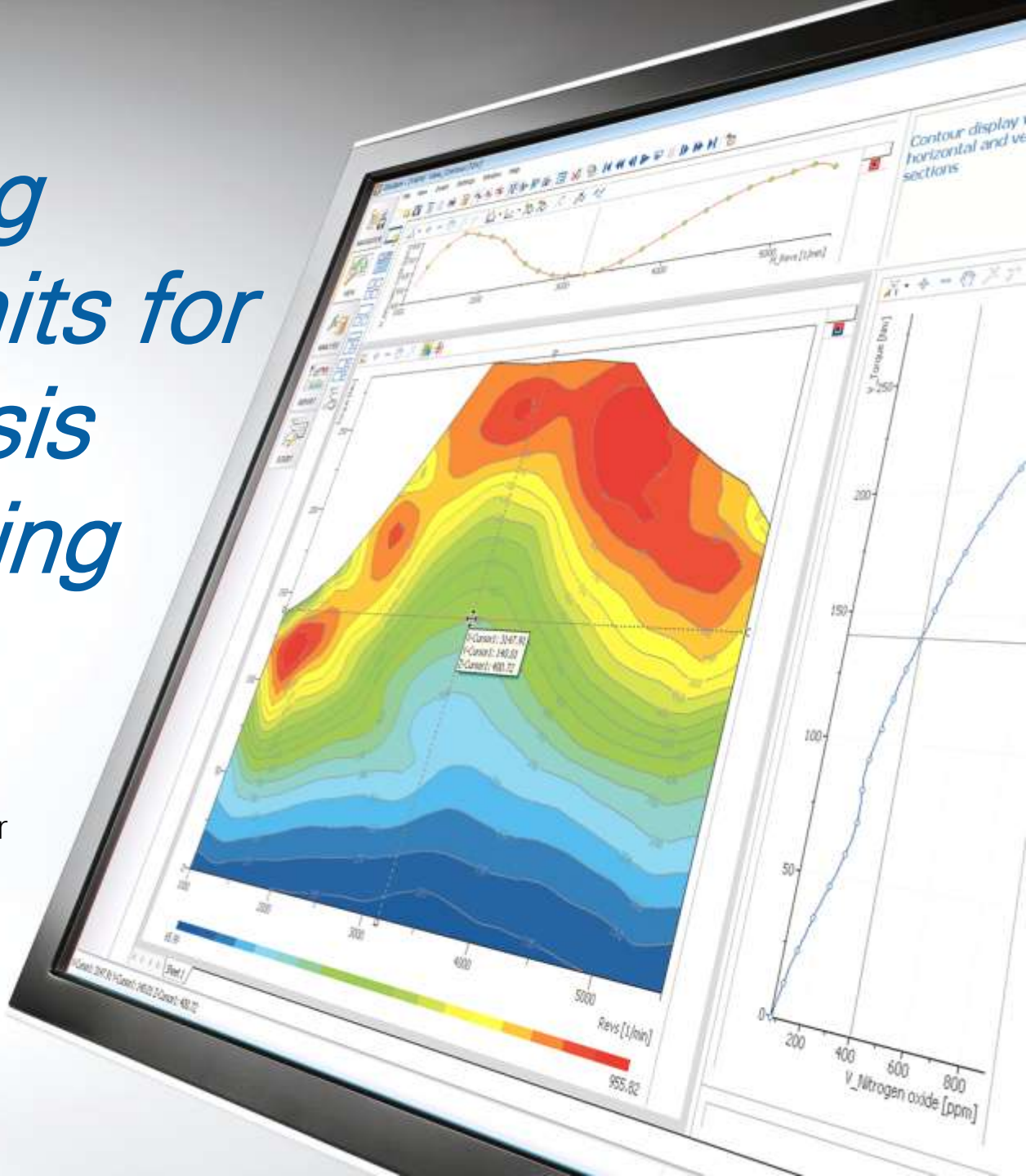

NIDays
THE LabVIEW CONFERENCE
03/10/2013 | Belgium
http://www.ni.com/nidays/

Overcoming Excel's Limits for Data Analysis and Reporting



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NI Certified LabVIEW Developer
NI Belgium

Today's Agenda

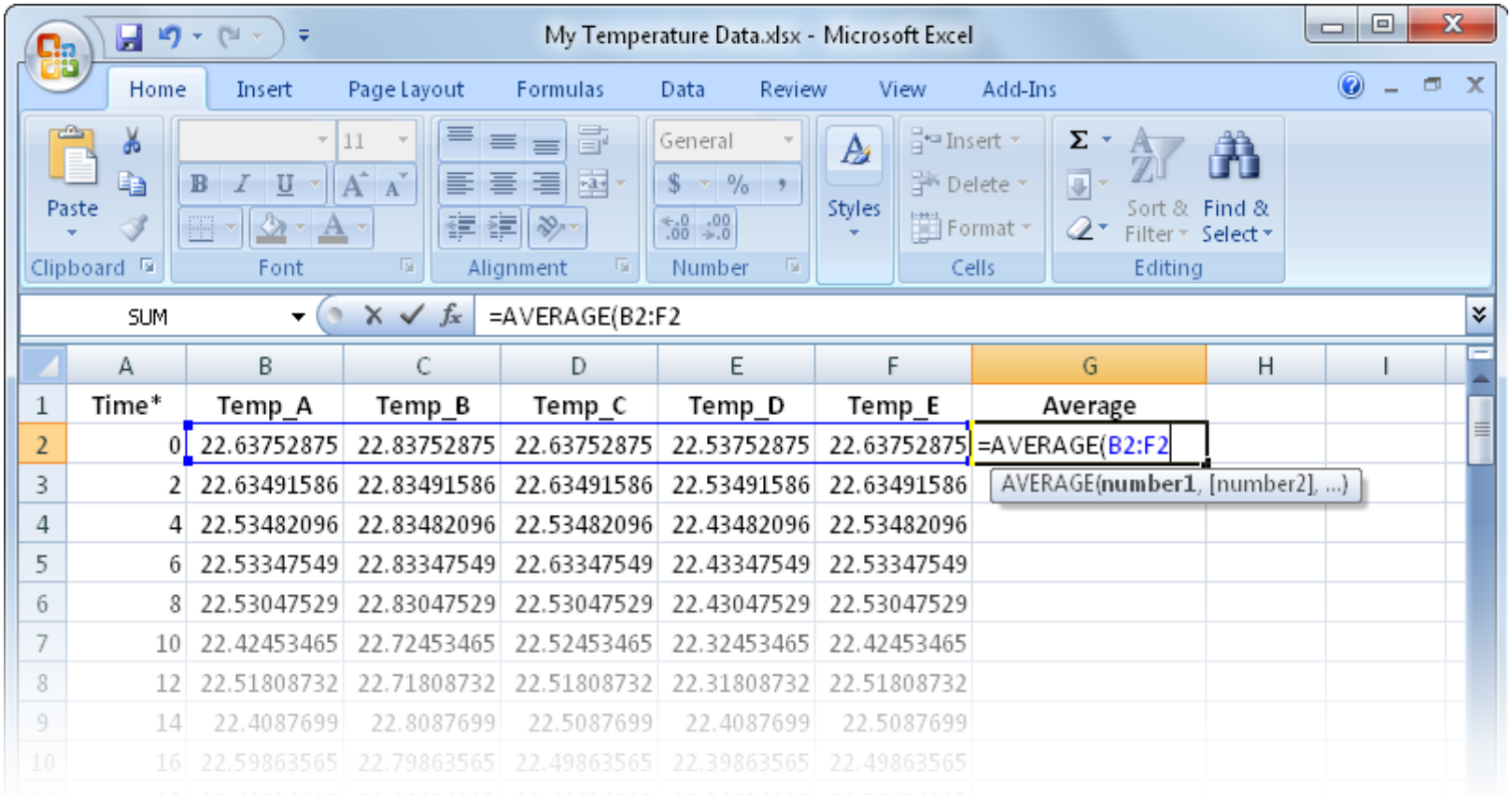
- Importance of Data Today
- Shortcomings of Traditional Tools
- Use Fewer Resources to Get More from your Data
- Real-World Application Exercises
- Where to go next?

What is the most difficult aspect of working with your current software tools?

If data is so valuable…

…why use financial tools to extract engineering intelligence?

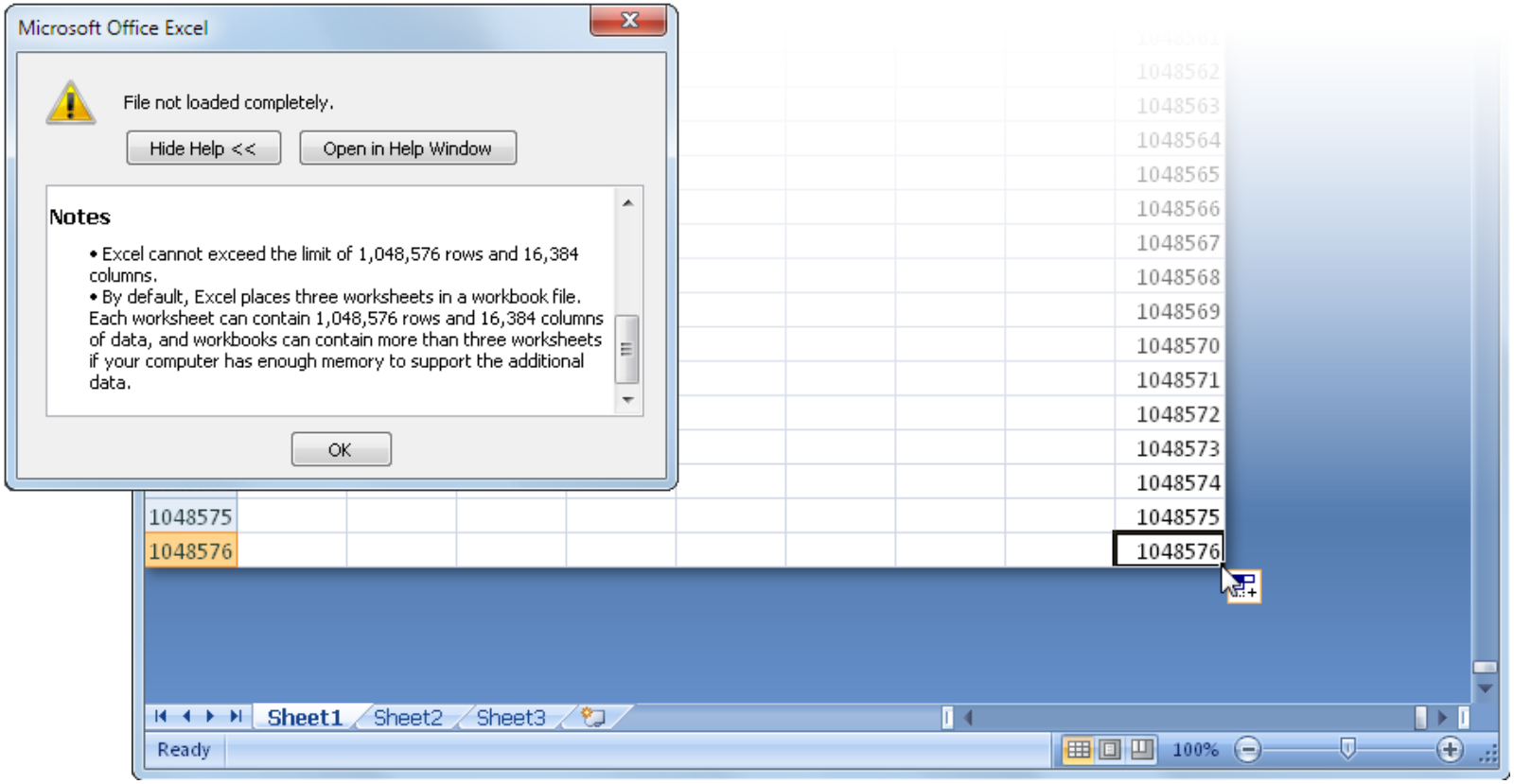
Engineers work with **channels**…



	A	B	C	D	E	F	G	H	I
1	Time*	Temp_A	Temp_B	Temp_C	Temp_D	Temp_E	Average		
2	0	22.63752875	22.83752875	22.63752875	22.53752875	22.63752875	=AVERAGE(B2:F2		
3	2	22.63491586	22.83491586	22.63491586	22.53491586	22.63491586			
4	4	22.53482096	22.83482096	22.53482096	22.43482096	22.53482096			
5	6	22.53347549	22.83347549	22.63347549	22.43347549	22.53347549			
6	8	22.53047529	22.83047529	22.53047529	22.43047529	22.53047529			
7	10	22.42453465	22.72453465	22.52453465	22.32453465	22.42453465			
8	12	22.51808732	22.71808732	22.51808732	22.31808732	22.51808732			
9	14	22.4087699	22.8087699	22.5087699	22.4087699	22.5087699			
10	16	22.59863565	22.79863565	22.49863565	22.39863565	22.49863565			

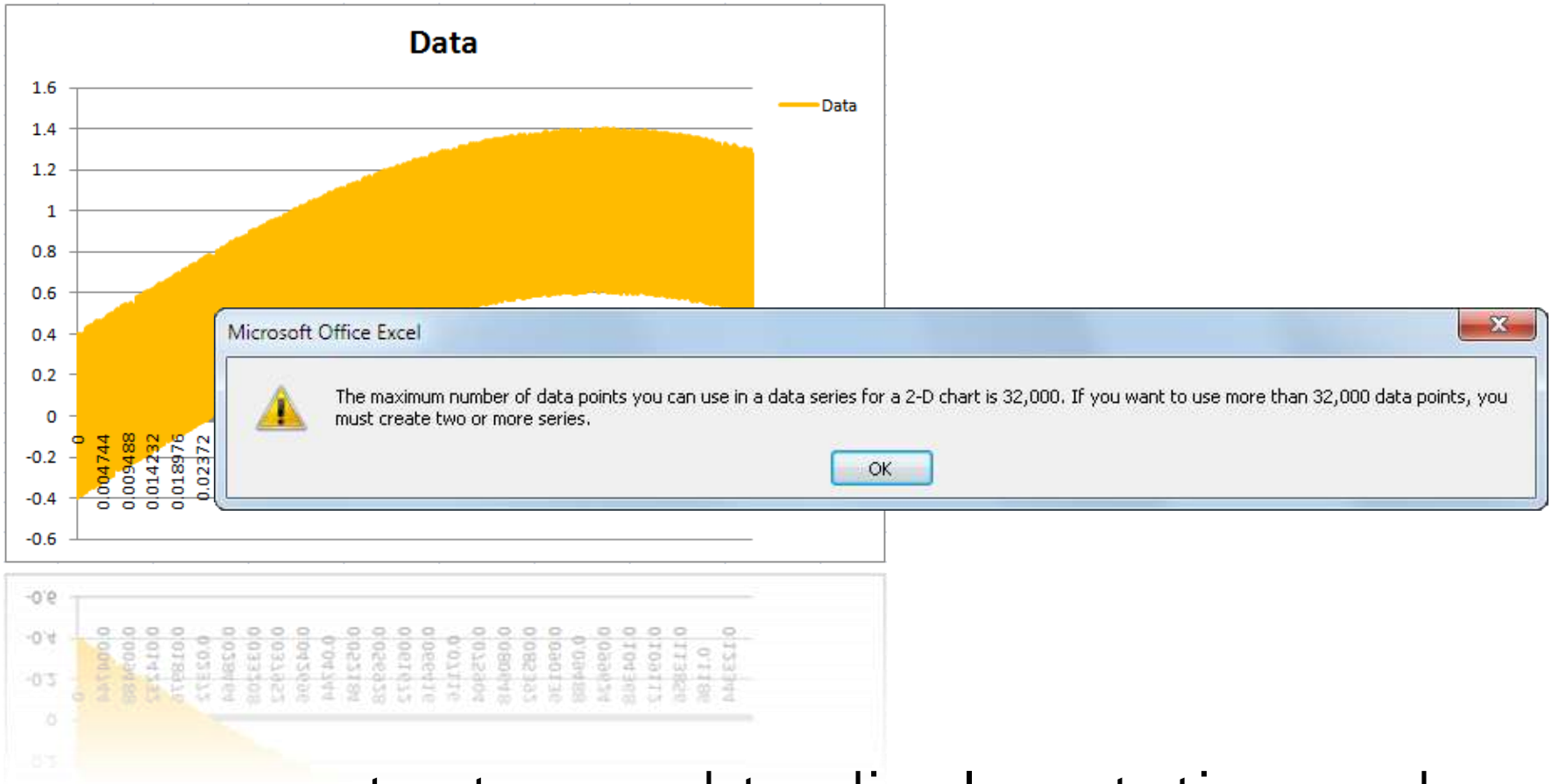
…accountants work with **cells**.

Engineers process time-based data…



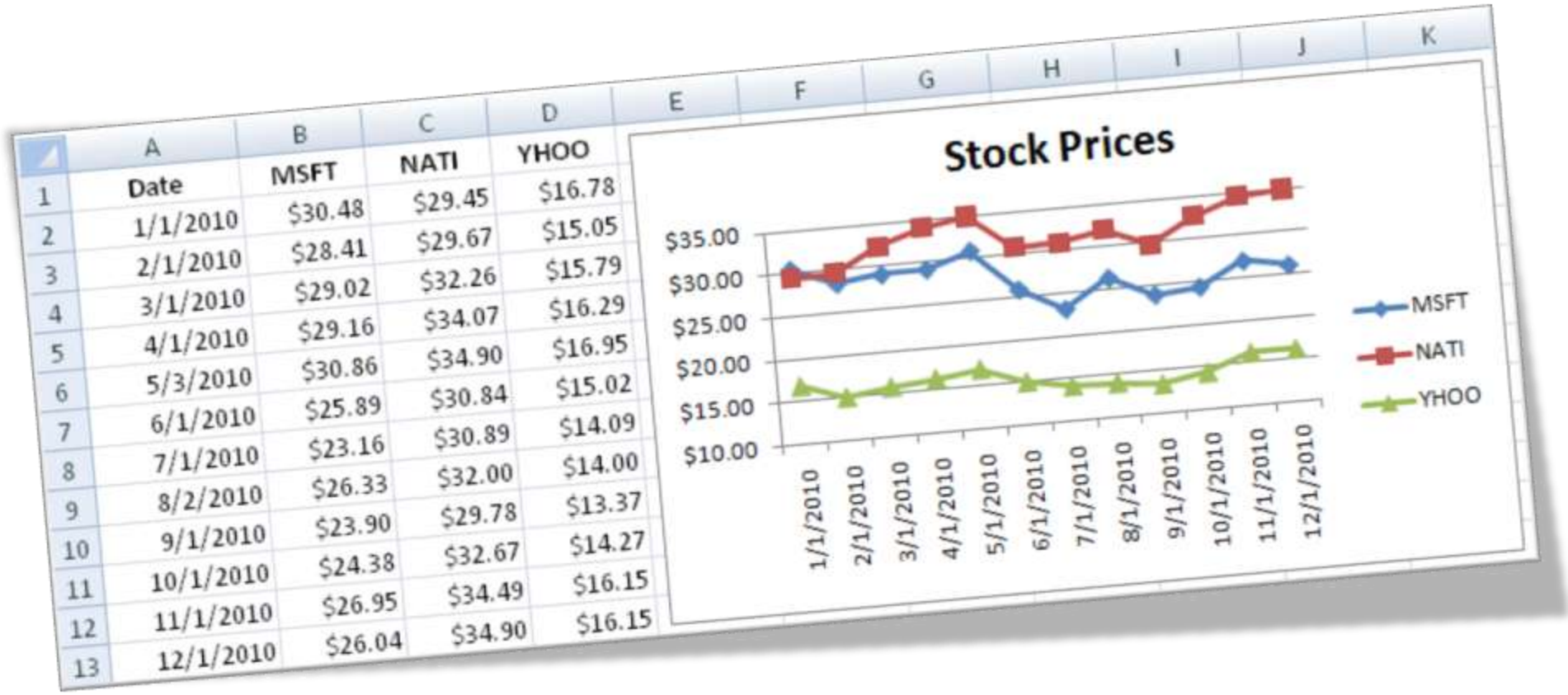
…accountants process balance sheets.

Engineers need to interact with data…



…accountants need to display static graphs.

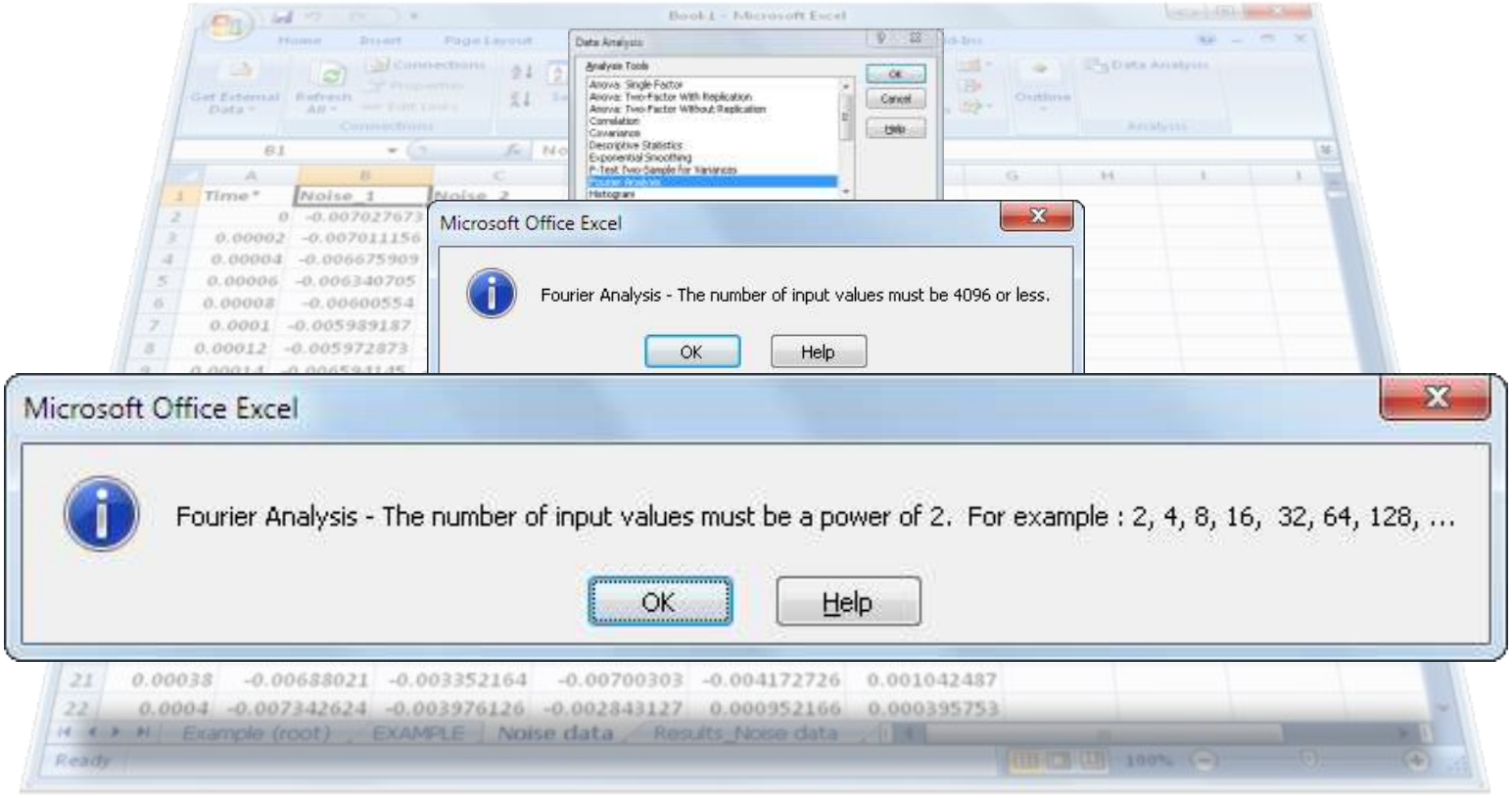
Engineers trend data from multiple files…



	A	B	C	D
1	Date	MSFT	NATI	YHOO
2	1/1/2010	$30.48	$29.45	$16.78
3	2/1/2010	$28.41	$29.67	$15.05
4	3/1/2010	$29.02	$32.26	$15.79
5	4/1/2010	$29.16	$34.07	$16.29
6	5/3/2010	$30.86	$34.90	$16.95
7	6/1/2010	$25.89	$30.84	$15.02
8	7/1/2010	$23.16	$30.89	$14.09
9	8/2/2010	$26.33	$32.00	$14.00
10	9/1/2010	$23.90	$29.78	$13.37
11	10/1/2010	$24.38	$32.67	$14.27
12	11/1/2010	$26.95	$34.49	$16.15
13	12/1/2010	$26.04	$34.90	$16.15

…accountants trend stock prices from multiple columns.

Engineers perform complex calculations…



…accountants perform basic math.

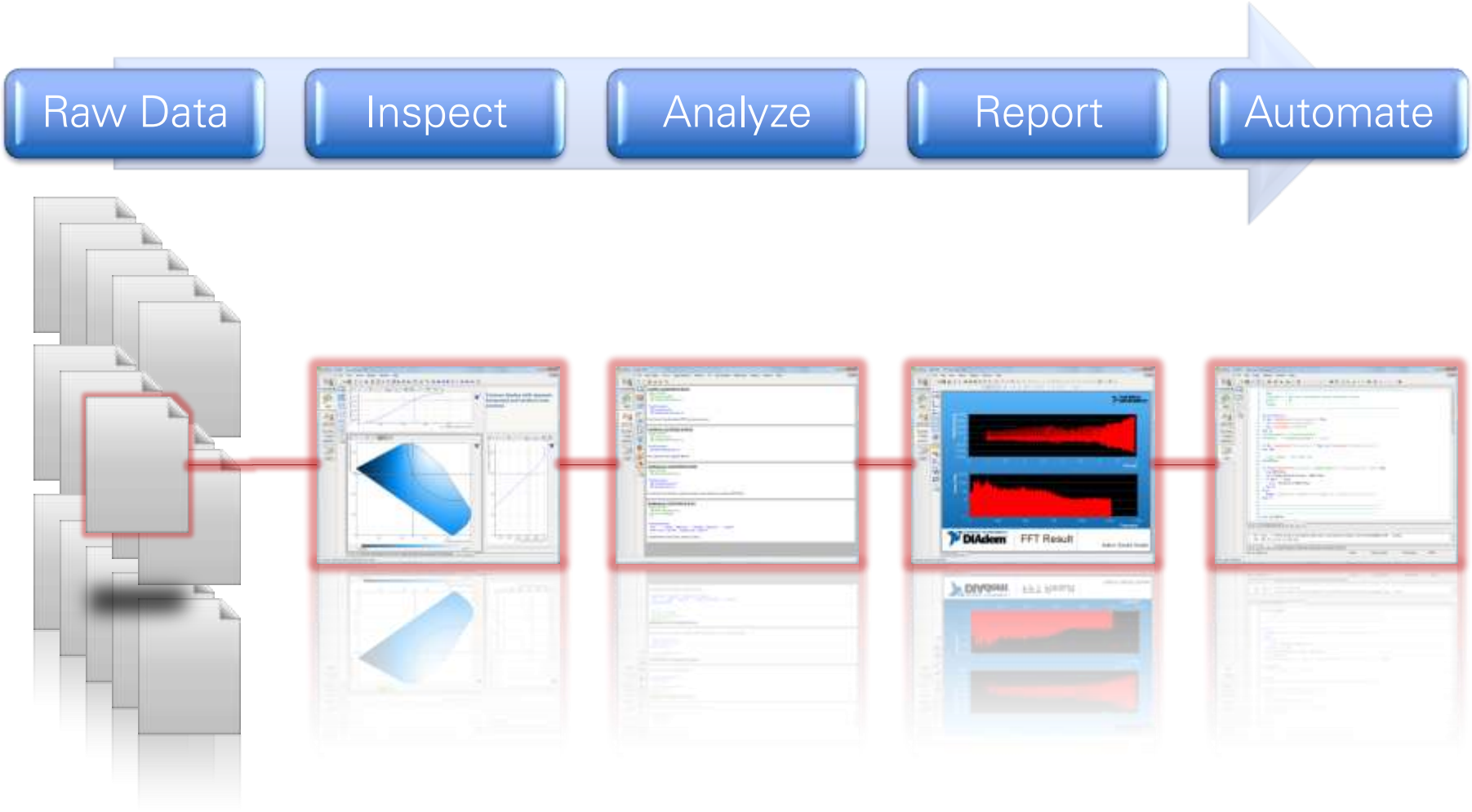
Engineers review **complex reports**…

…accountants review **expense reports**.

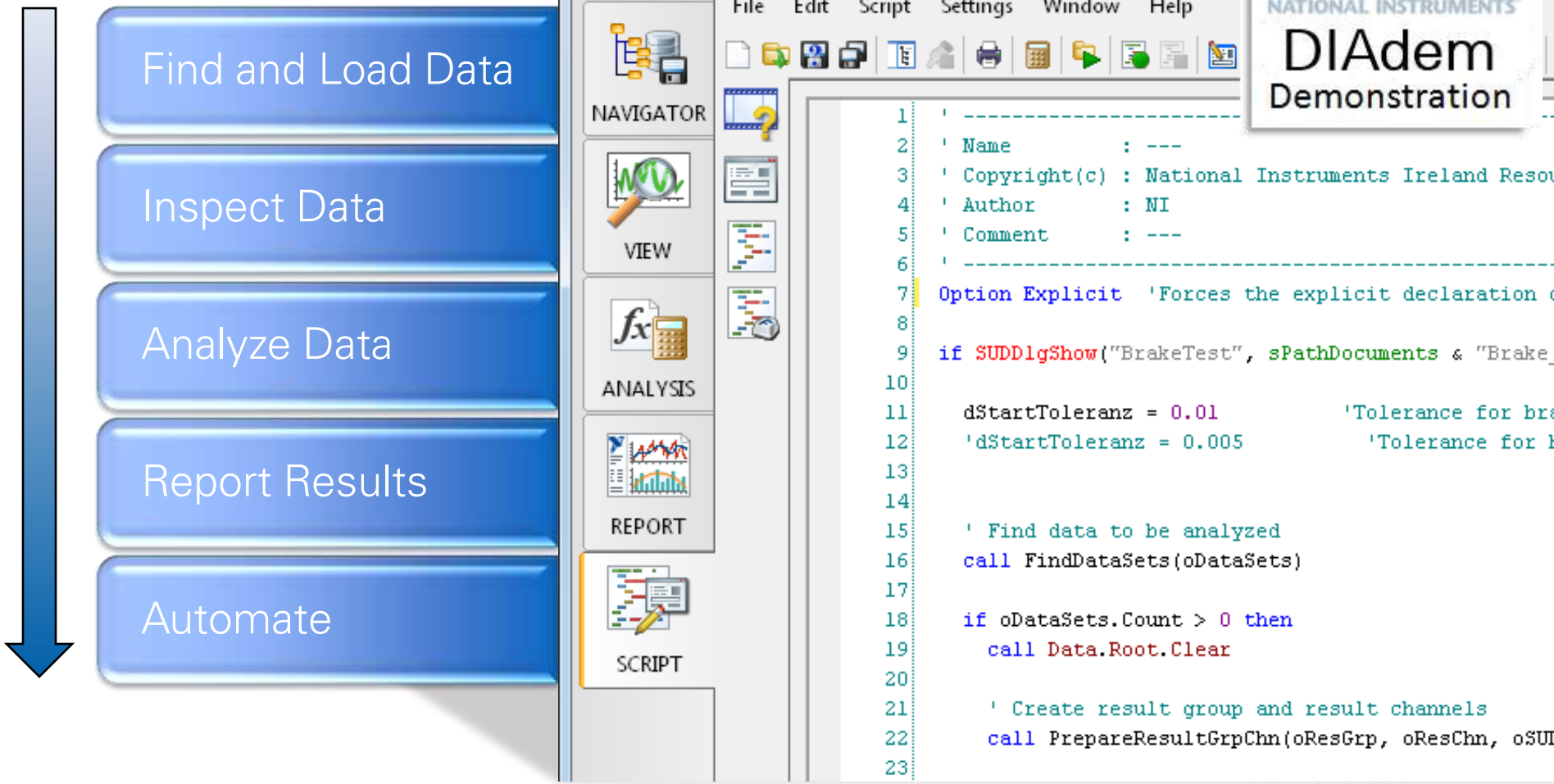
What is NI DIAdem?

- Ready to use data search and mining
- Easy, flexible access to databases and files
- Interactive analysis and report generation
- Automation through VBScript

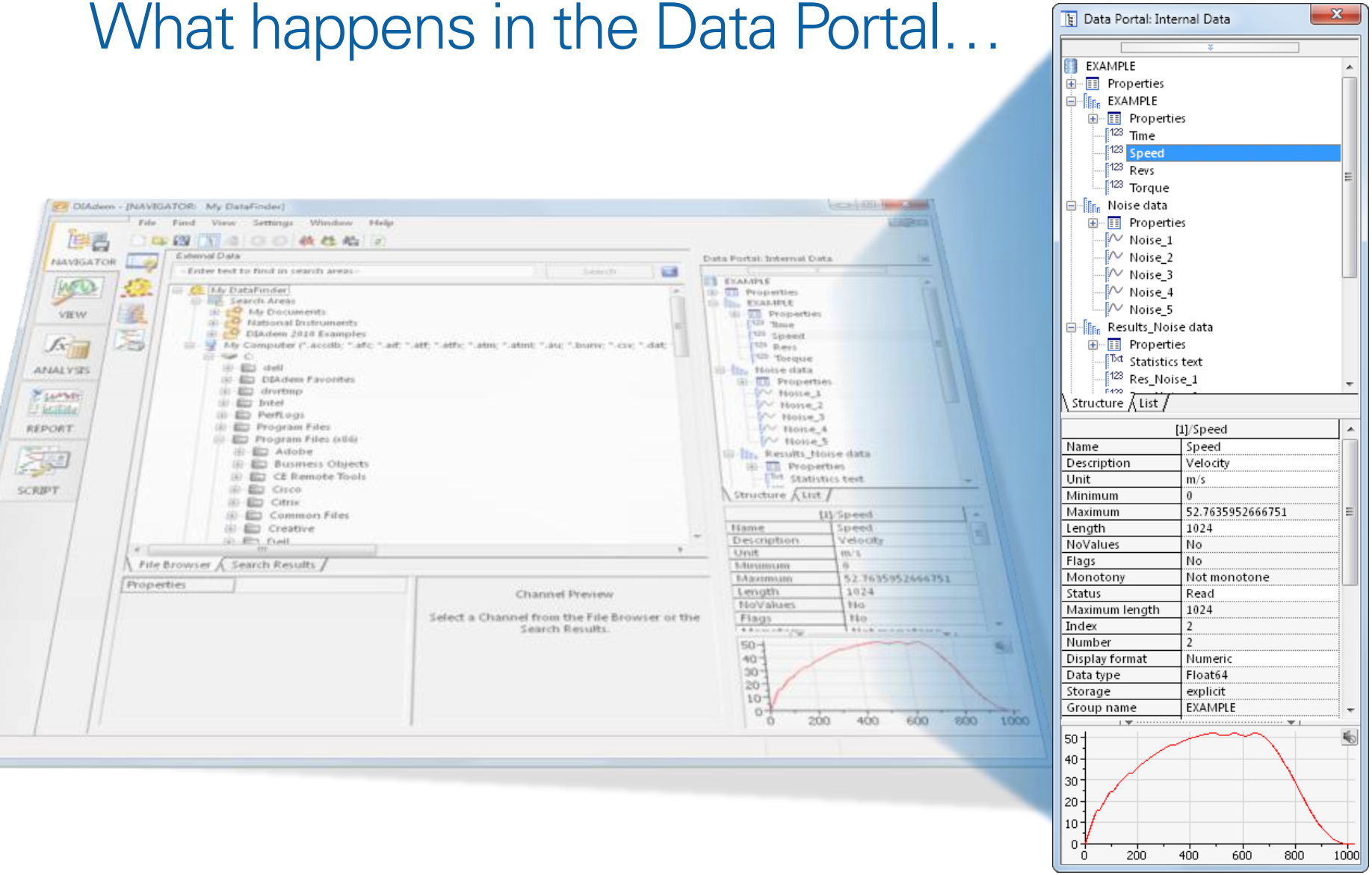
NI DIAdem uses Independent Components



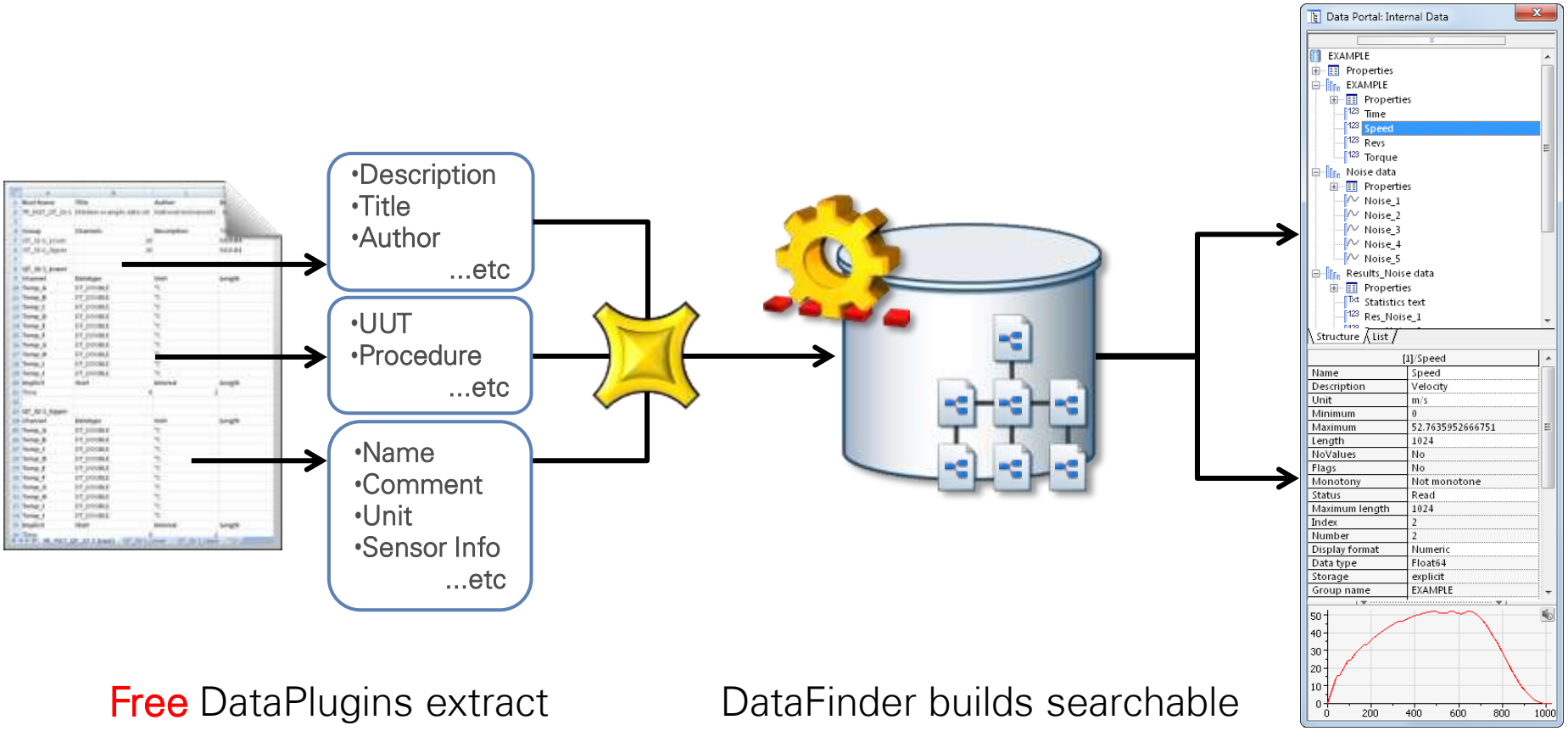
NI DIAdem Environment Layout



What happens in the Data Portal…



NI DataFinder and DataPlugin Technology



Free DataPlugins extract metadata from any custom file format

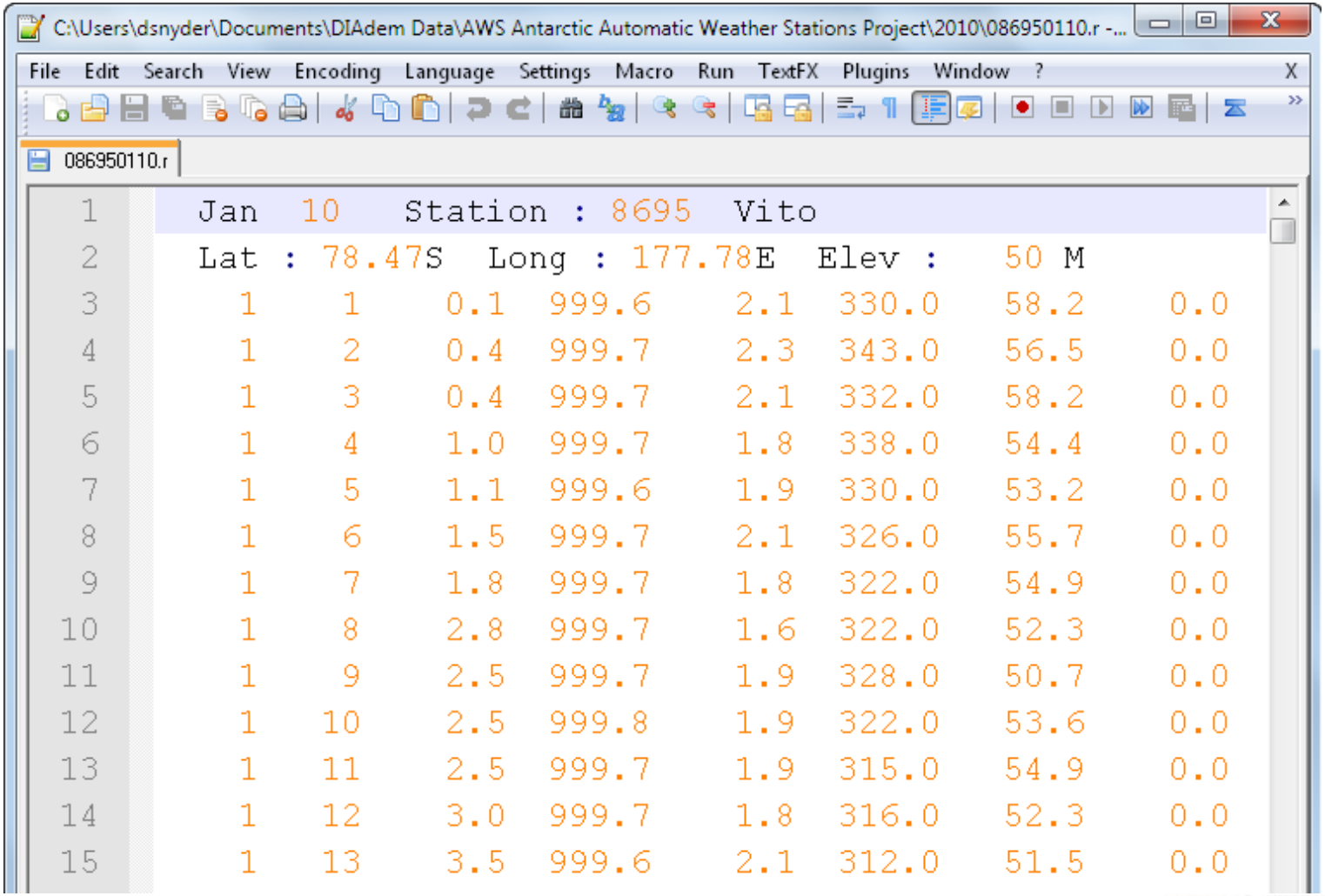
DataFinder builds searchable index database automatically

Automated Weather Station Data in *.r Format

REAL WORLD APPLICATION OF CONCEPTS

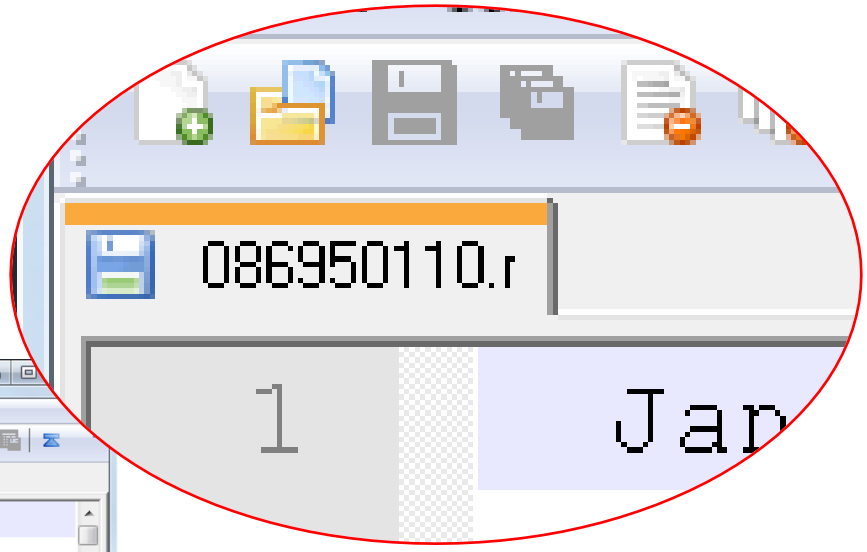

YOUNG

File Format – Simple…Right?




```
 1    Jan  10   Station : 8695  Vito
 2    Lat : 78.47S  Long : 177.78E  Elev :   50 M
 3      1    1    0.1  999.6    2.1  330.0   58.2    0.0
 4      1    2    0.4  999.7    2.3  343.0   56.5    0.0
 5      1    3    0.4  999.7    2.1  332.0   58.2    0.0
 6      1    4    1.0  999.7    1.8  338.0   54.4    0.0
 7      1    5    1.1  999.6    1.9  330.0   53.2    0.0
 8      1    6    1.5  999.7    2.1  326.0   55.7    0.0
 9      1    7    1.8  999.7    1.8  322.0   54.9    0.0
10      1    8    2.8  999.7    1.6  322.0   52.3    0.0
11      1    9    2.5  999.7    1.9  328.0   50.7    0.0
12      1   10    2.5  999.8    1.9  322.0   53.6    0.0
13      1   11    2.5  999.7    1.9  315.0   54.9    0.0
14      1   12    3.0  999.7    1.8  316.0   52.3    0.0
15      1   13    3.5  999.6    2.1  312.0   51.5    0.0
```

File Format – Simple…Right?



C:\Users\dsnyder\Documents\DIAdem Data\AWS Antarctic Automatic Weather Stations Project\2010\086950110.r -...

File Edit Search View Encoding Language Settings Macro Run TextFX Plugins Window ?

086950110.r

```
Jan  10   Station : 8695  Vito
Lat : 78.47S  Long : 177.78E  Elev :   50 M
  1    1    0.1  999.6    2.1  330.0   58.2    0.0
  1    2    0.4  999.7    2.3  343.0   56.5    0.0
  1    3    0.4  999.7    2.1  332.0   58.2    0.0
  1    4    1.0  999.7    1.8  338.0   54.4    0.0
  1    5    1.1  999.6    1.9  330.0   53.2    0.0
  1    6    1.5  999.7    2.1  326.0   55.7    0.0
  1    7    1.8  999.7    1.8  322.0   54.9    0.0
  1    8    2.8  999.7    1.6  322.0   52.3    0.0
  1    9    2.5  999.7    1.9  328.0   50.7    0.0
  1   10    2.5  999.8    1.9  322.0   53.6    0.0
  1   11    2.5  999.7    1.9  315.0   54.9    0.0
  1   12    3.0  999.7    1.8  316.0   52.3    0.0
  1   13    3.5  999.6    2.1  312.0   51.5    0.0
```

File name format:

- 4 or 5 digit station ID
- 2 digit month
- 2 digit year
- .r extension

File Format – Simple…Right?

```
Jan  10   Station : 8695  Vito
Lat : 78.47S  Long : 177.78E  Elev :   50 M
   1    1    0.1  999.6    2.1  330.0   58.2    0.0
   1    2    0.4  999.7    2.3  343.0   56.5    0.0
   1    3    0.4  999.7    2.1  332.0   58.2    0.0
   1    4    1.0  999.7    1.8  338.0   54.4    0.0
   1    5    1.1  999.6    1.9  330.0   53.2    0.0
   1    6    1.5  999.7    2.1  326.0   55.7    0.0
   1    7    1.8  999.7    1.8  322.0   54.9    0.0
   1    8    2.8  999.7    1.6  322.0   52.3    0.0
   1    9    2.5  999.7    1.9  328.0   50.7    0.0
   1   10    2.5  999.8    1.9  322.0   53.6    0.0
   1   11    2.5  999.7    1.9  315.0   54.9    0.0
   1   12    3.0  999.7    1.8  316.0   52.3    0.0
   1   13    3.5  999.6    2.1  312.0   51.5    0.0
```

C:\Users\dsnyder\Documents\DIAdem Data\AWS Antarctic Automatic Weather Stations Project\2010\086950110.r

File Edit Search View Encoding Language Settings Macro Run TextFX Plugins Window ?

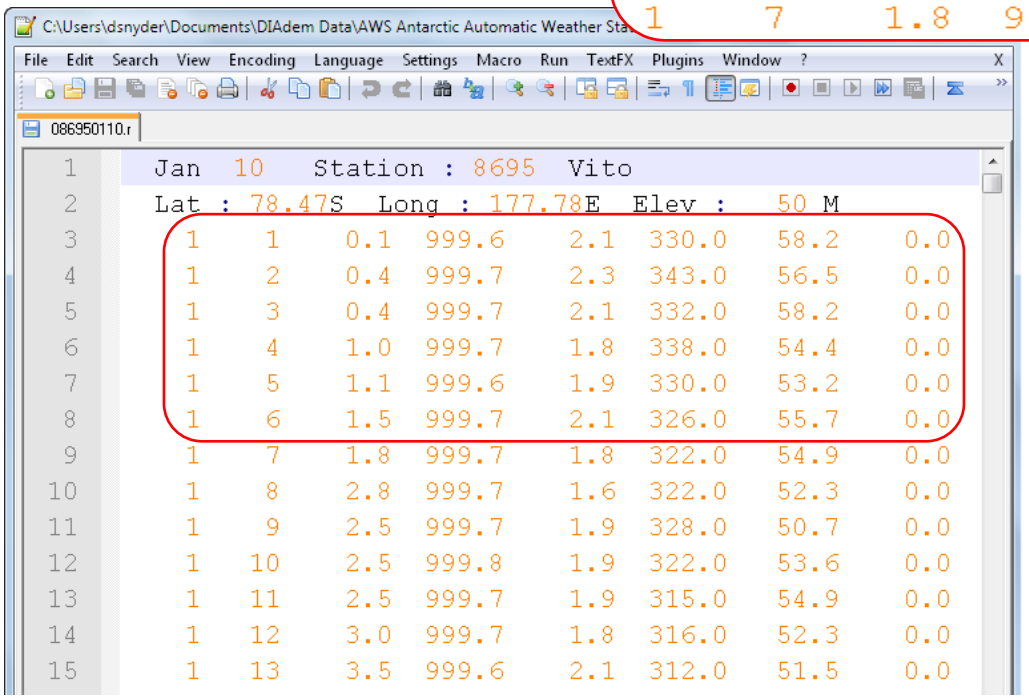
086950110.r

Meta data:

- Multiple tags per row
- Inconsistent delimiters
- Unclear station name
- No channel names…

File Format – Simple…Right?

1	1	0.1	999.6	2.1	330.0	58.2	0.0
1	2	0.4	999.7	2.3	343.0	56.5	0.0
1	3	0.4	999.7	2.1	332.0	58.2	0.0
1	4	1.0	999.7	1.8	338.0	54.4	0.0
1	5	1.1	999.6	1.9	330.0	53.2	0.0
1	6	1.5	999.7	2.1	326.0	55.7	0.0
1	7	1.8	999.7	1.8	322.0	54.9	0.0



Data:

- Day of month
- Ten minute interval of day
- Temp, pressure, speed, angle
- Six *or eight* columns
- "Null" data values
- No obvious units
- Inconsistent delimiters

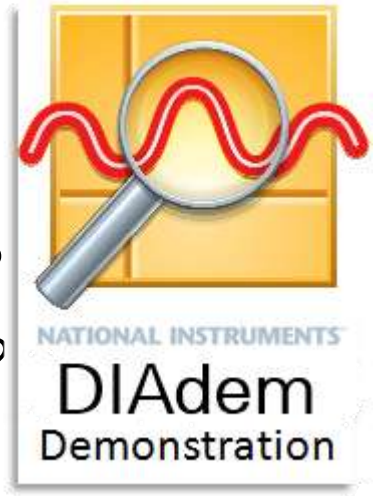
28 Years of Data

13,000+ Files

29 Folders

2.13 GB of Data

Hunting for some needles…



- What was the temperature profile in July 1984?
- Can I get insight into one station over one year?
- How does minimum temperature trend vs. time?
- What is the max wind speed…*ever*?
- What's the min pressure for a month by layout?
- How much does elevation affect temperature?

Audio Data Stored in *.XLSX Format

REAL WORLD APPLICATION OF CONCEPTS

Let's Explore Some Data

Here are our simple challenges:

- Open 1 second of CD quality audio data (44.1 KHz)
- Search for information in our data sets
- Graph the entire microphone data set
- Zoom in on a region of interest

Could we accomplish these tasks (easily) using a normal spreadsheet?

Where to go next?

Download Trial Version

Download Free DataPlugins

Play with NI DIAdem

Watch Tutorials and Demonstrations

Try Self-Paced Online Training (SPOT)

Get Support

@ http://www.ni.com/diadem

Contact Information:

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