

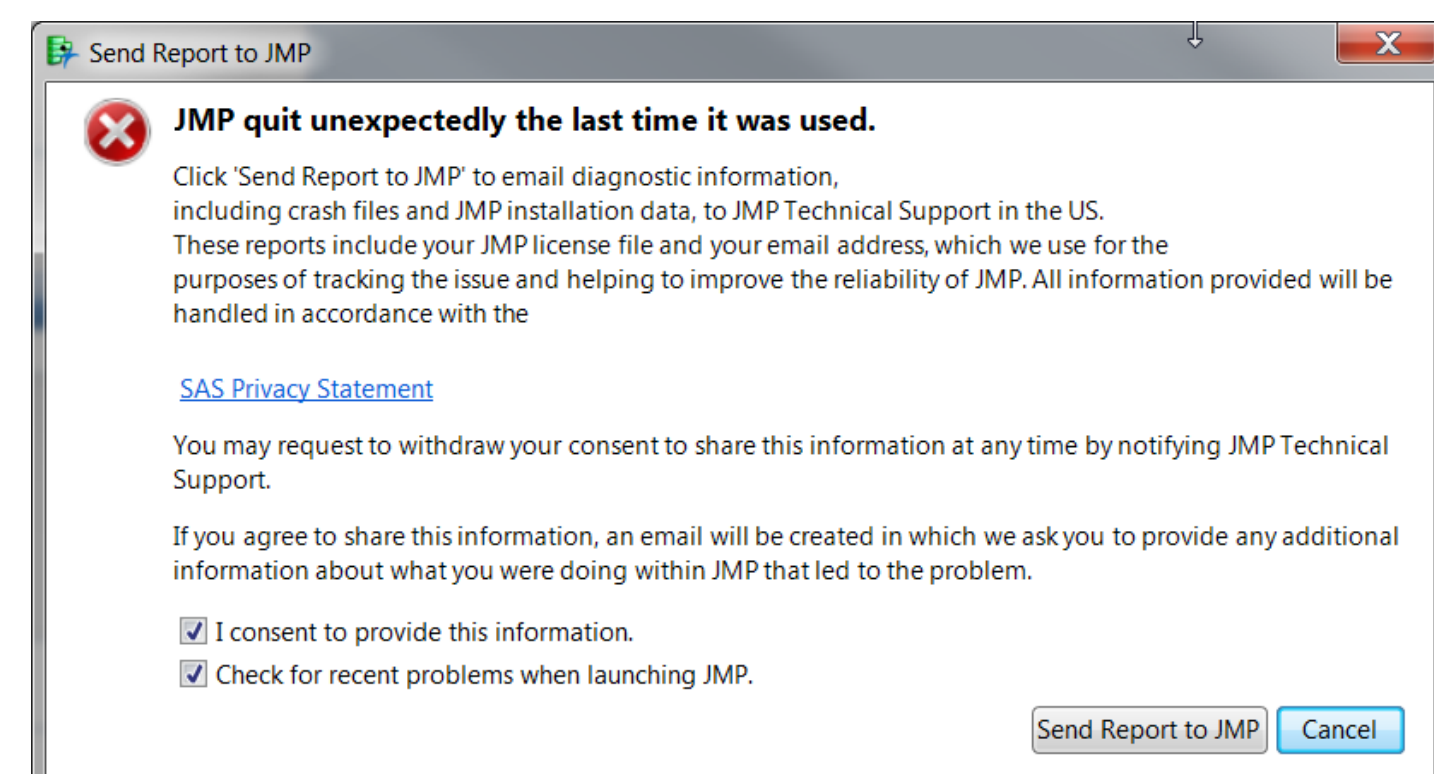
Using JMP® to Examine JMP® Crash Data

Shannon Connors, PhD

JMP, SAS

Abstract

Customer bug and crash reports provide precious insights into customers' experience of JMP product quality. Even as the JMP team develops features and new products, we also evaluate problem reports from a range of production releases. JMP developed email-based systems for Mac crash reports in JMP 12 and Windows crash reports in JMP 13. Technical Support and Development collaborate to identify, investigate and fix reported problems. New crash files sent to JMP Technical Support are processed hourly and details loaded into a SQL Server database. Reported issues are screened, identified as novel or potentially related to a known issue, and details are sent back to the track. I created a crash investigation project that refreshes hourly via JSL and organizes my queries, scripts, graphs, and tables with embedded web links. I use the data tables in this crash data project to identify additional occurrences of known crashes, find groups of unsolved crashes requiring further investigation by JMP developers, and understand the prevalence of various problem reports from the field. Text files saved from the JMP tables are consumed by an internal crash tracking website. For JMP 15, we have implemented improvements to this system that we believe will streamline the process and encourage more customers to share their reports.



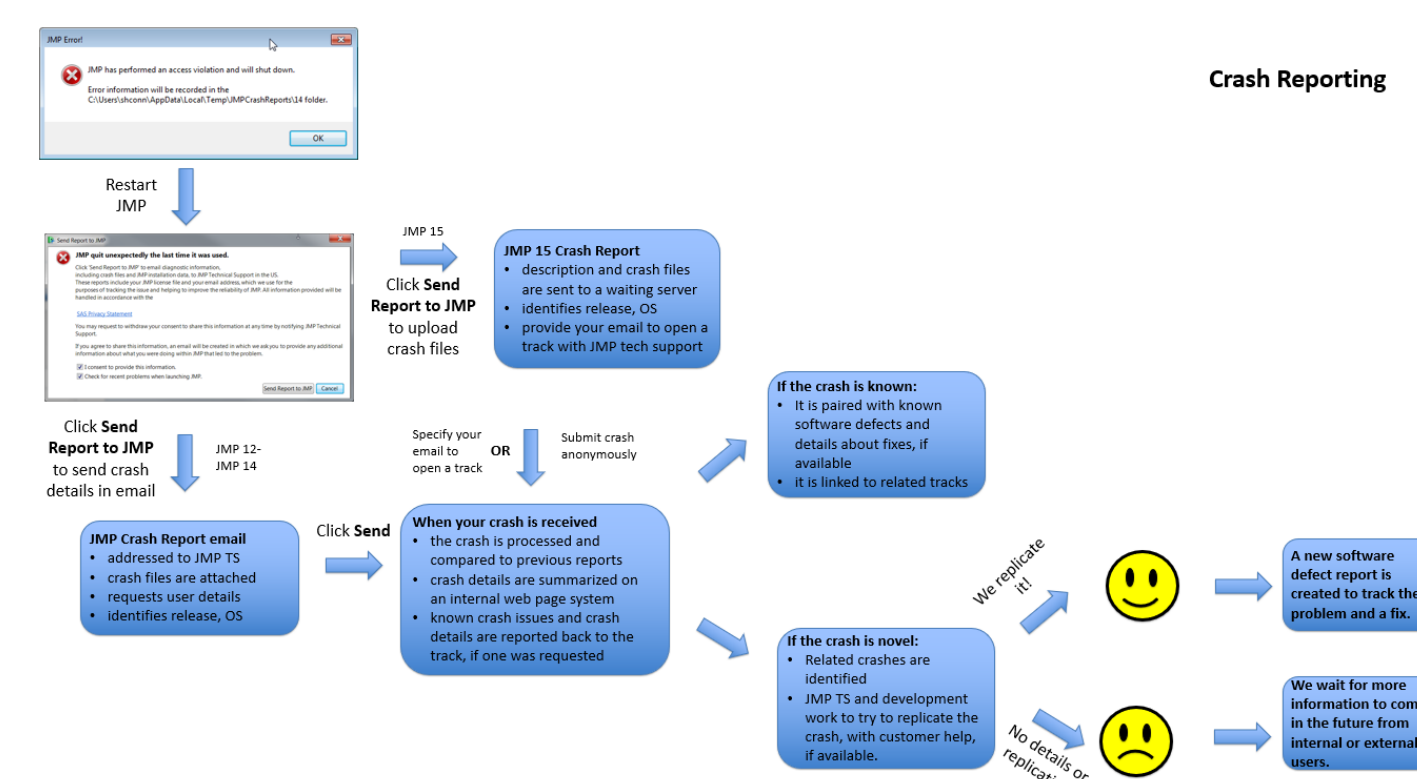
Click pictures to zoom

Objectives

- Automated packaging, processing, and storage of JMP crash reports from internal and external sources.
- Quick refresh of combined tables created using queries from crash databases and table operations in JMP.
- Organization of tables and graphs in a JMP 14 project.
- Creation of text versions of tables for crash web page.
- Investigation of new and as-yet-unsolved crashes.
- Improvement in JMP's stability release to release.

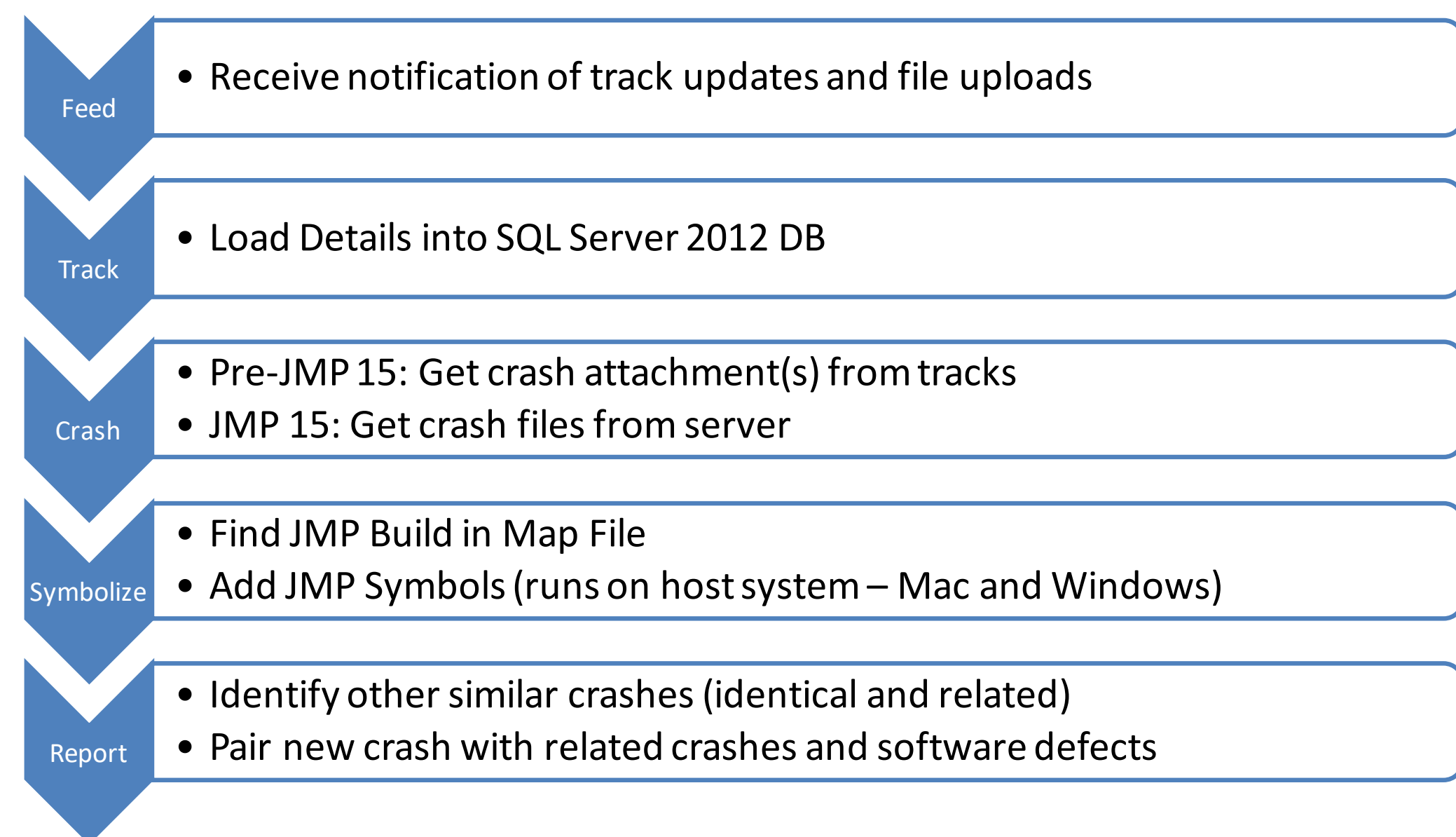
Crash Reporting

- After JMP exits unexpectedly, customers are prompted to send details back to the JMP team via JMP tech support.
- JMP 14 uses an email-based mechanism, while JMP 15 allows direct upload of crash files to a server.
- Mac customers who report their issues share .crash files, while Windows customers provide .jer and .dmp files that developers use to help debug the problem.
- Customers are asked to provide details about the actions that preceded a crash and replication steps, if available.
- Though some crashes can be solved using only crash files, customer notes often provide critical clues and test case scenarios for replication and fix verification.
- When a crash can be replicated, a defect is opened and addressed in the next available JMP release.
- If a "mystery crash" can not be replicated initially, later reports may shed light on how to solve the problem.

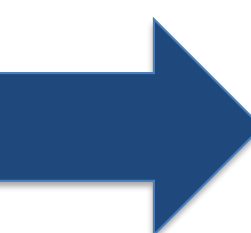


Crash File Processing

- The JMP DevOps team maintains an automated crash analysis pipeline in collaboration with JMP Technical Support.
- Technical Support provides a list of new and updated JMP tracks from JMP 14 and earlier versions. JMP 15 crash files are downloaded from a crash server every 5 minutes.
- Crash attachments are identified by file extension and name, then processed by host-specific programs (Mac or Win).
- New crashes are screened to identify high-scoring matches to existing tracks and software defects.
- Crash details are sent to the track, usually within an hour.
- Newly entered software defects are attached to tracks and added to the database.
- JMP testers, developers, and other internal JMP users send their own crash reports through the screening system.



Click pictures to zoom



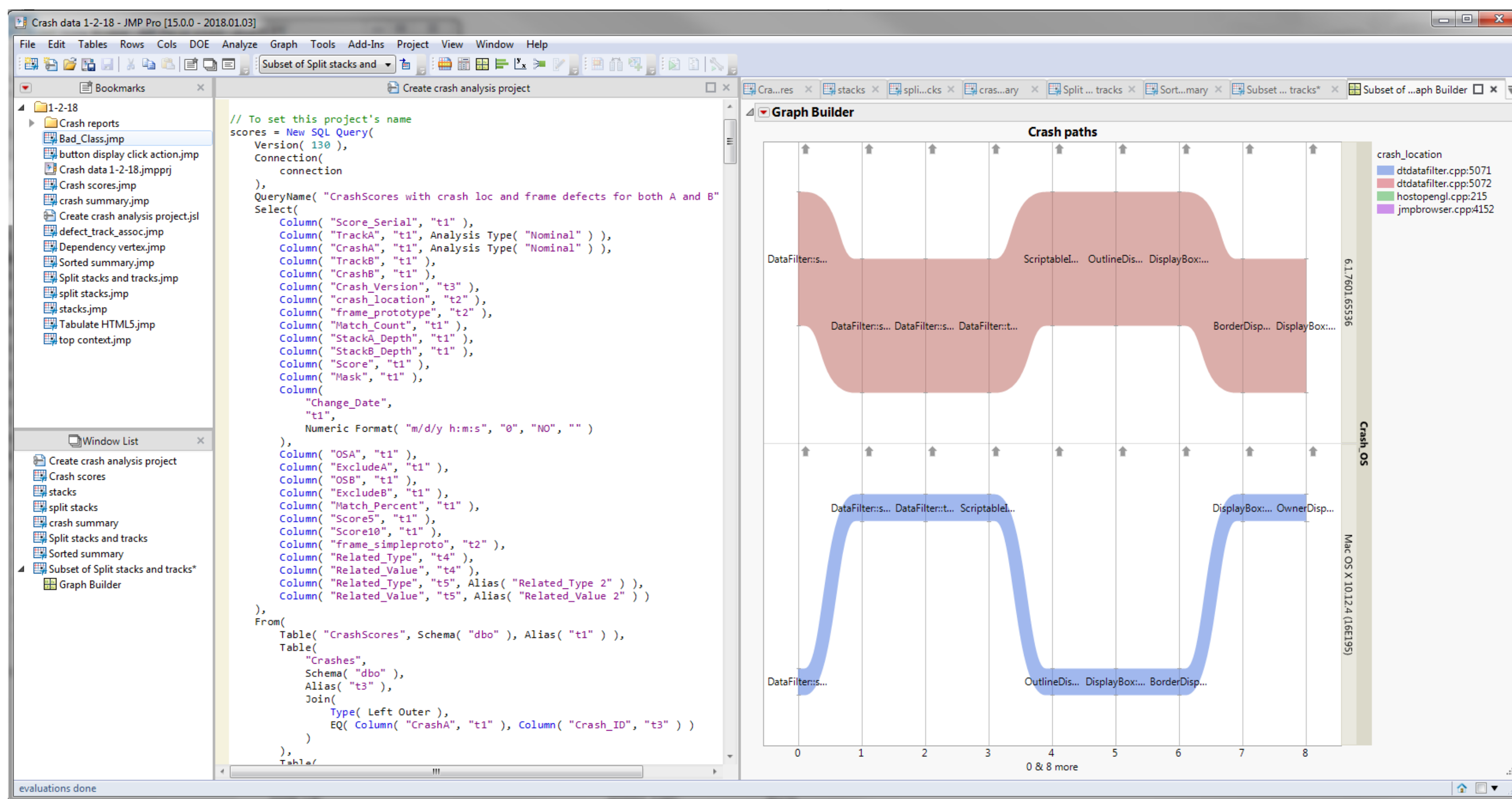
Automated and Interactive Analysis of JMP® Crash Data

Shannon Connors, PhD

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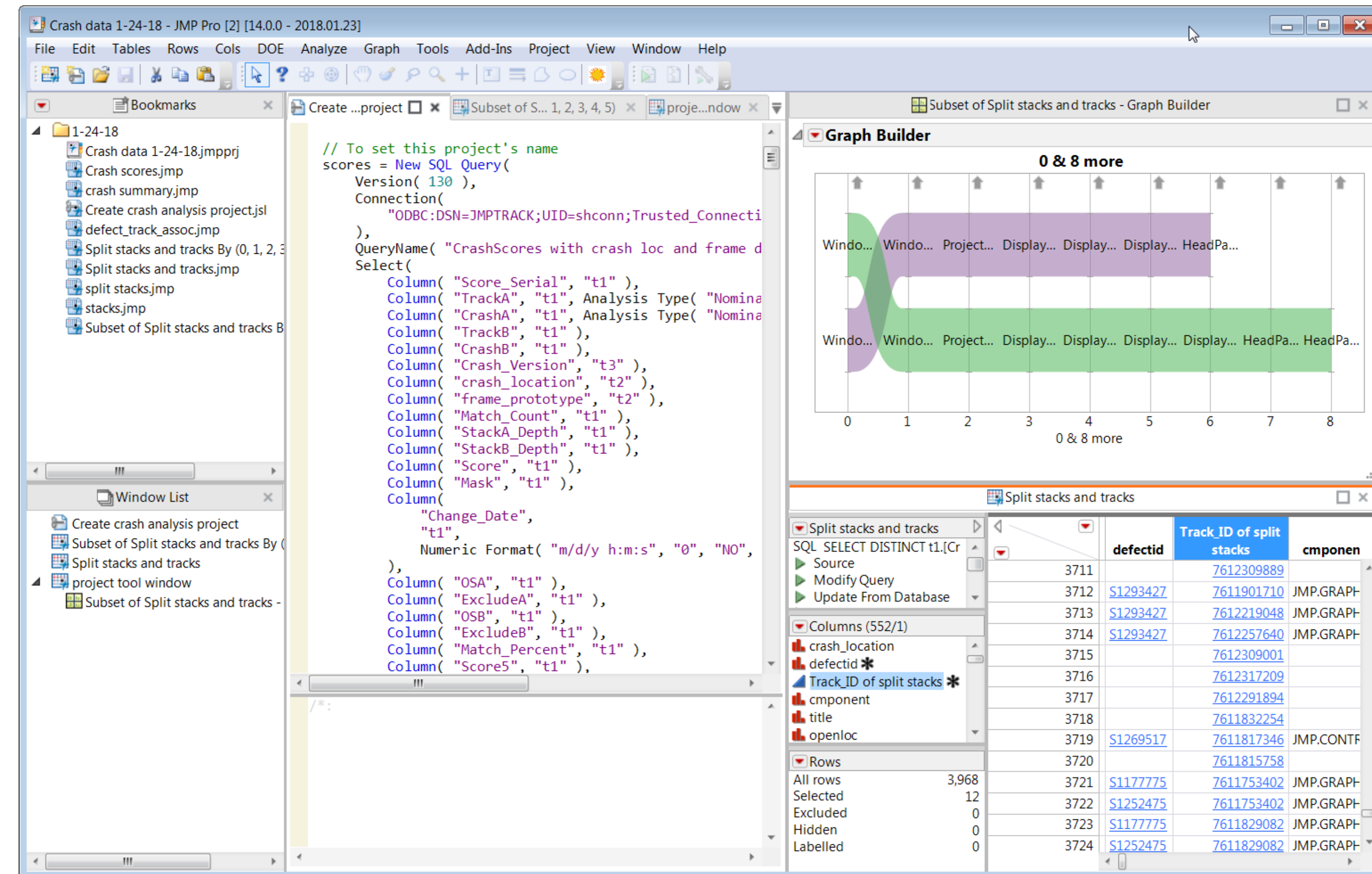
Key Features for Crash Analysis

- I use a **JMP project** to contain and organize various tables and graphs for crash data.
- I create a master **JSL script** to automate updates to my crash data exploration project.
- I use JMP's point-and-click **database Query Builder** to select and join tables and choose columns from the crash database, and copied the script into my master script.
- I use JMP's **Event Handler column property** to script the addition of live links to my table for 1-click opening of web pages for support tracks and software defect reports.
- I use JMP's **Tables menu** tools like Summarize to group similar crashes and defect reports.
- I embed **scripts in my data tables** to generate graphics for interesting subset tables-e.g., parallel plots of crash paths to explore operating system or release differences.



Click pictures
to zoom

My Favorite Crash Exploration Features



JMP projects:
a drag and drop interface for organizing my JMP files and windows

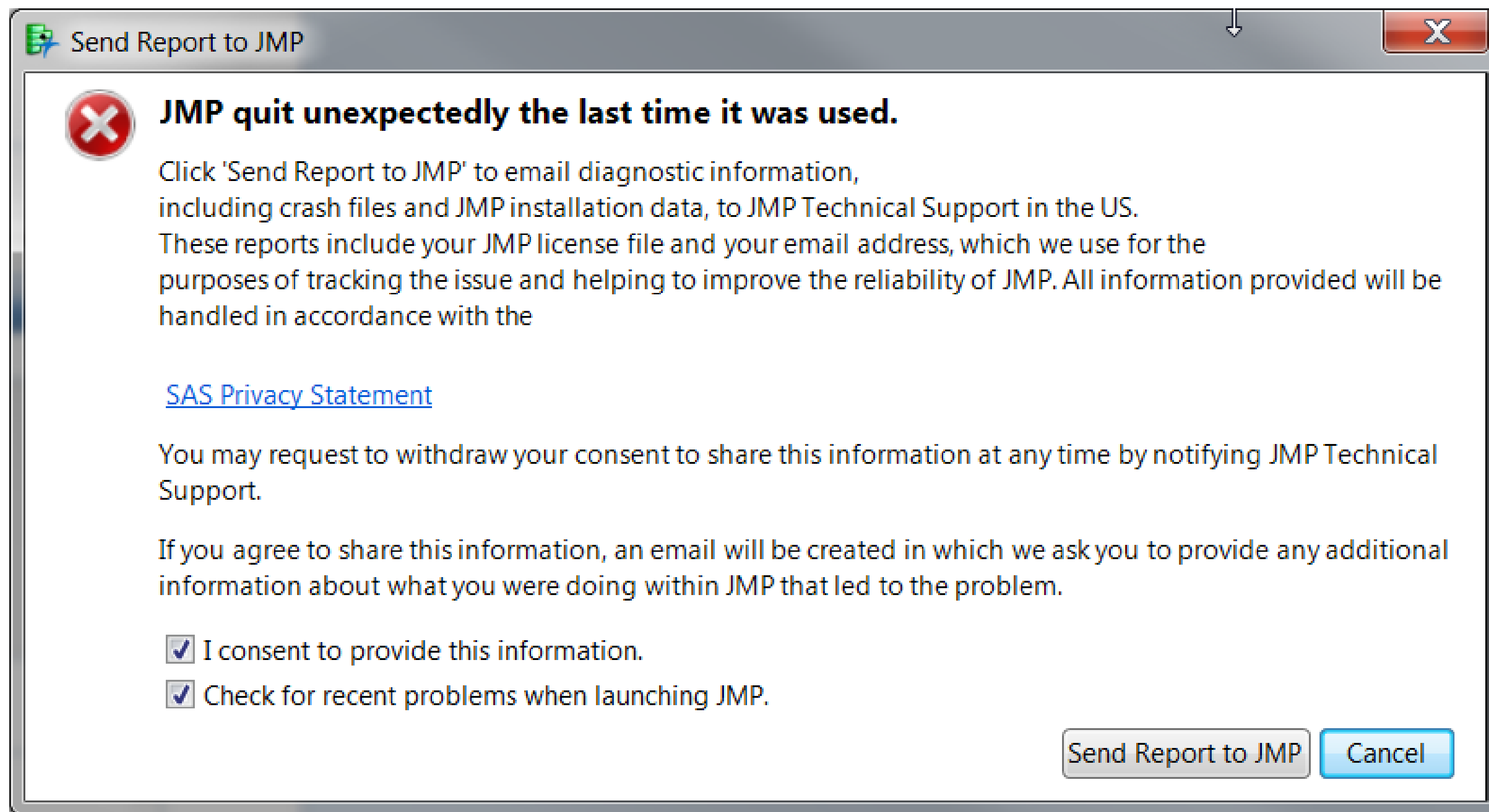
JMP Query Builder:
an interactive interface for setting up database joins and saving scripts

JMP Parallel Plot:
a useful tool for visualizing the set of functions JMP ran prior to a crash.

Event handler column property: embed scripts in data table cells. I embedded web links in my JMP tables!

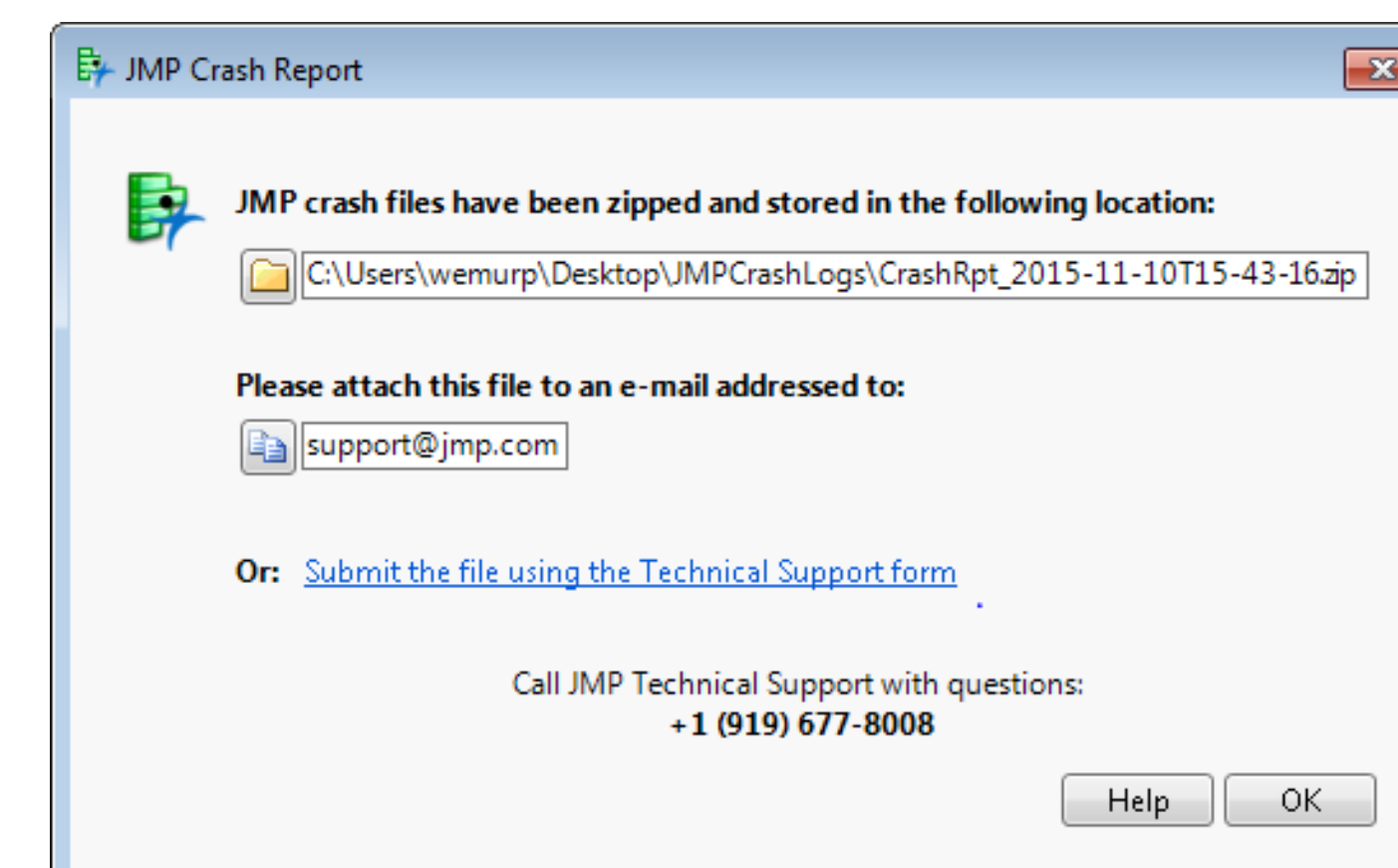
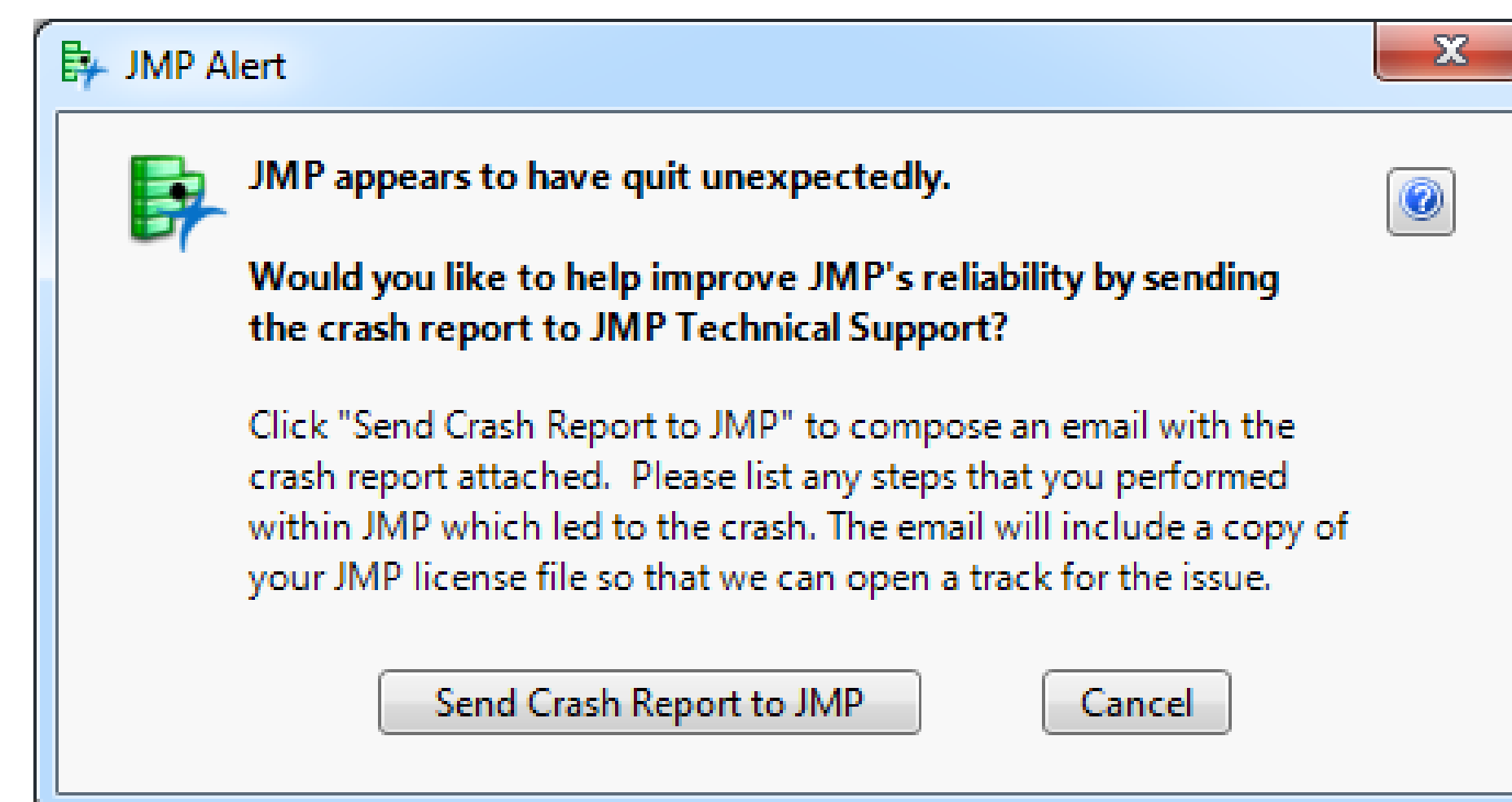
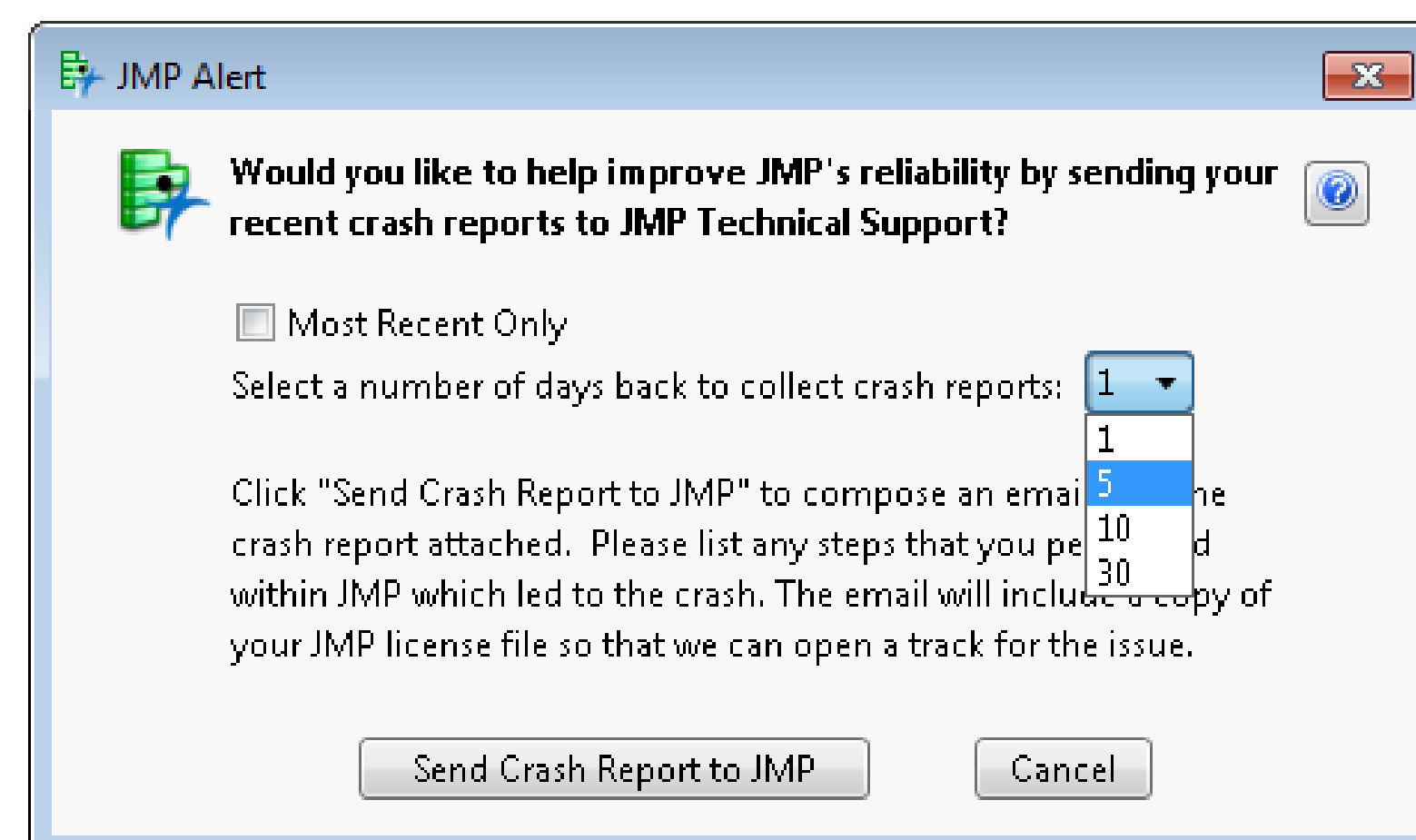
Please Send Your Crash Reports

With the development of an automated pipeline for JMP crash reporting, we are now receiving more crash files from JMP customers than ever before. We are very grateful to you for providing important clues that help JMP Development solve more rare crashes and improve the stability of our product. It is especially useful if you can provide details about the steps you took in JMP prior to the crash. But even if you don't remember what you did or you don't have time to provide details, we are still interested in receiving your crash reports. It is always helpful to know if multiple customers have encountered a particular crash and we are actively reviewing unresolved mystery crashes in search of solutions. We greatly appreciate your help!



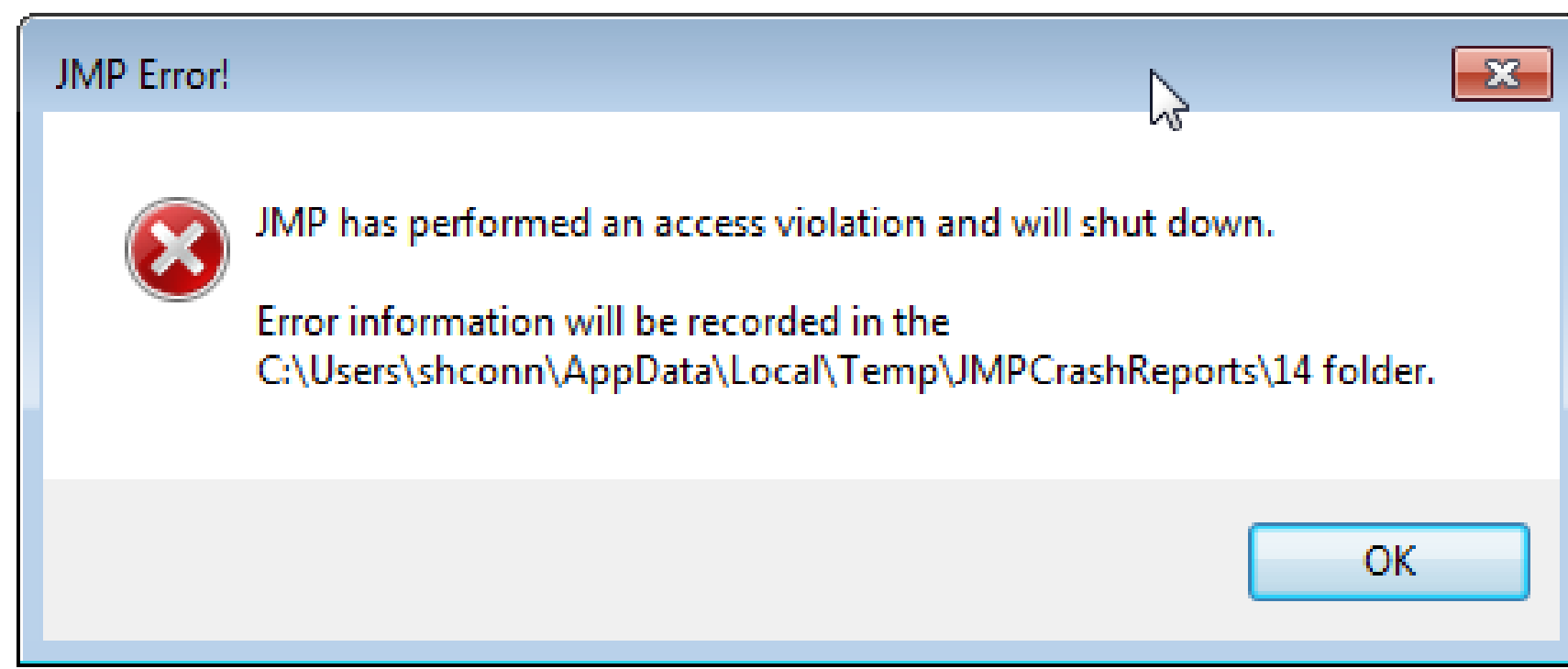
JMP Crash Report Message

A crash reporting add-in written by TS is available for Windows versions prior to 13 here: <https://community.jmp.com/docs/DOC-6475>

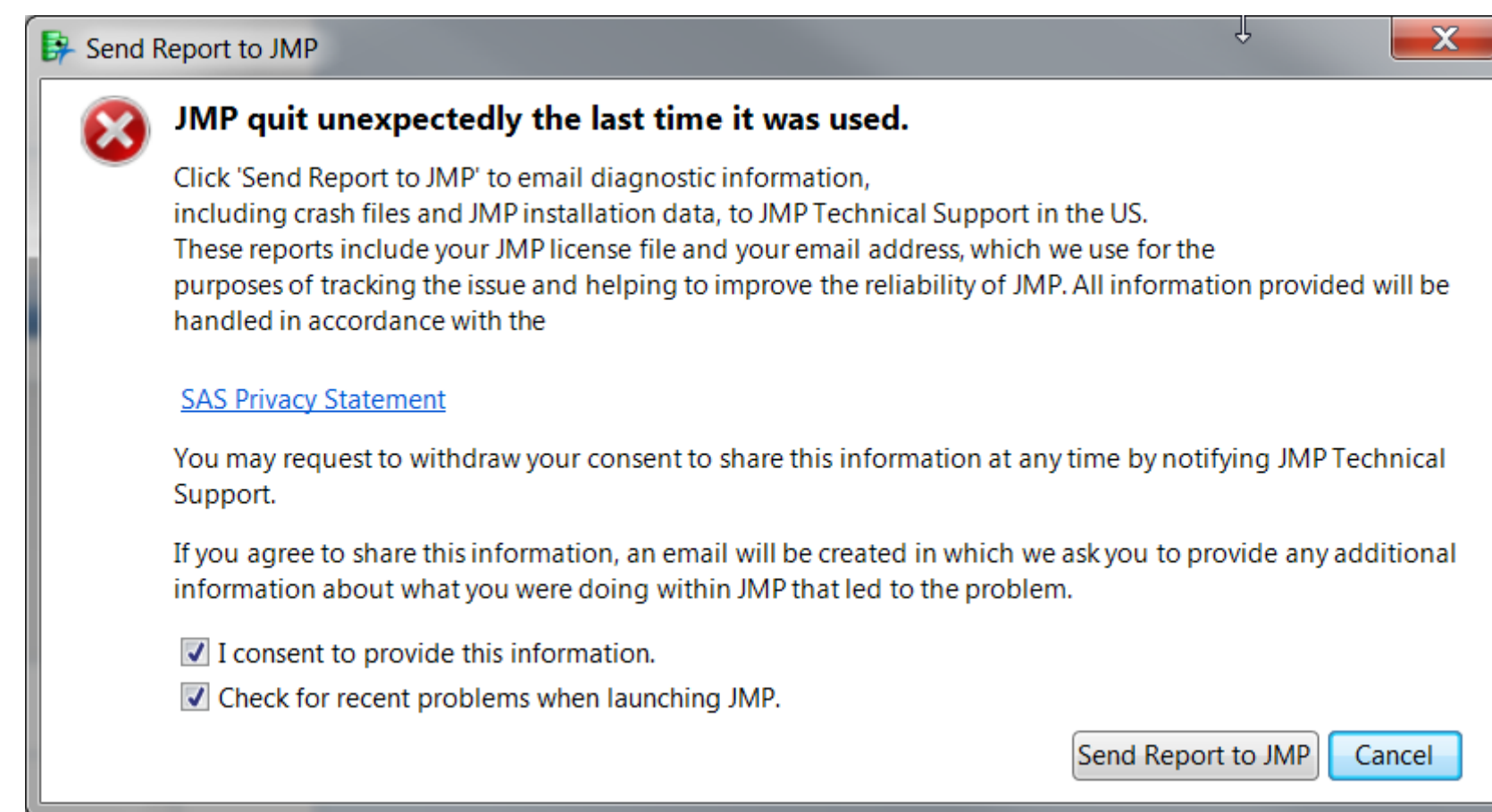


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Crash Reporting



Restart
JMP



JMP 15
Click **Send Report to JMP** to upload crash files

JMP 15 Crash Report

- description and crash files are sent to a waiting server
- identifies release, OS
- provide your email to open a track with JMP tech support

Click **Send Report to JMP** to send crash details in email

JMP 12-
JMP 14

JMP Crash Report email

- addressed to JMP TS
- crash files are attached
- requests user details
- identifies release, OS

Click **Send**

When your crash is received

- the crash is processed and compared to previous reports
- crash details are summarized on an internal web page system
- known crash issues and crash details are reported back to the track, if one was requested

Specify your email to open a track

OR

Submit crash anonymously

If the crash is known:

- It is paired with known software defects and details about fixes, if available
- it is linked to related tracks

If the crash is novel:

- Related crashes are identified
- JMP TS and development work to try to replicate the crash, with customer help, if available.

We replicate it!



A new software defect report is created to track the problem and a fix.

No details or replication



We wait for more information from internal or external users.

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Crash File Processing

Feed

- Receive notification of track updates and file uploads

Track

- Load Details into SQL Server 2012 DB

Crash

- Pre-JMP 15: Get crash attachment(s) from tracks
- JMP 15: Get crash files from server

Symbolize

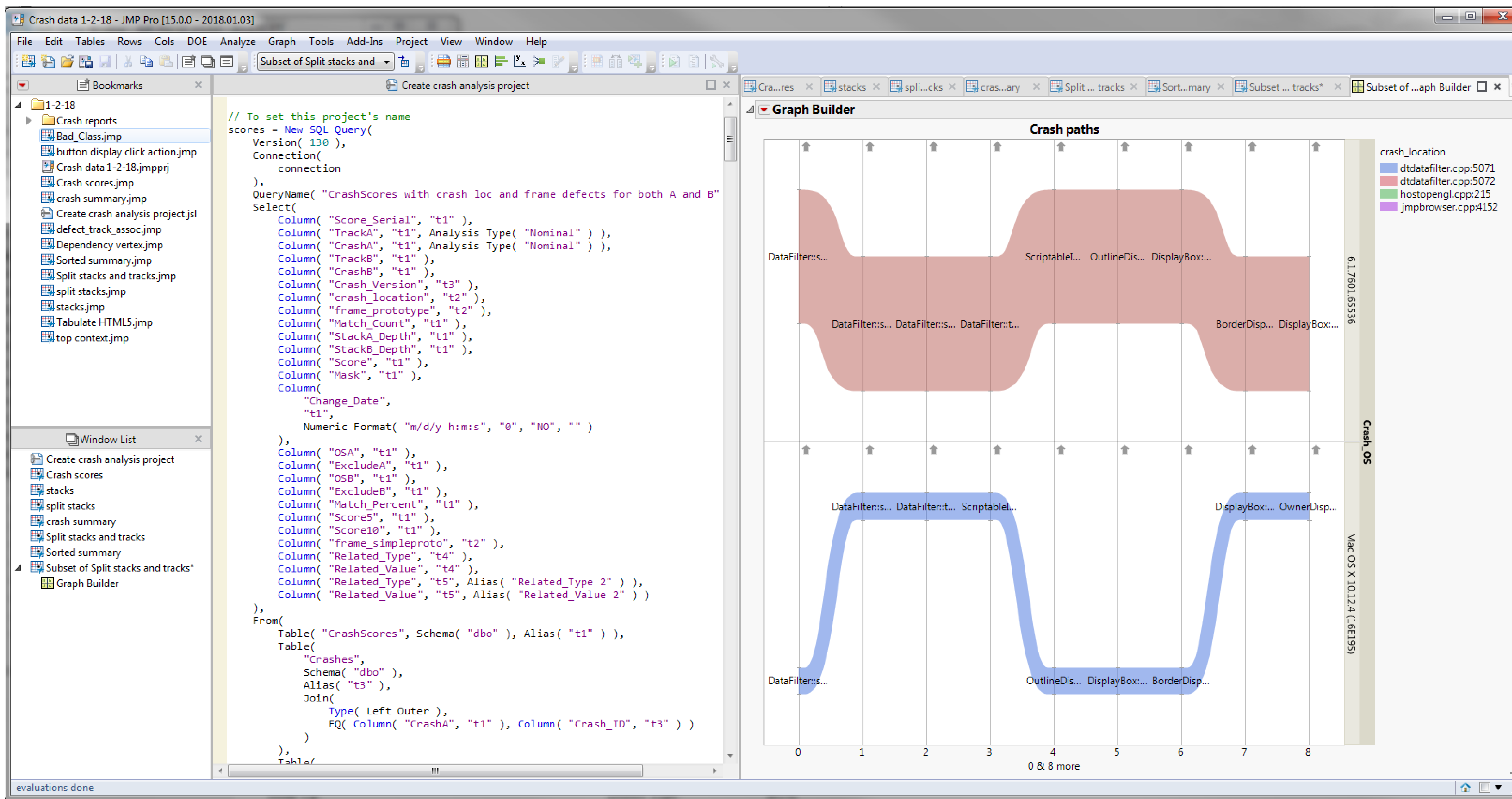
- Find JMP Build in Map File
- Add JMP Symbols (runs on host system – Mac and Windows)

Report

- Identify other similar crashes (identical and related)
- Pair new crash with related crashes and software defects

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JMP Crash Data Project



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The screenshot displays the JMP Pro interface for a project named "Crash data 1-24-18". The main window shows a SQL query in the Script Window:

```

// To set this project's name
scores = New SQL Query(
  Version( 130 ),
  Connection(
    "ODBC:DSN=JMPTRACK;UID=shconn;Trusted_Connecti
  ),
  QueryName( "CrashScores with crash loc and frame d
  Select(
    Column( "Score_Serial", "t1" ),
    Column( "TrackA", "t1", Analysis Type( "Nomina
    Column( "CrashA", "t1", Analysis Type( "Nomina
    Column( "TrackB", "t1" ),
    Column( "CrashB", "t1" ),
    Column( "Crash_Version", "t3" ),
    Column( "crash_location", "t2" ),
    Column( "frame_prototype", "t2" ),
    Column( "Match_Count", "t1" ),
    Column( "StackA_Depth", "t1" ),
    Column( "StackB_Depth", "t1" ),
    Column( "Score", "t1" ),
    Column( "Mask", "t1" ),
    Column(
      "Change_Date",
      "t1",
      Numeric Format( "m/d/y h:m:s", "0", "NO",
    ),
    Column( "OSA", "t1" ),
    Column( "ExcludeA", "t1" ),
    Column( "OSB", "t1" ),
    Column( "ExcludeB", "t1" ),
    Column( "Match_Percent", "t1" ),
    Column( "Score5", "t1" ),
  )

```

The Graph Builder window shows a parallel plot titled "0 & 8 more" with two tracks, one green and one purple, showing the sequence of windows and projects over time. The x-axis is labeled "0 & 8 more" and ranges from 0 to 8.

The data table window, titled "Split stacks and tracks", contains the following data:

defectid	Track ID of split stacks	cmponen
3711	7612309889	
3712	S1293427	JMP.GRAPH
3713	S1293427	JMP.GRAPH
3714	S1293427	JMP.GRAPH
3715	7612309001	
3716	7612317209	
3717	7612291894	
3718	7611832254	
3719	S1269517	JMP.CONTR
3720	7611815758	
3721	S1177775	JMP.GRAPH
3722	S1252475	JMP.GRAPH
3723	S1177775	JMP.GRAPH
3724	S1252475	JMP.GRAPH

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