



SAFIPA
South Africa-Finland
KNOWLEDGE PARTNERSHIP ON ICT



African Advanced Institute for Information
& Communications Technology

Code-Sprint Toolbox

How to run a code-sprint

SAFIPA-Meraka Code-Sprints Programme

Dr. Louis Coetzee & Dhiren Seetharam

2011-06-30



SAFIPA-Meraka Code-Sprints Programme: Code-Sprint Toolbox - How to run a code-sprint by Dr. Louis Coetzee & Dhiren Seetharam is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License](https://creativecommons.org/licenses/by-nc-nd/3.0/).

1 Introduction

The lack of experienced and skilled human capital in information and communication technology (ICT) in South Africa is significantly limiting our ability to grow a vibrant ICT sector and to compete internationally. Various interventions are required to address this need and contribute towards building a strong ICT capability in South Africa. To this end, the Meraka Institute, an ICT Research and Development unit of the CSIR, has a core human capital development (HCD) component in its mandate. The code-sprint programme was developed to meet the objectives of building human talent for economic and societal benefit.

A code-sprint is a dedicated training event aimed at empowering tertiary students with software development skills to improve their work-readiness and enhance their opportunities for uptake in the industry. A small group of students contribute to a real-world programming project under the guidance of a skilled technical leader. Through the close collaboration between the group and the technical leader, programming skills are shared and transferred, whilst key deliverables are achieved within the target project.

The Meraka Institute (supported by SAFIPA donor funding) has successfully executed two phases of code-sprints, 2009 and 2011. 2009 consisted of two and 2011 having three code-sprints. The programme was a resounding success with 26 code-sprinters (tertiary students) participating over the two phases. The code-sprints programme has a well developed methodology to measure the growth of each student as well as other outcomes. The results extracted through the measurement methodology were extremely positive with clear indicators of the success of the code-sprint programme.

The first two code-sprint phases were hosted at the Meraka Institute. An opportunity exists to host the code-sprints at other development “hotspots” while following the code-sprints methodology. An example of a potentially viable hosting environment is the newly created “African Regional Mobile Application Laboratory” where the code-sprints targets are those of importance to the Laboratory at that time. Another potential code-sprint hosting environment can be a Living Lab, as it already contains the basic elements (various stakeholders such as students, communities and community innovators within a real life context containing multi-disciplinary challenges to be solved) required for the execution of a code-sprint. Tertiary education institutes are also well positioned to host code-sprints. With the addition of the code-sprints methodology, a technical solution can be developed, while significant knowledge and skills transfer are taking place.

Traditionally the code-sprints have been focused on the ICT domain. However, the developed code-sprint methodology and extracted know-how suggest that similar outcomes can be obtained in other domains (e.g. various fields of engineering).

An opportunity exists to grow the programme and achieve larger impact through wider participation of several different entities and by expanding the application area of the code-sprints. For this to become a reality, a methodology tool box is required to minimize the effort in running a code-sprint. This document contains the high level tools to run a successful code-sprint. It provides a high level description of the methodology and provides various “tools” in the forms of a spreadsheet (the budgeting tool) and document samples.

2 Code-Sprint Methodology

In order to host a code-sprint phase the following tasks are typically executed:

- **Identify hosting organisations:** Identify a set number of organisations as hosting organisations. A key element in this identification process is the identification and sourcing of the “champion” at the organisation. Additional criteria associated with a hosting organisation is its ability to source students and embedded target projects with appropriate complexity and associated impact.
- **Transfer knowledge to “champion”:** Based on the tools associated with this document, transfer knowledge and train the “champion” to allow him/her to drive a code-sprint at the

organisation. Some background regarding the team composition is also provided.

- **Code-sprint preparation:** The “champion” at the hosting organisation to set-up the code-sprint. The champion will be guided by this document to ensure compliance with the code-sprint methodology. Sub tasks associated with preparation include:
 - Code-sprint target identification.
 - Code-sprint team leader identification and appointment.
 - Code-sprinters identification and appointment.
 - Logistics (location, environment, equipment).
 - Code-sprint measurement framework development.
 - Just-in-Time (JIT) Training.
- **Code-sprint execution:** “Champion” and code-sprint leader to execute the code-sprint. Sub tasks associated with execution include:
 - Pre-measurement.
 - Target execution.
 - Post-measurement.
 - Closure.
- **Code-sprint wrap-up:** “Champion” and code-sprint leader to complete the code-sprint. Sub work-packages associated with wrap-up include:
 - Measurement analysis.
 - Reporting.

The above envisioned tasks provide a high level work-plan to host a code-sprint phase.

A specific tool (see the “Budget Tool”) has been developed to allow for the execution of a code-sprint (and is provided with this document). The various appendices provide samples of various communications that are used throughout the process. Sample pre- and post evaluation questionnaires are also provided by this document.

2.1 Identify Host Organisations

The host organisation can best be described as that temporary facility that meets the basic requirements for the successful hosting of a code-sprint. These requirements are (not exclusively) listed as:

- Adequate space to accommodate all participants, leaders, furniture and equipment (PCs and/or other equipment required for the code-sprint).
- Within agreeable travel distance from the accommodation facilities of the participants and code-sprint leaders.
- Have suitable catering facilities for the participants and leaders to access.
- Detached location from the daily activities of the host organisation's business.

Another factor that could determine the host organisation are the administrative procedures regarding the appointment of temporary Human Resources (HR), such as participants and code-sprint leaders. In the majority of instances, larger organisations would have rather stringent processes to manage appointments, even though they may comply with the requirements indicated above. It is advisable that some consultation occur between the code-sprint champion and an HR representative to understand the plan for these procedures well before the execution of the code-sprint. A cost decision can then be taken to determine the trade-off between further management time being devoted to handle lengthy procedures, as opposed to less management intervention

when procedures are minimal.

2.2 Knowledge Transfer

For successful planning and completion of a code-sprint event, a suitable team needs to be assembled to ensure that roles and responsibilities can be separately tasked. The basic code-sprint team would consist of:

- Code-sprint champion.
- Code-sprint leader.
- Event support staff.
- Code-sprint participants.
- Code-sprint external management team.

2.2.1 Code-sprint champion

The “champion” can best be defined as:

“An individual responsible for the code-sprint programme management, that holds the key responsibilities of planning, executing, monitoring and evaluating the code-sprint event, to the benefit of its stated objectives.”

It is advisable that this champion be drawn from either:

- **The host organisation:** the organisation where the code-sprints will be held.
- **The sponsor organisation:** the organisation responsible for sponsoring the costs associated with running a code-sprint event.

It may also be suitable for this role to be split between two people. However, it is not advisable to have more than two people.

The base knowledge for this individual needs to be familiarity with project and/or programme management skills to ensure an easy transition into code-sprint champion. It should be noted that the management of the code-sprint is closely related to event planning and organisation, where the majority of effort is in the planning stages. The execution and monitoring stages require little supervision from the champion since the code-sprint leaders will take ownership for meeting the stated objectives. The closure stage would entail using the entire team.

2.2.2 Code-sprint Leader

The code-sprint leader is that person that will be responsible for leading the team to meet the objectives of the code-sprint. This individual is usually a knowledge domain expert dependent on the subject matter of the code-sprint. For example, if a particular code-sprint has a stated objective of creating a software toolbox for configuring wireless mesh routers, the ideal code-sprint leader will have in-depth knowledge of wireless mesh networks, the design and implementation of wireless mesh routers and software skills for the employed technologies to develop the toolbox. It should be stated that in some domains, it might be difficult to find a single individual that has all matching skills required for leading a code-sprint. Therefore, the budgeting tool allows for up to 4 leaders to be budgeted against a single code-sprint event.

Aside from the technical skills that the leader needs to possess, it is equally important for the individual to have some essential team leadership skills. It has been found that inclusive participation is required for the participants to contribute effectively to a code-sprints' objectives. The leader is solely responsible for creating a team environment that allows for all to share and collaborate together in the achievement of the eventual goal.

It is advisable when planning a code-sprint event, that if a suitable code-sprint leader is not already identified, that a similar recruitment advertisement (to the one in Appendix C of this document) be

drafted to recruit one or more code-sprint leaders for the event. The key skills should be a combination of technical knowledge and team leadership exposure. It is vital that both requirements be measured to ensure that the event is not a meaningless exercise.

2.2.3 Event Support Staff

A code-sprint requires a fair amount of planning to ensure successful achievement of the stated objectives. This planning function must be led by the champion with the help of various support staff members. When following the steps listed in Appendix D regarding how to use the budgeting tool, the execution of these activities can be accomplished by different support staff members with proficiencies in handling these tasks. There may be individuals that are suited to making travel and accommodation arrangements, whereas others can help with equipment sourcing and venue bookings. These logistical functions are of critical importance prior to the code-sprint starting and requires skilled coordination by the champion to ensure all details are successfully implemented.

Other areas where support staff may be required are:

- In the identification of the code-sprint targets.
- In the recruitment of participants and code-sprint leaders (if required).
- In the closure of the code-sprint event.
- Generally, financial management assistance when necessary (either from sponsor or host organisation).

2.2.4 Participants

A vital component of the code-sprint event are the participants. This group of individuals need to possess certain key elements that are required for successful execution of the code-sprint. The most important elements are:

- **Motivation:** the participants must have an internal drive for accomplishment and sense of achievement.
- **Passion for subject:** the code-sprint subject matter should draw participants that are willing to learn in the relevant domain and that are interested in making valuable contributions to its body of knowledge.
- **Technical skills:** every code-sprint will require participants to have suitable technical skills in order to achieve its objectives. Some care should be taken when selecting the code-sprint target so that it can be assumed that the required skills are readily available.
- **Goal orientation:** the code-sprint leader must provide for a collaborative forum for all participants to learn, interact and contribute to the tasks. While the leader may be able to provide direction and scope out tasks, the individual must have some achievable goal that can be accomplished with their current skill set.

The individuals selected should also have some sense of group cohesiveness that can lead to enhanced peer-to-peer learning being achieved. In practice, it has been found that when some participants are above average in terms of the skills set for the required code-sprint, the group informally look for direction from this individual as well. This feature is very helpful for the learning gained for the entire team and aids as a team building exercise.

2.2.5 Code-sprint management team

All previous descriptions of the roles that constitute a code-sprint team can be grouped as internal to the a code-sprint. There exists an external code-sprint management team that the champion must report to within an organisational structure. This group of individuals will be responsible for:

- Making the final decision regarding the code-sprint target/s.

- Overseeing that the code-sprint champion is leading the project/programme effectively.
- Accepting any risks identified throughout the code-sprint.
- Expenditure approvals as made by the code-sprint champion.
- Accepting the derived benefits after successful completion of the event.

It would be advisable to compose a team with members that can play the following roles:

- **Executive management member:** the leader of the management team that has final approval rights.
- **Financial approver:** that member that can facilitate budget approvals and expenditure claims.
- **Strategic champion:** that member that ensures the code-sprints are aligned to the organisation's strategic objectives.
- **Host organisation representative:** that member that will be able to uphold the interests of the hosting organisation.
- **Sponsor organisation representative:** that member that will be able to uphold the interests of the sponsoring organisation.

The roles stated above can be found in multiple individuals, however, in most cases, a single person may be able to perform more than one role. The composition of this external team is therefore not prescribed in this document since there will be various forms found in different organisations. The reader may merely use the above discussion as guidelines.

2.3 Code-sprint Preparation

Code-sprint preparation is a collection of planning tasks that need to be conducted by the code-sprint champion with the assistance of various support staff. A large amount of effort is required in this activity to ensure that the execution and monitoring stages are efficiently run. Further details will be provided below on each of the sub-tasks within this activity.

2.3.1 Code-sprint target identification

This task requires the code-sprint team to identify the code-sprint target. This function is accomplished by 2 sub-tasks:

- Requests for a call of proposals/project ideas.
- Proposals/project idea evaluation.

It should be noted that if the host/sponsor organisation already have code-sprint targets selected, this task is then complete.

Appendix A refers to the the identification process and the weighted scoring matrix. Appendix B gives a template used for requesting proposals or project ideas. Note that the template asks for submitters to provide information relating to specific sections that are used in the scoring matrix. Any change in one of these objects will lead to a similar change in the other. Reference to Appendix A and B is required so that the reader understands the templates and their inherent use. Please note that these are reference guidelines only. Any other format to achieve this task may be acceptable, just be aware of the close linkage between them. A detailed explanation is now provided of each object.

2.3.1.1 Call for proposals/ project ideas

This sub-task must achieve the function of gaining several submissions for a suitable code-sprint target. The submitters need to be aware of the host/sponsor organisation's overall objectives as stated in the template. They also need to supply information for each of the sections stated so that

the champion can easily compile his or her weighted scoring sheet. Omission of any of these sections may disadvantage the submitter when evaluation occurs. It should be noted that the template must provide for explicit details to be submitted so there is little room for subjectivity.

2.3.1.2 Proposal/project idea evaluation

Once all submissions have been accepted the evaluation process can commence. As stated previously, Appendix A is a guideline that can be modified if required.

The compilation of the scoring matrix can be done by the code-sprint champion, with assistance where required from support staff. Each section should be specified in the sheet as a column with each row then containing each proposal's information per section. The weighting must be distributed amongst all categories chosen, totalling to 100%. Weight each of the categories dependent on the expected benefits the host or sponsor organisation may want to derive from the code-sprints. The weightings must not change through the evaluation process.

Each section per proposal must then be given an objective score and it's weighted rating must be calculated and tallied to give an overall score for the proposal. The project or programme board members should perform this task. Each member should provide their own scoring and the champion can collate all inputs. The scoring can be any range of numbers that is left to the discretion of the project champion to specify. It should be noted that a suitable range be selected to allow for flexibility in scoring. Once all board members have submitted their scores, an average scoring per proposal can be calculated and presented. If using an ascending range of numbers, then the highest scores would denote those proposals that are fulfilling the objectives well. If using a descending range, then the lowest scores would indicate the best performing proposals.

2.3.2 Code-sprint team leader identification and appointment

Section 2.2.2 indicates the traits that the code-sprint leader must possess. This individual needs to have a combination of professional technical skills and team leadership skills. If the code-sprint leader has already been identified, then this task is fulfilled. If not, a recruitment template must be drafted to find one or more individuals to facilitate successful completion of the event. Referring to Appendix C, a template is provided for the recruitment of the participants. A similar format can be used for the leaders. No single template is prescribed as different organisations might have existing templates that can be used, as long as the task of finding one or more individuals is accomplished. A recommendation is that a CV must accompany all applications. There should also be some disclosure regarding previous exposure to an environment like code-sprints, or similar. A weighted scoring matrix can also be used for selection, however, the recruitment notices must be explicit as to the information required.

2.3.3 Code-sprinters identification and appointment

Section 2.2.4 indicates the traits that the code-sprint participants must possess. Appendix C contains a template used for the recruitment of participants. This template is a guideline only. Particular importance must be given to the right match of participant to the code-sprint. This must be done to ensure that the participant does not lack the motivation when executing the code-sprint tasks. Another key consideration is the depth of skill required by the participant. This has to be linked to the level of detail of the objectives of the code-sprint. The participant must emerge from the code-sprint having achieved their assigned tasks, but also gain tacit knowledge that can be used in their future work and collaboration. A recommendation is that all applications must be accompanied by a CV disclosing their exposure to the skills required. Reference may also be provided. An interview must be used to evaluate the participants prior to their selection. It has been found that many participants have a misrepresentation of themselves described on their applications, therefore investigative questions need to be used in an interview evaluation process. A weighted scoring matrix can also be used to selection, however, the recruitment notices must be explicit as to the information required.

2.3.4 Logistics (location, environment, equipment)

Logistics encompasses arrangement of the physical objects necessary for the execution of the code-sprint. The budgeting tool largely helps to define the logistical elements required for a typical code-sprint. Appendix D will give explicit instructions on how to use the budgeting tool.

This task will look at the:

- **Location (venue):** that place where the code-sprint will occur i.e. the host premises.
- **Environment:** the collaborative configuration of the environment at the code-sprint venue.
- **Equipment:** all necessary equipment required for use by the code-sprint leader and participants.

The location will, in a majority of cases, be chosen to be some convenient location within the locality of the host/sponsor organisation, and the accommodation sites for the leaders and participants. The organisers should be wary that the choice of venue largely impacts the outcome of the code-sprints. This is evident from the fact that certain features of the location must be conducive to a collaborative and innovative environment that would be separate from the organisation's standard daily activities. The cost factor should also be considered as the venue would have to be rented out for the entire duration of the code-sprint, plus additional time for any equipment and furniture configuration. Ideally, if a large enough room is available within the premises that the organisation operates at, this would be most beneficial from a cost perspective and an advantage for the champion as well as they would have easy means of access to the group.

The environment within which a code-sprint is executed must foster collaboration, tolerance, team work and dedication. Once a location has been chosen, the configuration of the room must be considered so that marginalisation of members do not occur. The leader should also be positioned with the rest of the group since it enhances communication and interaction. The leader and participants form a large component towards the creation of such an environment. The leader should be able to facilitate brainstorming sessions that elicit responses from all participants and lead to the creation of a group solution. There may be differing methodologies that may be adopted for group work and this document will not cover them, but rather leave that flexibility to the code-sprint team.

It should be noted that continuity within this environment is also a contributing factor of success. This means that the champion should endeavour to get all participants arriving and leaving at the same time so that the group does not have to revisit concepts that were previously explained. The champion and support staff must plan well in advance for the travel and accommodation arrangements (if budgeted) to be done concurrently so that there are no late arrivals. This also promotes group work and peer-to-peer learning.

Equipment necessary for the code-sprint needs to be ordered or rented, delivered and configured prior to the code-sprint commencing. However, depending on the skill level of the participants, it may be a good exercise to also involve the participants in this activity as their introduction to group work. This has proved to work well for the Meraka code-sprints. An equipment catalogue should be drawn up with the code-sprint leader and the champion, and various suppliers need to be approached to gain competitive rental prices. Miscellaneous equipment should also be considered like network cables, power cables, power strips, projectors, white boards etc. The choice of equipment is largely dependent on the content of the code-sprint.

2.3.5 Code-sprint measurement framework development

One of the most important outcomes from any code-sprint is the knowledge transfer gained by the participants, and in some cases the leader. The participants usually start with some basic knowledge of the subject matter and then leave with a sound understanding of the contribution they made while learning. The core feature of any code-sprint is skills development and to ensure this occurs, some form of measurement needs to be performed.

For the Meraka Code-sprint programme, pre- and post-evaluation questionnaires were used. This

is the easiest form of data collection. The questionnaire aimed to test the level of skill that the participant possessed prior to the code-sprint, and then assessed them after it had concluded as well. Since the only intervention between both pre- and post- questionnaires would be their participation in the code-sprint, it can be proven whether the code-sprint has been a contributing factor to their learning. No template is provided as these questionnaires may vary in the responses that the organiser may want to elicit from the participants. There are various forms available on the internet that can be customised to suit the reader's purposes. Accompanying this document is a sample pre-evaluation and post-evaluation questionnaire as used in the Meraka code-sprints.

2.3.6 Just-in-Time (JIT) Training

This concept refers to focused training to enhance specific skills of the workforce prior to the use of this ability. JIT has been introduced within the Meraka Code-Sprints programme in year two after the learning gained from the first year produced a clear need for enhanced skills development. The code-sprint leader and champion need to plan if JIT is required for the purposes of their code-sprint event. This should be done on a case-by-case basis rather than generically.

It should be noted that the code-sprint can also be used as a platform to educate the participants on the broader aspects of organisational management and business development. These sessions give the participant a better understanding of the context of their work within the code-sprint and expose them to other aspects that may not be implied during their daily activities. These sessions are usually in the form of a forum where the facilitator presents on a particular subject and then interacts with the participants to internalise the concepts.

JIT is incorporated within the budgeting tool (refer to Appendix D for instructions). It should be noted that the JIT sessions are not mandatory and can be omitted if constraints do not allow for it. These sessions may also not last a full day therefore the budgeting tool required an input of hours per session per facilitator.

2.4 Code-sprint Execution

The execution phase of the code-sprint is largely where the leader and group work towards achieving their intended objectives. For the duration of the code-sprint, there needs to be some planning regarding the progress made at various stages of the project. The leader is usually allowed some pre-preparation time before arriving at the venue to plan the various activities that need to be attempted during the code-sprint. From the Meraka code-sprints, the standard project phases have been observed. These are as follows:

- **Initiation stage** – groups are forming and the leader is setting the stage for the expectations that each of the participants must reach. Some intense discussion is had regarding the subject matter and its context, the work that the participants will perform, and the aimed objectives at the end of the code-sprint.
- **Planning stage** – the code-sprint leader must assess the various skill levels of the participants and task the participants to the pre-planned activities that he/she had developed. It may become evident that some learning is required by the participant prior to making a contribution on the task.
- **Execution stage** – this stage involves the delivery of the individual task outputs. Participants must elicit the help of the leader and peers to execute their tasks efficiently and timeously. In this stage, there is invariably some scope change that occurs. On one hand, the participants may adequately reach the leader's expectations and deliver. The leader is then able to introduce further requirements for them to fulfil. On the other hand, it may be found that the participants have not performed within an allocated amount of time and rework needs to occur to change the objectives to match the skill level. Both cases have proven to work well as it still transfers skills and breeds team work and a sense of achievement from the participants perspective.
- **Closure stage** – this stage involves the final delivery of the objectives in various forms. These can be demonstrations to the project board, project reports, product brochures etc.

The form of the output is largely dependent on the subject of the code-sprint. The leader is usually required to give a final presentation and report on the project indicating if the intended objectives were met and the changes made to meet them.

Over this entire activity, the champion may act in an oversight role to periodically ensure that the code-sprint is performing adequately. The champion should meet regularly with the leader to assess any problems and gain the status of the participant's progress. The champion has to ensure that the interests of the management team are met and may need to intervene when necessary if the code-sprint is faltering due to any factor whatsoever. The champion needs to present these risks to the management team and agreement must be reached on mitigation strategies to implement if interventions are required.

2.5 Code-sprint Wrap-up

This activity is concerned with final closure of the code-sprint event. It is assumed that at this stage the code-sprint leader and this group have concluded their intended objectives. At this time, the post-questionnaires are captured to measure the learning gained by the participants. The leader must also submit a final report or presentation detailing the entire project and the progress thereof. The champion should collate these outputs and present them to the project board, together with a complete financial statement of the expenditure for the duration of the sprint. The project board can then look at the entire event and accept or discount the attributed benefits.

3 Conclusion

Code-sprints have been demonstrated as an effective mechanism to transfer skills to a select audience while furthering the development of a specific technology. The CSIR Meraka Institute (through SAFIPA) has run a number of successful code-sprint events and during this process developed a specific methodology of how to run such an event. This document contains the methodology, various tools and samples of communications which would allow other hosting organisations to successfully execute code-sprints.

Appendix A: Code-Sprint Target identification

The following methodology applies to the code-sprint target selections. A call for code-sprint proposals needs to be initiated and sent out to all interested parties. This call is in the form of a Terms of Reference (ToR) (see Appendix B for a sample ToR) , and requires the submission of a short brief about the proposed project and also included other items like the strategic value of the proposed code-sprint and how easy it might be to source participants and leaders. All proposals are then evaluated by the code-sprint management team according to a weighted scoring matrix. The evaluation process comprised of the following steps:

1. All proposals need to be captured into an evaluation sheet with rows depicting each proposal and columns depicting the categories that they would be evaluated in.
2. A score out of 100 points is assigned for each category for each proposal in turn. The score is awarded on consensus from the panel as to how well the proposal fulfilled the criteria.
3. A weighted score is then calculated for each category and then summed to give an overall final score for each proposal. The following table shows the weighting per category.

Category	Category Description	Weighting (%)
Potential Impact and Value	Describes the impact that the code-sprint will have for the hosting organisation and the value that will be generated for the beneficiaries (High score = large impact and value)	20
Strategic Alignment	Shows that the code-sprint objectives are aligned to hosting organisation strategy (High score = strong strategic alignment)	20
Code-Sprint Tasks/Deliverables	Indicates how specific the tasks are defined and what the deliverables of each task are (High score = well defined tasks and adequate deliverables)	10
Employed Technologies	Describes the technologies that will be used during the code-sprint by the participants (High score = technologies are abundant and skilled individuals will be easy to source)	10
Required Leader Skills	Describes the leadership skills required by an individual to lead the code-sprint to a desirable outcome (High score = leader possessing such technical knowledge will be easy to source)	10
Required Participant Skills	Describes the required skills that the participants need to possess to accomplish the code-sprint objectives (High score = participants with required technical competence will be easy to source)	8

Risks	Indicates all the project risks that might occur and its potential impact on the success of the code-sprint (High score = low associated risks)	7
Identified code-sprint leader	This field measures if a code-sprint leader has already been suggested within the proposal (High score = proposal submitter already nominated a suitable sprint leader)	5
Co-investment/ funding opportunities	Indicates if there are other sources of co-funding or investment to the code-sprint (High score = proposal already identifies possible secondary funding sources)	5
Evaluation Criteria	Describes how the code-sprint deliverables must be evaluated to correctly indicate that the objectives have been reached (High score = criteria is well defined and easy for team to evaluate)	5

The proposals contain vital information on the required skills of the participants and the code-sprint leader, which is used to then start the recruitment process. The recruitment of participants follows the identification of the code-sprint targets.

Appendix B Code Sprint Terms of Reference

The following provides a sample “Request for Proposals” as was utilized in the SAFIPA Meraka code-sprints programme.

Request for Proposals/Project Ideas

Meraka Institute Code-sprints: The capacity and applications expansion program

20/03/2009

Background

The Integrated Technology Research Group in Meraka has won funding from the South Africa – Finland Knowledge Partnership on ICT (SAFIPA) programme to host two code-sprints over a four week period during the June/July period in 2009 on projects currently under development in AIP. A code-sprint is a mechanism where external resources (students) contribute to an open source project in a focused and energetic manner under the guidance of a senior technical leader. A dual benefit is introduced through code-sprints: Participants have the opportunity to increase their skill levels under the guidance of an expert while needed functionality is added to the open source project.

Objective

The objective of this Request for Proposals/Project Ideas is to identify suitable open source projects which will benefit from the code sprint initiative based on the invitation requirements described below.

Request for Proposals/Project Ideas Invitation

Interested parties are invited to submit their proposals to Dhiren Seetharam (details below). Proposals should include the following:

- Must briefly describe the project:
 - background and why it should be used as a code-sprint target,
 - it's objective,
 - the need it addresses,
 - and the potential benefits of the project (including potential impact and value).
- Indicate alignment with Meraka strategic themes.
- Describe the availability and specifications of identified functionality to be added during the sprint:
 - What are the main tasks/deliverables for this sprint?
 - What are the main technologies used in this sprint?
 - What capabilities and skills are required (for technical leader as well as participants) to be able to contribute to the sprint?
- Indicate the risk associated with the execution of the sprint.
- Include designation, position, availability and contribution of code-sprint technical leader (also if leader is internal or external to Meraka).
- Highlight potential opportunities for co-investment (be it Meraka or external funding sources).
- Provide post-sprint evaluation criteria (to determine success or failure of the sprint).

In addition, proposals should not exceed 3 pages in length and must release all technology as open source.

Selection process

Proposals will be rated based on the strength of their compliance to the requested points above. In addition, proposals deemed to have a higher strategic value will be valued more. Evaluations will be done by the Meraka Institute Code-sprints project team. The decisions of the project team will be final.

Appendix C: Code-sprinters identification and appointment.

Utilizing the above ToR, and the selected target, the required skills for a code-sprinter can be identified. The following provides a sample advertisement based on a specific code-sprint target.

<< Vacation Work on code-sprint>>

Nature of Vacation Work

An exciting opportunity for vacation work exists at the <<organisation>>.

We are hosting a code-sprint event during the <<period>> and we need willing and able- minded programmers to participate in this exciting venture.

For those scratching their heads, a code-sprint is more commonly known as a hackerthon (as defined in Wikipedia), a unique collaborative effort by a group of young, dynamic programmers to collectively complete an assigned task within a specified duration.

We are looking for five (5) participants to join us in working on <<code-sprint>>.

The objective of this project is to: <<objective of code-sprint>>

Successful candidates will:

- Be a part of an exciting challenge that can have a variety of real-world applications
- Gain expertise that would better position you within the job market
- Have paid travel and accommodation provided for the duration of the code-sprint
- Earn R <<xx>>/day for the duration of the code-sprint

Requirements:

- Are you in possession or intend to be in possession of a degree in either:
 - Engineering
 - Computer Science
 - Computer Engineering
 - Information Systems
- Do you possess skills in any of the following languages:
 - Java – at least 1 year experience
 - Linux exposure ideal
 - Database knowledge
 - Website security development

Application process:

1. Qualifying candidates must download the CV template from the following link: <<application site>>
2. Complete the template thoroughly and then submit via the following link: <<application site>>
3. Queries about the application process or code sprint must be directed to the following email address: <<code-sprint organizers email address>>.
4. Closing date for applications is <<date>>.

Appendix D: Single Code-Sprint Budgeting Tool – A Tutorial

This section details the use of the Single Code-Sprint Budgeting Tool. A tutorial is provided to guide the user in the use of the budgeting tool to estimate costs for a typical code-sprint.

With this tool, you will be able to estimate costs for:

- Participant remuneration.
- Code-sprint leader remuneration.
- Participant travel and accommodation.
- Code-sprint leader travel and accommodation.
- Code-sprint venue costs.
- Equipment budgets.
- JIT facilitator costs.
- JIT facilitator travel and accommodation costs.
- JIT venue costs.
- Management costs.

You will not be able to:

- Generate a project plan.
- Use a single document to generate multiple cost estimates.
- Insert other cost factors and considerations.

3.1 Description of tool

The tool is a Microsoft Excel workbook comprising of two sheets. The first is a Budget Questionnaire where the user must fill in specific estimates for the quantities that are asked. The second sheet is the Costing Estimate sheet that takes all the values from the questionnaire and calculates sub-totals for each of the sections provided. The choice of sections have been inserted based on the Meraka Code-sprint programme and modified to generically suit most organisations and the typical code-sprint event that they might organise. Some questions are mandatory while others are not. The questions indicate which values are needed. It should be noted that the tool is used to budget for a single code-sprint event. To gain estimates of multiple events, the user will have to create multiple instances of the workbook for each code-sprint.

3.2 How to use the tool

Make reference to the tool workbook as the point below refer to directly to each sheet. A table is provided giving the question section and number, the purpose, and expected value entry.

3.2.1 Using the Budget Questionnaire

Question	Purpose	Expected Entry
1. General		
1.a	The total duration of the code-sprint is mandatory to calculate estimates of costs and for planning purposes. The minimum allowable duration is 2 and the maximum is 20.	Numeric digits denoting working days
1.2 Participant Remuneration		
1.1.a	The total number of participants the organiser wishes to recruit for this particular code-sprint is mandatory. The minimum allowable number is 4 and the maximum is 16.	Numeric digits
1.1.b	If the participants are being paid for their time, the hourly rate of payment is required. Leave blank if not budgeted for. NOTE: The costing calculation for this item uses an 8 hour working day	Numeric digits in decimal format. No monetary symbols are included
1.2 Code-sprint Leaders remuneration		
1.2.a	The total number of leaders is mandatory. The minimum is one and the maximum allowable is 4.	Numeric digits
1.2.b	If the leaders are being paid for their time, the hourly rate of payment is required. This has to be denoted per leader. Leave blank if not budgeted for. NOTE: The costing calculation for this item uses an 8 hour working day	Numeric digits in decimal format. No monetary symbols are included
1.2.c	If multiple leaders are being recruited, indicate the number of days each leader will be required. If only one leader is used, enter the same answer as Question 1a above. If more than one leader is used, their combined days cannot exceed the maximum duration answered for Question 1a. Leave blank if not budgeted for.	Numeric digits denoting working days
1.2.d	Preparation time required for each leader is helpful when planning. Denote the number of allowable days per leader. Leave blank if not budgeted for. NOTE: The costing calculation for this item assumes that the leader is being paid for preparation time.	Numeric digits denoting working days
1.2.e	Post-evaluation time required for each leader is helpful when in the code-sprint wrap-up phase. Denote the number of allowable days per leader. Leave blank if not budgeted for. NOTE: The costing calculation for this item assumes that the leader is being paid for post-evaluation time.	Numeric digits denoting working days
2. Logistics Budget		
2.1 Participant Travel and Accommodation		
2.1.a	If air travel is budgeted for the participants, enter in the total expected number of participants that will require it. If no travel is budgeted, leave this blank and ignore Questions 2.1.b, 2.1.c, 2.1.d	Numeric digits
2.1.b	If air travel is budgeted for the participants, estimate the cost of return flight tickets from the participants departure point to the code-sprint locality.	Numeric digits in decimal format. No monetary symbols are included
2.1.c	If transfers are budgeted for the participants, enter the number of transfers that will be required. A transfer refers to the transportation of one or more individuals from the airport to a final destination. If transfers are not budgeted, leave this blank.	Numeric digits
2.1.d	If transfers are budgeted for the participants, estimate the cost of the transfer. Leave blank if transfers are not budgeted.	Numeric digits in decimal format. No monetary

		symbols are included
2.1.e	If accommodation is budgeted for the participants, enter the number of participants requiring accommodation. Leave blank if accommodation is not budgeted.	Numeric digits
2.1.f	If accommodation is budgeted for the participants, estimate the cost of accommodation per night. Leave blank if accommodation is not budgeted for. NOTE: The costing calculation for this item assumes that all participants will be staying for the total duration of the code-sprint (your answer to Question 1.a)	Numeric digits in decimal format. No monetary symbols are included
2.2 Code-sprint Leader Travel and Accommodation		
2.2.a	If air travel is budgeted for the code-sprint leader, enter in the total expected number of leaders that will require it. If no travel is budgeted, leave this blank and ignore Questions 2.2.b, 2.2.c, 2.2.d	Numeric digits
2.2.b	If air travel is budgeted for the code-sprint leaders, estimate the cost of return flight tickets from the leader's departure point to the code-sprint locality.	Numeric digits in decimal format. No monetary symbols are included
2.2.c	If transfers are budgeted for the code-sprint leaders, enter the number of transfers that will be required. A transfer refers to the transportation of one or more individuals from the airport to a final destination. If transfers are not budgeted, leave this blank	Numeric digits
2.2.d	If transfers are budgeted for the code-sprint leaders, estimate the cost of the transfer. Leave blank if transfers are not budgeted for.	Numeric digits in decimal format. No monetary symbols are included
2.2.e	If accommodation is budgeted for the code-sprint leaders, enter the number of leaders requiring accommodation. Leave blank if accommodation is not budgeted.	Numeric digits
2.2.f	If accommodation is budgeted for the code-sprint leaders, estimate the cost of accommodation per night. Leave blank if accommodation is not budgeted for. NOTE: The costing calculation for this item assumes accommodation will be required for the leader's duration at the sprint (i.e. the answer to Question 1.2c). Preparation and post-evaluation time is not accounted for in the accommodation calculation. Also, it is assumed that all leaders will use the same accommodation premises.	Numeric digits in decimal format. No monetary symbols are included
2.3 Code-sprint Venue		
2.3.a	Estimate the cost per day for booking out the code-sprint venue. Leave blank if not budgeted for. NOTE: The costing calculation for this item assumes that the venue will be booked for the entire duration of the code-sprint (i.e. the duration specified in Question 1a).	Numeric digits in decimal format. No monetary symbols are included
2.3.b	Estimate the cost of catering per day for the code-sprint. Leave blank if not budgeted for. NOTE: The costing calculation for this item assumes that the catering cost will apply for the entire duration of the code-sprint (i.e. the duration specified in Question 1a).	Numeric digits in decimal format. No monetary symbols are included
3. Equipment Budget		
3.a	If rental PCs are budgeted for the use of the participants and leaders, enter the total number required. Leave blank if not budgeted for.	Numeric digits
3.b	If rental PCs are budgeted for, estimate the cost of rental per day. Leave blank if not budgeted for. NOTE: The costing calculation for this item assumed that the rental period will be the same as the total duration of the sprint (i.e.	Numeric digits in decimal format. No monetary

	the duration specified in Question 1a).	symbols are included
3.c	There might be miscellaneous equipment required for the sprint. Give an estimate of the total cost that these items might have.	Numeric digits in decimal format. No monetary symbols are included
4. Just in Time (JIT) Training		
4.a	Indicate how many sessions will be conducted during the code-sprint duration. Leave blank if not budgeted for this item and ignore all other questions in this section.	Numeric digits
4.1 Facilitator remuneration		
4.1.a	Indicate how many facilitators you may use for these sessions. The maximum allowed is 4.	Numeric digits
4.1.b	If the facilitators are being paid for their time, the hourly rate of payment is required. This has to be denoted per facilitator. Leave blank if not budgeted for.	Numeric digits in decimal format. No monetary symbols are included
4.1.c	If multiple facilitators are being recruited, indicate the number of hours each facilitator will be required. If only one facilitator is used, the total number of hours needs to be estimated for all sessions. If more than one facilitator is used, indicate the hours per facilitator. Leave blank if not budgeted for.	Numeric digits
4.2 Facilitator Travel and Accommodation		
4.2.a	If air travel is budgeted for the facilitators, enter in the total expected number of facilitators that will require it. If no travel is budgeted, leave this blank and ignore Questions 4.2.b, 4.2.c, 4.2.d	Numeric digits
4.2.b	If air travel is budgeted for the facilitators, estimate the cost of return flight tickets from the facilitator's departure point to the code-sprint locality.	Numeric digits in decimal format. No monetary symbols are included
4.2.c	If transfers are budgeted for the facilitators, enter the number of transfers that will be required. A transfer refers to the transportation of one or more individuals from the airport to a final destination. If transfers are not budgeted, leave this blank	Numeric digits
4.2.d	If transfers are budgeted for the facilitators, estimate the cost of the transfer. Leave blank if transfers are not budgeted.	Numeric digits in decimal format. No monetary symbols are included
4.2.e	If accommodation is budgeted for the facilitators, enter the number of facilitators requiring accommodation. Leave blank if accommodation is not budgeted.	Numeric digits
4.2.f	If accommodation is budgeted for the facilitators, enter the number of nights each will require it for. Leave blank if not budgeted for.	Numeric digits
4.2.g	If accommodation is budgeted for the facilitators, estimate the cost of accommodation per night. Leave blank if accommodation is not budgeted for. NOTE: The costing calculation for this item assumes that the same accommodation premises is used for all facilitators.	Numeric digits in decimal format. No monetary symbols are included
4.3 JIT Venue Costs		
4.3.a	Estimate the cost per hour for booking out the JIT venue. Leave blank if not budgeted for. NOTE: The costing calculation for this item assumes that the	Numeric digits in decimal format.

	venue will be booked for the entire duration of all JIT sessions.	No monetary symbols are included
4.3.b	Estimate the cost of catering for each JIT session. Leave blank if not budgeted for. NOTE: The costing calculation for this item assumes that the catering cost will apply for all JIT sessions.	Numeric digits in decimal format. No monetary symbols are included
5. Management		
5.a	If the champion's labour costs are covered by the code-sprint funding mechanism, estimate his/her hourly rate. NOTE: The costing calculation for this item uses 50% of the total duration of the code-sprint as an estimation (i.e. the duration specified in Question 1a).	Numeric digits in decimal format. No monetary symbols are included
5.b	If the support teams' labour costs are covered by the code-sprint funding mechanism, estimate the number of members. Maximum of 2 is allowed.	Numeric digits
5.c	If the support team's labour costs are covered by the code-sprint funding mechanism, estimate the hourly rate of each support team member. NOTE: The costing calculation for this item uses 50% of the total duration of the code-sprint as an estimation (i.e. the duration specified in Question 1a)	Numeric digits in decimal format. No monetary symbols are included