Principles and results (C4EU 5.6.1: Evaluation of Results and Best Practices -a)

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Abstract

This report specifies the driving principles of bottom up broadband initiatives. These principles are developed to describe the best practices in terms of networking and communications, taking into account related reference models such as the open source community. The report also includes a review of the project indicators and which is the current state of the project.

Index Terms

Bottom-up-Broadband (BuB), principles, results

Affiliation

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I. Introduction

This report summarizes the principles that drive our work, the identified best practices and the results obtained so far. As we promote collaboration, this document has been written in a collaborative way. The details as well as the instructions to collaborate are provided in Section II. The core BuB principles are explained in Section III. As there are several parallelisms between BuB and open source communities, we devote Section IV to explore them. Wireless community networks have established a number of networking principles that foster collaboration, which are reviewed in Section V.

The communication and discussion of results are critical for long term sustainability in BuB initiatives and, for this reason, we emphasize the importance of documentation and transparency in Section VI and some guidelines to prepare workshops in VII. We assess which is the current status of the project by means of the quantitative indicators examined in Section VIII. Finally, Section IX concludes this report.

II. About this document

This report has been produced using open source tools such as LaTeX [1] and *git* [2]. LaTeX is widely used in academia to prepare print-class documents. It automatically takes care of numbering, cross-referencing, tables of contents, bibliography, etc. *git* is a high performance distributed revision control which is used in many open source projects, such as the linux kernel. Git makes it easy and safe to collaborate as each contributor works on his personal copy. Good contributions can be easily shared with others, and it is always possible to revert to a previous version.

Our git repository is publicly available in *github*:

https://github.com/jbarcelo/C4EU-deliverables

Anyone who is familiar with LaTeX and *github* can contribute to this document. The firs step is to make a copy (a *fork* in *github* jargon). The contributor can work in this copy and make changes to improve the document. After that, it is necessary to request that these changes are merged into the original copy of the document (a *pull request* in github jargon).

If you see anything that can be improved, feel free to contribute. This document is

alive in the sense that it will keep evolving as long as contributors make changes and improve it.

The system automatically keeps track of all the contributors and their contributions. It is possible to see who is contributing more actively and which are the exact changes made by each contributor. And everything is public on the web.

III. BuB Principles

Bottom up broadband has its starting point in an unsatisfied need by the users. This users can be either individuals, communities, institutions, companies or other organizations. The users get involved in the planning, funding and deployment of the solution.

Having a working solution is not the only goal in BuB initiatives. Even though approaches such as fast prototyping are encouraged in BuB, BuB might not always be the fastest or more economical way.

In BuB there is also an interest in learning, in sharing and in collaborating. BuB is about educating the users and empowering them. For this reason, there is an emphasis on workshops, participative mailing lists and accessible documentation.

It is also important to be inclusive and understand that everyone can contribute in one way or another. It is by no means restricted to experts or gurus. Everyone has some strengths and weaknesses, and by means of collaboration it is possible to combine the strengths of each of us to achieve more ambitious goals.

As the African proverb says “If you want to go fast, go alone. If you want to go far, go together.”

IV. A parallelism with open source communities

The spirit of BuB is very similar to the open source initiative. Before diving into similarities, it is worth saying that the only significant difference is the user attitude. In a bottom up broadband context the user must provide some resources to become part of the resulting network, while in open source community both developers and users benefit from external contributions. Of course, both approaches are completely free.

Transparency is the most evident similarity with this kind of community. For an end user to connect to the network some specifications must be handled thus making this

information public and transparent is a key aspect of the BuB approach. The more information, the more users.

From transparency comes derived works. That is, individuals and organizations can adapt these projects to their needs.

As well as the open source definition states, any discrimination or restrictions take place in the BuB philosophy.

V. Open Network

Open network is a network that allows free connection for anyone, i.e. no restrictions to prevent someone else connecting to it and therefore promotes the growth of the network.

The open network concept itself, is limited to the deployment and operation of the network regardless the content and services running on it. Therefore open network ensures that nobody can prohibit the entrance to new people and essential services network (IPs, DNS, etc.) works properly. An important aspect of the open network is that it allows connection to many segments of the population excluded (village with low population) since its deployment model reduces costs compared to the currently dominant models.

The guifi.net foundation is a clear example of open network, also with the participation of all users has created the largest open network of the world. It is an open network because all network settings data are published, allowing any person can see how the network is built, to improve, maintain and extend.

A misconception that people have about the open network is that it is not secure, because the link layer is not encrypted, allowing any user to analyze the data passing through your node, but in any network (internet or open network) security depends on the user (application layer), therefore the user is responsible for implementing security measures according to their needs. For example, protocols such as SSL allow secure channel connection between two points in the network and that all information that travels over the network is encrypted.

VI. Transparency and documentation

To achieve the goals set at the beginning of the project, it is paramount to have the necessary documentation to support the achievements and progress of the same. Not only for the fact of having it, but also to give help and support to potential new contributions from other members that look interested in the project. One of the qualities of Commons for Europe, is that it is completely and totally open, and anyone interested can contribute in a big or small way, depending on their knowledge or involvement. What is sought with this idea is to achieve that C4EU far from being a project of a team gets to be a project done by all.

One of the main objectives which we desire to achieve is the fact of get C4EU expanded and taken place in the whole European Union. To accomplish this objective, it is essential, therefore, the fact of being transparent in all our actions and knowledge and try to give as much help as possible to help new integrators to achieve the project objectives. Whether through direct contributions or by providing documentation in which we rely to carry it out. For more information please visit the official web site of the project or take a look out code at GitHub.com.

VII. Open Workshops Preparation

So far, there have been two workshops and both have been organized by people from the UPF. At this section, the details on how to prepare an open workshop will be provided.

As any other kind of meeting, some steps must be followed in order to organize a workshop:

1) **Decide the need to make a workshop**
2) **Let the partners know:** Once, you have decided that a workshop will take place it is recommended to inform the partners about this fact.
3) **Agree on a date:** At this point, you have to ask your partners about their availability and take a poll in order to choose the best day for everyone.
4) **Book a room:** Once the date and time are fixed, you may reserve a room for the workshop.
5) **Inform about the requirements:** The information on the documents and/or other kind of things that have to be prepared in order to participate in the workshop

TABLE I
SUCCESS INDICATORS

Indicator	Low	Medium	High
Pilot Proposals	0 - 10	11 - 15	+15
Executed sensor pilots	1	2	+3
Number of executed WiFi/SuperWiFi pilots	1	2	+3
Number of executed fiber pilots	1	2	+3
Number of executed hybrid pilots	0	1	2
BuB final users	0-500	500-5000	+5000
BuB raised fundss	0-1000	1000-100,000	+100,000
Cities involved	0-2	3-5	+6

should be provided at this point. You may also give a deadline for the documents to be uploaded and explain the different roles that any participant can take.

6) **Remote participation:** It is recommended to provide a way to attend to the workshop remotely, since may be some partners unable to attend physically.
7) **Attendance sheet:** Prepare an attendance sheet providing a summary of all the important information and any other data that have to be highlighted. All the participants should sign that sheet, indicating the role they will take.

VIII. PROJECT INDICATORS

Some quantitative success indicators have been proposed. Table I summarize the indicators that have been consider and the rest of the section offers further details on each of them.

A. Pilot proposals 0-10/11-15/+15

The leaders of the pilots work package will issue two calls for pilots in 2012 and 2013. All the partners of the project and external BuB champions will respond to this call with pilot proposals. These proposals must contain some basic information regarding the project, and clearly indicate which are the differentiating characteristics that make

them more attractive and suitable for execution. Among all the proposed pilots, the partnership will choose those that are more interesting following criteria of potential impact, geographical distribution, technological diversity, and commitment of the champions that are backing the proposal. The resources of the C4U project will be devoted to monitoring, supporting and documenting the selected pilots.

So far we have received 14 pilot proposals.

B. Number of executed sensor pilots 1/2/3

The most promising sensor pilots of all the the received proposals will be executed. These pilots will receive full support from the partners involved in the BuB pilots work package and will be carefully documented to replicate the success models and disseminate the lessons learned.

At this point, there is one sensor pilot being executed.

C. Number of executed superwifi/wifi pilots 1/2/3

The most promising superwifi and wifi pilots of all the the received proposals will be executed. These pilots will receive full support from the partners involved in the BuB pilots work package and will be carefully documented to replicate the success models and disseminate the lessons learned.

At this point, there are two WiFi pilots in execution. One deals with public WiFi ofering while the other addresses mobile WiFi in combination with mesh technology.

D. Number of executed fiber pilots 1/2/3

The most promising fiber pilots of all the the received proposals will be executed. These pilots will receive full support from the partners involved in the BuB pilots work package and will be carefully documented to replicate the success models and disseminate the lessons learned.

There is one fiber pilot being executed at this moment.

E. Number of executed hybrid pilots 0/1/2

Some of the pilots will combine more of one of the technologies of interest in the C4EU project. This hybrid pilots represent a major challenge as they will require the collaboration of different working groups with heterogeneous background and expertise to successfully integrate disparate technologies. Note that a hybrid project involving two different technologies will be counted thrice. As an example, a hybrid wifi-sensor pilot counts as a wifi pilot, a sensor pilot and a hybrid pilot.

There are preliminar talks to launch an hybrid pilot which studies the impact of a fiber connection in an urban wireless network.

F. BuB final users 0-500/500-5000/+5000

One of the goals of this project is to have an impact on a large number of citizens and institutions. To this end, we will estimate the aggregate number of users of the pilots deployed in the project. As an example, if a BuB project provides Internet connectivity to a cultural center, we will estimate how many people (including staff and visitors) have benefited from the pilot.

At this point, none of the pilots has been completed and therefore this metric is difficult to estimate.

G. BuB raised funds 0-1000eur/1000-100,000eur/+100,000eur

The BuB principle requires involvement and commitment from the part of those that will benefit from the pilot. This commitment takes the form of time and effort devoted to the initiative (which are difficult to quantify) and financial support for the execution of the pilot. This indicator reflects the amount of BuB money that is raised from sources different than the project. These should cover the major part of the expenses of the pilots using commercial technologies (wifi, fiber).

Some of the pilots have raised over 18,000 Euro in crowdfunding. Nevertheless, the total amount of money will be difficult to estimate until the pilots are completed. Figure 1 shows an example of a crowdfunded initiative in the goteo.org crowdfunding platform.

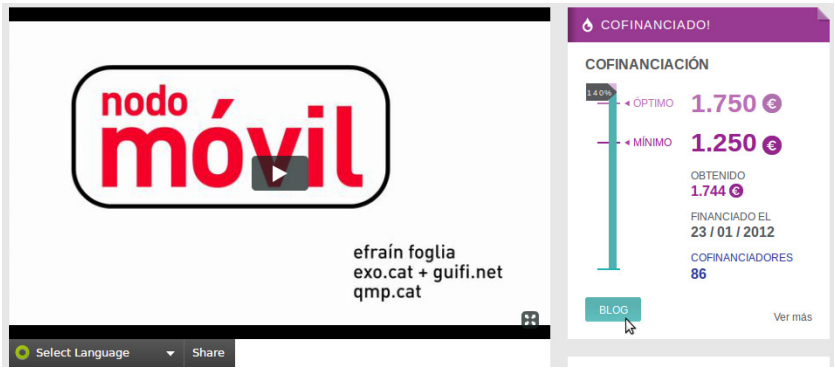

Fig. 1. An example of a crowdfunded initiative in goteo.org (in Spanish)

H. Cities involved in the pilots 0-2/3-5/+6

One of the goals of the project is to geographically spread success models across Europe, and to establish successful collaborations among champions that share the same goals in different locations. This goal will be fulfilled if the projects are executed in several different cities.

So far we have pilots in Gurb (Vic), Barcelona, London, the cities of the province of Rome. Some of the pilots are mobile or portable and can easily spread to a large number of cities.

IX. Conclusion

In this report we reviewed the driving principles in BuB initiatives and how they develop in best practices. An analysis of the quantitative project indicators shows that the project is in a good position to achieve the figures defined as medium and good performance for all indicators.

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