WG on Informatics Education: CECE

- Members of the Committee on European Computing Education
  - Jan Vahrenhold, University of Münster, Germany
  - Enrico Nardelli, University of Rome "Tor Vergata", Italy
  - Cristina Pereira, Informatics Europe, Switzerland
  - Gérard Berry, Collège de France, France
  - Judith Gal-Ezer, The Open University of Israel, Israel
  - Michael Kölling, King's College London, United Kingdom
  - Andrew McGettrick, University of Strathclyde, United Kingdom
  - Mirko Westermeier, University of Münster, Germany
  - Michael E. Caspersen, Aarhus University / It-vest, Denmark
  - Barbara Demo, University of Turin, Italy
  - Serdar Tasiran, Koc University, Istanbul, Turkey
  - Antoine Petit, INRIA, France
WG on Informatics Education: I4All

- **Members of the Informatics for All group**
  - Enrico Nardelli, University of Rome "Tor Vergata", Italy
  - Judith Gal-Ezer, The Open University of Israel, Israel
  - Andrew McGettrick, University of Strathclyde, United Kingdom
  - Wendy Hall, University of Southampton, United Kingdom
  - Bobby Schnabel, ACM
  - Michael E. Caspersen, Aarhus University / It-vest, Denmark
IT as Knowledge Area:
Informatics and CT

IT as a Supporting Technology
Digital Competences in the 21\textsuperscript{st} Century

**Informatics/Computational Thinking**

- **Advanced**
  - ‘for some’, ‘for career’, in-depth
- **Fundamental**
  - ‘for all’, ‘for life’, general ‘bildung’

**As subject** (specialisation)

**In subjects** (integration)

**Support**

- Technological, practical, pedagogical, and subject-specific

- **As subject-specific tool/media**
- **E-learning and collaborative tools**
- **Digital literacy (“ECDL”) – literate consumer of IT**
- **Technology and infrastructure**

Subject-specific

Pedagogical

Practical

Technological
Two Challenges for our Community

To clarify and set direction
(outward)

To deliver
(inward)
Two Challenges for our Community

To clarify and set direction (outward)

To deliver (inward)
Some important reports

**Running On Empty:**
The Failure to Teach K–12 Computer Science in the Digital Age

**Shut down or restart?**
The way forward for computing in UK schools
January 2012

**Informatics Education in Europe: Are We All In The Same Boat?**

US, 2010  
UK, 2012  
IE/ACM-E, 2017
Some important reports

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US, 2010

UK, 2012

IE/ACM-E, 2017
In the new economy, CS is not an optional skill, it is a basic skill, right along with the three R's
Computer Science for All is the President’s bold new initiative to empower all American students from kindergarten through high school to learn computer science and be equipped with the computational thinking skills they need to be creators in the digital economy, not just consumers, and to be active citizens in our technology-driven world. Our economy is rapidly shifting, and both educators and business leaders are increasingly recognizing that computer science (CS) is a “new basic” skill necessary for economic opportunity and social mobility.

The CSforAll Consortium is a hub for the national Computer Science for All movement that works to enable all students in grades K-12 to achieve CS literacy as an integral part of their educational experience.

CS for All
Some important reports

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January 2012

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UK, 2012

IE/ACM-E, 2017
Statistics guidance
National curriculum in England: computing programmes of study

Published 11 September 2013

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Running On Empty: The Failure to Teach K–12 Computer Science in the Digital Age
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IE/ACM-E, 2017
CECE Report (2017)

Informatics Education in Europe: Are We All In The Same Boat?

Informatics: First Contact

Recommendations

- Informatics (3)
- Digital literacy (3)
- Teacher training (2)
Informatics for All

A similar joint effort by a coalition of the major informatics organisations in Europe

Computer Science For All

JANUARY 30, 2016 AT 6:05 AM ET BY MEGAN SMITH

CS For All

Computer Science for All is the President’s bold new initiative to empower all American students from kindergarten through high school to learn computer science and be equipped with the computational thinking skills they need to be creators in the digital economy, not just consumers, and to be active citizens in our technology-driven world. Our economy is rapidly shifting, and both educators and business leaders are increasingly recognizing that computer science (CS) is a “new basic” skill necessary for economic opportunity and social mobility.

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What Is CSforAll? What We’ve Accomplished Get Involved
Two-tier strategy:

Informatics and CT

- as subject (specialisation)
- in all subjects (integration)

[ At all Educational Levels ]
Informatics and CT
New aspect of 'bildung''
New basic competence for all

Mathematics is the language of science
Informatics is (to become) the language of all subjects
Informatics
– mathematics of the 21\textsuperscript{st} century

Programming
– writing of the 21\textsuperscript{st} century
Two Challenges for our Community

To clarify and set direction
(outward)

To deliver
(inward)
## Our Grand Educational Challenge

### Expansion of Informatics (think math+)

<table>
<thead>
<tr>
<th>Educational level</th>
<th>In subjects (integration)</th>
<th>As subject (specialisation)</th>
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</thead>
<tbody>
<tr>
<td>Higher</td>
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<td>Secondary</td>
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<tr>
<td>Primary</td>
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Conceive I4All ♦ Curriculum ♦ Materials ♦ Teachers (food chain) !
We need your help outward!

Dissemination of CECE report across Europe
(Ministries, politicians, decision makers, ...)

Invite relevant parties to the I4All coalition
(Endorse our mission statement)

Approach EU and Countries/Regions
(The European Commission, Politicians, ...)

...
We need your help inward!

Develop research-based knowledge about I4All
   (New groups in Informatics Departments)

Develop curriculum with a new mind-set
   (Not for wannabe experts, but for general education)

Develop teaching and learning materials
   (Kids, parents, teachers, teacher-teachers, , ...)

Skilled people high in the food chain
   (There is no food chain!)

...
Two Challenges for our Community

To clarify and set direction (outward)

To deliver (inward)

Digital Competences in the 21st Century

Informatics/Computational Thinking

Knowledge area

In subjects (integration)

Advanced
(For some: for career, in-depth)

Fundamental
(For all: for life, general knowledge)

As subject
(specialization)

As radical, novel, and defining technology and way of working (innovation of subjects)

Two-tier strategy

We need your help outward!

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Our Grand Educational Challenge

Expansion of Informatics (think math+)

Educational level | In subjects (integration) | As subject (specialisation)
--- | --- | ---
Higher | | 
Secondary | | 
Primary | 

Conceive I4All ● Curriculum ● Materials ● Teachers (food chain)!

Informatics
-mathematics of the 21st century

Programming
-writing of the 21st century

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