

Turris Omnia crowdfunding

We love hardware!!!



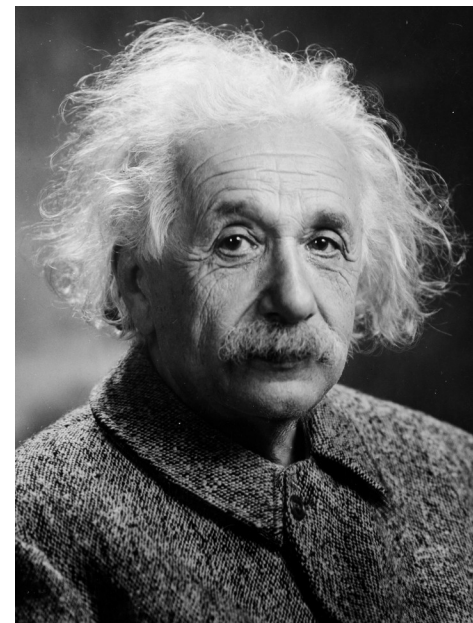
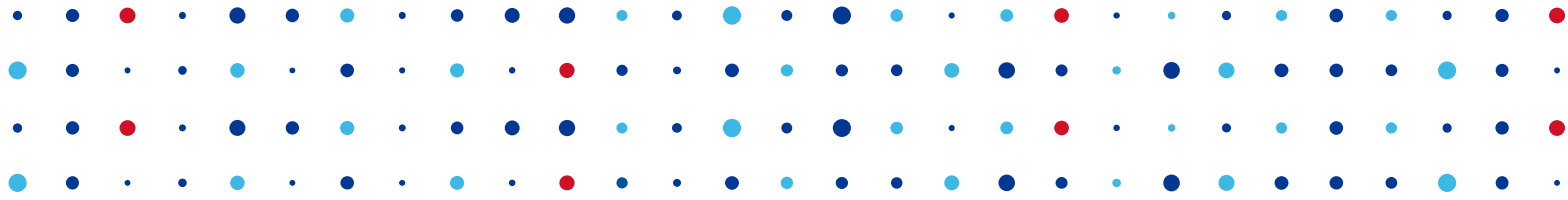
Ondřej Filip • 11. 5. 2017 • RIPE • Budapest



About

- Not about Turris Omnia
 - Open source hardware financing
 - Crowdfunding
 - What can go wrong...
-
- „If you lack your own words, use someone else's.“ - Ondrej Filip





Why?

Strive not to be a success, but rather to be of value.

Albert Einstein



Why?

- Project document - 2012
 - IPv6, DNSSEC, firmware, security
 - Security analysis, adaptive firewall
 - Hardware – CERN licence
 - Network analysis
 - Automatic updates
 - Extensible HW – sensors
 - App market, cooperation
 - „Blue“ Turris – Czech Republic only

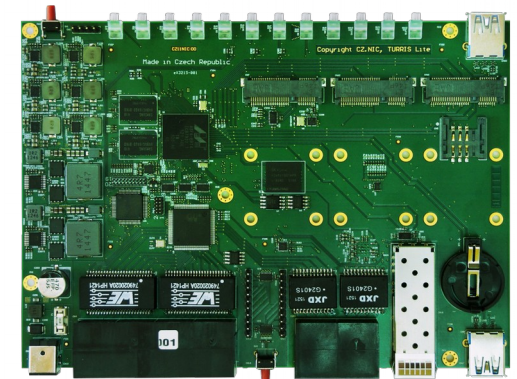


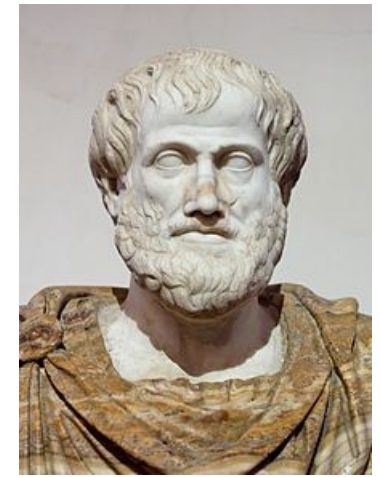
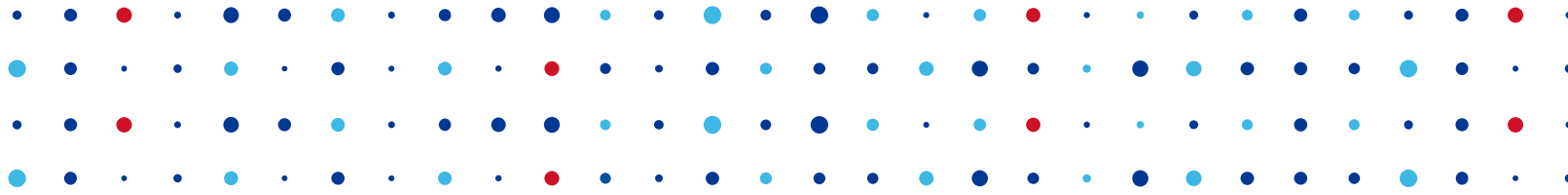
PROJECT:
TURRIS



Why Omnia?

- Attention locally and internationally
- Idea of powerful open hardware
- Extensible HW and SW
- Security and automatic updates
- Issues of some commercial vendors





Critics?

There is only one way to avoid criticism: do nothing, say nothing, and be nothing.

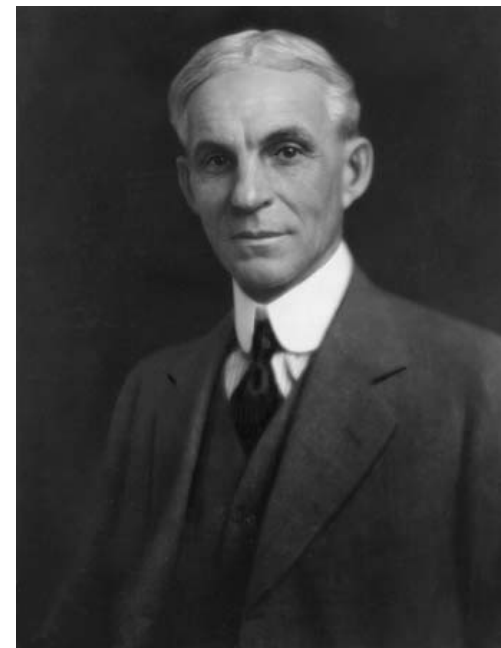
Aristotle



Value test

- Crowdfunding campaign
- More options – IndieGoGo chosen – easily possible from Czechia
- Conservative target - \$100.000,-
- ... btw





During the campaign

Whether you think you can or you think you can't, you're right.

Henry Ford



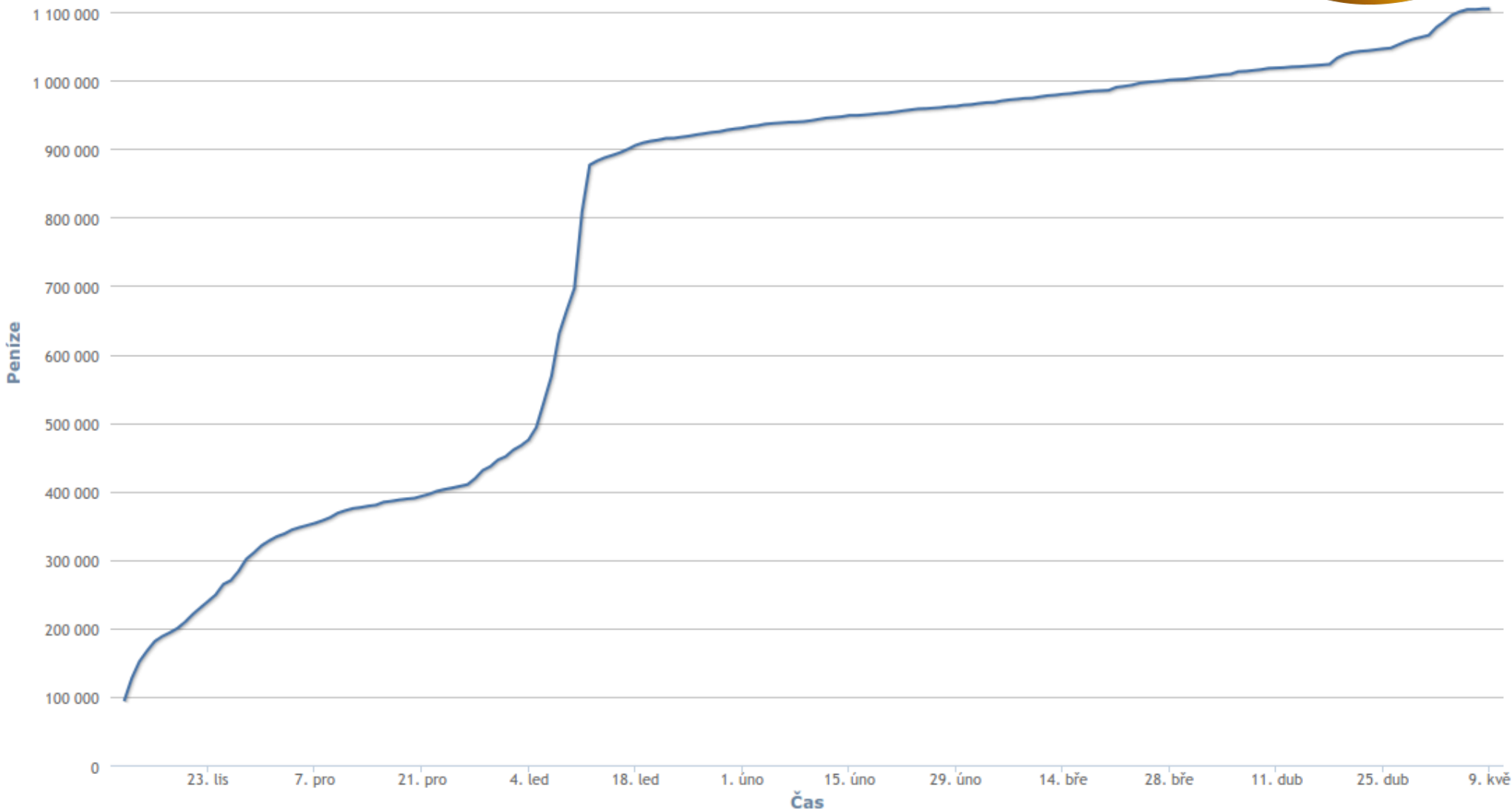
Campaign



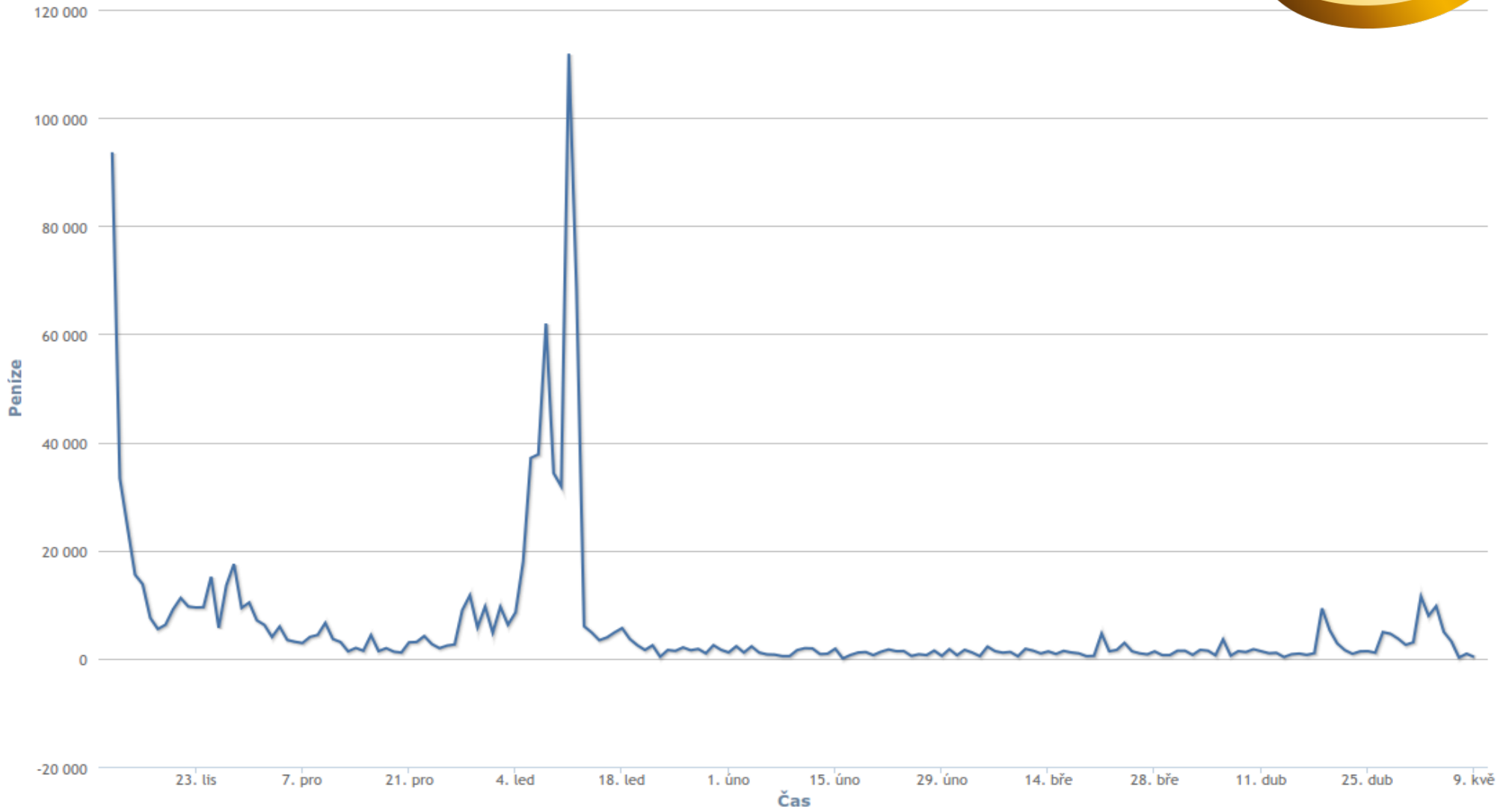
- First two months (start – 12.11.2015)
 - Target amount reached in 21 hours
 - Campaign fed by stretch goals
 - 857k USD collected
 - 3700 routers
 - 2200 upgrades
- InDemand
 - 1 123k USD, >4400 routers



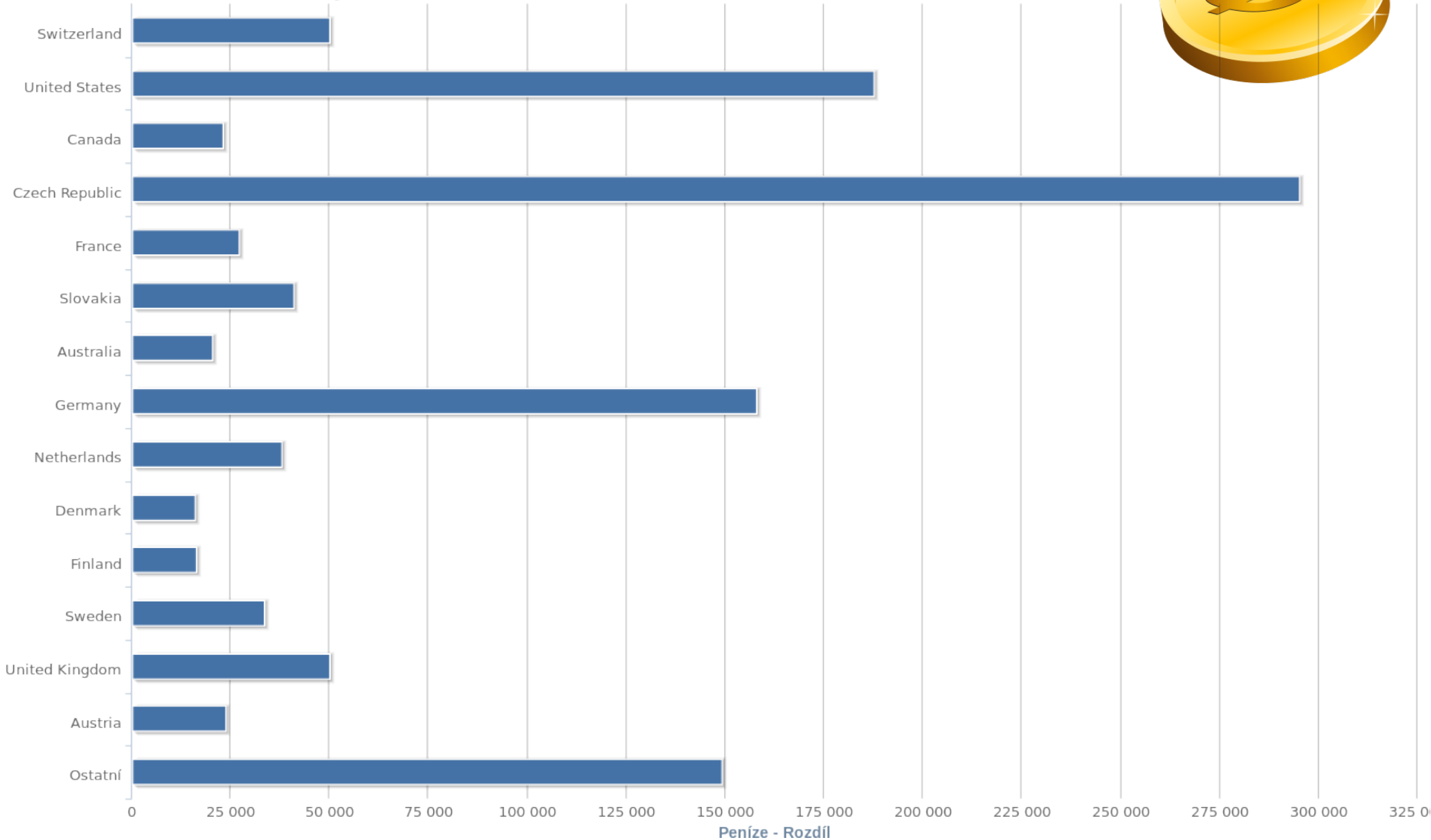
Campaign – total amount



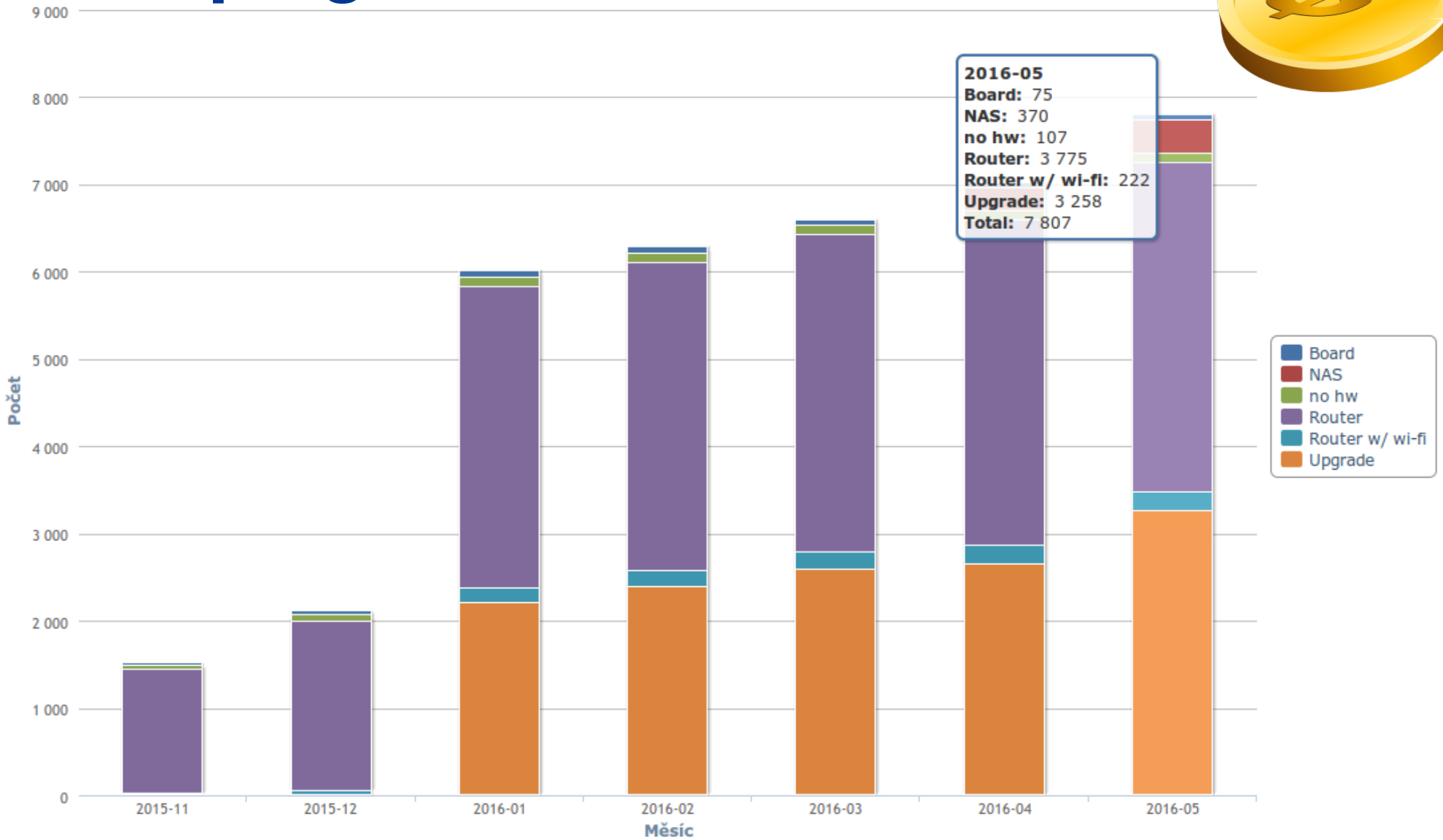
Campaign - additions

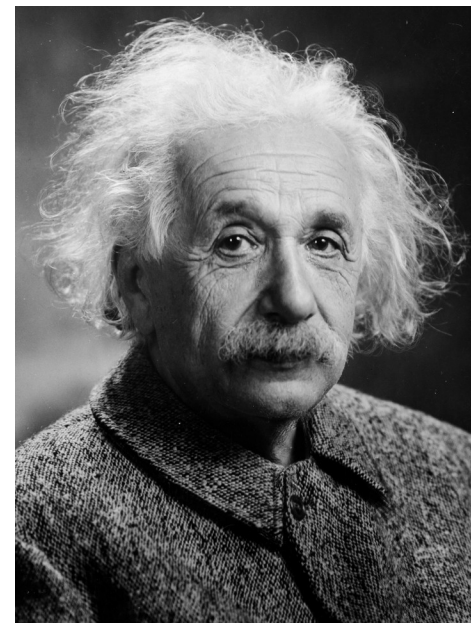
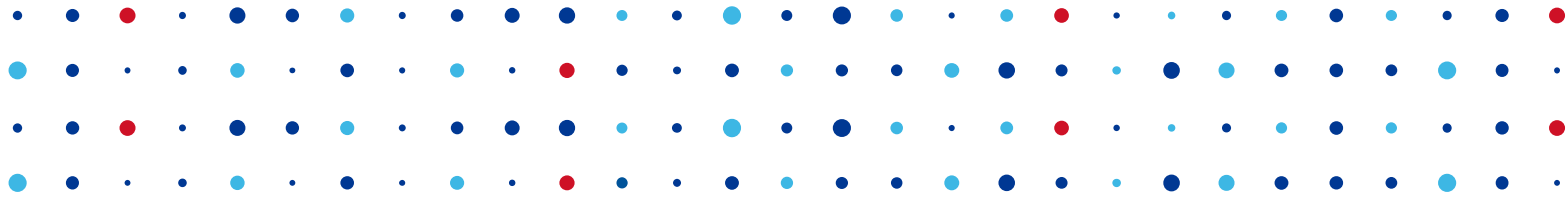


Campaign - countries



Campaign - orders





Perks and stretch goals

**A person who never made a mistake
never tried anything new.**

Albert Einstein



Perks - products

- „Products in an e-shop“
- How to motivate campaigners – time/volume limited offers – „to add a sticker does not cost anything“
- Board, router, Wi-Fi, no Wi-Fi; memory 1GB vs 2GB
- LTE (3 variants), Hacker pack, Wall mount
- Poster, t-shirt, sticker, photo - #facepalm



Stretch goals

- Colors – #facepalm
- Mobile app
- Extension à la RasPI
- Monitoring and parental control
- 3 years warranty



Metal case



Everything has beauty, but not everyone can see.



Confucius

Stretch goals

- Easy OpenVPN configuration
- Active bandwidth monitoring
- Configuration backup
- Educational videos
- EMMC flash – 4GB → 8GB

(luckily we had no time to promise more)

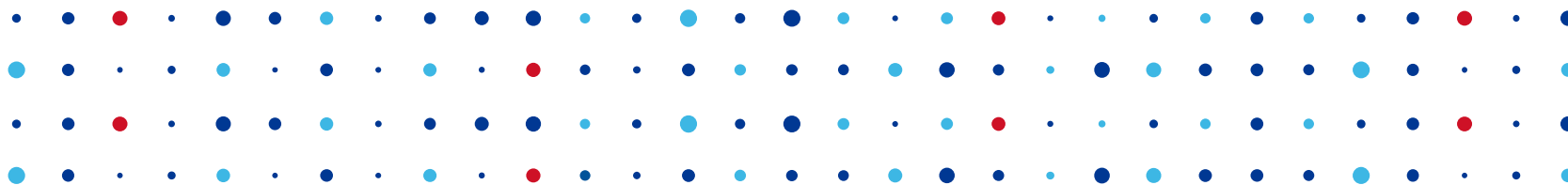


Logistics



- Simple calculation of the variants – just routers
 - Router: $3 * 2 * 2 = 12$
(3 colours, wi-fi/no-wi-fi, 1GB/2GB)
 - + power source: $12 * 4 = 48$
 - + stickers, photo, wall mount, LTE
 $48 * 2 * 2 * 2 * 4 = 1536$
 - + t-shirts (2 colours; M:S,M,L,XL,XXL,3XL; F:S,M,L,XL)
 $1536 * (2 * (6 + 4) + 1) = \underline{\underline{32256}}$
- And that's not all!



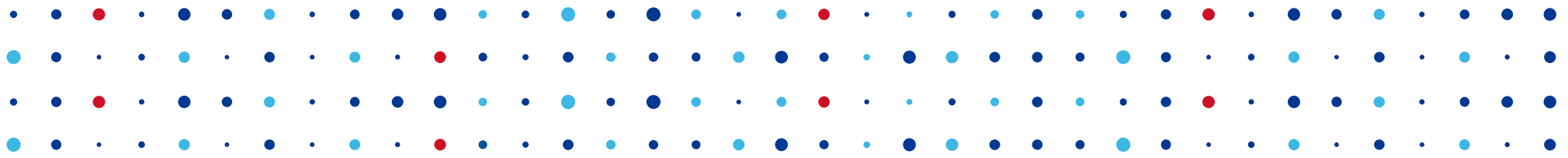


Logistics

I didn't fail the test. I just found 100 ways to do it wrong.

Benjamin Franklin



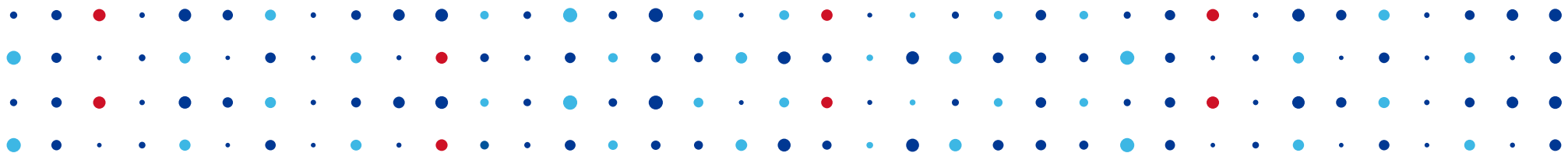


Logistics

We didn't fail the test. We just found more than 30000 ways to do it wrong!

Turris Omnia Team





Development, production a deadlines

Anything that can go wrong, will go wrong.

Murphy's law



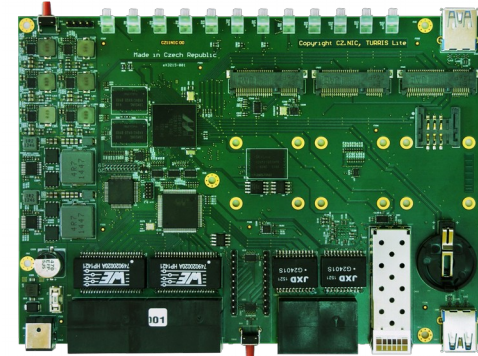
Plan



- Experience from Turrís 1.0 and Turrís 1.1
- Board prototype ready by the campaign start – but...
- Detailed timetable at the beginning
- Small omissions
 - Stretch goals
 - Production capacities (8000 pcs)
 - Logistics (!!!)



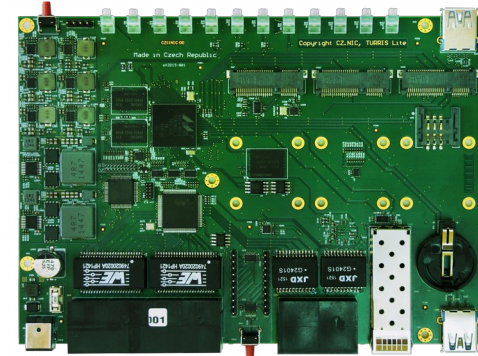
Prototypes – 1. series - PCB



- Manufacturer in Czech Republic
- 60ks: 44 + 16 late delivery – production difficulties – 27 partially functional
- Mechanically drilled, non-filled and non-overplated instead of requested laser-drilled, filled and overplated blind micro-vias in pads under CPU caused inflation of BGA balls.
- Agreement about compensation



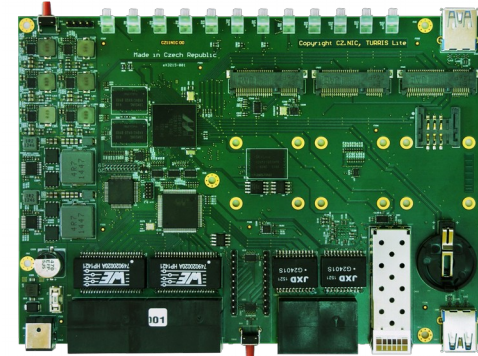
Prototypes – 2. series - PCB



- Manufacturer in UK
- 10 pcs ordered – 6 delivered and late
- Broken production machines
- Very bad surface quality - non-functional
- Agreement about compensation

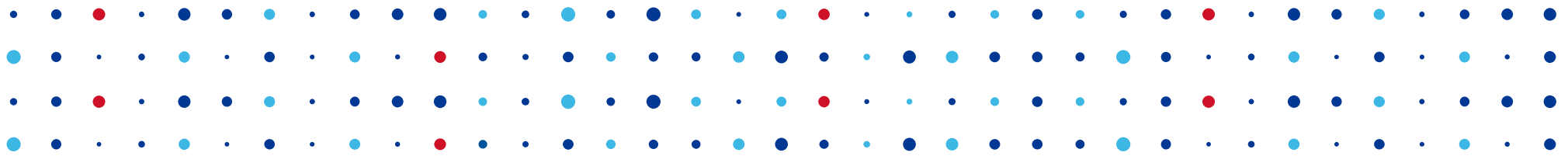


Prototypes – 3. series - PCB



- Manufacturer in China
- Planned to be a final prototype
- Already tested and delivered a correct series of boards
- Last test before production – everything checked, there can't be any problem
- 30 pcs ordered: delivered before deadline (!)





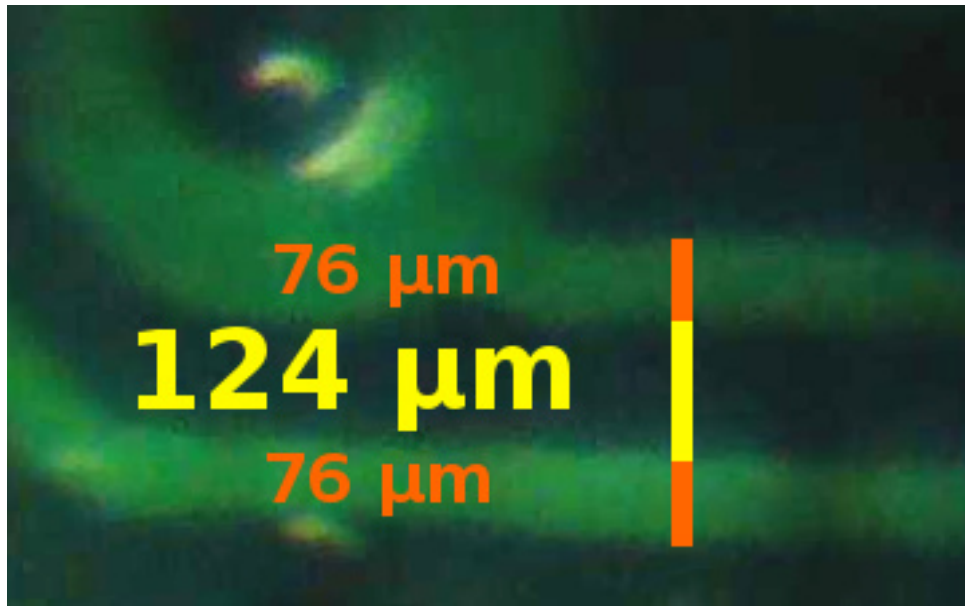
„Last“ prototype series

Murphy was an optimist.

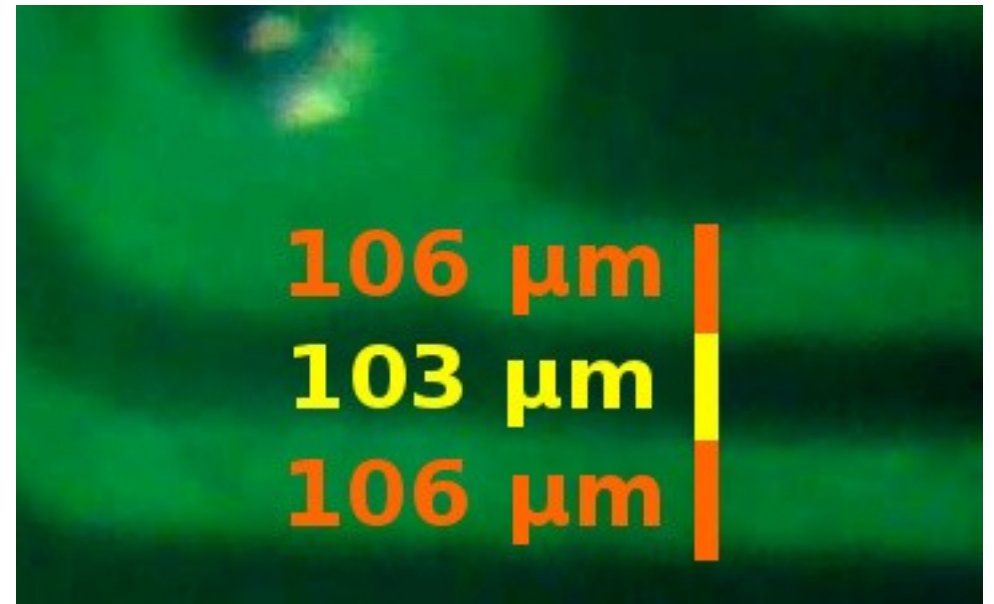


Prototypes – „final“ series - board

- Controlled impedance – not correct

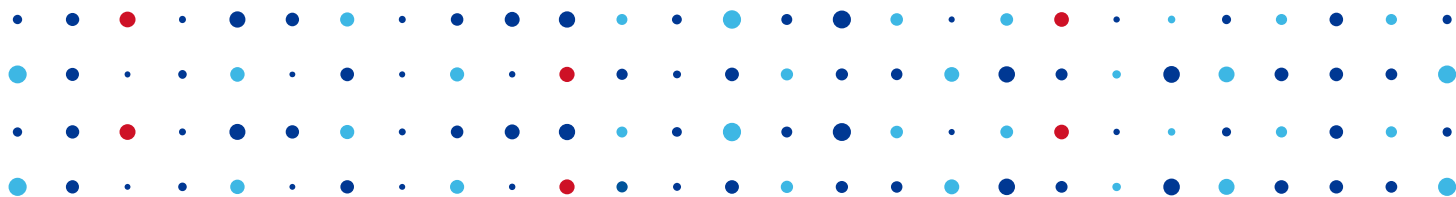


Correctly manufactures board with controlled impedance



Wrongly manufactured board – too thick connections , too small distance





Deadlines

**It does not matter how slowly you go
as long as you do not stop.**

Confucius



Deadlines

- Prototype series – 6 weeks if you rush (PCB - CN, assembly - CZ, testing, ...)
- Original promise – 04/2016
- Delivery started – 09/2016
- Very long tail
 - Production, finalisation - order
 - Logistics (more)
- Last router from 1st phase dispatched – 11/2016
- First e-shop – 10/2016 – (?!?)



And other some minor pleasures

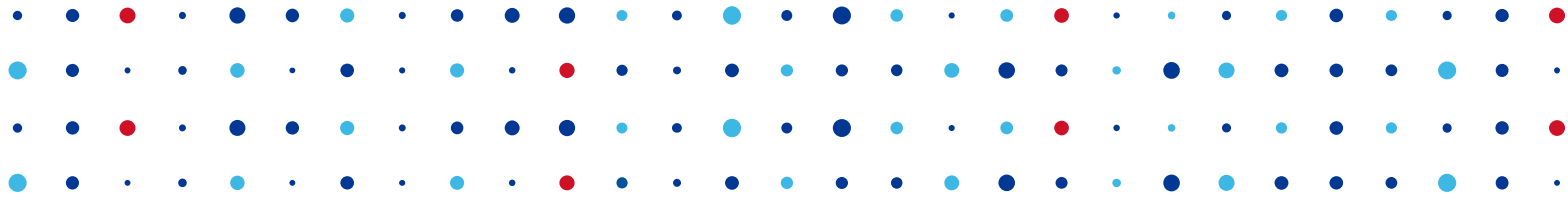
- Declaration of Conformity - testing
- Waste act
 - Electrical equipment
 - Batteries and accumulators
- Packaging act
- Copyright law, data protection act, ...
- VAT in EU



Future

- Stretch goals – parental control soon – better control of you home devices
- Mainly SW – to make it less geeky
- Still a lot of work on security and data analysis
- Cooperation with other open hardware vendors – smart homes
- No crowdfunding! (or not soon)





Thank you!

I would rather die of passion than of boredom.

Vincent van Gogh

