JOHNS HOPKINS

Module 1 Assignment

IPT Work Scenario

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Module 01 Assignment: Integrated Project Teams

Problem Statement

Your assignment for this week is to write a work-based scenario that would require or benefit from the incorporation of an integrated project team. Describe the scenario and include several ways in which this IPT structure would be useful, as well as several obstacles or problems this integrated project team might face. How would you recommend the IPT overcome these obstacles?

Assumptions

Included in the assumptions of incorporating in integrated project team in a work-based scenario is that incorporation of the integrated project team simplifies the work and compresses the development schedule and/or costs for the organization. This may not be the case for very small projects where one person is capable of designing a product that meets all objectives.

Another assumption is that the team is brought together all at the same time at the beginning of the project. If that is not the case, new members of the team may have difficulty getting up to speed and getting other members of the team to work with them.

Another assumption in benefiting from an IPT structure is that each member of the IPT is placed in a role that emphasizes their strengths. If each member of the IPT is placed randomly, a member may be placed in a role that does not suit their interests or experience, thus resulting in an inefficiency within the team which may be difficult to overcome and still maintain team cohesiveness and development velocity.

One more assumption is that every member of the IPT is working toward the common goal of completing the assigned task. For obvious reasons, if members of the IPT are actively trying to derail the progress of the IPT then the project would not benefit from the creation of the IPT.

Computations

N/A

Discussion/Conclussions

For this assignment I will describe an integrated project team that I work on at my job at Pratt & Whitney, the benefits of forming the IPT, some challenges facing the IPT, and how the IPT might go about tackling some of the challenges faced by the IPT.

The project that has been envisioned is creating an automated inspection and repair system which suggests repairs to return hardware to service after incurring damage in the field. The scope of damage that can be incurred in the field is quite wide, including dents, scratches, nicks, metal creep, galling, coating wear, eternal cracking, internal cracking, seal wear, etc. Just as the scope of damage is quite wide, the array of inspection tools that can be used is wide as well, meaning there are many different

types of inspection and analysis that can be run for each of the different machines. Repair recommendations can be similarly broad in scope, with blending, re-coating, cold-straitening, peening and scrap/replace being valid repair options in different scenarios. Due to the large scope of the damage, analysis, and repair operations, this is the type of project that is best suited for an integrated project team.

One way in which the IPT is useful in this case is in providing a wide array of experience in the repair process. No one engineer has all the knowledge to be able to read scan data from inspection machines, suggest an analysis route, execute the determined analysis, and interpret the results of the analysis for every possible type of damage for every part in an airplane engine. That amount of knowledge is simply too much for a single person to handle, it takes a whole organization to be able to track all that information. Thus this is an advantage to using an integrated project team, since the multitude of members provide a diverse array of knowledge, ideally spanning all of the possible repair operations discussed.

One obstacle for the IPT along this same thread is both in finding a subset of people within the organization who have components of the expertise needed as well as filling any gaps in knowledge left after the team is formed. In an organization as big as Pratt & Whitney, often it can be unclear who to contact for a particular question. One example is for internal crack analysis, to form a complete IPT, members of the x-ray diffraction lab should be included in the effort, as they are the ones who have the expertise to analyze internal cracking damage. This can hopefully be overcome with a strong IPT leader with both detailed knowledge of the organizational structure and a wide network of people they can inquire to get the contacts needed for IPT success. As for filling any knowledge gaps after the team is formed, it is important to include subject matter experts in discussions and learning for the benefit and teaching of team members who can automate the inspection and repair process.

Another way in which the IPT is useful in this scenario is being able to put people in positions of strength. For example, some engineers may have greater expertise in analysis tools, some engineers may have more experience in automation and implementation of software systems, and some engineers may have greater experience in project planning and scheduling. Each member of the IPT should be placed in a position which both matches their strengths and gives the IPT the best opportunity to succeed. If the members of the IPT are organized in this fashion, then the IPT will function much more smoothly than if not.

Some challenges along this thought process is that there may be open roles within the IPT that no member has technical expertise in. For example, there may be no member of the IPT that has detailed knowledge of software testing, or authentication. In this scenario, there are two options. The first option is that a member of the IPT steps up and tasks themselves with learning the role and how to be successful. Often careful research and communication with other people who have previously held a similar role can suffice for roles that are not too dissimilar from the member's strengths. The other option for roles that are far away from all IPT member knowledge pools include adding a member to the

IPT to fill that gap in knowledge. While this is not always ideal, sometimes adding members to the team is the only option when faced with a challenging role for which no IPT member is suited.

An additional way in which this project benefits from the IPT structure is in developing concurrent capabilities in parallel. Because of the IPT structure, for example, one team member can work on security and authentication, while another works on automating analysis capability, while another member works on creating a web dashboard, etc. Developing concurrent capabilities in parallel allows the team to tackle a broad array of functional components at once, and can greatly speed up the development cycle.

Challenges to this parallel execution of tasks include communication and integration between each parallel functionality. If one team member is working on authentication and one team member is working on a web dashboard, these two team members will likely have to integrate the functionality prepared with each other. This is often more challenging than integrating two functional components developed by the same team member. To meet this challenge, it is recommended that each team member prepares detailed documentation for the functionality that they created, how things work, and how one might integrate with the functionality created. Without this type of documentation and communication, integration between team members can become cumbersome, or even impossible.

One final way that the project may benefit from the IPT structure is in the review stage. Often it is difficult for a member of the team to objectively review their own code. A single member of the team may have difficulty identifying all of the failure modes of their code. In addition, a diverse set of opinions on how things could be done often provides a more elegant solution than a single member's first thoughts at solving a problem. Thus it is advantageous in both cases to have a few sets of eyes on a particular functionality in the review process to produce the best possible code.

While having multiple sets of eyes on code in the review process is beneficial in many ways, sometimes it can be challenging. First off, it can be difficult to parse another person's code, in some cases making it unclear to the reviewer what exactly is happening. Another challenge that can arise is a multitude of strong opinions on the best path forward, which can lead to some dissent among reviewers. The best way to tackle both of these challenges is to ensure the review process is meticulous and thorough, allowing each review the time to fully understand what is being reviewed as well as articulate their opinions of any potential changes.

In conclusion, it is very useful to this project and many other project structures to implement the IPT structure in creating a team for the project. While there are some organizational challenges to implementing the IPT structure, the benefits of such a team far outweigh the challenges, and each of the challenges can be broached with careful foresight and project monitoring.