Project Management Plan

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# Project Description

The Main aim of the project is to submit a project plan to develop a safety critical computer system for plant automation that will include the process control system’s software i.e. the human user interface that interact with device. Our company is an international cooperation spread across multiple locations around the globe with the head office in Karlskrona, Sweden. We were approached by a client/customer from Germany to develop and deliver the project within the budget 1,200,000 Euros. The customer wants a very professional solution and emphasizes importance on safety. There are four sites total available among them the outsourcing and insourcing sites are as follows.

|  |  |
| --- | --- |
| Outsourcing areas for the project | Insourcing areas for the project. |
| * Poland, Gdansk | * Australia, Melbourne. * Malaysia, Kuala Lumpur. * China, Beijing. |

As the customer wants a very professional solution and also stressed the emphasis on safety criteria. Total number of months allocated for the project to be completed is given below in the table.

|  |  |
| --- | --- |
| Phase | Duration(months) |
| 1. Analysis | 3 |
| 1. Design | 3 |
| 1. Development | 6 |
| 1. Test planning | 3 |
| 1. Test Execution | 6 |

Note: Phases 3, 4 are executed parallels.

As the customer demanded to follow waterfall life cycle model a short description about the waterfall life cycle model and the corresponding activities performed in the model are illustrated below.

Waterfall model is a software development life cycle mode. It is a sequential design process model for development of product. The development of the product is carried out in 5 different phases. In waterfall model next phase is executed only after the previous phase meets the requirements criteria.

Analysis: The requirements necessary for developing the product are gathered in this stage.

Design: The requirements are sliced into modules for implementation. This makes both implementation and programme execution easy. In this stage the hardware and software specifics are designed and detailed as well.

Development/Implementation: In this stage the inputs are converted into real time executable code or program are developed.

Testing: Mainly involve verification and validation.

Maintenance: it involves improving quality and rectify errors that arise in testing phase. Cross check with the requirements specified by the customer.

# Task Assignment Summary

The task allocation for our project is detailed in Table 1. The site(s) that have been allocated to work on a task are marked with an X.

Table 1 Task distribution

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Analysis | | Design | | | | Development | | | | | Test Planning | | | Test Execution | | |
| ID | SE | AU | SE | CH | AU | PL | SE | MY | CH | AU | PL | SE | MY | AU | SE | MY | AU |
| 1 |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 1.a. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 1.b. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 1.c. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 1.d. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 1.e. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 1.e.i. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 1.e.ii. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 1.e.iii. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 2 |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 2.a. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 2.b. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 2.c. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 2.d. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 2.e. |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 3 |  | X |  |  | X |  |  |  |  | X |  |  |  | X |  |  | X |
| 4 | X |  |  | X |  |  | X |  |  |  |  | X |  |  | X |  |  |
| 5 | X |  |  | X |  |  | X |  |  |  |  | X |  |  | X |  |  |

# Task Distribution Strategy

This section describes why tasks were allocated to each site. As the project is globally distribute project with its headquarters at karlskrona, Sweden. And the insourcing sites area located at Australia, Melbourne; China, Beijing; Malaysia, Kula Lumpur. The third party contractor is located in Poland, Gdansk. The module based task distribution strategy is followed. The entire module is given to single site to reduce communication overhead and also the resources are limited. As in the table above we can see the offshore subcontractor doesn’t exist or no task is allocated to them in any of the 5 phases. Generally offshore outsourcing means subcontracting the task to third party vendors from different countries. The reason to avoid the third party vendors is mainly due to security, privacy norms, lower quality, sometimes fail to deliver the product within the threshold time period and sometimes when the task is allocated to third party vendors from specific locations unlike Poland which is in Europe itself along with headquarters there is a possibility or chance to face cultural differences and turnover rate which do exist in this case as well but relatively very less in this case avoids selecting the Poland subcontractor. The Malaysian site is also not selected as it contains both developers and testers are graduated people and are very new with no prior experience. Training them to match with the current task is long process, even after training in sometimes they dint understand which trouble is so it is avoided. China has experienced developers and testers who are good but the main drawback is they doesn’t contain the project management resources. SO in this case first a case study and action plan is to be prepared and the all the necessary training required to be given to the china people by the project manager is time taking process. Sometimes if any hardware equipment is unavailable in china then transporting it from Europe to china might have security clearance issues. But our motive is that china doesn’t have the project management resources and allocation of project manager and his adjustment with new environment is time taking process which we would like to avoid. There are a lot of chances in communication, understanding and cultural differences with respect to china when compared to Australia. Thus only two sites are selected they are Sweden headquarters. And the Australia. In order to allocate the task among these two countries the foals are identified and the allocation is done based on the important and higher priority once. The goals are achieved by considering all possible ad factors to achieve. The factors considered here are resources and experience level.

## Analysis Phase

As there are only two places among these sites the analysis phase is divided. There are no others sites with analysts though. The tasks are distributed among these based on the prioritization and experience level. The entire module is given to one site to reduce the communication overheads. The tasks in the analysis phase are distributed as follows.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system.

Australia is allocated with three tasks because this office has long term reputation developing the safety critical systems for the customers around the world. Thus the analysts present in the Melbourne office have the experience in developing the safety critical systems.

Sweden is allocated with the resources balance of plant and alarming and security system because allocating at least one to the headquarters is must and here we considered only two sites, among them one task should be challenging to be allocated to either of them. But here the headquarters have many several other projects to deal with. Thus more burden on it lead to problems. Sweden is allocated with two tasks which are at the end of the development because it is in direct contact with the customer and help to improvise and be in touch with them for the required changes.

## Design Phase

In this phase the available sites are Australia and Sweden. The task are distributed as follows.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system.

The modules core management, power management and pollution control are assigned to Australia as it has more advantages. In the previous phase all the three modules are handled by the office at Australia. When this task is assigned to other site other than Australia When the designers fail to understand the end product obtained from analysis phase then when there is misunderstanding in the product obtained and the product to be developed it is difficult to process and reduced the gap. Thus the task allocation is done to Australia to reduce the commutation. As sometimes even though we try to reduce the overhead in reducing the gap sometimes the organisational differences and assistance will become problematic…. The remaining two tasks are given to the headquarters as they are directly in touch with the customers it is easy to get the feedback from them and review it for rectification.

## Development Phase

In this phase the available sites are Australia and Sweden. The task are distributed as follows. The entire module are given to the same site to reduce the communication overhead.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system.

After the end product obtained from the Design phase the development phase the task allocation to Australia is three modules which are similar to the modules given in the previous phase as this allocation is apt. If at all the developers have any doubts or questions about the product or the blueprints that are obtained from design phase they can take to the expert in the respective area for clarification. If it is assigned to other site other than Australia then there will be communication and reduction in quality if at all the developers have any questions about the product. Trying to reduce them will sometime be problematic… The other two tasks are given to the headquarters as these are final phases in the development and as they are in touch with customers this can reduce the communication overhead.

## Test Planning Phase

In this phase the available sites are Australia and Sweden. The task are distributed as follows. The entire module are given to the same site to reduce the communication overhead.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system.

The number of developer’s designer’s testers at the office Australia are more when compared to headquarters. Thus allocating them with the third task will not affect as much as it shows when allocated at headquarters. The main reason behind it is as the number of people are less there will be impact in the quality in the software product line development. In this case as well similar to previous all the three tasks core management, power management and pollution control are allocated to site Australia. The other tasks are allocated to headquarters as they are in touch with the customer it is easy to cross check.

## Test Execution Phase

In this phase the available sites are Australia and Sweden. The task are distributed as follows. The entire module are given to the same site to reduce the communication overhead.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system.

Similar to the previous phase here as well the three task are given to Australia s if at all there are any questions the expert of the previous end product obtained from the test planning phase are asked for clarification. The other two task are given to headquarters as at least one task should be given to the headquarters. Unlike allocating them 3 tasks will be a lot of burden as the number of working staff in each expertise are less compared to people at office in Melbourne. Also the headquarters is directly in touch with the customer and they have several other projects along with this so, the current allocation strategy is explicitly perfect.

# Project Management Effort

The project management effort required in each phase is detailed for each site in Table 2. In each phase the project management effort is equal to approximately 10% of the budgeted work.

Table 2 Project Management Efforts by Phase and Site (Person Months)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Analysis | | Design | | | | Development | | | | | Test Planning | | | Test Execution | | |
|  | SE | AU | SE | CH | AU | PL | SE | MY | CH | AU | PL | SE | MY | AU | SE | MY | AU |
| Estimated Effort – Budget | 5.45 | 22.20 | 4.72 |  | 17.84 |  | 11.35 |  |  | 39.80 |  | 2.10 |  | 29.55 | 5.02 |  | 58.55 |
| Project Mgmt Effort | 0.545 | 2.22 | 0.472 |  | 1.78 |  | 1.135 |  |  | 3.98 |  | 0.21 |  | 2.955 | 0.502 |  | 5.855 |

## Overall Project Responsibility

The site that has the direct connectivity with the customer in this case from Germany is responsible for delivering the end product or final product to be delivered. The Sweden site is the overall in charge of delivering final product. This site has the sufficient project management effort to be allocated to each phase.

## Analysis Phase

The project management effort allocated for this phase is summarised as:

|  |  |  |
| --- | --- | --- |
| Effort for phase | 27.65 person months | (a) |
| PM effort for phase | 2.212 person months | (b) |
| Percent PM Effort | 8% | (b) / (a) \* 100 |

The sites that are available for this phase are only two Australia and Sweden. The other sites although have no analysts available in their offices.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system.

Both these sites have enough project management resources. All these have enough analysts with them. The other sites are not included as they don’t have the analysts even if they might have been selected in case. So the project management effort is required at both sites to reduce redundancy, communication and improve coordination between sites. The design phase is more important phase as it involves the architecture of the product or the blueprints of the product are stimulated here. The overall PM effort for this phase is 2.212 person months.

## Design Phase

The project management effort allocated for this phase is summarised as:

|  |  |  |
| --- | --- | --- |
| Effort for phase | 22.56 person months | (a) |
| PM effort for phase | 2.381 person months | (b) |
| Percent PM Effort | 10% | (b) / (a) \* 100 |

The sites that are available for this phase are only two Australia and Sweden. The other sites although have no analysts available in their offices.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system.

Australia and Sweden have the sufficient project management resources available with them. It is the responsibility of the headquarters to deliver the product. The project management effort is required at both sites as the overall redundancy, communication and coordination overheads can be reduced. The overall PM effort for this phase is 2.381 Person months.

## Development Phase

The project management effort allocated for this phase is summarised as:

|  |  |  |
| --- | --- | --- |
| Effort for phase | 51.15 person months | (a) |
| PM effort for phase | 6.138 person months | (b) |
| Percent PM Effort | 12% | (b) / (a) \* 100 |

The sites that are available for this phase are only two Australia and Sweden. The other sites although have no analysts available in their offices.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system

Both the Australia and Sweden have sufficient project management resources. The development phase as the functionality of the product is dependent on it. The Project management effort for this phase is 6.138 person months which is higher when compared to other phases as more number of persons are involved in this phase for development. This phase is important as the final integration and functionality testing done at headquarters must meet the customer requirements. So careful and precision in quality maintained is important in this stage.

## Test Planning Phase

The project management effort allocated for this phase is summarised as:

|  |  |  |
| --- | --- | --- |
| Effort for phase | 31.65 person months | (a) |
| PM effort for phase | 2.532person months | (b) |
| Percent PM Effort | 8% | (b) / (a) \* 100 |

The sites that are available for this phase are only two Australia and Sweden. The other sites although have no analysts available in their offices.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system

Both the sites have sufficient project management resources. The previous phase is executed by same persons so the person months effort is comparatively less in this stage as the test case generated are done by same site where development is done. Thus the Pm effort in this stage is 2.532 Person months.

## Test Execution Phase

The project management effort allocated for this phase is summarised as:

|  |  |  |
| --- | --- | --- |
| Effort for phase | 63.57 person months | (a) |
| PM effort for phase | 7.6284person months | (b) |
| Percent PM Effort | 12% | (b) / (a) \* 100 |

The sites that are available for this phase are only two Australia and Sweden. The other sites although have no analysts available in their offices.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system

Both the sites have sufficient resources. As no third site is involved in this stage as well the same criteria as said earlier works here. The PM effort in this stage is 7.6284 person months. This is higher than the previous phase effort as it is time consuming. It involves delivering the product without any mistakes. It also involve the project management effort to see if the testers are following right path in testing as per the requirements of the customer if they are same or not.

# Integration Effort

As the tasks will be completed by different people, and perhaps even in different sites some integration effort will be required in this project. Table 3 details the integration effort budgeted for each site and phase.

In this case the integration effort is calculated as (Number of days allocated for integration/20)\*(number of persons allocated for integration), which is same for persons per site and phase. 20 is number of working days.

Table 3 Integration Effort (Person Months per Site and Phase)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Analysis | | Design | | | | Development | | | | | Test Planning | | | Test Execution | | |
|  | SE | AU | SE | CH | AU | PL | SE | MY | CH | AU | PL | SE | MY | AU | SE | MY | AU |
| Effort | 0.5 | 0.75 | 1.00 |  | 1.50 |  | 2.00 |  |  | 3.00 |  | 1.00 |  | 1.50 | 2.00 |  | 3.00 |

In this integration process all the components that are distributed at two sites are integrated to gather at the end in order to proceed for the next stage. In this case we only have two sites available.

## Analysis Phase

Sweden is the headquarters and this site is used as the integration site. The headquarters have direct tie with the customer in the Germany which is in Europe as well so nearby to the customer. We can give the end phase updates to the customer as planned in the communication phase. The task that are assigned to the sites are:

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system

Three persons from Australia are sent for integration to the Headquarters. One person is project manager in the analysis phase and remaining two are the analysts of the products requirements. Two persons are useful at headquarters as well for the integration during analysis phase and one of them is manger and the other is analyst. Sweden is the main site so the entire responsibility at this site is very high. The integration effort at headquarters is 0.5. The integration effort from Australia is 0.75. As the site Australia has long reputation in building safety computer systems thus it has a very less chance of modifying the product to the headquarters site. As all the analysts are accomplished the nitration effort is less in this case.

5 days is allocated as there will be sometimes chance that all the people are unavailable to the meeting due to travelling. Since our travelling tie is between 1 day to 34 hours So we give rest one day after coming and also last day and last but one are used to re access the end product. So, there is no rush among the team. Hen remaining two days will be sufficient for assessment.

Persons allocated for integration = (2 from Sweden, 3 from Australia)

Days allocated for integration=5

Integration effort for analysis phase = (5/20)\*5=1.25

## Design Phase

Similar to the above case the Sweden is the headquarters and the site is used as integration site. The headquarters have the direct tie with the customer in the Germany which is in Europe as well so nearby to the customer. We can give the end phase updates to the customer as planned in the communication phase. The task that are assigned to the sites are:

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system

Here also three persons from Australia

Three person form Australia are sent for integration. Here as well one person is the project manager and two persons are designers. Two persons at headquarters are useful in integration effort one person is manager and the other one is designer. Total number of days allocated for integration is 10 days. As first day can be a casual general meeting. The 2 days are left free from schedule for reassessment in the blueprints that are obtained in the design phase developed by Australia site are matching without any problems. Remaining days are useful in design integration. The integration effort at headquarters is 1.00 and at Australia is 1.5. These efforts are sufficient. The integration effort required is less as both the sites have experienced designer’s expert in their task.

Persons allocated for integration = (2 from Sweden, 3 from Australia)

Days allocated for integration=10

Integration effort for analysis phase = (10/20)\*5=2.50

## Development Phase

Similarly here also headquarters is Sweden.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system

Integration for this phase as mentioned in communication plan, each phase is updated to the client at the end of the phase. This phase is where the implementation of the code to develop the product is done so it must be done very carefully and it takes lot of time in integrating them. This must be checked with the end product obtained from the previous phase. They are compared with the final expected product. Thus it involves lot of procedures so it takes a lot of time. The integration effort at headquarters is 2.00 and at Australia is 3.00. Three person form Australia are sent for integration. Here as well one person is the project manager and two persons are developers. Two persons at headquarters are useful in integration effort one person is manager and the other one is developer. Total number of days allocated for integration is 20 days. These 20 days even though if first two and last two days are left for general casual meeting and debriefing and also review of product. 1 day for taking rest other 15 of the days can be used for development which can be sufficient of the integration. This phase demands more time in integration as it is very important phase. Even though the developers are experienced the integration can’t be done after they arrive it takes time so we gave them more days for integration,

Persons allocated for integration = (2 from Sweden, 3 from Australia)

Days allocated for integration=20

Integration effort for analysis phase = (20/20)\*5=5

## Test Planning Phase

Similarly here also headquarters is Sweden.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system

Integration for this phase as mentioned in communication plan, each phase is updated to the client at the end of the phase. The site Australia have a very long reputation so 10 days is sufficient for integration as they are experienced. Three person form Australia are sent for integration. Here as well one person is the project manager and two persons are testers. Two persons at headquarters are useful in integration effort one person is manager and the other one is testers. In this case the testing is done without any error and the integration is made. Integration effort at headquarters is 1.00 and at Australia is 1.5. The integration effort is less in this case. The days are distributed similar to the design phase allocation for the testers.

Persons allocated for integration = (2 from Sweden, 3 from Australia)

Days allocated for integration=10

Integration effort for analysis phase = (10/20)\*5=2.5

## Test Execution Phase

Similarly here also headquarters is Sweden.

Australia: Core management, power management and pollution control

Sweden: Balance of plant, alarming and security system

This phase require excess effort as it involves final assessment of the product to deliver to the customer. The integration effort is similar to the days allocated n development phase. Integration effort at headquarters is 2.00 and the integration effort at Australia is 3.00. The integration effort here is more as it involves extra effort n re verification of the final product before delivering to the customer.

Persons allocated for integration = (2 from Sweden, 3 from Australia)

Days allocated for integration=20

Integration effort for analysis phase = (20/20)\*5=5

# Communication Plan

This section describes events, meetings and training sessions held within the project.

## Event 1

The initial kick off meeting which is the first meeting that is held. The event is being held in the beginning of the project. It is not recurring and not repeated. The meeting is held only once. The location is at headquarters Sweden. Customers, Project manger’s, Project director, senior members are involved. The meeting is face to face type. Topic is manly focused on the duration, budget, resource schedule and allocation, objectives of the project. Mentioned in the table below about the details of all the flight charges from travelling to Australia to Sweden and hotel stay is also mentioned.

## Event 2

Team member’s initiative kick off meeting. This meeting is held once in every phase. The meeting is held at their respective site locations. Project manager and team members are involved. The topic mainly focus on the distribution of activities between the team members, roles and responsibilities of the project and the scheduled time for completion, schedule for the ongoing meetings. No budget allocation. Face to face commination.

## Event 3

This is a status meeting. This meeting is held every 10 days. The event is held at their respective sites. The project managers, members of the team are involved. The topic is focused on the activities completed by each member and the overall status of the project and remaining activities and problems raised are discussed with each other to resolve. No budget allocation. Face to face meeting.

## Event 4

Integration meeting. This meeting type is held once at end of every phase. The meeting is held at the headquarters. The project managers, members of the team from each phase are involved. Mainly the topic focus on the activities for carrying the integration of the tasks gathered from site is integrated. Face to face communication. Table below in budget show the hotel stay and charges at Sweden.

## Event 5

This event involves the status report event. It is recurring once in every 15 days. The project managers are involved. Reporting the status of the assigned task for the given task which is helpful to track the overall project status and also to provide the status information to customer if necessary. Emails are used to communicate. No budget allocation.

## Event 6

This event involve team building activities. This is held only once. The project managers and team members are involved. This helps for team building the trust and eliminating the cooperation and communication problems between the employees. Face to face communication is used, Create general oral activities at the site to take them to a good location or recreation park once and 3 movies in 6 months period of time.

## Event 7

Final review meeting. This meeting is held in Sweden. The project managers, customer and project director are involved to discuss the product. It mainly focus on the demonstration of the developed product. Face to Face communication. Table mentioned for travel and budget. It is held once.

## Event 8

End party it is held once. It is face to face communication. Project manager, project director. End party it involves food Drink celebrations. Awards for best employees, hard workers, best people in each phase. Grand closing ceremony with both country cultural events and concluded by national anthems. Party, travel and stay charges event charges are mentioned.

# Additional Human Effort

* The initial kick off meeting for which the project managers fly from Australia to Sweden and stay in hotel for one day.
* The project managers at end of each phase travel with the two team members from Australia to Sweden.
* Different tools required during the phases like analysis, design, developmemt, test plan, test execution are needed to be provided which involve additional costs.
* Electricity bill for managing the databases storage and computers every month for the six months. Papers print outs and general utensils provision.
* Booklets or recording about the discussion on the project to be stored to retieve and track down.
* Food expenses during the travelling and stay are considered.
* After completion of final phase the project managers fly from Australia to Sweden to demonstrate product to customer and stay in hotel for 3 days.
* Integration effort at each stage involving travel of 3 people.
* Movie tickets for all the staff and the recreation park expenses.
* End party celebrations. 15 people are invited from Australia including project manager and staff for party.
* Tools that are used in each phase some communication tools as well. The unavailable tools are purchased,
* The overhead due to reassessment of modules that are developed wrong and rescheduling them.
* Travelling costs for three persons from Australia to Sweden during every phase in the development. It is involved in the integration phases (analysis, design, development, test plan, test execution). The activity involve the stay and travelling and discussing about the integration of the e product at each stage. Project managers and team members. Yes the travel details are given in below table.
* Travel cost from Stockholm international airport to Ronneby domestic airport in the all the integration phases (analysis, design, development, test plan, test execution) for all the three persons project manager and 2 team members. Initial kick off meeting project managers, Final meeting phase where the project managers attend. End party phase for all the 25 persons attending. All the transportation expenses are bared by the company.
* Travelling costs from ronneby airport to karlskrona head office during the phase’s integration, initial kick off meeting, final kick off meeting and the end party event during which the project manager and team members in initial kick off meeting transportation by car. Then the initial and final kick off meeting where managers are transported by car. Then the final end part the transportation for all 25 person by bus.

## Activity 1

Additional human effort is required to reduce the time gap between the two countries. The human effort is to track down the progress of the project every day by the project manager and two team members working on current state of development in the project are updated once in every week. They are paid excess amount for performing this task and this can be done from work from home as well. The time allocated is 1 and half hour. It is done in every phase of development. Work from home communication software required for communication are provided which involve additional costs as well. The budget allocation is done in other costs.

## Activity 2

In order to reduce the cultural and language barriers the training is given 1 or 2 days before the travel about the behavioural norms and for all the people travelling they are trained by expert in the respective field of culture from Sweden who is hired during the project. They visit based on our schedule to travel in every phase and train the people. The budget allocation is done in other costs table.

## Activity 3

In order to reduce the stress and the improve the communication coordination between the team members 1 person is allocated as the trainee to look into the persons interaction skills and increase the event activities and conduct them at regular intervals. The budget allocation is done in other costs table.

## Activity 4

Care is taken to reduce the integration gap and to make sure that the trust is developed and the people are involved in sharing the code. The differences among them are reduced. The project managers are paid along with team members for travelling during the integration phases. This is done at headquarters. The budget allocation is done in other costs.

# Additional Costs

This section details cost other than human capital. All costs are in Euro (EUR).

Costs related to travel are summarised in Table 4.

Table 4 Travel Costs

**Table 6 Travel and Hotel Costs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** |  | **Comment** | **Unit Cost** | **Quantity** | **Total** |
|  | **Initial meeting** | | | |  |
| Flight: Australia to Sweden |  | 1 person, return | 1000 | 1 | 1000 |
| Flight: Stockholm to ronneby |  | 1 person,return |  |  |  |
|  | **integration process** | | | |  |
| Flight: Australia to Sweden (Analysis) |  | 3 person, return | 1000 | 3 | 3000 |
| Flight: Australia to Sweden (design) |  | 3 person, return | 1000 | 3 | 3000 |
| Flight Australia to Sweden (development) |  | 3 person, return | 1200 | 3 | 3000 |
| Flight: Australia to Sweden (test planning) |  | 3 person, return | 1200 | 3 | 3000 |
| Flight: Australia to Sweden (test execution) |  | 3 person, return | 1200 | 3 | 3000 |
|  | **Final review meeting in Australia** | | | |  |
| Flight Australia to Sweden |  | 1 person, return | 1000 | 1 | 1000 |
|  | **Hotel** | | | |  |
|  | **Initial meeting ,final review meeting** | | | |  |
| Hotel: Sweden (Australia) |  | 1 person, 3 night | 100 | 1 | 100 |
| Hotel Sweden (Australia) |  | 1 person, 3 nights | 100 | 3 | 300 |
|  | **integration process** | | | |  |
| Hotel: Sweden (Australia) analysis |  | 3 person, 5 night | 70 | 3\*5=15 | 1050 |
| Hotel Sweden(Australia) design |  | 3 person,10 night | 100 | 3\*10=30 | 3000 |
| Hotel : development phase |  | 3 person, 20 night | 100 | 3\*20=60 | 6000 |
| Hotel: test planning |  | 3 person, 10 night | 100 | 3\*10=30 | 3000 |
| Hotel :test execution |  | 3 person, 20 night | 100 | 3\*20=60 | 6000 |
|  | **End Party** | | | |  |
| Hotel: Sweden (Australia) |  | 15 person, 3 night | 70 | 3\*15\*=45 | 3150 |
| Hotel: Buffet |  | 20 person | 8 | 20\* 8=160 | 1280 |
| Awards |  | 7 person | 8 | 7\*8=56 | 56 |
| Cultural events |  | 10 participants | 250 | 250\*10 | 2500 |
|  | **Recreation and movie** | | | |  |
| entrance: Australia(recreation park) |  | 25 person | 3 | 25\*3 | 75 |
| Movie entrance :Australia |  | 25 person | 3 | 3\*3=9 | 225 |
| entrance: Sweden(recreation park) |  | 10 person | 3 | 10\*3 | 30 |
| Movie entrance: Sweden |  | 10 person | 3 | 3\*3times=9 | 90 |
|  | **GRAND TOTAL** | | | | **50856** |

Other costs are summarised in Table 5.

Table 5 Other Costs

| **Phase** | **Item** | **Unit Cost** | **Quantity** | **Total** |
| --- | --- | --- | --- | --- |
| Start of the project | Big dinner party for head office staff | 3 | 10 | 30 |
| tools |  |  |  |  |
| Analysis | Analysis software | 180 | 2 | 180 |
| Trainee (cultural difference) | During phases initial, final, integration (5), end party. (2 sites) | 300 | 8\*2=16 | 4800 |
| 1 hour work pay | Every week the update about the work progress during some common time in non-working hours | 50 euro | 3\*120days in 6 months=360 | 18000 |
| Communication equipment | To all the staff 60 pc and mobile | 300 | 60 | 18000 |
| Communication equipment | For high quality video conferencing software | 8500 | 2 | 17000 |
| Salary for travelling people to satisfy the norms of headquarter | The main purpose here is to increase the salary of the people travelling to other site and make sure they are paid well for the work done in reducing the integration effort | 2000 (Euro Bonus) | 5\*6months=30 | 60000 |
| Trainee (extra circular activities) | Monthly six months(2 sites) | 500 | 6\*2=12 | 6000 |
| Electricity bills | Printouts , video conferencing(monthly) | 2000 | 2 | 4000 |
| Electricity bill | Generators, Data storage high quality | 2500(per week) | 2\*2sites=4 | 10000 |
| development | Development tools | 170 | 2 | 170 |
| Food expenses for trainee | 2 trainee at each site total 4 | 10 per day | 4\*120=720 | 7200 |
| Design phase | Rational rose | 200 | 2 | 200 |
| Testing tools | Testing | 300 | 3 | 300 |
| Module overhead | Tools | 700 | 1 | 700 |
|  |  |  |  |  |
| **GRAND TOTAL** | | | | **1580** |

# Budget

A summary of the budget is presented in Table 6.

Table 6 Budget Summary

|  |  |
| --- | --- |
| **Item** | **Amount (EUR)** |
| Human Capital (From Excel) | 803095 |
| Travel Costs | 50856 |
| Other Costs | 1580 |
| ***Grand Total*** | ***855531*** |

## Risk of deviation

Discuss the likelihood of coming within budget. Assume a total budget variance of 10%. A

# Risks

The major risks faced by this project are listed in Table 7.

Table 7 Major Project Risks

| **Risks** | **Likelihood** | **Impact** | **Mitigation/Reduction Strategy** |
| --- | --- | --- | --- |
| Staff Turnover | Low | High | * Bonus * Salary rise * Rewards * Work appreciation * Effective communication * Conducting regular face to face communication * Informal meetings * Motivation |
| Quality | Medium | low | * To conduct face-to-face meeting in every phase to make sure all the team members are clear about the goals of the project. * To take a continuous feedback from the customer at the end of every phase. * By assigning the work to highly skilled and efficient people. |
| Language and cultural differences | Medium | Medium | * To give suggestions to learn/ improve the English language. * To record every meeting and track down them for understanding. * To conduct face to face communication instead of video conferencing in this case we don’t have the common working hours. * Excess effort on working 1 hour extra every week on updating the progress during non-working hours are paid or subsidised with large amount. * To make them understand the global cultural aspects and make sure they know the general formal behaviour for the people who visit the Sweden sites. |
| Most important **Integration Risk** With respect to code fluctuations | Medium | Low | * The code used or the format followed is different at different sites care to be taken such that these code principles are explained when the integration is done and the concepts are made clear among the people. |
| Integration risk with trust | High | High | * Trust is developed among the trevelling person and the people at the receiving end by speaking on general aspects the area where they differ. The scope for development in enriching the trust. The common food habits. * general meetings are conducted where the project managers take care in developing the trust among the teams. |
| Temporal distance | High | High | * As the sites are located with a time difference of +10 hours’ time here we would like to choose an hour common to both the sites so that they can contact with each other during this period of time. * For this special software equipment that is available both to mobile version, desktop version and pc version are installed in the staff and project managers to communicate with other end site people easily. * This is live feed with great clarity and secured portal. * The idea is to install the same software but much sophisticated version in the office if at all the staff are staying in the office itself working they can communicate in the office as well. |
| Cost overload | Medium | High | * Proper planning should be done by the project managers and project director to utilize the resources and improve quality. |
| Stress hours among employees | High | High | * The stress load is high in software development care is taken to provide canteen, coffee hours, free food all the expenses are bared. |
| Travelling and food expenses, stay | High | High | * Care to be taken that all the provided transportation, food and hotel expenses are of high standard. * Option to be given such that they can choose from the option for food either the can pay for themselves or the company can bear. * Care to be taken that they are provided with all the facilities of good standard. |
| Failure of database | Medium | High | * Care to be taken that 2 backup are maintained so that the storage is not compromised when it comes to damage. * Generators are inserted such that the will give back up power supply when extremely needed. |
| Communication and coordination | Low | Low | * Face to face communications mechanism is mostly used as there are only two sites. * The extra activities like mingling sections, general activities like taking to movies are included. * The mingling activities are conducted in offices like quiz competitions, and group discussion on general issues, common food court area are all useful in improving the communication. |
| Trust | Low | Low | * Conducting face to face communication to reduce the differences. * Keeping all the files and folders accessible to all the team member’s not showing any hierarchy within the organisation will increase the trust. |
| Geographical distance | High | High | * As the travelling distance is high the persons travelling are given the opportunity to travel in business class for their entire transportation in all phases. |
| Change in requirements | Low | High | * once requirements are specified then change in requirements is avoided to maximum extent. |
| Hardware and software problem | Medium | High | * Both the sites can possibly use the same hardware. But can use the same software so that there are no ups and downs. |
| Customer satisfaction | Low | High | * Customer must be involved in every phase of development and is satisfied with the product developed. If he is not satisfied the necessary updates needed are informed and modified as it is waterfall model once the customer is satisfied in that phase only then the next phase is started. |
| Task uncertain | Low | High | * By conducting face to face communication the task are explained clearly and seen that they are properly understood. * Every team member is given awareness about their roles and responsibilities. |
| Product delivery failure | medium | High | * To monitor the status of progress using the monitoring tools and implementing necessary precautions if the task is off the track. * To check if the product is developed or progress is as per schedule and updates are imbibed as well. * To check if proper time is allocated to develop the product if required changing or improving the flexibility of deadline 1 or 2 days. |