**Appendix A: Project Plan Template**

*Note: Text displayed in blue italics is included to provide guidance to the author and should be deleted or hidden before publishing the document.*

*This template can be used at it is, or to complete and improve an already existing template.*

Project Plan

for

Musical Neural Network

**Distribution:**

<Organization., Name>

**Appendices:**

<Appendix 1>

*Help: The purpose of the Project Plan is to document all managerial aspects of a project that are required to execute it successfully within its constraints. If some aspects are defined in separate plans (e.g. Quality Assurance Plan, Configuration Management Plan, Risk Management Plan, Project Schedule), the Project Plan should refer to these documents.*

*It is important, that also non-applicability of a section is agreed on by the responsible manager. Therefore:*

*Don’t remove headlines level 1 and level 2 headlines (Heading1 and Heading2)*

*Reasons why a section is not applicable shall be documented under the respective headline*

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1. **OVERVIEW**

Using a neural network we can train a neural network to recognize/analyze sheet music – Looking at the types of notes used in what way and the pauses between notes. We will be using Tensorflow on the Anaconda IDE to develop our system. The neuralnet can then generate its own unique music. Will it be capable of producing music indistinguishable from a human composer?

*Help: This section describes a management summary. Provide essential information like*

*What the motivation for this project is (e.g. to fill a gap in the product portfolio)*

*Who the customer is*

*What the project will deliver. Is it a new product or an extension of an existing one?*

*What it will cost*

*How long it will take*

*Which organizations are involved*

1. **GOALS AND SCOPE**
   1. **Project Goals**

*Help: The project goals define the expected project results together with the required development constraints.*

*Identify the various categories of project goals Consider the following categories:*

*Functional goals*

*Strategic goals*

*Business goals (e.g.: time-to-market, cost)*

*Technological goals*

*Quality goals*

*Organizational goals (e.g. competence development, testing of new methods, techniques, or tools, application of new processes, etc.)*

*Other goals, e.g.: usability, portability, etc. (these goals, and what is specifically expected, should be clearly specified in the Project Requirements Specification)*

*Constraints (e.g.: environmental constraints, application specific standards, national standards, cultural relationships, etc.)*

*\*\*\*\* You may infer sensible Project Goals\*\*\*\*\*\*\*\*\*\**

*Prioritize the project goals: Functional, business, and quality goals should be prioritized at least.*

|  |  |  |
| --- | --- | --- |
| **Project Goal** | **Priority** | **Comment/Description/Reference** |
| **Functional Goals:** | 2 |  |
| <functional goal #1> |  |  |
| <functional goal #2> |  |  |
|  |  |  |
| **Business Goals:** |  |  |
| <Time-to-market> |  |  |
| <efficiency, cost, quality> |  |  |
| **Technological Goals:** |  |  |
| <technical goal #1> |  |  |
|  |  |  |
| **Quality Goals:** | 2 |  |
| <quality goal #1> |  |  |
|  |  |  |
| **Constraints:** |  |  |
| <environmental> |  |  |
| <appl. specific standards> |  |  |
| <national standards> |  |  |
|  |  |  |

* 1. **Project Scope**

*Help: Clarify what the project will (and will not) deliver, in order to avoid future shifts in the level of ambition.*

* + 1. **Included**
    2. **Excluded**

*Help: State what is specifically excluded from the project but what the customer may expect to be included. This could, for example, be clarifying that training of end-users is excluded.*

1. **ORGANIZATION**

*Help: Describe the internal project organization and all organizational issues affected by the project result or the project is dependent on.*

* 1. **Organizational Boundaries and Interfaces**

*Help: Describe the environment that the project is embedded in. Identify external* ***stakeholders*** *the project is dependent on and who are affected by the project result.*

* 1. **Project Organization**

*Help: Identify and staff all steering functions, project management functions, and execution functions.*

*Graphical illustrations such as hierarchical organization charts or matrix diagrams may be used to depict the lines of authority, responsibility, and communication within the project.*

* + 1. **Project Manager**

*Help: Identify the Project Manager who has the overall responsibility of the project. If the Project Manager has appointed a Technical Project Manager (syn.: Development Project Manager), who is only responsible for the technical project execution, this should also be specified.*

***Example:***

|  |  |
| --- | --- |
| **Role** | **Organization: Name** |
| Project Manager |  |
| Technical Project Mgr. |  |

* + 1. **Project-internal Functions**

*Help: Since the project manager has the overall project responsibility, he /she is also responsible for the project-internal functions. But he/she can delegate the management of these functions to project team members. In this case list the functions and individuals responsible for*

***Example:***

|  |  |  |
| --- | --- | --- |
| **Function** | **Organization: Name** | **Comment** |
| Quality Assurance |  |  |
| System Test Lead |  |  |
| Validation Lead |  |  |
| Configuration Mgmt |  |  |
| Change Mgmt |  |  |
| etc. |  |  |
|  |  |  |
|  |  |  |

* + 1. **Project Team**

*Help: List all project team members here and ensure that the time they spend on the project is accounted for in the project budget.*

|  |  |  |
| --- | --- | --- |
| **Organization: Name** | **Availability** | **Comment** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

* + 1. **Steering Committee**

*Help: Identify the committed individuals composing the project steering committee, and its responsibility and authority within the project.*

|  |  |  |
| --- | --- | --- |
| **Organization** | **Name** | **Comment** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. **SCHEDULE AND BUDGET**
   1. **Schedule and Milestones**

*Help: Estimate the effort for the project activities and plan the activity sequencing. Then prepare the schedule that supports all of the required activities and complies with the resource plan.*

*Define project milestones based on the chosen development strategy (see section 6) and on critical events in the project schedule.*

*List the milestones and define clear milestone criteria to make milestones measurable. Examples are given in the table below. Replace the demo data with your project milestones.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestones** | | **Description** | **Milestone Criteria** | **Planned Date** |
| M0 |  | Start Project | Budget Release | <yyyy-mm-dd> |
|  |  | e.g.: Project goals and scope defined | PRS or SRS reviewed  Stakeholders identified Impl. Proposal reviewed | <yyyy-mm-dd> |
| M1 |  | Start Planning |  | <yyyy-mm-dd> |
|  |  | <milestone description,  e.g. Life Cycle Objectives LCO defined> | Scope and concept described | <yyyy-mm-dd> |
| M2 |  | Start Execution |  | <yyyy-mm-dd> |
|  |  | <milestone description,  e.g. Life Cycle Architecture LCA defined> | Requirements agreed, project plan reviewed, resources committed | <yyyy-mm-dd> |
| M3 |  | Confirm Execution |  | <yyyy-mm-dd> |
|  |  | <milestone description,  e.g. alpa version> | Architecture reviewed and stable | <yyyy-mm-dd> |
| M4 |  | Start Introduction |  | <yyyy-mm-dd> |
|  |  | <milestone description,  e.g. system test passed> | Coding of new functionality finished,  Draft documentation | <yyyy-mm-dd> |
| M5 |  | Release Product |  | <yyyy-mm-dd> |
|  |  | <milestone description> | Product system tested, documentation reviewed | <yyyy-mm-dd> |
| M6 |  | Close Project |  | <yyyy-mm-dd> |

A detailed Project Schedule is available in **Error! Reference source not found.**. The Project Schedule is monthly updated by the Project Manager.

* 1. **Budget**

*Help: Calculate the required project budget based on cost estimates for project activities, sub-contracts etc. Present the distribution of the budget over the whole project life.*

* 1. **Development Process**

*Help: If available and applicable refer to the* ***organizational development process*** *and describe deviations from this standard process. Otherwise describe the development process applied in this project.*

*Explain why this development process has been selected. Describe how the selected development process is tailored to the needs of the project, takes learnings from previous projects into account, and how it is mapped to the milestone process.*

1. **RISK MANAGEMENT**

*Help: Describe the procedure to be used for managing risks in the project. The procedure should specify who is responsible for risk management, when risk situation is regularly considered (e.g. at each project status meeting), and which roles risks are communicated to, etc.*

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1. **SUB-CONTRACT MANAGEMENT**

*Help: List which part of work is out-sourced to which sub-contractor.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Sub-contractor** | | **Sub-contracted Work** | **Ref. to sub-contract** |
| **Company** | **Contact** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. **COMMUNICATION AND REPORTING**

*Help: State the principles for reporting and distributing information within the project for the different groups of internal and external stakeholders. Include, for example, how often the reporting will take place, the type of reports or information, the type of media in which it is presented, and the type of meetings that will take place.*

1. *Internal communication and reporting: ensure that all information is available to those who need it.  
   – Plan project meetings, how often they take place, and who will participate  
   – Define how project information will made available to the internal stakeholders (e.g. project library)  
   – Define how and how often sub-projects and sub-contractors report to the project manager  
   – Define who participates milestone meetings  
   – Define how events will be communicated*
2. *External communication and reporting:  
   – Define what information will be provided to which stakeholders  
   – Define how and how often information will be provided to which stakeholders often (e.g. project report)   
   – Plan regular meetings with external stakeholders*

***Example****:*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Communication** | **Method / Tool** | **Frequency/Schedule** | **Information** | **Participants / Responsibles** |
| **Internal Communication:** | | | | |
| Project Meetings | Teleconference | Weekly and on event | Project status, problems, risks, changed requirements | Project Mgr Project Team |
| Sharing of project data | Shared Project Server | When available | All project documentation and reports | Project Mgr(s)  Project Team Members |
|  |  |  |  |  |
| Milestone Meetings | Teleconference | Before milestones | Project status (progess) | Project Mgr Sub-project Mgr |
| Final Project Meeting | Teleconference | M6 | Wrap-up  Experiences | Project Mgr Project Team |
| **External Communication and Reporting:** | | | | |
| Project Report | Excel sheet | Monthly | Project status - progress - forecast - risks | Project Manager Sub-Project Managers |
| SteCo Meetings | Teleconference | Monthly |  | Project Manager, SteCo |
|  |  |  |  |  |

1. **DELIVERY PLAN**
   1. **Deliverables and Receivers**

*Help: List here all deliverables from the project and who the receivers of the deliverables are. Indicate also the planned delivery date. Take in consideration both strategic and technical aspects.*

***Examples*** *for non-technical deliverables are: marketing and sales material, training material, management presentations, publications, bullets, etc.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Identity** | **Deliverable** | **Planned Date** | **Receiver** |
| D1 | Individual project proposal document submission | 2018-02-22 | A.Joy |
| D2 | Milestone 1  Final project proposal document submission | 2018-03-21 | A.Joy |
| D3 | Milestone 2  Planning document submission | 2018-04-13 | A.Joy |
| D4 | Milestone 3  System Analysis and Design document submission | 2018-05-04 | A.Joy |
| D5 | Milestone 4  Technical 1: Database Design | 2018-05-25 | A.Joy |
| D6 | Milestone 5  Technical 2 : Class Design | 2018-06-14 | A.Joy |
| D7 | Milestone 6  Technical 3 : Object Behaviour Model | 2018-07-04 | A.Joy |
| D8 | Milestone 7  Technical 4 : Coding | 2018-08-04 | A.Joy |
| D9 | Test plan document submission | 2018-09-14 | A.Joy |
| D10 | Milestone 8  Testing | 2018-10-22 | A.Joy |
| D11 | Milestone 9  Implementation | 2018-10-29 | A.Joy |
| D12 | Project Submission | 2018-11-01 | A.Joy |

1. **QUALITY ASSURANCE**

One of the key factors that product quality is achieved is by the use of the TensorFlow platform. When it comes to neural machine translation, TensorFlow reduces errors by 55%-85%. In Neural architecture search, one can figure out what is the right neural network to use for a problem. TensorFlow allows coders to iterate quickly, train models faster and run more experiments. With regards to quality assurance in production as well as support— teams can run TensorFlow on large-scale server farms embedded on devices, CPUs, GPUs, TPUs.

Furthermore, the use of GitHub widely extends development quality. It makes the acquisition of documentation quite easy. This also includes help guides. GitHub can integrate with common platforms such as Amazon and Google Cloud, services such as Code Climate to track your feedback, and can highlight syntax in over 200 different programming languages, thus, making quality of integration a key advantage. GitHub is a repository so all work can be publicized.

1. **CONFIGURATION AND CHANGE MANAGEMENT**

**Configuration Items:**

* Final project proposal document - this includes the final proposal that will be assessed before commencement of the project. It is the first item of the development process that will be used to guide all other items on a basic level.
* Planning document – Much like the proposal, the planning document will be used to guide the development of all other items, however, it will be used on a more in-depth scale. It provides guides and steps in a predefined manner that allows the configuration of all items to be executed as harmoniously as possible
* System Analysis and Design document – Here we identify, break down and assess all major and minor aspects of the development of the system, the environment, effects and the functionality of the system itself.
* Database Design – This is technical aspect of the system. The database is one of the most important physical components of the system. Once this has been correctly developed, it an also be used for Class creation which is the next item.
* Class Design – This item can be based on the elements found in the database design. It is a technical item that defines the basis of code development of the system.
* Object Behavior – This technical item works with thee classes and database as a baseline. However, it is also the baseline for coding the system. It will be assessed and defined before coding commences for the purpose of simplifying the intense complicated nature of coding.
* Coding - This is the item that configures all previous items. It is the physical compilation of all planning up until this point. The system is physically created here.
* Owner and Creator – In this situation, the system will be owned by the creators. It is not custom built for any organization or party, however, future versions of the system may allow customization either done by the creators or trained personnel.
* Documentation – All documentation will be handled and recorded by the creators of the system and will be assessed by the receiver of all deliverables which are discussed in **Number 7.** Documentation will also be handled with the use of the GitHub platform.

**Change Management**

Fortunately, the life cycle for the development of the system allows for easy methods of identification, assessment and implementation of changes within the development process. The configuration items are all key points of each milestone in the development process. This makes it easy to pin point easier or more effective ways to commence each step. Thus, smaller and larger changes can be made in a timely manner to ensure that all members are notified and included in these changes. The timeliness factor is also helpful because many changes do not take place simultaneously which means the process will not be complicated.

Regardless of the simplicity of making changes, we still need to follow steps that will make sure these changes are efficiently superior as opposed to keeping it the same. These are the steps:

|  |  |
| --- | --- |
| **Step** | **Description** |
| Generate CR | A submitter completes a CR Form and sends the completed form to the Change Manager |
| Log CR Status | The Change Manager enters the CR into the CR Log. The CR’s status is updated throughout the CR process as needed. |
| Evaluate CR | Project personnel review the CR and provide an estimated level of effort to process, and develop a proposed solution for the suggested change |
| Authorize | Approval to move forward with incorporating the suggested change into the project/product |
| Implement | If approved, make the necessary adjustments to carry out the requested change and communicate CR status to the submitter and other members |

1. **SECURITY ASPECTS**

*Help: State how to deal with security matters, for instance:*

*Classification of the project information with regard to requirements for integrity, availability and confidentiality, in accordance with the organization's group directives on security,*

*Specific action that must be taken to fulfill security requirements, such as security agreements with suppliers and partners, security check of project team members, security audits of equipment, usage of coded information, etc.*

*Authorization of information distribution and publishing, that is, who should decide which information will be distributed to whom,*

*Procedure for monitoring security,*

*Procedure for reporting security incidents.*