INF2040 Project Management

CASE STUDY Part 2
Information Systems Design - Game Masters Canada

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Date: June 15, 2020

1. Project Organizational Structure

According to the case study, Game Masters Canada (hereinafter: **"GMC"**) does not have a formal organizational structure, but does have groups of resources dedicated to:

- New product Innovation
- Information Systems & Design
- Media Sales
- Operations

"The New Production Innovation department works with the Information Systems & Design department to build the application, the Media Sales department to sell the application and with the Operations group to support the application."

From the above description, it can be concluded that GMC operates a functional organizational structure. This is because deliverables are expected from individual departments in order for collaboration to take place.

Nevertheless, with the recruitment of the project manager for the New Product Innovation department, GMC could operate the Matrix Organization structure. This is because, with the assumption that the New Product Innovation department has a departmental head or functional manager, project resources will report to both the functional manager and the project manager with the project taking utmost priority. Also, the project manager will get his team members from the functional departments in this case, the Media Sales, Operations and Information

Systems & Design departments. It is mentioned in the case study that the project manager is being recruited under the New Product Innovation department only, this gives him a little flexibility and he is seen as more of a coordinator. This is an attribute of a weak or balanced matrix structure.

However, the choice of what form of matrix (weak, strong or balanced) should be operated depending on the organization's decision and the kind of project being done. Before the recruitment of the project manager, it was seen that projects were being conducted in a functional way. Considering the project manager is being recruited for the New Product Innovation department, and with the way GMC operates, it means members of the project team would consist of members of other departments. Nevertheless, individual projects in other departments could still be done through the functional departments or a project manager could also be recruited for specific projects in these departments. To conclude, currently and with the new project manager recruitment, GMC operates a matrix organizational structure, with flexibility regarding its specific type (weak, strong or balanced) as mentioned above. The same is true regarding the project's organizational structure. To give the PM more flexibility and authority to enhance the potential of this project we would recommend a strong matrix for the project.

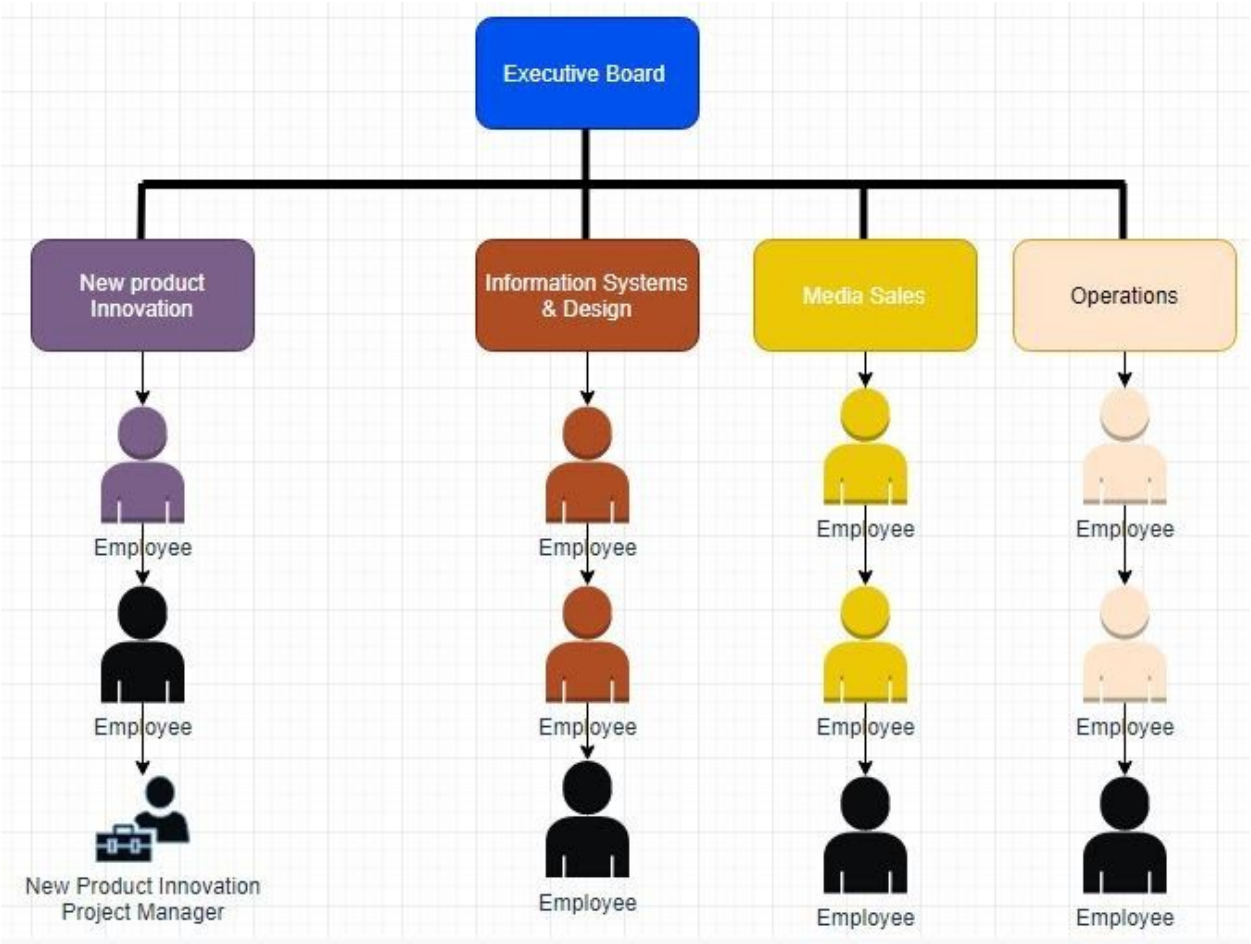
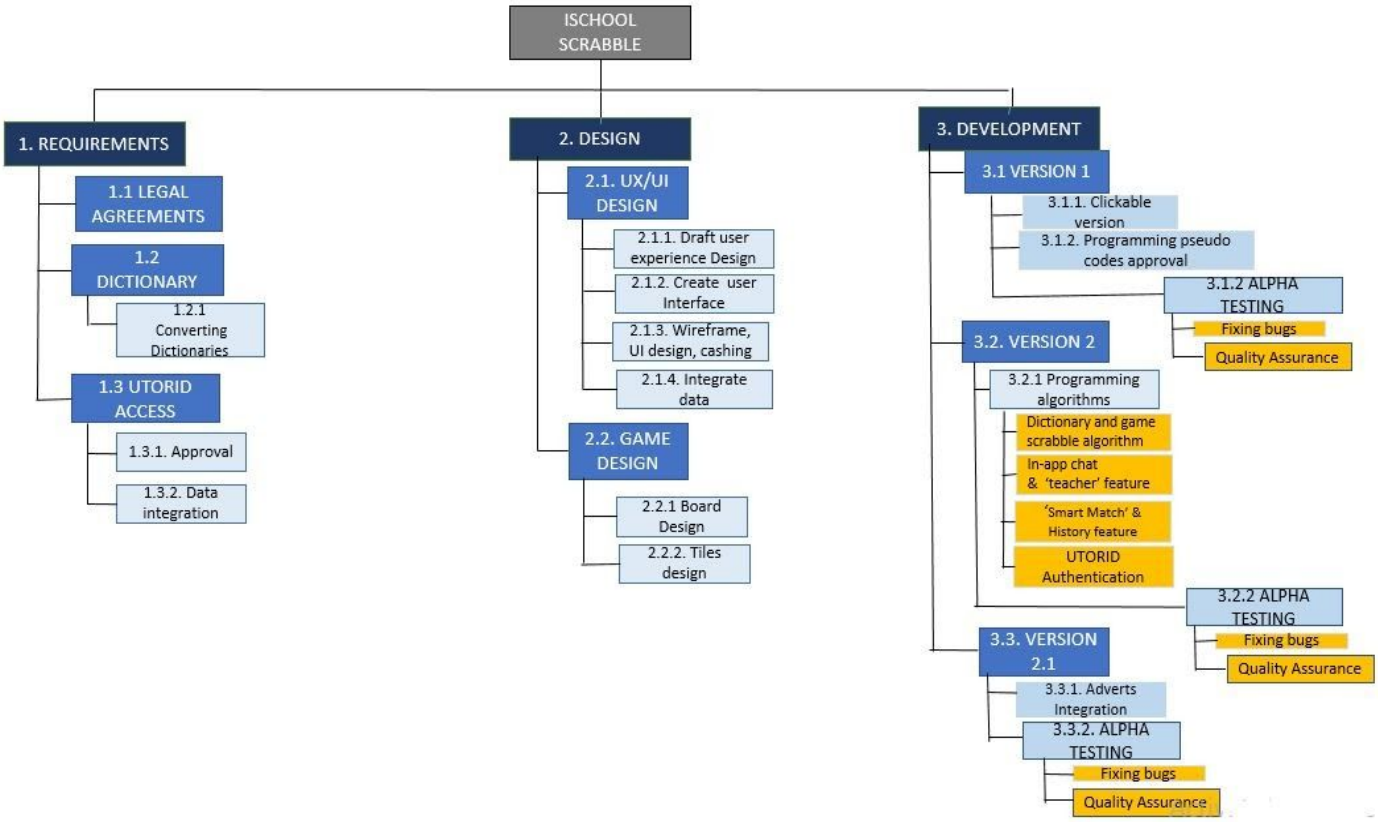


Figure 1. *The employees in black represent the different members of the department which make up the project team.*

2. Work Breakdown Structure

Below is the Work Breakdown Structure of the iSchool Scrabble Project. It combines the traditional software project methodology and the agile feature breakdown method to give a comprehensive breakdown of the project task and activities needed to complete the tasks.

Figure 2. Sequence Diagram of WBS



3. Sequence Diagram, Critical Path & Schedule

The WBS is further broken down into an activity list below (Project Insight, n.d.). Figure 3 and 4 represent schedule chart and network diagram, respectively.

Project Activity List
Date: June 15, 2020

ID	WBS #	WBS Item	Activity	Predecessor	Effort (Business Days)	Resource Requirements
1.1.1	1.1	Legal Agreements	Create and approve with GMC and iSchool: ● Privacy Policy ● Terms of Use ● Agreement for Intellectual Property ● Non-Disclosure Agreement Register trademark, copyrights,	Project start	5	Lawyers (2)

			patent			
1.2.1	1.2	Dictionary	Convert nine dictionaries into mobile app compatible format	1.1.1	1	Software Developer (1)
1.3.1	1.3	UTORid Access	Request access from UofT; follow through; get access	1.1.1	9	UX Developer (1)
1.3.2	1.3	UTORid Access	Integrate UTORid into the application	1.3.1	1	UX Developer (1)
2.1.1	2.1	UI/UX Design	Draft user experience design	1.1.1	5	UX Developer (2)
2.1.2	2.1	UI/UX Design	Create user interface	2.1.1	5	Graphic Designer (2)
2.1.3	2.1	UI/UX Design	Wireframe, UI design and development, cashing	2.1.2	10	Front End Developer (2)
2.1.4	2.1	UI/UX Design	Integrate data; data storage and user management	2.1.3	10	Back End Developer (2)
2.2.1	2.2	Game Design	Design iSchool Scrabble board	2.1.4	3	UI/UX Developers (2)
2.2.2	2.2	Game Design	Design iSchool Scrabble character tiles	2.1.4	2	UI/UX Developers (2)
3.1.1	3.1	Version 1	Draft v1.0: - Release clickable demo - Approve programming pseudo codes	2.2.1 and 2.2.2	5	Developers (2); QA agent (1)
3.1.2	3.1	Version 1	Alpha testing of v1.0; fixing bugs	3.1.1	25	Developers (5); QA agent (1)
3.2.1	3.2	Version 2	Develop v2.0; programming	3.1.2	5	Graphic

			algorithms for: - Dictionaries - In-app chat - History, 'Teacher', and 'Smart Match' features			Designer (1); Developers (3); QA agent (1)
3.2.2	3.2	Version 2	Alpha testing of v2.0; fixing bugs	3.2.1	25	Developers (5); QA agent (1)
3.3.1	3.3.	Version 2.1	Develop v2.1: - Adverts integration	3.2.2	5	Developers (2); QA agent (1)
3.3.2	3.3.	Version 2.1	Alpha testing of v2.1; fixing bugs	3.3.1	25	Developers (5); QA agent (1)

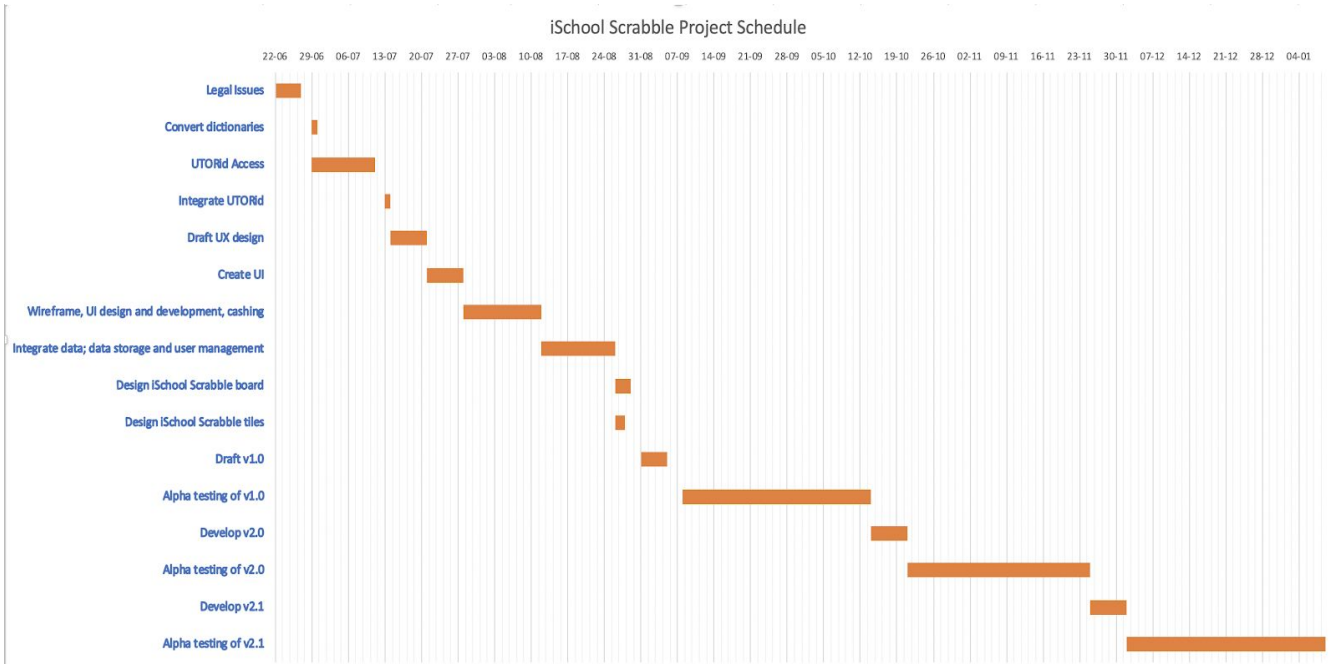


Figure 3. Project Schedule Chart

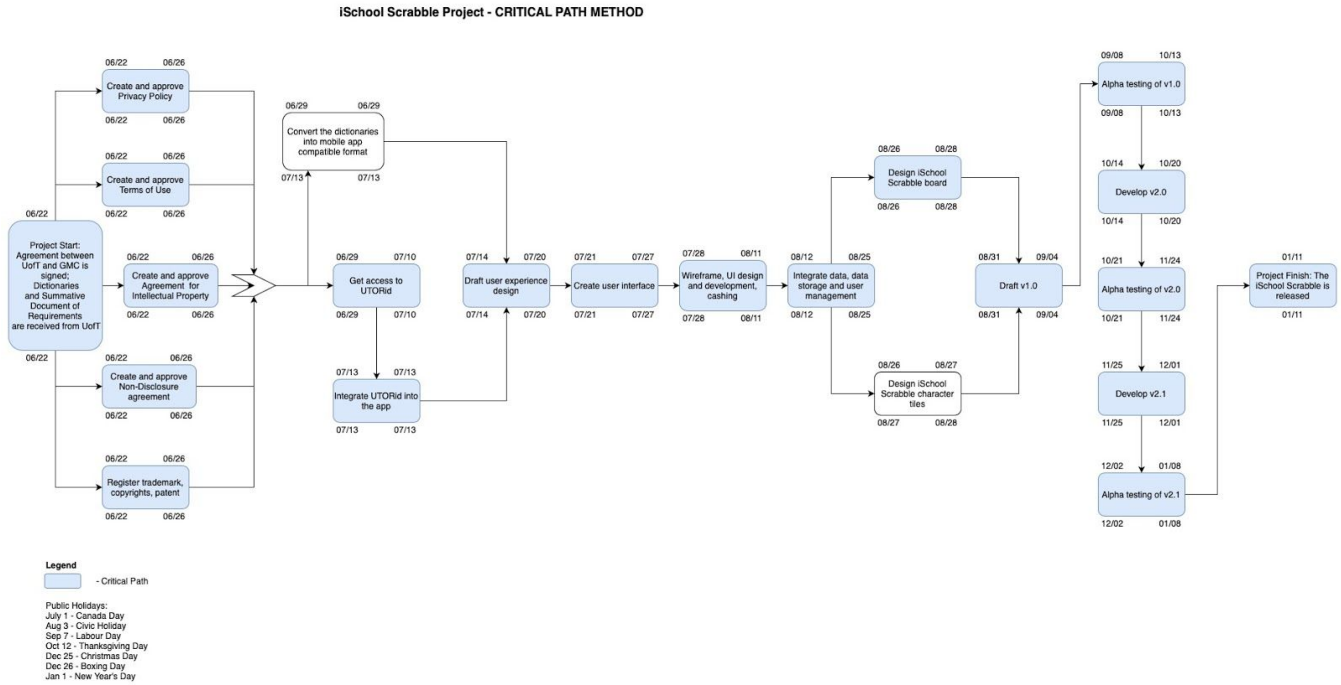


Figure 4. Project Schedule Network Diagram

Diagram notes:

- Activity days are business days - Monday to Friday.
- Public holidays are excluded.
- Finish to Start dependency relationship.
- Critical Path is marked in blue.

The Figure 3 and 4 are submitted as separate files for higher resolution quality.

4. Project Budget 15 marks

Game Masters Canada - Iscrabble Project Budget				Labour			MATERIALS				
TASK	**DESCRIPTION**	**START DATE**	**END DATE**	**# people**	**HR**	**$/HR**	**UNITS**	**$/UNITS**	**EQUIP/SPACE**	**General**	**BUDGET**
Requirements											**$ 190,965.38**
(10% of GMC's overhead/ general costs)	Rent of office / Studio Production Space ($2500 * 6.75 months)	6/22/2020	1/11/2021						$16,875.00		$1,687.50
	Maintenance Personnel ($25000 /6.75 months)	6/22/2020	1/11/2021							$2,500.00	$250.00
	Materials Management Staff ($44000 /6.75 months)	6/22/2020	1/11/2021							$44,000.00	$4,400.00
	Salaries for seinor staff members ($190000 /6.75 months)	6/22/2020	1/11/2021							$190,000.00	$19,000.00
	Utilities ($350 * 6.75 months)	6/22/2020	1/11/2021						$2,362.50		$236.25
	Security System ($95 * 6.75 months)	6/22/2020	1/11/2021						$641.25		$64.13
	Phone Service / Internet Service ($120 * 6.75 months)	6/22/2020	1/11/2021						$810.00		$81.00
	printer ($25 * 6.75 months)	6/22/2020	1/11/2021						$162.00		$16.20
	Coffee and Snacks (40 * 6.75 months)	6/22/2020	1/11/2021						$270.00		$27.00
Rewards and Recognition	Team Rewards and Recognition 1.1	6/22/2020	6/26/2020				1.0	$25.00			$25.00
	Team Rewards and Recognition 1.2	6/29/2020	6/29/2020				1.0	$25.00			$25.00
	Team Rewards and Recognition 1.3	6/29/2020	7/13/2020				2.0	$25.00			$50.00
	Team Rewards and Recognition 2.1	7/14/2020	8/25/2020				4.0	$25.00			$100.00
	Team Rewards and Recognition 2.2	8/26/2020	8/27/2020				2.0	$25.00			$50.00
	Team Rewards and Recognition 3.1	8/31/2020	10/13/2020				1.0	$25.00			$25.00
	Team Rewards and Recognition 3.2	10/14/2020	11/24/2020				6.0	$25.00			$150.00
	Team Rewards and Recognition 3.3	11/25/2020	12/21/2020				8.0	$25.00			$200.00
Travel	Taxi, public transit: clients, consultants, errands etc.	6/22/2020	12/21/2020							$500.00	$500.00
Purchase Testing Devices	iphone	6/22/2020	6/29/2020				1.0	$650.00			$650.00
	android phone	6/22/2020	6/29/2020				1.0	$550.00			$550.00
	ipad	6/22/2020	6/29/2020				1.0	$619.00			$619.00
	microsoft tablet	6/22/2020	6/29/2020				1.0	$529.99			$529.99
	samsung tablet	6/22/2020	6/29/2020				1.0	$479.99			$479.99
Infrastructure Services (first 6.75 months of the project)	Azure server	6/22/2020	1/11/2021						$7,000.00		$7,000.00
	Data storage	6/22/2020	1/11/2021						$1,800.00		$1,800.00
	Interactions with university system (UofT Student ID Login service. To integrate student's Utorid from ACORN with mobile app)	6/22/2020	1/11/2021						$500.00		$500.00
Legal Fees	Licensing and copyrights GMC	6/22/2020	6/26/2020	2	6	$120.00					$1,440.00
	UofT trademark licensing	6/22/2020	6/26/2020	2	6	$120.00					$1,440.00
	Draft legal agreement for intellectual property	6/22/2020	6/26/2020	2	6	$120.00					$1,440.00
	Register trademark, copyright, patent	6/22/2020	6/26/2020	2	6	$120.00					$1,440.00
	Draft terms of use	6/22/2020	6/26/2020	2	6	$120.00					$1,440.00
	Draft privacy policy	6/22/2020	6/26/2020	2	6	$120.00					$1,440.00
	Non-disclosure agreement (during production)	6/22/2020	6/26/2020	2	4	$120.00					$960.00
Recruitment Cost	3% Finders fee for UI/UX Developers	8/26/2020	1/8/2021							$2,726.40	$2,726.40
Software Developer	Convert nine dictionaries into mobile app compatible format	6/29/2020	6/29/2020	1	8	$40.00					$320.00
UX Developer	Request access from UofT; follow through; get access	6/29/2020	7/10/2020	1	72	$36.00					$2,592.00
UX Developer	Integrate UTORid into the application	7/13/2020	7/13/2020	1	8	$36.00					$288.00
UX Developer	Draft user experience design	7/14/2020	7/20/2020	2	40	$36.00					$2,880.00
Graphic Designer	Create user interface	7/21/2020	7/27/2020	2	40	$25.00					$2,000.00
Front End Developer	Wireframe, UI design and development, cashing	7/28/2020	8/11/2020	2	80	$32.69					$5,230.40
Back End Developer	Integrate data; data storage and user management	8/12/2020	8/25/2020	2	80	$35.90					$5,744.00
UI/UX Developers	Design iSchool Scrabble board	8/26/2020	8/28/2020	2	24	$35.50					$1,704.00
UI/UX Developers	Design iSchool Scrabble character tiles	8/26/2020	8/27/2020	2	16	$35.50					$1,136.00
QA agent	Oversee: clickable demo and programming pseudo codes	8/31/2020	9/4/2020	1	5	$28.00					$140.00
UI/UX Developers	Draft v1.0	8/31/2020	9/4/2020	2	40	$35.50					$2,840.00
QA agent	Alpha testing of v1.0; fixing bugs	9/8/2020	2020/10/13	1	40	$28.00					$1,120.00
UI/UX Developers	Alpha testing of v1.0; fixing bugs	9/8/2020	2020/10/13	5	200	$35.50					$35,500.00
QA agent	Oversee v2.0	10/14/2020	2020/10/20	1	5	$28.00					$140.00
Graphic Designer	Design features for v2.0; dictionaries, in-app chat, fetures	10/14/2020	2020/10/20	1	40	$25.00					$1,000.00
UI/UX Developers	Develop v2.0	10/14/2020	2020/10/20	3	40	$35.50					$4,260.00
QA agent	Alpha testing of v2.0	10/21/2020	2020/11/24	1	40	$28.00					$1,120.00
UI/UX Developers	fixing bugs	10/21/2020	2020/11/24	5	200	$35.50					$35,500.00
QA agent	Oversee v2.1	11/25/2020	12/1/2020	1	5	$28.00					$140.00
UI/UX Developers	Develop v2.1	11/25/2020	12/1/2020	2	40	$35.50					$2,840.00
QA agent	Alpha testing of v2.1	12/2/2020	1/8/2021	1	40	$28.00					$1,120.00
UI/UX Developers	fixing bugs	12/2/2020	1/8/2021	1	200	$35.50					$7,100.00
Project Manager	*Total Project Cost * %15*	6/22/2020	1/8/2021							$24,908.53	$24,908.53
SUBTOTAL											**$190,965.38**

Contingency Reserve	To account for identified risks – 5% of total cost	$9,548.27
Management Reserve	Ro cover unplanned work – 5% of total cost	$9,548.27
Cost Baseline:		**$210,061.92**

Figure 5. Game Masters Canada iScrabble Project Budget. See attached budget file "iScrabble Project Budget_final_including_EVM" for high-resolution details.

The iScrabble budget is built with Bottom-Up Estimating which results in definitive estimates that vary within -5% or +10% of the budget at completion. The iScrabble cost baseline was determined by aggregating all of the lower-level components from the WBS. Salary estimates were sourced from the job posting website Glassdoor (glassdoor, 2020) and Legal Fees were informed by the Government of Canada's Intellectual Property Office (Intellectual Property Office, 2019). Material costs were obtained from research of retailers such as Best Buy and

Staples, with the assumption that the resources be available for purchase in Toronto. All costs are listed in Canadian Currency.

PERT estimate:		**expected cost**
Most Likely - BAC	cM	$204,965.00
Optimistic - definitive estimate -5%	cO	$190,965.38
Pessimistic - definitive estimate +10%	cP	$212,965.00
Triangular distribution	cE = (cO+cM+cP) / 3	$202,965.13
Beta distribution	cE = (cO+cM+cP) / 6	$101,482.56

The PERT estimate considers all of the potential risks associated with the iScrabble project. The cost of each risk was calculated using a quantitative risk analysis where the expected monetary value equals the sum of probability of occurrence multiplied by impact.

Assuming that no risks happen, the optimistic estimate for the project is: **$190,965.38** (This amount excludes contingency and management reserves)

Assuming that all risks occur, the pessimistic estimate for the project is: **$212,965.00**

(all risks: $22,000 + budget total: $190,965.38)

The most likely estimate was calculated by combining the project estimate and the costs associated with the high probability risks: **$204,965.00**

(EMV for Project schedule delay: $14,000 + budget total: $190,965.38)

Risk Event	Probability (P)	Consequence / Impact	Expected Value (EMV)
Project over budget due to the additional costs	Moderate (%20)	$10,000	$2,000
Project schedule delay	High (%70)	$20,000	$14,000
User information leakage	Low (%10)	$50,000	$5,000
The software fails in the performance test.	Low (%10)	$3,000	$300
Equipment malfunction caused by misuse	Low (%10)	$7,000	$700

5. EVM analysis

Assumption: The project is tracking one month behind schedule 3 months after the start date.

Estimate At Completion (EAC):
The EAC represents the current estimate for the total project cost. It is calculated by dividing the Budget At Completion (BAC) by the Cost Performance Index (CPI):

EAC = BAC / CPI.

Budget At Completion (BAC)

The BAC is the amount budgeted for the entire project. **The BAC is $210,061.92, fixed costs included**. In order to properly estimate the EAC, it is necessary to exclude the fixed cost from the CPI calculation, as well as from the BAC, and then add them back. The fixed costs do not impact the overall pace of the project and the new estimate of costs. The fixed costs amount is: $12.428.98. **The BAC is $197,632.94, excluding the project's fixed costs**. We kept the

contingency and management reserves as a part of the BAC for the purpose of this calculation, since it is reasonable to assume that these will change in proportion to the other changes to budget (and are presented in percentage terms).

Refer to the project budget file ("iScrabble Project Budget_final_including_EVM.xls") for the BAC and costs breakdown.

Cost Performance Index (CPI)

The CPI is a measurement that is indicative of the value from every dollar that is spent on the project:

CPI = EV / AC

Earned Value (EV)

The EV is the estimated value of the work that was actually accomplished, at the relevant point in time, using the budgeted cost. Since the project is one month behind, the Earned Value is the budgeted cost of the work performed in the first 2 months. According to the project's budget, **the EV is $34,274.62. We assumed that we are precisely one month behind at the end of three months and therefore we had not accomplished the targets of month 3 (But instead we accomplished the targets of month 1 and 2).**

Actual Cost (AC)

AC are the actual costs of work performed based on all known costs at the time of estimation (3 months after the project started). In our case, it took 3 months to accomplish the work planned

for only 2 months. Accordingly, the actual cost can be calculated by multiplying the cost of 2 months work by 3/2. In other words, each month's work actually took 1.5 months to complete and hence was 50% more costly than originally planned. Thus, the actual cost of the work performed is: **$51,411.93.** The calculation of the AC is provided below:

AC (of the work performed in the 3 months period) = EV(the budgeted cost of the work performed in each of the first 2 months) X 1.5

AC = 34,274.62 X 1.5 = $51,411.93

- The AC calculation is based on the assumption that the variable costs did not change due to the delay of the work but due to the lower velocity the actual cost of the work performed is 1.5 times higher.

CPI = EV / AC = 34,274.62 / 51,411.93 = 0.67

The CPI is less than 1 which means that the project is over budget and only getting $0.67 out of every dollar that is put into the project.

Thus the EAC is:

EAC = BAC / CPI = $197,632.94 / 0.67 = $294,974.54

The EAC, which is the current estimate of the total project cost is: **$294,974.54** excluding the fixed costs and **$307,403.52 including the fixed costs.**

- Refer to the project budget file ("iScrabble Project Budget_final_including_EVM.xls") for the costs breakdown into variable and fixed costs.

Forecasted scheduled completion:

Calculating the Schedule Variance (SV):

SV = EV - PV = 34,274.62 - 71,025.02 = **- 36,750.4**

SV is negative, which indicates our project being behind schedule.

Calculating the Schedule Performance Index (SPI):

SPI = EV / PV = 34,274.62 / 71,025.02 = **0.48**

Which means that the project is progressing at a 48% of the rate planned.

If the project is progressing at a 48% of the rate planned, and the project was planned to be completed after 6.75 months according to the project's schedule, and assuming that the project will continue to progress at the same rate till its completion, the current estimation for the total lifetime of the project is:

6.75 (months) / 48 x 100 = 14.06 months.

Thus, the project's forecasted scheduled completion based on its start date (see project schedule) is: August 23, 2021.

The attached excel file "iScrabble Project Budget_final_including_EVM" includes the EVM calculations presented in this section.
Also refer to the project's schedule network diagram and the critical path diagram figures 3,4.

6. Stakeholder Register

Stakeholder	Interest in Project	Assessment of Interest	Assessment of Influence	Potential Strategies for Gaining Support or Reducing Obstacles
(A) Project Sponsor	Budget	High	High	Bi-weekly reports
(B) Project Manager	Scope, Budget, Schedule	High	High	Daily updates
(C) GMC Management	Budget, schedule, status and progress	High	High	Bi-weekly reports
(D) Supervisor of the New Production Innovation team	UX requirements, development, testing and release	High	Medium	Bi-weekly updates
(E) UX Developer	User experience development	Medium	Medium	Daily updates on the work assigned to them. Weekly updates on the project during development and testing
(F) UI Developer	UI requirements, development, testing and release	Medium	Medium	Daily updates on the work assigned to them. Weekly updates on the project during development and testing
(G) Graphic Designer	UI requirements, development, testing and release	Medium	Medium	Daily updates on the work assigned to them. Weekly updates on the project during development and testing
(H) Software Developer	Requirements, development,	Medium	Medium	Daily updates on the work assigned to them. Weekly

	testing and release			updates on the project during development and testing.
(I) UofT representative - ACORN	ACORN integration	Low	Low	Daily updates during ACORN integration. After the integration, updates are provided if requested.
(J) iSchool Faculty members (nine representatives: one for each concentration plus museum studies)	Dictionaries/Vocabularies	Medium	Low	Weekly reports while dictionaries are being updated
(K) iSchool students (500)	Usability	High	Low	Monthly updates on progress through iSchool channels of communication
(L) Lawyers Firm	Legal concerns	Medium	High	Daily updates during policies, terms of use and licensing stage. Monthly progress reports.
(M) Quality Assurance Firm	Quality concerns	Medium	High	Daily updates during project development and weekly updates during testing. Monthly progress reports.

Stakeholder Register Notes:
Project Sponsor - Chief of iSchool Administrative Office and/or management
GMC - Game Masters Canada

According to the Stakeholder Register above, twenty stakeholders along with iSchool students are involved in the project. For the purpose of communication channels calculation, we assume

500 students are enrolled in the Faculty of Information at the time of the project duration. Another major assumption for the project that it does not undergo beta testing (Beta Testing, 2018). Although collection of requirements from the students and post-release support are out of the scope, we found it necessary to include the students as stakeholders as they are primary users of the product. Considering these assumptions, the number of communication channels are 134,940.

The project sponsor, GMC management and project manager are to be managed closely as their stakes in the project are high (Figure 6). The technical team's involvement in the project is limited by their direct responsibilities, thus their medium level of interest and influence in the project (Yarmosh, 2019). iSchool faculty members are heavily involved in the project during the dictionaries' updates. Although the dictionaries are an integral part of the project, the faculty members possess low power over the entire project. Lawyers and quality assurance firms play an important role in the project (Mroczkowska & Jaskulski, 2020); their responsibilities are fairly limited, but they perform regulatory function which is key to any project.

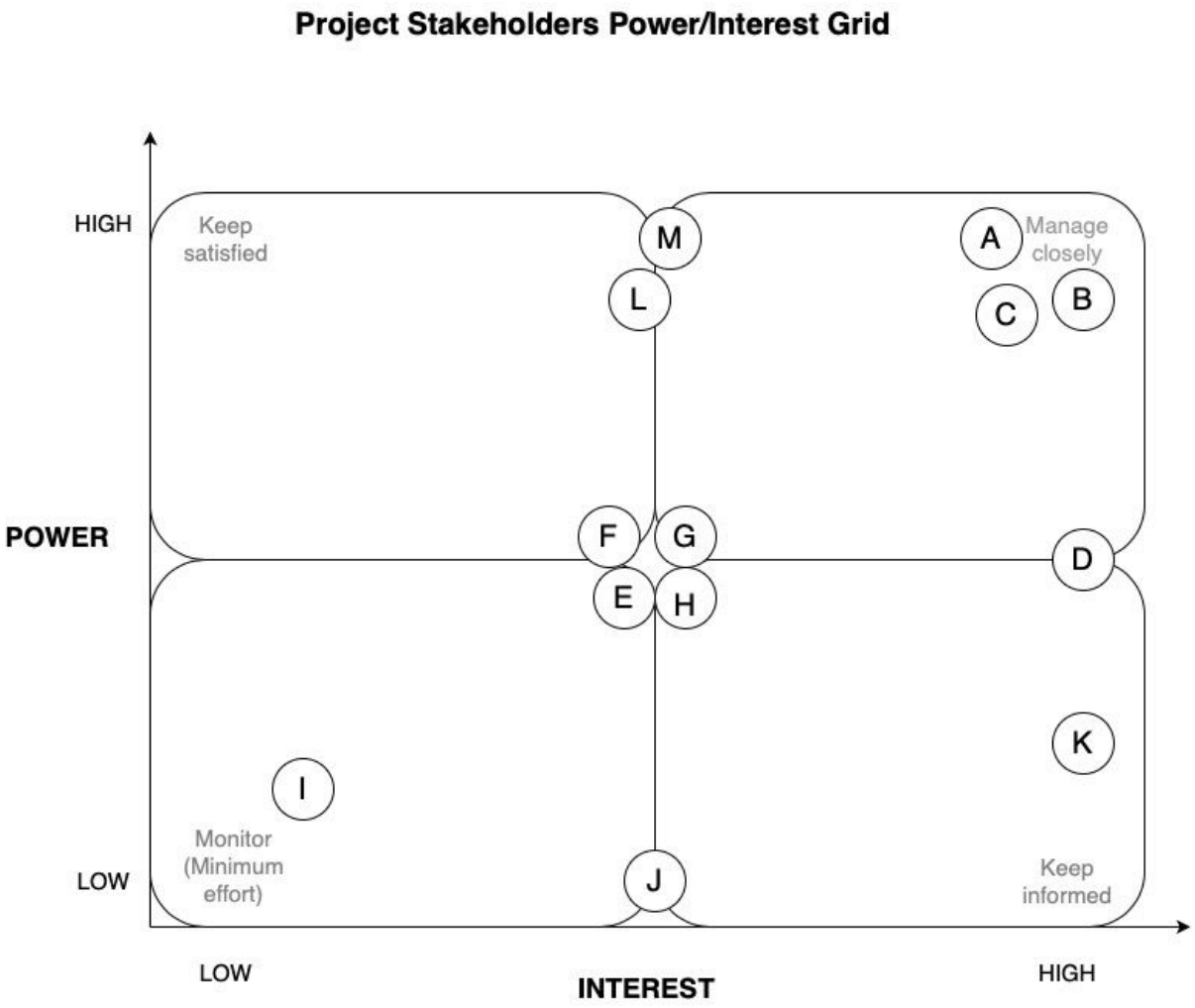


Figure 6. Stakeholder Power/ Interest Grid

7. Communication Matrix

The communication matrix includes communications that are used for two main functions:

(1) Communications that aim to provide information to relevant stakeholders regarding the project status/updates on related aspects like risks, best practices etc. These communications are either interactive (in person/phone call) or 'push' communications, all distributed directly to the stakeholders that need to receive the information. These

communications are highlighted in yellow when the accountable person is a part of the project team and are highlighted in red when the accountable person is a stakeholder outside the project team (iSchool committee / legal advisor etc).

Interactive communications were chosen where the communication is of high importance or when the interaction is essential to achieve the goals of the relevant communication.

Due to COVID-19 implication, all interactive communications are either 'in person' or in the form of a video/conference/phone call.

(2) Communications that are a part of the project work or the project management documents. These communications are in either a 'pull' or a 'push' format - the 'pull' format is implemented using shared repository/ knowledge base - mainly for the project management documents. Sometimes combined with a 'push' communication like a link via Email. The 'push' format communications are reports/forms distributed by emails. These communications are highlighted in green.

The use of PMIS, could potentially make communication management more efficient and improve documentation. All communication dates are in accordance with the project's milestones and schedule.

Assumption: for the purpose of this Communication Matrix, in accordance with Case Study 1 we assume that GMC's office is located in Toronto and all of the stakeholders are based locally.

Communication Matrix definitions:

GMC - Game Masters Canada

Project sponsor - Chief of iSchool Administrative Office and/or management representative.

GMC's senior manager - senior management representative.

Key stakeholders: GMC's senior manager, Project sponsor.

Item/ Delivery	Accountability	Objectives	Recipient	Frequency	Method
Kickoff meeting	Project Manager	Introduce project, review objectives & goals	Project team, Project Sponsor, Stakeholders	1time, before project start date	In person/ Video call
Project team meetings	Project Manager	Review status of project	Project team	weekly	In person/ Video call
Technical and UI/UX design meetings	Technical lead and UI/UX lead	Review technical problems & solutions	Technical team UI/UX designers	weekly	In person/ Video call
Project status meetings 1	Project Manager	Update senior management on project status	Senior Manager in GMC	Monthly	In person/ Phone call
Project status meetings 2	Project Manager	Update sponsor on project status	Project sponsor	Monthly	In person/ Phone call
Project Progress Reports	Project Manager	Detailed report on project status including progress, costs and problems	all stakeholders.	Monthly (prior to relevant Project status meetings 1, 2)	Report via Email
Budget and financial	Project Manager	Update on budget and	Project sponsor,	Monthly	Email

updates		financials	GMC's senior manager		
Information Security updates	Technical lead	Update on changing Information Security best practices	Project Manager, team members	As needed	Email
Risk Reports	Project Manager	Assessment and updates of risks	Key stakeholders and stakeholders who could be impacted.	monthly	Report Via Email
UoT Progress updates	Head of appointed iSchool Vocabulary committee	Update on progress of iSchool vocabulary committee	Project Manager, Project Sponsor	Weekly till delivery of vocabulary updates	Vocabulary updates report, Via Email
Updates on ACORN related adjustments	Head of UoT login services	Updates on ACORN adjustment, technical problems & solutions implementation	Project Manager	Monthly	Form , Via Email
Legal updates	Appointed Legal Advisor	Updates on legal issues - status and concerns	Project Manager	Monthly	Email
Approval of product requirements	Project sponsor, and each project	Approve requirements	Project Manager	1 time, by July 13, 2020	Signed form via Email

(*collection of requirements is out of scope)	team lead				
Draft Privacy Policy and Terms of Use	Appointed Legal Advisor	Review Privacy Policy and Terms of Use	Senior Manager, Project Manager, project sponsor	1 time, prior to June 24, 2020.	Draft document, via Email.
Approval of Privacy Policy and Terms of Use	Senior Manager, Project Manager, project sponsor	Approve Privacy Policy and Terms of Use	Appointed Legal Advisor	1 time, prior to June 29, 2020.	Form, via Email.
A clickable demo of the mobile application	UX/UI lead	Sharing clickable demo with stakeholders	all stakeholders	1 time, by September, 4, 2020.	Website - link, Via Email
Feedback re clickable demo	all stakeholders	Getting feedback re clickable demo	Project Manager	1 time, by July, 20, 2020.	Form, Via Email
Testings results	Product testing team lead	Review testing results	Project Manager.	1 time for each version release, 1 week after such release plus 1 time prior to final	Testing Summaries

				release (by January 4, 2021)	
Quality Reports	Quality assurance agent	Review quality assurance results	Project Manager, and for those who can take corrective actions.	1 time for each version release, 1 week after such release plus 1 time prior to final release (by January 4, 2021)	Quality assurance report, Via Email
Issue log Updates	Project Manager	Update responsible stakeholders for resolving specific issues by target date	Stakeholders can view at their own discretion.	As needed	Shared spreadsheet, link is Emailed to impacted stakeholders.
Change requests	Project Manager / stakeholder	Request to update Project Management Plan	all stakeholders	As needed	Change log shared repository, Emailed to all stakeholders.
Updates to Project Management Plan / related project documents	Project Manager	Updates to Project Management Plan and related documents	all stakeholders	As needed	Shared project management documents/ repository, Emailed to all stakeholders.
Project Schedule	Project Manager	Updates to project schedule	all stakeholders	As needed	Project schedule shared documents, Emailed to stakeholders

Lessons learned register	Project Manager	Identify and share knowledge to improve existing and future projects	Senior Manager, Supervisor in each of GMC's resource groups	As needed plus at project closure	Lessons learned shared knowledge repository
Stakeholders register	Project Manager	Updates regarding changes in communication activities with stakeholders	Impacted stakeholders	As needed	Stakeholders register shared repository, Emailed to impacted stakeholders

Legend:

Communications regarding project status/updates, when the accountable person is a part of the project team are highlighted in: _____.

Communications regarding project status/updates, when the accountable person is a stakeholder outside the project team (iSchool committee / legal advisor etc) are highlighted in: _____.

Communications that are a part of the project work or the project management documents are highlighted in: _____.

8. Weekly Status Report Template

Mobile Enterprises Weekly Status Report			
Project Name:		Activity ID	

Project Manager	Date of Status Entry	Projected Date of Completion

Deliverable Summary A brief summary of the project status

Issues for Immediate Attention Any key issues for the week
Key Team Interdependencies

Risk Summary			
Risk ID	**Risk Event**	**Impact**	**Risk Response**

Activities in Progress			
Deliverable status:	Actual Duration (days):	Remaining Duration:	Percent Complete:
Actions needed:			
Activities Completed this week			
Quality objectives met:			
Key Milestones achieved:			
Change requests:		**Status:** in review / agreed / withdrawn	

Budget		**Earned**	**Actual**	**Cost**		Schedule	
BAC	PV	EV	AC	CV %	CV $	SV %	SV $
Performance Index		**Forecast**				**Status: on track/ behind schedule**	
CPI	SPI	ETC	EAC	VAC %	VAC $	behind budget / urgent	

Top Priorities for the Following week	**Individuals Responsible**

Comments Any issues that require action or attention e.g. request for logistical information, use of contingency funding etc.

Figure 6. Template of Weekly Status Report

Key sections included:

- A brief summary of the project status that updates the key stakeholders of major accomplishments completed.

- An Issues log flags any major issues that have arisen along with highlighting team interdependencies that are required to complete deliverables for the week
- A risk summary will depict any current high-risk issues that have occurred
- Activities in progress displays a forecast of the major deliverables that are in the process of completion and the actions needed to resolve the deliverables.
- Activities completed outlines any major deliverables from the WBS and Milestone chart that were completed during the week
- Change requests depicts any change requests that occurred, and the status of consensus (in review, agreed, withdrawn)
- An Earned Value Management section assesses various trends and allows stakeholders to perceive if the project is on track or behind schedule / budget.
- A Top Priorities for the Following Week section gives the stakeholders a forecast of the week to come, and highlights the individuals / teams that will be involved
- A comments section is provided to highlight any other issues that demand stakeholder attention. E.g. requests for additional resources, logistical analysis, noting the use of contingency funding etc.

9. Risk Breakdown Structure

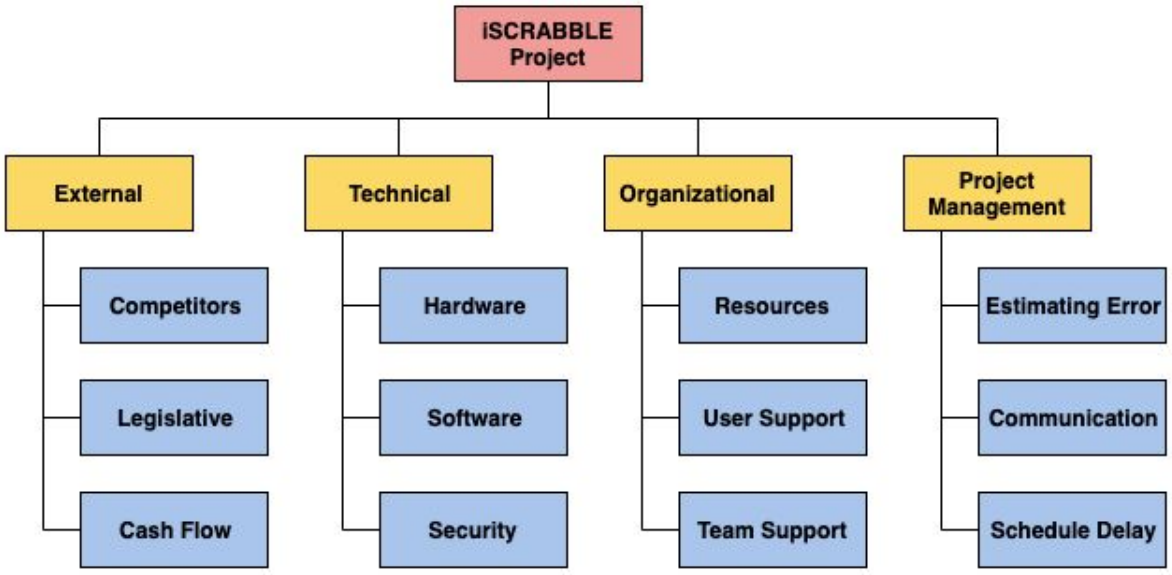


Figure 7. Risk Breakdown Structure

Above diagram is the Risk Breakdown Structure of the iScrabble project in Game Master Canada, and the risks are identified in the structure and categorized into different sections: external risk, technical risks, organizational risks and project management risks. For each section, the risks are listed into finer levels. For example, project management risks are refined as estimating error risk, communication risk and schedule delay risk.

RISK RESPONSE PLAN AND REGISTER		
Project Nam/ Number:	**Prepared by:**	**Date:**
iScrabble	Grace Li	2020/07/13
Customer/End User Group:	**Contact Name:**	**Project Type (S/M/L):**
iSchool staff and student	(iSchool principal's name)	M
Business Unit:	**Project Manager:**	**Project Sponsor:**
New Production Innovation	(Manager's name)	Game Master Canada

WBS Number	Risk Event	Probability	Impact	Overall Risk	Risk Response	Risk Owner
1	Project over budget due to the additional costs	Moderate (%20)	Moderate ($10,000)	Moderate	Avoid	Project Manager
2	Project schedule delay	High (%70)	High (can up to $20,000)	High	Mitigate	Project Manager
3	User information leakage	Low (%10)	Very High (can up to $50,000)	Moderate	Avoid	IT Team
4	The software fails in the performance test.	Low (%10)	Low ($3,000)	Low	Acceptance	IT Team
5	Equipment malfunction caused by misuse	Low (%10)	Moderate ($7,000)	Moderate	Transfer	Vendor

1. The project may go over budget due to the additional labor cost (such as employee training) or additional equipment cost (such as equipment breakdown or shortage). This risk has a moderate probability and moderate impact on the project, which could slow the process schedule. Expected value (EMV) for this risk is $2,000. The risk response is to Avoid the risk. Contingency reserves and management reserves are included in the budget.

2. Since a lot of factors can impact the project schedule such as employee absenteeism or slow design feedback, there is a high probability that the project cannot be completed by the deadline. This can lead to high impact, which increases 10 - 20% of the total project cost. Expected value (EMV) for this risk is $14,000 (see EMV calculation in section 4. Project Budget). Mitigate is the risk response. Project managers should constantly track

and measure the progress schedule, and respond to design feedback immediately.

3. The chance of user information leakage is low. But once it happens, it will cause a very high impact. Expected value (EMV) for this risk is $5,000. The response for this risk is to avoid the leakage happening by using encryption keys and following the information security best practices.

4. This is a low chance that the software fails in the performance test, the IT team will make sure all the system and software go well. But if this happens, it can cause low impact since the game relies on the software for execution. There will be no other choice except the IT team trying to fix the system and debug the software. Acceptance is the response. Expected value (EMV) for this risk is $300.

5. The chance of the rental equipment malfunction caused by misuse is low, since the company will provide training for new employees. But if equipment breaks it will cause a Moderate impact to the project. Therefore, transferring the risk to the insurance company is a good choice. Expected value (EMV) for this risk is $700

10. Test Cases

• Identify 10 test cases you would use on your project outcome to ensure it meets acceptable quality standards before it is launched

Test	Description	Prerequisite	Input	Expected	Actual	Result

Case #				Output	Output	
1	Customer create an account on iScrabble mobile app	User have UTORid	User name, UTORid and password	Account created and linked to the student account	Account created and linked to the student account	Pass
2	Customer log in with a existing account	Account have been created before	Username and password	Successfully login to the existing account	Successfully login to the existing account	Pass
3	Download the iScrabble app on an Android phone	Phone having enough storage space	Mobile app download process	iScrabble app downloaded and runs well	iScrabble app downloaded and runs well	Pass
4	User authentication check	User have UTORid	Name, UTORid, password	iScrabble can access UofT account info	iScrabble can access UofT account info	Pass
5	Run the scrabble game to check game's rule and points count	Already login with user account	Run the scrabble game	Game runs well and point bonus counts right	Game runs well and point bonus counts right	Pass
6	iScrabble's response time within 1 second	iScrabble is installed on the phone	Run the game and test the response time	All iScrabble functions response in 1 second	All iScrabble functions response in 1 second	Pass
7	Security test for user account	User account was created	Login with wrong password	Showing password error	Showing user id error	Fail
8	Game points history have been saved	User login an account	Game points from every round	Game points have been collected from each round	Game points have been collected from each round	Pass
9	App	User login an	Disconnect	Data been	Data been	Pass

	performance during intermittent network connection	account	network in the middle of the game	saved automatically and recover after connect issue	saved automatically and recover after connect issue	
10	App performance with hard reboot or system crash	User login an account	Shut down the device during the game	App resume at the last operation	App resume at the last operation	Pass

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