TPRCS
Background and Structure of a Coordination Action

EATCS Meeting: Aarhus 22.01.04

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➤ Mission Impossible III?

➤ Well. . . A scheme has been proposed, and the proposal has been delivered by Jan 13th . . .

But let's first try to put some structure around to help thoughts.

A Conceptual Challenge

What is Computer Science? (The short answer is clearly: I don't know!)

Over 30 "recognised" Core Technology Areas (ACM Computing Curriculum 2001)

➤ algorithmics,

➤ artificial intelligence,

➤ compilers,

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Let's try to go to the foundations, and Principled Approach.

The Background

A Principled view of CS (P.J. Denning CAMC Nov 2003)

➤ Computing Mechanics: Laws that govern computation.

> computation, communication, coordination, automation, recolletion

➤ Design Principles: Methodologies to design computation that works.

> simplicity, performance, reliability, evolvability, security

➤ Computing Practices: Standard ways of "delivering" the field.

> programming, system engineering, modelling, innovating, applying

➤ Core Technologies: Subdisciplines organised around common aspects of applications domains.

> algoritmics, ai, architectures, databases, hci, networks, os, ...

➤ Applications Domains: Not in the picture, but influencing the field.

> biosciences, eScience, pervasive comp, ...the world all around

An Organisational Challenge

The Keystone of the CA proposal: A principled approach:

Initial phase based on parallel "discussion tables" arranged around Principles.

The proposal is deliberately vague about what Principles we are talking about:

Still many details to be filled in execution plan, and today is where it all starts.

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A few obvious approaches:

➤ One table per Mechanics Principle, Design Principles omnipresent as concerns and measurement criteria.

➤ One table per grouping of Core Technologies, according to Mechanics-driven criteria.

➤ One table per Design Principle, no Mechanics, Core Technologies all along.

➤ One table per Computing Practices item.

CA: The Objectives

A single overall objective:

➤ Identify themes and prospects for Computer Science research for the years 2007–2010, in particular with a view to their implementation in the EU Commission's Seventh Framework Programme.

Some necessary intermediate milestones (of independent, significant value).

➤ Large scale consultation to identify long-term prospects and challenges for European research in CS;

➤ Undertake a state-of-the-art survey of European CS research, so as to identify strengths and weaknesses;

➤ Identify long-term grand challenges for CS research, and from these, identify a set of short-term challenges attainable by 2010.

CA: The Structures

➤ **Core management group:** The four partners will form the core management group (CMG). **Role:** Jointly ensure a project's leadership.

➤ **Management Board:** Appointed by the CMG in consultation with the EATCS Council and related organizations. Ten members chosen according to scientific and nationality criteria.

Role: favour the spreading of the CA's activities in the national and research communities; Advice and support the CMG on matters on strategy. It will play a pivotal role to implement the workplan where it involves large consultations with the scientific community.

➤ **Scientific Board:** Appointed by the MB in consultation with the EATCS and sister organizations. Composed of five members.

Role: Run a state-of-the-art analysis; then help the community compile a list of research challenges for 2007–2010. Its conclusions are to be fed back to the research community, and embodied in the final deliverable of the project for wide dissemination, care of the CMG.

CA: The Programme – WP 1

Workpackage 1: Principles of Computing.

Trigger and coordinate brainstorming on 'Great Principles of Computing'.
Select and appoint a Management and a Scientific Board.
Organise area workshops and a final working conference.

Description of Work (months 1–9)

Initiate and nourish a brainstorming exercise on each of a set of "Great Principles" lying at the heart of Computer Science. (Purpose: kickstart a compound of activities aimed at identifying Grand Challenges for European Research in CS.)
Activities led by members of the MB and implemented through open calls for position papers on research challenges, (Internet-based) brainstorming, and working conferences.
Closing event of WP1: a conference pulling together the separate discussions on the various 'principles'.
During project negotiation: CA's Management Board will be formed. During WP1, the CA's Scientific Board will be appointed by the Management Board.

Deliverables

D1.1: Formation of Scientific Board (month 5)
D1.2: Meeting and Workshops in WP1 (month 9)

Workpackage 2: State-of-the-Art Analysis.

Produce a state-of-the-art analysis.
Start the discuss on the challenges ahead.

Description of Work (months 10–15)
The Scientific Board, bulding on WP1, will produce a comprehensive state-of-the-art of CS research in Europe.

In parallel, the community will proceed in panels and open e-forums. (Aim: start discussing the challenges ahead, so as to prepare the ground for WP3)

A workshop during the WP, where the community meets the SB, and a final conference, to feed the WP's results back to the community.

Deliverables
D2.1: A State-of-the-Art Analysis of European Computer Science Research.
D2.2: Meetings and Workshops in WP2.

Workpackage 3: Grand Challenges.

Production of a list of Grand Challenges for Computer Science.

Description of Work (months 16–24)

Fixed the general purpose, framework and deliverables of WP3, its implementation may be considerably influenced by the outcome of WP2. (This is where the steering role of the Core Management Group, together with the Management Board, will come into play.)

Middle-term workshop and a final conference to interact with the community and disseminate the workpackage's findings.

Liaise actively with the Press as a way to communicate beyond the research community.

The Grand Challenges document will be published widely: Expected targets: researchers and funding agencies alike (quite independently of its role in the CA).

Deliverables

D3.1: Grand Challenges for European Computer Science Research.
D3.2: Meetings and Workshops in WP3.

CA: The Programme – WP 4

Workpackage 4: A Research Strategy for 2007–2010.

Production of a Strategic Plan for Computer Science research in 2007–2010

Description of Work (months 25–30)

Starting from WP3, the Scientific Board and the Management Board will jointly produce a document singling out the research challenges for the short/medium range (less than five years). (It is our intention to create a real strategic plan for European Computer Science research for the years 2007–2010, for research programmes in the EU member states, and in the EU FP7.)

The closing event of the CA will be a plenary conference, where the strategic plan will be presented to the community. We will arrange Press releases and sessions for the Pres

Deliverables

D4.1: A Strategic Plan for European Computer Science Research in 2007–2010.
D4.2: Meetings and Workshops in WP4

CA: The Resources

Honoraria for SB.

The SB will have a very demanding task. For the CA to be a success, we need to attract the very leaders of the field. Need at least €10K per SB member per year.

Scientific Meetings.

Will include workshops and working conferences, panels' discussions and meetings, and discussion groups' activities. Members of the SB will be invited to meet and discuss with the research community, give and take feedback.
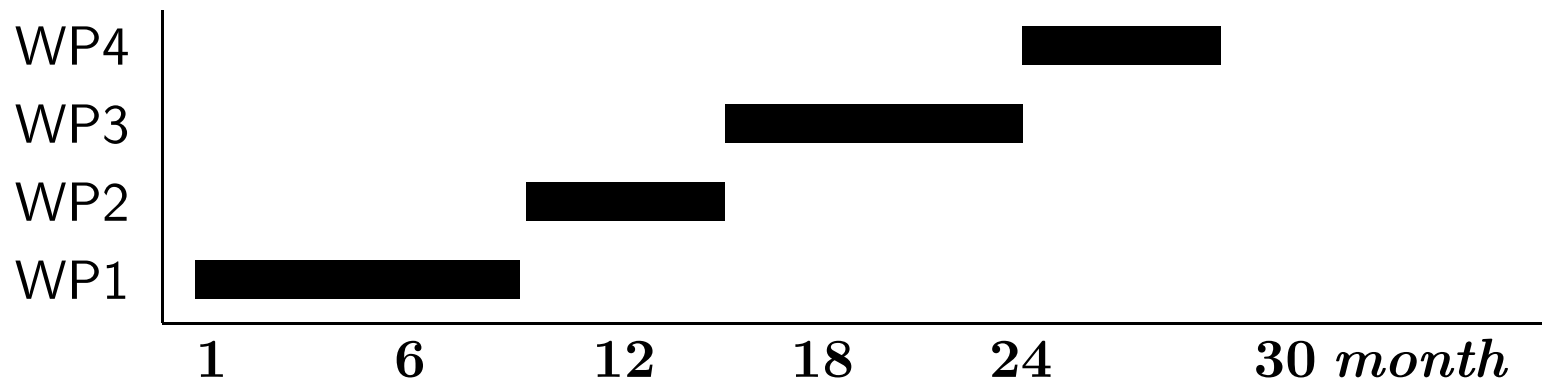We will need to put in place or hire audio/video conference facilities.

Technical and Clerical Support.
We will need to deploy Internet technologies to coordinate and disseminate the CA's activity and findings.
Secretarial support for CMG members; funds for the typographical composition of the final report

Summary of Financial Requirements.

30 months of activity, a budget of €252K plus standard overheads. Tentatively: €100K for the SB, €45K for the conferences, €45K for panel meetings and contributions to discussion groups; €35K for further travel of the SC and the CMG, and a final €27K for administrative, technical and clerical expenses and the functioning of the CMG).

GANTT Chart for TPRCS(Bars represent activity in time.)

What now?

Start think about identifying:

➤ Principles for Phase 1

➤ Members of MG

➤ Members of SB