



This Briefing is: **UNCLASSIFIED**
Presented material has no legal obligations.

Wanna fly to Mars? / CzechTechSat

(1, 2, 3) **Jaroslav LAIFR**, *et. al.* (Callsign **OK1SFL**)

1) PhD cand. @ **CTU FEE, Dept. of Measurement**, Prague, Czech Republic

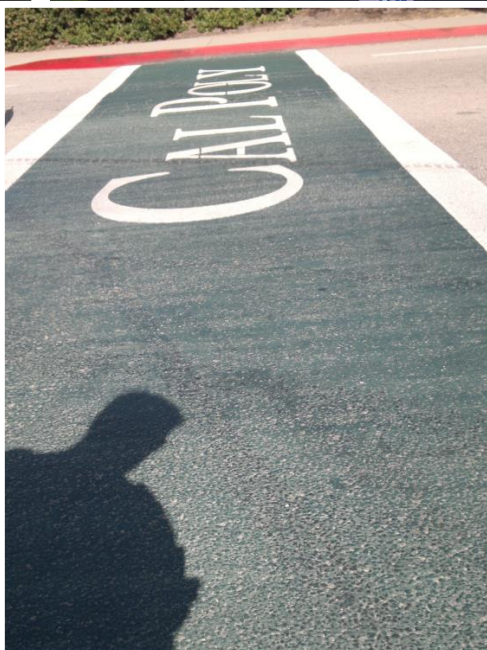
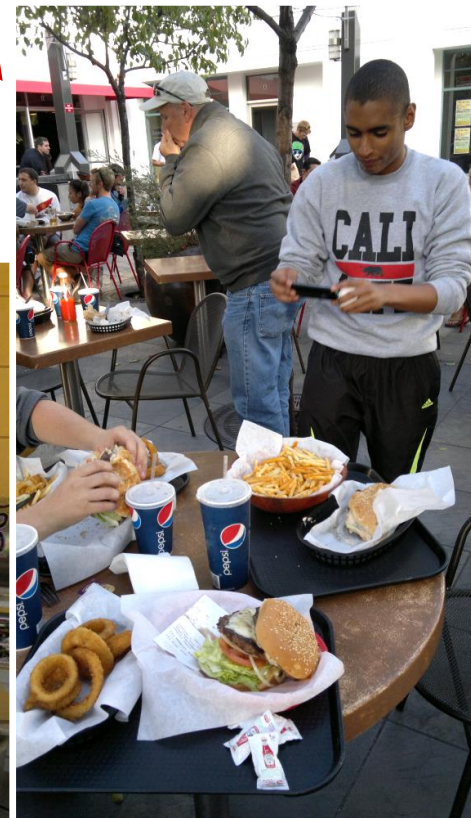
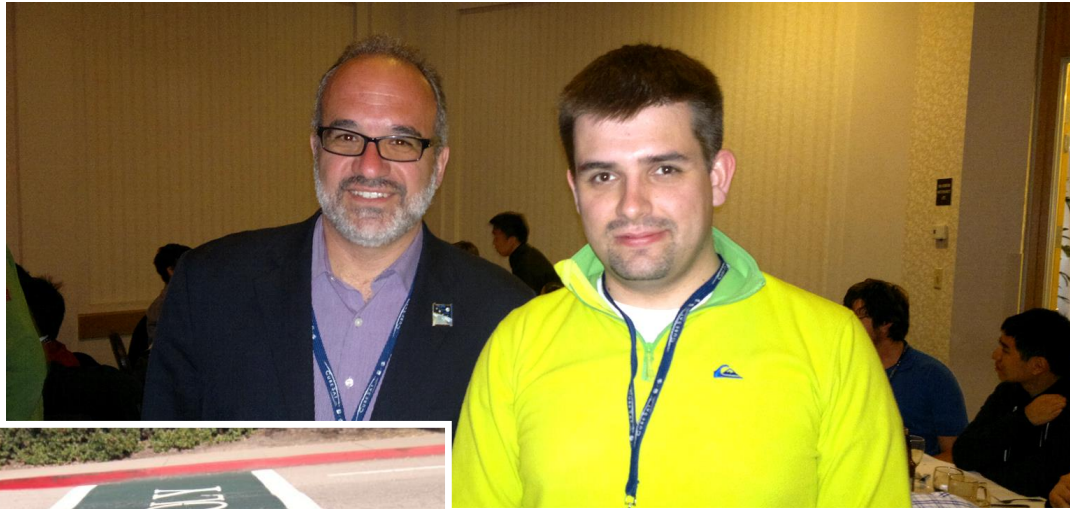
2) Technical Lead @ **Astronomical Institute of AS CR**, Solar Dept., Prague, Czech Republic

3) CEO & Founder @ **SkyFox Labs s.r.o.**, Prague, Czech Republic

ITU Symposium and Workshop on Small Satellite Regulation, CTU FEE, Prague, Czech Republic, EU, Mar 3, 2015

Welcome here, Small Sat Community! ;-)

I never thought You would come here.



Who am I? Where I came from?



JUICE / RPWI / LVPS – Technical Lead
Solar Orbiter / RPW / LVPS-PDU - Development Support
Lunar Lander – L-DEPP study - Technical Lead

- **Fault Tolerant systems** (e.g. Railway Fire-Safety)
- **CzechTechSat** Founder & Teamleader



On the Doorstep to **JPL**



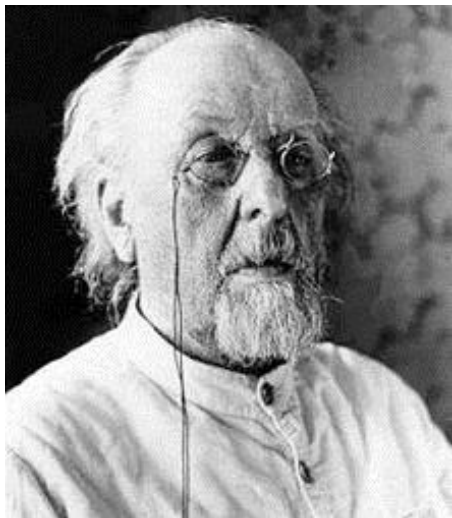
OBSPM **LESIA**, Paris



- **1st** Space-related **PhD.** Cand. @ CTU FEE

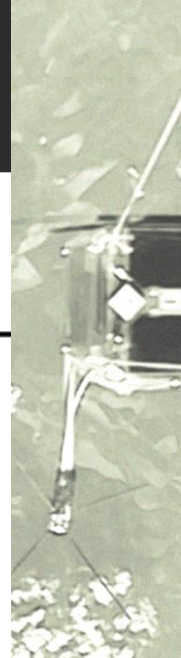
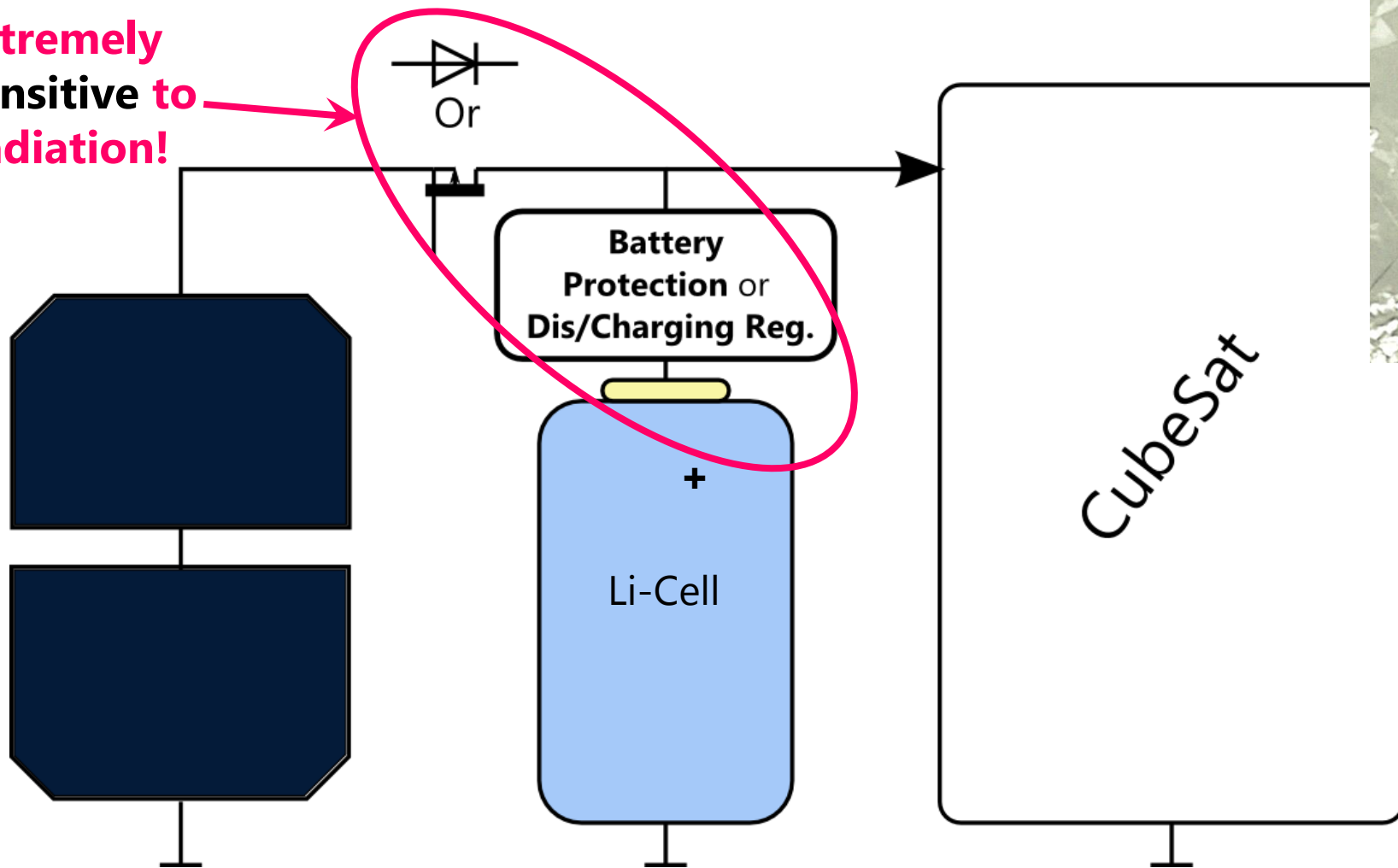
My Life Goal: To HELP people (Elon 😊) to visit Mars safely.

Mars. Feasible Challenge.



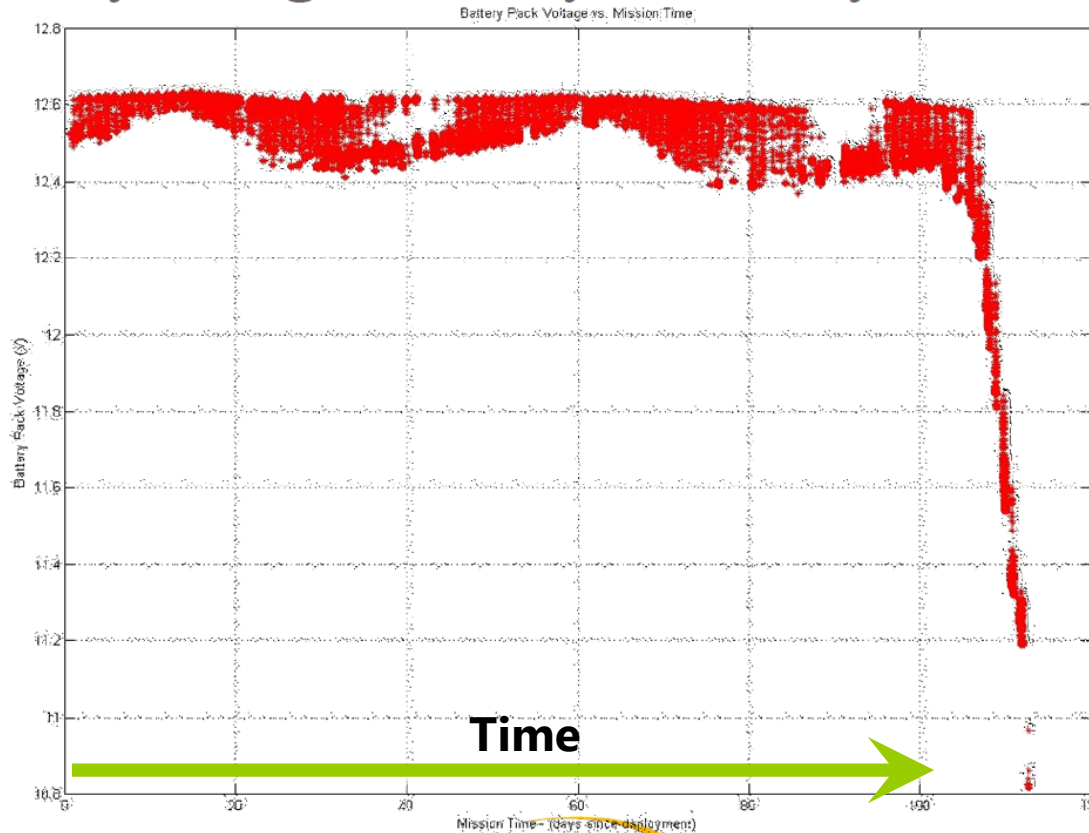
Radiation causes Power problems, ...

Extremely Sensitive to Radiation!



Radiation causes... (Not)-Living Example.

Battery Voltage Anomaly - 110 days



25

2014 CubeSat Developer's Workshop KySat-2



5/1/2014

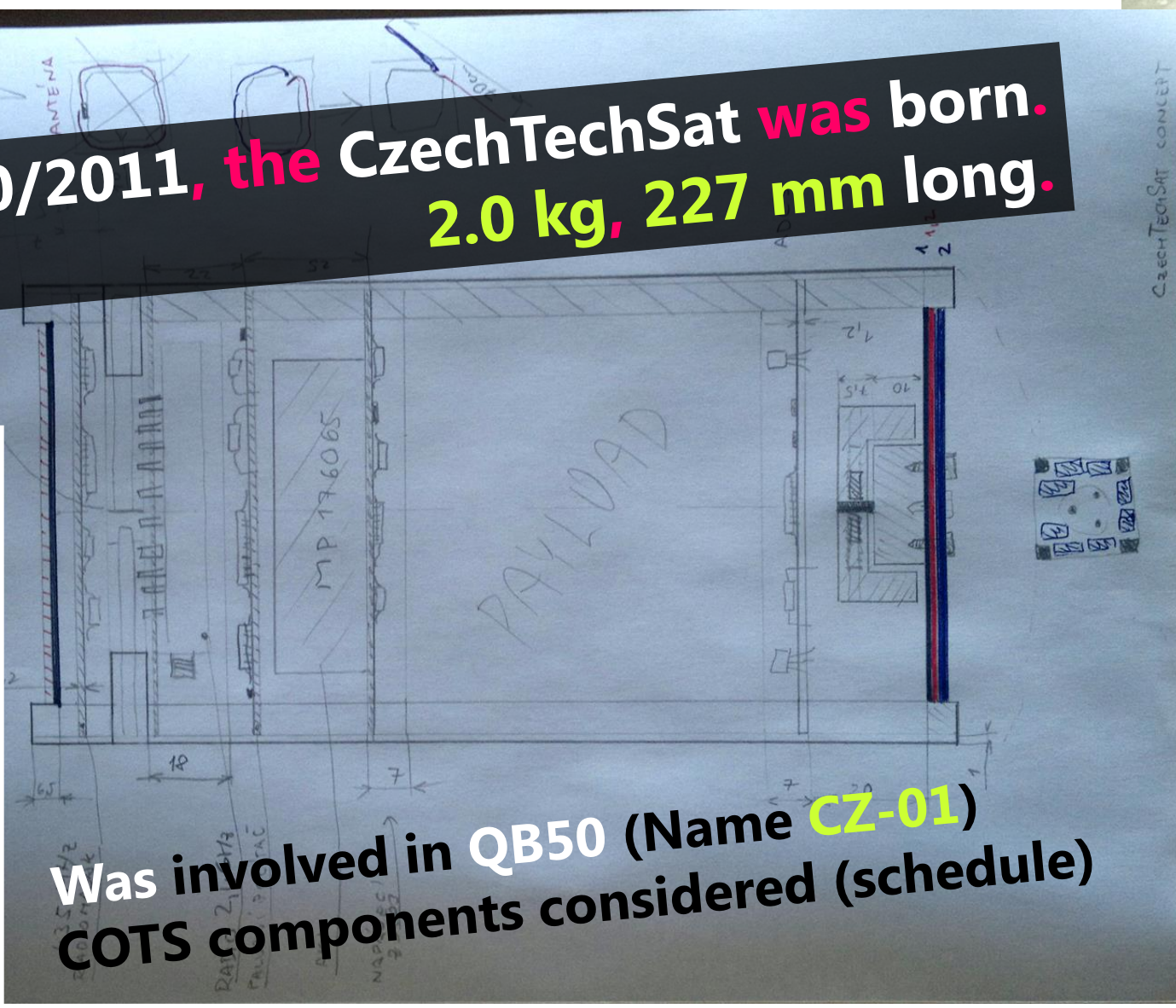
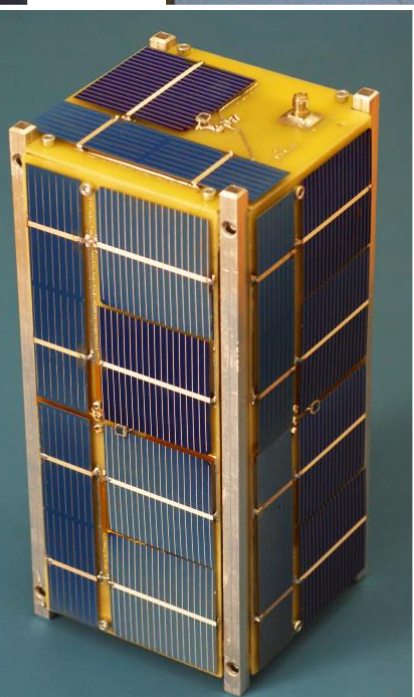
Image Source: http://www.cubesat.org/images/cubesat/presentations/DevelopersWorkshop2014/Rexroat_KySat-2.pdf

Image Credits: Kentucky Space, Cal Poly



Once upon a time...

in 10/2011, the CzechTechSat was born.
2.0 kg, 227 mm long.



Was involved in QB50 (Name CZ-01)
COTS components considered (schedule)

What's all about?

- Fly **First Space-Friendly™** satellite subsystems
- Active **ADCS, OBDH, EPS, BlueLED**
- COTS HW for **Deep-Space** missions

Image Credits: Matej Slavik, Hospodarske Noviny, CzechTechSat Team



NASA TRL 6 Heritage, 39 500 meters, Stratosphere



~400 kB of Telemetry downloaded



- UHF/VHF Antenna Deployed at 28 200 m
- Watch [YouTube videos](#) → [CzechTechSat](#)

The Project - Numbers

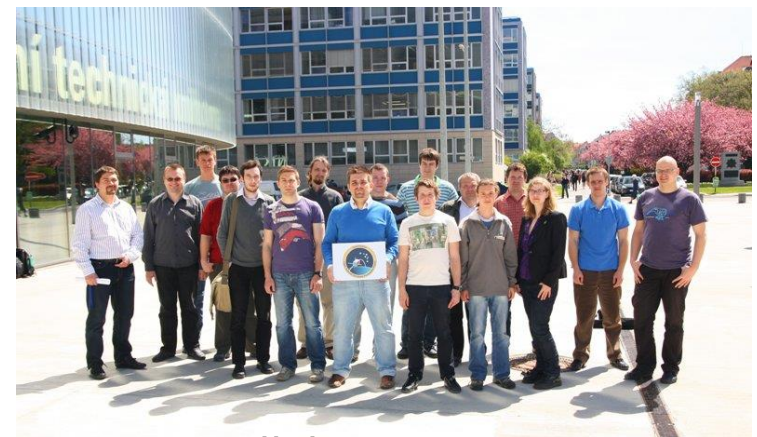
University Funding Breakdown

Fiscal Year	Budget
2012	7,2 k\$
2013	6,2 k\$
2014	10 k\$
Total (3 yrs)	23,4 k\$



Active Team

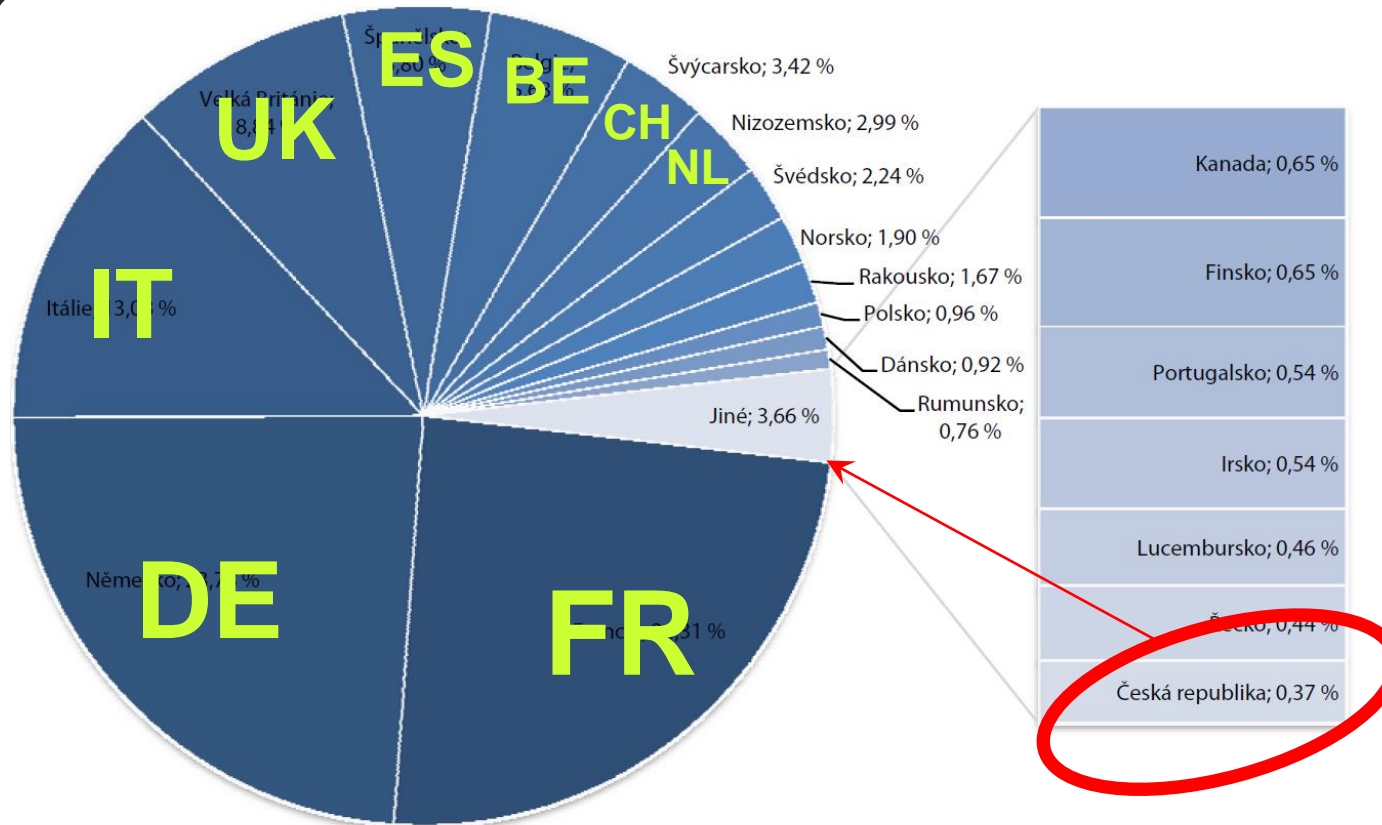
⇒ You **Need** a **Business Plan** to **Win**.



Past Collaborators, 2011



Brite-Austria Approach will never happen in CZ.

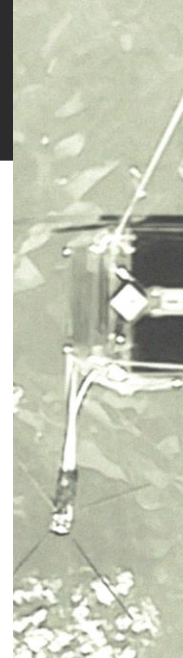


Contribution to ESA

ALL (space)



...Political Decision.







Your easy way to space.

The Way up is Now Opened!

The screenshot shows the SkyFox Labs website homepage. At the top is a navigation menu with links for HOME, PRODUCTS, ABOUT, HOW TO, REFERENCES, and CONTACT. The main header features the text "YOUR EASY WAY TO SPACE." and a sub-header stating "SkyFox Labs™ is a manufacturer of the World's First Space-Friendly™ components for CubeSats and Small Satellites you cannot find anywhere else." A red vertical button labeled "REMOVE BEFORE FLIGHT" is positioned on the right side of the header, with an arrow pointing to it and the text "CLICK ON ME!". Below the header is a section titled "Recent Products" featuring three product images: "Space Solder Set", "PCB Service", and "piNAV-L1". A button below this section says "See all Space-Friendly™ Products". The "DID YOU KNOW?" section contains the text "MOSFET-based electronics is the typical cause of a mission loss." and the hashtag "#spacefacts". The "Partners" section displays logos for KBmicro and LVR. The footer includes copyright information "© 2014 SkyFox Labs. All rights reserved.", social media links for Twitter and email, and the text "Created by appio".



- Private Company, Prague

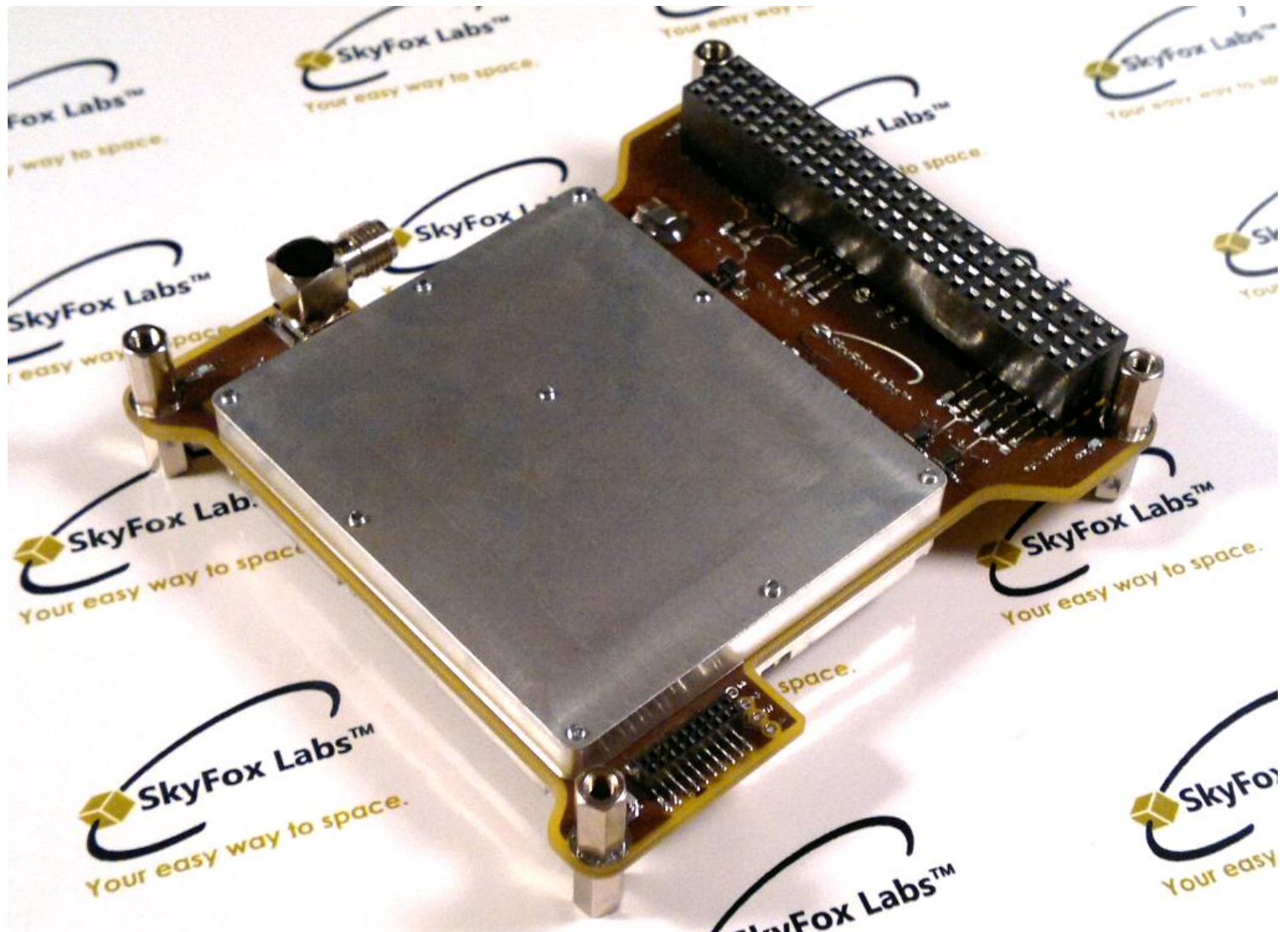
Proudly a **New Player** on **Small Sat Market** since **2014**.

New Product!

Image source: http://www.mancaveradio.com/wp-content/uploads/2012/02/Steve_Jobs_iPhone.jpg Credits: Apple



New Product – PC/104+ CubeSat GPS Receiver



<http://www.SkyFoxLabs.com>

Our Lucky-7 in TV and News! :)



Praha
Největší týdeník v České republice

5 PLUS 2
Jsem tam, kde jste

DNEŠNÍ VYDÁNÍ
Speciál
Chytré mladé hlavy
Jak žijí a v čem vynikají
+ TV program na celý týden

Číslo 36 ROČNÍK III 26. 8. 2014
www.5plus2.cz

Česko má vlastní družici. Díky studentům

Česko má vlastní družici. Díky studentům

Doříček koupí za každou cenu

mi hlavami

Česko má vlastní družici. Díky studentům

Doříček koupí za každou cenu

mi hlavami

Česko má vlastní družici. Díky studentům

Doříček koupí za každou cenu

mi hlavami

Česko má družici, místo profiků

Je to myslitelná realita družice, kterou Česko má. Nejedná se ale o komerční projekt, ale o výzkumný. V dobrém slova smyslu je věc na soběstředných studentech a zaměstnancích ČVUT.

Česko má družici, místo profiků

Je to myslitelná realita družice, kterou Česko má. Nejedná se ale o komerční projekt, ale o výzkumný. V dobrém slova smyslu je věc na soběstředných studentech a zaměstnancích ČVUT.

Česko má družici, místo profiků

Je to myslitelná realita družice, kterou Česko má. Nejedná se ale o komerční projekt, ale o výzkumný. V dobrém slova smyslu je věc na soběstředných studentech a zaměstnancích ČVUT.

Vývoj studentského satelitu

ČVUT sestavují v rámci projektu CzechSat-7

ale vyvinuli studenti

ČVUT sestavují v rámci projektu CzechSat-7

ale vyvinuli studenti

ČVUT sestavují v rámci projektu CzechSat-7

Události

ČVUT sestavují v rámci projektu CzechSat-7

Chtějí do kosmu. Vydělávají si na to výrobou GPS čipů

ČVUT sestavují v rámci projektu CzechSat-7

Chtějí do kosmu. Vydělávají si na to výrobou GPS čipů

ČVUT sestavují v rámci projektu CzechSat-7

Credits: Mafra, Hospodarske Noviny, Ceska Televize, LVR, CzechTechSat Team

And many more...

Future?



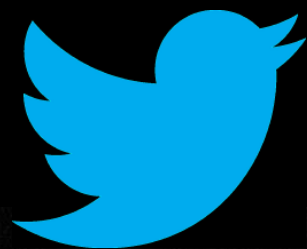
- **SSO** (600 km Alt., 98° Incl.)
- Radiation around Poles – Good Chance for Reliability TESTs!
- **Chinese Long March 2D** or **SpaceX**
- Negotiation, licensing **in progress**, **API/A + IARU Submitted!**
- **Space-Friendly™** Hardware Maiden Flight foreseen in **H1, 2016**
- **7th** czech satellite in **Space** (since **1978**)
- **WISH US LUCK! ;-)**
- **Still** Looking for Low Cost Back-up **Flight** Opportunity



Image Credits: Wikipedia/CNSA

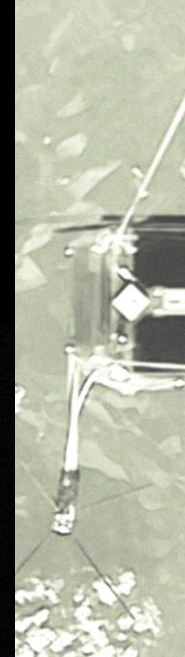
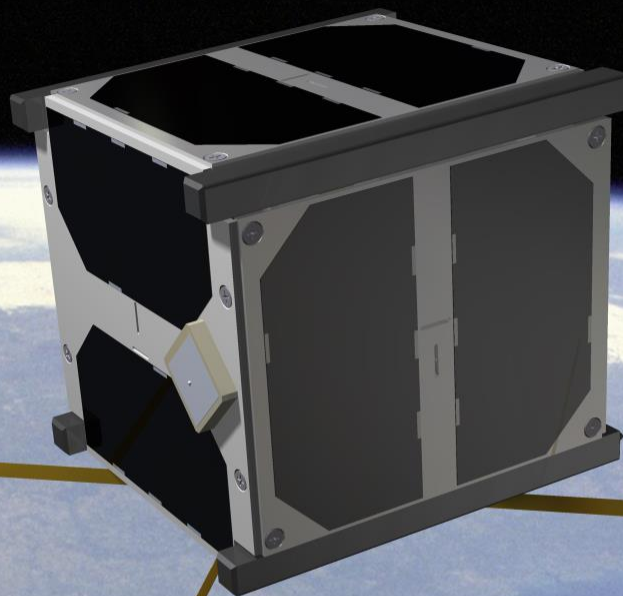


Join us on



!

@SkyFoxLabs



73 de OK1SFL!