TeamPlus: A Data-Driven Tool Utilizing a Genetic Algorithm for Optimal Software Team Formation

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1. Illustrative Example

This section illustrates the importance of leveraging adequate support for software team formation. Consider two project managers, Karla and David, both assigned to form teams for critical industrial software projects with identical requirements and a diverse pool of software developers at their disposal.

In the first scenario, David opts to form his team based solely on his experience and intuition. Without automated support, his manual approach to team selection risks several pitfalls. For instance, David might not realize that two developers have a history of working well together, leading to overlooked synergies. Additionally, he might not consider the organization's knowledge management strategy, which identifies the need for more people familiar with a specific critical technology. This oversight can result in a misalignment between the selected teams and the organization's strategic goals, leading to inefficiencies, underutilization of skills, knowledge gaps, and potential conflicts, ultimately impacting the overall quality and progress of the project.

In contrast, in the second scenario, Karla utilizes TeamPlus to form her team. With TeamPlus, Karla can quickly identify the organization's gaps regarding specific technologies, such as how many people are experienced with a given technology. Additionally, she can access the history of collaboration between developers, understanding how well two developers have worked together. This comprehensive insight enables her to make informed decisions about team composition. Furthermore, Karla can quickly have TeamPlus suggest optimal teams for her project by entering the required technologies. She can manually adjust the teams to satisfy specific goals and restrictions whenever needed, ensuring that all project requirements and organizational

strategies are met. This data-driven approach to team formation minimizes skill mismatches and interpersonal conflicts, which David's team faces due to the lack of such insights.
This scenario demonstrates the tangible benefits of using TeamPlus. The tool not only streamlines decision-making processes and saves time but also substantially enhances the probability of project success by ensuring optimal team composition. TeamPlus facilitates the seamless integration of technical and collaborative skills by utilizing automated support. It achieves this by leveraging historical data on developers' past project involvements, allowing for a nuanced understanding of individual capabilities and interpersonal dynamics. This approach ensures that teams are not just groups of skilled individuals but well-rounded units optimized for performance and synergy. The example of Karla and David demonstrates how TeamPlus can transform software team formation in industrial settings, making a compelling case for its broader adoption.