

UNISEC-Southern Africa: Our big picture

By

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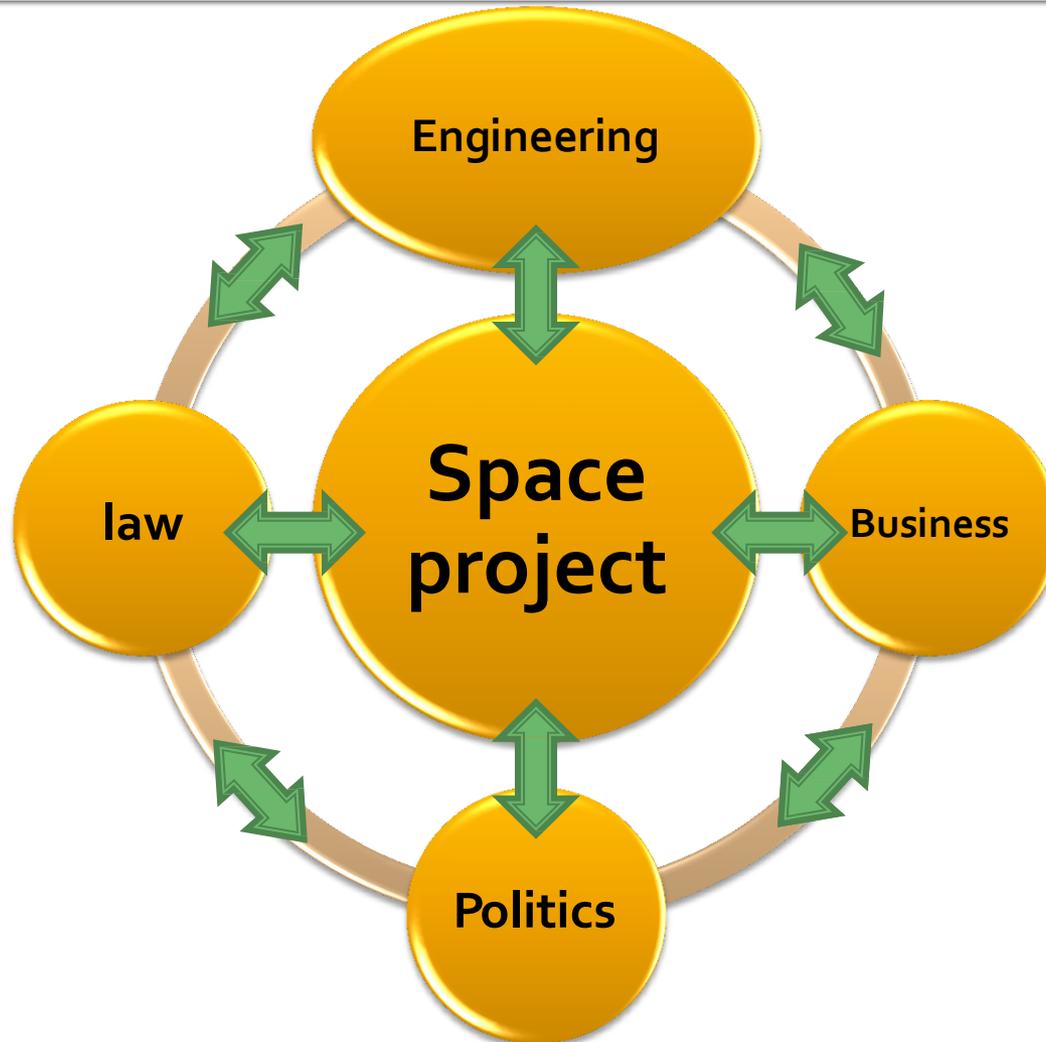
Outline

- Our vision
- The big picture
- What we have
- The way forward
- Conclusion

Our vision

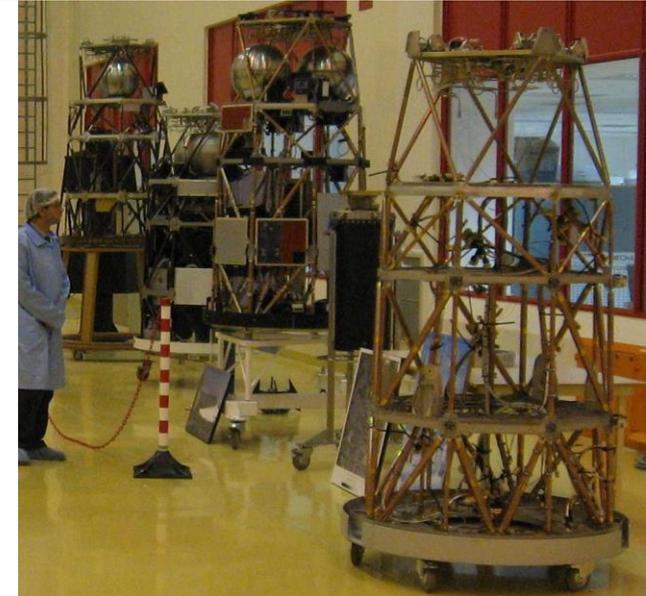
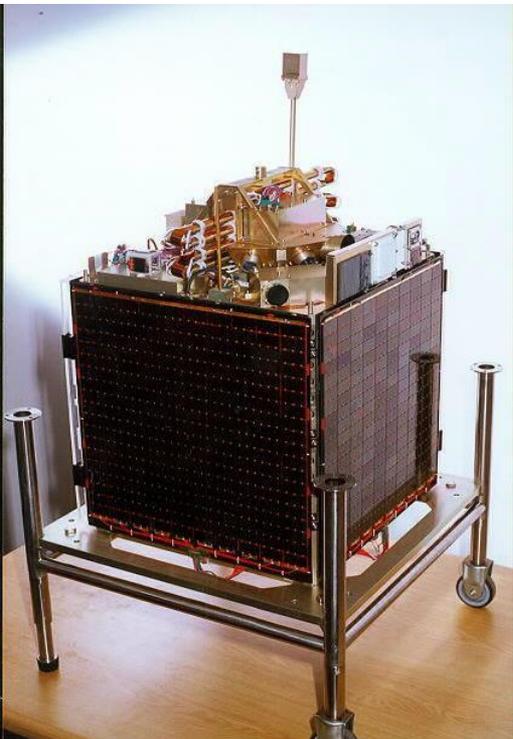
To drive and facilitate the growth of a new breed of space engineers within the southern Africa region through effective and efficient inter- and intra- university collaboration, and the optimal use of research facilities and industry.

The big picture



What we have: >>> History...

- **1980-1994:** Military space program
Unfortunately the satellite was not completed



- **1992-1998:** SunSat (64 kg), built by Stellenbosch University graduate students and staff.

Launch: 23/02/1999 on Delta II USAF

Altitude: 640 km to 850 km

Last contact: January 2001

>>> Experience ...

- **2005-2006:** SumbandilaSat (83 kg), built by SunSpace in about 15 months
Launch: 17/09/2009
Altitude: 505 km

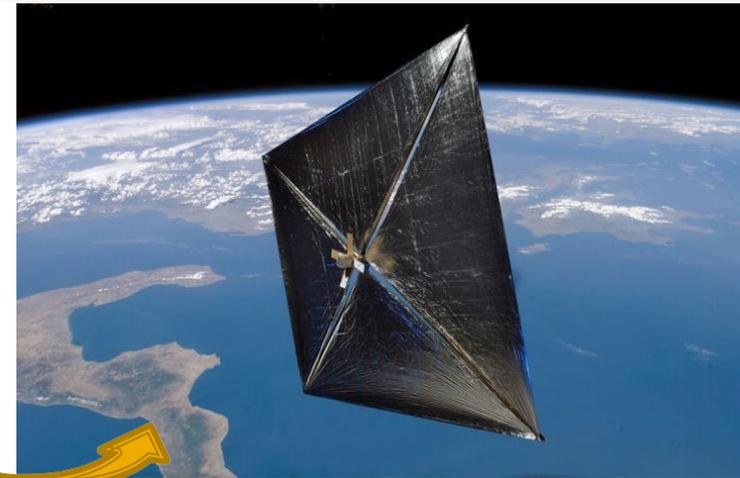


Tokyo Haneda Airport Area
(about 12 km by 8 km)

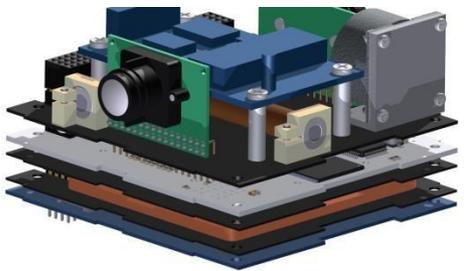
>>> Projects...

- **European Commission's 7th Framework Programme (FP7):**

- Stellenbosch University participating in the "DeorbitSail" Project.



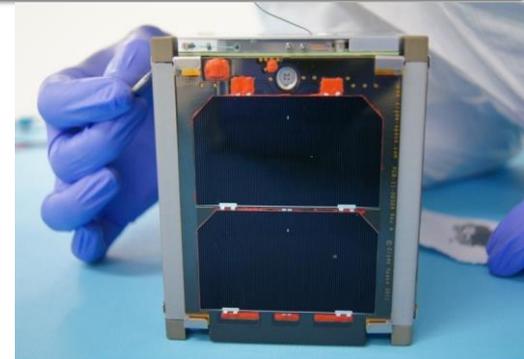
- Stellenbosch University leading the "ZA-AeroSat" Project with CPUAT/F'SATI collaboration, as part of the QB50 constellation.
- Stellenbosch University contributing 15 ADCS bundles to other QB50 CubeSats.



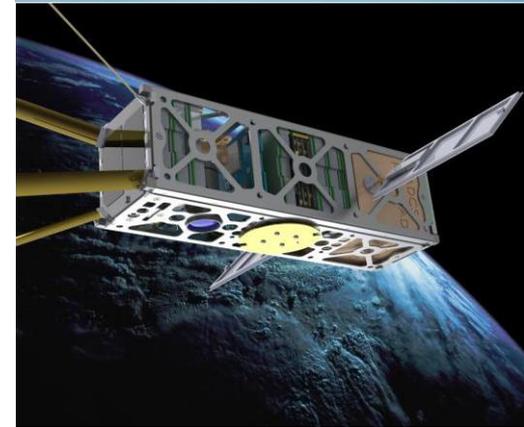


- CPUT/F'SATI leading "ZACube-1" and "ZACube-2" projects with Stellenbosch University contributing the control system design
- ZACube-1 was launched on November 21st 2013. Africa's first nano-satellite is alive and called **TSEPISO** (Promise)

ZACube-1

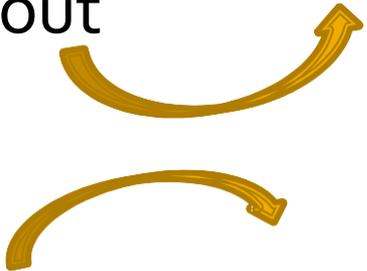


ZACube-2



>>> Outreach...

- Space science and technology is promoted through high school outreach both in and out of South Africa
- **CanSat Program:** CPUT/F'SATI uses the CanSat program as an outreach tool, a teaching tool and a commercial venture



>>> Partnerships...

- Inter-University partnerships
 - Cape Peninsula University of Technology & Stellenbosch University
- University-Research facility partnerships
 - Cape Peninsula University of Technology & National Research Foundation / iThemba Laboratory for Accelerator Based Sciences
 - Stellenbosch University & National Research Foundation / iThemba Laboratory for Accelerator Based Sciences



- Stellenbosch University & Agricultural Research Council
- University-Industry partnerships
 - Stellenbosch University & Denel's Spaceteq
 - Stellenbosch University & Space Commercial Services (SCS)

The way forward

1

- State of space affairs in Southern Africa
- Strength and weaknesses

2

- Propose partnerships and collaborations
- Strengthen core knowledge

3

- Include other relevant university departments
- Revisit 1 and 2 and expand

Conclusion

- MUCH work to be done
- Southern Africa is Central to the development of space engineering in Africa
- A successful UNISEC-Southern Africa is an imperative for Africa

Acknowledgements

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- Prof. Herman Steyn
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- SANSA
- UNISEC



**Thank you for your
attention !!**