Building a BuB Community

(C4EU 5.5.2: Report on support actions - training and networking -b)

Name Surname, Name Surname, Name Surname, Name Surname, Name Surname, and Name Surname

Abstract

This report summarizes the training, networking and communication efforts of the BuB4EU branch of the Commons for Europe project. At the time of this writing, the fellows recruited for the second round of botto-up broadband pilots are already working. Each of the fellows has both one academic advisor and one mentor with extensive BuB experience. These two roles complement each other in the education of the student. The collaboration tools are those commonly present in collaborative initiatives: workshops, mailing list, and a git repository. We complement the training of the fellows with the training of the general public using an online course. The goal of this course is to empower the citizens to be able to reproduce one of the pilots that was executed in the first round: the open wireless sensor network.

Index Terms

Bottom-up-Broadband (BuB), training, workshops

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I. INTRODUCTION

This report summarizes the training and communication efforts of the BuB4EU branch of the Commons for Europe project. After this introduction, Section II provides information about this document and how to collaborate. Section III introduces the fellow program that we have prepared to back the execution of the selected pilots. Section IV describes the roles of mentor and adacemic advisor that will help the fellows participating in the pilots. Those that are interested in BuB4EU meet in the workshops detailed in Section V and participate in the mailing list as explained in Section VI. A web has been constructed and is continually evolving as explained in VII. The BuB4EU branch and the obtained results have also been presented bottom-up broadband forums that are introduced in Section VIII. The plan for the preparation of an online course is detailed in IX. Finally, Section X offers some concluding remarks.

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 own 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. FELLOW PROGRAM FOR SUPPORTING BUB PILOTS

Each of the pilots selected for execution receives the backing of a fellow. Fellows are recruited among the last year students of a four year networking undergraduate program. The selection process relies on academic grades, Curriculum Vitae and personal interview.

For project management purposes, each fellow has to prepare four different deliverables regarding the pilot. First, a pilot charter which is a high-level description of the pilot. Then, a detailed planning with the tasks to be carried out throughout the pilot execution. When the first results are available, they will be covered by an execution deliverable. This execution deliverable is a checkpoint to verify that the pilot is on track and advancing according the schedule. Finally, upon completion of the pilot, the fellow will prepare a memory for publication and will explain the pilot in a public presentation.

IV. MENTOR PROGRAM AND ACADEMIC ADVICE

The fellows selected to participate in the Commons for Europe (C4EU) project do so as part of their education at the university. Specifically, this training is divided in two different blocks: *practicum* and *degree thesis*. The practicum involves real-world work in which the fellows have the opportunity to use the skills they have learned in regular courses. It is also the opportunity to realize that real-world work is substantially different from the courses taught at the university, which means that the fellows have to make an extra effort to get acquainted with technologies and work-flows that they have not learned in class.

The *practicum* is not a controlled environment as the course lab assignments are. Things can go wrong, and it is important to understand and accept it. Furthermore, there is not a teacher that *knows the solution*. This means that the level of effort to achieve results is much higher in the practicum than in a course assignment, as it is possible to get stuck and it may take days or longer to find a solution or a workaround.

TABLE I
PILOTS, FELLOWS AND MENTORS

Pilot	Student	Mentor	Main Academic Advisor
Open Sensor Network	Alejandro Andreu	Alex Posada and Tomas Diez	Jaume Barcelo
Free Europe WiFi	Ignacio Justel	Givanni Calcerano	Albert Domingo
FFTx	Jorge Beltran	Roger Baig	Jaume Barcelo
Mobile Node	Fernando Gros	Efrain Foglia	Jaume Barcelo

The effort is measured in the European Credit Transfer System (ECTS). The *practicum* has a value of 20 ECTS credits, which is equivalent to 500 hours of work.

The fellows are not alone in this quest. A *mentor* is assigned to each student to indicate the tasks that the student has to do and provide the necessary help and guidance. As the practicum is tied to a real-world work, the *mentor* needs to be someone that extensive experience in Bottom-up Broadband initiatives.

Besides the actual technical skills acquired in the execution of the *practicum*, the fellows are also expected to practice *soft* skills such as participation in meetings, effective communication, organization of work to meet schedules, generation of documentation, etc. For some people, the practicum can be the starting point of a professional career.

A mentor has been assigned to each of the students participating in the C4EU project. It is important that the mentor is someone from outside the university that is very familiar with bottom-up-broadband and with the pilot. Table I summarizes the pilots under consideration, the student assigned to each pilot and the mentor assigned to each student.

In addition to the *practicum*, the fellows also have write their *degree thesis*. This thesis is an academic document that is necessary to obtain the degree. In the thesis, the fellows will comprehensively describe their pilot. As an academic document, it has to be carefully written, well structured and profusely documented. It is necessary to include introductory material, related work and references. It is also important to include a detailed work-plan with descriptions of the tasks. The work should be described in such a way that an external evaluator can understand what is the contribution and why it is important. The role of the academic advisor is to guide the fellows in the successful completion of the

academic work in coordination with the mentor.

The *thesis* has also a value of 20 ECTS credits, which means 500 additional hours of work. This part of the work will be supervised by an academic advisor from the university. There is hard deadline for the *thesis* in June. Not meeting this deadline would represent a delay of one year in the obtention of the degree. For this reason, it may be a good idea to plan the work in such a way that the thesis is finished considerably earlier, to have some *safety margin* in case of unexpected events.

LaTeX is a popular document preparation system in the academia, that we will also use in the preparation of the thesis. It is convenient to structure a large document in chapters, sections and subsection. It also provides support for references and cross-references. And automatically generates tables of contents, tables of figures, bibliography, etc. Our idea is to use LaTeX also for the preparation of the documentation of the C4EU project, in such a way that it can be re-used in the preparation of the thesis of the fellows.

Another tool that can be helpful in the preparation of the documentation is github. Github is a web based extension of the git revision control system, and makes it possible that different people work in parallel on the same document, suggest changes, rollback modifications, etc. in a distributed fashion.

A. Mentors for the OSN pilot

Recently two researches joined the initiative and they will be helping the fellow to complete the pilot. A short biography is shown below.

- *Alex Posada*: He is an engineer who researches in the field of interactive media, produces and creates music and is actively involved in many interactive projects which normally involve sensors. Hence he will be able to contribute to the Open Sensor Network project.
- *Tomas Diez*: He is the project manager in FabLab Barcelona —workshop offering personal digital fabrication—, located in the Institute for Advanced Architecture of Catalonia (IAAC). He has executed projects in Latin America as well as in Europe. He focuses on the research for a more fluid language between machines and humans, and is currently working on Smart Citizen, a very similar initiative to Open Sensor Network.

B. Mentor for the FFTx pilot

The mentor for the FFTx pilot is Roger Baig Vias and he will help Jorge Beltran to perform this project. Roger is from Barcelona and he studied Industrial and Electronic Engineering at Universitat Politcnica de Catalunya (UPC). He also did a master at Universitat Autnoma de Barcelona (UAB). Now he is working in the Private Foundation guifi.net by the Open, Free and Neutral Network where he does tasks as international projects, dissemination and promotion. Roger also takes part in CONFINE (FP7) and C4EU (CIP) projects.

C. Mentor for the FEW pilot

As explained before, Nacho Justel will be guided by Giovanni Calcerano from Provicia WiFi. Giovanni is graduated in Mathematics, and developed his carrer mostly as consultant in the field of high-level technical computing / scientific / statistical experience with over ten-year experience in the business sector. He is currently working at Provincia di Roma, being the responsably of European projects as OpenData, among others. For more information, about his professional career, you can take a look at his LinkedIn profile.

D. Mentor for the Mobile Node pilot

Fernando, will be guided by Efraín Foglia. Efraín has been working in different areas related to Design and Art. Nowadays he is doing research on the field of the relation between Design & Art and digital networks, taking into account also their social and political implications. He is an active member of guifi.net and exo.cat, two platforms which work on the design and deployment of open networks.

He graduated in Design of Graphic Communication in UAM (Mexico) and is currently working on his PhD at the Universitat de Barcelona (UB) about "'*Art in MediaCity*'"

V. BuB4EU Workshops

Together with the mailing list, one of the main tools to exchange results and foster the discussion is the organization of workshops. This workshops are announced on the

mailing list and are open for everyone to participate. The workshops are organized every two weeks by the fellows themselves.

In the workshop each of the fellows present the advancements in the last two weeks, the plans for the next two weeks. It is also a good place to discuss possible obstacles, opportunities, re-planning and in general sharing experiences related to the pilots. The workshop help the fellows to keep track of all the pilots and identify possibilities of collaboration.

The workshops are also attended by the mentors, advisors and anyone interested in BuB. The more senior members offer guidance to the fellows reinforcing the learning aspects of the pilots.

VI. OPEN MAILING LIST

To coordinate the Bottom Up Broadband efforts we use a mailing list. The mailing list runs on free software and it is provided by the guifi.net community network. It is an open mailing list and anyone can subscribe or check the archived mails following this link "https://lists.guifi.net/listinfo/bub".

We have received several external subscriptions from people that is interested in the general idea of BuB. Of special relevance is the presence in the BuB list of people from the Federation French Data Network (FFDN) and the Free Network Foundation (FNF). It is a convenient tool for the daily work and to keep track of progress between meetings and workshops. It is particularly useful for people interested in BuB that cannot attend the meetings or events, as it provides a means for collaboration and contribution that is not tied to particular schedules or locations.

The list has been growing since its creation, and currently has 59 subscribed member. The numbers of members has doubled in the last year.

The combination of the active mailing list and periodical workshops makes it possible to sustain an intense working effort over long periods of time. Besides, it helps in building a community of contributors which is one of the goals of the project. We are very grateful to all those people which, despite not being formally in the project, contribute in making it a success.

VII. WEB

The web of Bottom-up Broadband for Europe contains the relevant information to the initiative. It has been prepared by Adriana Marti using the Drupal Content Management System. The web describes the BuB Driving principles and the member of the team. It also includes the Call for Pilots and Call for Fellows forms, for anyone willing to contribute in one way or the other.

The web also offers a short description of each of the BuB pilots and forums for discussing them. There are also sections for news and articles. Finally, the web links to other relevant webs such as "Commons for Europe", "Code for Europe" and "Code for America", and also provides a link to the mailing list for those willing to read the archives or subscribe.

VIII. INTERNATIONAL FORUMS

A. Battlemesh'12

Two people from the Commons for Europe project participated in Battlemesh v5 (Athens, March 26th to April 1st) and presented the project there. Battlemesh is a yearly meeting of wireless community networks enthusiasts in which the latest routing protocols are tested. Battlemesh is attended by community networks leaders, and therefore it is the right place to get in touch with such communities.

B. 18th EUNICE Conference on Information and Communications Technologies

Albert Domingo presented the paper "White Spaces in UHF Band: Catalonia Case Study and Impact of the Digital Dividend" [3], combining information regarding white spaces availability and population density.

C. EC Flarch group workshop

The European Commission Future Internet Architecture group organized a workshop in Brussels to discuss the design principles of the Future Internet Architecture. The interest was in transformative evolution, to address challenges that could not be solved

by incremental infrastructure investment or incremental evolution of the protocols. Albert Domingo attended the workshop and presented the paper "Bottom-up Broadband Initiatives in the Commons for Europe Project" [4].

D. International Summit of Wireless Community Networks'12

The International Summit of Wireless Community Networks was performed in Barcelona between 4 and 7 of October 2012. The summit was a particular place where the participants could share your diverse knowledge and strategies about new technology infrastructure needs and formulating policy reforms to improve community wireless network. Three partners of our consortium participated in the event.

Ramon Roca spoke in the opening event, but also participated during all summit, first he informed all participants about the advantage of BuB business model against the traditional model - explaining why the BuB business model is better and he ended in agreement that infrastructure as a commons [5] can be much more efficient, Ramon also explained the successful completion of the second phase of BuB fiber deployment in Gurb.

Miquel Oliver (as representative of Univesitat Pompeu Fabra, participant in the Bottom-up Broadband project) talked about the C4EU project, and especially about the BuB branch of the project. And Federico Capoano, from Caspur, presented about the need of creating accessible documentation for non-geeks.

E. 5th International Workshop on Multiple Access Communications

This workshop took place in Maynooth (Ireland) on the 19th and 20th of November. The technical program comprised talks and demonstrations of the latest advancements of the field by academy and industry leading institutions.

Luis Sanabria presented the demo "Spectrum Sensing with USRP-E110" to detect the availability of white spaces in the band used for SuperWifi communications [6].

F. Battlemesh'13

A few members of the BuB initiative, including two fellows, participated in Battlemesh'13 at the University of Aalborg and presented BuB and two of the pilots. This event took

place at the Univeristy of Aalborg in April.

G. Pirinelab'13

This is a retreat in the Pirenees Mountains that gathers hackers and enterpreneurs to explore the latest bottom-up technologies and their application to rural and mountain areas. One of the fellows attended Pirinelab in representation of Bottom-up Broadband and established contacts and gathered information useful for all the pilots.

H. International Summit for Community Wireless Networks'13

Bottom-up Broadband for Europe was also present in this edition of the most important gathering of community networks. One of the topics of interest is the creation of global coordination tools and a license that guarantees the freedom of the networks. The summit was in October in Berlin.

IX. ONLINE TRAINING

In order to further disseminate the results of the pilots and increase the reach and impact of bottom-up initiatives, we have started working in the preparation of an online course to teach to anyone in the Internet how to build a bottom-up wireless sensor network.

A. Introduction and goals

It is a commonplace that the Internet is changing our lives. It is changing the way we learn and also the way we contribute to our communities and organize ourselves. It is our goal to use the network to teach about the construction of new networks. In this course we will explore the bottom-up creation of a wireless sensor network that can be used to gather and share data. This gathering and sharing of data empowers the citizenship to monitor - and interact with - the environment.

We are interested in bottom-up models. We use the terms peer-to-peer, do-it-ourselves and bottom-up interchangeably. The idea that we want to transmit with bottom-up is that the participant takes an active role and contributes to the community rather than being
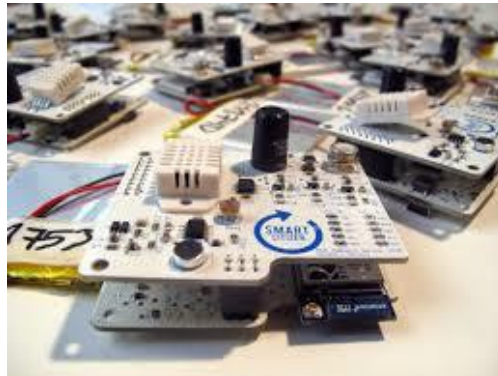
Fig. 1.   Smart Citizen Kit units. These are wireless nodes with multiple sensors.

a mere consumer. For this reason, we teach the first simple steps to build, configure and program a sensor that uploads the gathered data to the Internet to make it publicly available.

This course is not only listening and reading. It is not a course about memorizing data and algorithms and passing tests. It is a course about programming, prototyping, constructing electronic devices, distributing the data and, in summary, completing projects. We want the participants to acquire the true and profound understanding necessary to transform their ideas and creativity into reality. Our goal is to offer true, long-lasting, enjoyable learning.

Our intention is to create a course different from those that already exist. It is not difficult to find introductory courses to chemistry, physics, biology, economics, etc. The course that we propose complements the extensive offer of courses which is already available.

Taking this course requires commitment, as the price of the necessary electronic components to work on the assignments is around 100 Euro. Therefore, our goal regarding the number of participants cannot be quantity. It has to be quality.

- We aim at a high completion rate, our goal is that 100% of participants complete a project.
- We aim at a high collaboration rate, above 80%.
- We expect the participants to behave as peers and contribute to improve the course.

We aim at a high contribution rate, above 10% of the participants should work on making the course better.

- We aim at creating a community beyond the course. At least one in-person workshop should be organized to give an opportunity to build and strengthen a community.

This course is based on a regular course taught at Universitat Pompeu Fabra. The lab assignment guide is available in `github` and `scribd`: http://www.scribd.com/doc/ 156136472/A-course-on-Wireless-Sensor-Networks-WSNs

B. Methodology

The course is organized in different units. Each of the units is a basic ingredient in the construction of a bottom-up wireless sensor network. For each of the units, we will follow the same class dynamics.

1) Class dynamics: The course is divided in video lectures and written material, both published as the course goes on. Video content includes: teaching lessons, interviews and additional instructions for the assignments (when necessary). While the written material is composed by assignments and self-assessment quizzes.

Each unit starts with a motivational video introduction delivered by an invited expert introducing fundamental concepts. Then, a lecturer presents the different concepts, tools and examples that are going to be useful for both the assignments and the self-assessment quizzes. Starting from the necessary theory underlying each unit, the lecturer then guides the students through hands-on examples providing further insight on the subject.

After each unit's video lessons, assignments are "unlocked" to the student. Assignments are composed of written (and photographic) material detailing instructions on how to build examples, which work as hints to complete the assignment itself.

Teachers will propose challenges on each assignment, often composed of alternative or advanced services that can be added at various stages with some additional work. Challenges are the ground for a final course project which students may submit and present in a final event.

Challenges may be completed by forming groups of one or more students, in fact, collaboration among groups is encouraged. It is strongly believed that discussion and

feedback provide more valuable results and are considered as ways of effective learning in this platform.

Each group of students will own a blog in which the completed assignments will be posted. The blog should contain links to the code, schematics, demonstration videos and any other material that helps to better understand the work. For the final project, the groups will also prepare a presentation that will also be included in the blog.

2) Badges as a merit recognition system: This course has the following learning goals:

- Combine electronics and code in Arduino for sensory and actuation projects.
- Configure XBees and effectively use them in a communications project.
- Combining sensors (and probably actuators) with wireless communications and networking to turn creative ideas into working prototypes.

By completing assignments, the participants will show their mastery of each of these aspects and will earn a badge as a reward. Deciding which badges will be offered in the course, the exact criteria to award a badge and designing such badges is one of the tasks of the preparation of the course.

The P2P University offers all the necessary tools to create and award badges. An example of a badge is shown in Figure 2.

3) In-person courses: Besides the online offer, the course will also be offered in-class for students registered at Universitat Pompeu Fabra. Furthermore, it will be possible to use the material for Summer Schools to promote the University and Bottom-up Initiatives.

4) On-line platform: As the goal is to reach everyone that has an interest on the construction of wireless sensor networks, the course will also be offered in the P2P University course platform. This platform will be used to host the videos, written material and tools for discussion and feedback.

In his keynote talk in Edulearn'13 in Barcelona, P2PU co-founder Philipp Schmidt explained that when they conceived P2PU they were looking for something different than Coursera or EdX. The interest was in building something inexpensive, in a bottom-up fashion, using the resources already available on the web.

The peer-to-peer principles are summarized by the words "Learning from the people, by the people. About almost anything".

The P2P is built on strong principles. Their web highlights "open", "community" and
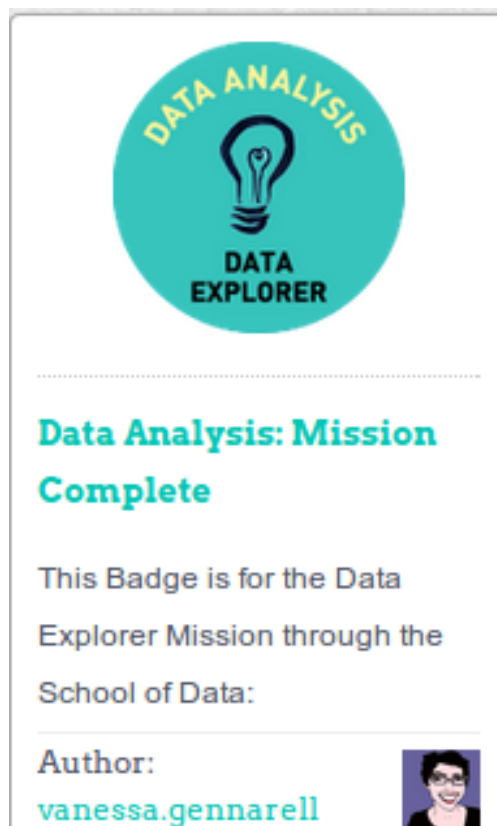
Fig. 2.   Example of a badge offered at the P2P University

"peer learning". Technologies and processes are open to make it open to collaborate. The organization is horizontal and driven by community discussions. And everyone is invited to learn and teach using the platform.

The courses are not constricted to the tools of the platform itself. On the contrary, they make use of all the resources available in the web such as mailing lists, blogging, micro-blogging, instant messaging, forums and video-conferences.

5) Completion rate, statistics and scientific analysis of the experience: One of the weaknesses of MOOCs are the low completion rates, typically below 10%. The reason is that people registers for courses but do not have the necessary time and/or motivation to complete them.

The goal of the P2PU and the "mechanicalmooc" engine is to offer an engaging and enriching experience to the participants, so that everyone benefits from the course.

Preetha Ram, which is involved in the "mechanicalmooc" has been quoted to say: "We want to do more than sign up tens of thousands of students and have only a fraction succeed. Our goal is to have everyone who participates succeed".

The system includes a logging and analytics system to keep tracks of clicks, emails and engagement in general. All this data is available for researchers and a team led by June Ahn (University of Maryland) is studying the data to find the best ways to encourage the participation of all registered users [**?**]

See http://http://info.p2pu.org/research/ for further details.

6) In-person Workshops and Meetings: The participants in nearby locations will be encouraged to meet and gather to work together in the projects. In-person collaboration provides a far richer experience than on-line work and helps keep people participative and engaged. Those that cannot meet in person will also be encouraged to get acquainted with their groups with presentation videos and/or other tools for team building.

7) Additional Material:

- Robert Faludi "Building Wireless Sensor Networks" [**?**]
- Alejandro Andreu "Open Sensor Network" [**?**]
- Massimo Banzi "Getting Started with Arduino" [**?**]

C. Work Plan

1) Identifying and specifying the course goals, the assignments and projects to learn and achieve such goals, as well as the evaluation criteria. October 2013. Leader: Jaume Barcelo.

2) Scripting of the course: preparation of the course structure including units segmentation, number/length of videos per unit, assignments and quiz dynamics and evaluation, feedback and collaboration management; and final project evaluation. November 2013. Leader: Jaume Barcelo.

3) Preparation of the written guide: there is already a guide for the in-class course, therefore this new adapted guide should take advantage of on-line resources (video, comments, etc.). December 2013. Leader: Luis Sanabria-Russo.

4) Preparation of the quizzes. Embedded googleforms will be used for the quizzes. January 2014. Leader: Luis Sanabria-Russo.
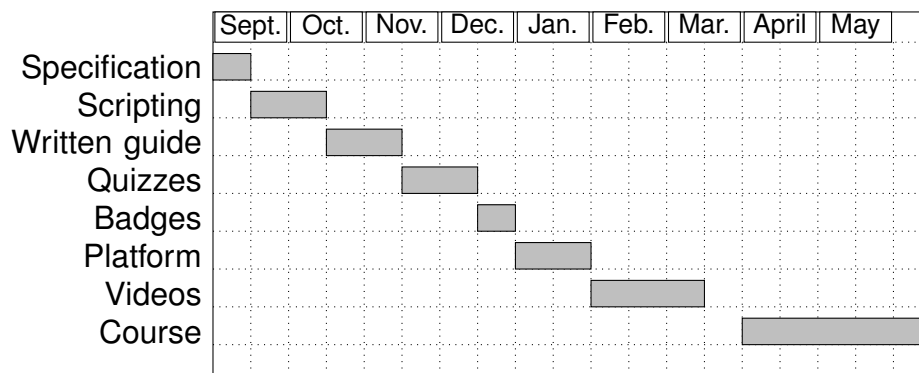
Fig. 3. Gantt Chart

5) Preparation of the badges using the P2P University tools. February 2014. Leader: Luis Sanabria-Russo.

6) Setting up the P2P University on-line platform: based on the course script, this task will configure the platform accordingly. February 2014. Leader: Luis Sanabria-Russo.

7) Shooting and producing the videos: this final task aims at shooting the videos according to what was designed in the course script and configured in the P2P University platform. March 2014. Leader: Laia Albo.

The course will start on April. Fig. 3 presents a Gantt chart representation.

1) Coordination tools: The tools will be the typical for collaborative projects: A mailing list for day-to-day progress and weekly meetings. Also IRC discussions as needed. Agile methodologies, *Trello* and *Wiggio* will also be considered for project and group management.

D. Results and Impact

This course builds upon successful experiences. There is already an existing in-person course that received very good feedback from the students. The laboratory guide of the course is available in `github` (https://github.com/jbarcelo/WSNs_lecture_notes) making it easy for everyone to contribute. We also published the guide in `scribd` in late July (http://www.scribd.com/doc/156136472/A-course-on-Wireless-Sensor-Networks-WSNs) and
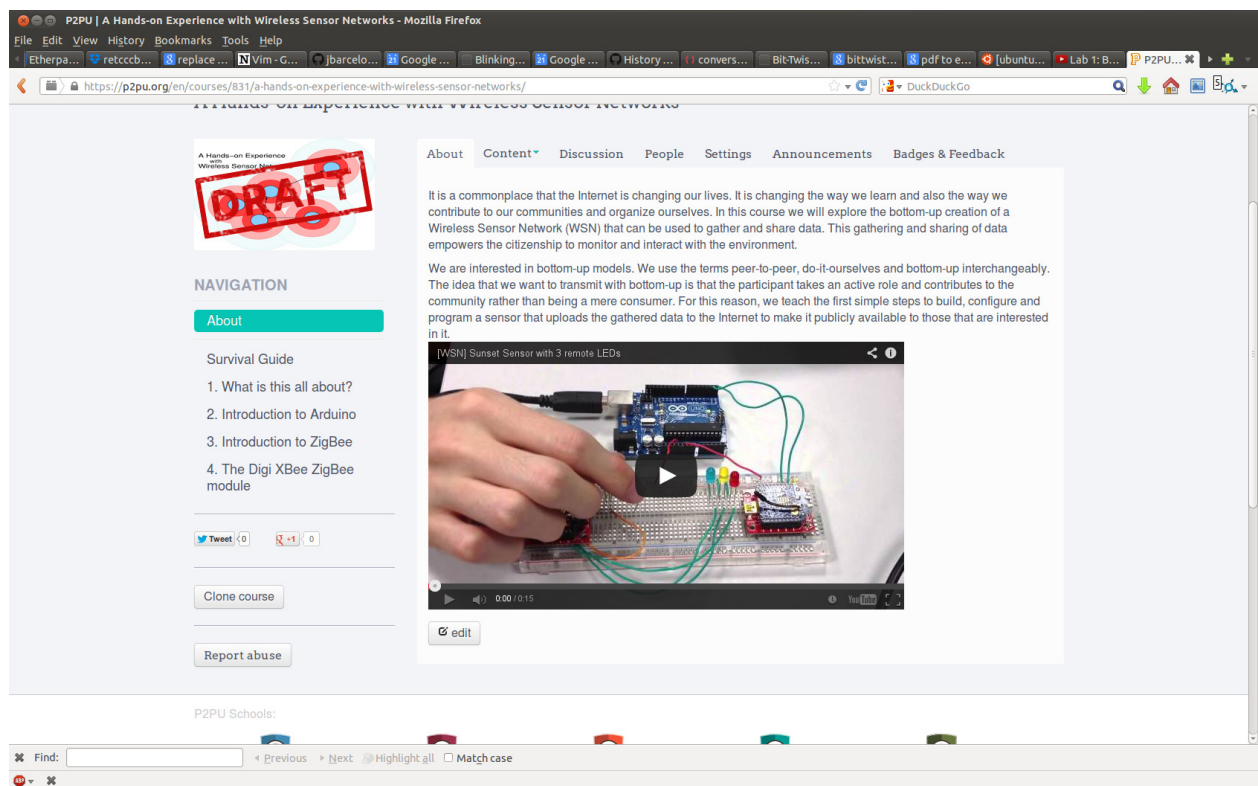
Fig. 4.   A screenshot of a draft of the course at P2P University

it was read more than 200 times in August.

Also, the idea of bottom-up smart cities implemented by Smart Citizen was applauded in Kickstarter and received over $60,000 in crowdfunding.

The hardware used in the course includes the Digi XBee and the Arduino board. This tandem was also used in the best-selling book by Rober Faludi "Building Wireless Sensor Networks". Arduino is a first choice platform for those interested in an introduction to electronics and micro-controllers. More than one million Arduino have been sold, confirming the success of their open business model.

The main goal of this course is to strengthen the community by teaching very basic skills to a large audience. After completing the course, the participants will be able to continue on their own with more advanced projects.

It is a basic digital education for everyone. People with no or little background in technology will make their first steps into programming, electronics, and sensing projects.

Students successfully completing this course will possess the basic tools to contribute to the creation of bottom-up Smart Cities.

1) Results obtained so far: By simply creating this document and discussing it with the involved communities on the Internet, we have received many inputs, ideas, and encouragement that has helped further shape the idea.

2) Eternal work-in-progress: Many collaborative projects never come to an end. These projects keep evolving and improving, and the actual direction of the evolution is highly dependant of the people that is working in it in every moment. The idea is to keep gathering feedback from the participants and use that information to continuously improve the course. For this reason it is very important that everyone involved does not feel like a simple "consumer". The goal is that the participants are also the "makers" of the course and everyone learns from everyone in a peer-to-peer way.

E. Teaching Plan

1) Concepts and competences acquired in the course:

- Bottom-up, peer-to-peer and community-oriented collaboration models
- Sensors, actuators, sensor networks, open data, Smart Cities
- Basic electronics
- Basic microprocessor programming
- Configuration of Digi XBee
- ZigBee communication

2) Weekly organization:

- Week 1: Presentation of the participants, presentation of the course, motivation to take the course, dream about a personal project.
- Week 2: Introduction to Arduino. Arduino IDE. Input/output.
  Lab assignment: Blinking LED project.
- Week 3: Introduction to XBee. Basic configuration of AT mode.
  Lab assignment: ZigBee chat project.
- Week 4: Basic interaction. Make a measurement and react.
  Lab assignment: Wireless Sunset Sensor project.

- Week 5: Open data. The importance of sharing the data. Open data platforms.

  Lab assignment: Taking measures with a sensor and uploading them to the Internet.

Motivating videos:

- Do-it-ourselves, Bottom-up, Sensors, Smart Cities, Smart Cities Kit: Laia Albo, Michel Bauwens, Tiberius Brastaviceanu, Guillem Camprodon and Tomas Diez, Alex Posada
- Arduino (Blinking LED): David Mellis, (Jaume Barcelo)
- XBee (Chat): Robert Faludi, (Luis Sanabria-Russo)
- Interaction design (Sunset Sensor): Alex Posada (Luis Sanabria-Russo)
- Open Data, Open Data platforms (Internet thermometer): Albert Domingo, Manuel Palacin, (Alejandro Andreu)

F. Lead teacher

- Jaume Barcelo (Universitat Pompeu Fabra): He is a lecturer at Universitat Pompeu Fabra where he takes part in the Wireless Sensor Network course. He has also taught at Universidad Carlos III de Madrid where he collaborated with the open-courseware experience that published the class materials online. Together with Luis Sanabria, he has prepared the basic laboratory guide for the Wireless Sensor Networks course that has been shared with the Internet community. Jaume has taught more than 20 courses at the graduate and undergraduate level at two universities. Visit www.jaumebarcelo.info for more information.

G. Other members of the team

- Laia Albo (Universitat Pompeu Fabra): She is a research technician at Telefonica-UPF chair "Social Innovation in Education". Audiovisual Systems Engineer from the University Pompeu Fabra, she has worked in the Teaching Quality and Innovation

Support Unit (USQUID) of the Polytechnic School of the UPF to support the project linked to the creation of educational videos for academic support (both for teachers and students).

- Alejandro Andreu (Universitat Pompeu Fabra): He completed his degree on Computer Communications with a thesis entitled "Open Sensor Networks". He has also contributed to the Smart Citizen Kit project.

- David Mellis (Arduino)
- Michel Bauwens (P2P Foundation)
- Tiberius Brastaviceanu (Sensorica): He is founder, active member, coordinator, facilitator, engineer and product designer at Sensorica.

- Guillem Camprodon (FabLab Barcelona): He is a researcher at the Institut d'Arquitectura Avancada de Catalunya (IAAC). He participates in the Smart Citizen Kit project as the main responsible for integration and project development (hardware and software).

- Tomas Diez (FabLab Barcelona): He is the director of FabLab Barcelona at the Institut d'Arquitectura Avancada de Catalunya (IAAC) and co-founder of the Smart Citizen Kit initiative. Tomas is also part of the master programs taught at IAAC.

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- And you, if you want. Everyone is invited to join the team and collaborate.

X. CONCLUSION

This report covers the training and networking efforts in the BuB4EU branch of the Commons for Europe project. As fellows are actively participating in this project, it is of paramount importance to provide them with help and guidance to make sure that they can accomplish their goals. Each student is assigned both an experienced BuB mentor and an academic advisor, which have complementing roles.

As we are interested in bottom up initiatives, it is very important to build a community with people and links that span beyond the consortium. To this end, we maintain an open mailing list and organize open workshops to attract new participants interested in the BuB concept.

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