Population Pharmacokinetics with Pipeline Pilot

1. Overview of Pipeline Pilot
2. Application Examples

PIPELINE® PILOT

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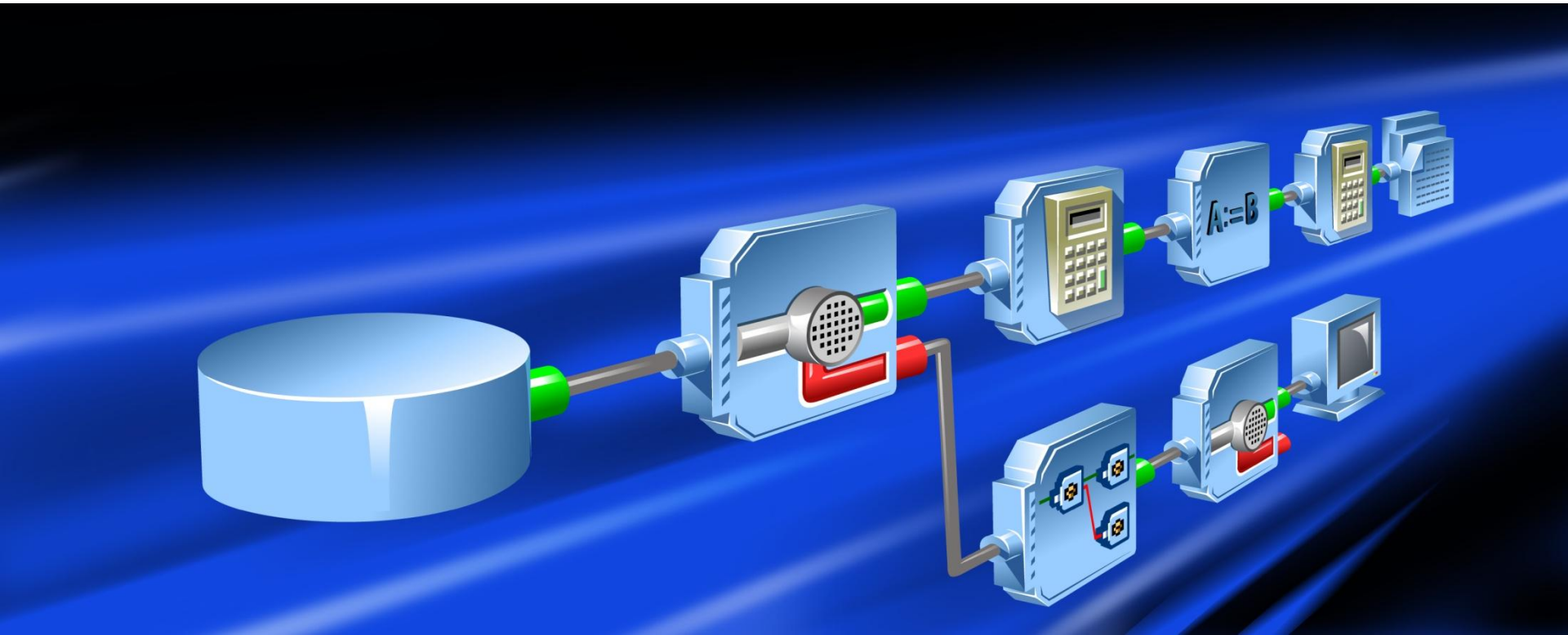
Pipeline Pilot

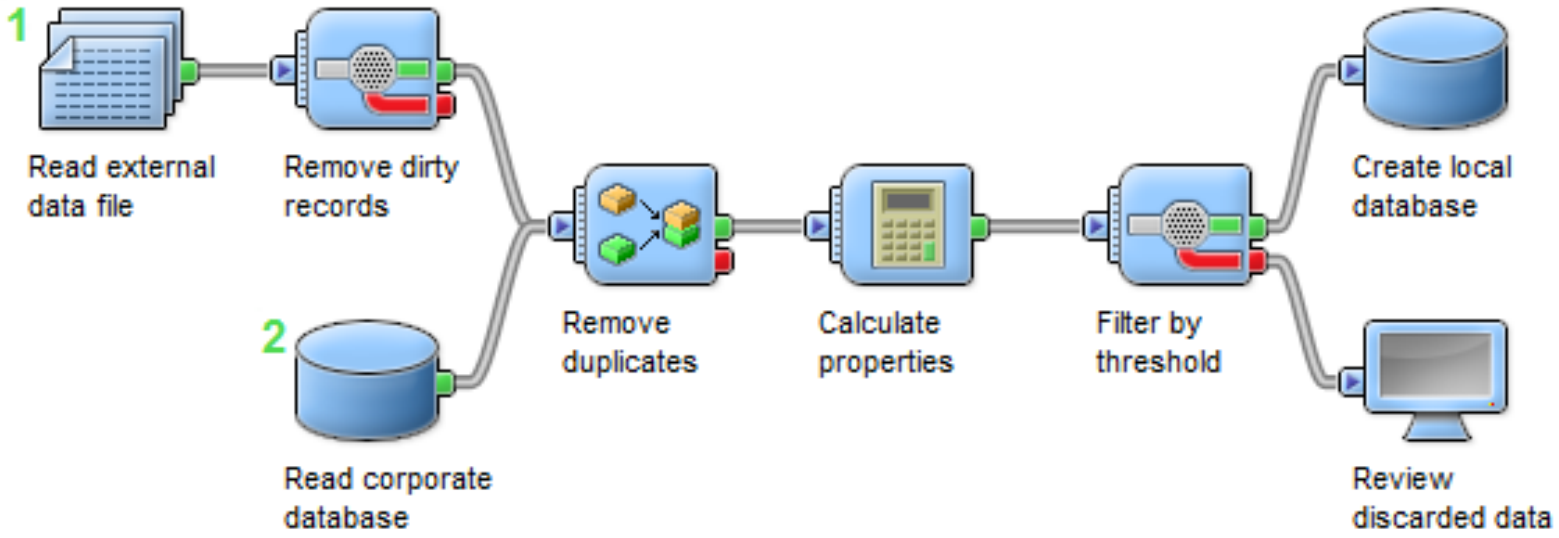
Enterprise software for

- Integrating diverse data & applications
- Automating data processing & analysis
- Capturing & deploying best-practice processes



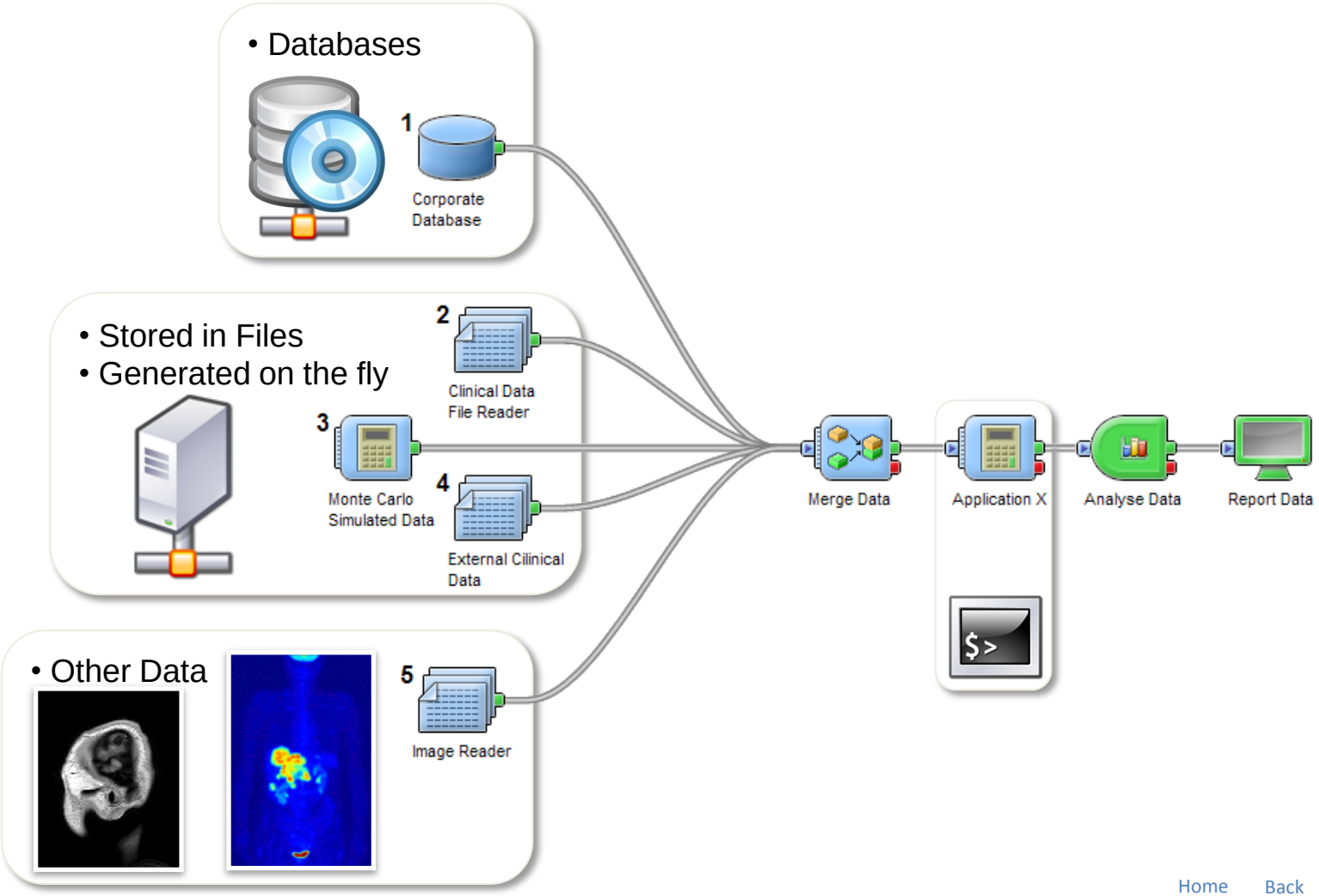
Data Pipelining

- A powerful new paradigm for data processing
- Pipelines guide the flow of data through a network of modular computational components



With Pipeline Pilot

- Access disparate research data locked in silos



With Pipeline Pilot

- Access disparate research data locked in silos
- Automate the scientific analysis

Command Line

ORACLE (CDISC)

SAS

R

MATLAB

Perl

Java

Python

VBScript

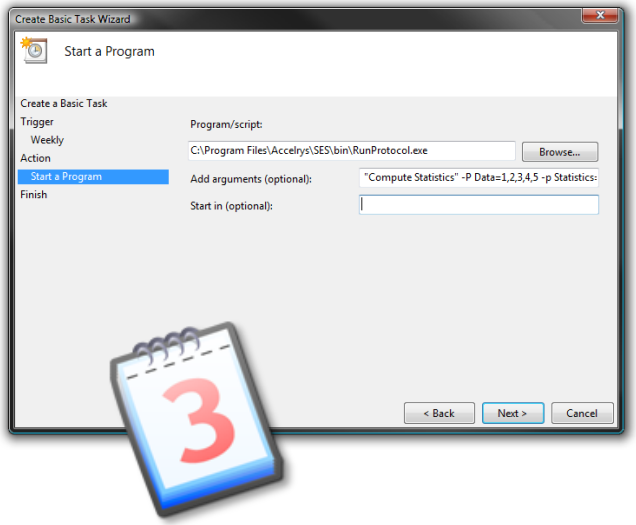
NONMEM (PsN, Xpose)

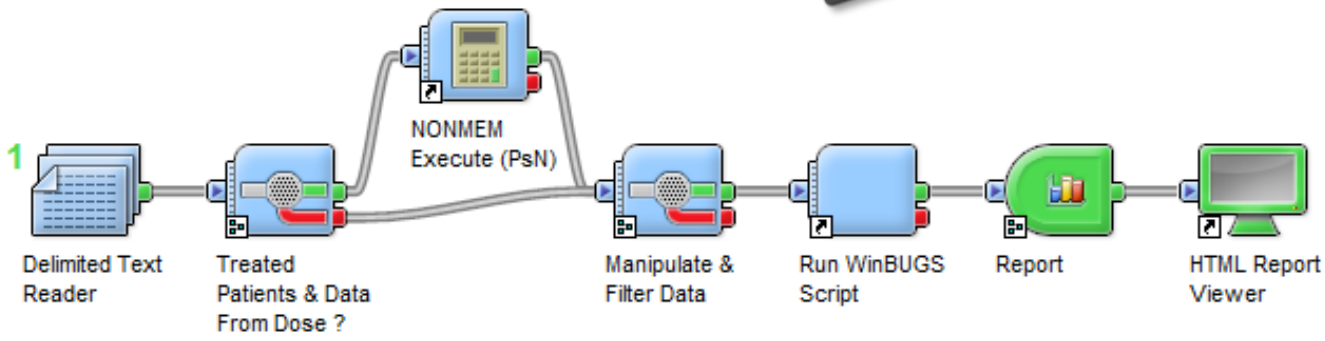
WinBUGS

Monolix

WinNonlin, Phoenix

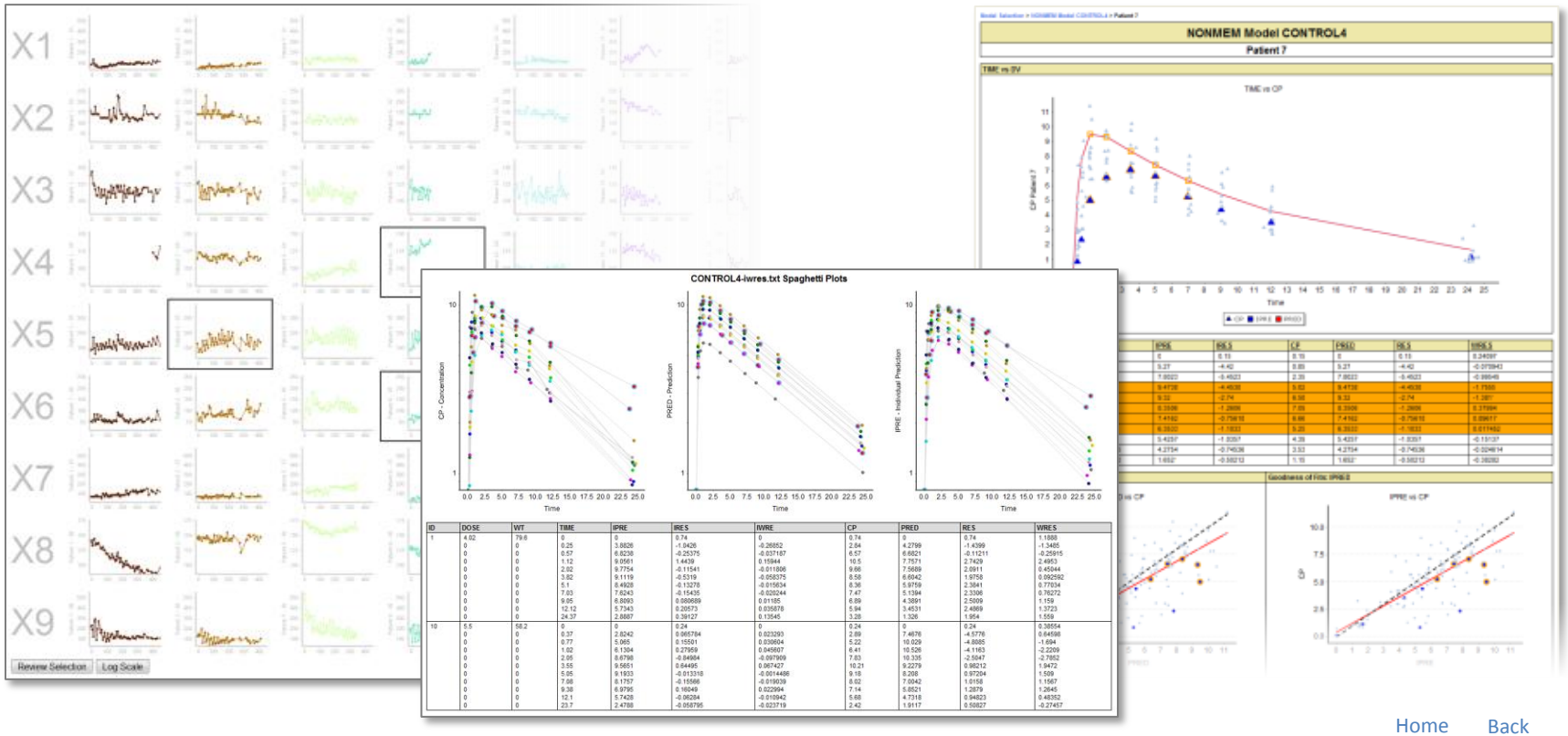
Simcyp





With Pipeline Pilot

- Access disparate research data locked in silos
- Automate the scientific analysis
- Explore, visualize and report research results



Pipeline Pilot Benefits

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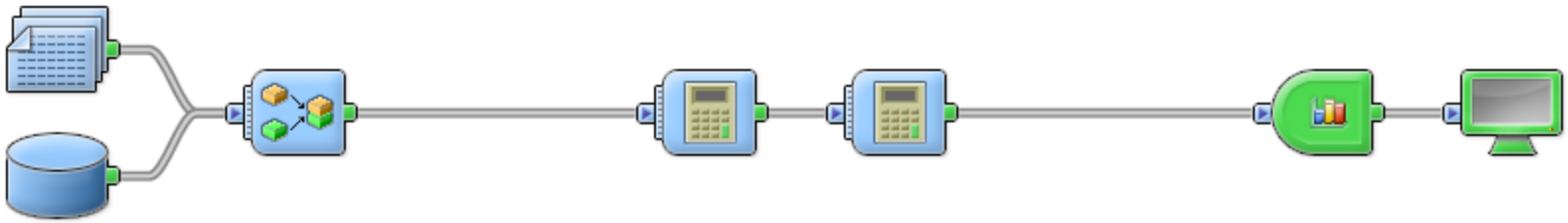
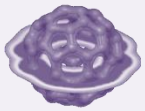
Merge Data	Automate Applications	Report & Deploy
• Extract knowledge • Fewer errors	○ Extract knowledge ○ Fewer errors • Save time • Focus on Science	○ Extract knowledge ○ Fewer errors ○ Save time ○ Focus on Science • Educate decisions • Collaborate



Component Collections

Materials M&S



Materials

Polymer Properties (Synthia)

Life Science M&S

Catalyst (Pharmacophore)

CHARMm (Simulations)

Chemistry

Chemistry

ADMET

Cheminformatics

Biology

Sequence Analysis

Gene Expression

Mass Spectrometry for Proteomics

Next Generation Sequencing

Laboratory

Plate Data Analytics

Analytical Instrumentation

Document Search & Analysis

Text Analytics

Chemical Text Mining

Imaging

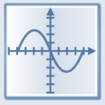
Imaging

Advanced Imaging

Database & Application Integration

Integration

Analysis & Statistics



Modeling

Advanced Modeling

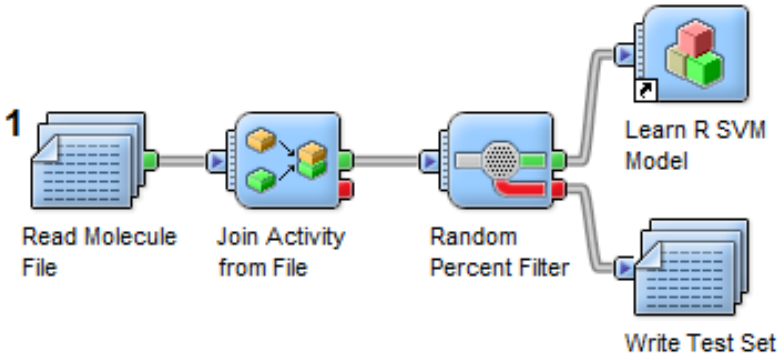
R-Statistics

Reporting & Visualization

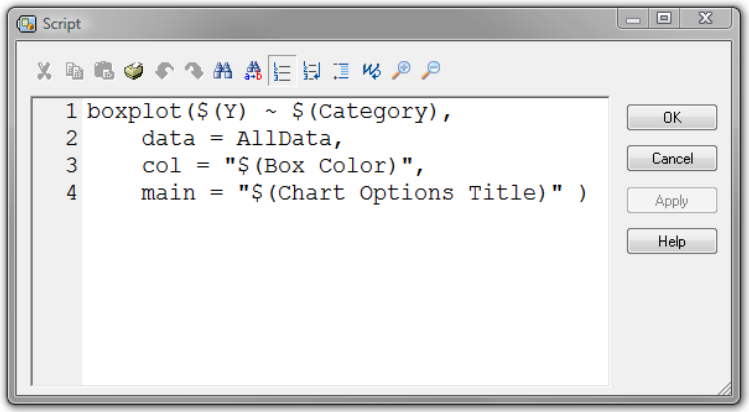
Reporting

e.g. R Statistics component collection

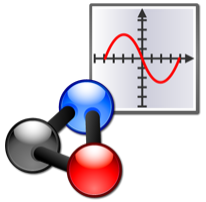
(non R experts)
Scientists use R tools without scripting



R experts customise R script within Pipeline Pilot



Synergies between statistically-aware R & scientifically-aware Pipeline Pilot



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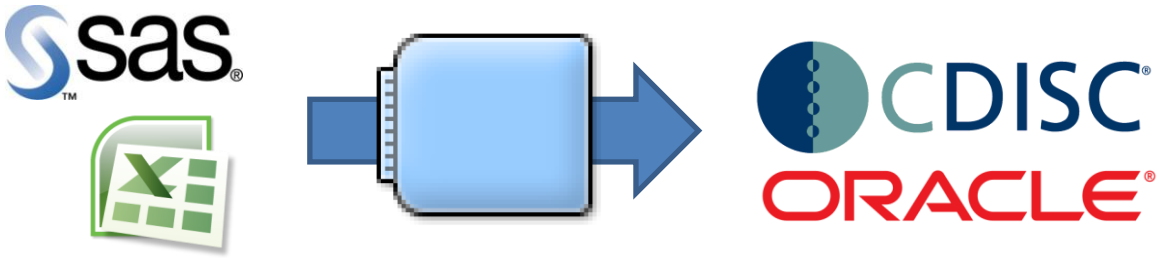
Use case 1 - Acadia - SAS to CDISC

- Acadia ClinPK internal PP development
- Transform and migrate human clinical trial data
  - From multiple locations, including SAS transport files and Excel spreadsheets
  - Into a consolidated CDISC* compliant Oracle database
  - Cross-study querying and reporting

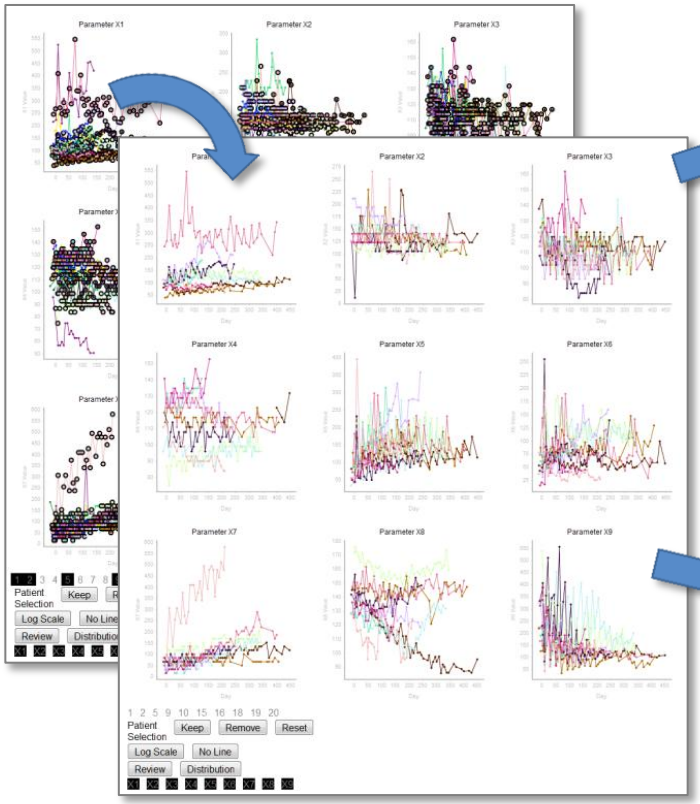


* CDISC = Clinical Data Interchange Standards Consortium

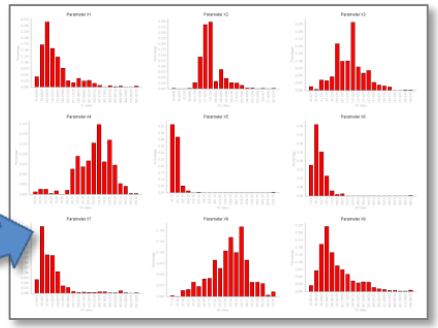
Use case 2 - Data Exploration

1. Data Overview

- Keep/Remove Patients
- Linear/Log Scale



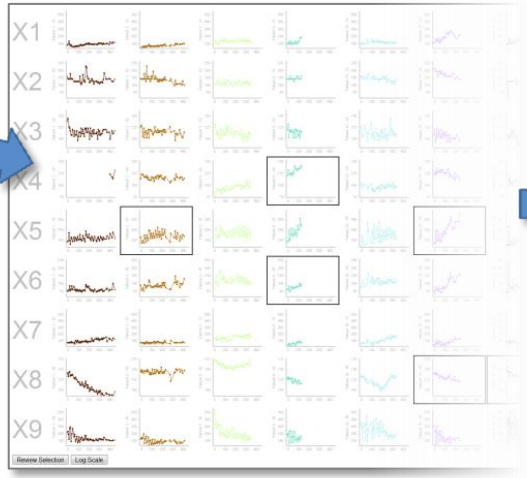
2. Data Distribution



- Remove/keep outliers
- Select parameters
- Linear and log scales
- Show/hide lines

3. Patient vs Parameter

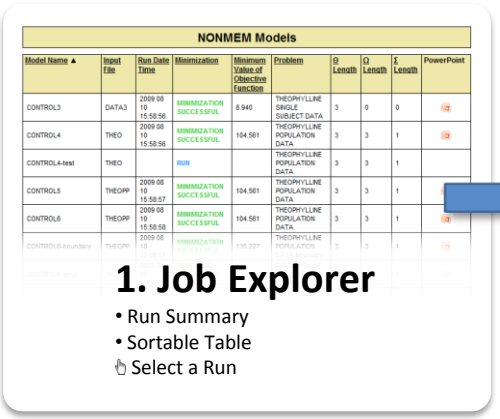
- Select to review in detail
- Linear/Log Scale



4. Data Details

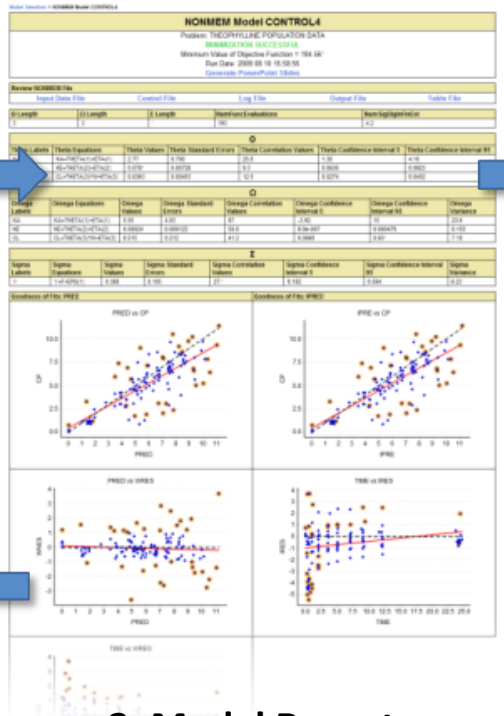
Use case 3 - NONMEM Models View

Compare, review and run NONMEM models from the Web Port



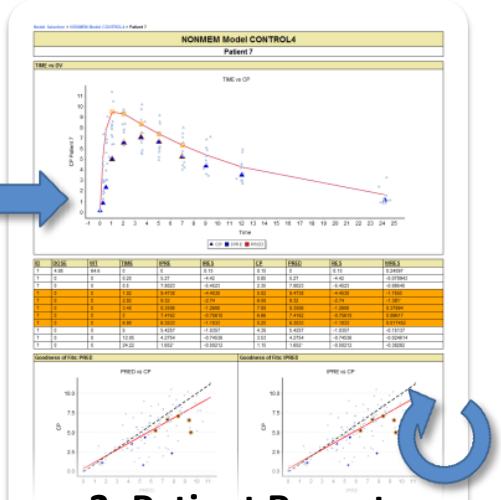
1. Job Explorer

- Run Summary
- Sortable Table
- Select a Run



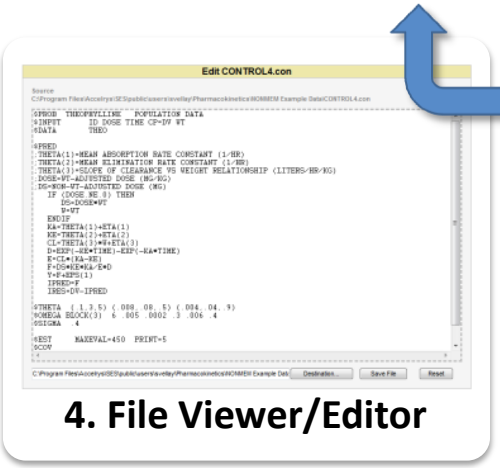
2. Model Report

- Parameter Estimate
- Goodness of Fit
- Individual Plot
- PowerPoint Version
- Select a File
- Select a Patient



3. Patient Report

- Individual Plot
- Goodness of Fit
- Patient Data Table
- Select another Patient



4. File Viewer/Editor

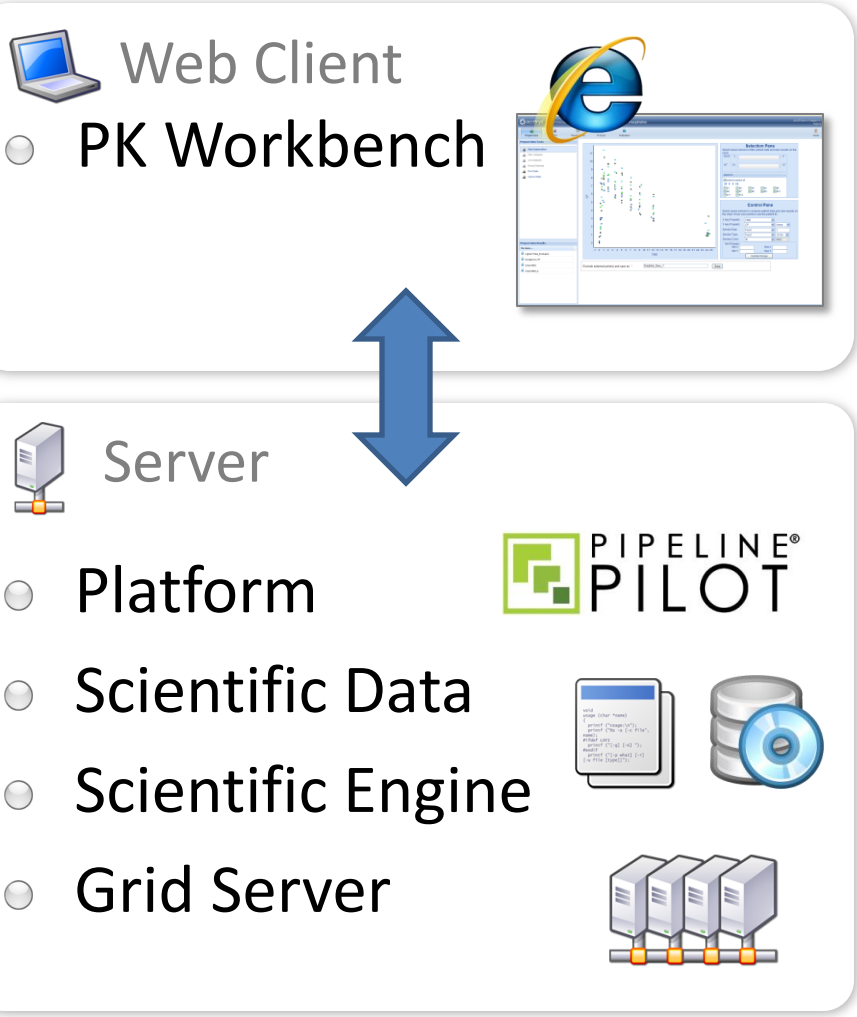
PsN Perl speaks NONMEM

NONMEM

Use Case 4 – Pharmacokinetics Workbench

- Web environment for modeling & simulation
- Create, share, run and compare models & scripts
- Track, log and replay!

- Enables capture and sharing of **best practice**
- Ensures **repeatability** by recording workflows
- Enables automation of workflow leading to **time saving**



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Questions & Comments

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