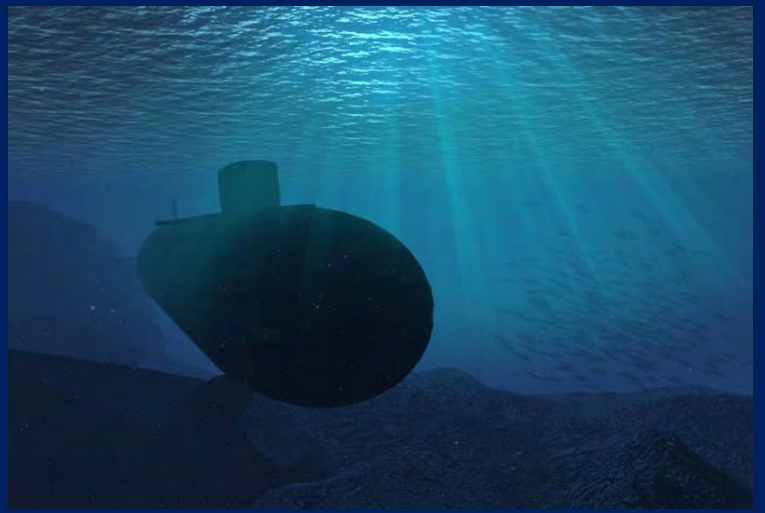
REFORMING THE ICT CURRICULUM IN THE UK

Simon Peyton Jones

A grass roots movement

- An increasing sense of unease about the way we teach our kids about computing
- 2008: let's fix this. Birth of the **Computing at School Working Group.**
- 2008-11: chug chug chug



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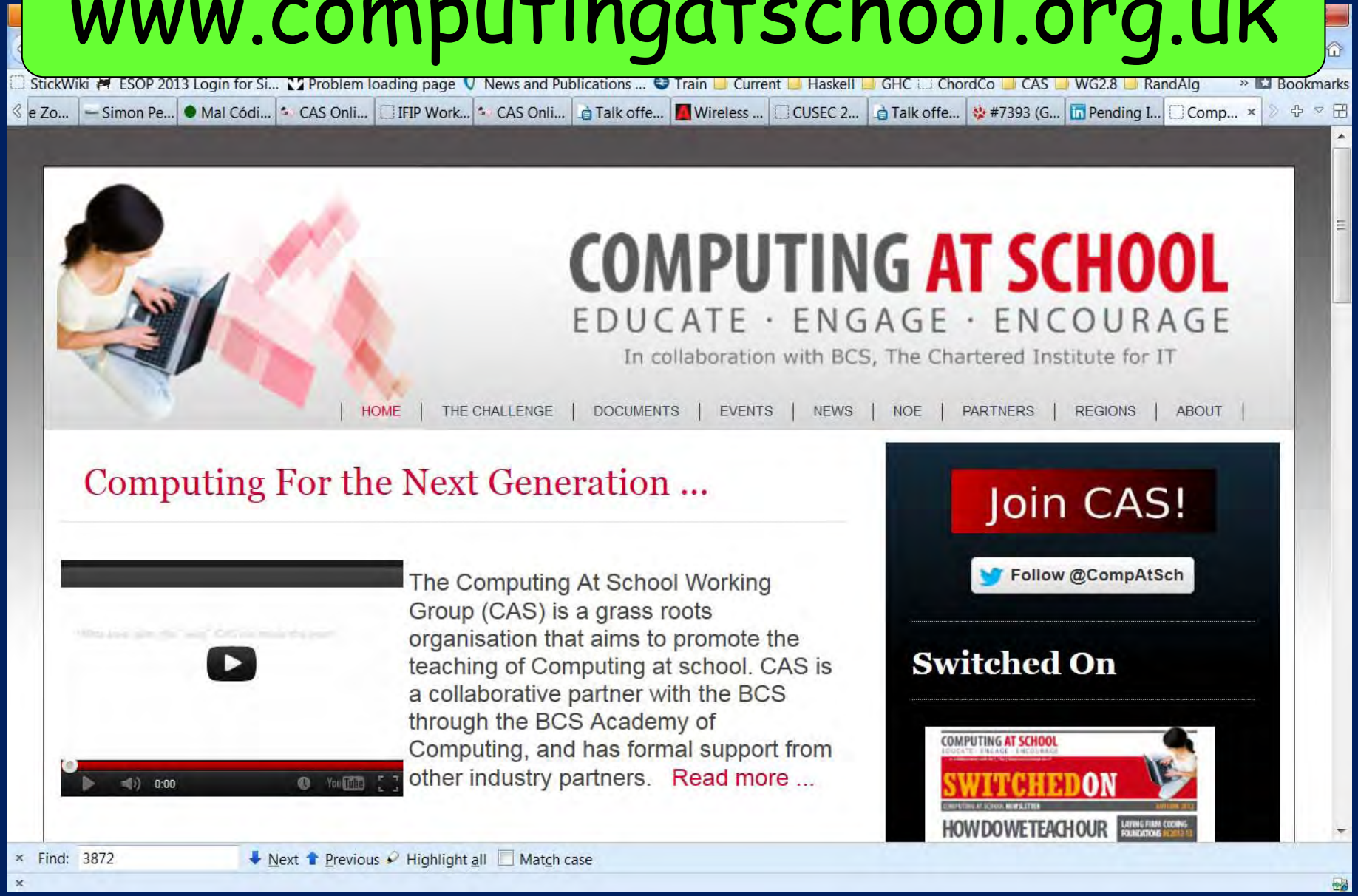
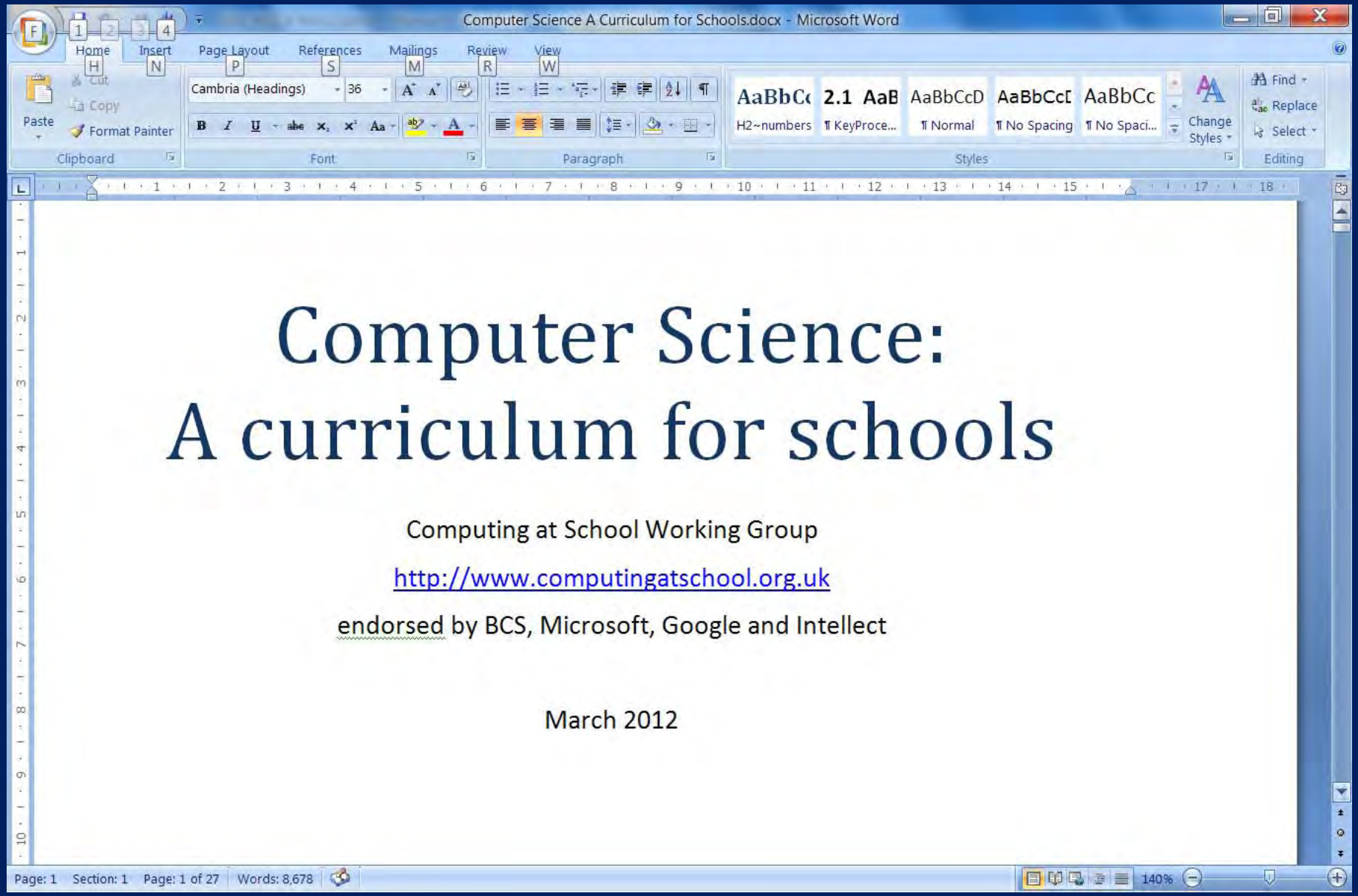


What is CAS doing?

Influencing national policy

Computer Science:
a curriculum for schools

Directly support teachers
"on the ground"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Computing at School Working Group
http://www.computingatschool.org.uk
endorsed by BCS, Microsoft, Google and Intellect
March 2012
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What is CAS doing?

Influencing national policy

Computer Science:
a curriculum for schools

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"on the ground"

Teachers: the myth

- ICT teachers are not very good
- They are happy with the status quo
- They couldn't teach computer science even if we wanted them to

So: we are stuck at Square 1

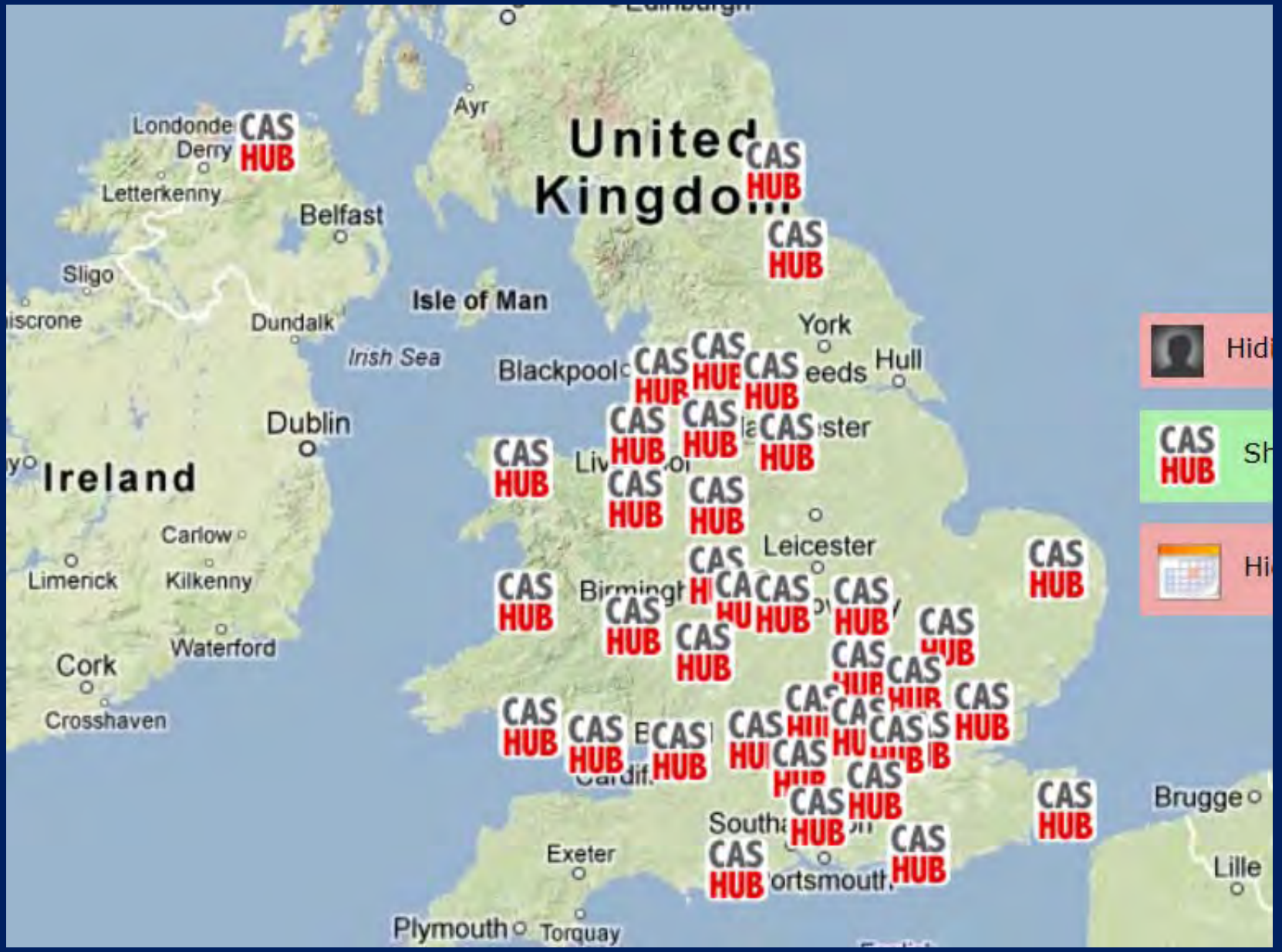
Teachers: the reality

- Most teachers live and die for their students: they work nights
- Few are happy with the status quo
  - It's the biggest sales environment ever. Always going for figures, always going for gold, always going for 100%. ICT is purely there to boost the results in my school, that's all it's there for.
  - I'm afraid I've done enough dragging students through qualifications, it's demoralising and it's morally wrong, so I'm moving on
  - Half the year group choose ICT because they enjoyed it so much at KS3, but then KS4 just squeezes the creativity out, it sucks the life out of the subject and they hate it
  - The exam is just so easy compared to the silly amount of effort they have to put into doing the coursework in order to get basic grades… my kids do no work for the exams and do really well at them

Teachers: the reality

- Many teachers are longing to introduce computing, but they feel
  - isolated (seldom more than one ICT specialist in a school)
  - under-qualified (even specialist ICT teachers seldom have a computer science degree)
  - under pressure for results (a Computing GCSE will be demanding)

But they are keen. Very keen. Very very keen.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cas teachers conference

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Teacher Conference 2012 (Birmingham)

Over 230 people attended the 2012 CAS Conference in Birmingham on July 15th. They enjoyed more than 30 different talks and presentations and was an excellent opportunity to catch up on the current issues and demands facing teachers as they approach a new term with changes to their curriculum being encouraged by central government.

"Computer Science is a rigourous, fascinating and intellectually challenging subject". So said Michael Give, Minister of Education in his speech at BETT 2012. He went on to give a clear steer to all schools to introduce computer science into their curriculum whilst announcing a consultation to disapply the current programme of study for ICT.

Against this backdrop our 2012 conference provides examples, resources and ideas for all teachers to carry this through in their schools. All slides, video and audio can be found below.

"As always an amzing conference with tons of valuable ideas, inspiring speakers delivering exciting keynote lectures ... so much better than any paid conference I've ever been to"

Join CAS!

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Switched On

www.computingatschool.org.uk/index.php?id=regions

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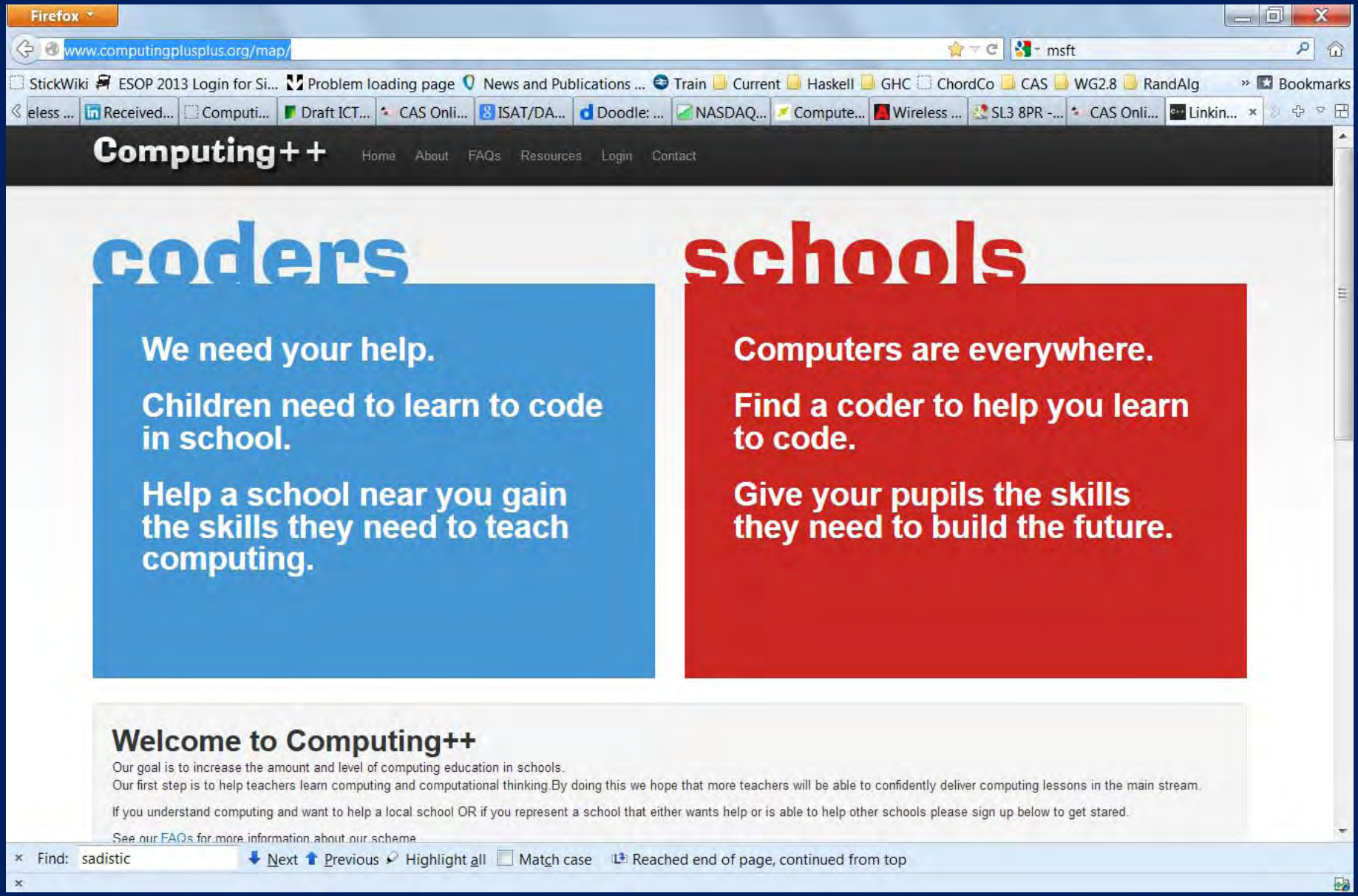
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Children need to learn to code in school.
Help a school near you gain the skills they need to teach computing.
schools
Computers are everywhere.
Find a coder to help you learn to code.
Give your pupils the skills they need to build the future.
Welcome to Computing++
Our goal is to increase the amount and level of computing education in schools.
Our first step is to help teachers learn computing and computational thinking.By doing this we hope that more teachers will be able to confidently deliver computing lessons in the main stream.
If you understand computing and want to help a local school OR if you represent a school that either wants help or is able to help other schools please sign up below to get stared.
See our FAQs for more information about our scheme
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Which leaves the problem

2012: blam!

January 2012: breakthrough

We're encouraging rigorous Computer Science courses

The new Computer Science courses will reflect what you all know: that Computer Science is a rigorous, fascinating and intellectually challenging subject. Computer Science requires a thorough grounding in logic and set theory, and is merging with other scientific fields into new hybrid research subjects like computational biology.

Although individual technologies change day by day, they are underpinned by foundational concepts and principles that have endured for decades. ***Long after today's pupils leave school and enter the workplace – long after the technologies they used at school are obsolete – the principles learnt in Computer Science will still hold true****."*

Michael Gove, Jan 2012

High profile reports

- Feb 2011: The Livingstone/Hope report
  - Bring computer science into the National Curriculum as an essential discipline
- 2011: Ofsted report on ICT
- Jan 2012: Royal Society Computing in Schools Report

  - The current delivery of Computing education in many UK schools is highly unsatisfactory
  - Computer Science is a rigorous academic discipline and needs to be recognised as such in schools
  - Every child should have the opportunity to learn Computing at school

Qualifications

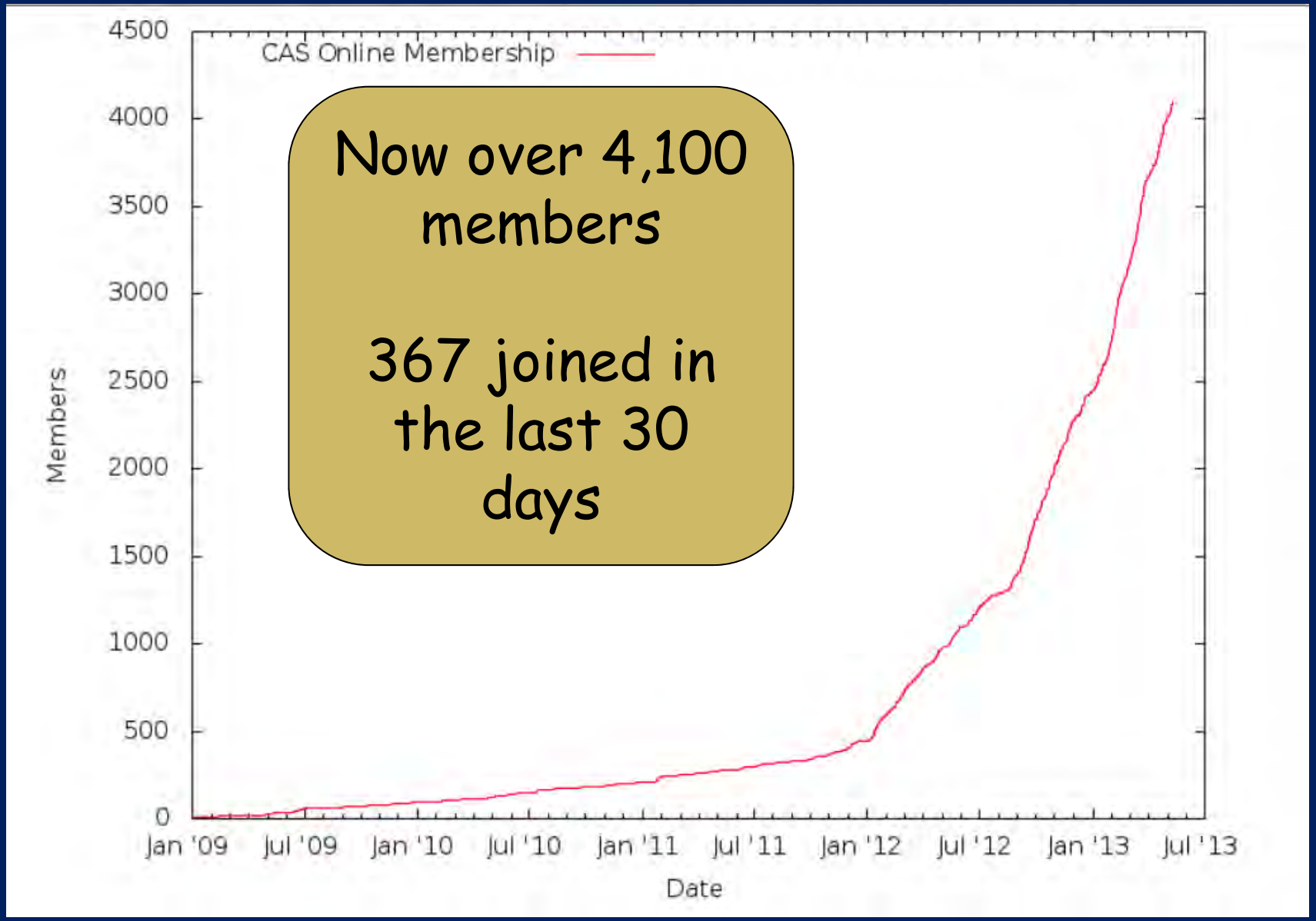
	Awarding bodies	Number of GCSEs in Computer Science
Sept 2009		0
Sept 2010	OCR	1
Sept 2012	AQA, Edexcel, WJEC	4
Sept 2013	CIE	5

- GCSE: national examinations taken at age 16
- Offered by "awarding bodies"

New dirt-cheap hardware platforms

Amazing
media coverage

e.g Observer
1 April 2012


CAS Online Membership
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Jul '11
Jan '12
Jul '12
Jan '13
Jul '13
Date
Now over 4,100 members
367 joined in the last 30 days

Curriculum

Review of the National Curriculum in England

- June 2012: Secretary of State Gove withdraws the National Curriculum for ICT.
- Sept 2012: SLPJ asked to chair group to write the new National Curriculum for ICT (!)
- Jan 2013: Drafts (for all subjects) to be published; launch Sept 2014.
- Jan 2013: **"ICT" re-titled as "Computing".**
- Jan 2013: **Computer Science in the EBacc!**

Aims (age 6-16)

All pupils

Computing

Programmes of study for Key Stages 1-4

- can understand and apply the fundamental principles of computer science, including logic, algorithms, data representation, and communication
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology

Progression

A levels

Apprenticeships

FE Colleges

CS — A range of qualifications at age 16 — ICT

Academic CS GCSE

Technical vendor quals
Eg systems administration, network management, database (Microsoft, Adobe, Oracle, etc)

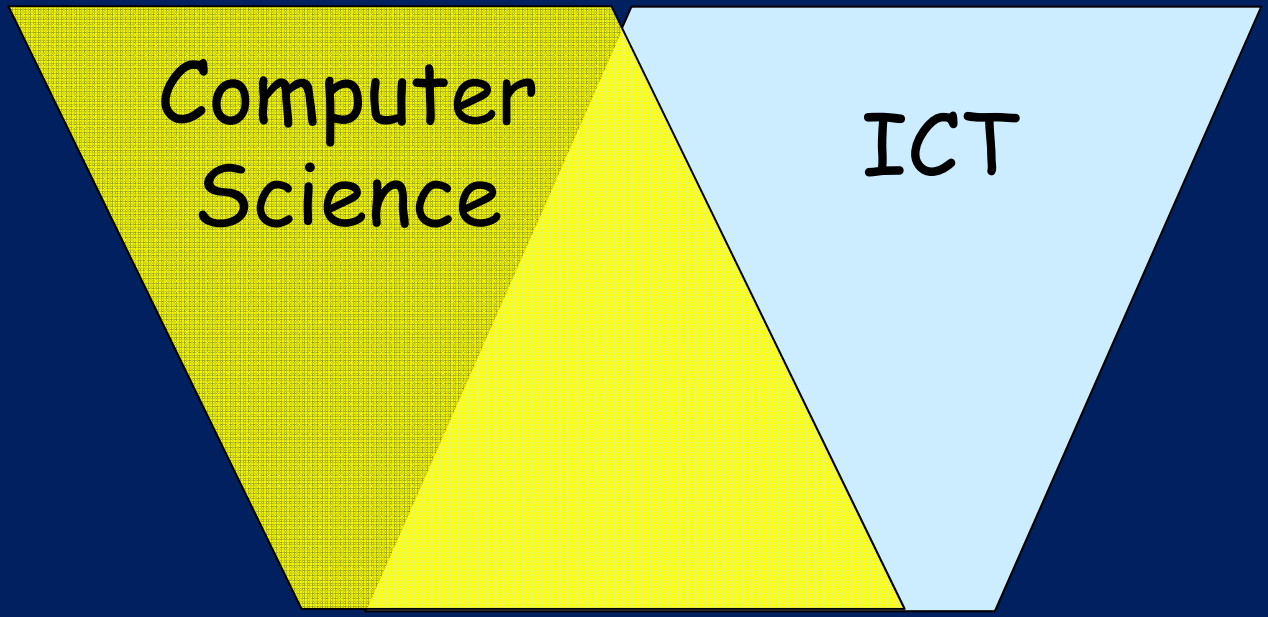
Applied ICT GCSE/BTec

Age 16

Age 14

Age 11

Age 6



Technology Enhanced Learning

Air battle

Everyone agrees that we need CS

Ground war

Job done? Absolutely not!

It's no good writing a Programme of Study that schools cannot deliver

Two massive challenges

Equip, support, affirm, encourage our ICT teachers to teach computer science

Attract qualified computer scientists into teaching, now that their subject is actually on the curriculum

CPD and the Network of Excellence

- Computing at School (CAS) and the British Computer Society (BCS) have launched a national **Network of Excellence for Teaching Computer Science**
- 650+ schools signed up
- Master teachers seconded 1 afternoon/week to package their SoWs etc for others to use
- 70+ universities deliver CPD to their local schools
- Government £2m support

Our friends... we love you

Apps for Good

cs4fn

Technocamps

Raspberry Pi

Code Club

YouSrc

Hack to the future

Computing at School

Make Things Do Stuff

Young Rewired State

Games Britannia

NextGen skills campaign

Lessons

- Articulate one simple message: CS as a discipline, from primary school
- Empower a broad group of passionate people, not just teachers.
- Embrace diversity: no "One True Way".
- Speak with one voice; avoid the "circular firing squad"; many stakeholders => many, many meetings
- Partnership, not competition with other groups
- Civil servants, and even politicians (!), are trying to do the Right Thing
- Network, network, network. Everything happens through personal relationships.

Most political problems are
intractable and expensive

This one is soluble and cheap

This is the moment. We are riding an
unstoppable wave of creative enthusiasm

Do not wait for someone else to do it.
We have to do it.
And we can, if we put our minds to it.

http://www.computingatschool.org.uk