How to Upskill in Informatics a (Very) Large group of Teachers

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SIF Website : https://www.socinfo.fr/

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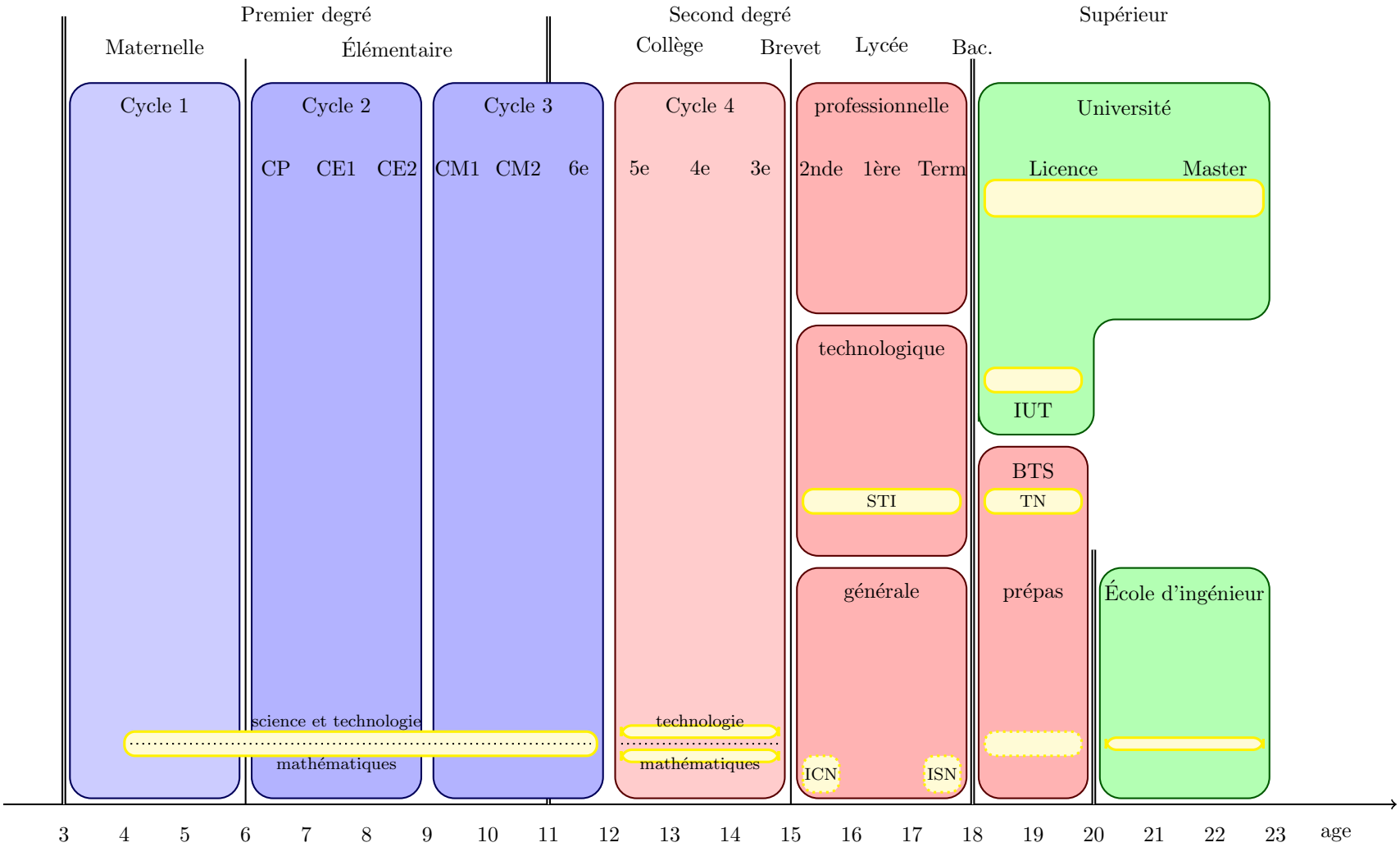
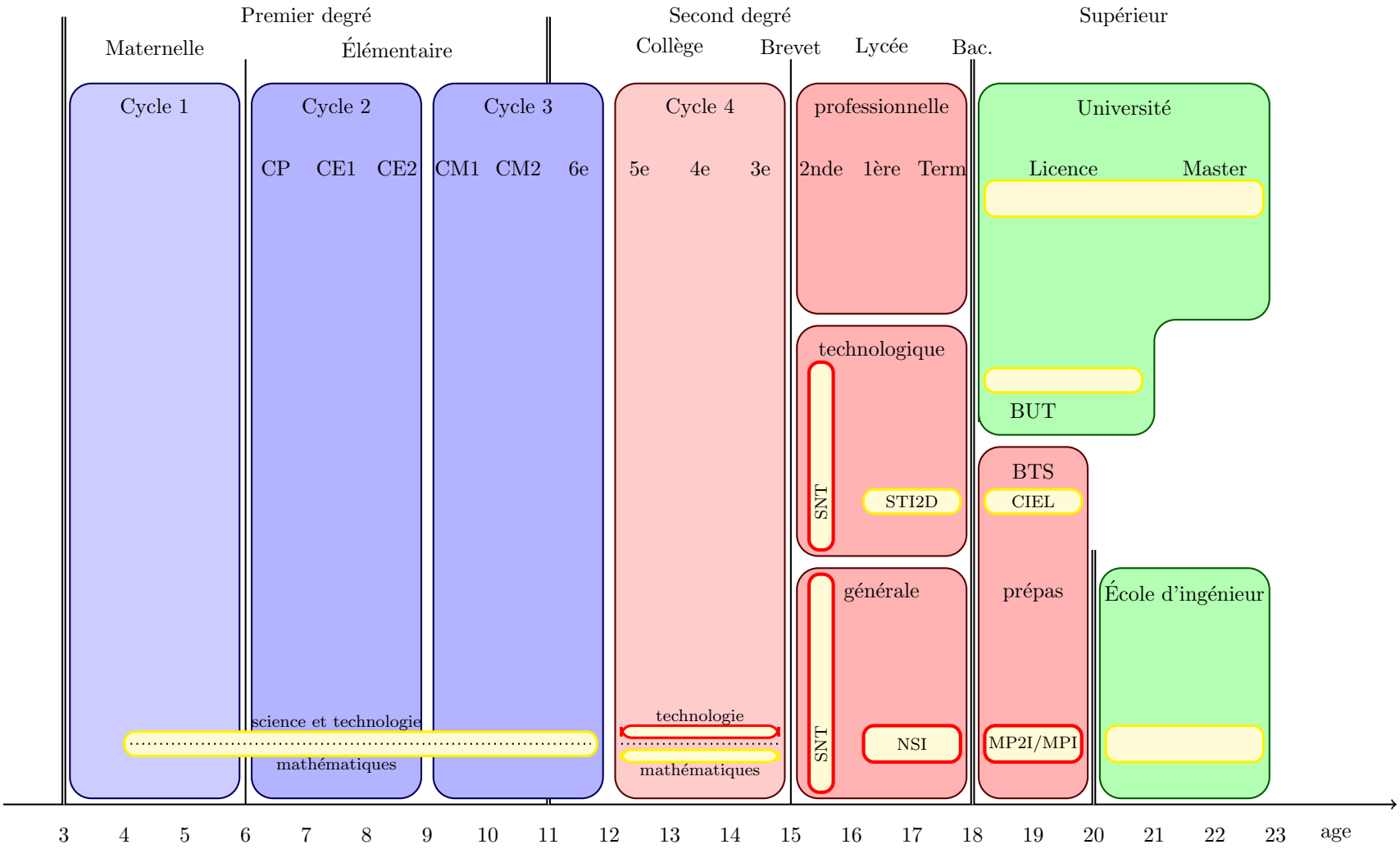
The French Education System

Previous situation before 2019

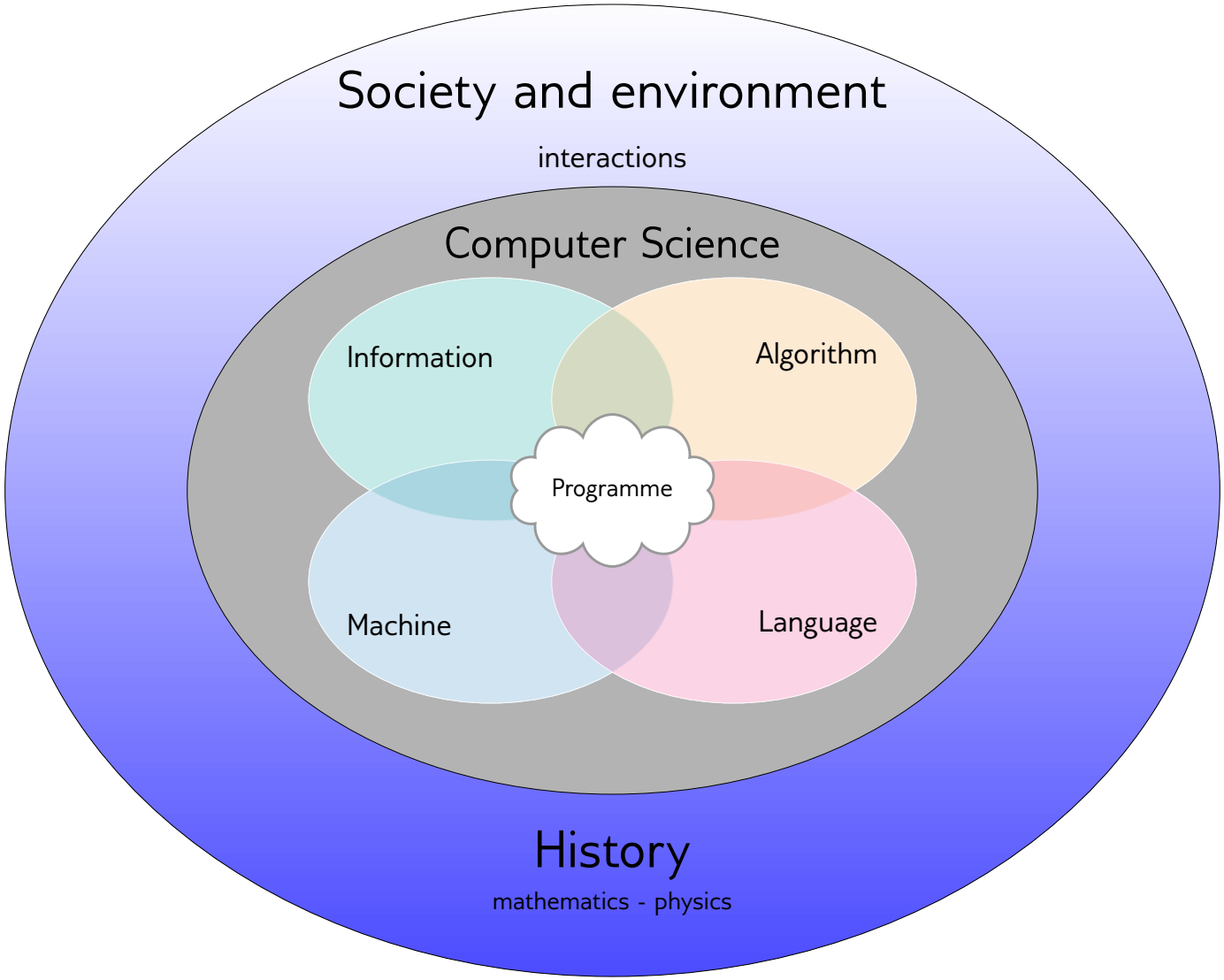


The French Education System

Previous situation after 2019 : high school reform



Structure of the French curriculum



Upskilling Teachers

Diploma : for "Teaching Informatics in High School" (inter-universities)

Objective

- **open NSI classes** (~ 1900 high schools)
- resource teachers for SNT (~ $\frac{1}{2}$ million of students, 3750 high schools)

Population : teachers in permanent position

- disciplines : mathematics (~ 50%), engineering science (~ 30%), physics and chemistry (~ 20%)
- **scientific background** - senior teachers - age - motivations
- teachers in public high school and abroad french high schools

Scientific content definition

- based on the **curriculum** (constraints) of 1ère and Terminale NSI classes
- split in independent thematic parts ? split between fundamental knowledge and practical skills ?
- **5 blocks** : Data representation and programming - Algorithmic - Architecture, robotics, systems and networks - Advanced Programming and Databases - Advanced Algorithmic

Upskilling Teachers (2)

Organization

- **44 universities** involved (heterogeneity of support) 2 years program
- bloc : 1 week (25 hours of lectures) in the university + 10 hours on-line learning
- total : ~ 200 hours
- free access to the university resources

Funding

- 24 teachers groups (selection by the hierarchy)
- 40k€ per group (directly funded on a special program by the ministry)
- supplementary blocks (local negotiations)

Results

- **2500 teachers upskilled**
- creation of an informatics teachers community (AEIF)
- pool of higher level teachers (subjects for the evaluation of students)

and now ...

- one shot action, few follow-up, and continuous learning
- teachers individual initiatives (production of resources, reorientation in informatics companies, masters and phds)
- management of different types of teachers

Sif actions (among others)

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Curriculum

- Proposition of a curriculum with partners (other associations)
- Participation to **expert groups** (co-leading)
- Elaboration for a up/re-skilling curriculum of employees/engineers in AI

Resources for educators

- **Videos** for students (and teachers activities)
- Gathering activities for the class (**CS-unplugged** national group)
- co-leader of "Plan National de Formation"

Teachers recruitment national program

- Contribution on the **scientific programme** (CAPES, Agrégation)
- Members participation to the jury

Teachers Upskilling

- Thematic **conference day** every year (all levels teachers)
- Support for teachers education
- Members participation to MOOCs

Sif priorities in Education

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Visibility

- avoid several denominations for informatics as a scientific discipline

Continuity

- homogeneity of curricula along the student education and coherence between years

Gender Equality

- less than 15% of women in informatics

Territory Equality

- informatics should be accessible throughout the country and all types of high schools

Attraction

- increase the place of informatics in the orientation process (discipline representation)

Teachers Upskilling

- increase the recruitment of computer science teachers and strengthen continuing education (by universities)