Introduction

• Corvus-BC 6U overview

• Subsystems to be open sourced

• Export control

• Future Rollout
Corvus-BC Overview

- 6U Form-factor
- 11 kg
- Imaging solution: 22 m GSD at 600 km, Red, Green, NIR spectral bands
- Flight computer: ARM A8 running Linux
- Power system: scalable 40Wh Li-Ion
- Communication: UHF transceiver running at 19.2 kbps for TT&C. Payload data is downlinked through Ka-band at 40 Mbps
- Solar panels: ARM M0+ processor, temperature, magnetometers sun sensors and magnetorquer coils
- Control: 3-axis with three reaction wheels, star tracker, GPS and gyro
- Storage: 1 TB
Corvus-BC Overview

- Solar Cells
- Flight Control System
- Ka-Band Radio
- Batteries
- Imaging Payload
Corvus-BC Overview

Ka-Band Radio

Star-tracker & Reaction Wheels

Imaging Payload

Flight Control System (“the rack”)
- Batteries
- GPS
- UHF TT&C Radio
- Flight Computer
Corvus-BC Overview

- Flight Computer (Aquila Space)
- Reaction Wheels Sinclair 30mN-sec
- Star Tracker Sinclair ST-16
- GPS (Novatel OEM615)
- Flight Computer (Aquila Space)
- Command and telemetry radio (AstroDev Lithium)
To be open sourced

Star-tracker & Reaction Wheels

Flight Control System ("the rack")
Technology included

- Source Code
- Schematics (Altium)
- PCB Layout files (Altium)
- Bill of materials
- Drawings (Solidworks)
- Part files (Solidworks)
- Testing procedures
- Assembly procedures
- Harness diagrams

GPL License
Motivation

- Reduce the price of remote sensing data
- Create a larger developer community that together can develop cheaper and more robust hardware/software space systems
- Enable faster technology integration
- Reduce the spacecraft costs while improving the reliability
- Changing company focus from hardware-centeric to data-centeric business model

Open Source is not a business model
Who can participate?

Initial release will be to individuals and organizations in the A5 Country Group:

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(and also the United States)
Community Platform

- A password protected community website will be setup
  - Technical files, wiki pages, bug tracker, email list, forums, etc
  - Similar to GitHub or Trac

- Users must create accounts, sign US Dept. of Commerce forms, and be authenticated

- Once on the site technical data can be exchanged in full compliance of EAR laws and regulations within the community website

- All of our technology is now controlled under EAR (not under ITAR)
  - All updates/patches/fixes must be ITAR free
Look for early adopters

- We are actively looking for early adopters
  - Universities
  - Companies
  - Individuals

- Future directions (let’s brainstorm!)
  - New ADCS algorithms
  - Propulsion
  - Local Ethernet (within the spacecraft)
  - Firecode/backdoor spacecraft reset receiver
  - Ground segment (software & hardware)
  - What else?...
Questions?

I’m here all week … please come find me!