OPUS Projects Manager Training

Introduction

ngs.opus.projects@noaa.gov

I've advanced to the second slide and I'm reading it.

- Can you read this slide and hear me as I read it?

- Can you access the web?

- Is everyone comfortable?

- Does anyone have any questions before we begin?

A few words before beginning.

OPUS Projects is a Web-based utility implying that access to the Internet and use of a Web browser are required.

JavaScript must be enabled in your browser and pop-up blocking may have to be turned off.

If you have difficulty configuring your browser, contact your instructor or the OPUS Projects team.

Operating systems and browsers.

No guarantee that OPUS Projects will work with your computer is implied. It has been successfully tested on X86 PC's in various combinations of the following…

Operating systems:
    Linux® and Microsoft Windows ®

Browsers:
    Chrome™
    Firefox®
    Internet Explorer® 8 through 10
    Opera®
    Safari®

Workshop Outline

➢ **Introduction**

• Step 1 : Creating a Project

• Step 2 : Uploading Data

• Step 3 : Session Processing

• Step 4 : Network Adjustment

What's in this training?

This presentation is a brief introduction to and overview of OPUS Projects.

The remaining presentations are a cookbook of the steps needed to complete most projects. Like most cookbooks, you will see steps completed in detail, but the technical justification for the steps will be minimal.

What's not in this training?

This training should not be considered an endorsement of any specific project design, field technique, hardware or software.

Nor does it represent specific NGS project guidelines. However, a familiarity with these guidelines may be valuable. For more information, visit:

> http://www.fgdc.gov/
> http://geodesy.noaa.gov/AERO/aero.html
> http://geodesy.noaa.gov/heightmod/

What's the bottom line?

By completing this training:

- You'll have enough information to successfully use OPUS Projects for your own projects.

- You'll be authorized to create your own projects.

- You'll be able to train others.

  (talk to one of the instructors for more information)

A project has been created for you.

It is identical to the one shown in this training except the access information has been customized to you.

Access information (keywords) for your training project should be in your hands by this time. If you haven't received this information, let your instructor know.

Your training project will be available for about a month to give you time to practice.

The state of your training project.

Under the assumption that most of you are already familiar with OPUS, the data and mark descriptions have already been uploaded to your training project.

No processing has been completed in your project. However, if you'd like copies of the training processing results, let your instructor know.

The training data set.

Because we are assuming familiarity with OPUS, we describe uploading data to OPUS quickly emphasizing aspects specific to Projects.

If you are unfamiliar with OPUS, uploading data to your project is a great chance to practice.

The data files and descriptions shown in the training are available in a ZIP file at ftp://geodesy.noaa.gov/pub/opus-projects/TDS2.zip

What's in the ZIP file?

The ZIP file contains:

- 15 RINEX data files with names like 2123275a. All will have the extension 06o (type: 06O).

- 8 photos with names like 2123_closeup. All will have the extension jpg or jpeg (type: JPEG image).

- 1 readme file containing descriptions for the marks in the training data set. Extension txt (type: text document).

What is the training data set?

These data are from sites in southern Louisiana.

The start and end times, data interval, ARP heights, antenna and receiver metadata are valid.

The photos and descriptive information appear meaningful but should be considered arbitrary and for training purposes only.

Anything else before we begin?

- Please ask questions!

- Feel free to "work along" with the presentations.

- Review the presentations as often as you like. Use the link given at the bottom of this slide to retrieve copies.

- Sharing and printing copies of the presentations is fine, but be aware that some of the files are large.

ftp://geodesy.noaa.gov/pub/opus-projects/

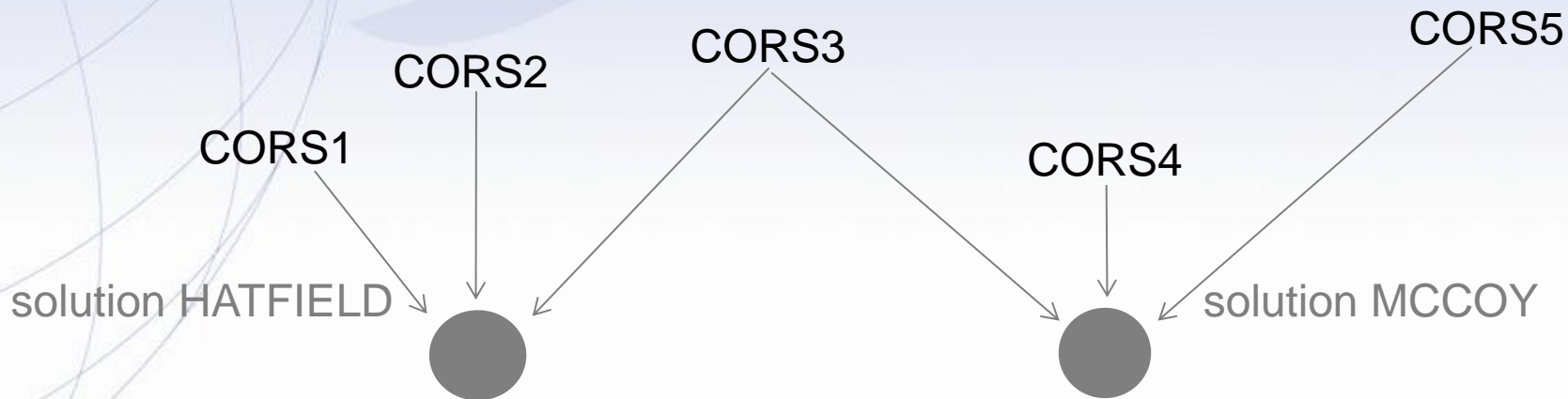# A brief overview of OPUS Projects.

What is OPUS Projects?

OPUS Projects offers Web-based access to simple visualization, management and processing tools for multiple marks and multiple occupations. Some of its advantages include:

- Data uploading through OPUS.

- Processing using the PAGES software.

- Graphical visualization and management aids.

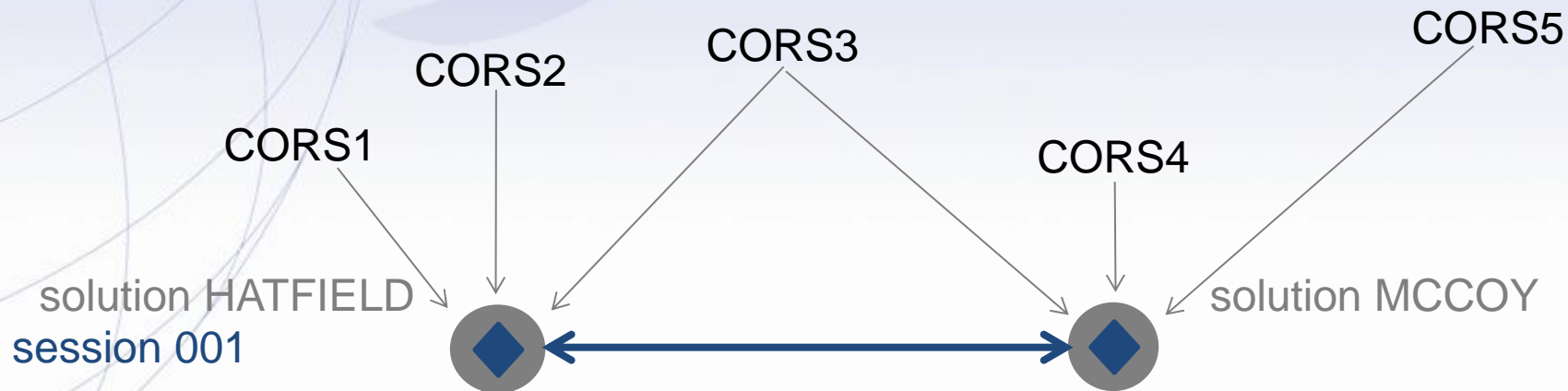- Limited support of bluebooking.

Why complicate OPUS?

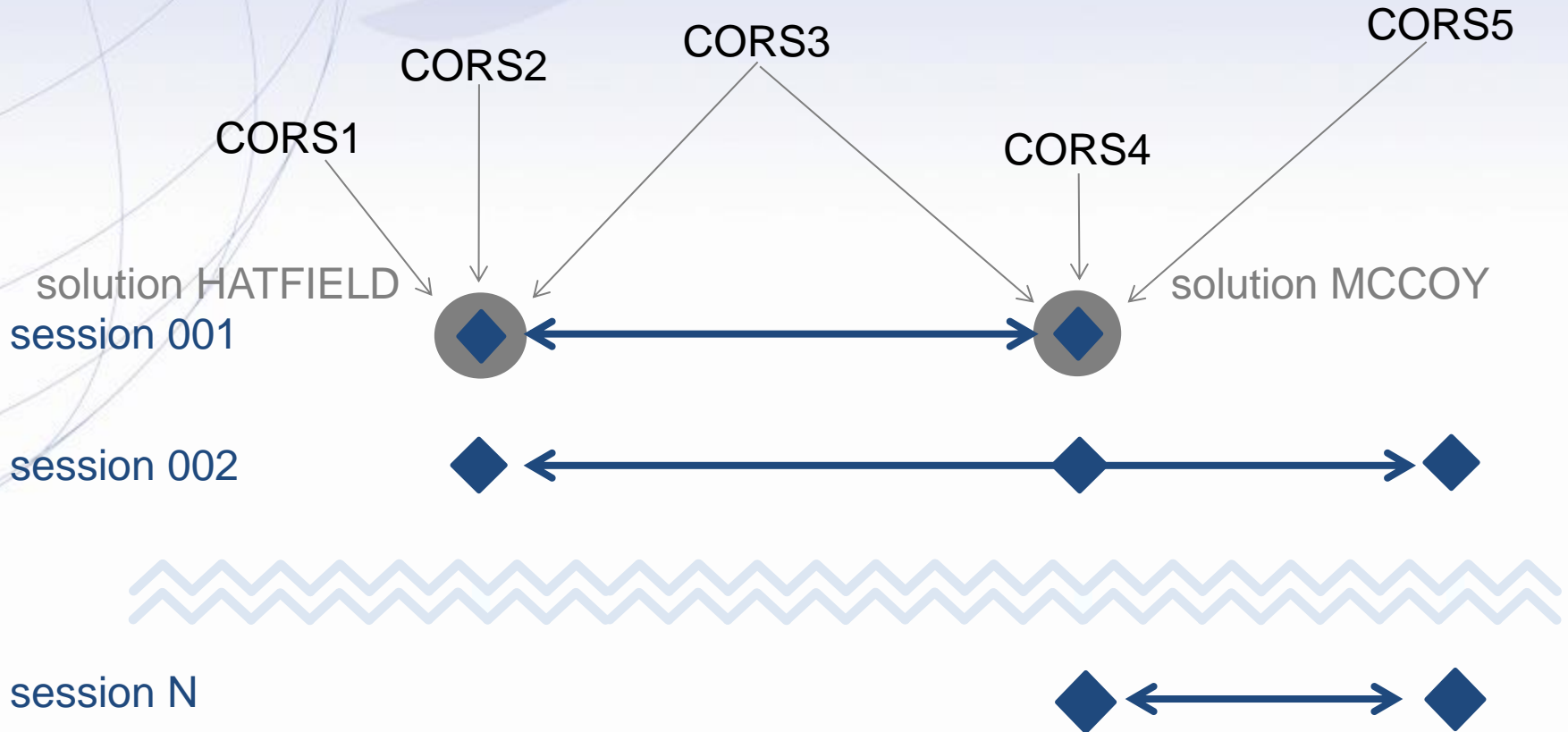● OPUS   ◆ Session   ■ Adjustment

CORS5

CORS3

CORS2

CORS1

CORS4

solution HATFIELD   solution MCCOY

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solution HATFIELD   solution MCCOY
session 001

Why complicate OPUS?

⬤ OPUS   ◆ Session   🟩 Adjustment

CORS3

CORS5

CORS2

CORS1

CORS4

solution HATFIELD
session 001

solution MCCOY
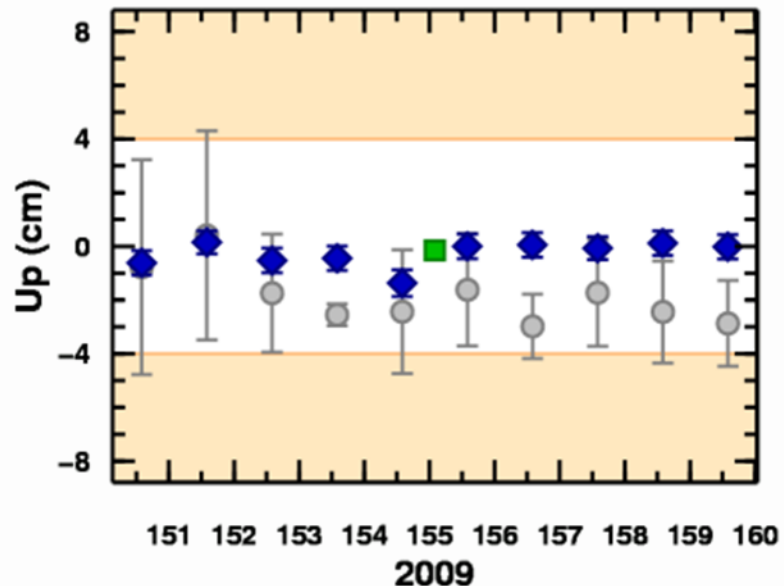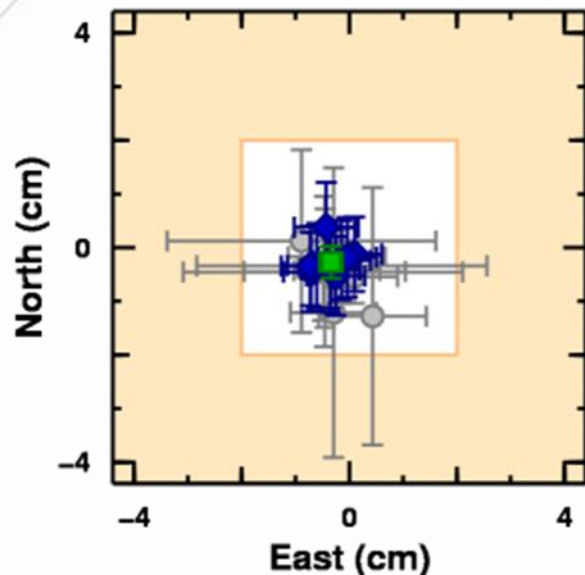
session 002

session N

Why complicate OPUS?

● OPUS ◆ Session ■ Adjustment
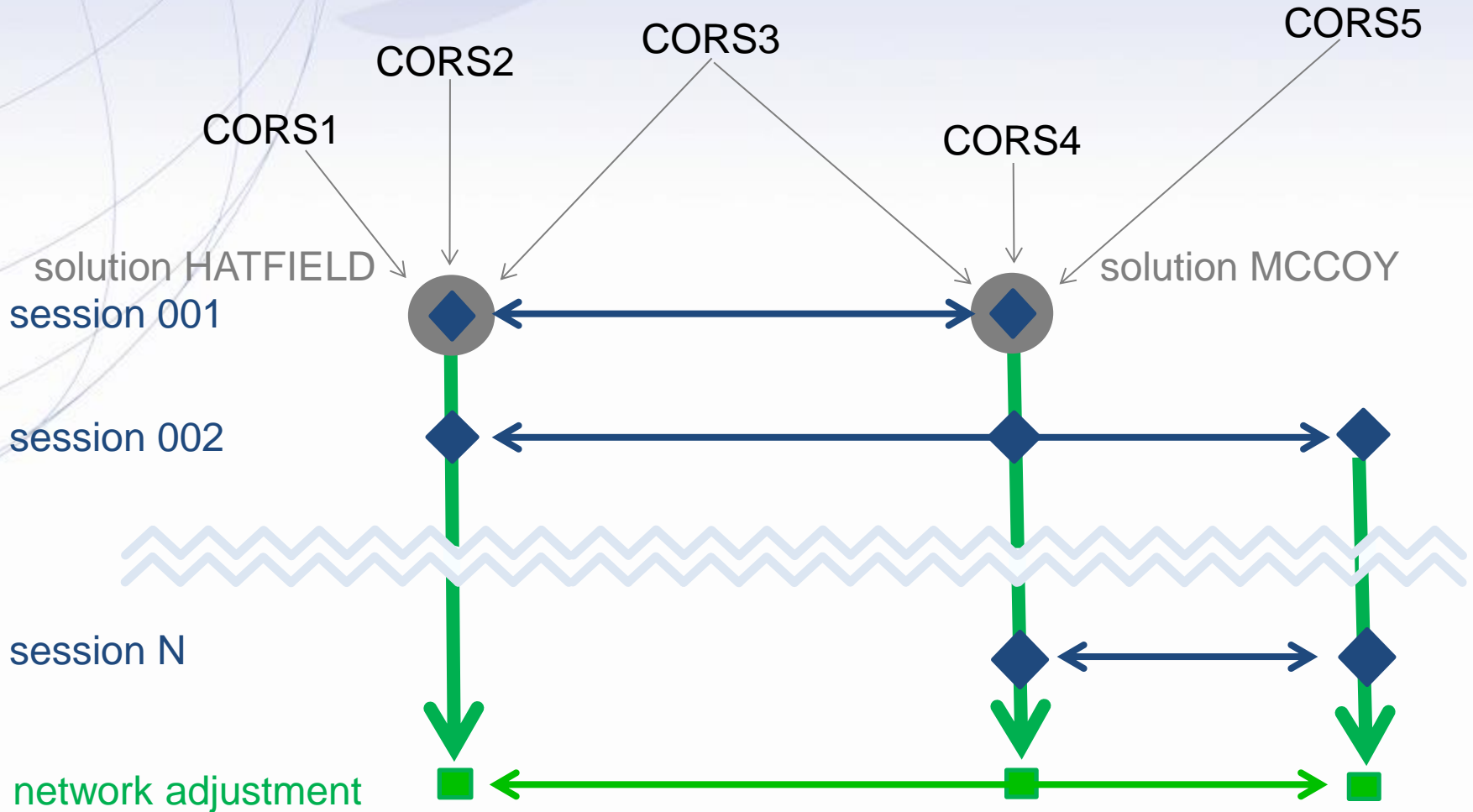
What's in it for me?

● **OPUS solutions** = pretty good, but each treated as independent and assumes "perfect" CORS.

◆ **Sessions** = simultaneously-observed marks processed together in sessions increases consistency.

■ **Adjustments** = interlinking sessions through network adjustments increases accuracy.

Do we *really* need another OPUS flavor?

- The practical answer is probably yes.
  The NGS and other groups have a history of projects whose specifications can't be entirely supported by OPUS.

- The academic answer is probably yes.
  As good as OPUS does, and that is <u>very</u> good indeed, sacrificing simplicity for flexibility can improve results.

What does this mean operationally?

1. **Plan your project**

2. **Collect data and metadata (photos and mark descriptions)**

3. **Gather data and metadata onto one computer**

4. **Process the data**

5. **Perform a network adjustment**

6. **Publish (if desired)**

What does this mean operationally?

1. **Plan your project**

2. **Create an OPUS project**

3. **Collect data and metadata**

4. **Upload data to your project using OPUS**

5. **Process sessions**

6. **Perform network adjustment**

7. **Publish (if desired).**

What does this mean operationally?

Admittedly an oversimplification, nevertheless there is value in thinking of OPUS Projects as four steps with an optional fifth step.

1. **Creating A Project**

2. **Uploading Data**

3. **Session Processing**

4. **Network Adjustment**

5. **Publishing to the NGS Integrated Database**

The steps represented graphically.
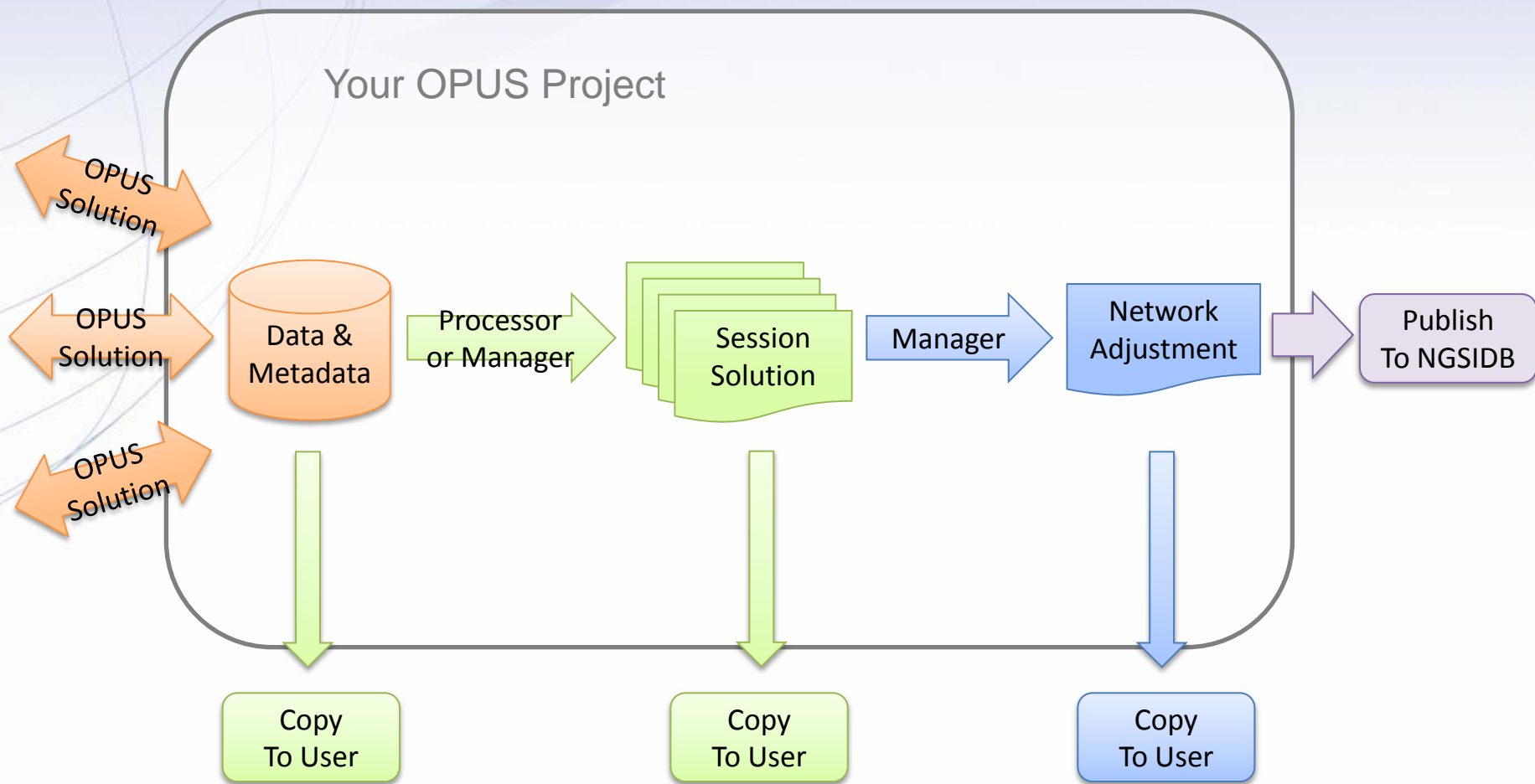
Are there any side effects?

Exploiting a Web-based application like OPUS Projects can mean:

- Less backtracking.
  - Data consolidated while teams are in the field.
  - Rapid data quality assessment.

- Simpler logistics.
  - Data are immediate availability through on-line storage.
  - Automated organization.

- Less worry.
  - Share information.
  - Share results.

Limitations?

- Uploads through OPUS-Static.
  - Dual-frequency.
  - 2 hrs ≤ data span ≤ 48 hrs (≤ 2 GPS midnights).
  - Observation interval = a factor of 30 (seconds).
- Minimum project size.
  - None
- Maximum project size.
  - There are *practical* limits to a project's maximum size.
  - About 100 marks in a single session.
  - Number of data files < a few hundred.

G.I.G.O.

We still need surveyors. We hope OPUS Projects can help, but it can't do your job for you.

- Follow your project's specifications.

- Use best practices and careful field procedures.

- Select permanent marks of public interest.

- Good coordinates come from good data.

http://gis.larc.nasa.gov/

A little OPUS Projects history.

2005: Weston and Gwinn began initial development on OPUS Projects.

2006: Several projects were completed as part of a proof-of-concept. Although the impressions were positive, the development stalled.

2007: Development restarted.

2010: OPUS Projects goes beta.

2013: OPUS Projects goes operational.

Things To Come.

OPUS Projects improves because your criticisms and suggestions. Although we can't act upon every comment, we do appreciate and consider every one. They have and will continue to steered development.

Here are a few things already in the works:

- Allowing data files < 2 hrs in duration.

- Better integration with CORS.

- Better support for publishing to the NGSIDB.

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Introduction

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