PerfectXL is a product in cooperation with TU Delft.

The Spreadsheet Validation Tool

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The spreadsheet revolution

A brief history of spreadsheets

- **1800 B.C.**  The first spreadsheets were clay tablets from Babylon.
- **1810**  Napoleon introduced the metric system.
- **1979**  The first spreadsheet program "VisiCalc" was launched.
- **1985**  Microsoft introduced Excel for Macintosh.
- **2014**  Approximately 750 million Excel users worldwide.
- **2015**  INFOTRON launches PerfectXL.

Did you know?

- **Spreadsheets are used in no fewer than 90% of all crucial company decisions.**
- **88% of all spreadsheets contain serious risks.**
  - $7,000,000,000 is wasted annually on incorrect spreadsheet usage.
- **People definitely need help to understand, validate and improve spreadsheets.**

That’s why we made PerfectXL, the Spreadsheet Validation Tool

Checking spreadsheets will be better and faster than ever.
It is very easy to use, it saves a lot of time.

PerfectXL is an INFOTRON product in cooperation with TUDelft.
Infotron is a spin-off of the Delft University of Technology. In tight cooperation with SpreadsheetLab, a subdivision of the same University, we work on the Spreadsheet Analyzing Core. The Analyzing Core forms the foundation for PerfectXL, our much appreciated Spreadsheet Validation Tool.
Six people work on PerfectXL every day, they’re located in Delft and Amsterdam. Something exciting connects us: we’re all thrilled about spreadsheets. That’s why together we run Infotron: 6 years of research, 3 years of building software and 20 man-years of work.

**Mateo Mol**
Director
He has always been crazy about numbers and about games. He studied econometrics and politics. For years, he was a publisher and founder of several online and print media. With Infotron, he found the optimal combination of doing business and playing with numbers.

**Felienne Hermans**
Founder of Infotron and assistant Professor at the Delft University of Technology.
She was working on her PhD at the University while she founded the company. She just loves spreadsheets, but also Lego. Felienne is head of the SpreadsheetLab.

**Arie van Deursen**
CTO and Professor Software Engineering at the Delft University of Technology.
He successfully co-founded the Software Improvement Group. Despite his professorship, Arie has always been the smart programmer that he wanted to be when he was young.
Excel is a brilliant program. Everyone can work with it, but building good and reliable spreadsheets is an issue of structure and precision. That’s why we developed PerfectXL, a web-based application to help you effortlessly understand, validate, and improve spreadsheets. The PerfectXL validation options are:

1. **Internal structure check**
   PerfectXL visualizes references and external sources, discovers the relation between input, calculations, and output, and checks the setup of information and formulas.

2. **Complete check for 18 types of risk**
   PerfectXL detects up to 18 types of risk in spreadsheets. Ranging from incorrectly applied VLOOKUPS and fixed numbers in formulas to empty cell references and double counts.

3. **Scan for formulas and constants**
   A good validation requires quick and easy insight into the used formulas and constants of the spreadsheet. What does the spreadsheet all calculate, and how?
PERFECT XL

The spreadsheet validation tool

A. Spreadsheets overview
B. Switch on/off risks
C. Extended help
D. Create PDF report about the spreadsheet
E. Create useful Excel copy
F. Spreadsheet homepage
G. 4 types of visualization
H. General characteristics
I. Characteristics per sheet
J. Found risks and suggestions
K. All used formulas
L. Referred constants
M. Compare two spreadsheets

ManagementReport.xlsx

Characteristics
- File size: 479.9 KB
- Sheets: 22
- Formulas: 6,038
- External references: 1

Risk Indicators
- Risks: 56
- High risks: 1
- Risk types: 8
- Risks per sheet: 2.4
- High risks per sheet: 0
- Risks per 1000 non-empty cells: 0.8
- High risks per 1000 non-empty cells: 0

Complexity Indicators
- Formulas: 6,038
- Unique formulas: 560
- Cell references: 9,945

Benchmark your spreadsheet against another spreadsheet in your portfolio. Compare both risk- and complexity indicators.

Learn how your spreadsheet works by viewing a visualization of sheet connections. Various colour mappings indicate various aspects.

To help you improve your spreadsheet, we've created a page listing all risks with information on how to improve or resolve them.

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PerfectXL creates a visualization of the internal references and external sources of your spreadsheets. It shows all the relationships between input, calculations and output and it checks the setup of information and formulas.

**Visualize references and sources**

The worksheets in many spreadsheets are connected like a plate of spaghetti. With PerfectXL, you can spot at a glance how worksheets are connected to each other and to external sources.

**Input, calculations, output**

A well-designed Excel spreadsheet maintains a clear separation between input, calculative, and output sheets. The input-output visualisation in PerfectXL shows you whether this separation has been applied. Arrows and colours clarify the routing of information.

**Sheet and reference details**

The size of a sheet and the number of references to and from other worksheets are revealed. One click on a reference provides details on all formulas involved.
PerfectXL is an product in cooperation with

1 Internal structure check

Why is this so useful?

Example: Forgotten field

A large oil company calculates oil stocks by using spreadsheets. A sheet for every field and a total calculation sheet. A small field suddenly becomes important, but after that... it becomes clear that this field in particular was never included in the total calculation! A single glance at PerfectXL’s visualization would have been all that’s needed to avoid this mistake.

Example: Spaghetti spreadsheet

A financial auditor has audited a spaghetti spreadsheet for years. But one day, he hasn’t got time to do it, so he has to explain the spreadsheet to his colleague. In a mere few minutes! With PerfectXL he clearly explains all references between sheets and between sheets and external sources without any waste of time.

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PerfectXL detects up to 18 types of risk in spreadsheets. Ranging from incorrectly applied VLOOKUPs and fixed numbers in formulas to empty cell references and double counts. Each of these risks can be marked a low risk (▲), a medium risk (▲▲) or a high risk (▲▲▲). PerfectXL effortlessly walks you through the various risks. The extended help function explains every risk. Each of the risks can be in/ or excluded in the analyses, based on the users requirements.

- Approximate lookup ▲▲
- Hidden formula ▲
- Referencing many cell groups ▲▲▲
- Circle chain of worksheets ▲▲
- Hidden or very hidden sheets ▲
- (Referencing) merged cells ▲
- Conditional complexity ▲▲▲
- Hidden rows or columns ▲
- Second degree error ▲
- Double operator ▲
- Incorrect formula location ▲▲▲
- Standard Excel error ▲▲▲
- Duplicated formula ▲▲▲
- Many different operations ▲▲▲
- Sum includes subtotals ▲
- Fixed number ▲▲▲
- Referencing empty cells ▲
- Unexpected range ▲

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Why is this so useful?

Example: Lower revenues

In a very large spreadsheet of Investment Company X, PerfectXL found an unexpected range in the straightforward formula sum. The cell below the sum-range was a number similar to the numbers in sum-range, and should have been included. Consequence: much lower company revenues for over three years in a row. Without PerfectXL, it would have taken days to detect this.

Example: Error prone spreadsheet

A consultant is asked to validate a business scenario in Excel. He uses PerfectXL. In a few seconds, PerfectXL not only found some fixed numbers in formulas (very dangerous), but also some very complex nested if’s in the spreadsheet. From research we know, too many nested if’s are hard to read and extremely error prone. The consultant decides to send the spreadsheet back for reengineering.
Sometimes it’s useful to have an overview of all the formulas in a spreadsheet. Which operations take place? Which cells are used? Likewise, sometimes it is required to have an overview of all constant values, used in formulas in the spreadsheet. Such overview makes it possible to quickly check all the largest figures, or alternatively, check very specific numbers like a VAT percentage value (and don’t put them as fixed numbers in formulas, one of the PerfectXL risks).

PerfectXL allows you to create a copy of the original spreadsheet which highlight some interesting characteristics of the cells. The existing formatting will be replaced by a colour mapping for different cell types, like formulas, text and numbers. Unexpected disruptions in patterns are quickly spotted. Internal and external references and risky cells are other examples.
Why is this so useful?

**Example: Direct to the end result**

A manager came up with some interesting results in a powerpoint presentation. Where does this results come from? Looking in his spreadsheet can take hours. PerfectXL sends you direct to the end result.

**Example: A one-off event**

A controller has to validate a sales model: input from an ERP and a few calculations in Excel. A year ago, the sales-manager had put some extra sales revenues in the spreadsheet for a one-off event. An interruption in a formula range. Unfortunately, this year the interruption is still there, but not relevant anymore. PerfectXL’s format mappings [an Excel output creation] shows interruptions in formula ranges by pink borders. An easy way to find interruptions.
PerfectXL allows anyone to compare, share and review analysis results from within the web tool or by creating PDF or XLSX output files.

**PDF validation report**

With the PDF export in PerfectXL you can effortlessly share with colleagues and clients your findings regarding complexity and riskiness. You can choose between a summary or an extended report. The most important visualizations are present in the PDF as well.

**Useful Excel list reports**

PerfectXL gives you options for exporting back to Excel. As an example you can download a copy of the original spreadsheet that is supplemented with a new sheet containing a list of risks, formulas or constants. This list contains hyperlinks to the respective locations in the spreadsheet. This allows the user to easily apply PerfectXL’s improvement suggestions.

**Compare results**

Got an improved spreadsheet? Compare it to an earlier version. All characteristics, risk indicators and complexity indicators are compared. The graphic representation of the differences makes for a clear and consistent overview.

PerfectXL is an INFOTRON product in cooperation with TU Delft.
PerfectXL is a product in cooperation with other large companies.

Some of our clients:

**Finance**
- ROBECO: The Investment Engineers
- NN
- apg: morgen is vandaag
- MN
- VIVAT VERZEKERINGEN
- AB ANBANG INSURANCE

**Accountants & Consultants**
- ATKearney
- PwC
- finext
- dijksterhuis accountants- en advieskantoor
- STEENS & PARTNERS Accountants en Adviseurs

**Other large companies**
- Port of Rotterdam
- Flora Holland
- Marente
- ORANJE-NASSAU ENERGIE
- transdev
**Roadmap: the near future**

**APRIL 2016**
- User defined thresholds

**JUNE 2016**
- New risk analyses

**JULY 2016**
- Follow the formula tree

**SEPTEMBER 2016**
- PerfectXL ribbon in Excel

**DECEMBER 2016**
- Spreadsheet performance indicators

**2017**
- Detailed cell & block visualizations
Getting PerfectXL

PerfectXL is a state of the art web tool, developed in a tight co-operation between Infotron and the Delft Technical University.

PerfectXL operates not from inside Excel, but separately as a web tool. You can use PerfectXL by means of a subscription.

For high-end users and larger organizations we also provide the options of a private cloud or an on-premise installation.

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