DRAGON MANAGEMENT 101

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As a project manager, I adhere to J. R. R. Tolkien's advice on risk management, *"It doesn't do to leave a live dragon out of your calculations if you live near him."* Dragons come in all sizes and attitudes. Some dragons are small and inconsequential to the safety of the village. Others are mean and nasty and leave nothing but fire and destruction in their wake. Project management has a lot to do with dragon management. As a project manager, you need to know where the dragons are, whether they are big or small, if you can deal with one should it show up on your doorstep some morning with a hungry look in its eyes, or do you need additional tools or specialists: for the really big ones you may need St. George on retainer. There may be some dragons you as project manager can't handle, but you can deal with most if you've prepared before the dragon comes calling. This article is intended to provide some simple guidelines to dragon management that can also be used for other purposes. In the software development and project management world we usually call this "risk management," but we know we're really dealing with dragons.

Risk management is intended to raise awareness of potential failure points as well as opportunities to exploit. The American Heritage Dictionary defines risk as "**a possibility of danger or harm.**" If these possibilities become real, they may cost a great deal in terms of money and opportunities. However, because risks are only possibilities, we often overlook their potential existence and, hence, their consequences. Keep Tolkien's advice in mind the next time you are tempted to ignore risks.

Consequently, risk management begins when an organization is choosing among competing projects. Here are some general rules of thumb about project risk:

> The higher the required quality for the project's deliverables, the higher the risk.
>
> The shorter the schedules for the project, the higher the risk.
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> The more severe the cost constraints, the higher the risk.
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> The higher the skills profile of the team, the lower the project risk.

Risk management is a process that identifies, assesses, communicates, and prepares, <u>in advance</u>, to deal with risk. Preparation for the recognized undesirable possibility eliminates the waste of time and resources associated with emergency reaction to problems. In general, organizations will choose projects that have potentially high rewards. But if you don't understand the project's risks, you can't know if the reward will be appropriate. The possibility of high rewards should ensure that high-risk projects receive proper attention from the project sponsor as well as internal and potential external stakeholders. This often does not happen unless sponsor and stakeholder involvement is a specific part of the risk management process.

Unfortunately, often project stakeholders are reluctant to address the underlying organizational issues that surround risks in software implementation. Some organizations use

the "kill the messenger" approach when risks are identified, limiting the project manager's ability (and enthusiasm) to identify and deploy alternatives to mitigate the risks. In a healthy organizational climate where risks can be discussed and regarded as challenges, the risks become more manageable. Project teams may resist risk analysis for several reasons, including:

> Recognizing them would call into question the project's scope, feasibility, funding, schedule, and team's abilities.

> The team is given a project with the schedule and available funding "fixed" before the requirements are known.

> An honest statement that "this project only has a 50/50 chance of success" may be taken as company disloyalty or an unwillingness to "make the effort."

If the project manager assures the team that risk identification is a key part of the their job, the result is a more open discussion of issues that serves as a valuable tool to successfully start and complete projects. Remember, just because the stakeholders and/or project team may not want to acknowledge the local dragon doesn't mean it's not there.

The following "primer" is an easy to implement five-step approach to identify, assess, prevent, accommodate, and manage project "dragons" throughout the life of the project. In addition to the primary benefit of increased likelihood of project success, project team stress levels will decrease and information useful on future projects will be developed. For example, the following products result from this approach:

> List of project risks that includes an assessment of impact, likelihood, and difficulty of detection;

> Early modifications to current project schedule and resource plans that includes tasks to mitigate or eliminate the risks (this may include a proposed change to project scope);

> Contingency plans that identify the owner of the contingency, what would trigger its implementation, and the actual contingent plan of action; and,

> Identification of those risks deemed "acceptable" (either the sponsor and stakeholders are not willing to spend time or money on preventive tasks or contingency plans associated with these risks or they are so overwhelming that nothing could be done to reduce or eliminate the risk).

The five-step approach starts with identification of risks that may jeopardize the project.

1. Identify Project Risks

Risk identification consists of identifying risks that are likely to effect the project and documenting the characteristics of those risks. No attempt should be made to identify all

possible risks, but any with a severe impact that are judgmentally considered possible should be included in the analysis. A reasonable approach to begin risk identification is to utilize past project experience to understand where and how similar work went wrong, or, even better, what went right. As Steve McConnell points out in *Rapid Development, "A typical software project can present more opportunities to learn from mistakes than some people get in a lifetime."* If your organization regularly conducts project retrospectives and makes the findings available, they are an invaluable tool for risk assessment, even where projects are dissimilar. (However, if the organization fails to take these learnings to heart, the same risk will be present over and over.) While past experience may not identify every risk and you may not be prepared to deal with every possibility, you'll still be well ahead when the dragon knocks on your door.

Begin the risk identification process by noting those tasks in the project plan that are:

> Most likely to fail (unless monitored and managed);

> Most damaging to the project if they fail (severe impact to project success); and,

> Hardest to detect if they fail (would be a total surprise until they actually occurred).

When evaluating the critically important or high-risk tasks, consider:

> Collections of tasks made vulnerable due to project scope, task complexity, external dependencies, and/or suspect assumptions;

> Specific potential problems within these vulnerable areas that could have such negative effect on the project that changes should be made even before the project begins; and,

> Likely causes of these potential problems and identification of actions to prevent them from occurring.

At the conclusion of this step you will have an initial list of project areas (tasks, staffing, schedule, etc.) that might pose serious problems. In the next step, we will expand this assessment in a more structured way.

2. Assess the Impact of the Risk

Risk assessment is the adaptation of an "intuitive" process designed to formalize the evaluation of specific risks. It is done by the project team when planning a project. Granted, if you're dealing with an inexperienced team, additional expertise will be needed to perform an adequate assessment. This step of risk management is intended to introduce some rigor, objectivity, and consistency into what is typically a subjective and covert process.

Project risks are multi-dimensional, and each dimension contributes to the importance of being prepared to manage the risk. As each potential problem is documented and discussed, assign weights to each of the following:

1. *What would be the impact of this occurring?*

   High—jeopardizes project success and may cause the project to be canceled.

   Medium—would require substantial change to project resources, schedule, and/or scope.

   Low—annoying but manageable with work-arounds.

2. *How likely is this to occur?*

   High—probable, it has occurred on other projects within the organization.

   Medium—possible, it doesn't occur often, but it has in the past.

   Low—improbable, because no one on the team has ever seen or experienced it happening.

3. *How difficult would it be to detect this?*

   High—there would be no warning, it would be a complete surprise.

   Medium—it could take several reporting periods to manifest.

   Low—if it occurs, we will know immediately.

Any project characteristic that is evaluated and ranked as "high-risk" should be analyzed to see what could be done to mitigate the risk <u>before</u> the project commences. This risk reduction process is a "win-win" situation with all stakeholders benefiting from the increased likelihood of project success.

Almost without exception projects are exposed to risks that are beyond the influence of the project manager and his or her organization (for example, dependence on other functional areas of the organization, third-party developers, governmental regulatory agencies.) Using the medical concept of triage, divide the risks you identify into the following categories from your perspective as the project manager:

Risks that will probably take care of themselves or be managed by others;

Risks that you cannot effect; and,

Risks that you can manage if they materialize.

As project manager you should focus on those risks within your power to control. However, risks outside your scope cannot be ignored. They must be assigned to the individual or group who is best equipped to mitigate the risk.

At the end of this step you will have a preliminary evaluation of significant project risks. The analysis done to this point may also suggest the nature of, but not necessarily the final, risk reduction actions. For example, key tasks may be moved in the schedule so the most experienced team members are available; or "early warning" project controls may be added to reduce the likelihood of surprise. This step will also indicate "ownership" of key risks. The next step will add more substance and detail to risk mitigation actions.

3. Identify Preventive Tasks

Once risks have been identified and their importance assessed, the project manager and project team must determine what action (if any) is appropriate. These actions will take the form of both *preventive tasks* that will mitigate or eliminate the risks and *contingency plans*

that are deployed in the event that the prevention fails. Preventive tasks are added to the project's schedule with assigned resources; they become a part of the team's approach to completing the project. Very often preventive tasks should have been part of the plan, but were overlooked or ignored because project teams tend to be overly optimistic when defining what needs to be done. Most of us mentally resist accepting that future work will need to be redone before it's done. For example, during risk identification a module that will be used by many other systems is identified as high risk if it is error prone. Preventive tasks that are added to the schedule might include code reviews with representatives of the other systems, early handoff to testing, rework time, and/or additional test time.

Some risks warrant changes to the project schedule and resource plans to: reduce likelihood; minimize impact; and, facilitate detection.

Changes might include:

> Add resources to tasks for cross training;
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> Establish independent parallel efforts;
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> Schedule high-risk tasks earlier;
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> Reduce project scope;
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> Add review tasks;
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> Shift more experienced resources to tasks;
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> Design in redundancy;
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> Change the approach to eliminate high risk tasks; and,
>
> Add prototyping tasks to prove concepts.

At the completion of this step, all significant identified risks will have associated mitigation actions to the extent the project resources and timing will permit. Remaining significant risks are the focus of the next step.

4. Develop Contingency Plans

Contingency plans describe, "*here's what we do if...*" scenarios should the preventive tasks fail, or if a conscious decision is made to "run the risk." Because risk is a "possibility of danger or harm," not a certainty, it may be reasonable to not try to eliminate or mitigate some risks, but to deal with them if they occur. Contingency plans are pre-defined action plans that can be implemented if the identified risks actually occur.

If a high-risk event does happen, the contingency plan must be implemented and resources allocated. Strategic projects typically have a "risk reserve" as part of the risk management plan. The risk reserve may take the form of redirection of staff from lower priority projects, consulting funds, schedule buffer, or a combination of these options. A key result of contingency planning is definition of the risk reserve that may be needed. Use of the risk reserve allows the project to continue.

Contingency actions for key risk areas should describe:

> The risk(s) being addressed;
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> The circumstances that trigger the action plan;
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> A description of the planned action to be taken, and,
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> Any additional risks that have been introduced as a result of efforts to manage the initial risk.

When you decide that a risk is acceptable, you are making an assumption that should be validated with the project sponsor.

All significant risk factors that cannot be mitigated to an acceptable level should be documented in a risk database.

1. The project work and the nature of the risk;

2. The impact of the risk on the project in terms of time, money, and future work;

3. Actions the Project Sponsor or executive staff can take to assist in reducing the risk, and,

4. The contingency plan that identifies *what* will be done, *who* will be involved, and what will *trigger* the action.

A risk management plan is an integral part of a project plan. If contingencies are significant, the contingency plan is an integral part of the risk management plan; hence, a part of the overall project plan. A project plan is in affect a contract between a project manager, the team, and the project sponsor. In this reason, project sponsors and stakeholders should have a clear understanding of project risks and how risks will be managed. The last step in this guide is to obtain the acceptance of the project sponsor and stakeholders in not only the project plans, but also the risk management plans.

5. Obtain Stakeholder Approval

Once the initial risk analysis has been conducted and contingencies identified, the project stakeholders must accept and agree to the contingency plan as part of the overall project approach. Stakeholders must be willing to accept the upward delegation of management of those risks that fall outside the project manager's scope and/or authority. If stakeholders cannot support the allocation of risk management and the contingency plans, the project manager must work with them to identify acceptable options. If there is no

closure on the overall risk management plan, a high-risk project's likelihood of success approaches zero.

In conclusion, any software development project has elements of risk: they may be small; they may be large. But like the dragon that lives nearby, they can't be ignored. Planning for the dragon starts when the project is conceived, designed, and through implementation. Simple guidelines can be followed that can take away the dragon's fire. But ignoring the dragon leaves you unprepared should the dragon come calling. You risk your project if you choose to believe that bad things don't happen.