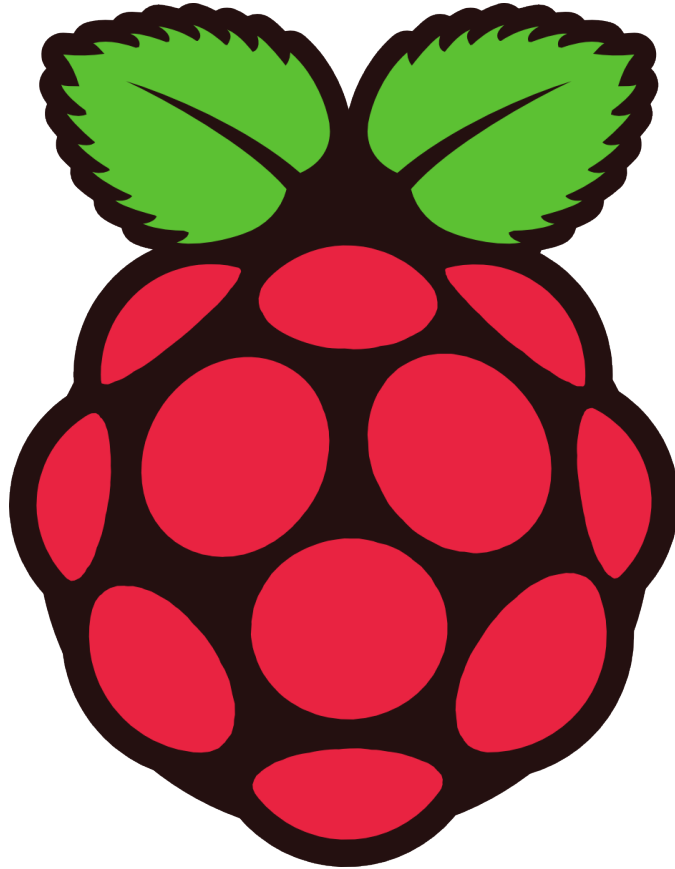


# Introduction to the Raspberry Pi



Alex Bradbury, Raspberry Pi Foundation

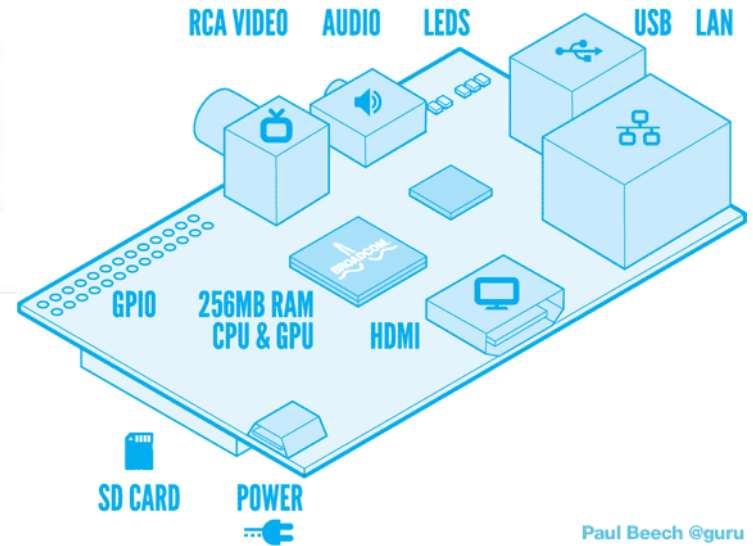
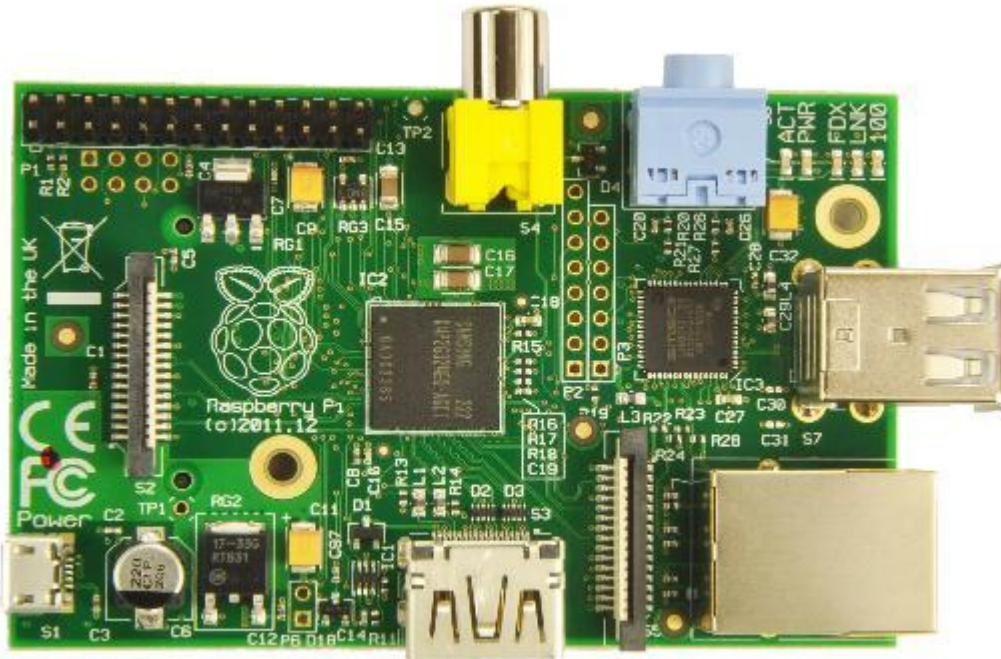
Twitter: @asbradbury  
Web: <http://asbradbury.org>

# Outline

Disclaimer: This talk will be more technical in parts than the usual Raspberry Pi talk.

- Background (what? why?)
- Education
- Technical details and challenges
- The future
- Community projects + developments
- How you can help

# What is it?



"Just" a Linux box

# Why is it?

- Shortage of Computer Science talent in the UK and worldwide
- Children need CS to understand the modern world
- Raspberry Pi: a solution? See also CAS, Young Rewired State, Code Club, Coder Dojo.....

# Educational story and strategy

- Start by getting the hackers/makers/geeks on board
- After school clubs
- Use in curriculum
- Schemes of work
- Make it the most straightforward solution

# Pi in schools: software

- Python
- Scratch
- Minecraft Pi edition (soon)
- Other programming language support
- Smartsim

SCRATCH

File Edit Share Help

hungry fish

x: 6 y: -72 direction: 3

Scripts Costumes Sounds

when clicked

switch to costume open-mouth

forever if distance to mouse-pointer > 10

point towards mouse-pointer

move 3 steps

when I receive got-me

play sound chomp

repeat 2

switch to costume closed-mouth

wait 0.3 secs

switch to costume open-mouth

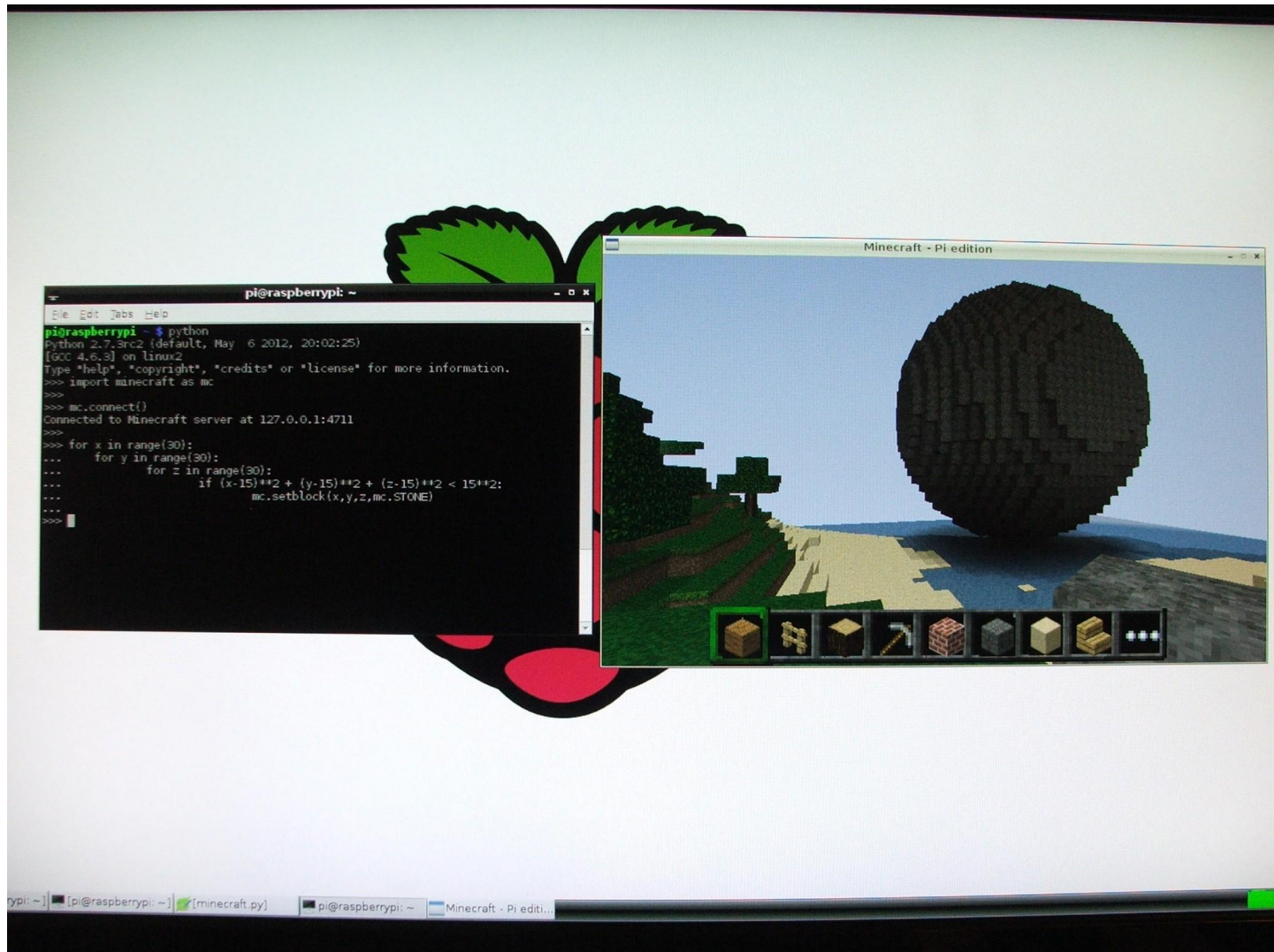
3 FishChomp

Click the green flag. Move the mouse to eat the small fish

New sprite: goldfish... goldfish... goldfish... hungry f... instructi...

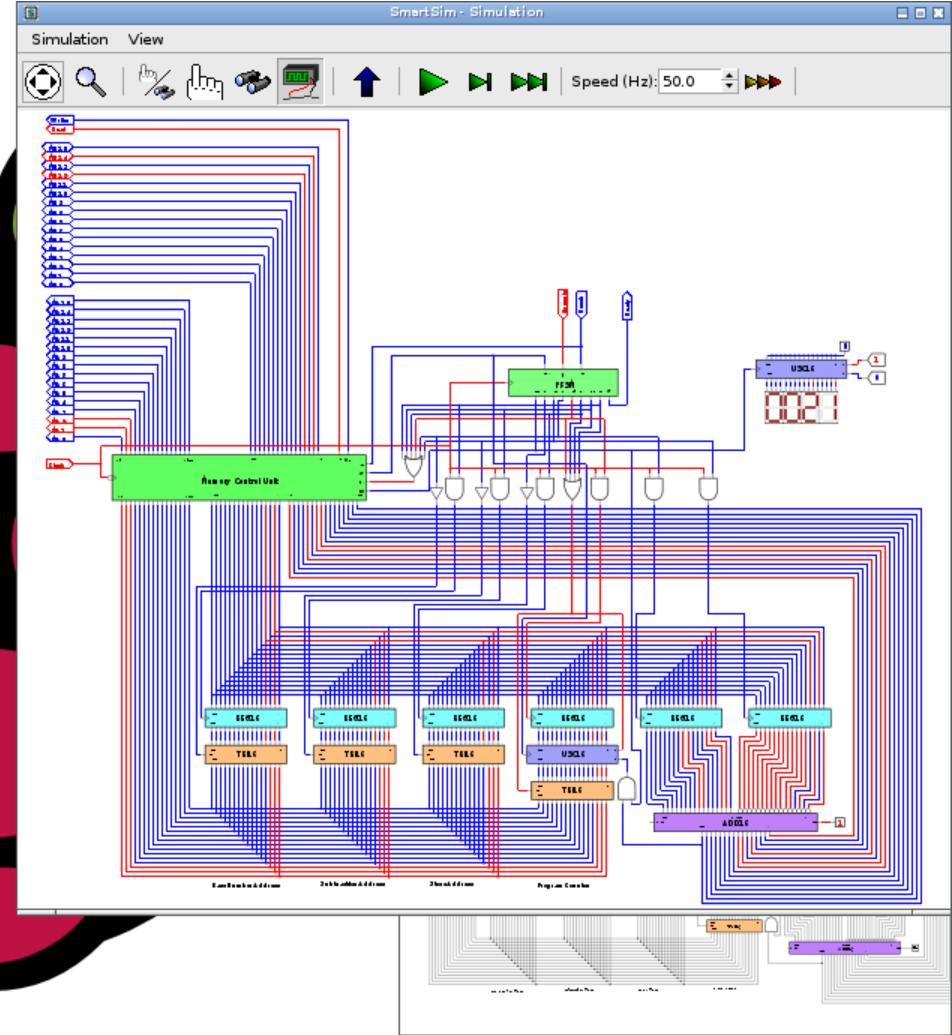
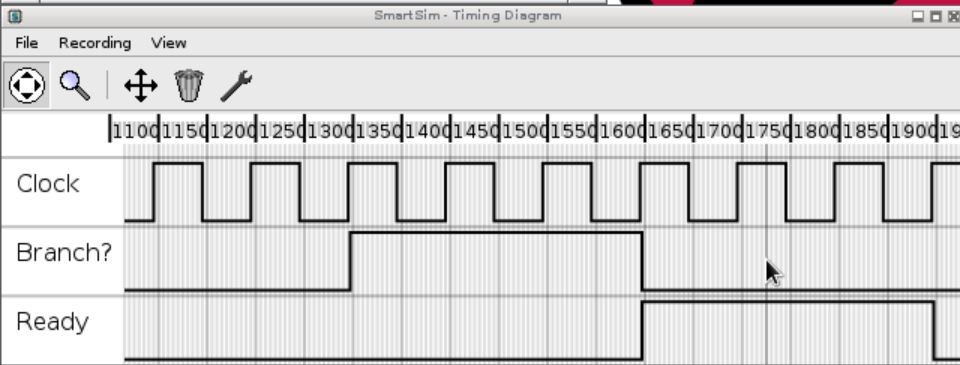
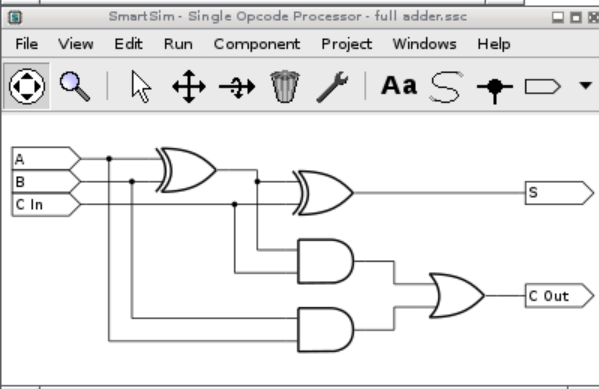
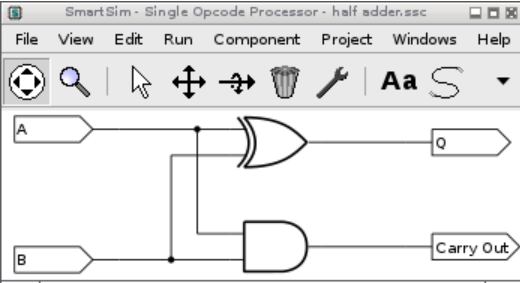
Stage

# Minecraft: Pi Edition





# Smartsim (<http://smartsim.org.uk>)



# Pi in schools: hardware and accessories

- PiFace
- GertBoard
- Lots of Adafruit stuff <http://learn.adafruit.com>
- Many 3rd party cases

# Pi in schools: material

- Sonic Pi
- Robotics
- Build your own OS (advanced)
- Programming competitions
- Many things in the pipeline

Need schemes of work, support networks, freely licensed material.

# Improving performance since launch

- Move to wheezy
- Raspbian <http://www.raspbian.org>
  - armhf vs armel
  - hardware fp
- Dynamic overclock
- USB interrupts
- Targeted optimisations (memcpy)
- Bugfixes (SD clock!)

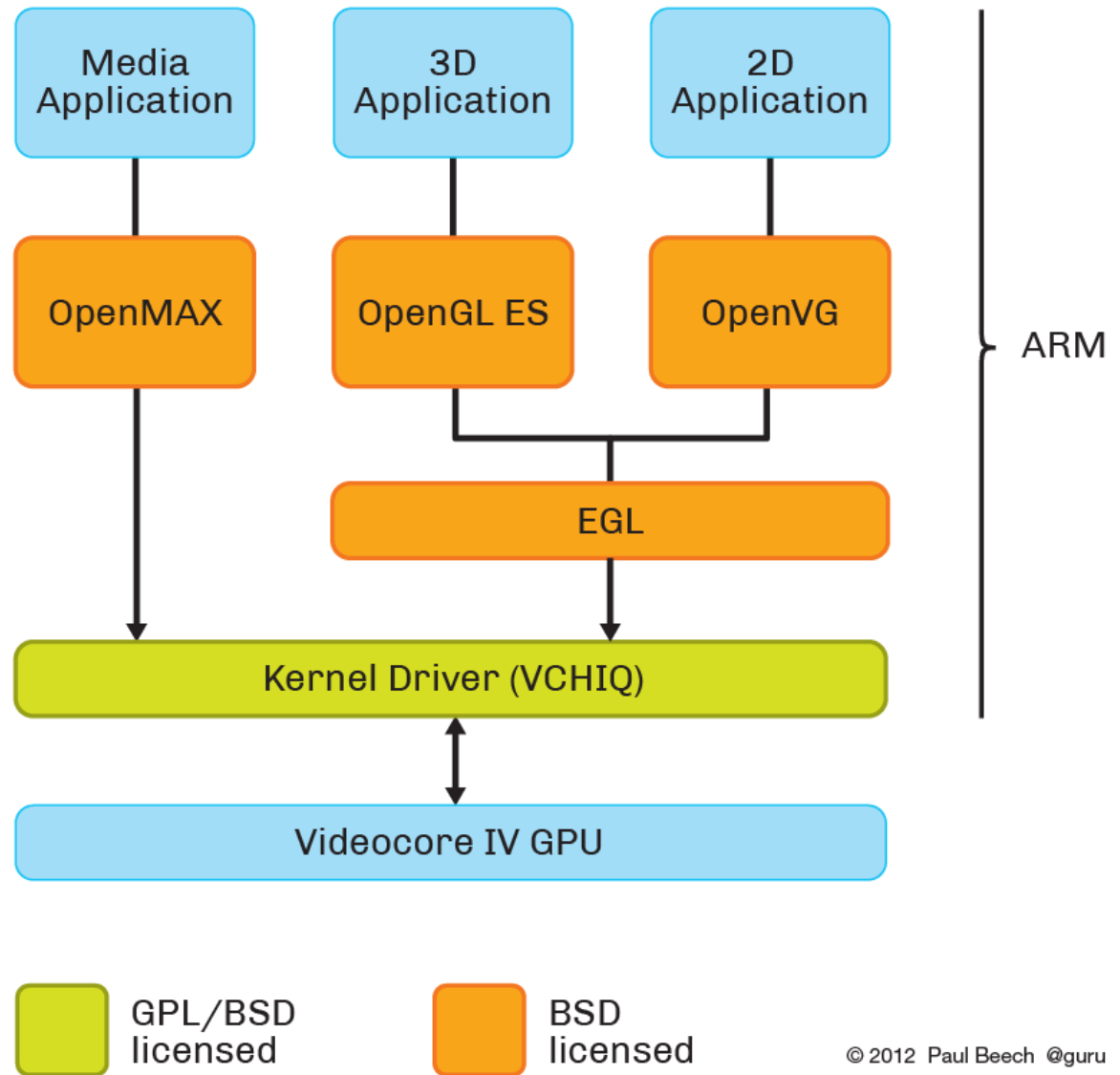
# OS support

- Linux
  - 3.2.x and 3.6.x kernels
  - Upstream support?
  - Raspbian/Debian, Arch, Fedora, buildroot, openembedded etc. etc.
  - Raspbian officially recommended. Generated using spindle
- Android
- FreeBSD
- Plan9
- RiscOS



## Graphics

- Graphics acceleration
- FOSS userspace code



# Software: future improvements

- Dynamic memory split
- Optimising XOrg, pixman
- Scratch optimisations
- Wayland?
- First boot experience
- Classroom deployment

# Other things for the future

- Software better exploiting Pi hardware
  - See BerryBots, Qt5
  - Community-driven!
- Camera module
- Display adaptor
- Hopefully even more add-on boards and accessories



# How have we got here?

- User community
  - GitHub projects
  - Forum members
  - Raspberry Jams
  - MagPi
- FOSS

# How can I help?

- Join our forums at [raspberrypi.org](https://raspberrypi.org)
- Share your projects and experiences
- FOSS licenses
- Join Coder Dojos or Code Clubs
- Raspberry Jams

# Questions?

- Ask now
- Or after
- Or email [asb@asbradbury.org](mailto:asb@asbradbury.org)
- Or twitter [@asbradbury](https://twitter.com/asbradbury)

# Overflow

- Wayland/Weston
- Glamor?
- Compiler optimisations
- JITs
- Compelling software: collaborative programming environment and more