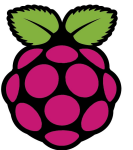


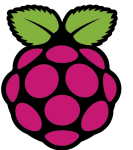
# The Raspberry Pi Foundation

Robert Mullins  
Robert.Mullins@cl.cam.ac.uk  
December 2011



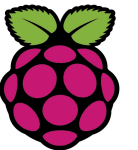
# The Raspberry Pi Foundation

- UK registered charity (No. 1129409), May 2009
- **Founders/trustees:**
  - David Braben (Frontier Developments)
  - Jack Lang (Computer Lab./Judge Business School/....)
  - Pete Lomas (Norcott Technologies)
  - Dr. Robert Mullins (Computer Lab.)
  - Prof. Alan Mycroft (Computer Lab.)
  - Dr. Eben Upton (Broadcom, PhD from CL)
  - [Martin Cartwright, CFO](#)



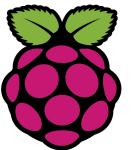
# Motivation

- Computer science skills increasingly important
- Decline in CS student numbers
- IT vs. CS at school
- Frustration vs. fun – need something that works!
  - Interfaces – electronics is fun too
- Access to computers



# *“..but we don't need to know how our cars work?”*

- Computers are **the** tool of the 21<sup>st</sup> century
- Computer science is concerned with much more than simply being able to use a computer
  - Yes, we should understand how they work and how to program them, but not all about the computer itself...
  - Thinking like a computer scientist (“Computational Thinking”) is a key skill:
    - Designing algorithms, using abstraction and decomposition, selecting appropriate representations, learning how to build correct, robust and scalable systems, etc.
    - There are endless applications and opportunities



*“I was flabbergasted to learn that computer science isn't even taught as standard in UK schools...that is just throwing away your great computing Heritage.”*

**Eric Schmidt** (Google CEO), August 2011

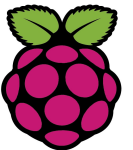
*“We need another BBC Micro.... the Raspberry Pi is a very easy thing to get out to a lot of schools”*

**Ed Vaizey**, MP, Minister for Culture and Creative Industries, October 2011

*“I think Eric Schmidt is right... we're not doing enough to teach the next generation of programmers.”*

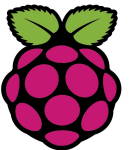
*“We need Government to give clear signals to schools that computing is important by allowing it as an option within the national curriculum. We need to give youngsters the knowledge necessary to become our technology pioneers of the future”.*

**David Cameron**, November 2011

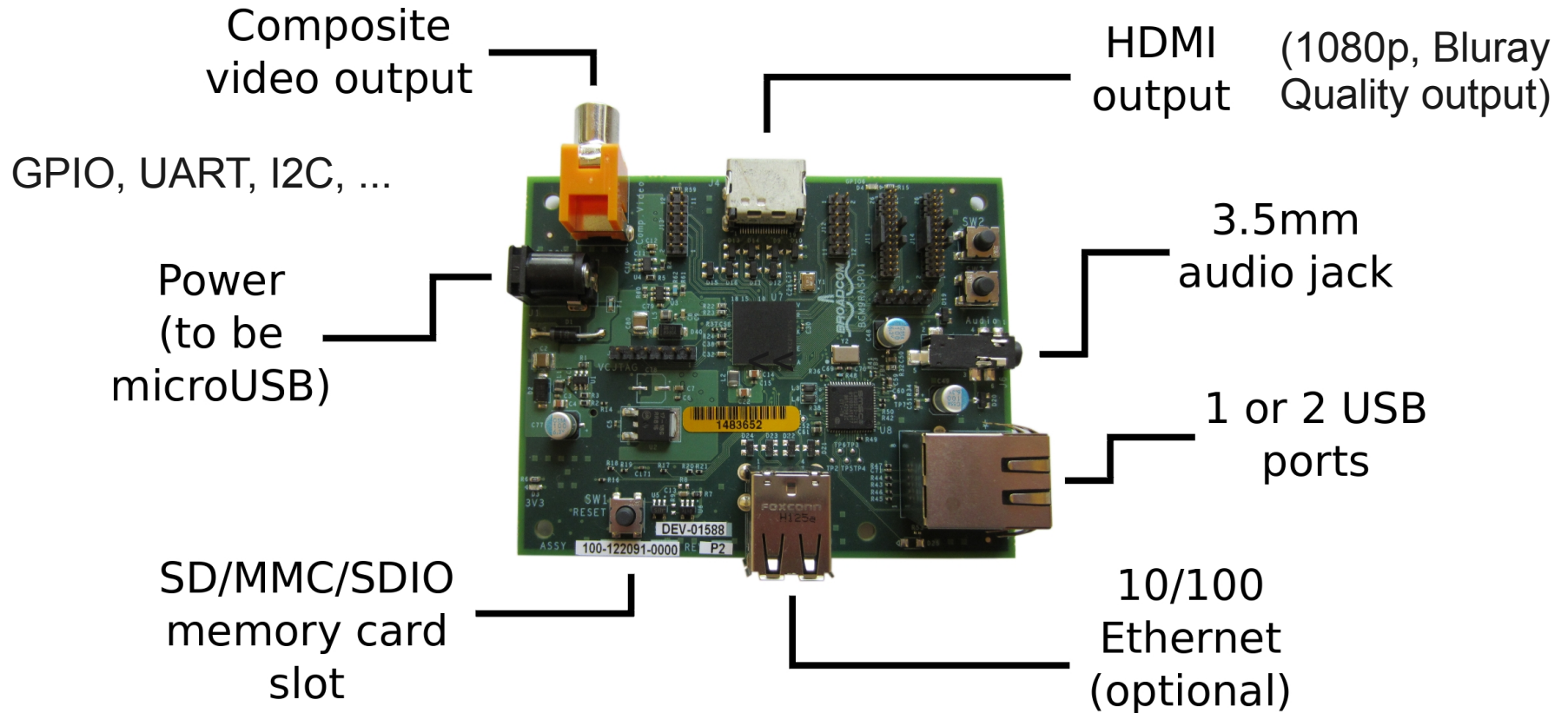


# First Product

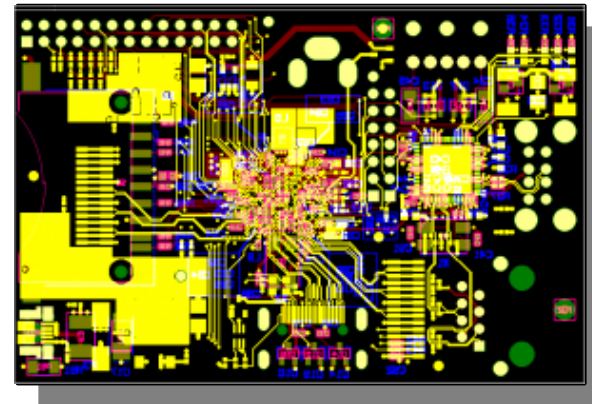
- Ultra low-cost (Model A \$25, Model B \$35)
  - Complete easy-to-program computer
- Ultra low-power ~1W
- Credit-card sized, fanless, instant start-up
- Provide a fun environment for experimenting with programming and electronics
  - Supported by books, an on-line TV channel etc.
  - Buy in a bookshop, newagents or on-line



# Prototype



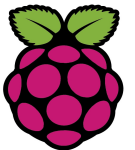
**700MHz ARM + GPU**  
**256MB (PoP) memory**  
**Debian/Fedora Linux**



**Final size of Raspberry Pi**  
**(85.60mm x 53.98mm, Credit card sized)**

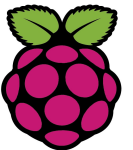


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# User Communities

- Distribute at Open Days
- Inexpensive, simple, open and easy to maintain computer for schools
- Fun computer for children to experiment with at home (programming, robotics, etc...)
- 7m+ people in UK who are not on-line
- Low cost computer with applications worldwide
- Undergraduate projects





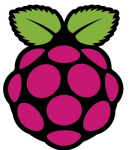
# Cooking times...

- **2011**

- 50 Alpha boards manufactured (now out with developers, Linux distros, Google etc..)
- Maker/hacker community (15K+ on mailing list) very active, 700K+ views of BBC report on Raspberry Pi
- Final PCB design finalised November 2011. 5K component kits ordered
- 100 Beta boards by Christmas

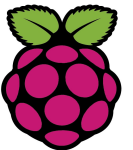
- **2012**

- Ramp up volume
- Development board to production unit
  - Case, SW bundle etc. Trial in after school clubs



# Future development

- Tablet version
  - Interesting low-cost screen technologies emerging
- Brambles! (Networks of Raspberries)
- **Raspberry Pi 2020**
  - **Exploit process scaling and keep price constant:**
    - 8 cores, improved GPU, 8GB main memory
    - WiFi, camera, matchbox sized case
    - holographic laser projector, virtual keyboard
    - FPGA logic on main SoC, high speed links, ....
    - < \$25
  - **Long term ~\$50 target for productivity PC?**
    - (incl. keyboard, mouse and screen)



# Many thanks to..

- Prof. Ian Leslie and Prof. Andy Hopper for their support
- Alex Bradbury and Daniel Bates for all their help to date
- Broadcom

[www.raspberrypi.org](http://www.raspberrypi.org)

[www.raspberrypi.com](http://www.raspberrypi.com)

ARM TechCon Best in Show for Hardware, 2011



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Designed and manufactured in the UK

