

Peter Sels:  
Data & Decision Science  
Software Engineer

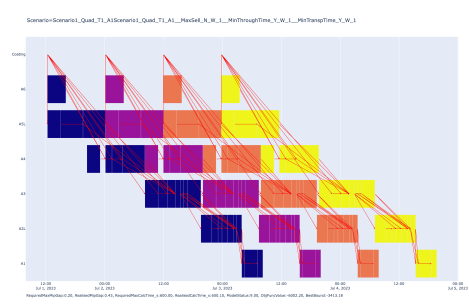
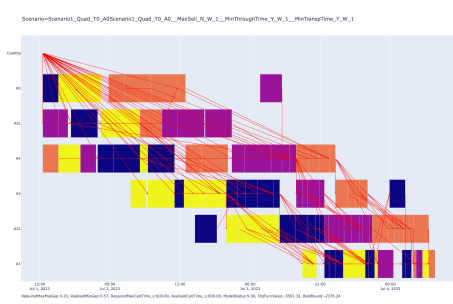
Peter Sels  
Logically Yours BVBA  
Plankenbergstraat 112 bus L7  
2100 Deurne, Belgium  
T +32 486 95 67 97  
[sels.peter@gmail.com](mailto:sels.peter@gmail.com)  
[www.LogicallyYours.com/Research/](http://www.LogicallyYours.com/Research/)

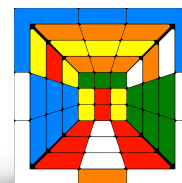
Personal Data	
Born	16/04/1971, Bonheiden, Belgium
Marital status	single
Languages	Dutch (native), English, French, German
Language notions	Spanish



**3y Experience: Manufacturing Optimisation consultant at FlandersMake; 2023-2020**

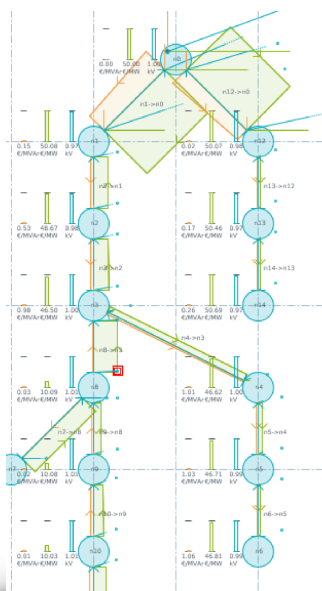
Skills used	Result achieved
Python, Django, SQL, NetSLiX.py (=own spreadsheet to DB tool), profiling	Robust strategical scheduling for changing product-mix assembly, Strategical pipeline layouting, Operational assembly line (re)scheduling, Assembly sequence generation algorithm profiling and performance improvement. Hierarchical decomposition of a product into subassemblies.
	DB driven websites: HR Competence browsing website, QuickScan questionnaire website, Adhesive Selector and Circular Bonding websites
	DB and Optimisation driven public website Covid-conform TablePositioner





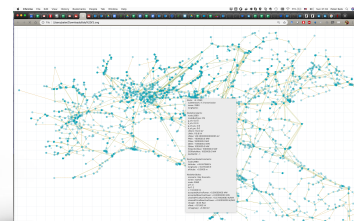
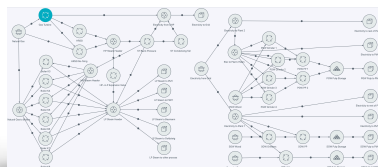
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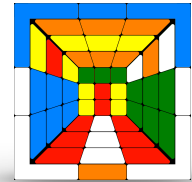
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**4y Experience: Energy Decision Optimisation: consultant at N-SIDE; 2020-2016**

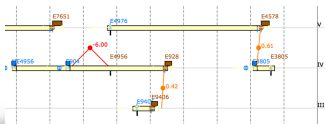
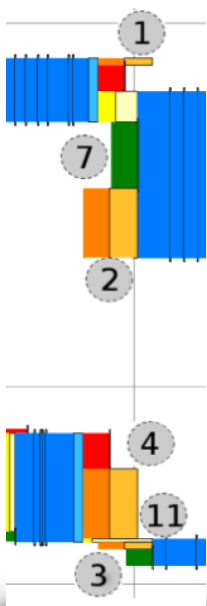
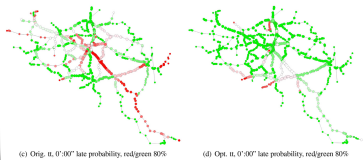
Skills used	Result achieved
Consultation using N-SIDE's plant optimisation <a href="#">ENERTOP product</a> towards a client in the paper production industry.	Optimal weekly planning of client plant's operations including gas consumption and electricity production & consumption (2m).
Built specialised multi-feature forecast via the <a href="#">Gradient Boost</a> Machine Learning library.	<a href="#">Live commercial forecast</a> for Germany. Also applied to Italy for Magnitude (1m)
Built Generic forecast using the <a href="#">Prophet Library</a> . Built generic "from Google spreadsheet to REST hosting server" script using <a href="#">Django</a> & <a href="#">Django-REST</a> . Built market clearing model with <a href="#">Julia-Opt</a> . All for the EU H2020 <a href="#">Magnitude</a> project.	The Magnitude project is still in progress. Our tools demonstrate that it is advantageous to co-clear gas-electricity-heat as 1 market to leverage complimentary flexibilities (1.5y).
Dynamic (Electricity) Reserve Dimensioning (DRD) documentation generation tool via <a href="#">LaTeX</a> .	DRD & doc tool is operational at <a href="#">ELIA</a> (the Belgian electricity network <a href="#">TSO</a> ) (2m)
Market clearing for an Asian Day Ahead electricity market using <a href="#">CPLEX</a> model solving, called via Python API.	IEX feasibility study (2m) accepted and a new project was ordered.
Consulted together with <a href="#">EGI</a> (funded by <a href="#">Worldbank</a> ) towards setting up a balancing market in Albania.	Document with recommendations (from experience in EU countries where balancing markets are established) to the Albanian TSO: <a href="#">OST</a> (2m).
Software Architecture Lead of the EU <a href="#">SmartNet</a> project for the N-SIDE electricity balancing market clearing optimisation block, respecting <a href="#">power flow physics laws</a> and <a href="#">maximising social welfare</a> , adopted by 6 other partner companies. Using <a href="#">Python</a> , <a href="#">ORM</a> by <a href="#">Django</a> , <a href="#">AMPL</a> , <a href="#">Mercurial</a> .	Co-defined, launched, monitored 72 parallel simulations on as many AWS cloud machines, modelling various <a href="#">TSO-DSO</a> Coordination Schemes, supporting project conclusions (3y).
Optimisation model building using <a href="#">AMPL</a> for charging of Electrical Vehicles from solar panels or grid in a parking lot, including desirable charge amounts per vehicle, for a commercial client.	Model operational as SaaS on an N-SIDE AWS server, callable by the client (2m).





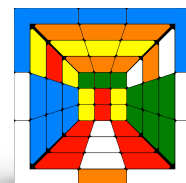
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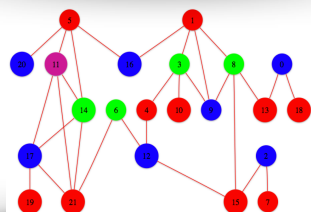
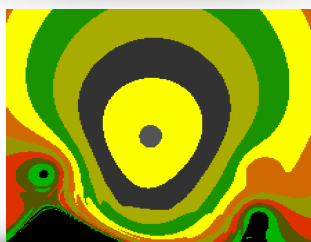
**6.5y Experience: Operations Research R&D: consultant to Infrabel+Phd; 2016-2010**

Skills used	Result achieved
Software versatility checking, business development. Self study: stochastic optimisation for energy supply to demand matching + Big Data	Checking applicability of railway timetabling software on bus and tram networks; for <a href="#">HTM, The Hague</a> (1m)
Research, writing conference and journal papers, discussing with co-authors, adapting papers to reviewer comments, co-publishing, reviewing conference and journal papers of others as expert in the field	3 top journal research publications, 10 international conference papers as first author and a similar amount as co-author, defending PhD in February 2016 at <a href="#">KU Leuven</a> (6y)
<b>Operations Research, MILP, C++</b> (66k lines) (multi IDE: <a href="#">Xcode</a> , <a href="#">Eclipse</a> , <a href="#">VisualStudio</a> ), Python, SQL (Oracle), <a href="#">CPLEX</a> , <a href="#">Gurobi</a> , <a href="#">XPRESS</a> , <a href="#">milp-logic</a> , <a href="#">OpenMP</a> (multicore), <a href="#">OpenMPI</a> (networked), dynamic <a href="#">SVG</a> with Javascript, XML parsing, <a href="#">CMake</a> (multi platform: Windows, Linux, Apple makefile generation), <a href="#">git</a> , R&D, (Word, Excel, Powerpoint)	Auto-generated (in 1 hour) a flawless, robust cyclic timetable for Denmark which reduces passenger journey time by 2.9%; for <a href="#">Banedanmark</a> (1m)
+ <a href="#">LUKS</a> & <a href="#">OnTime</a> simulations (+ Word & Excel)	Auto-generated (in 2 hours) a flawless, robust cyclic timetable for Belgium (advanced the state of the art of research) which reduces passenger journey time by 3.8%. My simulations show increased robustness and train punctuality & reduced missed transfers; Integrated at <a href="#">Infrabel</a> . (3.5y)
+ <a href="#">Sqlite</a> , <a href="#">Qt</a>	Auto-generated (in 10 min) flawless, platforming plans for all 530 stations in Belgium; integrated at <a href="#">Infrabel</a> (3y)
<b>C++</b> (4k lines)	Developed <a href="#">milp-logic</a> , my solver abstraction C++ library & API for CPLEX, Gurobi and XPRESS with a boolean logic modelling layer on top. I open sourced this code (1m)



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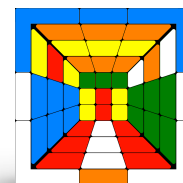
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7y Experience: Software R&D: consultant to Philips Research & others: 2010-2003	
Skills Used	Result Achieved
Android App development in Java in Eclipse, project specification write-up, database definition & design, receiving & sending SMS-es, SQL querying of Sqlite database, smart multi-criteria matching, test definition & deployment	Server App on Android Phone that matches offer and demand of agricultural products for Congo (0.7m)
iPhone/iPad App development in Objective-C, under Xcode, learning & using Apple APIs, Puzzle-15 state machine based solver algorithm R&D	5 LogicallyYours Apps on Apple iTunes (1.5m)
C++, C, C#, Java, Python, XML, Coolflux embedded C, FreeRTOS, socket programming (UDP, TCP-IP), body sensor network node & host programming, linear algebra (up to feature correlation matrix, PCA, minimal Mahalanobis distance and Cholesky decomposition), 2D computational geometry (various more and more efficient polygon intersection algorithms, cooperation on algorithms with senior researchers), object tracking, Bayesian estimator. Built inside navigation system on top of Ekahou LPS.	Flexible MPEG fragment player, Photonic textile API, Body sensor network physiological feature (e.g. heartbeat detection from ECG) & emotion detection, SmartFloor pressure sensitive floor API with foot-detection & people identification, EnterTable large multi(>100)-touch table; in building navigation algorithm; for Philips Research Eindhoven (6y)
C++ & C, Perl, Perl-Tk, Embedded Rabbit C, SICK scanner interfacing, RS232 programming, firewire camera interfacing, GPS-like Matrix based localisation algorithm, embedded Linux programming, embedded website creation	Container in crane tracking solution, container on train separation, GUIs, device embedded configuration webserver for Camco, Haasrode (4m)
C++, ksh programming, Java, porting, interfacing nCipher 3DES encryption/decryption API	ported, unit tested and secured; for Alcatel Space, Antwerp (4m)
PHP, MySQL, CSS, HTML, Dreamweaver	booking website development (3m)

6.5y Experience in Chip Design & Tool R&D: employee at Esasics: 2003-1996	
Skills Used	Result Achieved
C++, Qt, graph colouring algorithms, parsing using lex & yacc, Operations Research, MILP, R&D (2000-2003)	Advanced EDA tools R&D (cycle accurate behavioural synthesis, worst case execution time tool, optimal routing on processor grid tool, CHDL (=VHDL mimicking C++ libraries) for Esasics chip design engineers (3y)
Protel PCB design, Perl (1999-2000)	Emulator platform Printed Circuit Board Design, automatic netlist checking, component ordering & follow up of PCB production; for Esasics (1y)
VHDL, Perl (1996-1999)	Design of various modules for digital chips (for crane controller and for USB); for Esasics (2.5y)





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Education (2016 back to 1989)	
Degree & Thesis	University
<b>PhD</b> in Operations Research with a <a href="#">thesis</a> in Optimisation with stochastic objective (by robust Mixed Integer Linear Programming) titled “Large-Scale, Passenger Oriented, Cyclic Railway Timetabling and Station Platforming and Routing” in cooperation with <a href="#">Infrabel</a> (2010 - 5/2016)	<a href="#">CIB, KU Leuven</a> , Belgium
<b>MSc</b> in Computation with a <a href="#">thesis</a> in <b>Operations Research</b> , (using <b>MILP</b> and <b>C++</b> ), titled “Scheduling for Dynamically Reconfigurable FPGAs” (1995-1996)	<a href="#">Computing Laboratory, Oxford University</a> , UK
Degree (“ <b>Licentie</b> ”) in Applied Computer Science ( (1994-1995)	<a href="#">KU Leuven</a> , Belgium
<b>MSc</b> in Electrical Engineering with a thesis in digital design (schematic entry) & compiler development ( <b>C++</b> ) in cooperation <a href="#">IMEC, Leuven, Belgium</a> (1992-1994). This thesis was awarded the national <a href="#">BARCO</a> prize for Industrial Engineers in 1994	<a href="#">KU Leuven, Campus Groep T</a> , Belgium
<b>BSc</b> (“Kandidaat”) in Applied Sciences (1989-1992)	<a href="#">KU Leuven</a> , Belgium

Some More Web Links	
Conference & Project publications: Energy (2016-2020)	<a href="#">Testing TSO-DSO interaction schemes for the participation of distributed energy resources in the balancing market: The SmartNet Simulator</a> <a href="#">SmartNet: Network and Market Models</a> <a href="#">SmartNet: Network and Market Models: Preliminary Report</a>
Journal publications: <a href="#">Transportation Research, Part B: Methodological</a> (5y impact factor: 4.116)	<a href="#">Reducing the passenger travel time in practice by the automated construction of a robust railway timetable</a> <a href="#">The train platforming problem: The infrastructure management company perspective</a>
Journal publications: <a href="#">Expert Systems with Applications</a> (5y impact factor: 2.571)	<a href="#">Automated platforming &amp; routing of trains in all Belgian railway stations</a> (under review)
Web profiles	<a href="http://www.LogicallyYours.com/Research">www.LogicallyYours.com/Research</a> (contains all my train research publications) <a href="https://www.linkedin.com/in/petersels">https://www.linkedin.com/in/petersels</a> <a href="https://www.researchgate.net/profile/Peter_Sels">https://www.researchgate.net/profile/Peter_Sels</a> <a href="https://scholar.google.be/citations?user=_1ILIKAAAAAJ">https://scholar.google.be/citations?user=_1ILIKAAAAAJ</a>
My consulting company	<a href="http://www.LogicallyYours.com/Company">www.LogicallyYours.com/Company</a>
Work references	<a href="http://www.LogicallyYours.com/References">www.LogicallyYours.com/References</a> (also check LinkedIn)
Peter Sels CV	<a href="http://www.LogicallyYours.com/PeterSelsCV">www.LogicallyYours.com/PeterSelsCV</a> (contains this PDF)