**Cost management plan**

**Project Name: AlphaXiu Gobang Webgame Project**

Modification record:

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| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 2021.10.05 | <1.0> | Initialize the cost management plan | <陈涵，张天乐> |
| 2021.10.25 | <2.0> | Update the 9th week cost management | <周灿苗，曹云舒> |
| 2021.11.01 | <3.0> | Update the 10th week cost management | <陈涵，张天乐，曹云舒> |
| 2021.11.08 | <4.0> | Update the 12th week cost management | <周灿苗> |
| 2021.11.15 | <5.0> | Update the 12th week cost management | <周灿苗> |
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**1.Introduction**

**1.1 Purpose**

The purpose of the cost management plan is to ensure that the project cost is planned according to the needs of the project, tracked and changed according to the procedures, and reported regularly. This plan involves project cost management and will be continuously updated as a result of continuous improvement of project cost management procedures.

**1.2 Assumptions**

The project will be based on the revised cash management cost.

**1.3 Scope**

The scope of the cost management plan is the processes, roles and tools used to plan and manage project costs throughout the project life cycle. This plan records the following cost management activities:

(1) Project cost management

The main activity of cost planning is cost management. This function defines how the web version of Gobang development project will manage the changes in project costs, record expenditures, and track planned actual costs and expenditures.

Project cost management can be divided into the following parts:

① Expense tracking

This part includes tracking all expenditure activities of the Huagong online black market project, including personal services and operating expenses and equipment. The process starts with spending requests, requests for research, purchases and completion, first payment and payment tracking requests.

② Cost control and change

This part defines how the budget changes and unplanned budget changes.

③ Cost check

This part includes coordinating the latest approved activities and monitoring project costs based on actual weekly expenditures. This process records the weekly budget assumptions for this project.

(2) Budget/Accounting

This process defines how to manage the costs directly related to the web version of the Gobang project, such as the cost of hardware and software facilities, in accordance with the SPR plan.

**1.4 Roles and responsibilities**

|  |  |
| --- | --- |
| Role | Responsibility |
| project manager | Approve the cost management plan;  Responsible for approving the baseline according to the cost of project development;  Review/approve project expenditures;  Responsible for holding synchronous meetings; |
| cost analysis | Track project cost, settle project cost, assist in project research |
| Business and Technical Project Manager | Review/approve project expenditures;  Determine financing needs and ensure that there are appropriate supporting documents for all matters to assist in tracking expenditures;  Responsible for decision-making issues; |

**2. Cost estimation**

According to the COCOMO model, the cost is studied and the following cost plan is obtained

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Estimate project cost based on COCOMO model | | | | | | | | | |
| 总体类型 | 工作量（人月PM） | | 开发时间（月M） | | | | 项目所属 | | |
| 组织型 | （其中L为项目代码行估计，单位为千行代码） | | D=2.5(E)0.38 | | | | 本项目为小规模组织型项目，根据COCOMO模型的基本公式预估:  全部工作量E = =21.3PM；  开发时间D = 3.0个月；  假设每人成本为8000，总成本为51.12w。 | | |
| 半独立型 | （其中L为项目代码行估计，单位为千行代码） | | D=2.5(E)0.35 | | | |
| 嵌入型 | （其中L为项目代码行估计，单位为千行代码） | | D=2.5(E)0.32 | | | |
| Cost Drivers | | 评估 | | | | | | | |
| Very Low | | Low | Nominal | High | | Very High | 项目所属 |
| Product attributes | |  | | | | | | | |
| Required software reliability | | 0.75 | | 0.88 | 1.00 | 1.15 | | 1.40 | Nominal 1.00 |
| Size of application database | | 0.84 | | 0.92 | 1.00 | 1.08 | | 1.16 | Very Low 0.84 |
| Complexity of the product | | 0.70 | | 0.85 | 1.00 | 1.15 | | 1.30 | Very High 1.30 |
| Hardware attributes | |  | | | | | | | |
| Run-time performance constraints | | 0.74 | | 0.89 | 1.00 | 1.11 | | 1.30 | Nominal 1.00 |
| Memory constraints | |  | | | | | | | |
| Volatility of the virtual machine environment | | 0.79 | | 0.87 | 1.00 | 1.15 | | 1.30 | Low 0.87 |
| Required turnabout time | | 0.76 | | 0.87 | 1.00 | 1.07 | | 1.15 | Nominal 1.00 |
| Personnel attributes | |  | | | | | | | |
| Analyst capability | | 1.52 | | 1.21 | 1.00 | 0.86 | | 0.69 | High 0.86 |
| Applications experience | | 1.29 | | 1.13 | 1.00 | 0.91 | | 0.82 | High 0.91 |
| Software engineer capability | | 1.42 | | 1.17 | 1.00 | 0.86 | | 0.70 | High 0.86 |
| Virtual machine experience | | 1.34 | | 1.21 | 1.00 | 0.90 | | 0.72 | Low 1.21 |
| Programming language experience | | 1.14 | | 1.07 | 1.00 | 0.95 | | 0.90 | High 0.95 |
| Project attributes | |  | | | | | | | |
| Application of software engineering methods | | 1.24 | | 1.10 | 1.00 | 0.95 | | 0.84 | High 0.95 |
| Use of software tools | | 1.23 | | 1.10 | 1.00 | 0.91 | | 0.87 | High 0.91 |
| Required development schedule | | 1.21 | | 1.08 | 1.00 | 1.05 | | 1.15 | High 1.05 |
| EAF=1\*0.84\*1.30\*1.00\*0.87\*1.00\*0.86\*0.91\*0.86\*1.21\*0.95\*0.95\*0.91\*1.05=0.667，总预计为51.12w\*0.667 = 34.1w | | | | | | | | | |

**3. Cost management**

At the beginning of each work week, the approved budget change proposal contains the following two parts

(1) Expense tracking, see the table below for details

(2) Cost control and changes, see the table below for details

|  |  |  |
| --- | --- | --- |
| Earned value management | | |
| 周数/完成日期/项目经理  第1周10.2项目确定 陈涵 | 计划值 | 无 |
| 实际成本 | 无 |
| 挣值计算 | 无 |
| 第2周10.8 陈涵 | 计划值PV | 预估本周工作量E = = 1.16PM；  工作时间为D = 0.3月；  假设每人成本为8000，总成本为1.16\*0.3\*8000\*0.667 = 0.28w |
| 实际成本AC | AC = 0.27w |
| 挣值计算EV | 本周工作量完成百分比RP = 96%  挣值EV = PV\*RP = 0.28w\*0.96=0.2688w；  根据成本偏差CV=EV-AC<0,处于成本超出状态 |
| 第3周10.15陈涵 | 计划值PV | 预估本周工作量E = = 2.4PM；  工作时间为D = 0.3月；  假设每人成本为8000，总成本为2.4\*0.3\*8000\*0.667 = 0.38w |
| 实际成本AC | 0.36w |
| 挣值计算EV | 本周工作量完成百分比RP = 100%;  挣值EV = PV\*RP = 0.38w\*1=0.38w;  根据成本偏差CV=EV-AC>0,处于成本节约状态 |
| 第4周10.22张天乐 | 计划值PV | 预估本周工作量E = = 3.42PM；  工作时间为D = 0.3月；  假设每人成本为8000，总成本为3.42 \*0.3\*8000\*0.667=0.55w |
| 实际成本AC | 0.581w |
| 挣值计算EV | 本周工作量完成百分比RP = 98%;  挣值为EV = PV\*RP = 0.55w\*0.98=0.539w;  根据成本偏差CV=EV-AC<0,处于成本超出状态 |
| 第5周10.29曹云舒 | 计划值PV | 预估本周工作量E = = 3.93PM；  工作时间为D = 0.3月；  假设每人成本为8000，总成本为3.93\*0.3\*8000\*0.667=0.629w |
| 实际成本AV | 0.551w |
| 挣值计算EV | 本周工作量完成百分比RP = 100%  挣值为EV = PV\*RP = 0.629w\*1=0.629w,  根据成本偏差CV=EV-AC>0,处于成本节约状态 |
| 第6周11.5陈涵 | 计划值PV | 预估本周工作量E = = 1.90PM  工作时间为D = 0.3月；  假设每人成本为8000，总成本为1.90\*0.3\*8000\*0.667=0.3w |
| 实际成本AC | 0.289w |
| 挣值计算EV | 本周工作量完成百分比RP = 0.98  挣值EV = PV\*RP = 0.3w\*0.98=0.294w,  根据成本偏差CV=EV-AC>0,处于成本节约状态 |
| 第7周11.12周灿苗 | 计划值PV | 预估本周工作量E = = 4.45PM；  工作时间为D = 0.3月；  假设每人成本为8000，总成本为4.45\*0.3\*8000\*0.667=0.71w |
| 实际成本AC | 1.97 |
| 挣值计算EV | 本周工作量完成百分比RP = 99%  挣值EV = PV\*RP =0.71w\*0.99=0.702w  根据成本偏差CV=EV-AC<0,处于成本超出状态 |
| 第8周11.16陈涵 | 计划值PV | 预估本周工作量E = = 2.15PM；  工作时间为D = 0.3月；  假设每人成本为8000，总成本为2.15\*0.3\*8000\*0.667-0.344w |
| 实际成本AC | 0.33w |
| 挣值计算EV | 本周工作量完成百分比RP = 99%  挣值为EV = PV\*RP = 0.344w\*1=0.344w;  根据成本偏差CV=EV-AC>0,处于成本节约状态 |
| 第9周11.26陈涵 | 计划值PV | 预估本周工作量E = = 2.9PM；  工作时间为D = 0.3月；  假设每人成本为8000，总成本为2.9\*0.3\*8000\*0.667 = 0.46w |
| 实际成本AC | 0.42w |
| 挣值计算EV | 本周工作量完成百分比RP = 100%  挣值为EV = PV\*RP = 0.46w\*1=0.46w;  根据成本偏差CV=EV-AC>0,处于成本节约状态 |