



Czech Space Alliance



The Czech Republic and capabilities / activities of the Czech space SMEs



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For the Austrian space industry, Czech Embassy



Czech Space Alliance



Summary of the presentation

- the Czech Republic background
- the Czech Republic and ESA
- the Czech Space Alliance objectives
- areas of competence / ESA projects
- international relations
- mid-term goals



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Czech Republic key milestones

- 1918 Czechoslovakia founded
- 1989 velvet revolution → return to democracy
- 1999 member of NATO
- 2004 joined EU
- 2005 started participating in ESA transition PECS
- 2007 joined the European Southern Observatory
- 2008 acceded to the ESA convention





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We are small, but

long history in space science & technology

- astronomy and propulsion discoveries
- development of 2-stage **launchers** in 1950's
- participated in all Inter-cosmos missions, including key payloads such as the VEGA stabilised platform
- 5 **national satellites** in Magion series 1978-1996
- the last Czech built satellite 2003 : Mimosa μ -accelerometer mission
- more Czech space sciences history in IAF paper

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www.iguassu.eu/downloads/Czechs_manuscr2b.doc

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Czech Republic in space now :

- **faster than planned** graduation from ESA's PECS "the transition to full membership programme"
- **Full ESA Membership since November 2008**
- Czech/ESA industry incentive scheme till 2014
- very active association of space industry established and its members are very successful in ESA bids
- **ESA enforced** transparent bidding conditions
 - ➔ **start of more active participation of industry**
 - ➔ **correction of the imbalance science/industry**



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Past difficult conditions for industry improving rapidly

It is finally understood, that ESA **R&D is mostly industrial**

Key ministries - Education, Industry, Environment and Foreign Affairs, led by Transport and co-operating with ESA, got together and proposed the "**National space plan**"

- **the Czech Space Alliance strongly contributed to, and influenced, the content**
- **the government approved the plan in May 2010**

www.spacedepartment.cz/en/wiki/National-Space-Plan



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The outcome of the National Space Plan

Past experience analysed, recommendation for future

→ **April 2011** - the government approved transfer of space coordination and the Czech representation in ESA to the Ministry of Transport

→ **Ministry of Transport** set up the national space coordination board including all interested ministries; replaced former private interests by civil servants

- Czech ESA Task Force -completed end 2010
- ESA boards and ESA council – completed Oct. 2011

www.spacedepartment.cz/en/wiki/National-Space-Plan



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The way ahead

The space policy and co-ordination is now back in the hands of public institutions and civil servants

There is a healthy co-operative spirit of all interested ministries – Transport, Education and Industry – and industry

The Czech Republic space budget is reasonable

- 5.4 M€ per annum to the ESA mandatory budget
 - Over 4 M€ per annum approx. to 13 optional programs
- ➔ **Total annual ESA budget around 10 M €**



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How does SME industry help itself ?

By associating in 2006 in the “Czech Space Alliance” to share resources to:

- lobby the government for space industry interests
- share experience & information
- build on Czech track record in space
- promote Czech space industry in ESA member states & worldwide
- establish relationship with other space alliances, agencies & entities
- co-found in 2007 the pan-European association of national space SME alliances, the SME4space





SME4SPACE

www.sme4space.org

Czech Space Alliance achieving its goals

- membership grew from 5 in 2006 to 17 in 2011
- 80% of Czech business in both ESA tenders (2009+2011) restricted to the Czech Republic
- 100% of Czech turnover won in standard international competitive ESA bids
- recognised by most Czech stakeholders as a partner and the source of practical expertise in space business and working with ESA
- regularly consulted by ESA, ministers, deputies and other decision makers in the ministries of Transport, Education and Industry


CSA members (1) : **winning contracts in ESA tenders**

- **ANF Data** – control systems software design
(Austrian parent Siemens )
- **AVX** - world's No. 1 tantalum and niobium capacitor
manufacturer (Japanese parent KYOCERA )
- **BBT** – material science, furnaces on the MIR (1994-
2001), used from EuroMIR'94 to Perseus'99
- **CSRC** – space electronics projects including h/w & s/w
design, cleanroom manufacturing, ESA certification
- **EGGO Space** – passive electronic components test
facility development

CSA members (2) : **winning contracts in ESA tenders**

- **Evolvsys** – flight s/w for payloads & data processing (German parent Evolving Systems Consulting )
- **Frentech** – design and manufacture of precision tooled assemblies for satellites
- **Iguassu Software Systems** – satellite navigation, EO processing, studies
- **LK Engineering** - industrial engineering, consulting, advanced computational technologies
- **SYNPO** – EADS CASA contract to develop launcher internal tank lining, ESA epoxy core development

CSA members (3)

- **RIGAKU** – R&D, world class precision X-ray optics and cameras (Japanese parent company )
- **Astrium CZ** – local subsidiary of EADS Astrium D
- **G.L.Electronic** - quality control, testing & unit integration (ESA certification), production
- **UNITES** – development and production of dedicated test and measurement systems
- **Chipinvest** – diagnostics & microsystems
- **Compotech** – structural composite tubes
- **5M** – development & production of composites materials

Some strengths and weaknesses of Czech industry - 1

- + mostly SMEs → nimble, flexible, innovative
- + larger companies typically not interested as margins too low and initial hurdles high
- + good space technology background
 - space background **was not in commercial context**
 - low awareness of our skills & companies abroad
 - only **minimal finances** available to help space SMEs
 - old habits (until recently a closed totalitarian system & no market economy experience) die hard

Some strengths and weaknesses of Czech industry - 2

+ SMEs quickly getting involved in ESA work

- N.B. only since the FULL ESA membership

+ SMEs showing very good results in technology level and integration into ESA structures & procedures

BUT

- intensive effort to make industry partners in the other member states aware of our existence and experience

weighs heavily on our SME's cash-flow

- Discussion of focused support by the government agencies not yet concluded

CSA projects during the ESA transition programme PECS

- satellite Navigation EGNOS & SISNeT
- GRID technology in EO/SAR
- set up& operation of the 1st CEE EGNOS monitoring station
- ESA study of space SME needs in PECS countries
- SCOS-2000 TT&C Extension & Mission Control System Demo.
- Navigation Educational Tools for ESA GNSS
- Spatial Observation Services & Infrastructure in CZ (SOSI-CZ)
- Image Info. Mining in Time Series (**int'l. competitive tender**)
- development of novel X-ray optical subsystems

Other sample projects not under direct ESA contract

- **Galileo** search & rescue, Indra consortium for GJU
- precision manufactured satellite components for **US**
- ground segment data processing s/w for the **Russians**
- ESA SWARM mission μ -accelerometer : experiment flight software & electronics **for VZLU / Astrium**
- IRIS / Antares – EU satellite communications system for civilian air-traffic, subcontracted to **Thales/INDRA**



1st ESA tender for the Czech R. (2009)– our results

The following CSA members selected

1. ANF Data (TTC over WAN, study)
2. AVX (low ESR tantalum capacitor)
3. BBT (acousto-optic device for hyper-spectral imaging)
4. CSRC (MTG preparatory - electronics)
5. Evolving Systems (software)
6. Frentech (design & precision tooling of satellite valve)
7. Iguassu Software Systems (EGNOS RT monitoring)
8. Iguassu Software Systems (EO parallel processing)
9. L.K.Engineering (methods of thermal testing)

2nd ESA tender for the Czech R. (2011) – our results

The following CSA members selected

1. ANF Data (Transient Objects for M&C in GSSC/GMMI)
2. CSRC (SMT Assembly Verification ECSS-Q-ST-38)
3. CSRC (Timepix-based Universal Radiation Monitor)
4. EGGO (Passive Components Test Facility)
5. Frentech (Antenna Deployment & pointing Mechanism)
6. Iguassu Software Systems (Distributed Raster Processing Framework)
7. Iguassu Software Systems (Multi-Constellation Long-term GNSS assessment)
8. Synpo (EPOXY Core Development)

Further successes in ESA's international competitive tenders with partners

- “Interference Monitoring for GNSS Reference stations” with Astrium Germany
- “Open-standard On-line Observation Services” (O3S) with EOX Austria



Further bids for ESA's announcements of opportunity in the pipeline



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Overseas space promotion and relations

ESA advises industry to develop **space business globally**

CSA is most active in developing relationship in :

ESA member states - Austria, France, Germany, Italy, Netherlands, Portugal, Spain, UK

ESA candidate member states – Slovakia, Slovenia

Overseas – Japan JAXA/SJAC/Jaspa, Brazil AEB/INPE, Argentina CONAE, Chile ACS, Mexico AEXA, Canadian Space Agency

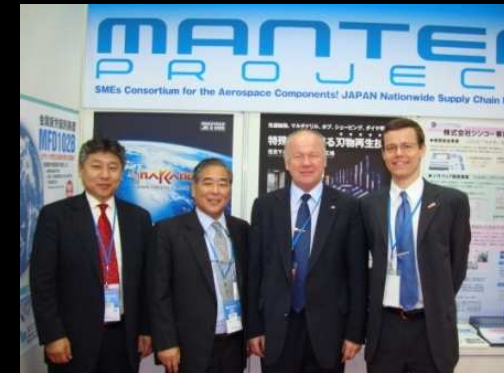




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Example of CSA's worldwide promotion



3rd Czech Japan Technology Days 2007

5th Czech Japan Technology Days 2010

- supported by the government agency Czechinvest
- meetings with JAXA, the Japanese Society of Aerospace Companies SJAC, SME association MANTEN/JASPA
- 2 return visits from JAXA, SJAC and JASPA to Prague, including the SAC chairman Ikegami sensei and JAXA President Tsukamoto



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International Astronautic Congress Oct. 2010 Prague

- Czech - Japan space seminar
- CSA – SpaceNed seminar
- Czech int'l. space seminar
- meeting with the AEB president
- presentation of the alliance in the plenary session
- the alliance became a member of the IAF



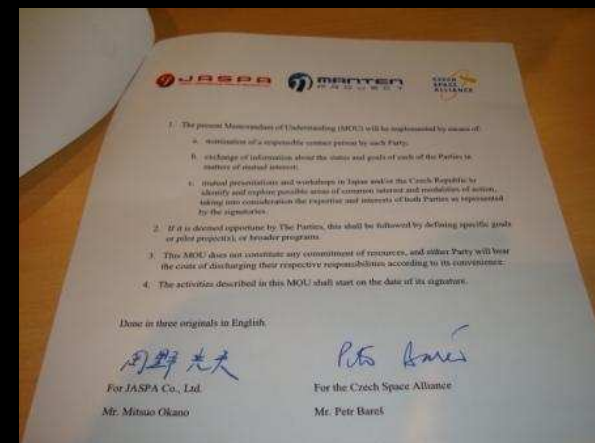
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International agreements



- co-operation MOU between CSA and the association of Japanese SMEs JASPA/Manten
- signed 25th May 2010 in Tokyo, during the Czechinvest event “Czech Japan Technology Day”
- follow-up meetings in Prague in Sept. 2010, Tokyo in Nov. 2010. May 2011, October 2011



International agreements



- space co-operation
“Letter of intent” with the
Brazilian Space Agency
- drafted and negotiated by
the CSA in 2008
- 11th Nov. 2010 signed by
AEB President Dr. Ganem
and Minister of Transport Mr.
Barta





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LOI with the Brazilian space agency



Following the signature of the LOI
in November 2010
Czechinvest & CSA organised
“Czech Brazil Space Industry Days”
with presentations for
AEB in Brasilia,
• INPE in S. J. Dos Campos,
CTA in S. J. Dos Campos
Air-force in Alcantara launch base





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And next ?

Follow the recommendations of the National Space Plan. The Ministry of Transport is tasked with the co-ordination of the **Implementation Plan**

Prepare the strategy for the 2012 **ESA ministerial council**, such as the revision of the optional programmes subscription. The Czech Space Alliance has been asked for provide their inputs

By the end of the industry incentive scheme in 2014, develop enough competencies (by no means mostly technological!) to be ready for **full scale competition across ESA** states.

Evaluation criteria for the Space Plan goals (2015-2016)

- overall geo-return in ESA of at least 86%
- balanced space participation academy/industry (20% academy & 80% industry)
- 1 Czech-owned sustainable space product
- 1 sustainable commercial activity exploiting space
- 1 on-going project, outside ESA's "Space Science Programme", with an excellent example of cooperation/integration of academia/industry.

Summary of CSA space contracts with ESA

- 1st Czech open call AO 6052 (2009)
80% of industrial budget = 1.92M €
- 2nd Czech open call AO6647 (2011)
78% of industrial budget = 2.78M €
- Alliance successes in competitive international bids = 100% of known Czech industry budget
- Out of the 23 industry projects awarded in the Czech open tenders, $\frac{3}{4}$ went to alliance members

Conclusion

The Czech Republic www.spacedepartment.cz/en/

- progressed rapidly to the full ESA membership
- approved the strategic National Space Plan
- is establishing transparent conditions for industry
- has measurable goals for the end of the incentive scheme

The Czech industry www.czechspace.eu

- won **40 ESA projects** since 2005
(12 in PECS, 11 in AO6052, 12 in AO6647, and
4 ESA and 1 Galileo international competitive tender)

We are now looking for further partnerships and opportunities to demonstrate our skills, creativeness & enthusiasm

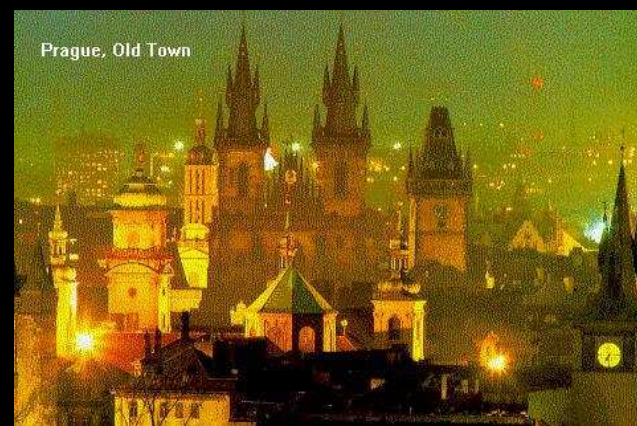


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Thank you for your attention

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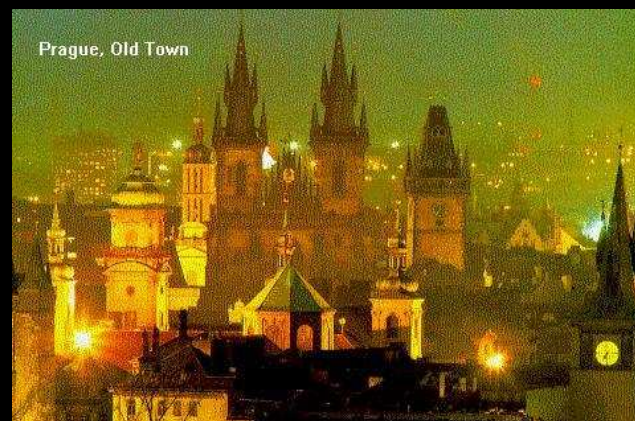
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