IAPP FTK project
Outreach activities

Kostas KORDAS

Aristotle University of Thessaloniki

Department of Physics

for the Division of Nuclear & Particle Physics

and the Division of Electronics

Project kick-off meeting, University of Pisa, 11-12 March 2013

Outreach activities – WP7

Outreach

(WP7, coordinated by AUTH):

spreading the word to the general public

The **Outreach** activities are to be **once per year:**

- ***IAPP open day:*** for general public:
  - about 1 per “nearby institutes” per year
- ***Workshop day:*** for University Students:
  - 1 per University per year
- ***Summer School:*** one event per year for the project.
- The ***Web page***

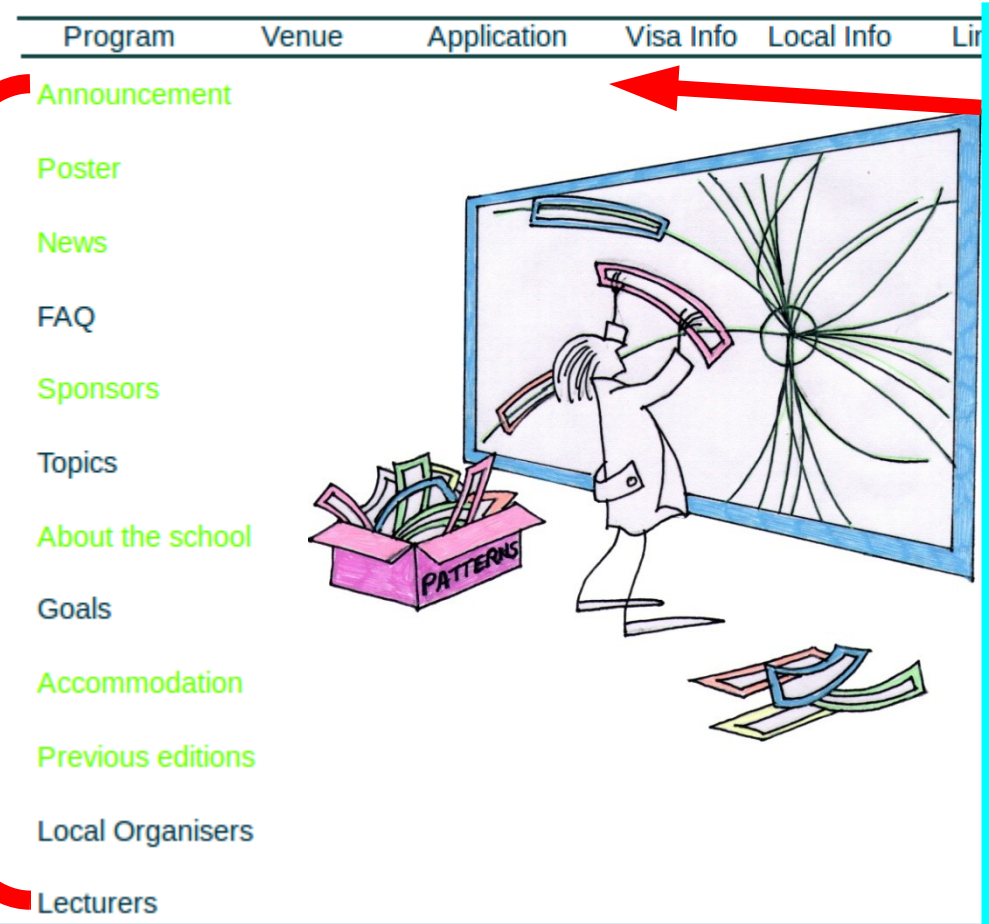
Outreach activities – WP7

A: **Web page and one-day activities**

Web-site: Months 6, 18, 30
general public & collaboration area

Collaboration (protected)
* Announcements
* Who are we?
* Work goal
* Work packages
* Work-plan, Secondment plan & useful info
* Training Links to indico's etc
* Background and Technical Docs
* Papers
* Talks & Conferences

IAPP FTK project
Fast Tracker for Hadron Colliders
(a 7th framework EU project)



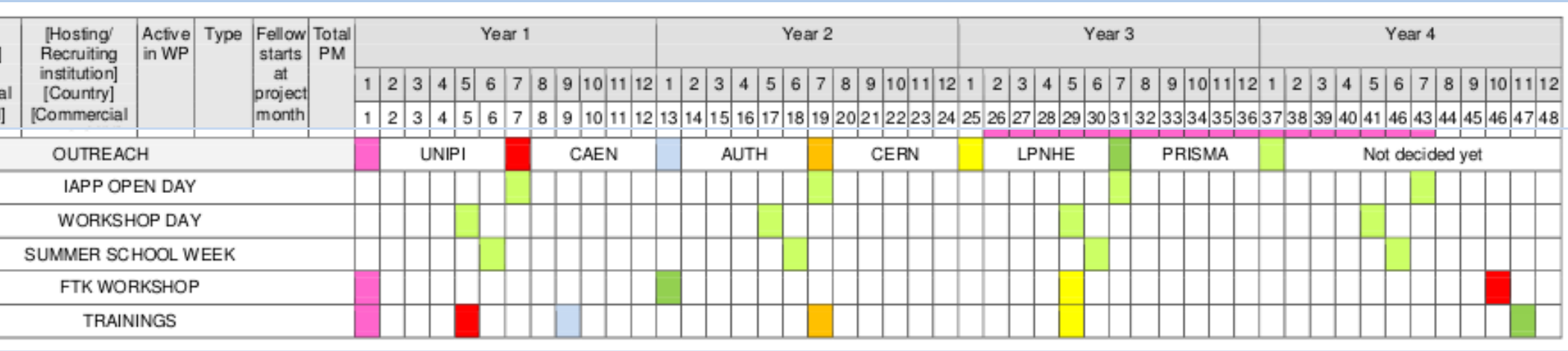
General public & Outreach Area
- Announcements
- Who are we?
- What is it this IAPP-FTK about?
- Triggering at HEP and the Physics we want
- The problem of fast pattern matching
- Applications outside HEP
- Outreach material from IAPP open days, workshops

Web-site: Months 6, 18, 30 general public & collaboration area

- **First steps:**
  - Will make the proto- web-page with
    - The parter institutes, people names
    - Outcome of this meeting:
      - the management structure
      - secondment plan, training material
  - Will make a call to collaborators by email (**mid April**) for *collecting material and to define responsibles for each type of information.*

- **Month 6: July 2013** – all what we have up to then should be on the web page

Open Days, Summer Schools, Workshops, Trainings, etc



The **Outreach** activities are to be **once per year:**
Dates on the gantt chart only indicative at time of proposal

- ***IAPP open day:*** for general public
- ***Workshop day:*** for University Students:
- ***Summer School:*** one event per year for the project.

NOTE:
The workshops and trainings offered by each partner for the FTK collaborators are defined and described in detail in PartB of the project and the dates fixed. Will not discuss them here.

IAPP project open days
Mo: 7, 19, 31, 43. Proposal says:

- "**The FTK labs will be open to the public to show the racks, crates, boards and chips developed by the collaboration**.
- Teachers (the fellows in particular) in front of posters in the lab will describe the importance of the real time analysis performed on FPGAs (a new type of computing) to make sophisticated decisions in few microseconds, for HEP experiment triggers as well as for other applications outside HEP.
- The programmable logic power based on real time parallel computing will be described with examples. The importance of "pipelining" and "parallelism" will be described in detail with examples as being the key features of our computing model.
- Simple CAD stations (Xilinx and Altera systems) will be provided to visitors to develop their own simple logic. Logic examples already done will be provided for people interested only in the implementation inside the chip, not in the logic development.
- **The goal is to let them understand how easy and powerful the use of these tools is.**"

IAPP project open day
a template programme

1) **Short talk on HEP**, ATLAS at the LHC & triggering at HEP (15')

2) **Short talk on embedded systems** (15')

3) **Posters** describing **importance of real time analysis on FPGAs**

   - for HEP experiment triggers & applications outside HEP

4) **Talk, Poster and Demonstrations (examples below):**

   1) **What we do in the IAPP-FTK project** (15' talk and poster)

   2) **Demo1**: Logic example already done: provided for people interested only in the implementation inside the chip, not in the logic development. E.g., ATLAS event display with simulated events and a trigger "menu" with 2 things. Try OR or AND → see rate decrease

   3) **Demo2**: importance of "pipelining" and "parallelism" with an example: e.g., real-time image processing using a camera connectd to FPGA:
      e.g., the visitor draws a track on a paper: if it comes from "the center" of the drawing, the preloaded patterns on the AM chip "fire". If track not from there, AM quiet

IAPP project open days material

- Best to **make videos for these talks** to play in sequence during the open days
  - They'll go on the web page
- **Seconded fellows** will make the **demo projects**
  - They'll go on the web page
- Propose: not necessarily the same day on all FTK partners.

Workshop days
Mo: 5, 17, 29, 41. Proposal says:

- “A set of seminars and lectures will be provided to university students on trigger for HEP experiments and FPGA applications outside HEP.
- This will be also the occasion to announce the Summer school week plan for the year.”

Workshop days for University Students. E.g:

A day of talks with scientific talks

- Part A: **Talks on the FTK project**
- Part B: **Talks on other work on embedded systems**
  - Also from scientists of other institutes/area-of-work
    - Invited also from outside the country and companies
    - Promote and explore collaboration possibilities

- About 2-4keuro each day for each institute
  - to pay coffees, lunches, room, printed material for participants, hotel rooms and flights for invited people.

Outreach activities: WP7

B: summer schools

Summer Schools.

Proposal says:

- “A few students will be allowed to spend a week during summer in one of the partner laboratory, in particular at CERN”.

Next, see 3 options for the format:

1) ~1 week format
2) Piggy-back with extra things on an existing school
3) Selected ~3 students each year to do a ~1 month project on FTK (e.g, at CERN).

1a) Summer School – week format focus on the concept

Two , 3h modules per day

- Day 1:
  - Introduction to High Energy Physics & the case for LHC
- Day 2:
  - Intro to detectors, trigger systems and ATLAS
- Day 3
  - Introduction to the FTK idea: for HEP and for other applications
  - Introduction to FPGAs, Associative Memories and PCs
- Day 4:
  - Lab1: Simulations of ATLAS events with various scenaria of triggering with Associative memories and classic track fitting
  - Lab2: Vision applications

1b) Summer School – week format focus on electronics

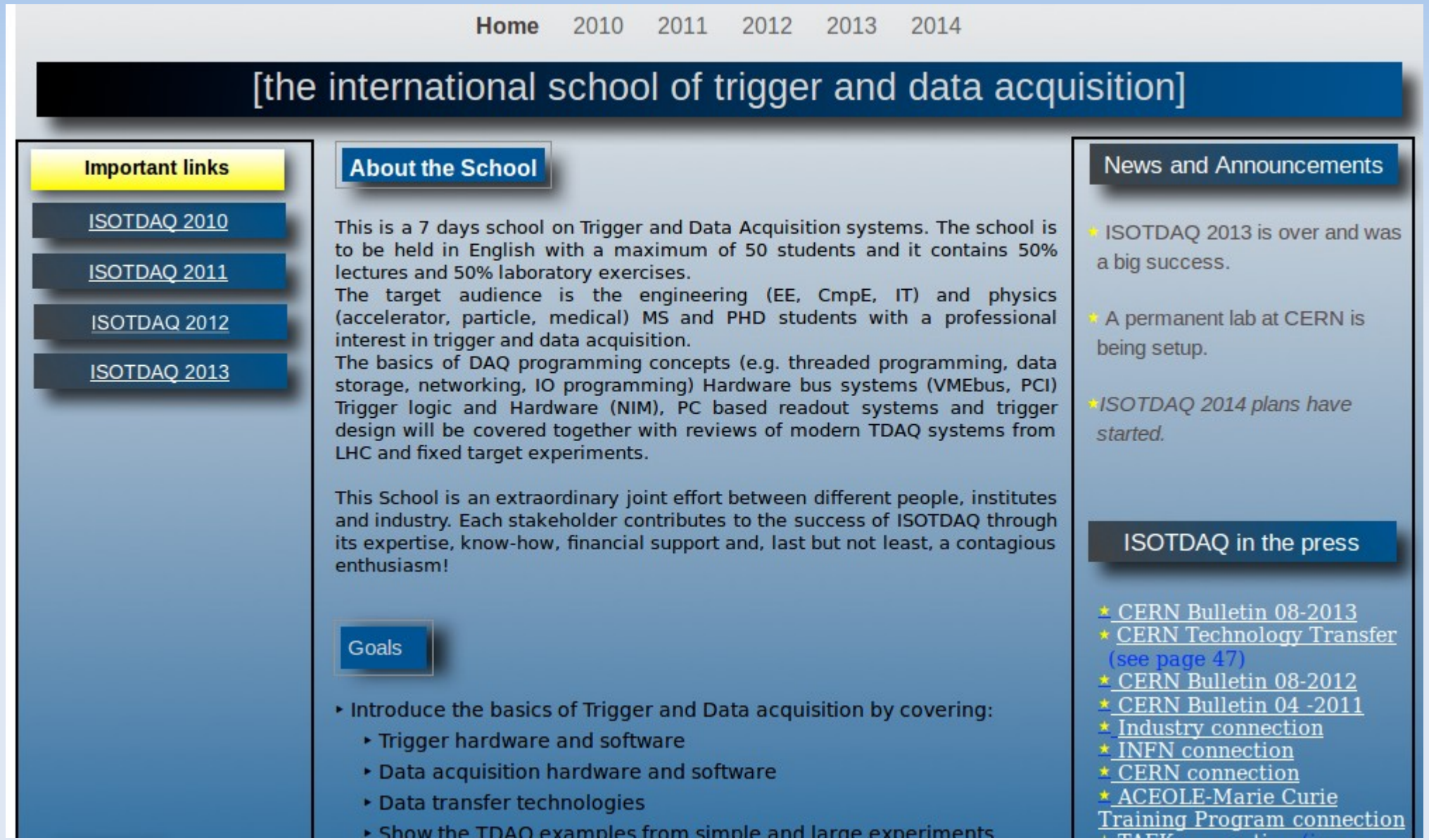
Two , 3h modules per day

- Day 1:
  - Introduction to High Energy Physics, the case for LHC, detectors, trigger systems and ATLAS
  - Introduction to the FTK idea: for HEP & for other applications
- Day 2:
  - Introduction to the technology: FPGAs, Associative Memories
  - Digital circuit design
- Day 3:
  - Digital Design using VHDL
- Day 4:
  - Practice on design with VHDL

2) Summer School – piggy backed also/instead an existing school

- Hard to have a full school for a week
- Idea is to **get hooked-up with an established school**, on the same topic: the International School for Trigger and Data Acquisition (ISOTDAQ)
  - This year (1-8 Feb 2013) it was the 4th edition and we organised it in Thessaloniki, at AUTH. Big success!
  - Students are Undergraduates, M.Sc, Ph.D and Researchers. From Physics and Engineering.
    - not only HEP people, though most are.
  - **Add one talk, and an exercise on the FTK-like systems: 1 extra day to the ISOTDAQ school**
  - **Provide teachers, lab material for the exercise, and finance some students to participate**

2) Using the ISOTDAQ school



Home 2010 2011 2012 2013 2014

[the international school of trigger and data acquisition]

Important links

ISOTDAQ 2010

ISOTDAQ 2011

ISOTDAQ 2012

ISOTDAQ 2013

About the School

This is a 7 days school on Trigger and Data Acquisition systems. The school is to be held in English with a maximum of 50 students and it contains 50% lectures and 50% laboratory exercises.
The target audience is the engineering (EE, CmpE, IT) and physics (accelerator, particle, medical) MS and PHD students with a professional interest in trigger and data acquisition.
The basics of DAQ programming concepts (e.g. threaded programming, data storage, networking, IO programming) Hardware bus systems (VMEbus, PCI) Trigger logic and Hardware (NIM), PC based readout systems and trigger design will be covered together with reviews of modern TDAQ systems from LHC and fixed target experiments.

This School is an extraordinary joint effort between different people, institutes and industry. Each stakeholder contributes to the success of ISOTDAQ through its expertise, know-how, financial support and, last but not least, a contagious enthusiasm!

Goals

- Introduce the basics of Trigger and Data acquisition by covering:
  - Trigger hardware and software
  - Data acquisition hardware and software
  - Data transfer technologies
  - Show the TDAQ examples from simple and large experiments

News and Announcements

- ISOTDAQ 2013 is over and was a big success.
- A permanent lab at CERN is being setup.
- *ISOTDAQ 2014 plans have started.*

ISOTDAQ in the press

- CERN Bulletin 08-2013
- CERN Technology Transfer (see page 47)
- CERN Bulletin 08-2012
- CERN Bulletin 04 -2011
- Industry connection
- INFN connection
- CERN connection
- ACEOLE-Marie Curie Training Program connection

3) Summer School – hands on FTK

- Send ~3 students (~1 from each University) to a lab (e.g., CERN) for one month

- To work on an FTK-related project
  - Learn by doing
  - Students will learn more in a more relaxed environment
  - This way we educate people who may work on FTK later

- Need to see the cost etc.

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