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Learning from Experience: Leading Collaborative Development Programs

Many companies in our industry are turning to design collaboration for mission critical programs. Like many new practices, this one comes with its own set of kinks. Development managers and engineers often worry that their development partner will fail to deliver a competent design on schedule. Horror stories abound about designs falling short of expectations causing delays and added cost. Fortunately, there are some key steps to executing successful design collaborations to reduce project risk.

The first steps to successful design collaboration are selecting the right partner, figuring out how to work with them, and then adapting the company's process for collaboration. Each of these steps are critical, and it is often not obvious where the pitfalls lie. Choosing the right partner isn't easy. It is much more difficult to evaluate a service than a product because, by definition, a service will change with every experience.

Choosing wisely is crucial because the wrong choice will result in starting over with another partner or taking over the project yourself, either of which can lead to a schedule delay. Quickly learning how to work with your development partner will head off schedule delays, missed expectations and high levels of frustration. It takes time for people to understand each other and to develop the trust needed for a successful outcome. Finally, most companies' development processes need modification to efficiently collaborate with an external development partner. Finding and making these adjustments as early as possible will help the program run more smoothly.

A simple way to improve your success during these initial steps, while simultaneously advancing the state of your program, is to engage your development partner in the specification and concept stage. This may seem premature, as you may not know exactly what you want to do yet, but it is the best time to engage your partner. People often make the mistake of waiting for fully developed specifications before starting to collaborate. Engaging your partner in the specification and concept phase results in five key benefits.

1. The first benefit is that you will know immediately if you've chosen the right partner by working on the actual problem in the beginning. By seeing how their development team works, reviewing the early deliverables, listening to the type of questions they ask and gauging responsiveness, you can quickly ascertain whether they will be a good fit. Until you begin the actual work, you will have a difficult time discerning sales fluff from substance. Building early confidence will make a measurable difference in how smoothly the rest of the program goes.

2. The second benefit of early collaboration is the ability to begin the process of integrating the two development teams. This is one of the most important steps you can take to ensure a

successful program. It takes time to learn each other's strengths and weaknesses, and fill gaps in the combined team. Frequently, you are looking for a development partner to bring knowledge you may not have yourself. Developing the detailed concept together quickly confirms that the knowledge needed is present in the depth expected.

It will also take some time for the engineers to become comfortable with each other, and to trust and respect each others' perspectives. Creating effective communication at the engineer level is extremely important to a fast-paced program.

3. Thirdly, a good development partner can generate many new ideas. It is far easier to consider these ideas during the formative specification and concept stages instead of trying to change a concept you're already invested in. Considering new ideas from outside the organization can be a delicate process. There will be a lot of pointed questions from team members seeking to understand all aspects of the idea. This process will be more effective and more likely to be truly collaborative if these ideas are introduced before a concept has solidified.

4. The fourth benefit is that you are also making progress on the design while the relationship is forming. Working together to develop the specification and the concept will produce hard design deliverables. This phase will typically last two to six weeks (depending on project complexity) for most capital equipment designs. At the end of this phase, there will be conceptual mechanical solid models, written specifications, system electrical and fluid schematics, software architecture, major component selection,

preliminary bill of material, product costing and development schedule. Accomplishing programs that live within cost, budget and schedule constraints will require trade-offs. Collaborating on these deliverables with your development partner achieves buy-in, commitment and a much richer understanding of the problem than simply handing them a specification. They will be much farther up the learning curve and have a deeper appreciation of the reasons behind the specifications.

5. Finally, the fifth benefit is getting an early assessment of your internal processes in order to modify them if needed to optimize collaborative development. This isn't typically considered in the beginning. It is important to gain an early understanding of how processes will need to change to simplify project execution. How will supporting documentation such as manuals, spares, service and training be handled? What are the project interfaces and format requirements for the support departments? What kind of manufacturing data will be needed, and at what stages? Answering these questions up front and getting the interfaces established will simplify the final phases of the development.

Early engagement in the collaborative design process improves project performance and accelerates development programs. Working with your development partner during the specification and concept phase is an effective way to reduce project risk while advancing the state of your program.