



2011 International Edition
FIRST CALL ANNOUNCEMENT
April 15, 2011

<http://webvalley.fbk.eu>



The 2011 International Edition

Fondazione Bruno Kessler (FBK) is glad to announce the organization of **WebValley 2011 - International in Primiero, Trentino (June 19-July 9, 2011)**.

WebValley is the FBK summer school for dissemination of interdisciplinary scientific research: **more than 200 students** from Trentino Alto-Adige SudTirolo have attended the WebValley camps since its first edition in 2001.

Adapting to the future: a Web-Kinect-GIS interface to climate change scenarios and complex environmental data, this is the title of the 2011 edition. The project will combine the amazing Kinect controller with GeoScaler Hub, an Open Source WebGIS for climate change indicators. The interface will explore new ways to interact with geospatial patterns, but also use methods to downscale global indicators and quantify the need for adaptation strategies at local scales. New ideas for interacting with displayed data through personal mobile devices and for reproducibility of analysis will also be explored. We expect to develop a concept prototype for an innovative exhibit display at MUSE, the new Trento Science Museum, designed by Renzo Piano and opening in 2012.

The project concept leverages from the approach proposed by John Holdren (US Presidential Science Advisor) "Climate Change Science and Policy: What Do We Know? What Should We Do" : "...Climate services – again aimed at providing climate change information to the users, coordinating science adaptation and mitigation."

Fellowships will include full tuition, accommodation and travel costs.

For the 2011 edition, **16 fellowships are available** for students from:

- 8 Trentino
- 3 AltoAdige-SudTirolo
- 5 International (co-funding required)

The **requirements** to participate are:

- High School student (Italy: 4th year)
- Adequate knowledge of English
- Enthusiasm in science and new technologies
- Above-average school records
- 2 letters: Student motivation letter and teacher's recommendation letter.



The Programme

Welcome to the Lab

- Resources (1)
- Team Building (2)
- The Challenge (1)

Basics & Tools

- Web2.0 collaborative tools (SVN, Trac, Wiki, ...) (1.5)
- The Open Source paradigms (2)
- Intellectual properties (2)

Computer Science Background

- Linux Operating System (3)
- Introduction to programming with Python (4)
- Object Oriented Programming (2)
- Web Technologies: HTML/CSS/JS (3)
- Virtualization and Cloud Computing (1.5)
- Scientific Python (3)

Geospatial Computing

- Introduction to GRASS GIS and QGIS: theory and practice (4)
- Outdoor activity: GPS data collection (2)
- Geographic data and cartography (1.5)
- WebGIS and applications (2)



Databases & Web

- Science, Big Data, and Reproducibility (1)
- Introduction to Databases (2)
- Introduction to GeoDatabases (1.5)
- OpenLayer, ExtJS and GeoServer (1.5)

Climate Change

- Introduction to Climatology (2)
- Climate Change basics (2)
- Local and Global in Climate Change(2)
- Climate Change and Epidemics (1.5)
- Climate Change and Adaptation: Natural Resources, Plant Pathology (2)

Scientific Background

- Basics of Statistics with R (2)
- Interactive Data Visualization (1)
- Geostatistics (1.5)
- Machine Learning (1)
- Biodiversity: from data to models (2)

New Interfaces

- 3D Sensors (Kinect, TOF, ..) Lab (2)
- Body-patterns and interaction (1)
- Mobile Personal Interfaces Lab (2)

Teamwork

- Lab work, discussions and special topics presentations (70)
- Excursion and Leisure Time (50)
- Final Presentation (10)

Lab opening times: from 9 to 24

See course material for 2010 at <http://webvalley.fbk.eu/> lectures

A Summer School since 2001

THE AIM

The school aims to introduce students to interdisciplinary research by combining a scientific challenge and new technologies, also favoring the participation of female and male students in the economic and social aspects of innovation. The WebValley Lab will provide computing resources as well as interactive devices (e.g. SmartBoard, Kinect controllers) to test how to enhance the physical access to data. To accomplish the project, students joining the school will work in a lively and interactive atmosphere together with a group of researchers from the Bruno Kessler Foundation and selected experts in the specific research field. The 2011 project will be developed with the support of international experts in climate change and protection of the envi-

THE FORMULA

- **Create a team of enthusiastic and motivated high school students (18 y) tutored by researchers.**
- **The team accepts a challenge** by a collaborating scientist from Ecology, Biology or Social Sciences and develops in **three weeks** a new web-based prototype for data analysis and management. In 2011, the project will be commissioned by MUSE.
- Students are introduced to **Open Source** software solutions (scientific programming, web interfaces, database, GIS and data analysis); they discuss, design and develop the new system interacting with scientists. They learn to select tools, organize their own workplan, and respond with a new solution to a problem of ethical interest. A working prototype web solution and technical results are presented at the end of the three week period.
- **The project activities are developed mostly in teamwork** as in a true research environment, that is informal and of high quality in resources, competence and organization. Each student can differently contribute to project with ideas, software code or data preparation, design of new web interfaces, project presentation.
- **The location:** the school is held in a **high-tech lab located in a small Alpine village**, to demonstrate that web access may support new types of innovative actions also in remote areas, combining new technologies and high-quality of life in a natural environment.
- **Lab is open all day**, but group activities and leisure time are also part of the three weeks.

THE GOALS

1. Encourage smart students to be entrepreneurs in science
2. Interdisciplinarity
3. Transform internet into an innovation building environment
4. Develop team work, collaboration, fast-prototyping attitudes
5. Use sophisticated open source methods in an informal teaching environment
6. Propose challenging themes of ethical interest
7. Use high quality data from scientific or statistical institutions.
8. Learn to use standard formats

But also learn from young people: how fast they are developing new skills and which is the potential for a new generation of scientists.

Highlights from the WebValley 2010 edition

<http://www.fbk.eu/node/1222>



Location

THE PRIMIERO VALLEY

The Primiero valley is situated on the Southern side of the Alps, Italy.

We are in Trentino, in the middle of the Dolomites mountain region.



TRANSACQUA

A cozy country from rural origins clear that in recent decades has been gradually transformed into a pleasant and sunny resort, with wide green spaces and numerous walks.

THE ENVIRONMENT

Natural Park of Paneveggio

From 35 years the Park protecting a large area (over 190 sq km) characterized by three distinct environments: the Dolomite Group of the Pale di San Martino, the forest Paneveggio and part of the chain of porphyry Lagorai. The extraordinary diversity of substrates, shapes the landscape and climate of the park gives the characters of high biodiversity value and natural beauty.

Pale of San Martino

Peaks, Pinnacles, and Precipices: these are the "Pale of San Martino" and "Lagorai Chain".

Most of the territory is represented by what is considered the most spectacular feature of the Park: the imposing Dolomitic complex of Pale di San Martino, a big sedimentary plateau at 2600 meters of altitude, witnessing the ancient presence of tropical seas and coral reefs of 250 million years ago.

more info at <http://www.sanmartino.com>



Fondazione Bruno Kessler

Over 350 researchers, 220 between students working on their theses, doctorate students and visiting scientists combined; 5 international state-of-the-art research centers; 7 laboratories, among which the MT- LAB fitted out for the design and production of silicon devices; 14 between spin-offs and start-ups combined; a library specialized in historical and philosophical-theological sciences with over 250.000 volumes.

These are the numbers of the Fondazione Bruno Kessler (FBK), which conducts research activities in the fields of Information, Materials and Microsystems Technologies, theoretical Physics, Historical Italian-German Studies and Religious Sciences. Additionally, through its network, FBK deals with research in the communications and public policies sector. <http://www.fbk.eu>



The Predictive Models for Biomedicine and Environment Research Unit (MPBA)

The core group organizing the Summer School is a team of MPBA researchers and WebValley alumni from former editions. MPBA's scientific challenge is itself interdisciplinary. Linking together human and environmental health requires mathematical models and computational tools that can deal with complex data patterns up to millions of features or samples and still support reproducibility. Applications with strong ethical impact in molecular biology, epidemiology and environmental risk are deployed by a mix of open source scientific computing, machine learning, geospatial technologies and web solutions. MPBA is a research unit of the FBK Center for Information Technology.

<http://mpba.fbk.eu>

Web | <http://webvalley.fbk.eu>



SPECIAL THANKS TO

PABZ

UNEP

MeteoTrentino

Comune di Transacqua

Comunità di Valle del Primiero

ACSM SpA

ENAIP Trentino

Computer Learning SRL

ENVIROCHANGE Project

FBK > < Eventi

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