the PMP exam. It helps project managers deal with uncertainties and achieve success in a dynamic business world. The success of a business project reliesheavily on a number of factors: individual and collective expertise of the teammembers, budget, resources, communication, and productivity among other things.Productivity, however, is becoming a serious concern for many project-basedfirms.According to a recent productivity survey byVoucherCloud that interviewed nearly 2,000 employees, the averageoffice worker in the United Kingdom is productive for just 2 hours and 23minutes. This study pertains to employees who do office work such as typingdocuments, taking calls, printing files, and setting appointments.A separate research on work-lifebalance by RescueTime, this time focusing on US-based knowledgeworkers (those that work with information), echoed an almost similar result.Knowledge workers in the US are productive for just 2 hours and 48 minutes.Unproductive workers and lost hours forma problematic mix for any business organization and its clients. Team memberswho slack negatively affect the overall efficiency of the group. Aside from thehuge financial setback, this concoction of problems results in multiple delays,poor quality of work, and dissatisfaction of clients.But with the right project management software,firms have a solid answer to many productivity issues and can further empowertheir workers to deliver their best work at all stages of the project fromplanning and execution to realization and delivery.To make your team members productivefrom start to finish, you need to establish a project plan right from thebeginning. And that plan has to have a high degree of quality. You have to sitdown with your team members, upper management, and your clients to discussthoroughly the details of the project.The goals of the project must beestablished from the beginning. Together with other involved parties, you canperform various project estimation techniques such as analogous estimating to createviable estimates for costs, resources, and schedule.As the plan becomes more defined,everyone involved in the project will have their roles and responsibilitiesestablished and made known to other team members, superiors, and stakeholders.All project information, goals, schedule, roles, and protocols are centralizedin the project management software that members can access securely whenеverneeded.Solid planning coupled with absolutetransparency empowers employees. They become extremely motivated and,therefore, productive.One of the many benefits of projectmanagement software is that it allows you to set and document every change madeto the overall plans and goals. Majority of project plans, if not all, undergoseveral changes and adjustments as they progress. Changes to plans occur forseveral reasons, including delays due to late approvals, internalreorganization, additional tasks, and new goals.It is critical for project managers tokeep all these changes documented and members notified. Documentation makes iteasy for members to review the new information. It also simplifies the auditingprocess as it helps create an audit trail. Documentation of projectdevelopments allows project managers to perform and/or repeat several criticalprocesses such as project cost estimation and justifyrequests for additional funds, members, and extension.An employee can be highly protective atthe individual level. But if he is working fast and furious on less importanttasks and oblivious to the scheme of things, he can cause bottlenecks thatseriously hamper the overall performance and efficiency of the