

Informatics Reference Framework for School (IRF4S)

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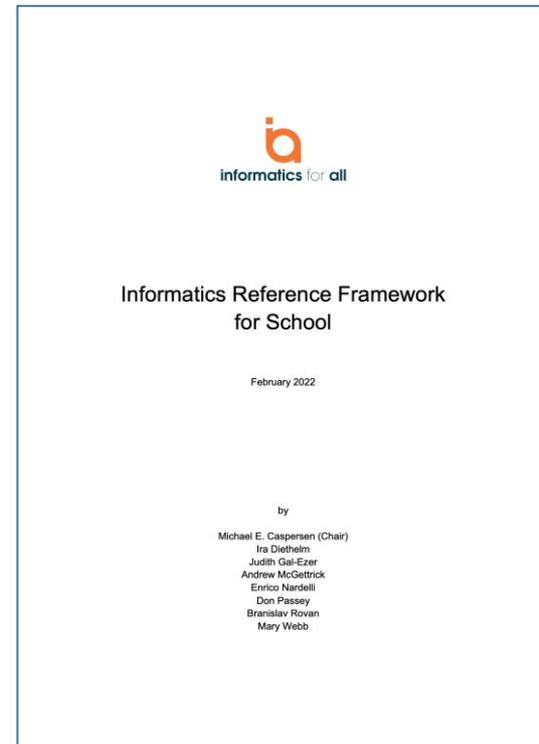
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Informatics Reference Framework for School (IRF4S)

Key activity 2020-2022

Preparation of interim version

October 2020 – June 2021



Broad consultation

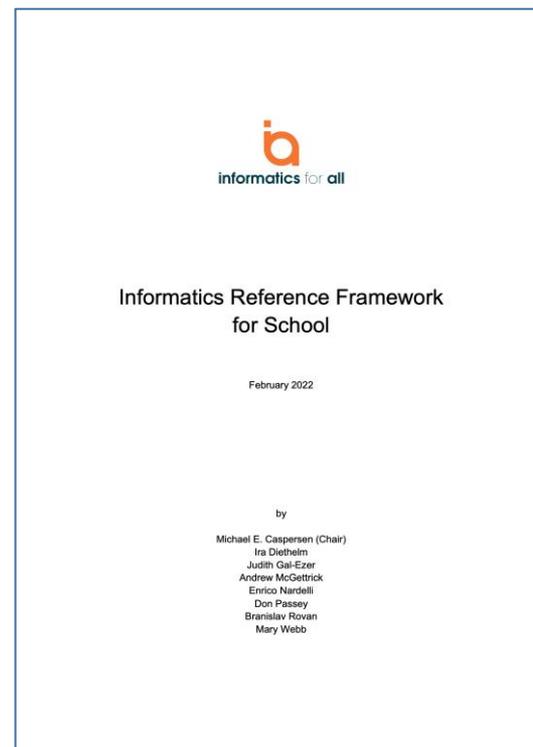
June – September 2021

Feedback from the networks of the four organisations behind the Informatics for All coalition and from 14 countries across Europe.



Integration of feedback and preparation of current version

September 2021 – February 2022



Informatics Reference Framework for School (IRF4S)

Characteristics

- Synthetic and short
 - 17 pages
- A minimum set of high-level common requirements
 - Room for national communities to derive curricula tuned to local culture and needs while coherent with a common European vision of Informatics in School
- An enduring foundation of 11 core topics 
 - Foundational and invariant terms possessing temporal robustness
- Contemporary context and implications
 - A brief contemporary interpretation of the core topics illustrating richness, relevance for all (potential specialisation topics)
- Indicators of outcomes (annex)
 - These are not intended to be prescriptive and are provided for illustrative purposes only to stimulate thinking and action of curricula designers.
- Future work
 - Guidelines for *using* the framework (ready)
 - Further elaboration on specialisation topics (in progress)

11 Core topics

Data and information
Algorithms
Programming

Computing Systems
Networks and communication

Human-computer interaction
Design and development

Digital creativity
Modelling and simulation

Privacy, safety and security

Responsibility and empowerment

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Inclusion, diversity and gender remain important issues in informatics education.

Inclusion is a fundamental principle.
Diversity is a feature of inclusion.
Gender concern is an issue of diversity.

The gender issue is a particular concern; engagement with informatics at an early age can **promote self-efficacy and tackle gender stereotyping** before prevailing views become entrenched.

Compulsory informatics education counteracts a tendency for girls to opt out and puts the onus on curriculum developers and teachers to create a curriculum that engages girls as well as boys.

4.2 Aims and objectives

At the end of upper secondary education, pupils will skilfully be able to:

1. **Use** digital tools in a conscious, responsible, confident, competent, and creative way .
2. **Understand** the principles and practices of informatics and their multifaceted applications .
3. **Analyse, design, frame and solve** problems "informatically" .
4. **Creatively develop** computational models to **investigate and communicate** about phenomena and systems .
5. **Identify and discuss** ethical and social issues associated with computational systems and their use, potential benefits, and risks .

More elaborate version on page 5

4.3 Core topics

Three examples

Core topic areas	Description
Data and information	Understand how data are collected, organised, analysed and used to model, represent and visualise information about real-world artefacts and scenarios.
Human-computer interaction	Evaluate, specify, develop and understand interaction between people and computing artefacts.
Responsibility and empowerment	Critically and constructively analyse concrete computing artefacts as well as advanced and potentially controversial techniques and applications of informatics, particularly from an ethical and social perspective.

All 11 core topics are described using succinct descriptors (see table 1, page 6)

4.4 Contemporary context and implications

In addition, core topics are described more elaborately and with **references to more specific topics**:

Data and information – **data science**

Algorithms and programming – **programming languages**

Computing systems – **artificial intelligence, machine learning**

Human-computer interaction – **computer graphics, virtual reality, augmented reality**

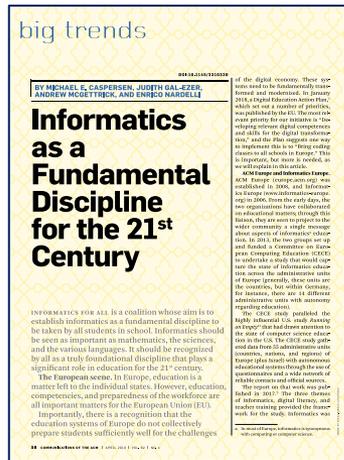
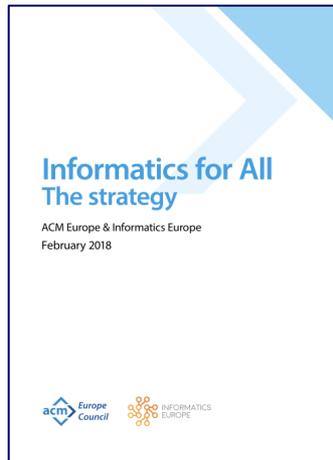
Responsibility and empowerment – **social networks, automated decision-making, bots**

An elaborate presentation is provided on page 7-10

A brief additional document will be provided on the **specific topics**

From Vision to Strategy to Unified Framework

... to Informatics for All



...



Substantial European collaboration to implement Informatics for All

Presented to and embraced by the European Commission

Some next steps (2022-2023)

Dissemination of the framework

- Translation into various European languages
- Discussion with and among national teacher communities
- Embracing the framework and pushing it politically

Two additional documents in pipeline

- Designing and Implementing a Concrete Informatics Curriculum for School
- Contemporary interpretation of core topics – potential specialisation areas

Article in Inroads

- Late 2022/early 2023

Workshop at ITiCSE 2023

- Report of national progress, ...