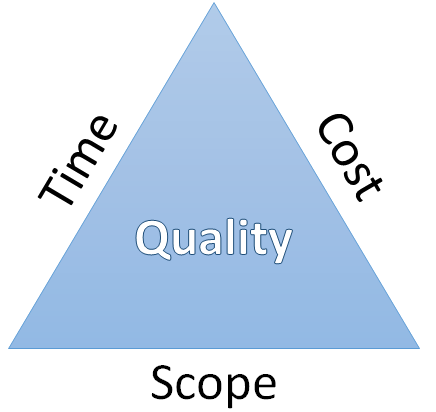
**DAMAGE CONTROL**



**Roles:**

Owner/Project-Manager – Rochak Kunwar

Secretary – Stan and Sally

UX Designer – Ursula and Xavier

Engineers – Teri, Abe, Britney, Claire, Doug, Emily, Frank, Grace, Holly, Ingrid, Jack, Keith, and Larry.

**Target:** Make our current grad plan and student registration system talk to each other, and to make a mechanism to auto-register for classes that student has planned. It should also forecast the number of sections required for a given class for a given semester.

**Decrease Quality:**

1. **Deliverables:**
2. There will be no mechanism to check and control that no students will be allowed to signup for two same classes but different sections.
3. The algorithm to find the optimum number of sections for the given class for a given semester might not return an optimum result.
4. And the main quality problem will be it may or may not work in small mobile browsers like Opera, UC-browser, old internet explorer, and on the android phones less than 5.0.
5. **Plan**:
6. There was a lot of confusion in allowing students to add classes and stay on waiting list but not allowing them to sign up for multiple classes. There is some ethical as well as a technical problem. My team is not able to fix this situation. So, one of the solutions for this problem is to leave this work to the students. Students can still sign up for classes even if they have already enrolled in the same class in different sections. They must make sure they are not signing two same classes in different sections.
7. Most of the people in our team are software engineers. We don’t have highly skilled people in algorithm, machine learning, prediction analysis, graph, and combinations. The problem is since there are so many classes and each class has many sections. The total combinations for this amount are straight forward to calculate only if we assume that we will need different sections even there is an overflow of one student. And also we have to assume that no students will change their major nor they will change their grad plan before enrolling in classes. By my experience in school I can say that these assumptions never hold; not even close.   
    Because of the nature of problem, we have proposed one solution for this problem which will decrease our quality but keep cost and time and scope constant. We will not use any machine learning for predicting how many students will change major or drop the class. But we are going to assume that 5% of students will either drop the class or change their grad plan or leave school. So, we decrease the number of students for each class by 5% and calculate the minimum number of sections needed for those classes for that semester.
8. This is the main quality problem we have faced in our auto-scheduling. Along with the problems mentioned above, it seems like we will not be able to make our auto-scheduling feature work on mobile browsers in the given time limit and budget. So, we have proposed a solution which will ignore this whole problem. We will ask every user to use Chrome, Mozilla, Safari, or Edge.
9. **Ramification:** These changes can bring unsatisfaction to the stakeholders who are working in pathway programs. Sometimes department may reopen some classes or shut down some classes because of inefficient algorithms, which will not make department leaders happy. Students might as well get frustrated if they by mistake signup for multiple sections of the same classes. This can be even serious if they get signup for multiple sections of the same classes and they don’t even know about it.
10. **Recommendation:** This is definitely not a good idea. Because of the fact anyone can make software, but the useful software is one that performs at least to some satisfaction rate. It takes more effort to make software than making quality software out of existing software. So, making software without quality is a waste. People will soon become frustrated with this software and school will have to propose a new project to maintain it again. So, it is better to make quality products by compromising something else.

**Decrease Scope:**

1. **Deliverables:** There will be no auto-scheduling for the classes one has scheduled in grad plan.
2. **Plan:** My team found out that auto-scheduling brings a lot of problems in quality. When we add the feature of auto-scheduling it brings the problem “a” and “c” in quality. If we remove the feature of auto-scheduling we can focus all our resources in making an algorithm to make the best prediction for the number of sections needed for given class. Excluding this feature will help us focus our time and resources left in making the best of what we are making. The product quality will be high. We will have more time to work on making software multiple browser supportable. Following this plan will be easy but it will destroy the whole reason for doing this project.
3. **Ramification:** Students will not notice any changes if this plan will contracts. It will only benefit the department chair or whoever decides the number of classes needed for certain subjects for a given semester. But this plan will have hard time satisfying the person who came with this idea and school administration as well. It will also exclude the whole reason for doing this project, At-least partially.
4. **Recommendation:** Even though this plan gives the quality in the area we will work, but it doesn’t do the main part that we want in this project: to communicate between grad plan and class registration system. So, this plan is definitely not recommended.

**Increasing Cost:**

1. **Deliverables:** We will hire more qualified people for a certain period to finish the project on time. This will increase the total project cost by 25%.
2. **Plan:** We will hire new people and consultants in the area of machine learning for designing algorithm that will predict the optimum number of sections required for a given class in given semester. This algorithm will predict in such a way that number of sections will be neither be high nor be to low. We will also hire one QA person in a contract position.   
   Currently our main problem is auto-class registration and predicting optimum number of sections for a given class. Since we don’t have a specialized engineer in Artificial Intelligence, it will take us a lot of time if we try to figure out by ourselves. We have decided one way to do will be to hire specialized people in the Algorithm for this project. So, our team can focus on implementing that algorithm and rest of the software.
3. **Ramification:**

This would not make the school administration happy. The customer would never want to pay an extra cost if the changes in the project and the extra cost added will be transferred to the customer.

1. **Recommendation:** As a project manager I would love to complete the project I took. But, when I have a difficult situation like this I would like to convince stakeholders and ask for extra budget to complete the project. Definitely this would not be my best option because it would not be good for my company’s image and will affect future contracts.

**Increase Time:**

1. **Deliverables**:

We will increase the total time of the project. We will do this project in parallel with similar projects. With this technique, the project will be completed in longer period without increasing cost. We have completed 60% of the project is 60% of the time. So, we will complete the remaining 40% of the project in double the time left, which will be total of 140% which will be 40% increase in the length of project.

1. **Plan:** The total hours we will work on this project will be the same, but we will do this project only few days a week and the rest of the days we will do some other similar project. We will only work on this project for Wednesday and Thursday. Friday will be project review day for this project and the other project that we will be working on parallelly. We will decrease the time of scrum iteration by 40%(Tue, Wed and half of Friday).   
   The plan is we have already spent 3600 hrs out of 6000 hrs. We will still complete our remaining project in 2400 hrs. which is predicted to be 2400 + 500 – 20 hrs = 2880 hrs. To finish our project within the planned budget we must decrease the total hours from 2880hrs to 2400 hrs. We will do this by doing project review of another project and this project one after another on Friday.
2. **Ramification:** Among all the option this will be most liked by the college administrator, students, and faculty as well. This will only harm our company's reputation. Overall this will be beneficial for almost all stakeholders unless they want it to do early for more reason**.**
3. **Recommendation:** Among all the choices available this option will be most preferred by me. Because this will not increase the cost of the project but will still return all the features needed with required quality.

**Increase Time and Cost keeping Quality and Scope constant.**

1. **Deliverables:** This will deliver all the required features and needed quality. We will only increase time by another 500 hrs. Wewon’t mix this project with our other project. So, it will increase time by 500hrs of 6000 = 8 %. The cost associated with the increase in time of a project will be paid by customer.
2. **Plan:** The plan of including more people by increasing the cost of project to finish it on time seems very inefficient. Increasing the project time by 40% will make project length very long. Excluding features from project will not fulfill the requirement we wan to complete.   
   So, we thought we can increase the project time and cost by 8% which will not make a project too long and too expensive. It is like compromising little in every aspect to get all we want.
3. **Ramification:** Maybe college administration will not like it. They will like the duration of the project because it is not increasing the time by a lot. They might be little worried about cost but this would be one of the best options they can have.
4. **Recommendation:**

I would highly recommend this plan because when you spend so much money on the project, spending 10% more wouldn’t affect much. This plan will be more likable if you have to do certain projects by some time period like construction or if you are software startup.

**Sources:**

**[1]** Project Management Institute, "What is Project Management," [Online] Available: [http://www.pmi.org/About-Us/About-Us-What-is-Project-Management.aspx](https://content.byui.edu/items/fb36352f-44a4-473d-bb81-1e5a2ce36646/1/?.vi=file&attachment.uuid=d896e129-6245-4248-9e6b-879a426c98ee)

**[2]** F. Usmani, “Quality Control vs Verify Scope,” *PM Study Circle*, 21-Oct-2019. [Online]. Available: https://pmstudycircle.com/2012/01/quality-control-vs-verify-scope/. [Accessed: 24-Nov-2019].

**[3]** “How to Reduce Project Management Operating Costs,” *Software Advice*, 20-Nov-2017. [Online]. Available: https://www.softwareadvice.com/resources/reducing-project-management-costs/. [Accessed: 24-Nov-2019].

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|  | Exceptional 100% | Good 90% | Acceptable 70% | Developing 50% | Missing 0% |
| Triple constraints 30% | The interplay between the constraints is clearly demonstrated. | It is unambiguous that all four constraints are completely understood. | A minor aspect of one of the triple constraints is not adequately described. | One of the constraints is misrepresented. | More than one of the constraints are misrepresented. |
| Plan detail 50% | All five plans are completely described. | All the important points of the five plans are described. | One important point is not adequately described. | The plans are generally lacking detail and specifics. | One or more plan is missing. |
| Recommendations 20% | Every plan recommendation is obviously accurate and trustworthy. | All five recommen-dations are accurate. | One recommen-dation is not completely in line with the plan details. | The recommen-dations are flawed in some way. | Recommen-dations are missing or completely off base. |

**Grading:**