

Development and Implementation of a Statistical Programming Environment in a Small Biotechnology Company

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18 October 2010

- ★ Challenges of managing SAS programming
- ★ Business requirements
- ★ Technical solution
- ★ Implementation and feedback

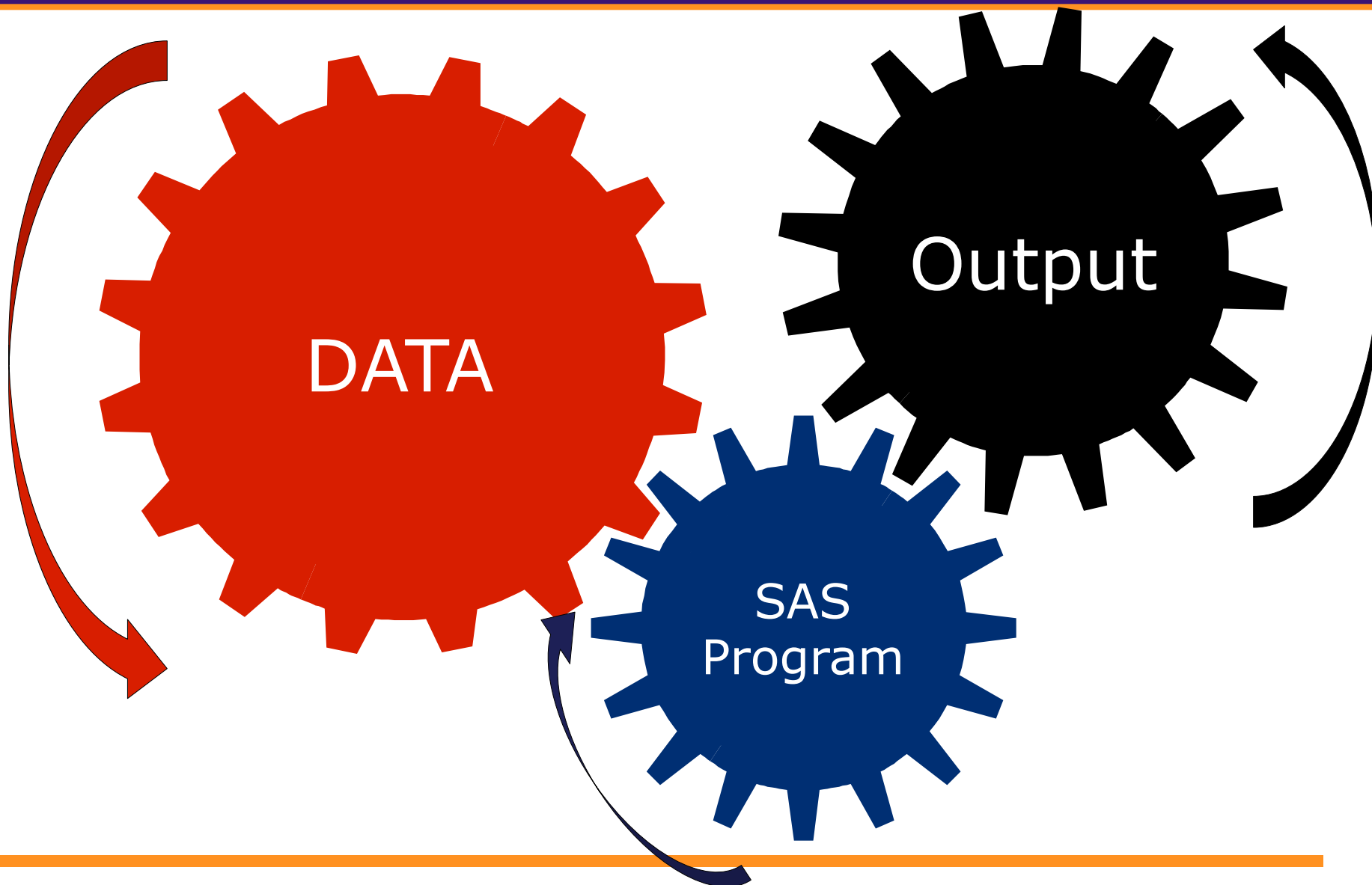
Challenges of managing SAS programming in a small organisation

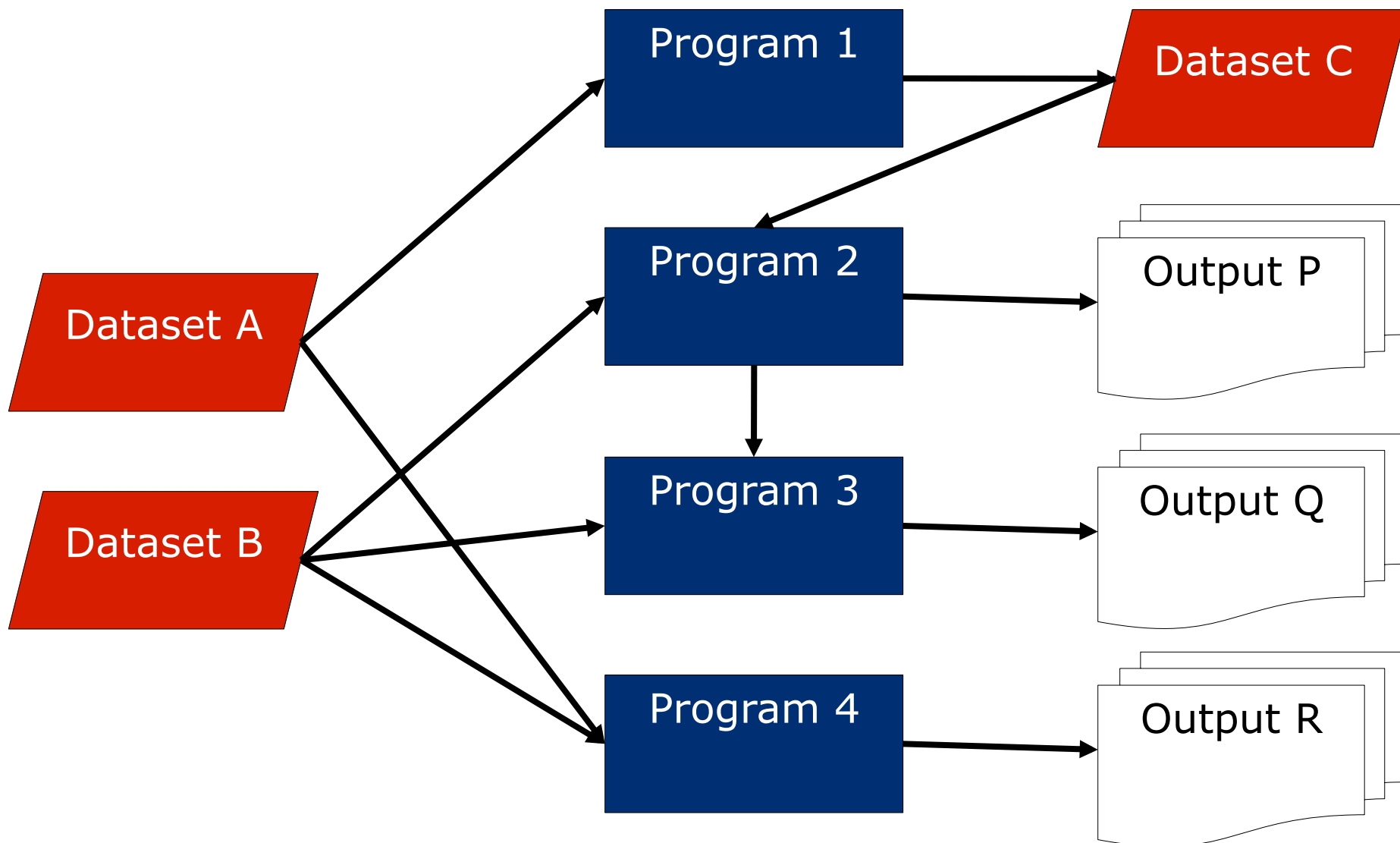
★ Technology

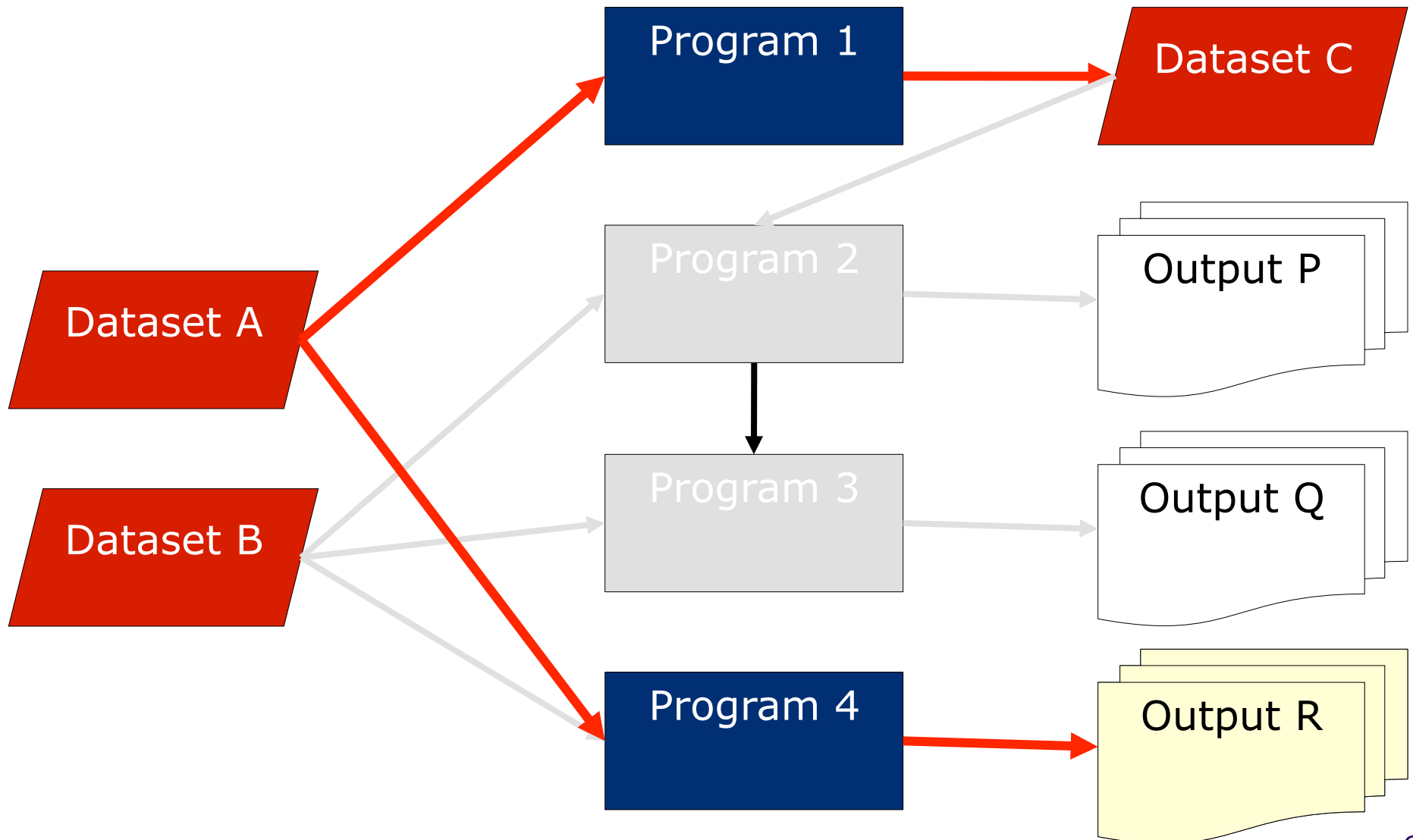
- Large companies: Server technology
- Small companies: Individual PC over LAN
 - Cost of IT infrastructure
 - Limited resource
 - Expertise

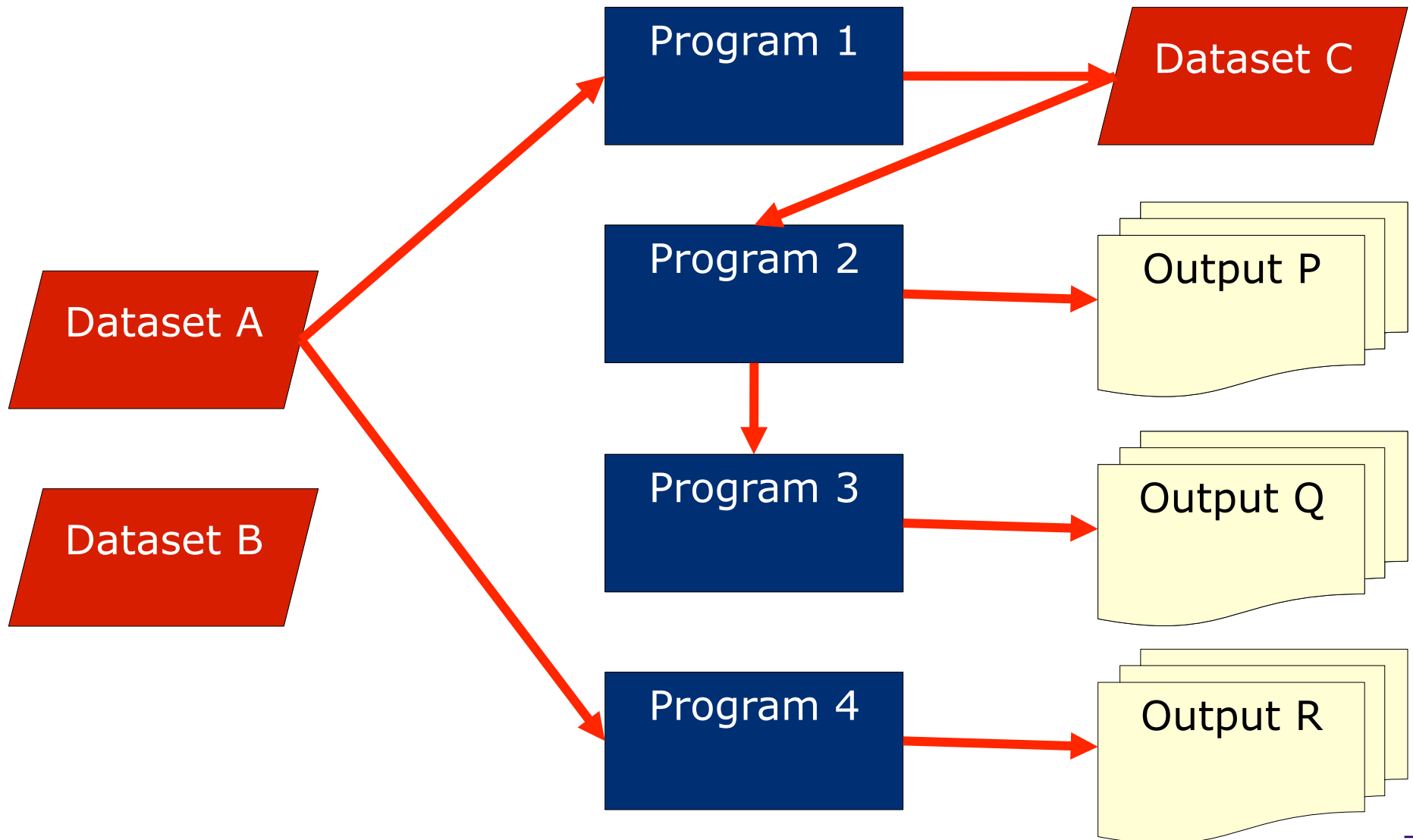
★ Nature of programming work

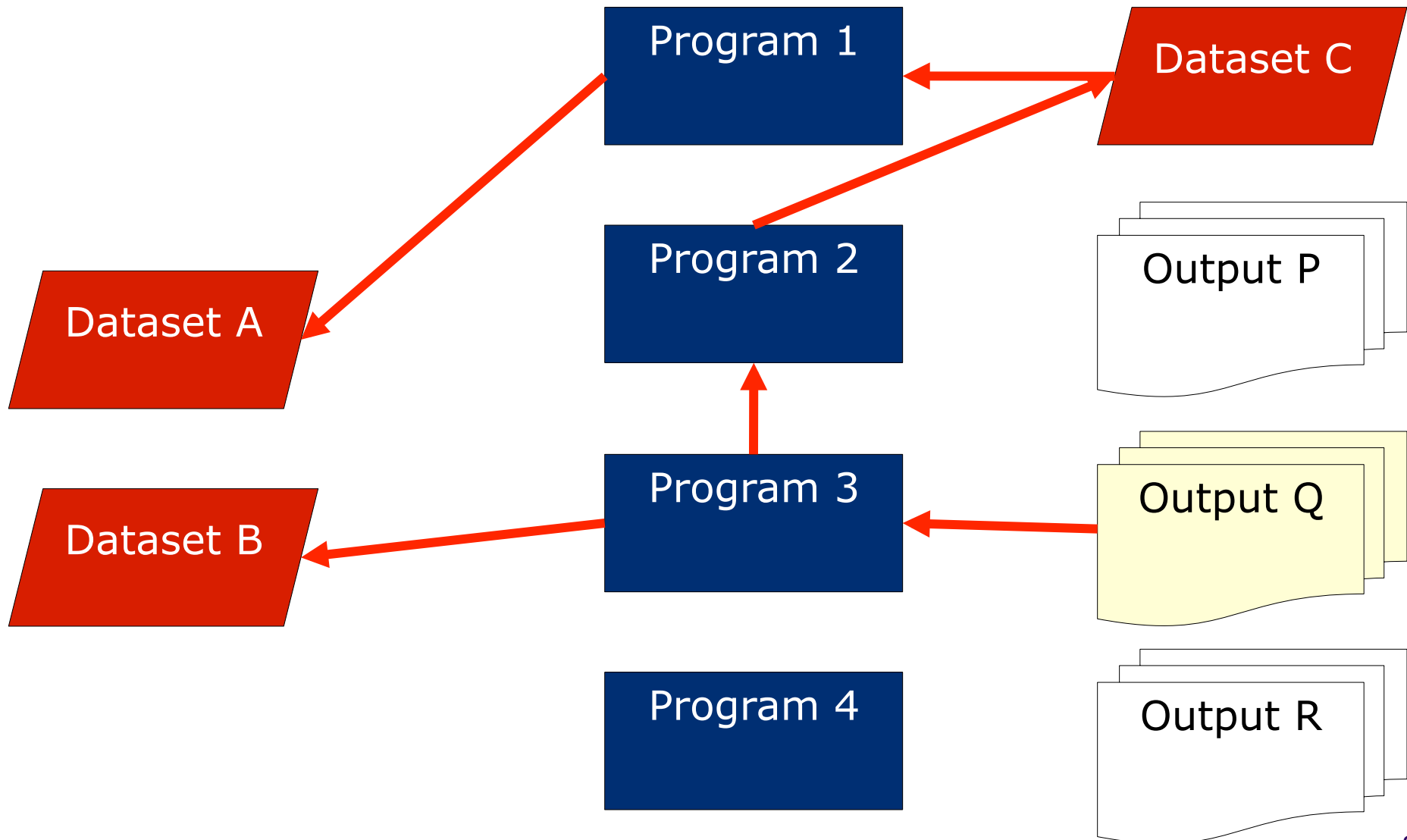
- In-house vs outsourcing
- Clinical study reporting vs Ad-hoc analyses vs Data review











- ★ Overwriting of files when programs are re-run
- ★ Program log
- ★ Documentation
 - Programs: Input and output files
 - Audit trail
- ★ Group of programs to run
- ★ Standards

- ★ Multiple tools vs single application
- ★ Off-the-shelf vs bespoke solution
- ★ Constraints
 - Data storage
 - Cost
 - Resource needed for implementation and maintenance
 - Changes to existing setup and processes
 - Fit for purpose

★ Business Requirements translated into Technical Requirements:

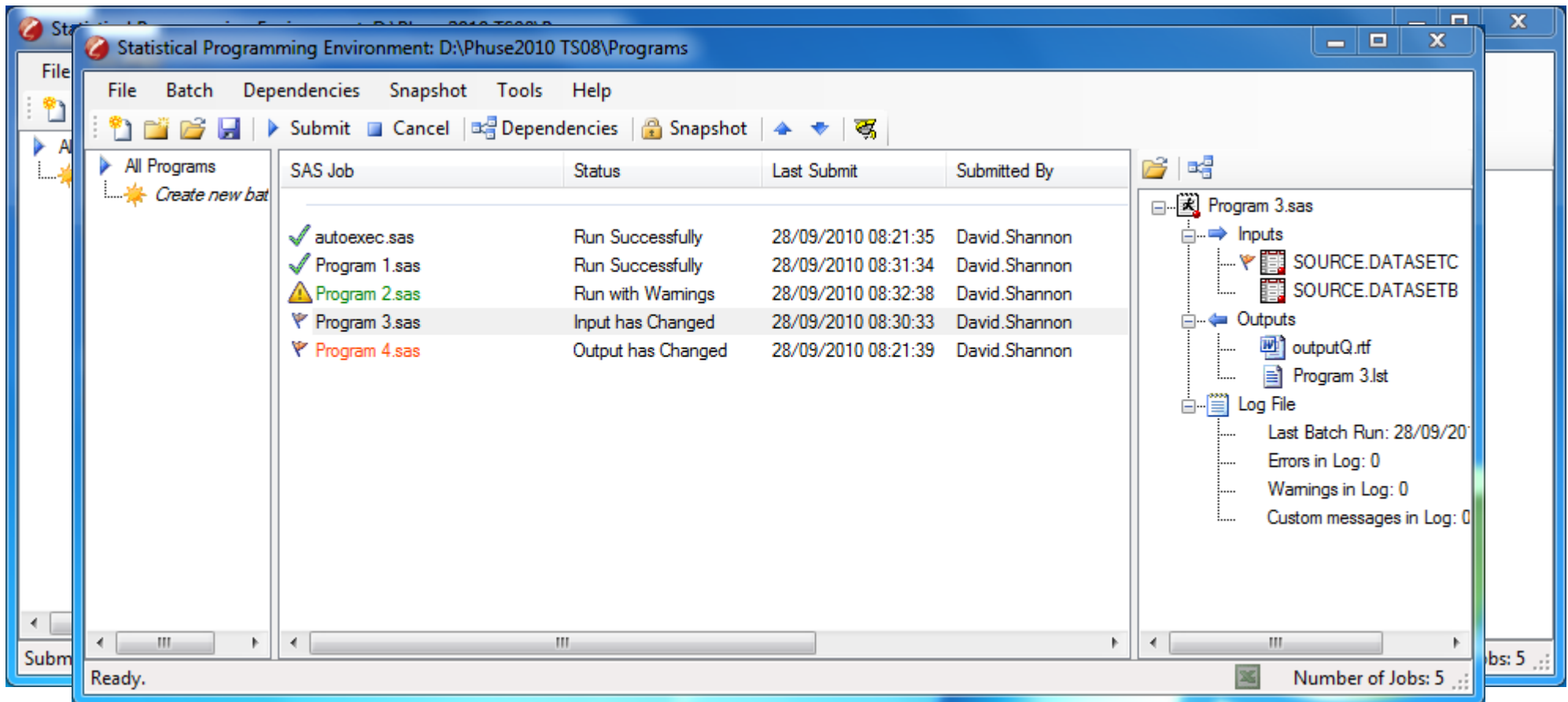
- Workflow



- Snapshots

- Audit trail

- Productivity



The screenshot displays the 'Statistical Programming Environment: D:\Phuse2010 TS08\Programs' window. The interface includes a menu bar (File, Batch, Dependencies, Snapshot, Tools, Help) and a toolbar with icons for Submit, Cancel, Dependencies, and Snapshot. The main area is divided into two panes. The left pane, titled 'All Programs', shows a list of SAS jobs with their status, last submit time, and submitted by user. The right pane, titled 'Program 3.sas', shows the job's inputs, outputs, and log file details.

SAS Job	Status	Last Submit	Submitted By
✓ autoexec.sas	Run Successfully	28/09/2010 08:21:35	David.Shannon
✓ Program 1.sas	Run Successfully	28/09/2010 08:31:34	David.Shannon
⚠ Program 2.sas	Run with Warnings	28/09/2010 08:32:38	David.Shannon
🔍 Program 3.sas	Input has Changed	28/09/2010 08:30:33	David.Shannon
🔍 Program 4.sas	Output has Changed	28/09/2010 08:21:39	David.Shannon

The right pane for 'Program 3.sas' shows the following details:

- Inputs:** SOURCE.DATASETC, SOURCE.DATASET B
- Outputs:** outputQ.rtf, Program 3.lst
- Log File:** Last Batch Run: 28/09/2010, Errors in Log: 0, Warnings in Log: 0, Custom messages in Log: 0

The status bar at the bottom indicates 'Ready.' and 'Number of Jobs: 5'.

★ Batch lists

- Virtual folders group SAS programs into lists
- Order the execution of programs within each list
- One SAS program may appear in many batch lists

★ Snapshots

- Elementary source control
- Secure all objects in a study to a compressed folder
- Read-only, users never know edit password
- Safely recover studies

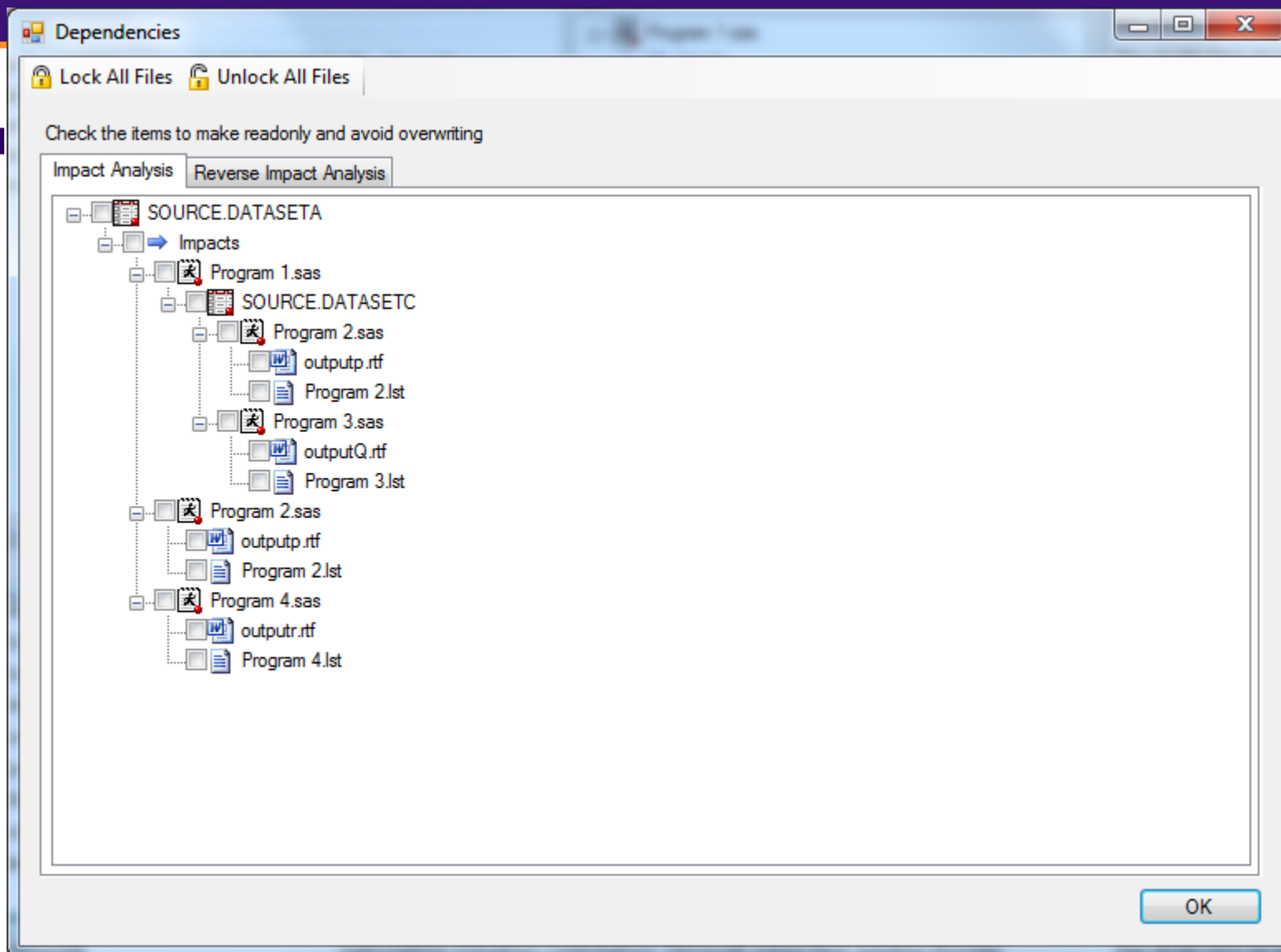
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★ Productivity

- Define SAS title statements
- Derive ODS statements
- Edit SAS program in a display manager session
- Navigation through log file error and warnings
- Populate company standard folder structures and autoexec
- Consolidate PDF outputs into a single PDF

- ★ Intuitive and quick to learn
- ★ Easy method to detect errors, warnings and custom text
- ★ Easy to see what has been changed
- ★ Ordering of program submission & Batch list
- ★ Dependency analysis
- ★ Snapshot function
- ★ Multi-user access – only 1st user has write access to XML file
- ★ Performance – additional time

Thank you for listening

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