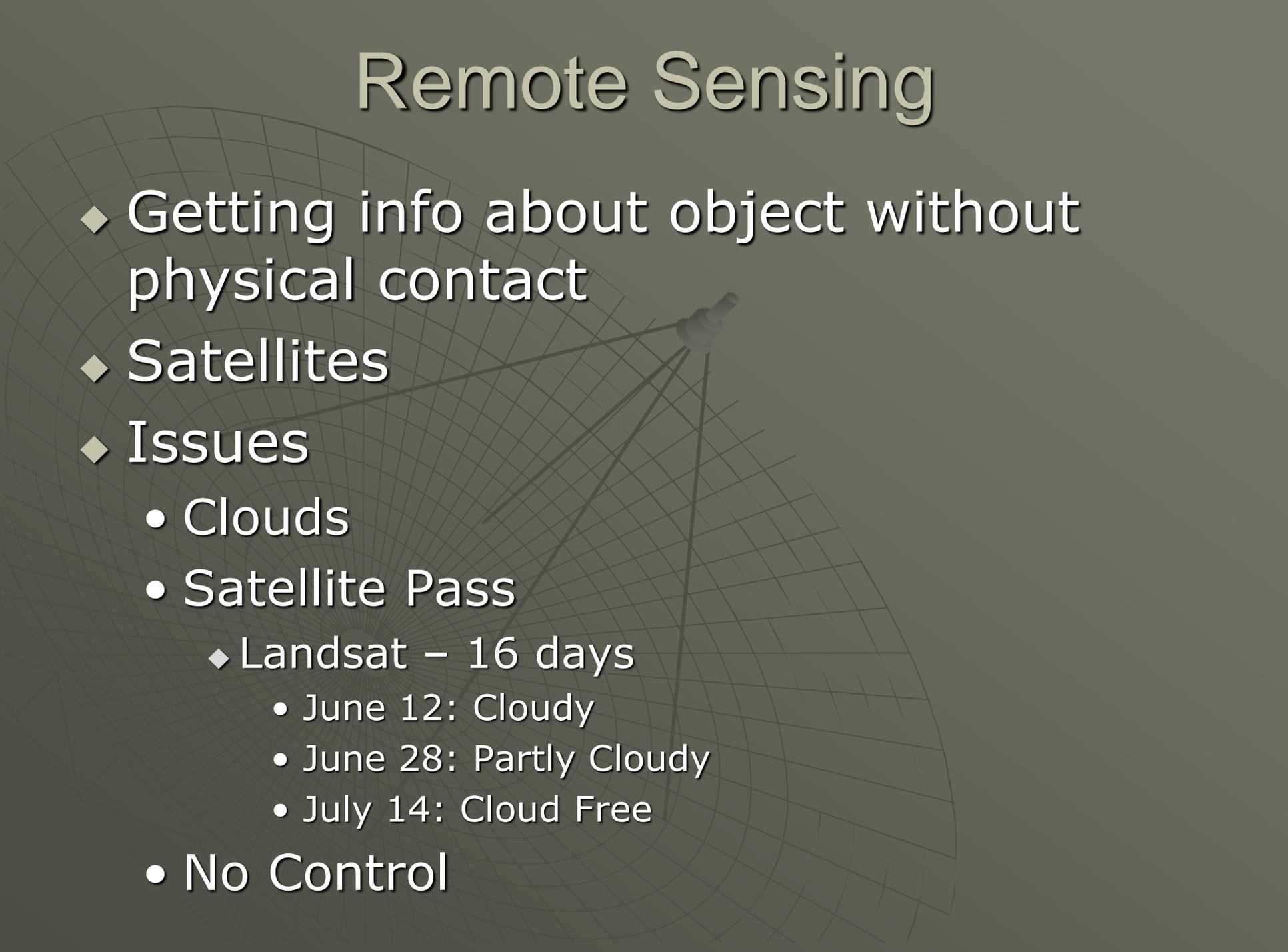


Unmanned Aircraft Systems in Agriculture

Jeremy Smith

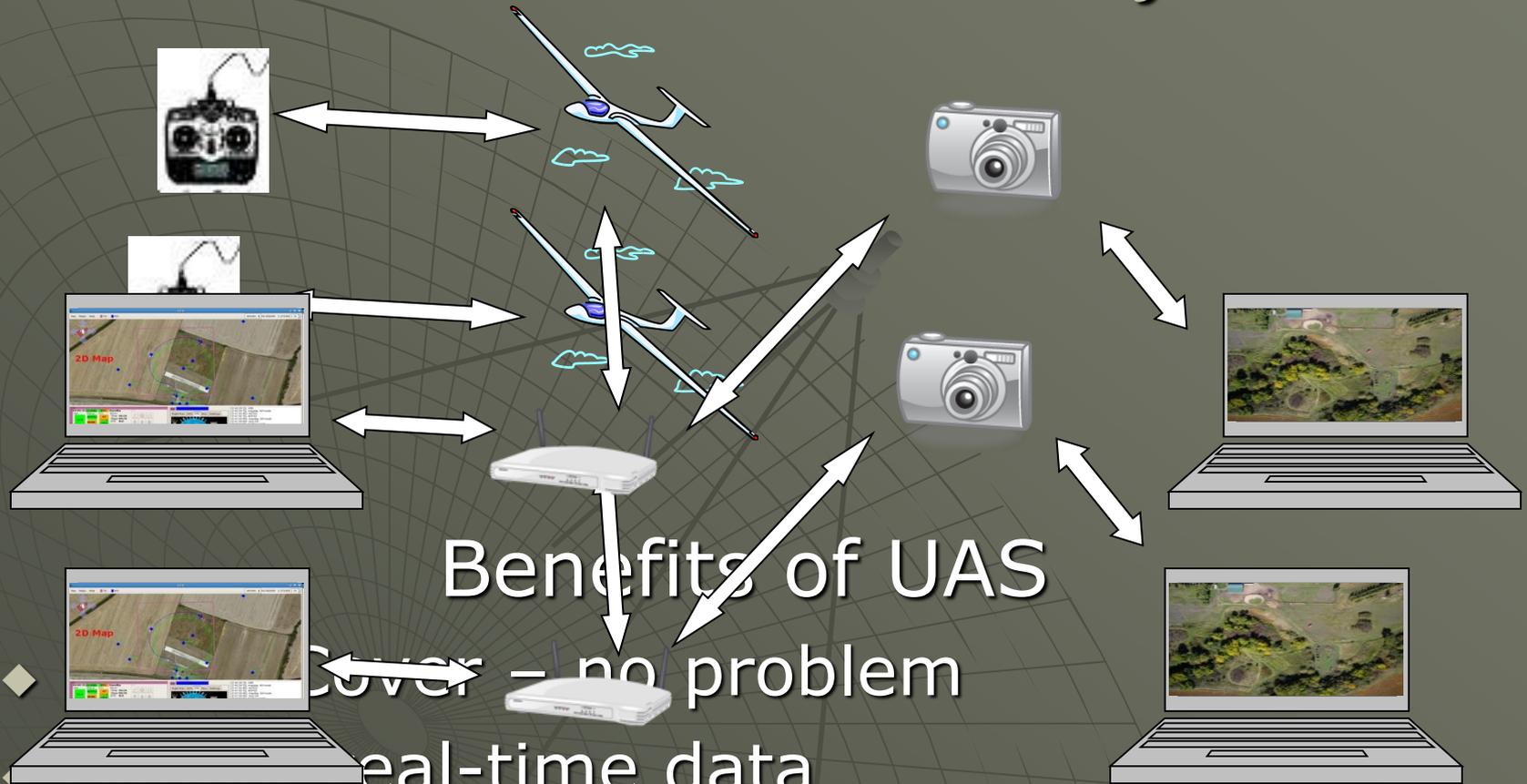
Space Studies
University of North Dakota

Remote Sensing

A satellite is shown in orbit above a grid representing the Earth's surface. The satellite is positioned at the top center, with lines radiating downwards to the grid, representing the satellite's field of view or sensor beams. The grid consists of concentric circles and radial lines, creating a perspective view of the Earth's surface.

- ◆ Getting info about object without physical contact
- ◆ Satellites
- ◆ Issues
 - Clouds
 - Satellite Pass
 - ◆ Landsat – 16 days
 - June 12: Cloudy
 - June 28: Partly Cloudy
 - July 14: Cloud Free
 - No Control

Unmanned Aircraft System



Benefits of UAS

- ◆ Cover - no problem
- ◆ Almost real-time data
- ◆ Freedom to Choose
- ◆ High resolution
- ◆ Easy to use

CropCam

- ◆ Weight = 6 pounds
- ◆ Wing span = 8 feet
- ◆ Battery powered
- ◆ Fits in gun case



Hand-launched



Autonomous flight



Land where you started



High Resolution Imagery



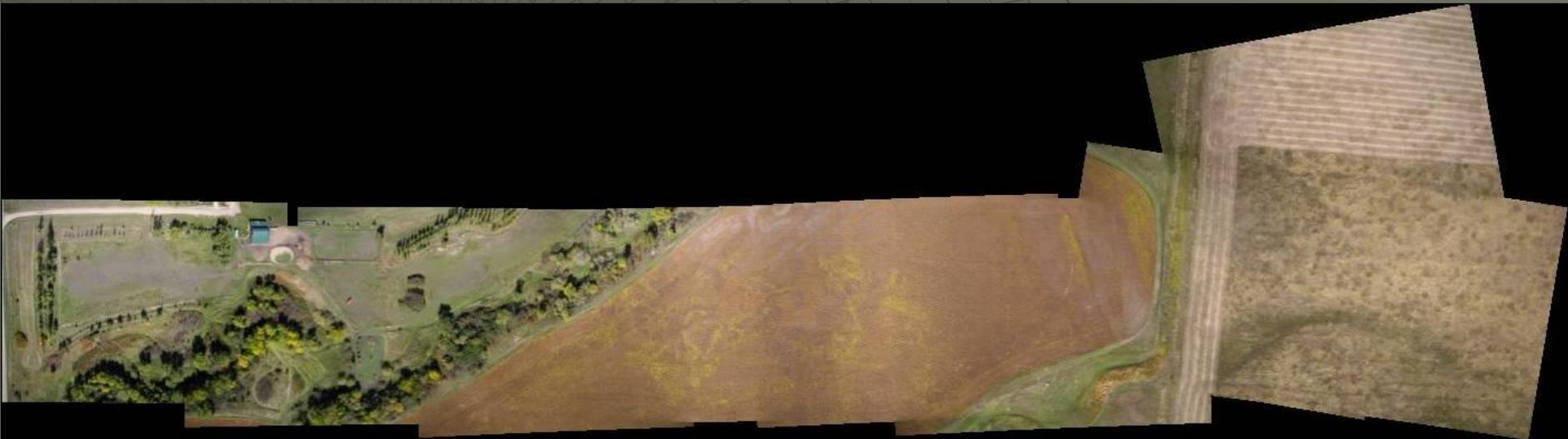
High Resolution Imagery



Image Mosaic



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Objectives/Future Work

Science

- ◆ Install and safely fly IR/RGB camera
- ◆ Satellite + Manned + Unmanned
 - Compare
- ◆ Image/Data manipulation
 - Usable data
 - Make it easy

Application

- ◆ Work directly with farmers
 - Precision
 - Sustainable
 - Organic
- ◆ "On-call" action
- ◆ Technology transfer
 - Technology
 - Data analysis
 - Legal

QUESTIONS?

