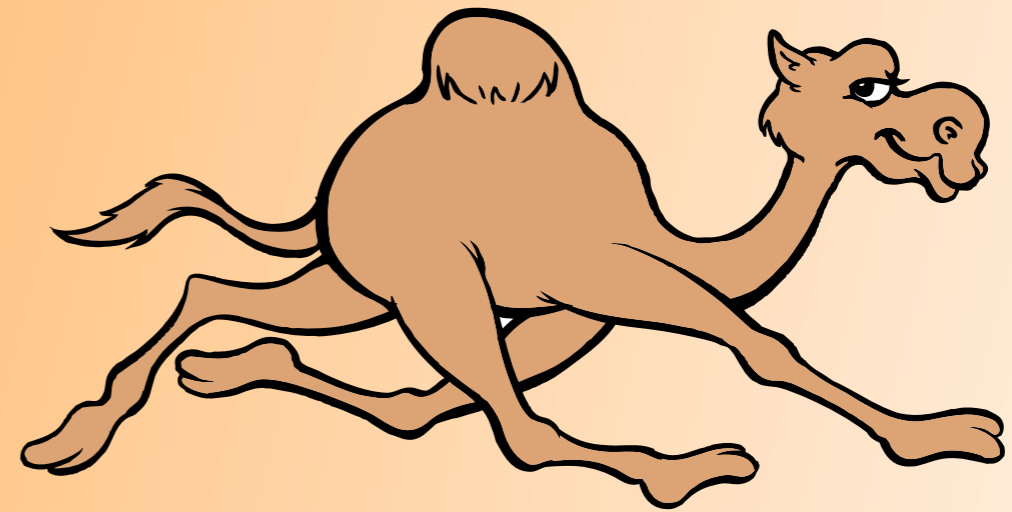


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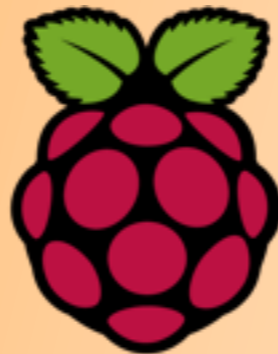
June 10-11 2013

Boston, MA



Apache Camel & Raspberry Pi

Thomas Walzer





about:

- Freelance Solution Architect (www.integratix.net)
- Healthcare focus
- Enterprise Application Integration since qst
- dataGATE -> eGATE -> ICAN -> JavaCAPS -> ?

Developer job title cheat sheet

- Senior = old
- Manager = expendable
- Architect = **can't code**
- Evangelist = can't ship
-





Quick Poll

- How many of you know the Raspberry Pi?
- How many of you own a Raspberry Pi?
- What did you do with it?



What is it?

„The Raspberry Pi is a credit-card-sized single-board computer developed in the UK by the Raspberry Pi Foundation with the intention of promoting the teaching of basic computer science in schools“ (Wikipedia)



Goal

- prevent the following:
 - (I) write a line of code
 - (II) lookup stacktrace on stackoverflow.com
 - (III) goto (I)



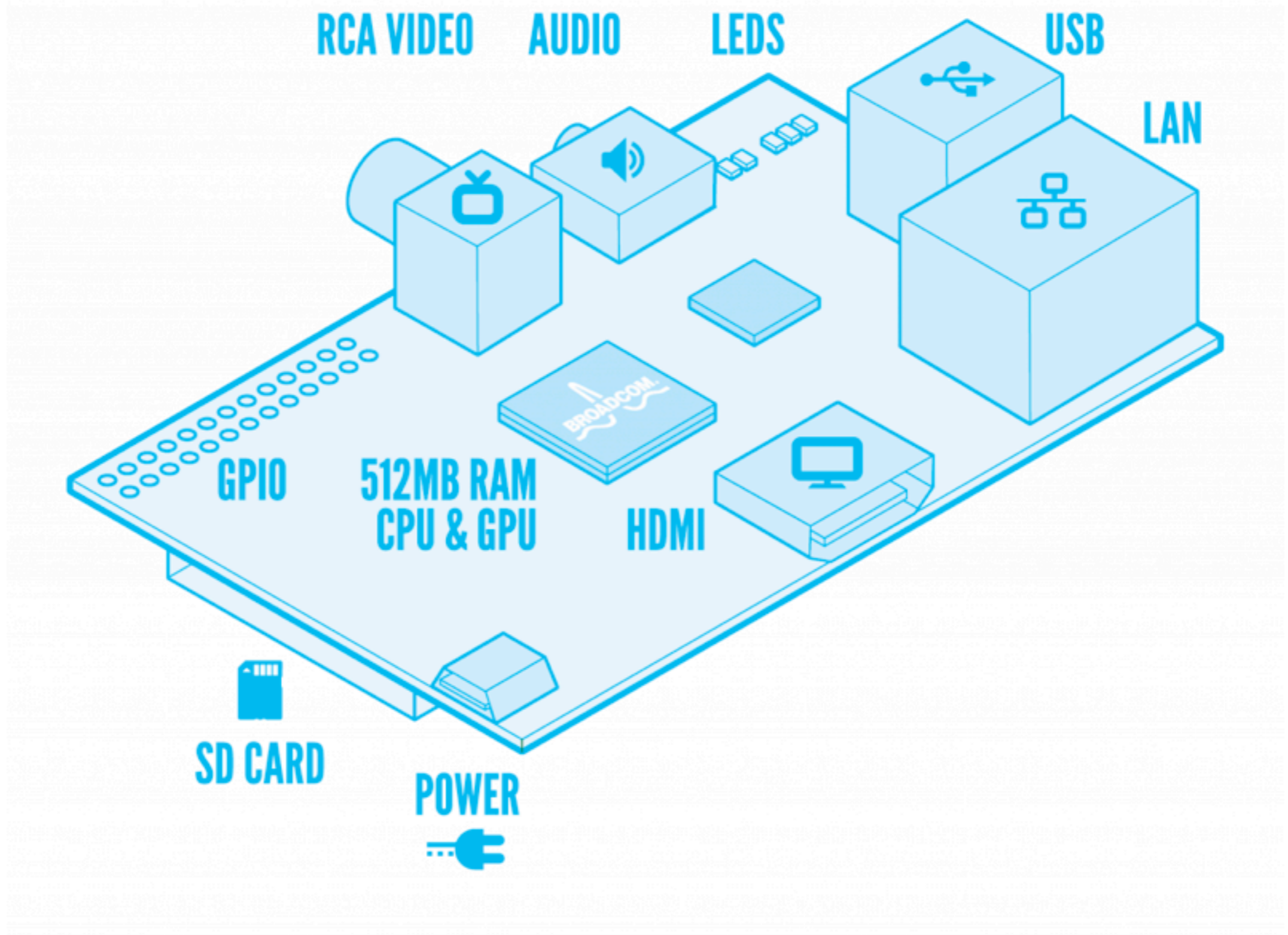
What does it look like?



ok, the real price is

Case	\$ 10
Power supply	\$ 5
SD Card	\$ 10
UPS	\$ 25
Pi	\$ 35
Total	\$ 85

RASPBERRY PI MODEL B



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Features (model B rev2)

- 700 MHz ARM CPU
- 512 MB RAM
- SD card as hard disk
- Video Core IV CPU (shared memory) 1080p30
- MicroUSB powered
- Ethernet



more features...

- Audio out
- HDMI/composite out
- 2 USB
- general purpose I/O



Operating systems

- Raspbian
- ArchLinux
- RiscOS
- ...

Hardware extensions

- Camera module (\$25)
- Gertboard (\$35)
- pi-face
- build your own





others build...

- VPN-, Radius-, Web-, Whatever... Servers
- media centers
- cheap digital signage solutions



still others do...

photo credit: www.nyccnc.com used with permission



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...get to the point... What does all this have to do with Apache Camel?



Genesis

- saw a video of some Oracle guys running Java on the Raspberry Pi (<http://www.youtube.com/watch?v=7DSp77OxzLg>)

Camel!



Service
Mix?



found in a drawer





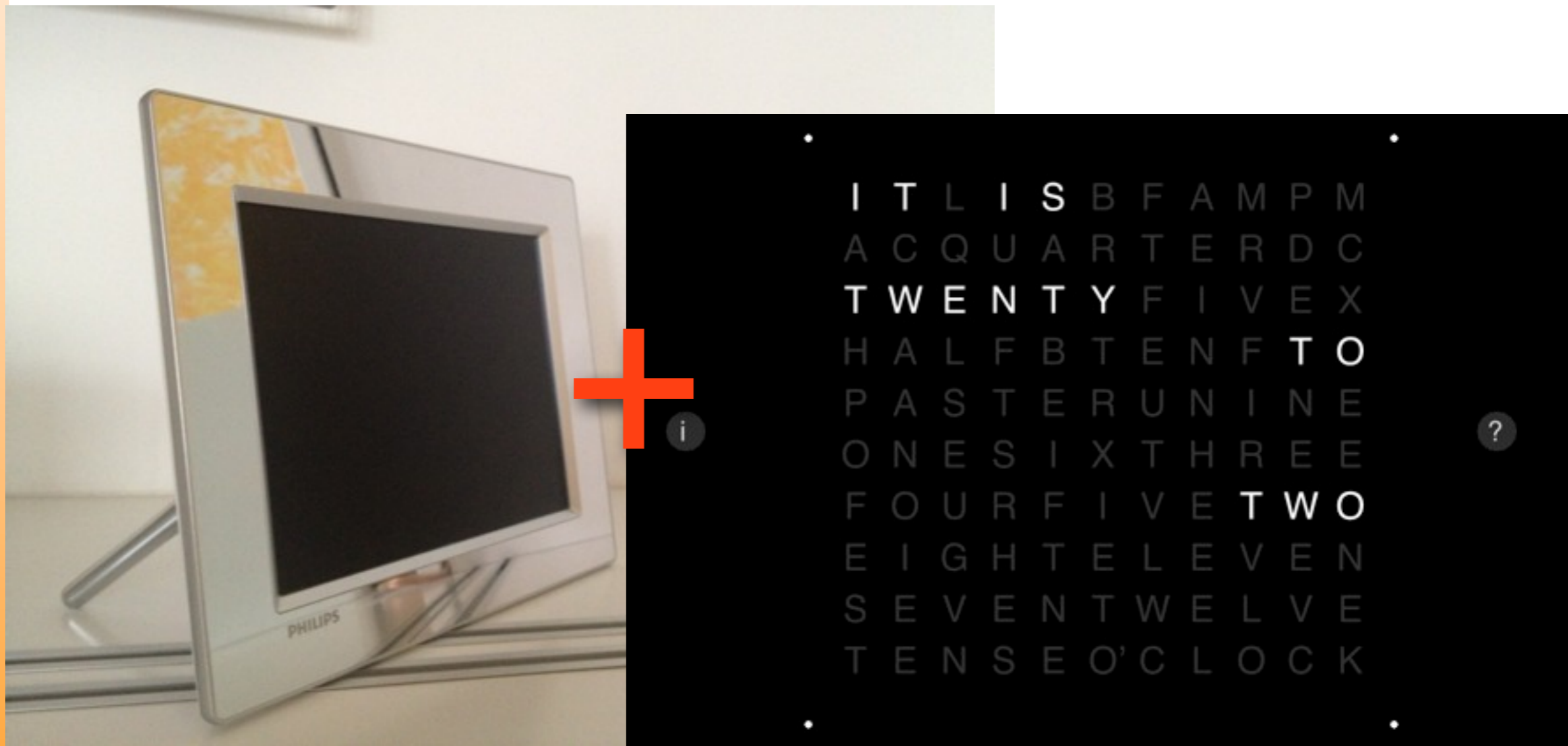
Philips photoframe

- Philips 8FF3WMI
 - WLAN
 - RSS
 - limited & not on startup!
 - no text file support
 - API (http/XML)



ideas came...

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...and went

- low cost status board
- low cost digital signage
- leverage the 100+ Camel components



pet-project idea

...allow a store owner to update his times of service via email and show his latest tweets...



Goals

- Tweets (red on white) & light up LEDs
- latest e-Mail (white on black)
- check a Webpage every 60 seconds (green on white)
- (pressing a button sends email)

make the LEDs work

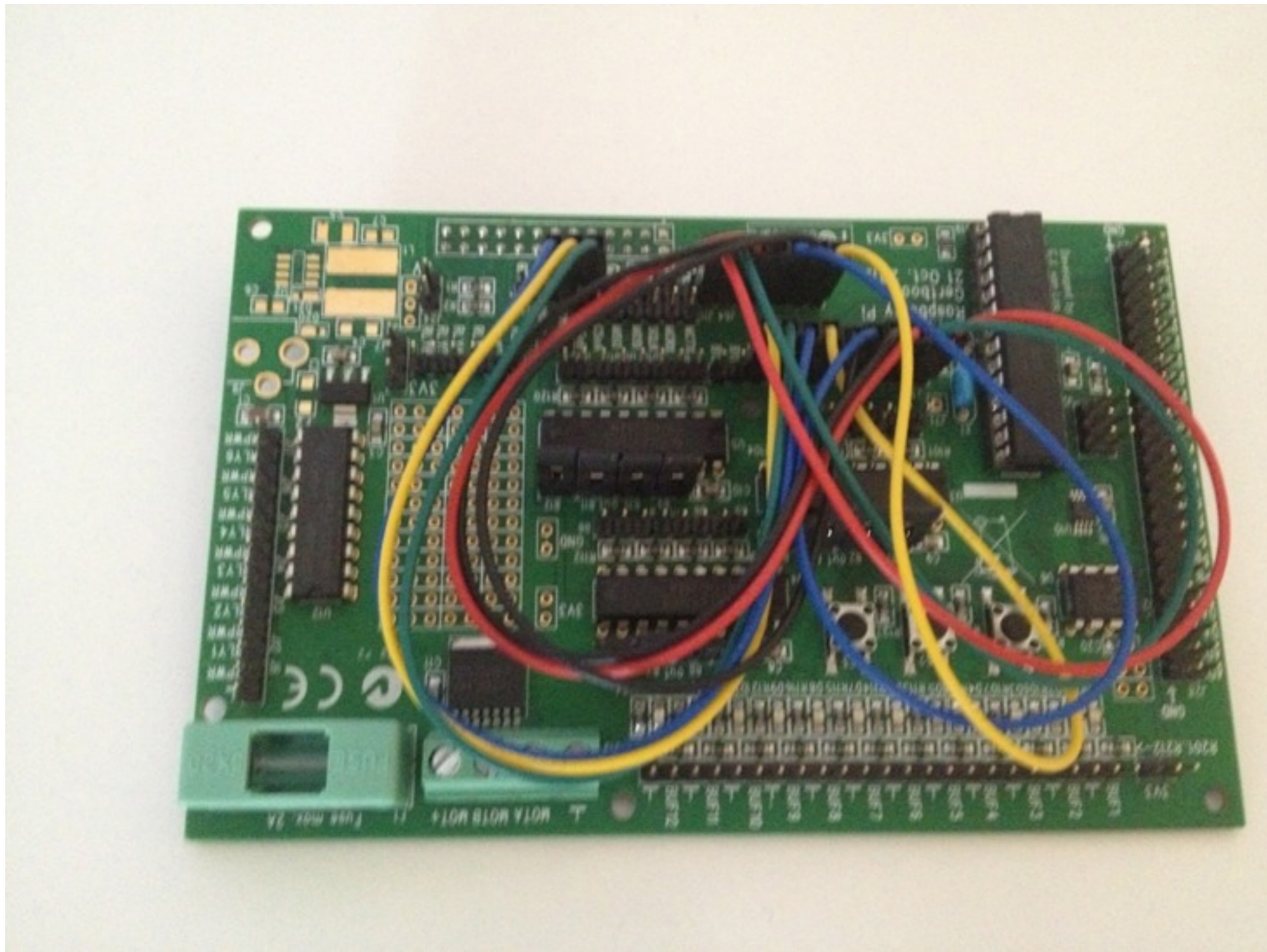


Gertboard

- designed by Gert van Loo
- add-on to Raspberry Pi
- plugs directly into Raspberry Pi GPIO socket
- drive relays and motors
- 12 led indicators
- detect switch presses & more



Gertboard





Solution

- JBOSS Fuse ESB
- „Rendering bean“ to render text to image
- „Photoframe bean“ to move images to frame
- a few simple routes (blueprint)



Routes

- External2File (for demo purposes)
- File2PhotoFrame



DEMO

email, twitter, web

@twalzer

frame@integratix.net (*Text only, please*)



software stack

- Raspbian (hard float Debian Wheezy)
- WiringPi library (GPIO library)
- Java 1.8 ARM
- Pi4J Java Native Wrapper
- JBOSS Fuse ESB + few hacks



Components

- camel-twitter
- camel-http
- camel-mail
- jsoup
- custom beans

Java on the Raspberry Pi



options, options,...

- OpenJDK, Oracle
- hardfloat, softfloat
- embedded, standard
- different performance characteristics (10-20x slower than current PC)
- http://wiki4.caucho.com/Java_On_Raspberry_Pi_Performance

Java 1.7 embedded

- Java 1.7 SE embedded (ejre1.7.0_04 ArmV6/7 Linux headless)
 - soft float only
 - licence/cost?
 - optimized for embedded devices





Java 1.8 ARM early access

- Java 1.8 works on hard float
- not optimized for embedded devices



Tweak Karaf et al on RPi

- In etc/jre.properties, replace the line that says jre-1.7 with jre-1.8
- In bin/karaf, remove all occurrences of “-server”
- remove -xMx and -xMs
- tweak ActiveMQ

credits: Robert Murphy



lessons learned

- Camel scales up & down
- blueprint pros/cons
- build with one tool run on another
- JBOSS Fuse & Talend ESB run on RPi
- service wrapper does not work
- vanilla Karaf



explore further

- benchmarking
 - Java
 - Routes
 - ActiveMQ
- daemonize ESB
- producer template & hiding middleware



Summary

- Bring Camel's power to the Internet of Things
- Have a cluster for \$70
- No cost Guerrilla integration projects
 - ESB under your desk
 - free software (check licences!)
 - lowest cost hardware

Q & A



- Camel community
- RPi community
- <http://code.google.com/p/philipsphotoframemanager/>

THANK
YOU!!!