

Local Chapter Activity Report

at the 8th UNISEC–Global Meeting

Jim Hefkey

New Zealand POC

History of Local Activities



APSS Became Active in 2016:

“A non-credit student enrichment programme available to ALL undergraduate students”

We do not know with certainty what the future holds for our graduates.

We do know that they will be asked to solve increasingly difficult problems, often in an unfamiliar environment, working in teams of people that do not all think the same way or have the same experience.

Space is an excellent analogue to prepare our students for this future.

History of Local Activities

- *Participated in CLTP6 in 2015*



- *Attended UNISEC-Global Meeting in 2017 Rome and 2019 Tokyo*



- *Held 5 local Mission Proposal Competitions*



- *Held 5 P-Sat Competition and Launch events*

Engaged with more than 700 undergraduate students across UoA

History of Local Activities

*November 20, 2020
APSS-1 became the first
New Zealand Satellite with
a scientific payload to
launch into space*

Orbital ID 2020-085D

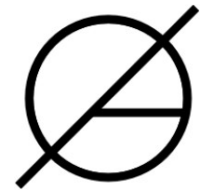
*Currently (2022) have
another 2 satellites under
construction and a further
2 in planning.*



History of Local Activities

Three Start Up Companies nurtured by the APSS

Zenno Astronautics: Received \$10.5M funding in 2022 and have hired several APSS graduates



Astrix Astronautics: Received \$0.5M pre seed funding and flew Tech Demo to orbit in 2022 on board Electron



Out There Astronautics: Currently competing in the \$100k Challenge and being nurtured in the APSS lab



And A Wedding !!

*Congratulations
Pavel & Julianne*



History of Local Activities

Lots of Success, BUT:

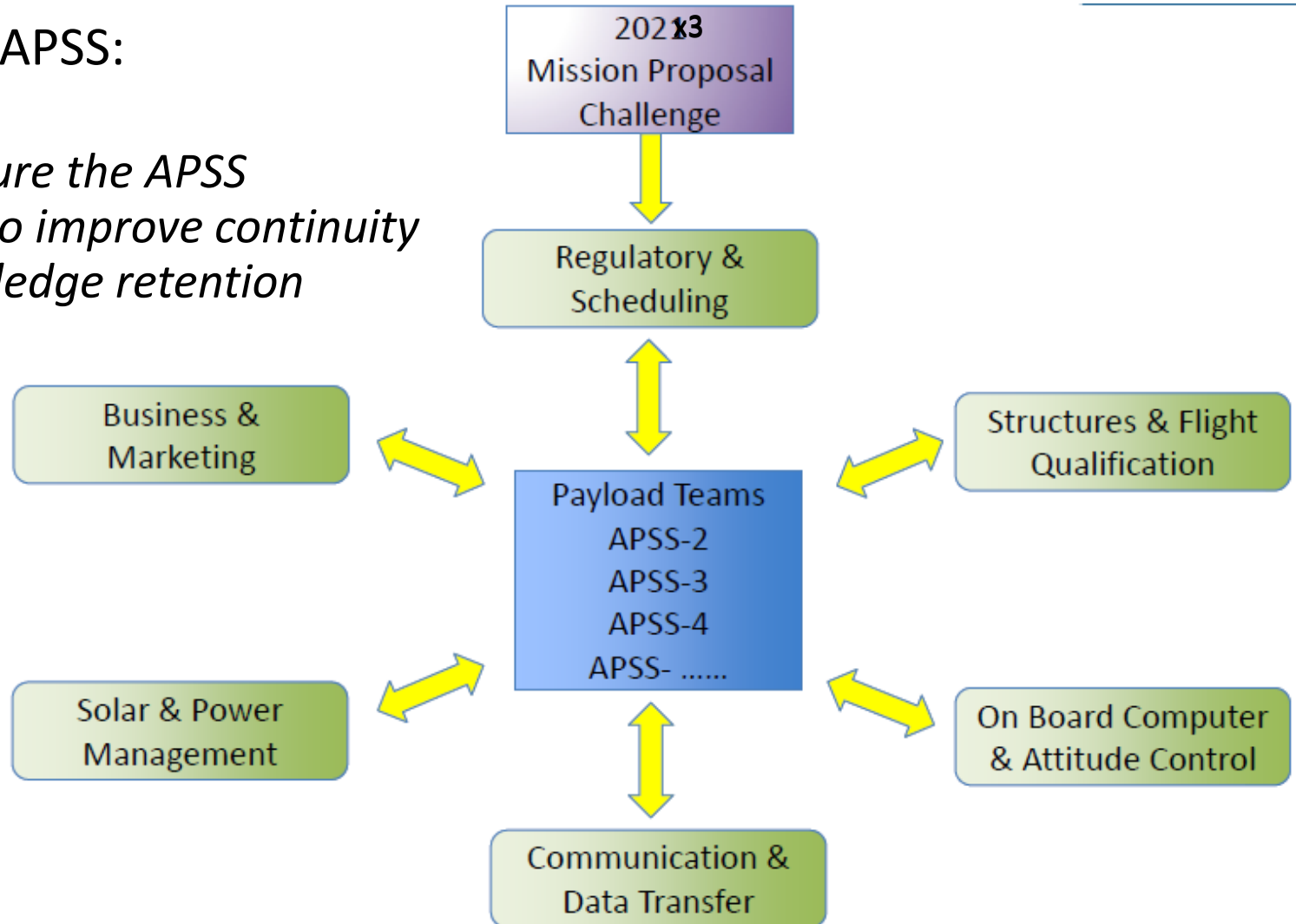
- *Structure of the program timeline too ambitious. Satellites not completed before student graduation therefore loss of knowledge, lack of continuity, particularly with Covid*
- *No experience in satellite systems and construction. APSS-1 deployed DOA*
- *Not enough oversight and structure for the student teams*
- *Changed hardware brand after the many issues surrounding the APSS-1 supplier. The new supplier much better but, has just recalled all of its modules for replacement.*
- *Success of the program has resulted in supporting staff being offered other positions*



Plan for 2022-23 and beyond

Plans for APSS:

- Restructure the APSS program to improve continuity and knowledge retention





Plan for 2022-23 and beyond

Plans for APSS:

- *Alumni students are delivering training to the next generation*
- *1st Stage: P-Sat using OTS Arduino and “launching” in 12 floor elevator*



- *2nd Stage: Design P-Sat from scratch using TI MSP processor. Includes circuit design, PCB design & assembly, programming, structure design, communication. Launch to 1km using amateur rocket.*

Plan for 2022-23 and beyond

Plans for APSS:

- *Restructure the APSS program to improve continuity and knowledge retention*
- *Prepare to launch MPC 2023 when students return*
- *Further engage Space Institute staff for satellite construction to fill gaps in knowledge*
- *Identify and engage staff for succession planning*

UNISEC-Global Activities in 2021-22

Number of

- Member Universities: 0
- Students: 0
- Professors 0
- Others (Corporate members, etc.): 0

- *CLTP11 – had a space booked and paid for. Attendee contracted Covid 19 just prior to the course and could not attend. 😞*
- *Participated in last Virtual UNISEC-Global Meeting (2:00am – 4:00 am Sat NZ time)*
- *Attend 8th UNIGLO meeting, Istanbul*

A Poor Result (D-)



Plan for 2022-23 and beyond

University Landscape in NZ

- 8 Universities along the 1600 km length of New Zealand's 2 main islands
- All with some small space activity

eg
 AUT – Radio Astronomy,
 Otago – Observatory
 VUW & UC – Student Clubs





Plan for 2022-23 and beyond

3 Main University Players in space

UC

- Student rocket club competes internationally since 2019
- BE Aerospace minor in 2022
- Launch Aerospace degree 2023

VUW

- Launch Space Science major 2023

UoA

- APSS 2016
- Auckland Space Institute 2019
- Masters, Diploma and Cert in Aerospace Eng 2021
- National Satellite Test Facility 2022



Plan for 2022-23 and beyond



- *Formally Establish New Zealand Chapter for UNISEC-Global*
- *Facilitate bringing Hepta-Sat training to NZ*
- *Invite expert on student satellite projects to NZ for lecture series*
- *Get one more satellite on launch manifest*
- *Improve grade to at least a C+*

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New Zealand

Ngā mihi nui - Thank you very much

Special thanks