

# Lessons Learned from KySat-1 Qualification Process

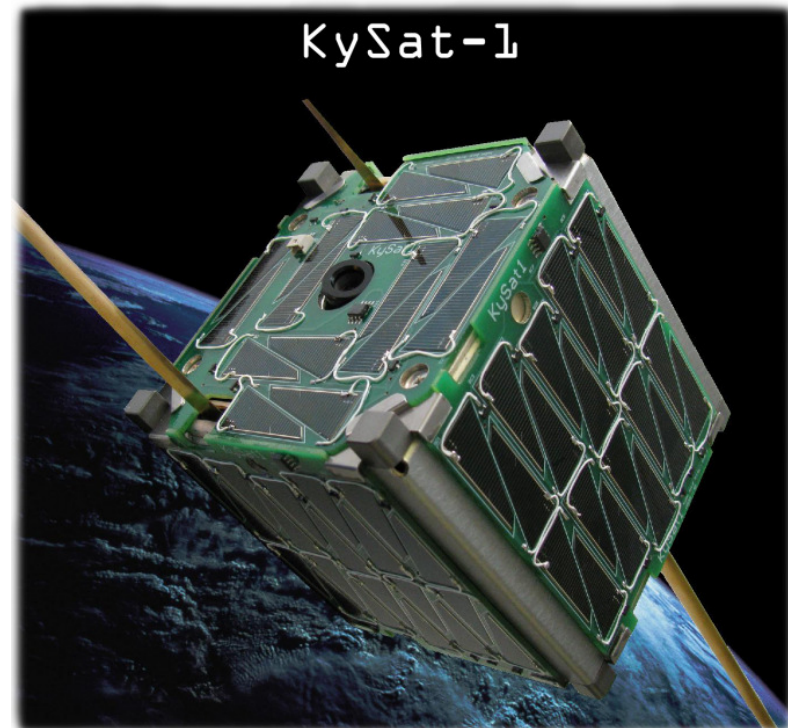
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# KySat-1

- 1U CubeSat
- Educational Mission
- Student-Led, Student-Designed, Student-Built
- Built by a Consortium of Universities
- Selected for ELaNa-1

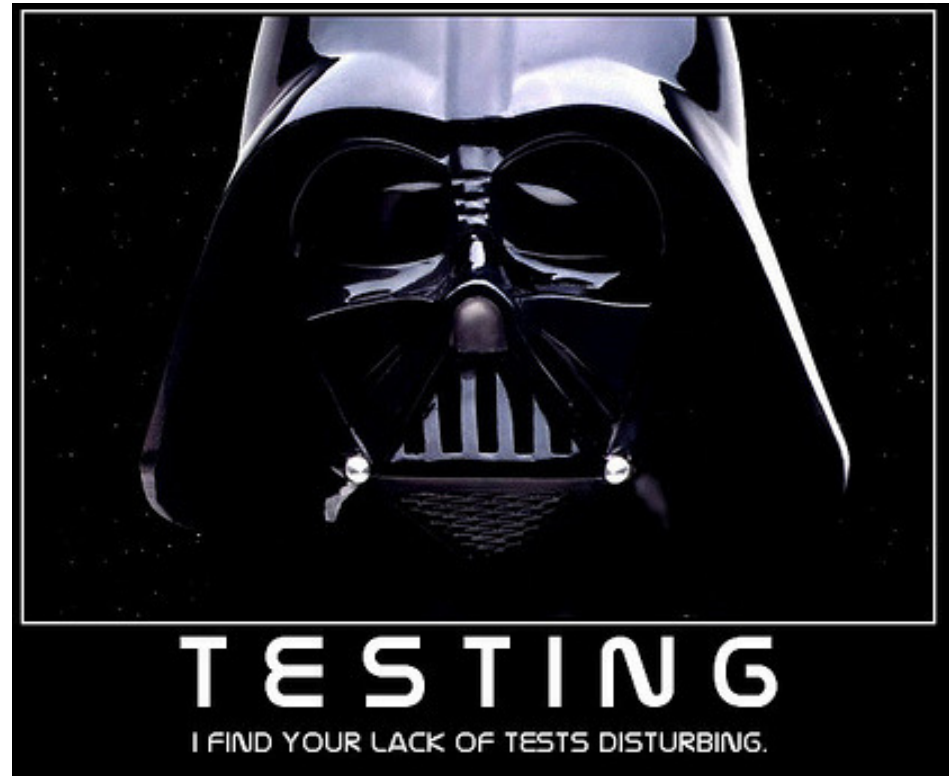


# Kentucky Space



# Testing

- Mission Assurance vs Qualification
- Process
  - Generate Procedures
  - Review and Approve
  - Test
  - Analyze
  - Report
- Failures – What about when things go wrong



# Testing

## Mission Assurance

- Testing to ensure mission success
- Convince internal team/sponsors
- Test as you fly

The system-of-systems nature of satellites lead to possible problems apparent only after integrating them all together

## Qualification

- Testing to ensure no harm to anything else
- Convince all vehicle owners/operators
- Needs detailed procedures and test reports

# Procedures and Reports

- Procedures
  - Detailed, reviewed procedures prevent stupid mistakes
  - Convinces people that you are testing what you say you're testing
- Reports
  - Contains raw and analyzed data and as-run procedures
  - Convinces people that you passed the test



# When Things Go Wrong

- Despite your best efforts, failures will happen
- Set up instrumentation expecting a failure

It's generally not enough to simply re-test until the anomaly goes away. The original problem needs to be explained



# When Things Go Really Wrong

- Earth-Intersecting Orbit
- Focus on Successes
- Diversify Projects
  - Balloons
  - Sub-Orbital
  - Can be used to test orbital components
- Don't Give Up
- Welcome to the Biz



\*No one was injured!



# Thanks and Questions

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