Risk Management

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# Routines

1. Update risks during team meetings.
   1. Discuss and update on newly encountered risks.
   2. Discuss and update on existing risks. Remove the existing risks if possible.
2. Communicate with clients about risk management status and plan.
   1. Explain the risks content to clients.
   2. Set priorities to each risk based on clients’ feedback.
3. During each sprint, save buffer time for any potential risks.

# Risks

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| Risk ID | 1 |
| Priority | High |
| Context | Our project is an extension of a previous project and we are not very familiar with the existing code. Also, the previous project is not well-documented. This means we do not know the completeness and robustness of the code. |
| Condition | Some unexpected bugs occur (e.g. database connection breakdown due to several dynamic settings) |
| Probability | Medium |
| Consequence | The framework should be updated to the newest version. The problems in the code are hard to detect. We may have to spend more time than we expected. |
| Severity | Medium |
| Related to client | Yes |
| Mitigation | * Discuss with clients to get information on some known bugs so that we can prepare to fix them in advance. * We also leave some buffer time in our planning. |
| Resolved | No, it has not resolved, but this risk has been mitigated. We reached out to clients to get more information on existing systems. We implemented new features for CAS and completed the deployment on Azure. Then we write detailed documents for future use. |

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| Risk ID | 2 |
| Priority | Low |
| Context | The continuous authorization security controllers keep updating. It is hard for us to support all the possible formats that might be used, e.g. JSON, XML, CSV, etc. |
| Condition | We don’t have enough time to support all the required data formats. |
| Probability | Medium |
| Consequence | Some of the controllers cannot be updated to the database. |
| Severity | Low |
| Related to client | Yes |
| Mitigation | * Discussed with clients and prioritized the data formats to support. * We shall support the JSON at first. If we don’t have enough time, we do not need to support other formats. |
| Resolved | No, but it has been mitigated. We build parsers for csv and xml, and both of them follow the same interface to provide parse services. Later, if someone wants to support more report format, they can follow our interface and create a new parser. The interface is simple, so it won’t take a long time to build a new parser. |

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| Risk ID | 3 |
| Priority | Medium |
| Context | Our clients wish to update the Jenkins and plugins to the latest reliable release. None of us have any experience in Jenkins usage. We need to learn how to use Jenkins. |
| Condition | None of our team members have experience with Jenkins. |
| Probability | Low |
| Consequence | We need to spend more time on learning Jenkins plugin development than expected. |
| Severity | Medium |
| Related to client | No |
| Mitigation | * We have planned learning time on Jenkins plugin development in WBS. * We leave buffer time in our plan. |
| Resolved | Yes, this has been solved. We have spent a lot of time studying the usage of Jenkins and updated the Jenkins and plugins according to the official documentation eventually. |

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| Risk ID | 4 |
| Priority | High |
| Context | The CAS service should be deployed on Azure Kubernetes Service. We need an Azure account and subscription for testing. By using Azure, we shall generate some cost. Our budget for Azure is $200. |
| Condition | The total money spent on Azure exceeds $200 |
| Probability | Medium |
| Consequence | We cannot use Azure to test our software. |
| Severity | Medium |
| Related to client | Yes |
| Mitigation | * We have discussed the budget with the client. It is okay for us to exceed the budget a little. * The instance would be stopped if it is not used. * The resource should be released and the volume should be detached if it would not be used for more than 1 day. |
| Resolved | Yes, we controlled our budget less than $100. |

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| Risk ID | 5 |
| Priority | High |
| Context | Azure environment different from AWS |
| Condition | CAS System originally deployed on AWS, which has a different environment from Azure and we have no experience on Azure and we do not understand the Azure environment and deployments. |
| Probability | Medium |
| Consequence | * The environmental difference between Azure and AWS would possibly cause longer time to finish deployment with more money cost. * We may even not be able to finish the required function on time, which will lead to impact on the project schedule. |
| Severity | Medium |
| Related to client | Yes |
| Mitigation | * Contact with clients for useful information on Azure usage. * Save buffer time on schedule to learn the hands-on knowledge with Azure Kubernetes Service. |
| Resolved | No, but it has been mitigated. We meet with our client and ask for advice for convenient tools on Azure usage like Helm. And we also follow the documentation and examples provided by Azure to quickly get familiar with Azure environment. |

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| Risk ID | 6 |
| Priority | Medium |
| Context | During the development, we may compromise and don’t follow the design. It may be caused by limited time, our unfamiliarity with the technology, etc. |
| Condition | The implementation is consistent with the design. |
| Probability | Low |
| Consequence | The inconsistency may lead to poor quality. |
| Severity | High |
| Related to client | No |
| Mitigation | * We have decomposed our system into multiple modules and decreased the coupling between different modules. The defects in one module will only influence the module itself. * We shall evaluate the effect of inconsistency and decide whether we need to refactor it. |
| Resolved | Yes, we adjusted our plan and estimation accordingly through sdlc. |

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| Risk ID | 7 |
| Priority | High |
| Context | Architecture design conformance with the actual code. |
| Condition | We need time to learn the existing code and compare the code with the architecture design. |
| Probability | Medium |
| Consequence | We have to spend more time on the validation of the architecture and impact our whole project schedule. |
| Severity | Medium |
| Related to client | Yes |
| Mitigation | * Check for existing documentation on architecture design and use cases. * Build the system and test the code performance. * Verification and validation with the architecture. |
| Resolved | No, but it has been mitigated. We check the existing architecture diagram and build and run the system in the meanwhile to help understand and validate the architecture. |

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| Risk ID | 8 |
| Priority | Medium |
| Context | Although the scale and requirements of our project have been clarified, as more details come out, clients may come up with new requirements. |
| Condition | New requirements come out. It requires some extra time for us to finish it. |
| Probability | Low |
| Consequence | We do not have enough time to finish development on time. |
| Severity | Medium |
| Related to client | No |
| Mitigation | * There is buffer time for each milestone. * We have chosen the Scrum process which can help us handle the change. * In the finished architectural design, we have left enough freedom on details. The change of these details shall not affect the architecture. |
| Resolved | Yes, our clients did give us more requirements during development, and we succeeded to accommodate them. |

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| Risk ID | 9 |
| Priority | high |
| Context | We could not find the administrator account information from the previous team of Jenkins. So we may need to open a new account in case of some security problems. |
| Condition | Since we did not get the Jenkins administrator accounts, we erased the user login, which then led to some security problems. |
| Probability | High |
| Consequence | It may lead to unauthorized login. |
| Severity | Servere |
| Related to client | Yes |
| Mitigation | * We have opened a new container, installed Jenkins and created a new account. |
| Resolved | Yes, we clone the Jenkins configuration to a newly deployed container, and the system keeps working fine. |

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