Introducing the Astronomical Digital Video System (ADVS)

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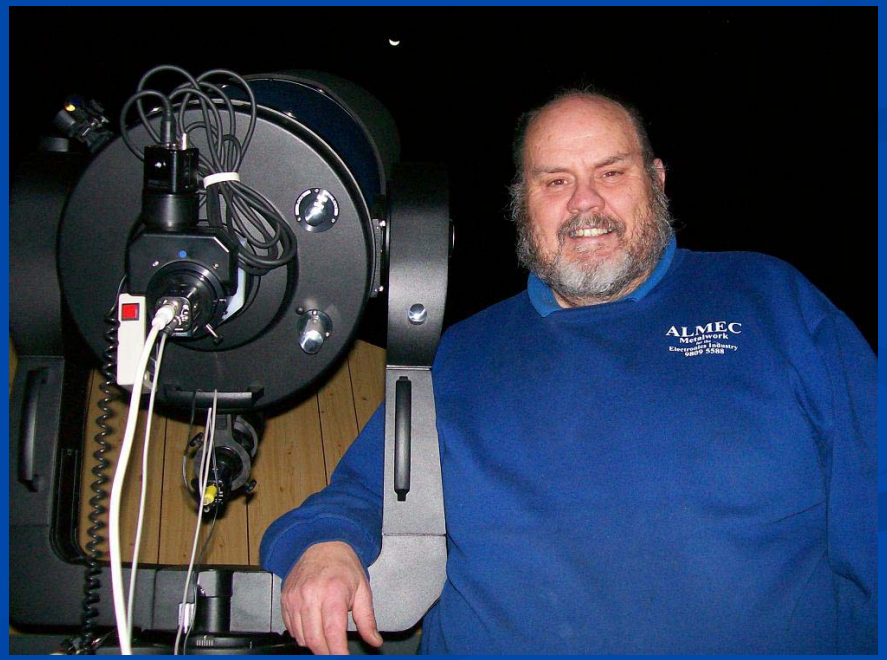
WSAAG and IOTA

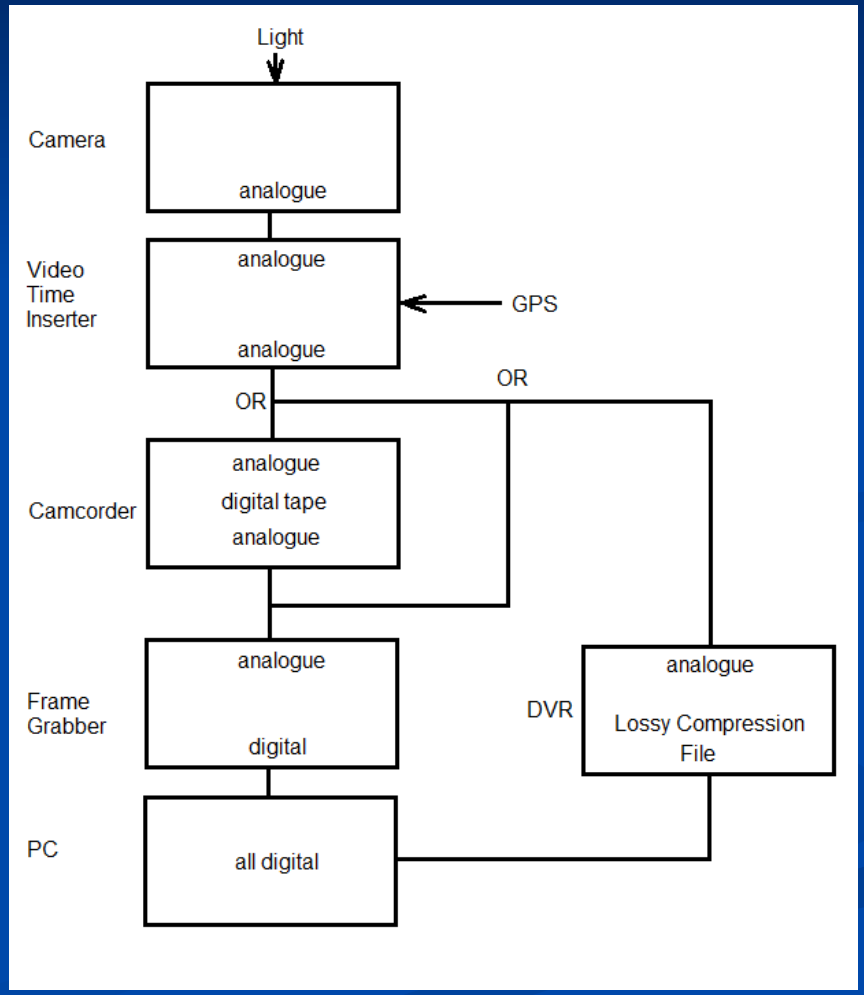
Presented to Lucky Star Kick-Off Meeting Workshop
18th - 19th April 2016

Introduction

Dave Gault
ADVS Quality Assurance

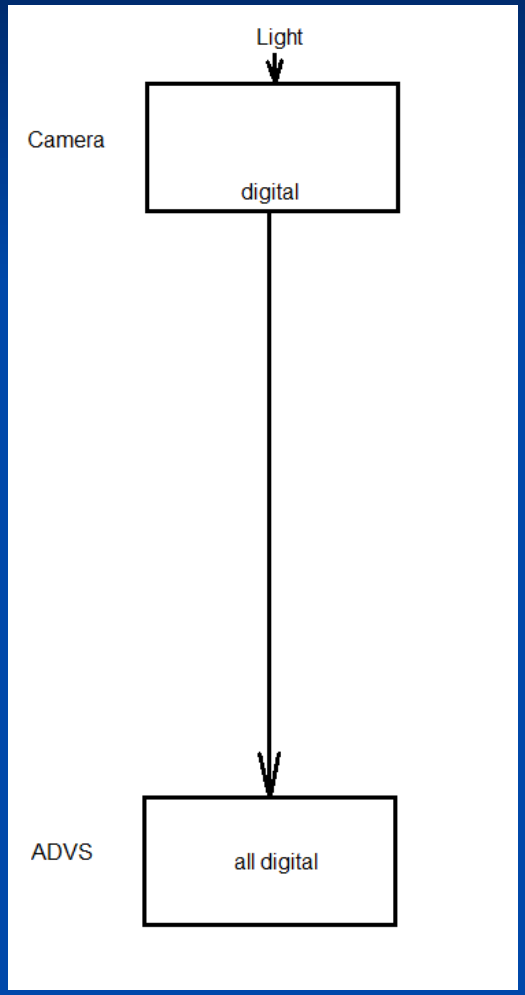


Typical Video Occultation Observing Equipment



The tortured signal path

The search for a more efficient Signal Path and better Signal/Noise



Creation of;

The Working Group on Scientific Video Astronomy

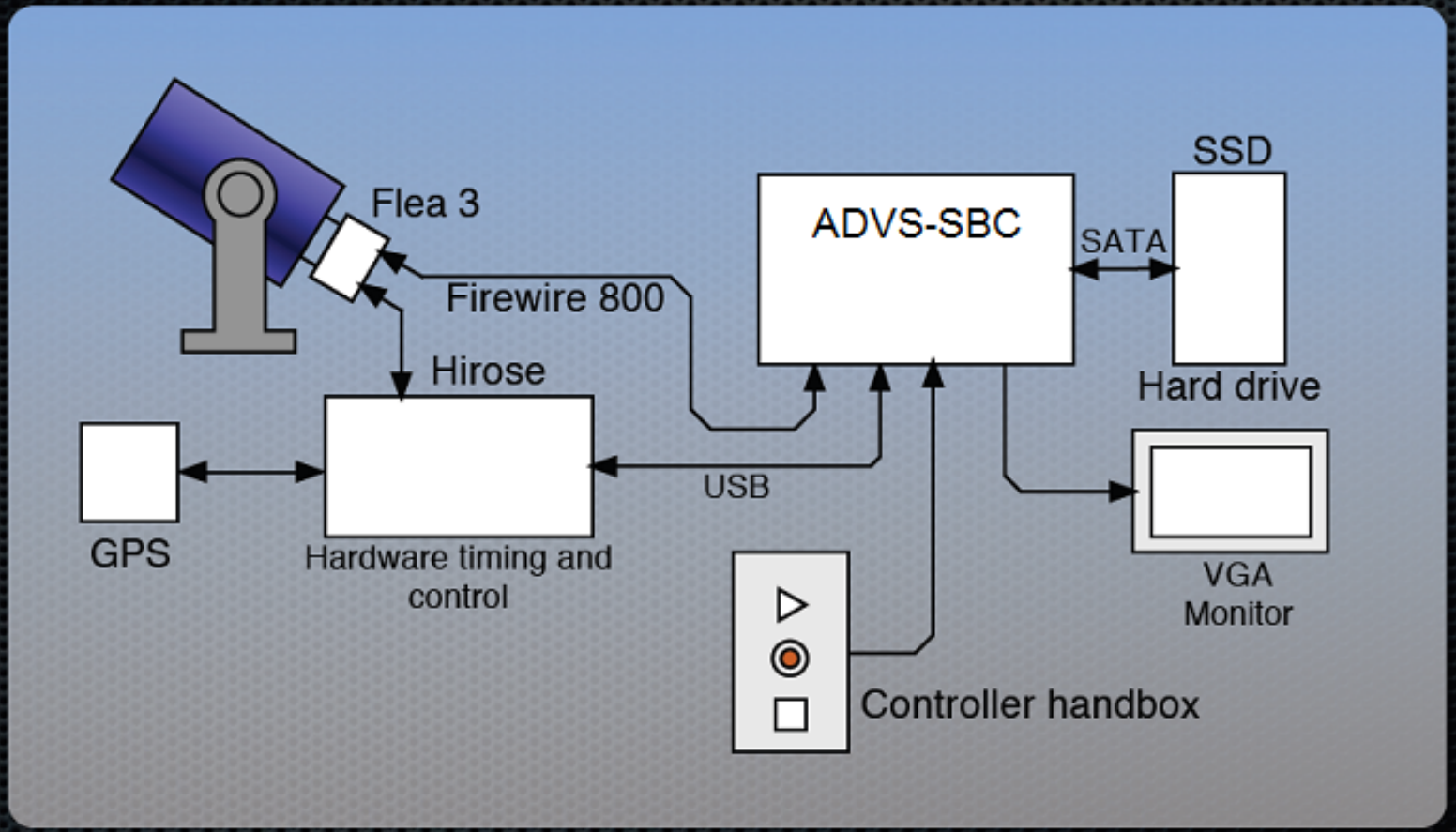
Tony Barry, Dave Gault and Hristo Pavlov

First meeting Easter Monday, 25th April 2011

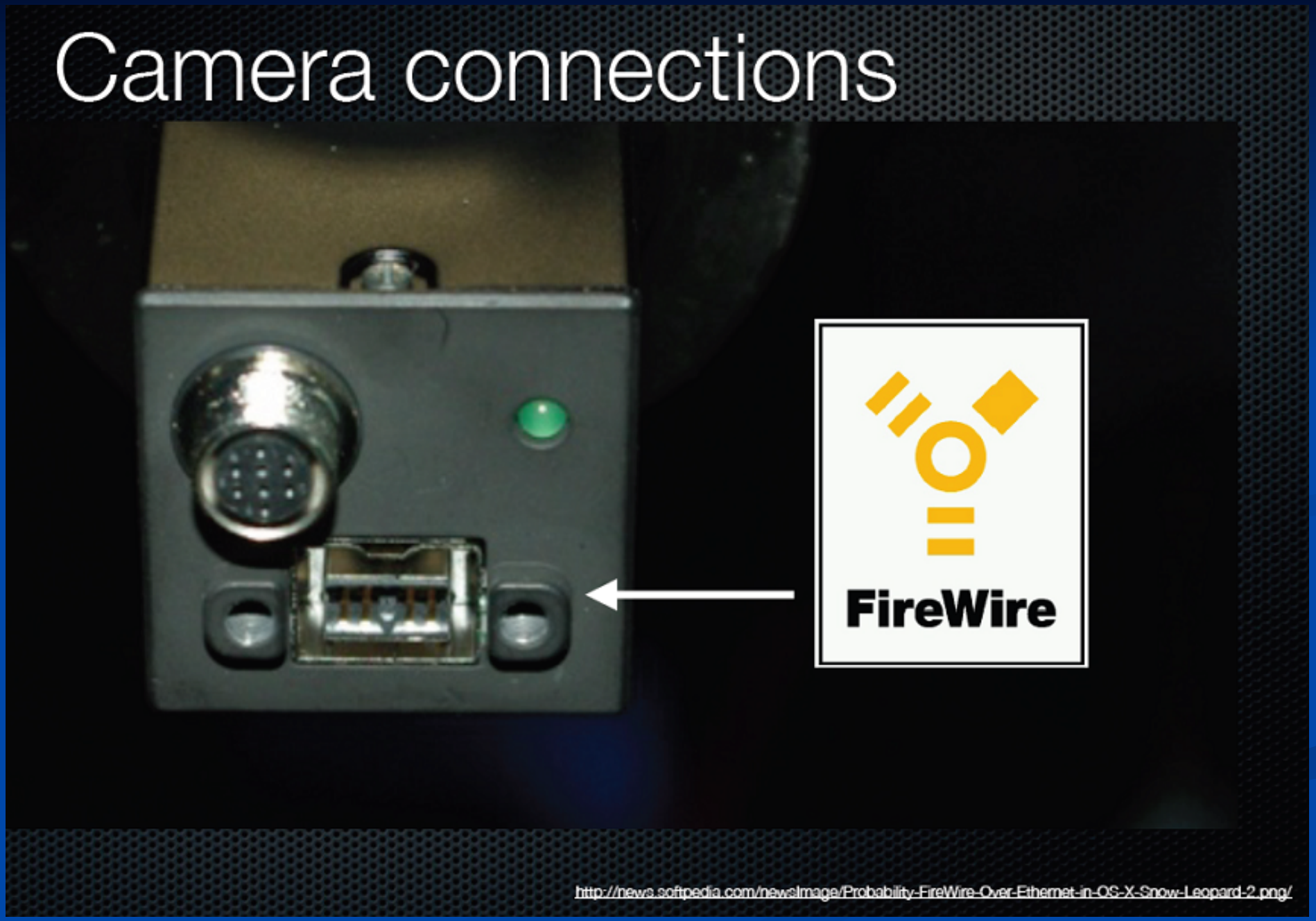
Selecting and developing the equipment

Tony Barry
ADVS Hardware

ADVS - overview

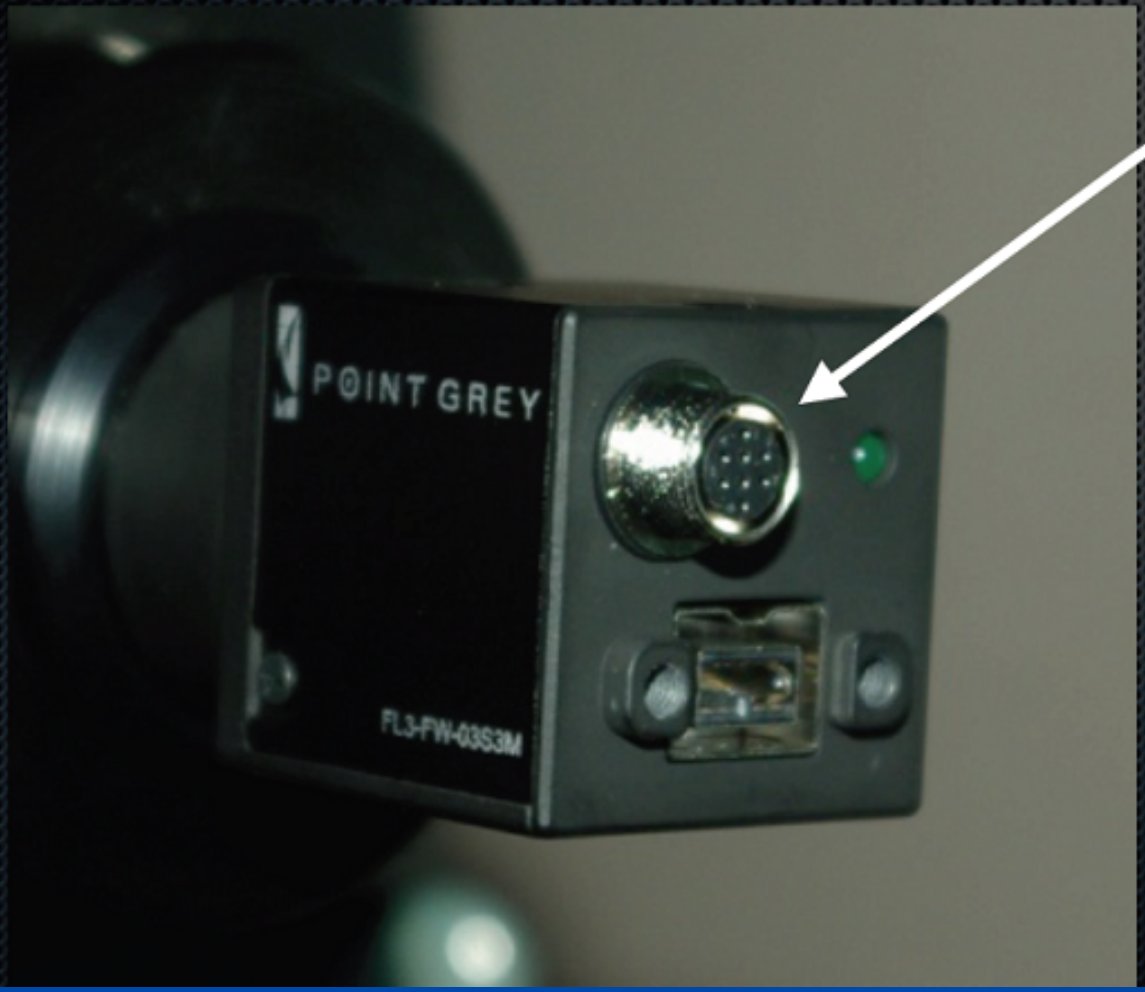


Camera connections



http://news.softpedia.com/newsImage/Probability-FireWire-Over-Ethernet-in-OS-X-Snow-Leopard-2.png/

Sync signals



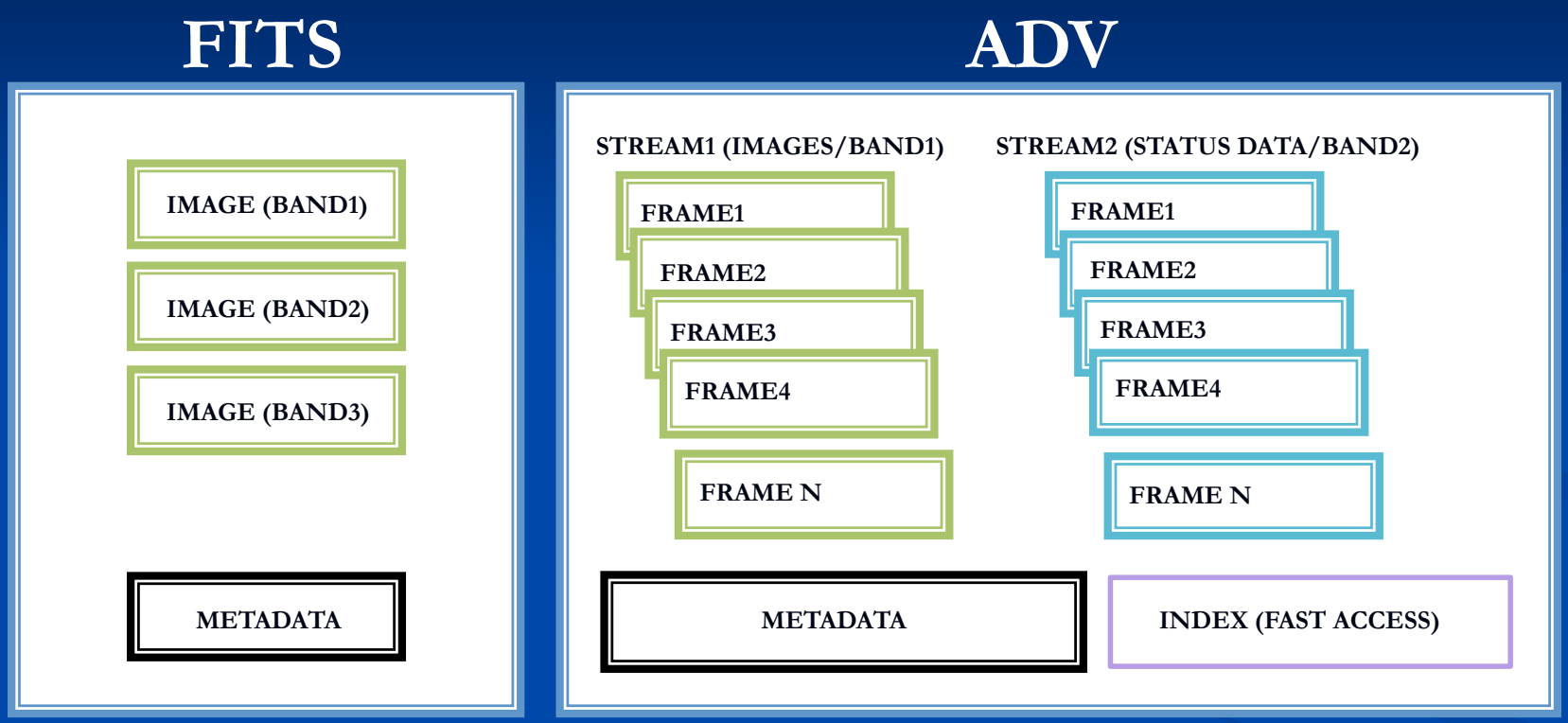
Hirose 8-pin

HTCC

Creating ADVR and Data Reduction Software

Hristo Pavlov
ADVS Software

ADV File Format



Astro Digital Video (ADV) File Structure

HEADER | DATA SECTIONS DEFINITION | SYSTEM METADATA TABLE | DATA BLOCKS | INDEX TABLE | USER METADATA TABLE

http://www.astrodigitalvideo.com.au/CurrentADVFileFormat.pdf

ADV Status Stream

1. GAIN
2. GAMMA
3. OFFSET (BRIGHTNESS)

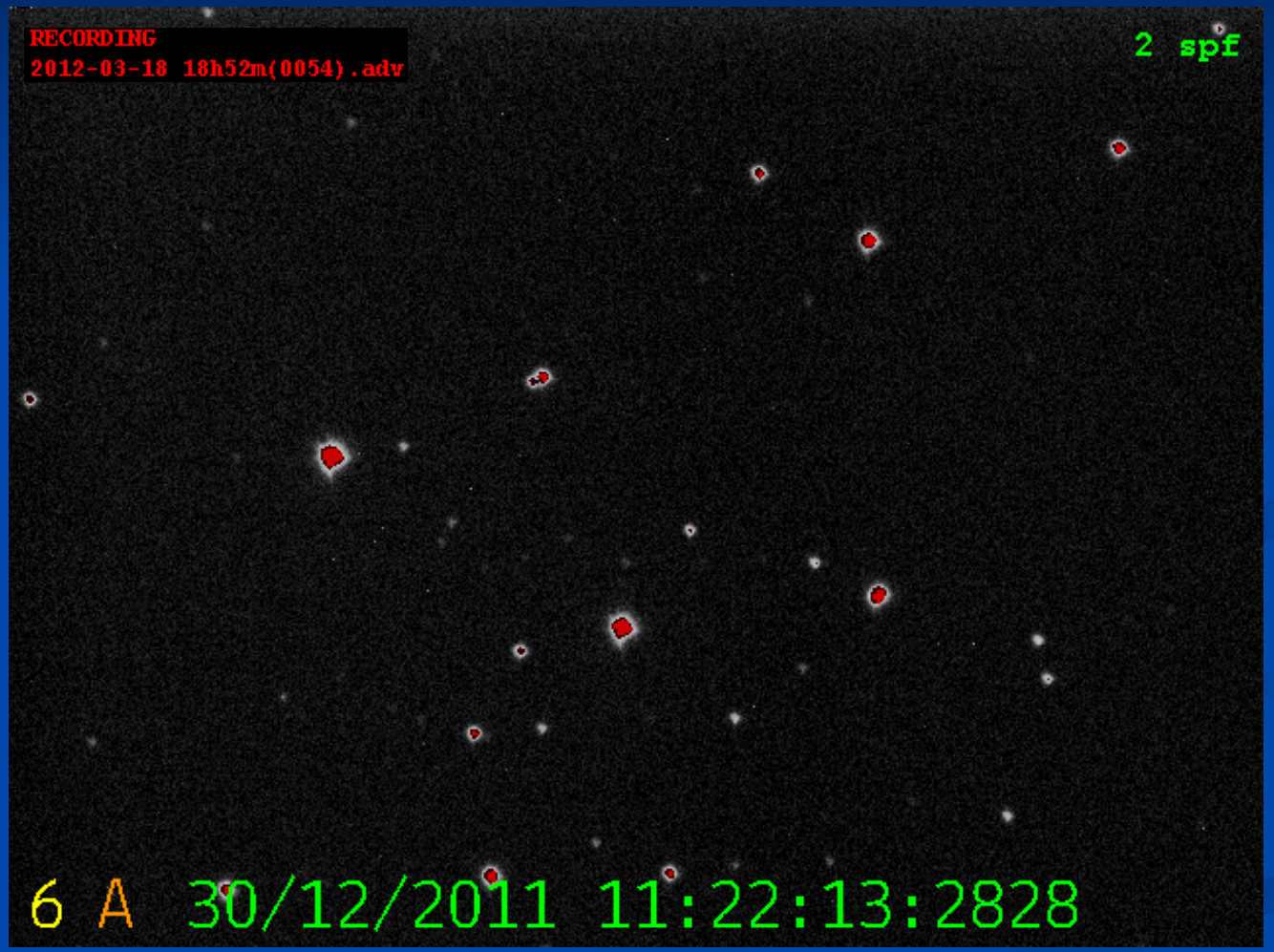
4. SYSTEM TIME
5. ADVR SYSTEM MESSAGES

6. TIMESTAMP
7. EXPOSURE
8. TRACKED SATELLITES
9. GPS FIX STATUS

ADVR – Software Considerations

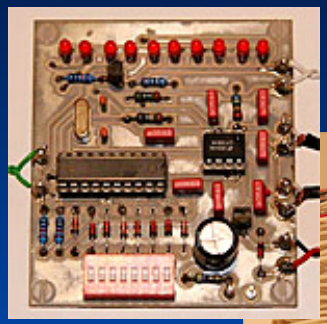
- Able to tolerate random OS slowness
- Optimized for performance (speed)
- Robust
- Easy to use

ADVR

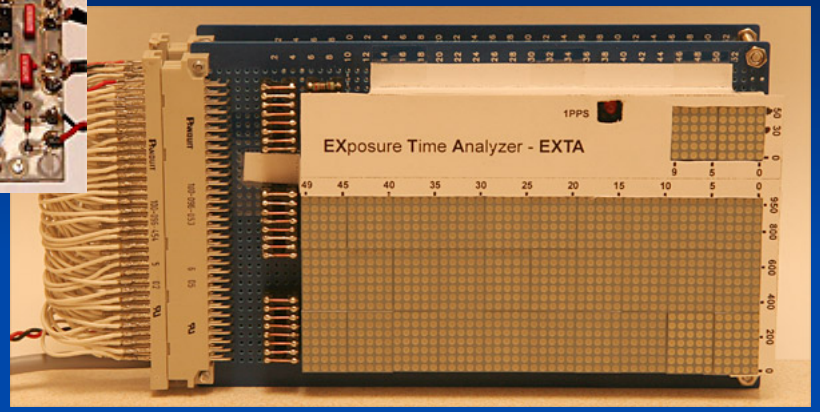

RECORDING
2012-03-18 18h52m(0054).adv
2 spf
6 A 30/12/2011 11:22:13:2828

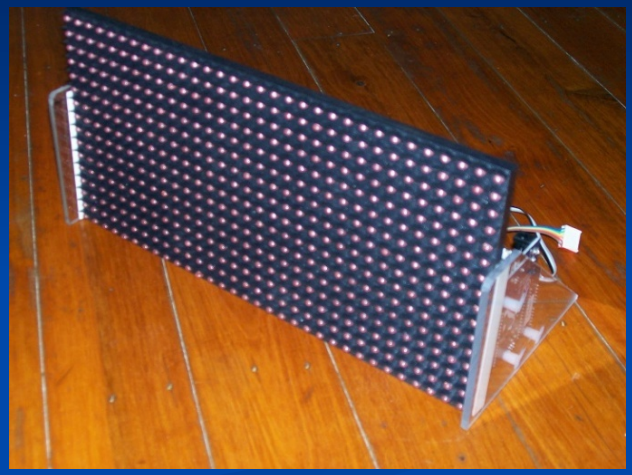
QA Testing

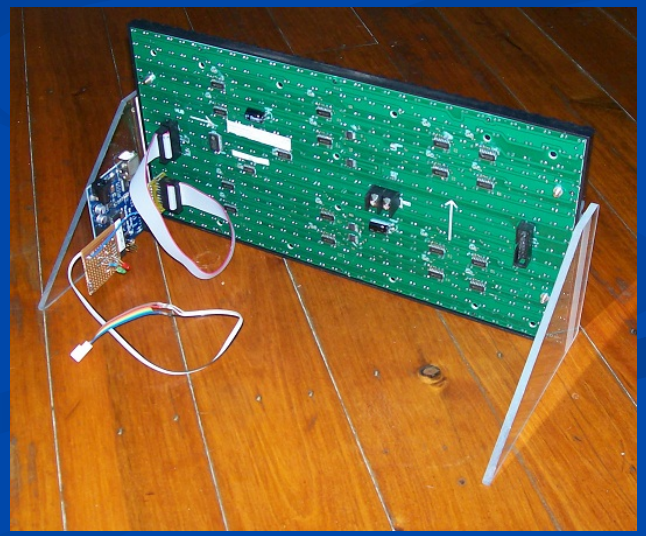
Introducing SEXTA



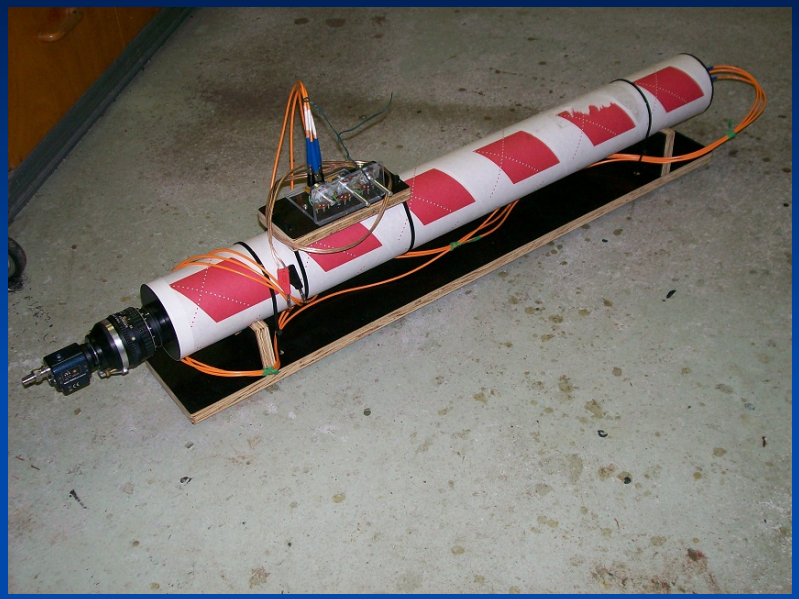
VEXA and EXTA by Gerhard Dangl

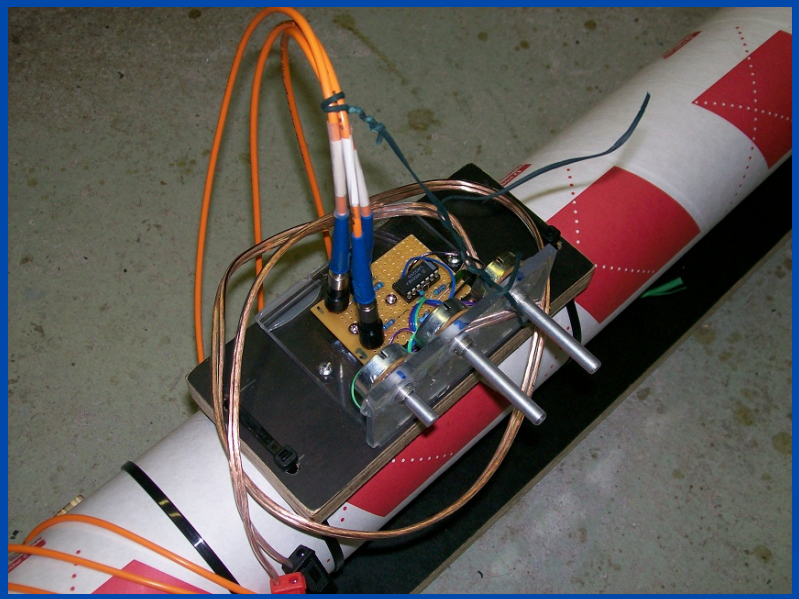


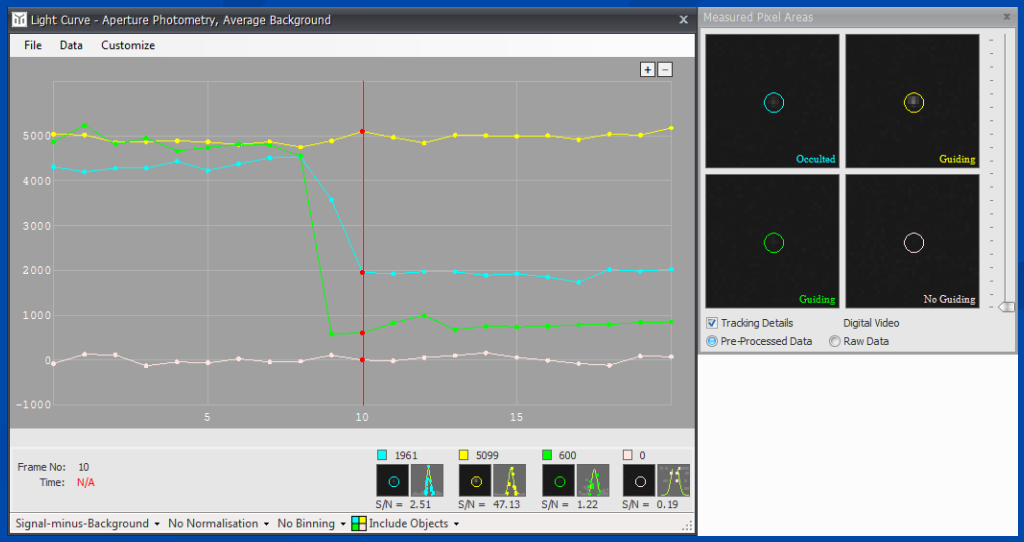




Introducing Star-Chamber







ADVS Effort at a Glance

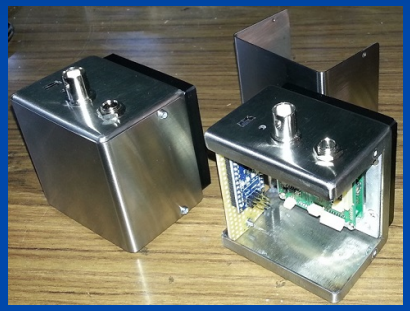
- 350 days
- 30 meetings
- 1,200 emails
- 271 cups of tea (with milk)
- $7,900 budget
- 19,400 lines of code
- 200 pages of documentation
- 3 working prototypes @ 2.1kg each
- Hours worked: Don't ask!
- No animals were harmed during the development

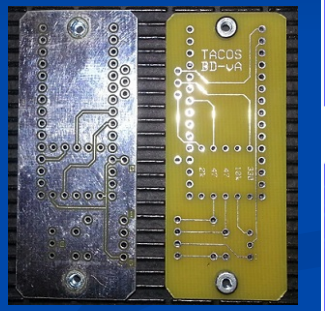
ADVS – Shortcomings 4 years later

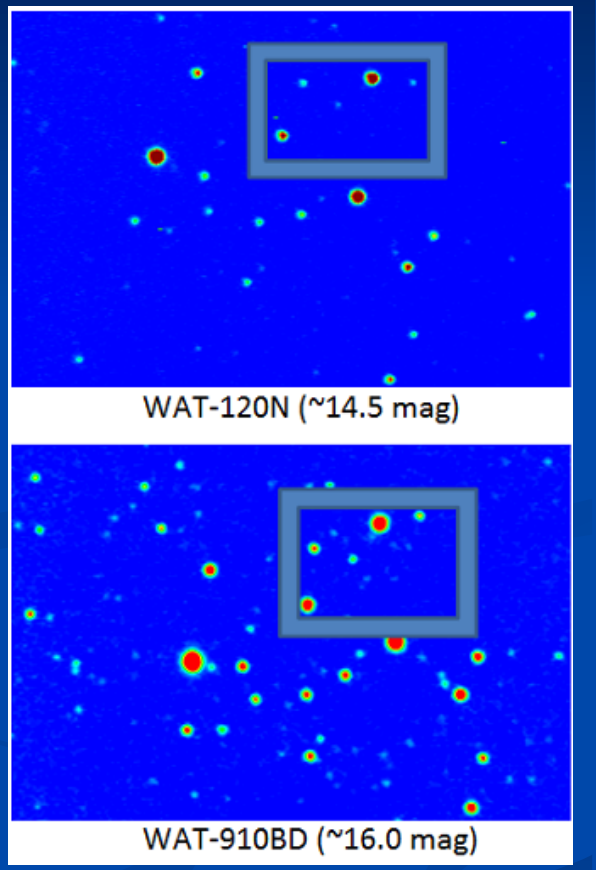
- Linux is not easy to learn
- Dedicated Linux box/partition is required which not many amateurs are ready to embrace
- Linux lacks many software tools used by amateurs
- Amateurs prefer Windows
- Digital cameras are more expensive
- Digital cameras are less sensitive than WAT-910HX/BD (currently preferred camera for occultations)

TACOS-BD

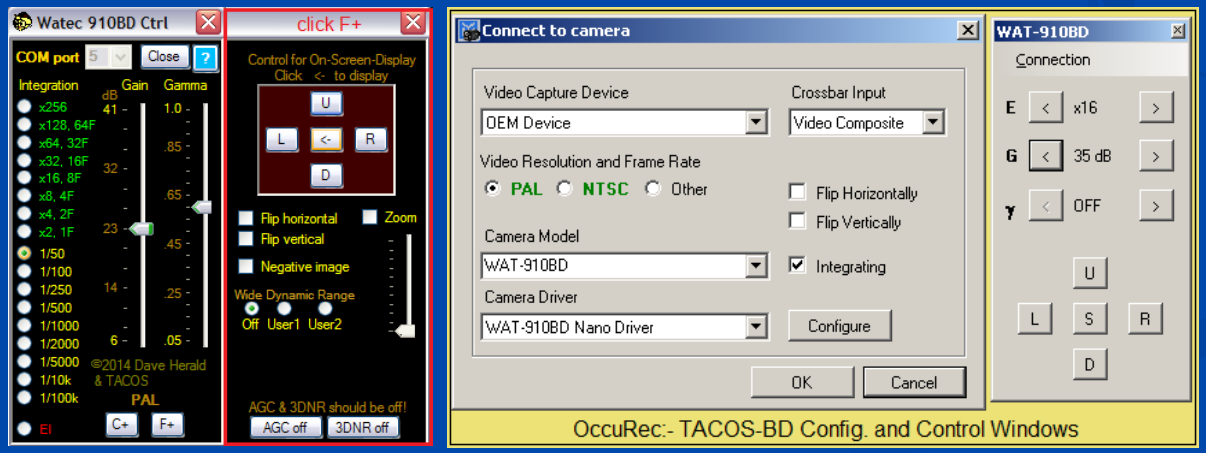
Neat housing with Arduino-Nano controller







Highly sensitive WAT-910BD video camera



Various options for computer control on Windows

Thank You! – Questions?