



Title: Go2Go Expansion in Hillsboro, OR

Course Title: **Project Management**

Course Number: **ETM 545/645**

Instructor: **Dr. Richard Sperry**

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Author(s): **Apeksha Gupta, Devender Kaur, Pengsee Her and Pratheek Chintala**

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Report No.:

Type: Student Project

Note:

Purpose:

Go2Go is a car sharing service, which operates in major cities of the United States of America. In Oregon, there are 500 Go2Go vehicles spread across the Portland Metro Area. With the population growth in Oregon, the demand of car sharing services also increases. Since increase in its success and demand, Go2Go is looking into expanding into another populated city, such as Hillsboro, Oregon. Hillsboro is the fifth largest city in the state of Oregon and hosts many big technology companies, such as Intel, Nike and Tektronix. This project proposal is backed by Go2Go Sales and Marketing team, which had conducted an in depth Market Research on the expansion.

Becoming a member with Go2Go is simple. Create a profile; enter your driver's license and credit card information. Once your profile is approved, Go2Go will issue you with a personal pin to be used as an identifier when selecting a vehicle. Customers can enjoy the services by simply using the Go2Go mobile application. The mobile application helps locate the closest car available in the area. The cars can be parked in any non-restricted curb side parking throughout the Go2Go House Boundaries.

Go2Go would provide travel flexibility to residents as well as commuters from nearby cities, who otherwise would have to own a car, or take public transits. The connectivity through max is well established, however, there is long wait time for Trimet buses to and from max stations to localities. The max is overcrowded during peak hours and not all max stations have park and ride facilities. The focus of our business is to make travel readily accessible and convenient at a lower cost. The car sharing service business market is highly untapped and can be advantageous to the company.

Objectives:

The Project is a collective endeavor of various departments within the company to successfully establish an operational Go2Go car sharing services into Hillsboro, Oregon; Meaning that any customer's should be able to use their mobile application for the services. Once the project is completed, the Project Manager will hand over the work to the operations manager for full authority and supervision. Success of this project is measured within the parameters of the scope, budget and time.

Scope: To expand Go2Go into the Hillsboro area and set up an operational business site. This would include the areas to host, the vehicles, the permits that are compatible with legal and regulations and a workshop with supporting equipment's and resources to host vehicles.

Budget: The capital cost of this project \$900,384 and has a risk reserve of \$1751, which equals to a grand total of \$902,135, as shown in Appendix N. The high cost activities are:

- Acquiring the fleet which cost \$555,600 for 30 vehicles
- Advertisements to cost \$31,820
- Promotions to cost \$11,660.

Time: To achieve the above scope in total of in 104 days, the critical path B1-B6 which has slack time of 0, as shown in Appendix I cannot be delayed. The other task all have generous amount of slack time and if needed use the leveling strategy to utilize the available tolerance slack.

Overview:

Go2Go is a highly organized Matrix organization. Go2Go went to Initial Public Offerings in 2008 and is a subset of a parent car manufacturing company. The Director and Vice Presidents of all the Departments reports directly to the Boards. The Project Management Office (PMO) is directly under the Director and all the Project Managers report directly to the Vice President, which then feedback to the Boards as shown in Appendix A.

The PMO is responsible for execution of the project within scope, budget and time, which means overseeing all departments workflow to help set up the new expansion location successfully. Every department has a major role to play in the setup process. Go2Go over the past years has gained exceptional experience in setting up the locations. The setup plans are tried and tested methods with some exceptions that can be incorporated to meet the local needs. The Hillsboro area is not different from the Portland area, so there are no major deviations in the project plan.

The top level deliverables which outline the scope of the project, as shown in Appendix B are:

- 1) Expansion Location
- 2) Application Development
- 3) Advertising and promotions
- 4) Acquisition and Preventive Maintenance
- 5) Resource Management

Since the location was given, the next steps are:

- Research on finding out which sites could host cars in Hillsboro.

- Verify and acquire destination permits for parking.
- Find out about the politics of different communities where we plan to host our sites.
- Verifying all the legal regulations would be a very critical task in order to go ahead.
- Once the legal and regulations issues are identified, Go2Go would be able to select house boundaries. This task was a major milestone of the project. After completing all activities, this will get submitted to upper managements for approval. Once approved, the next activity in-line becomes predecessors and demands for completion.
- The request for purchasing the fleet of vehicles from the manufacture would get passed onto upper management for approval. Once approved, this would enable all activities to flow in parallel which includes development of the Application and its integration with the existing application.

The Sales and Marketing team would plan a budget for advertising and promotion. Designing the advertising campaigns, promotions, etc would be done by the internal staff of sales and marketing division. Another major milestone of the project is to acquire and set up the shop for maintenance and repairs of cars during day to day operations. Resources would be of equal importance to execute the operational work which includes customer care support, field support in case of any breakdown in cars, technician support for all the maintenance and repairs etc.

The allocated capital estimated budget for this project was \$1,000,000. In order for this expansion project to be successful, it must be under budget and on-time. The required total hours of completion is 1569 hours and a total expense budget of \$900,384 in 111 days with a risk reserve of \$1751. In Appendix K, this displays the breakdown of total resource hours allocated weekly for each departments and Appendix L displays the total cumulative values weekly for each departments.

Schedules:

The project starts on September 28th, 2015 and ends on February 18th, 2016. A total of 111 days, from start to finish and approval of project signed off. The schedule for each major milestone along with start and end date are:

- Legal Regulations are completed - 10/12/15 to 10/13/15
- Application signoff - 02/11/16 to 02/18/16
- Shop setup is completed - 10/23/15 to 11/10/15
- Personnel training is completed- 11/23/15 to 11/27/15

The critical path is B1- B6 has slack time of zero, as shown in Appendix I.

For estimating the expected duration of each project task, the optimistic, pessimistic and most likely times were used to get expected time, as shown in Appendix G.

In Appendix H, the Gantt Chart is used to illustrate the level two tasks duration through the project life.

In this project there are two tasks that have subtasks. One is shop setup and the other is training, as shown in Appendix C. Shop setup takes longer than three weeks and has subtasks. Training has subtasks because all the three training sub-tasks under that task have different set of activities. The subtasks under Shop Setup (D4-Shop Layout Configuration,D5-Acquire the shop, D6-Acquire equipment) and Training under resource Management is (E3-Technician Training,E4-ASE Training, E5-Customer Support Training,E6-Operations Team Training)

The Activity on Node (AON) diagram in Appendix I, displays the critical path of the project along with slack time accordingly to each tasks. Appendix J displays the probability diagram analysis of completing the project in 111 days, with a 95% probability.

Resources:

In this project, the project manager is responsible for coordinating and ensuring the project scope is aligned with the parent organization's objectives. The department managers are responsible for their team members to provide status updates, which then would get fed back to the project manager. In Appendices B and C, displays the workflow break down accordingly to departments and within these departments, who is the responsible and accountable personnel.

The primary resources that are allocated to this project are listed below:

1. Project Manager
2. Operation Manager
 - Operation Officer
 - Field Support Officer
 - Lead Technician
3. Finance and Human Resources Managers
4. Sales and Marketing Managers
5. Marketing Communications Team
6. Customer Service Manager
7. Legal Officer
8. Software Development Manager
9. Software Developer

- 10. Quality Assurance Analyst
- 11. Vehicle Manufacture (car vendor)

In addition to the primary resources, there will be hiring extra team members to help operations team on a regular basis. Here is the list of additional staff:

- 1. Five field support officers,
- 2. Two lead technicians,
- 3. Three customer support officers

Any delays within the schedule will affect the cost of the total budget, especially the critical path as shown in Appendix I. The critical path will need to be monitor closely, ensuring that deliverables are met and does not require crashing. To help monitor the project's progress, the project manager will use the earned-value analysis method with a 50-50 rule on all activities, as shown in Appendix L.

Personnel:

Project Manager : Responsible is to mitigate any potential risks that may cause conflicts within the project and making sure the project flows smoothly throughout the project duration.

Operation Manager : Responsible for approving and overseeing all of the operations officer, field supports and lead technicians tasks.

Operation Officer : Responsible for overseeing the field support officer and lead technicians operations. They ensuring that any risks or issues in the field are addressed.

Field Support Officer : Responsible for gathering the fleet of vehicles and returning them into their house boundaries on a day-to-day basis. Also, report any vehicles that may need to be maintain directly to the lead technicians.

Lead Technician : Responsible for maintaining the vehicle fleets to prevent any failure out in the field.

Finance and Human Resources Managers: Responsible for approving any budgetary cost associated with the project and optimizing staff resources requirements.

Sales and Marketing Managers : Responsible for overseeing and approving any workflow processed from the marketing communications team.

Marketing Communications Team : Responsible for designing and developing an advertising strategy program, i.e. promoting, expansion, strengths and weaknesses.

Customer Service Manager : Responsible for improving customer satisfactions.

Legal Officer : Responsible for making sure all legal regulations are not violated.

Software Development Manager : Responsible for overseeing the developer's workflow and making sure there program aligns with Statement of Work.

Software Developer : Responsible for writing the program for the new application location expansion pack.

Quality Assurance Analyst : Responsible for finding any bugs within the program and feed those bugs back to the developers for correct-of-actions.

Vehicle Manufacture (car vendor) : Responsible for allocating fleet of vehicles to Go2Go operations team.

Appendices C and D- Displays the responsible and accountable personnel along with a bottom-estimated workflow break down accordingly and within these departments.

Risk Management Plans:

The risks have been identified based on its criticality to the business and probability of occurrence. Appendix N, displays the high risk impacts associated to the project:

Community Politics: We have identified places to host our cars based on the market research, surveys and feasibility analysis. However if there is any resistance from community, it can be detrimental to the business and brand. We will have to hire Public Relations Officers to address issues that would arise. The probability of occurrence is 30% and would cost us \$5000 extra, based on our historical data and research. It is a high risk with high impact. We plan to monitor the risk by weekly status meetings and daily reports and use Cost Variance and Schedule Variance as a control tool. We want to work with the community and not against; hence it is an important phase of the Project.

Software Development: Software is an important part of our business. The software will provide a platform for the customers to use the services; hence it is critical to the business. According to our previous experience software development team has had issues in following the work instructions for the Project which in turn delayed our other tasks in the software deliverable. There is approximately a 30% chance that the same issue may occur again and it would cost \$566 additional to the resource loading and crashing the schedule. It is a high risk and can use high impact by delaying the tasks on our critical path. We plan to use Schedule Variance and Cost Variance as a control tool.

Quality Assurance (Q/A): The new developed GUI (Graphical User Interface) software must be backwards compatible with the existing software is important for functionality. The Q/A team's aggressive testing is to find any bugs or issues in the software and provide feedback for improvements. We have established well-documented testing procedures in place along with the correct personnel team with years of experience. However any unfixed issues may have a high impact. There is approximately a 10% probability that we can encounter any problem, which means that

additional resources would have to be hired to complete on time. This will cost us an additional \$257. We plan to use Schedule Variance and Cost Variance as a control tool.

Acquire Fleet: Our major expenditure for the Project is the fleet. It costs \$555,600 for 30 vehicles. There is approximately a 1% chance of inflation. The probability of the occurrence is 1% which is low, but the impact in the cost would be an additional \$5556. We plan to control this this expense using Schedule Variance and Cost Variance as a control tool.

Evaluation Methods:

The deliverables would be continually evaluated weekly and any deviation would be highlighted as per the planned-Valued. So, for each of the identified risks (the entire list of risks identified), we would calculate the Cost Variance and the Schedule variance on a weekly basis. The data will be collected on a weekly basis and compared from the planned value as per our bottom-up estimate. The variations in the schedule for lot of the activities would not leave an impact on the overall schedule due to slack availability. However, for activities in the critical path, any delay would result in delaying the project. The milestone in this project is completing the project on-time. In order to complete the project, the project manager and his team has to review their milestones frequently. Status update, provide each team members to be on the same track and will be the responsible persons for any schedule slippage.

Expected Monetary Value (EMV) is calculated to determine the contingency risk reserve fund. It is summation of all economic impacts and risks and their probabilities of occurrences. Therefore the Contingency Reserve for our project would be \$1751.06, as shown in Appendix N displaying the detailed calculated EMV.

The project manager could use a CPI ratio chart to monitor the instead of a CV chart. The CV is often formulated as ratios rather than the differences and is in dollar values compared to CPI a ratio value. The CPI would indicate how the project has been earning value faster than it has been accruing costs, if the value is 1.0 or greater, as shown in Appendix O. The use of these ratios is helpful when an organization wishes to compare the performance of several projects, or same projects over different time periods [1]. The limits of the project life cycle over time as the project progress should change because your EV to AC cost over time will decrease over time once the project has been successfully implemented.

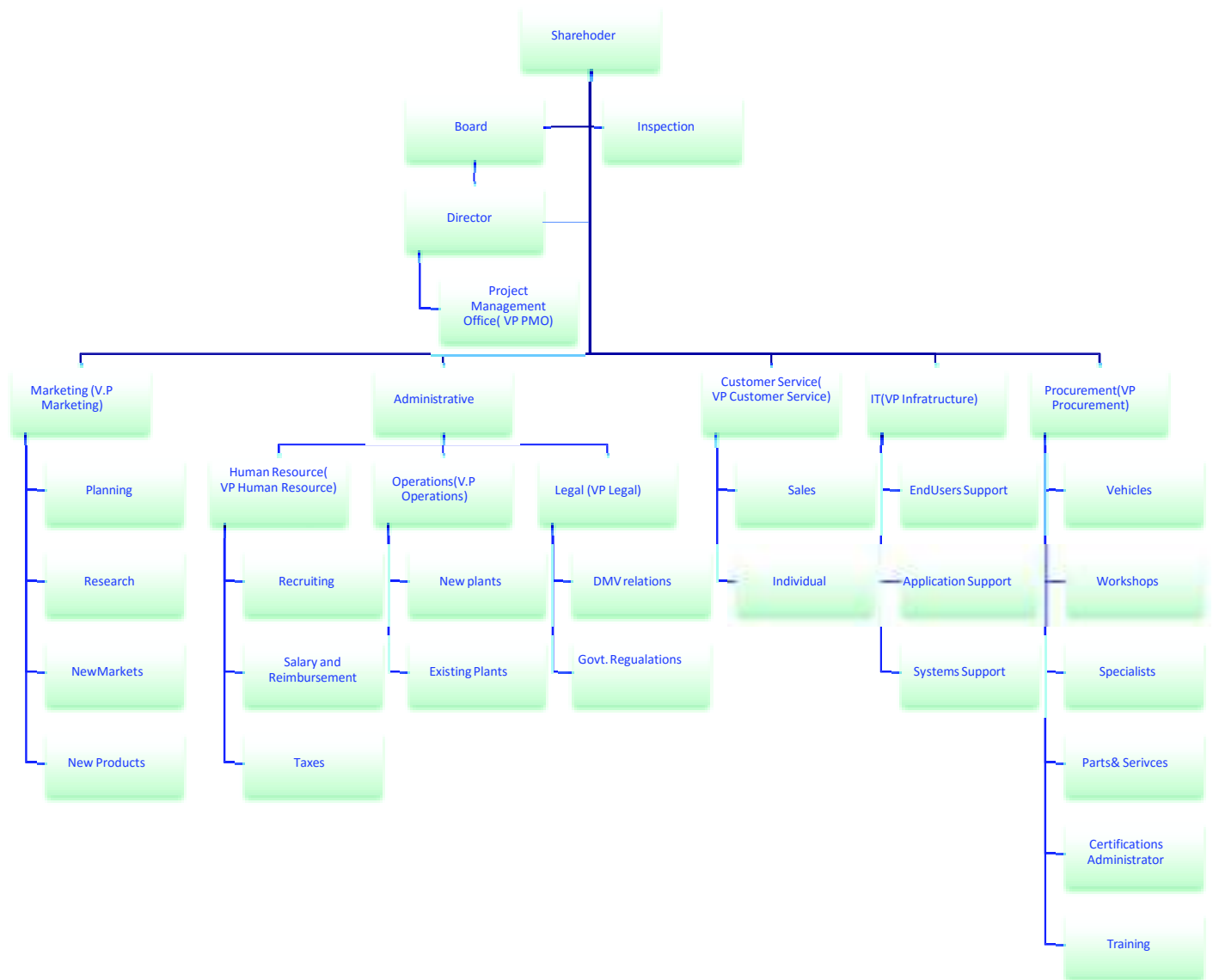
This project will be officially terminated, once all activities on the project has been completed and handed off to the operations team to continue business on a regular basis. A planned date of completion for project is February 18th, 2016. The termination

type of the project will be termination by extinction. In order to terminate the project by extinction successfully, the project manager has to ensure that all accountable activities of the project has been meet by achieving their goals.

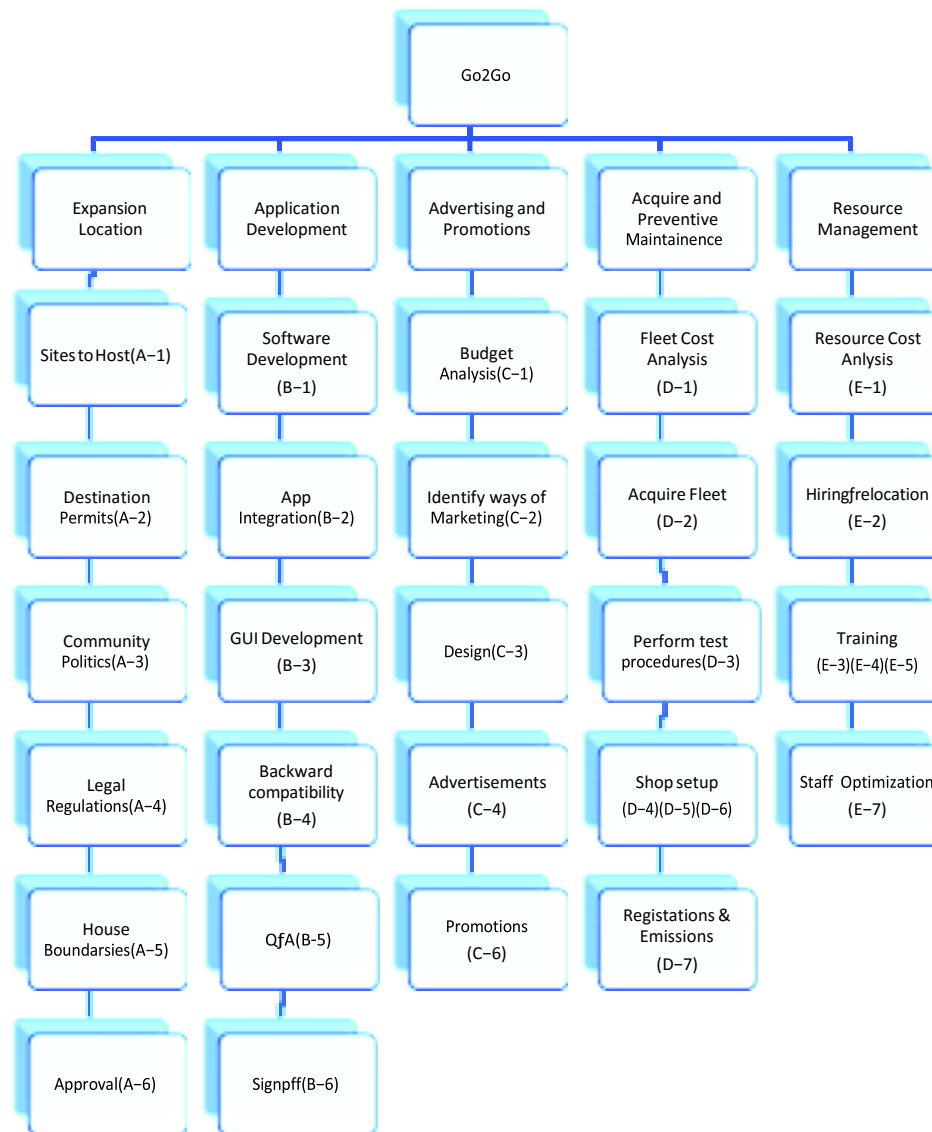
Reference

[1] "Wiley: Project Management: A Managerial Approach: 8th Edition - Jack R. Meredith, Samuel J. Mantel." [Online].
Available:<http://www.wiley.com/WileyCDA/WileyTitle/productCd-EHEP002031.html>.

Appendix A: Organizational Chart



Appendix B: WBS



Level 1

Level 2

Level 3

D4-Shop Layout Configuration, D5-Acquire the shop, D6-Acquire equipment

E3-Technician Training, E4-ASE Training, E5-Customer Support Training, E6-Operations Team Training

Appendix D: Bottom Estimate

Level 1	Level 2 Activity	Level 3 Task	No of Days		Project	Operations	Operations	Field	Lead	Finance &	Sales and	Marketing	Customer	Legal Officer	Software	Software	QA Analyst	Cars Vendor
Expansion Location: Hillsboro, OR	Sites to host		10.00	80		0.5					9			0.5				
	Destination Permits		3.00	24		2.25					0.25			0.5				
	Community Politics		2.00	16		0.1					1.5			0.4				
	Legal Regulations		2.00	16		0.25					0.25			1.5				
	House Boundaries		3.00	24						0.15	2.5			0.35				
	Fleet Expansion Approval		2.00	16		0.25					1.75							
Car2Go Expansion Application Develop	Software Development App		20.00	160		2					0.25		0.25		1.5	16		
	App Integration Plan 4		19.00	152		2.5					0.5		0.5		1	14.5		
	Gui Development		21.00	168		1.5					0.5				2	17		
	Backward Compatibilities		22.00	176		1.5					0.5		0.5		2	17.5		
	QA		16.00	128		1									1		14	
	Sign Off		6.00	48		1									3	2		
Advertising & Promotions	Budget Analysis for Advertisements		3.00	24	0.5					0.25	2.25							
	Identify the ways for marketing		4.00	32		0.25					3.75							
	Design advertisement and promotions		5.00	40							1	4						
	Advertisements		11.00	88		C				0.25	0.5	10.25						
	Promotions		10.00	80		C				0.25	0.5	9.25						
Acquire & Preventive Maintenance Pla	Fleet Cost Analysis		2.00	16	1.5					0.5								
	Acquire Fleet		9.00	72	1					0.5								7.5
	Perform test Procedures on the fleet		5.00	40		0.25		4.75										
	Shop Setup			0														
		Shop Layout Configuration	3.00	24		0.25	0.25		2.5									
		Acquire the shop	10.00	80		1	0.5		8	0.5				1				
		Acquire equipment	10.00	80		1	0.5		8	0.5								
Resource Management	Emissions and Registrations		5.00	40		0.75	0.25				3			1				
	Resource cost Analysis		4.00	32		2.5				1			0.5					
	Hiring/ Relocating		19.00	152		3				15			1					
				0														
		Technician Training	4	32		0.5			3.5									
		ASE Training	5.00	40		0.5			4.5									
	Training	Customer Support Training	5.00	40		0.5							4.5					
		Operations Team Training	5.00	40		0.5	4.5											
	Staffing Optimization Model		2.00	16	0.5	1.5												

Appendix E: Summary Aggregate Baseline
Responsibles

Subproject	Task	Level 2 Activity	Level 3 Activity	Manager	Manager	Officer	Support	Technician	HR Manager	Marketing	Communicat	service	Legal Officer	devepment	Developer	QA Analyst	Cars Vendor
Expansion Location: Hillsboro, OR	A-1	Sites to host			○				6	•			6				
	A-2	Destination Permits			•				∅	6			○				
	A-3	Community Politics			6					•			○				
	A-4	Legal Regulations			6					6			•				
	A-5	House Boundaries			∅				6	•			○				
	A-6	Fleet Expansion Approval		○						•							
Car2Go Expansion Application Development Add-on	B-1	Software Development App			○				∅	6		6		○	•		
	B-2	App Integration Plan 4			○				∅	6		6		○	•		
	B-3	Gui Development			○				∅	6				○	•		
	B-4	Backward Compatibilities			○				∅	6		6		○	•		
	B-5	QA			○					6				○		•	
	B-6	Sign Off			○									•	•		
Advertising & Promotions	C-1	Budget Analysis for Advertisements		○	∅				6	•							
	C-2	Identify the ways for maketing			○					•							
	C-3	Design advertiment and promotions			6					○	•						
	C-4	Adverstiments			6				6	○	•						
	C-5	Promotions			6					○	•						
Acquire &Preventive Maintenance Plan for the fleet of vehicles	D-1	Fleet Cost Analysis		○						•							
	D-2	Acquire Fleet		•					○								•
	D-3	Perform test Procedures on the fleet		∅	○		•										
	D-4	Shop Setup	Shop Layout Configuration														
			Acquire the shop		○	6		•									
			Acquire equipment	∅	○	6		•	6				∅				
	D-6				○	6		•	6								
	D-7	Emissions and Registrations			○	6				•			•				
Resource Manaagement	E-1	Resource cost Analysis			•				○			•					
	E-2	Hiring/ Relocating			○				•			○					
	E-3	Training	TechicianTraining														
			ASE Training		○			∅	•								
			Customer Support Training		○			∅	•								
			Operations Team Training		○							•					
					○	•											
	E-7	Staffing Optimization Model		•	•				∅								

Ledgend:

- Responsible
- 6 Support
- ∅ Notification
- Approval

Appendix F : Time Phased Budget

Level 1	Level 2 Activity	Level 3 Task	No of Days	Budget	September					October					November					December					January					February			
					28	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21							
Expansion Location : Hillsboro, OR	Sites to host		10	2380	1000		800			580																							
	Desitnation Permits		3	840			840																										
	Community Politics		2	440			440																										
	Legal Regulations		2	320			320																										
	House Boundaries		3	678			678																										
	Fleet Expansion Approval		2	500			500																										
Car2Go Expansion Application Development Add-on	Software Development App		20	3770									1000	300	470	2000																	
	App Integration Plan 4		19	3620						1000	1100	520	1000																				
	Gui Development		21	3960											1100	1000	1860																
	Backward Compatibilities		22	4100														1000	600	1500	1000												
	QA		16	2656																		1300					1356						
	Sign Off		6	1600																								1600					
Advertising & Promotions	Budget Analysis for Advertisements		3	840													840																
	Identify the ways formaking		4	980			980																										
	Design adverstiment and promotions		5	880			880																										
	Adverstiments		11	31820							1820	30000																					
	Promotions		10	11660							10900	760																					
Acquire &Preventive Maintenance Plan for the fleet	Fleet CostAnalysis		2	840						132	708																						
	Acquire Fleet		9	555600							3E+05	3E+05																					
	Perform test Procedures on the fleet		5	840								840																					
	Shop Setup			0																													
		Shop Layout Configuration		3	420								420																				
		Acquire the shop		10	21480								21480																				
	Acquire equipment		10	101480								400	1080	1E+05																			
Emissions and Registrations		5	1120										1120																				
Resource Manaagement	Resource cost Analysis		4	1100						1100																							
	Hiringf Relocating		19	135720							1E+05		35720																				
	Training			0																													
		Techician Training		4	580										580																		
		ASE Training		5	7700										7700																		
		Customer Support Training		5	700										700																		
		Operations Team Training		5	880										880																		
	Staffing Optimization		2	880										880																			

Appendix G : Expected Time

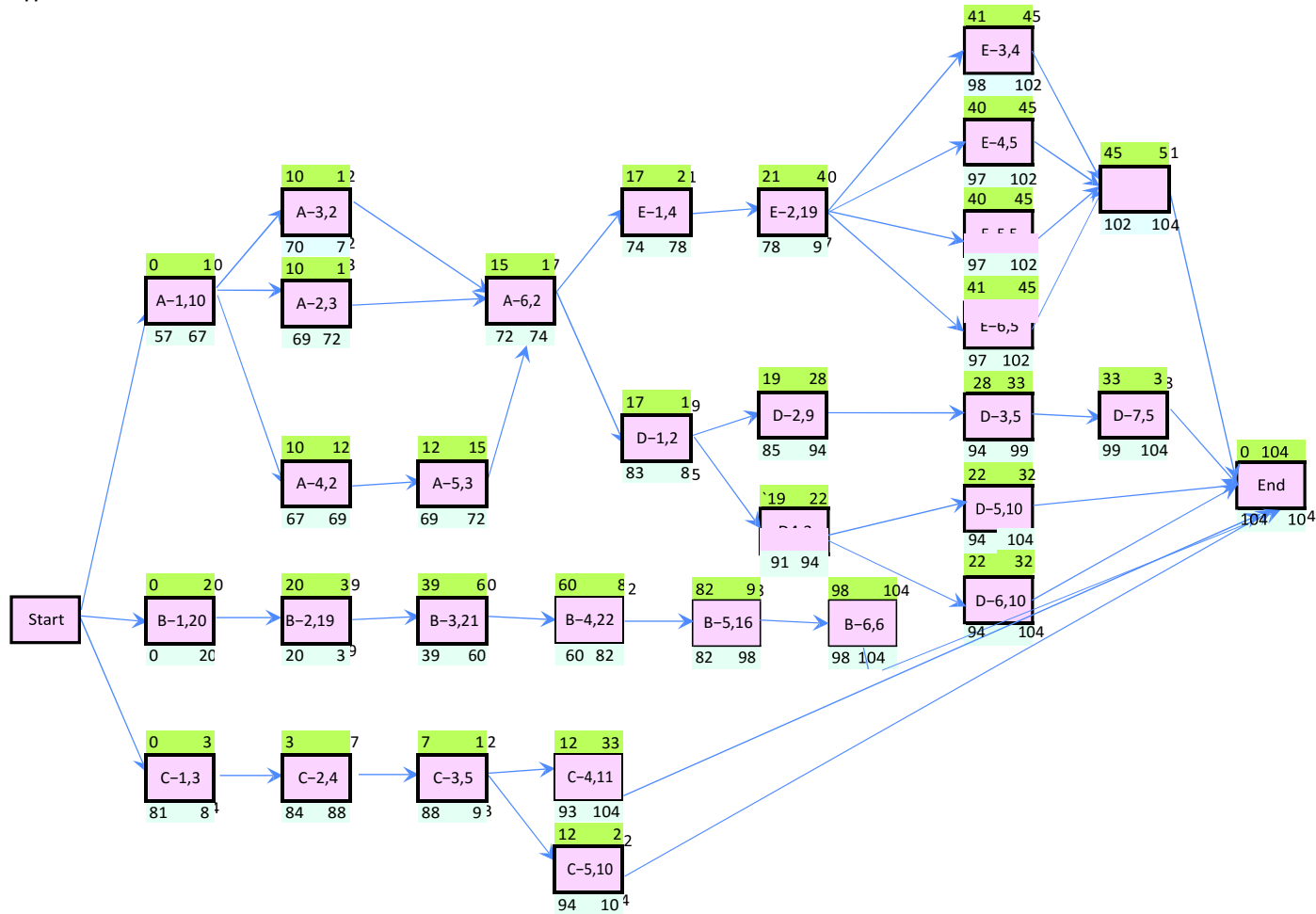
Level 1 Deliverable	Activity Number	Level 2 Activity	Level 3 Task	No of Days	Time (a)	Time (m)	Time (b)	(TE)	(o^2)	Deviation (o)	Predecessor
Expansion Location: Hillsboro, OR	A-1	Sites to host		10	7	9	13	9.33	1.00	1.00	Start
	A-2	Desitnation Permits		3	1	2	5	2.33	0.44	0.67	A-1
	A-3	Community Politics		2	1	2	3	2.00	0.11	0.33	A-1
	A-4	Legal Regulations		3	1	1	4	1.50	0.25	0.50	A-1
	A-5	House Boundaries		3	1	2	4	2.17	0.25	0.50	A-4
	A-6	Fleet Expansion Approval		3	1	1	4	1.50	0.25	0.50	A-2,A-3,A-5
Car2Go Expansion Application Development Add-on	B-1	Software Development App		20	18	19	23	19.50	0.69	0.83	Start
	B-2	App Integration Plan 4		20	17	18	22	18.50	0.69	0.83	B-1
	B-3	Gui Development		20	18	20	26	20.67	1.78	1.33	B-2
	B-4	Backward Compatibilities		20	19	21	24	21.17	0.69	0.83	B-3
	B-5	QA		15	12	16	20	16.00	1.78	1.33	B-4
	B-6	Sign Off		5	3	5	8	5.17	0.69	0.83	B-5
Advertising & Promotions	C-1	Budget Analysis for Advertisements		3	1	2	5	2.33	0.44	0.67	Start
	C-2	Identify the ways for marketing		5	2	4	6	4.00	0.44	0.67	C-1
	C-3	Design adverstiment and promotions		5	2	4	8	4.33	1.00	1.00	C-2
	C-4	Adverstiments		10	5	12	13	11.00	1.78	1.33	C-3
	C-5	Promotions		10	7	10	13	10.00	1.00	1.00	C-3
Acquire & Preventive Maintenance Plan for the fleet of vehicles	D-1	Fleet Cost Analysis		2	1	2	3	2.00	0.11	0.33	A-6
	D-2	Acquire Fleet		10	6	8	14	8.67	1.78	1.33	D-1
	D-3	Perform test Procedures on the fleet		5	2	4	7	4.17	0.69	0.83	D-2
		Shop Setup									
	D-4		Shop Layout Configuration	3	1	2	5	2.33	0.44	0.67	D-1
	D-5		Acquire the shop	10	7	9	12	9.17	0.69	0.83	D-4
	D-6		Acquire equipment	10	8	9	13	9.50	0.69	0.83	D-4
	D-7	Emissions and Registrations		5	3	4	7	4.33	0.44	0.67	
Resource Management	E-1	Resource cost Analysis		4	2	3	5	3.17	0.25	0.50	D-3
	E-2	Hiringf Relocating		20	16	18	22	18.33	1.00	1.00	A-6
		Training									
	E-3		Technician Training	5	2	4	3	3.50	0.03	0.17	E-2
	E-4		ASE Training	5	3	4	6	4.17	0.25	0.50	E-2
	E-5		Customer Support Training	5	3	5	7	5.00	0.44	0.67	E-2
	E-6		Operations Team Training	5	3	4	6	4.17	0.25	0.50	E-2
	E-7	Staffing Optimization		3	1	1	4	1.50	0.25	0.50	E3,E4,E5,E6
Total				249	174	225	315	231.50	20.64	23.50	

Appendix H : Gantt Chart in xls

Activity Code	Task Name	Start Date	End Date	Duration	Predecessor	Budget	% Complete
	Level 1 Deliverable						Expected Time (TE)
	Expansion Location: Hillsboro, OR						10%
A1	Sites to host	09/28/15	10/09/15	10d		\$2,380.00	3%
A2	Desitnation Permits	10/12/15	10/14/15	3d	3	\$840.00	2%
A3	Community Politics	10/12/15	10/13/15	2d	3	\$440.00	2%
A4	Legal Regulations	10/12/15	10/13/15	2d	3	\$320.00	3%
A5	House Boundaries	10/14/15	10/16/15	3d	6	\$678.00	2%
A6	Fleet Expansion Approval	10/19/15	10/20/15	2d	4, 5, 7	\$500.00	
	Car2Go Expansion Application Development Add-on						20%
B1	Software Development App	09/28/15	10/23/15	20d		\$3,770.00	19%
B2	App Integration Plan 4	10/26/15	11/19/15	19d	10	\$3,620.00	21%
B3	Gui Development	11/20/15	12/18/15	21d	11	\$3,960.00	22%
B4	Backward Compatibilities	12/21/15	01/19/16	22d	12	\$4,100.00	16%
B5	QA	01/20/16	02/10/16	16d	13	\$2,656.00	6%
B6	Sign Off	02/11/16	02/18/16	6d	14	\$1,600.00	
	Advertising & Promotions						3%
C1	Budget Analysis for Advertisements	09/28/15	09/30/15	3d		\$840.00	4%
C2	Identify the ways for marketing	10/01/15	10/06/15	4d	17	\$980.00	5%
C3	Design adverstiment and promotions	10/07/15	10/13/15	5d	18	\$880.00	11%
C4	Adverstiments	10/14/15	10/28/15	11d	19	\$31,820.00	10%
C5	Promotions	10/14/15	10/27/15	10d	19	\$11,660.00	
	Acquire &Preventive Maintenance Plan for the fleet of vehicles						2%
D1	Fleet Cost analysis	10/21/15	10/22/15	2d	8	\$840.00	
D2	Acquire Fleet	10/23/15	11/04/15	9d	23	\$555,600.00	9%
D3	Perform test Procedures on the fleet	11/05/15	11/11/15	5d	24	\$840.00	5%
	Shop Setup						
D4	Shop Layout Configuration	10/23/15	10/27/15	3d	23	\$420.00	3%
D5	Acquire the shop	10/28/15	11/10/15	10d	27	\$21,480.00	10%
D6	Acquire equipment	10/28/15	11/10/15	10d	27	\$101,480.00	10%
D7	Emissions and Registrations	11/12/15	11/18/15	5d	25	\$1,120.00	5%
	Resource Management						4%
E1	Resource cost Analysis	10/21/15	10/26/15	4d	8	\$1,100.00	19%
E2	Hiring/ Relocating	10/27/15	11/20/15	19d	32	\$135,720.00	
	Training						4%
E3	Techician Training	11/23/15	11/26/15	4d	33	\$580.00	5%
E4	ASE Training	11/23/15	11/27/15	5d	33	\$7,700.00	5%
E5	Customer Support Training	11/23/15	11/27/15	5d	33	\$700.00	5%
E6	Operations Team Training	11/23/15	11/27/15	5d	33	\$880.00	2%
E7	Staffing Optimization	11/30/15	12/01/15	2d	35, 36, 37, 3	\$880.00	

Task Name	Sep	Oct	Nov	Dec	Jan	Feb
Level 1 Software Engineer - London, UK						
Task 1.1: Design and Implement a New Feature						
Task 1.2: Develop and Test the New Feature						
Task 1.3: Deploy the New Feature to Production						
Task 1.4: Monitor and Maintain the New Feature						
Task 1.5: Write and Review Code						
Task 1.6: Collaborate with the Product Team						
Task 1.7: Participate in Team Meetings						
Task 1.8: Stay Up-to-date with Industry Trends						
Task 1.9: Provide Technical Support to Users						
Task 1.10: Contribute to Open Source Projects						
Task 1.11: Mentor Junior Engineers						
Task 1.12: Participate in Hackathons						
Task 1.13: Attend Conferences and Workshops						
Task 1.14: Write and Publish Technical Articles						
Task 1.15: Collaborate with Cross-functional Teams						
Task 1.16: Participate in User Acceptance Testing						
Task 1.17: Perform Code Reviews						
Task 1.18: Implement Security Measures						
Task 1.19: Optimize System Performance						
Task 1.20: Troubleshoot Production Issues						
Task 1.21: Document System Architecture						
Task 1.22: Participate in Agile Scrum Meetings						
Task 1.23: Collaborate with the QA Team						
Task 1.24: Implement CI/CD Pipelines						
Task 1.25: Participate in On-call Rotations						
Task 1.26: Write and Maintain Test Cases						
Task 1.27: Collaborate with the UX Team						
Task 1.28: Participate in Design Reviews						
Task 1.29: Implement A/B Testing						
Task 1.30: Collaborate with the Marketing Team						
Task 1.31: Participate in Product Launches						
Task 1.32: Implement Analytics Tracking						
Task 1.33: Collaborate with the Sales Team						
Task 1.34: Participate in Customer Feedback Sessions						
Task 1.35: Implement Feature Flags						
Task 1.36: Collaborate with the DevOps Team						
Task 1.37: Participate in Incident Response						
Task 1.38: Implement Logging and Monitoring						
Task 1.39: Collaborate with the Data Science Team						
Task 1.40: Participate in Data Analysis						
Task 1.41: Implement Data Backup and Recovery						
Task 1.42: Collaborate with the Infrastructure Team						
Task 1.43: Participate in System Architecture Reviews						
Task 1.44: Implement Disaster Recovery Plans						
Task 1.45: Collaborate with the Compliance Team						
Task 1.46: Participate in Security Audits						
Task 1.47: Implement Access Control Mechanisms						
Task 1.48: Collaborate with the Legal Team						
Task 1.49: Participate in Privacy Impact Assessments						
Task 1.50: Implement Data Retention Policies						
Task 1.51: Collaborate with the HR Team						
Task 1.52: Participate in Employee Training						
Task 1.53: Implement Performance Management						
Task 1.54: Collaborate with the Finance Team						
Task 1.55: Participate in Budgeting and Forecasting						
Task 1.56: Implement Resource Allocation						
Task 1.57: Collaborate with the Operations Team						
Task 1.58: Participate in System Uptime Monitoring						
Task 1.59: Implement Load Balancing						
Task 1.60: Collaborate with the Network Team						
Task 1.61: Participate in Network Configuration						
Task 1.62: Implement Firewall Rules						
Task 1.63: Collaborate with the Security Team						
Task 1.64: Participate in Vulnerability Scans						
Task 1.65: Implement Patch Management						
Task 1.66: Collaborate with the Vendor Management Team						
Task 1.67: Participate in Vendor Selection						
Task 1.68: Implement Vendor Onboarding						
Task 1.69: Collaborate with the Procurement Team						
Task 1.70: Participate in Contract Negotiations						
Task 1.71: Implement Vendor Performance Monitoring						
Task 1.72: Collaborate with the Risk Management Team						
Task 1.73: Participate in Risk Assessment						
Task 1.74: Implement Risk Mitigation Strategies						
Task 1.75: Collaborate with the Insurance Team						
Task 1.76: Participate in Insurance Policy Review						
Task 1.77: Implement Insurance Claims Management						
Task 1.78: Collaborate with the Legal Team						
Task 1.79: Participate in Legal Review						
Task 1.80: Implement Legal Compliance						
Task 1.81: Collaborate with the Regulatory Team						
Task 1.82: Participate in Regulatory Reporting						
Task 1.83: Implement Regulatory Audits						
Task 1.84: Collaborate with the Compliance Team						
Task 1.85: Participate in Compliance Training						
Task 1.86: Implement Compliance Monitoring						
Task 1.87: Collaborate with the Audit Team						
Task 1.88: Participate in Audit Findings						
Task 1.89: Implement Audit Remediation						
Task 1.90: Collaborate with the Internal Control Team						
Task 1.91: Participate in Internal Control Reviews						
Task 1.92: Implement Internal Control Improvements						
Task 1.93: Collaborate with the External Audit Firm						
Task 1.94: Participate in External Audit Findings						
Task 1.95: Implement External Audit Remediation						
Task 1.96: Collaborate with the Tax Department						
Task 1.97: Participate in Tax Compliance						
Task 1.98: Implement Tax Reporting						
Task 1.99: Collaborate with the Finance Department						
Task 2.00: Participate in Financial Planning						

Appendix I: AON



Critical Path-----B-1->B-2->B-3->B-4->B-5->B-6

SlackTime

A-1	53
A-2	59
A-3	60
A-4	57
A-5	57
A-6	55
B-1	0
B-2	0
B-3	0
B-4	0
B-5	0
B-6	0
C-1	81
C-2	81
C-3	81
C-4	81
C-5	82
D-1	66
D-2	66
D-3	66
D-4	75
D-5	72
D-6	72
E-1	57
E-2	57
E-3	57
E-4	57
E-5	57
E-6	56
E-7	57

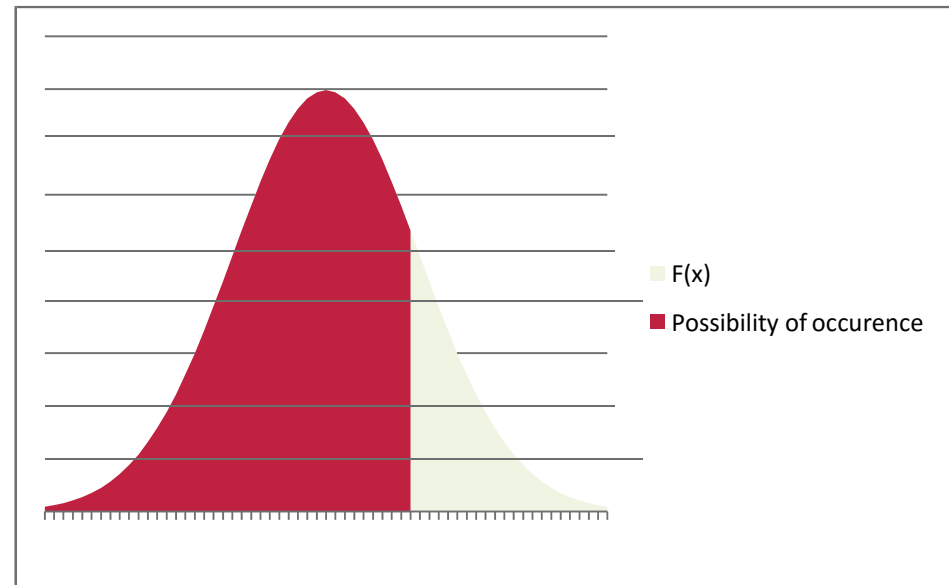
Appendix J : Probability Chart

Level 1 Deliverable	Critical Path Activity Number	Level 2 Activity	No of Days	Optomistic Time (a)	Most Likely Time (m)	Pessimistic Time (b)	Expected Time (TE)	Variance (o^2)	Standard Deviation (o)	95% Probability (1.645)	Normal Distribution (Z)	Project Completion Time (D)	Immediate Predecssor Activity
Car2Go Expansion Application Development Add-on	B-1	Software Development App	20	18	19	23	20	0.69	0.83	21	0.54	70%	Start
	B-2	App Integration Plan4	19	17	18	22	19	0.69	0.83	20	0.54	70%	B-1
	B-3	Gui Development	21	18	20	26	21	1.78	1.33	23	0.87	80%	B-2
	B-4	Backward Compatibilities	22	19	21	24	21	0.69	0.83	23	0.54	70%	B-3
	B-5	QA	16	12	16	20	16	1.78	1.33	18	0.87	80%	B-4
	B-6	Sign Off	6	3	5	8	5	0.69	0.83	7	0.54	70%	B-5
	Total		104	87	99	123	101	6.33	6.00	111	3.92		

Overall Critical Path	
Normal Disribution (Z)	2.33
Variance of Critical Path (o^2)	2.52
Desired Project Completion time (D)	99%
95% Probability (1.645)	111

Appendix J : Bell Curve

Range	F(x)	P
-3	0.004432	0.004432
-2.9	0.005953	0.005953
-2.8	0.007915	0.007915
-2.7	0.010421	0.010421
-2.6	0.013583	0.013583
-2.5	0.017528	0.017528
-2.4	0.022395	0.022395
-2.3	0.028327	0.028327
-2.2	0.035475	0.035475
-2.1	0.043984	0.043984
-2	0.053991	0.053991
-1.9	0.065616	0.065616
-1.8	0.07895	0.07895
-1.7	0.094049	0.094049
-1.6	0.110921	0.110921
-1.5	0.129518	0.129518
-1.4	0.149727	0.149727
-1.3	0.171369	0.171369
-1.2	0.194186	0.194186
-1.1	0.217852	0.217852
-1	0.241971	0.241971
-0.9	0.266085	0.266085
-0.8	0.289692	0.289692
-0.7	0.312254	0.312254
-0.6	0.333225	0.333225
-0.5	0.352065	0.352065
-0.4	0.36827	0.36827
-0.3	0.381388	0.381388
-0.2	0.391043	0.391043
-0.1	0.396953	0.396953
0	0.398942	0.398942
0.1	0.396953	0.396953



0.2	0.391043	0.391043
0.3	0.381388	0.381388
0.4	0.36827	0.36827
0.5	0.352065	0.352065
0.6	0.333225	0.333225
0.7	0.312254	0.312254
0.8	0.289692	0.289692
0.9	0.266085	0.266085
1	0.241971	
1.1	0.217852	
1.2	0.194186	
1.3	0.171369	
1.4	0.149727	
1.5	0.129518	
1.6	0.110921	
1.7	0.094049	
1.8	0.07895	
1.9	0.065616	
2	0.053991	
2.1	0.043984	
2.2	0.035475	
2.3	0.028327	
2.4	0.022395	
2.5	0.017528	
2.6	0.013583	
2.7	0.010421	
2.8	0.007915	
2.9	0.005953	
3	0.004432	

ID	Resource Name	Work (Hours)	TOTAL	September	October	November	December	January	February																	
			28	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21		
1	Project Manager																									
	Budget Analysis for Advertisements	4	4																							
	Fleet Cost Analysis	12	12																							
	Acquire Fleet	8	8																							
	Staffing Optimization Model	4	4																							
	House Boundaries	4	168	6	9	25.8	8	11	10	13	14	19	4	9	8	8	16	18	2	4	6	2	2	6	4	0
	Destination Permits	18	18																							
	Community Policies	0.8	0.8																							
	Legal Regulations	2	2																							
	Fleet Expansion Approval	2	2																							
2	Software Development App	16	16	4	4	4	4																			
	App Integration Plan	20	20					5	5	5	5															
	Gov Development	12	12								2	3	3	2	2											
	Backendward Compatibilities	12	12																							
	QA	8	8																							
	Sign Off	8	8																							
	Identify the ways for marketing	2	2		2																					
	Perform test Procedures on the Fleet	2	2		1	1																				
	Shop Layout Configuration	3	3																							
	Acquire the ship	8	8					3	3	2																
	Acquire equipment	8	8					3	2	3																
	Emissions and Regulations	6	6							3																
	Resource cost Analysis	20	20																							
	Strategic Scheduling	14	14							4	16			6	6											
	Technician Training	4	4																							
	ALE Training	4	4																							
	Customer Support Training	4	4																							
	Operations Team Training	8	8																							
	Leadership Communication	12	12																							
	3	Operations Officer		48	0	0	0	2	4	3	3	0	36	0	0	0	0	0	0	0	0	0	0	0	0	
Shop Layout Configuration		2	4				2																			
Acquire the ship		4	4				2	1	1																	
Acquire equipment		4	4				2	1	1																	
Emissions and Regulations		2	2				1	1	1				</													

Appendix L : 50-50 Planned Value																													
Level 1	Level 2 Activity	Level 3 Task	No of Days	Budget	Septe	October					November					December					January					Feburary			
					28	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	31	7	14	21			
Expansion Location: Hillsboro, OR	Sites to host		10	2380	1000			800			580																		
	Desitnation Permits		3	840				840																					
	Community Politics		2	440				440																					
	Legal Regulations		2	320				320																					
	House Boundaries		3	678				678																					
	Fleet Expansion Approval		2	500					500																				
Car2Go ExpansionApplication Development Add-on	Software Development App		20	3770										1000	300	470	2000												
	App Integration Plan 4		19	3620						1000	1100	520	1000																
	Gui Development		21	3960												1100	1000	1860											
	Backward Compatibilities		22	4100														1000	600	1500	1000								
	QA		16	2656																			1300			1356			
	Sign Off		6	1600																							1600		
Advertising & Promotions	Budget Analysis for Advertisements		3	840												840													
	Identify the ways for maketing		4	980	980																								
	Design adverstiment and promotions		5	880				880																					
	Adverstiments		11	31820					1820	30000																			
	Promotions		10	11660					10900	760																			
Acquire & Preventive Maintenance Plan for the fleet of vehicles	Fleet Cost Analysis		2	840					132	708																			
	Acquire Fleet		9	555600						300000	255600																		
	Perform test Procedures on the fleet		5	840								840																	
	Shop Setup			0																									
		Shop Layout Configuration	3	420					420																				
		Acquire the shop	10	21480						21480																			
	Acquire equipment	10	101480						400	1080	100000																		
Emissions and Registrations		5	1120									1120																	
Resource Manaagement	Resource cost Analysis		4	1100						1100																			
	Hiring/ Relocating		19	135720							100000			35720															
	Training			0																									
		Techician Training	4	580										580															
		ASE Training	5	7700											7700														
		Customer Support Training	5	700												700													
		Operations Team Training	5	880												880													
	Staffing Optimization		2	880												880													
Total				1000	980	3958	13352	334388	279840	201360	2120	46580	3120	1470	3860	1000	600	1500	1000	1300	0	0	1356	1600	0				
Cum. Total				1000	1980	5938	19290	353678	633518	834878	836998	883578	886698	888168	892028	893028	893628	895128	896128	897428	897428	897428	898784	900384	900384				

Appendix N: Risk Management

Probability	High			Software Development Q/A Community Politics
	Medium			
	Low	Emissions and Regulations Hiring/relocation Advertisements Destination Permits Acquire Shop Legal Regulations	Operation Team Training Customer Service Training ASE Training Acquire Fleet	
		Low	Medium	High
		Impact		

Political	Social	Economic	Technological
Registrations	Training	Acquire Shop	Q/A
Destination Permits	ASE Training	Acquire Fleet	Signoff
Legal Regulations	Advertisements	relocating	Software Development
Community Politics	Training		

Risk divided into the categories of PESTLE

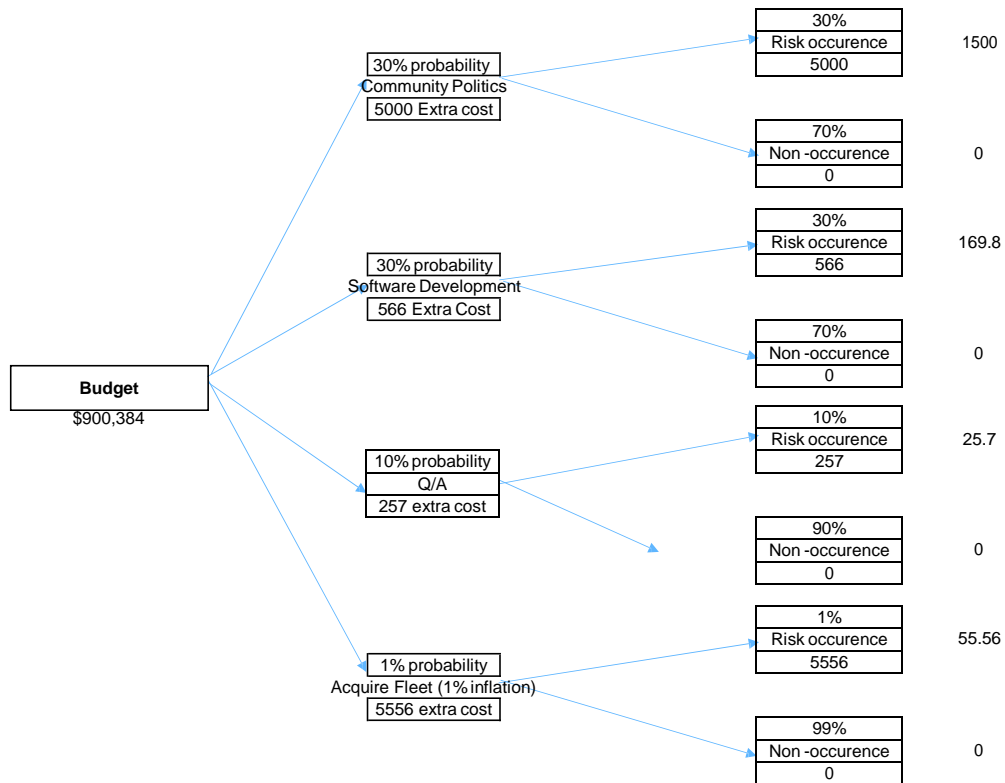
Deliverables with risk	Level of Impact	Risk Rating	Risk Management	measure and frequency	Control Measure
Community Politics	High	1	Accept the risk and add contingency reserve. Will lead to additional cost for external lawyer services. Have slack of 52 days	Weekly reports on status with calculations of CV and SV	CV and SV
Software Development	High	2	Accept the risk and add contingency reserve	Weekly reports on status with calculations of CV and SV	CV and SV
Q/A	High	3	Accept the risk and add contingency reserve	Weekly reports on status with calculations of CV and SV	CV and SV

Acquire Fleet	Medium	4	Accept the risk of price increase and added contingency reserve. Also have slack of 66	Weekly reports on status with calculations of CV and SV	CV and SV
Operation Team Training	Medium	5	No risk of delay. We have slack time of 56 days	Weekly reports on status with calculations of CV and SV	CV and SV
ASE Training	Medium	6	No risk of delay. have slack time of 57 days	Weekly reports on status with calculations of CV and SV	CV and SV
Customer Service Training	Medium	7	No Risk of delay. Have slack time of 57 days	Weekly reports on status with calculations of CV and SV	CV and SV
Emissions and Registrations	Low	8	No risk of delay. Have slack time of 72 days	Weekly reports on status with calculations of CV and SV	CV and SV
Destination Permits	Low	9	Does not pose risk of delay. We have slack time of 52 days if required	Weekly reports on status with calculations of CV and SV	CV and SV
Legal Regulations	Low	10	Does not pose risk of delay. We have slack time of 53 days if required	Weekly reports on status with calculations of CV and SV	CV and SV
Acquire Shop	Low	11	Have slack time of 72 days	Weekly reports on status with calculations of CV and SV	CV and SV
Hiring/ relocating	Low	12	No risk. Have slack time of 53 days	Weekly reports on status with calculations of CV and SV	CV and SV
Advertisements	Low	13	No risk of delay. We have slack time of 71 days	Weekly reports on status with calculations of CV and SV	CV and SV
Signoff	Low	14	Risk will be controlled by QA.so chances of no signoff will be negligible	Weekly reports on status of planned v/s actual	CV and SV

We are focusing on making a contingency reserve for top 4 risks categorised as High or Medium impact risks

Deliverable	Risk	Impact	Quantitative Impact	Probability
Community P.	We may lose few areas in the house boundary due to resistance from local residents	Hire external lawyers to re-negotiate. Which in turn will increase the cost	\$5,000	30%

Software Development	If the Business Requiramen document is not followed correctly	Delay in software development will delay the successor tasks.	\$566.00	30%
QIA	If bugs are not fixed in time	Will lead to delay in approval and require more resources	\$257	10%
Acquire Fleet	If fleets cost rises due to inflation or other	Will lead to more spending	\$5,557	1%



The contingency Reserve would be the addition of all the risks in colu
So, total Clntingency Reserve would be \$1751.06

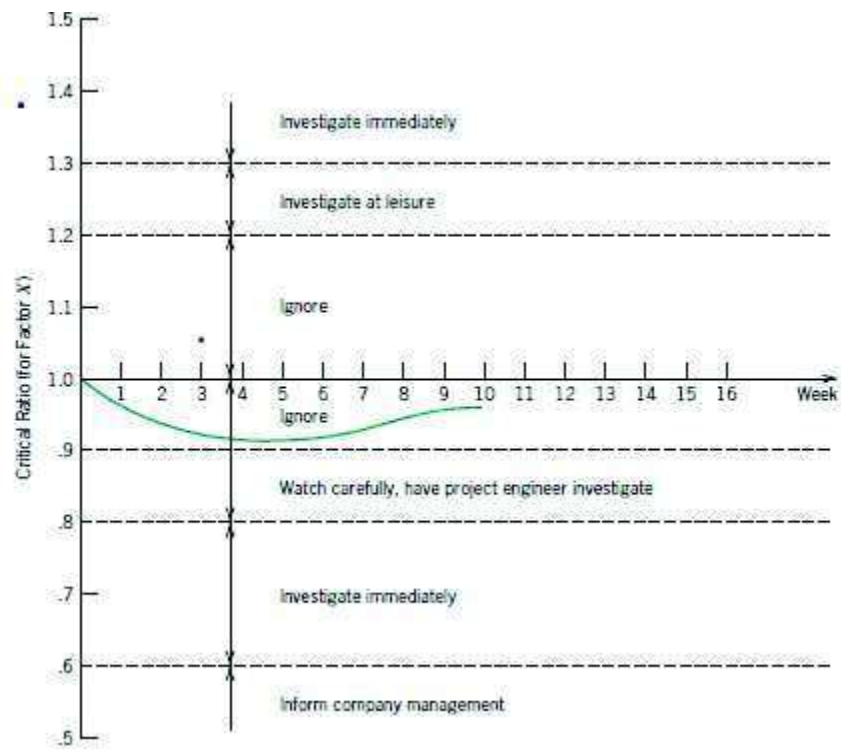
1751.06

Appendix O: Quantitative Measures

- **Schedule Variance (SV) = Earned Value – Planned Value.** The difference between what was planned to be completed and what has actually been completed as of the current date.
- **Cost Variance (CV) = Earned Value – Actual Costs.** The difference between the work that has been accomplished (in dollars) and how much was spent to accomplish it.
- **Schedule Performance Index (SPI) = Earned Value / Planned Value.** Schedule variance related as a ratio instead of a dollar amount. A ratio less than 1.0 indicates that work is being completed slower than planned.
- **Cost Performance Index (CPI) = Earned Value / Actual Costs.** Cost variance related as a ratio instead of a dollar amount. A ratio less than 1.0 indicates that the value of the work that has been accomplished is less than the amount of money spent.

Why would you use a CPI ratio chart instead of CV? Discuss the charts are indicating and justify your control limits why these values? Are the same limits over the project life cycle reasonable or should they change over time as the project progress?

The reason why you would use a CPI ratio chart instead of a CV chart is because the CV is often formulated as ratios rather than the differences. CV is in dollar value compared to CPI is a ratio value. The CPI indicates how the project has been earning value faster than it has been accruing costs, if the value is 1.0 or greater. The use of these ratios are helpful when an organization wishes to compare the performance of several projects, or same projects over different time periods. The limits of the project life cycle over time as the project progress should change because your EV to AC cost over time will decrease over time once the project has been successfully implemented.



Appendix P : Termination

Legal Regulations are completed	Legal advisors from Go2Go headoffice, by doing all paper work in time, all our legal regulations are assigned to the tasks can be sucessfully terminated.
Application signoff	Taking the time to do a final confirmation on completed deliverables ensures that everone are on same track and with final confirmation with PM can lead sucessful application signoff
Shop setup is completed	By doing proper research for office that is accessible to every place in hillsboro and making sure it is not effecting the major part of the budget and time can lead in sucessful shopsetup
Personnel training is completed.	By hiring a certified person with necessary training from Go2Go head office(Company requirement) and attching new person to experienced one can be sucessful terminated.