



## ICT4DEV INTERNATIONAL SCHOOL (ICT4DEVIS)

### **The life-long learning program of FRAmericas, bridging technology and development**

The ICT4DEV international school (ICT4DEVIS) aims at bridging technology and development, and it is conceived as a for-credit, hands-on, practice oriented, cross-cultural summer school, intended for students, professionals and practitioners who want to pursue a professional career in deploying ICT and Innovation as tools to boost international development. ICT4DEVIS is shaped by contributions from a hand-picked cluster of high-level academic institutions around the world, fueled by a will to excel in their respective academic contexts, and willing to engage in an innovative process that will use all the benefits of existing technology to develop what could be a new model for academic design and implementation.

At FRAmericas we considered that there is renewed interest in academic institutions around the world to incorporate the subject of ICT in their academic programs. However, program concentration as well as later job-placement for students coming out of these schools varies widely, with strong representation of subjects related to technology industry and technology trade. Yet, studies show the promise of ICT as an instrument to accelerate the pace and widen the reach of international development efforts, but the cradle of ICT4DEV practitioners is still limited. Furthermore, students coming out of current ICT university courses who want to devote themselves to international development find themselves faced with three major hurdles:

- **ICT is, by definition, a multiple-sector endeavor, but schools must concentrate in a smaller range of knowledge in order to provide specialized training.** As a result, most ICT academic programs tend to emphasize one aspect over others: science & technology; economics; or social applications – education, public services; etc. Yet, when time comes to apply ICT to a development objective, students find their education lacking in one or more areas needed to make an appropriate choice of technology and achieve a successful end-result;
- **Application of ICT as a development tool requires the involvement of the public and private sectors, whose purposes, institutional mind-frames and level of knowledge tend to be quite different.** The development practitioner seeking to devise an ICT-based solution to a given problem finds that he/she must have a good understanding of these two very different mind-sets, and the ability to propose a solution that would satisfy both;

- **Information access, as well as communication channels and protocols, vary greatly from one cultural setting to another.** Students are rarely trained to fine-tune their outputs to these strong cultural components, with the result that ICT4DEV project inception and deployment face the risk of suffering setbacks or even fail to achieve its goals.

It seemed apparent to us that formal academic education in this field would benefit from supplementary training aimed at rounding up a student's education with practical, job-related, additional capacity-building, for the purpose of improving their effectiveness in a development context.

Today we are glad to report that we have a kernel of institutions and strategic partners representing the different continents of the world, interested in pursuing a way to improve on the ability of academic institutions to prepare their students to be highly effective agents for the application of ICT4DEV. This core group would work to shape the contents of the ICT4DEVIS, so that it responds to the group's perceived needs and reflects our institutions' respective capabilities. The strategic partners that expressed their interest in this initiative are (so far):

- Professor Edson Luis Riccio, School of Economics, Business and Accountancy, FEA, University of Sao Paulo, USP, **Brazil**
- Professor Leonardo Pineda, School of Technology Change and Strategic Innovation, University of Rosario, Bogota', **Colombia**
- Professor Marco Peres, Director ICT Observatory, University of Externado, **Colombia**
- Professor Michael Gurstein, Executive Director: Centre for Community Informatics Research, Development and Training (CCIRD), **Canada**
- Professor Dianne Davis, President ICC, **USA**
- Professor Kristian Sund, Middlesex University, **UK**
- Dr. Fernando Montenegro, Senior Officer, Inter-American Development Bank (IADB), **USA**
- Dr. Linamara Rizzo Battistella, Secretary of the State of Sao Paulo, **Brazil**
- Professor Carlo Scheel, Technological Institute of Monterrey, **Mexico**
- Professor Walter Castelnovo, Department of Informatics and Communication, University of Insubria, Como, **Italy**
- Professor Sang Yoo Kim, International relations, Dongguk University, Seoul, **Korea**
- Professor Jae Jon Kim, College of Business Administration, Chonnam National University, Gwangju, **Korea**
- Dr. Dorothy K. Gordon, Director-General, **Ghana-India** Kofi Annan Centre of Excellence in ICT.

The first session of ICT4DEVIS was organized and hosted by the University of Insubria, Como, Italy in 2012 (<http://ksm.dicom.uninsubria.it/ict4devis/>). The second session has been organized and hosted in 2013 by the Interactive Robots and Media Laboratory, the Software & Knowledge Engineering

Laboratory at NCSR "Demokritos", Athens, Greece and the ARCOMEM and SOCIALSENSOR FP7 ICT research projects of the European Union.

## Didactic Plan

### Onsite lectures

ICT4DEVIS will deliver to the students 24 hours of onsite lectures, divided in three modules of 8 hours each.

The content and the objectives of each module are described in the following table:

<b>Module 1</b>	<b>ICT Infrastructures and Systems for Development (INFSYS)</b>
<b>Sub-unit 1</b>	1.1 Network architectures, devices and access technologies
<b>Number of hours</b>	4
<b>Lecturer</b>	TBD
<b>Content of the unit</b>	<p>This unit includes:</p> <ul style="list-style-type: none"> <li>• An overview of communication technologies as a driver for communities in developing countries</li> <li>• An introduction to network architectures that can be scaled to the constraints typical of underdeveloped areas;</li> <li>• An introduction to the different access technologies, with a particular emphasis on the mobile technologies (GSM/GPRS/UMTS, WiFi, WIMAX) that proved to be the easier to deploy in marginal and less developed areas.</li> </ul>
<b>Objectives of the unit</b>	The goal of this unit is to give an overview of emerging communication technologies that are feasible for deployment in developing countries and how they can help improve quality of life.
<b>Sub-unit 2</b>	1.2 Innovative Information Systems architectures, models and tools
<b>Number of hours</b>	2
<b>Lecturer</b>	TBD
<b>Content of the unit</b>	<p>This unit includes:</p> <ul style="list-style-type: none"> <li>• An introduction to the most up to date information system technologies, with a particular focus on those fitting the ICT4DEV target scenarios, that is, data as a Service, cloud computing, and data outsourcing;</li> <li>• A discussion of the pros and cons of each of them and what should be done for their effective deployment;</li> <li>• An analysis of the privacy and confidentiality issues rising from the use of such technologies</li> </ul>



FRAMERICAS

KNOWLEDGE FOR DEVELOPMENT

<b>Objectives of the unit</b>	
<b>Sub-unit 3</b>	1.3 ICT for community building
<b>Number of hours</b>	2
<b>Lecturer</b>	TBD
<b>Content of the unit</b>	<p>This unit includes:</p> <ul style="list-style-type: none"><li>• an introduction to the principles of Social Computing</li><li>• a discussion of the principal Social Computing Services (such as blog, wiki and social networking services),</li><li>• A discussion of the possibility of integrating these services in the implementation of ICT systems aimed at supporting community building and fostering people's wellbeing.</li></ul>
<b>Objectives of the unit</b>	The objective of this unit is to give the students an introduction to the use of ICT related to wellbeing and social inclusion, rather than to productivity

<b>Module 2</b>	<b>Impacts and Socio-Economic Benefits of ICT4D Programs (SOCECO)</b>
<b>Number of hours</b>	8
<b>Lecturer</b>	TBD
<b>Content of the module</b>	<p>This module aims to develop the concepts that will shape the understanding or the studying in assembling the most adequate framework for assessing the social and economic impact of ICT4D.</p> <p>The module covers the following topics:</p> <ul style="list-style-type: none"><li>• Infrastructure and Policy</li><li>• ICT for Agriculture</li><li>• ICT for Education with an emphasis on higher education</li><li>• ICT for Health and Human Services</li><li>• E-Services</li><li>• ICT for the Environment</li><li>• Poverty and ICTs</li><li>• Growth and ICTs</li><li>• Education and ICTs</li><li>• Health and ICTs</li><li>• Trade/Market Access and ICTs</li></ul> <p>Each topic will be presented under a critical conceptual framework in order to understand the role of national policy in promoting the effective development and usage of ICTs and its contribution to socio-economic development.</p>
<b>Objectives of the unit</b>	Give the students an overview of the multitude of disciplines (varying from moral and ethics, cultural differences, politics, sociology, systems thinking, finance, project management) that are involved in the use of digital technologies for the resolution of the world's severe challenges of human wellbeing and development



FRAMERICAS

KNOWLEDGE FOR DEVELOPMENT

<b>Module 3</b>	<b>ICT for Sustainable Development (ICT4DEV)</b>
<b>Number of hours</b>	8
<b>Lecturer</b>	TBD
<b>Content of the unit</b>	<p>This module is articulated through the following tracks:</p> <ul style="list-style-type: none"><li>• STRATEGY DESIGN AND BASIC LOGIC MODEL – the U.N. MDGs</li><li>• DEVELOPMENT AND KNOWLEDGE-BASED SOCIETIES</li><li>• BUILDING INNOVATIVE KNOWLEDGE SOCIETIES: HARNESSING ICT TO DEVELOPMENT GOALS Gives an overview of why it is important for LDC to design and implement national ICT strategies</li><li>• INDICATORS OF LDC'S PARTICIPATION IN KS: WHAT THE INDICATORS TELL US ABOUT THE SPREAD OF ICT AND CAPABILITIES OF THEIR USE Introduces empirical evidence on the diffusion of ict and accumulation of capabilities for producing or using these technologies by people in ldc</li><li>• THE POTENTIAL USE OF ICT FOR SUSTAINABLE DEVELOPMENT: IDENTIFYING POTENTIAL APPLICATIONS FOR PUBLIC AND PRIVATE SECTORS Focuses on the leading developments in the application of ICT to facilitate the provision of public services, achieve productivity gains, improve the quality of life for citizens, enhance access to information and facilitate knowledge sharing</li><li>• IMPLEMENTING ICT IN THE LDC: USE OF ICT WHEN POVERTY IS PERVASIVE Highlights the need for creative approaches to sharing limited ict resources and the potential benefits of regional cooperation initiative</li><li>• NATIONAL ICT STRATEGIES FOR KNOWLEDGE-BASED DEVELOPMENT: WHAT PROCESSES ARE NEEDED? Presents practical measures that LDC can take to put national or regional ICT strategies in place</li><li>• INNOVATIVE KS:THE BENEFITS, RISKS AND OUTCOME Reviews some of the social and economic outcomes resulting from investments in ICT by some of the LDC. With the participation of presenters from LDC.</li><li>• THE "LIFE-CYCLE" OF A PROJECT FOR DEVELOPMENT: HOW INTERNATIONAL ORGANIZATIONS WORK FOR THE DEVELOPMENT OF LDC</li></ul>

	Focuses on the different steps of a project intended for the development of a given country, from the project idea to its implementation in the field. (With the participation of officials from the major international organizations for development)
<b>Objectives of the unit</b>	This module is intended to introduce students to a professional career in International Development Organizations, where a specific preparation on ICT4DEV subject is required.

## Video lectures

ICT4DEVIS will deliver to the students 16 hours of video lectures to be accessed asynchronously, either on the internet or on a CD that will be distributed to the students at the beginning of the school.

The video lectures include both talks specifically recorded for the students of the school and a selection of talks and conversations already available online. The video lectures are intended as an integral part of the school and the students have to attend them in order to receive the attendance certificate and the ECTS credits delivered by the school (see below).

The video lectures will include:

- Presentation of relevant examples and best practices in ICT4DEV
- In depth lectures on specific topics that impact on the three ICT4DEVIS' tenants (ICT Infrastructures and Systems; Impacts and Socio-Economic Benefits of ICT; ICT for Sustainable Development)
- In depth lectures on transversal topics, innovative ideas and particularly interesting applications

The aim of the video lectures is to stimulate the discussion among the students on the topics covered. To this end a cooperation platform will be made available to the students through which it will be possible to share comments and ideas. The active participation to the online discussions will be considered as an integral part of the school.

## Individual study

The students of ICT4DEVIS are required to complement the attendance to the onsite lectures and the video lectures with individual study. The estimated amount of the individual study is 1 hour and 45 minutes of individual study for each hour of onsite lecture.

## ECTS Credits

The didactic activities of the school include:

1. The attendance to the onsite lectures
2. The attendance to the video lectures
3. Participation to the online discussion on the topics covered by the video lectures
4. Individual study

The release of the ECTS credits will be based on the following table:

	<b>Attendance</b>	<b>Individual study</b>	<b>Participation to the online discussion</b>	<b>ECTS Credits</b>
Module 1 (INFOSYS)	8 hours	14 hours	3 hours	1
Module 2 (SOCECO)	8 hours	14 hours	3 hours	1
Module 3 (ICT4DEV)	8 hours	14 hours	5 hours	1
Video lectures	16 hours		9 hours	1
<b>Total</b>	<b>40</b>	<b>42</b>	<b>20</b>	<b>4</b>

## Attendance Certificate

The number and the quality of each student's contribution to the discussion on the platform will be the basis for the evaluation of his attendance to the School and, consequently, for the release of the attendance certificate and the related ECTS credits.

The attendance certificate, with the number of the credits corresponding to the didactic activities, will be released only to the students that attended all the onsite lectures and whose participation to the online discussion is evaluated positively by the evaluation committee.