



**VeRoLog Solver Challenge
Award ceremony
July 12th, 2017**

Caroline Jagtenberg on behalf of the challenge team





MEET THE TEAM

The nut to crack



The rules

➤ All-time best

- 25 “all-time-best” instances
- Freestyle is allowed
- Participants submit solutions

➤ Restricted resources

- 25 “late” instances
- No commercial solvers allowed
- Participants submit executables
- We select finalists → determine winners on “hidden” instances

The timeline



The resources

- <https://verolog.ortec.com>
- Problem description
- Two interchangeable formats
(text and xml)
- Test examples
- Solution validator
- Runtime calibrator

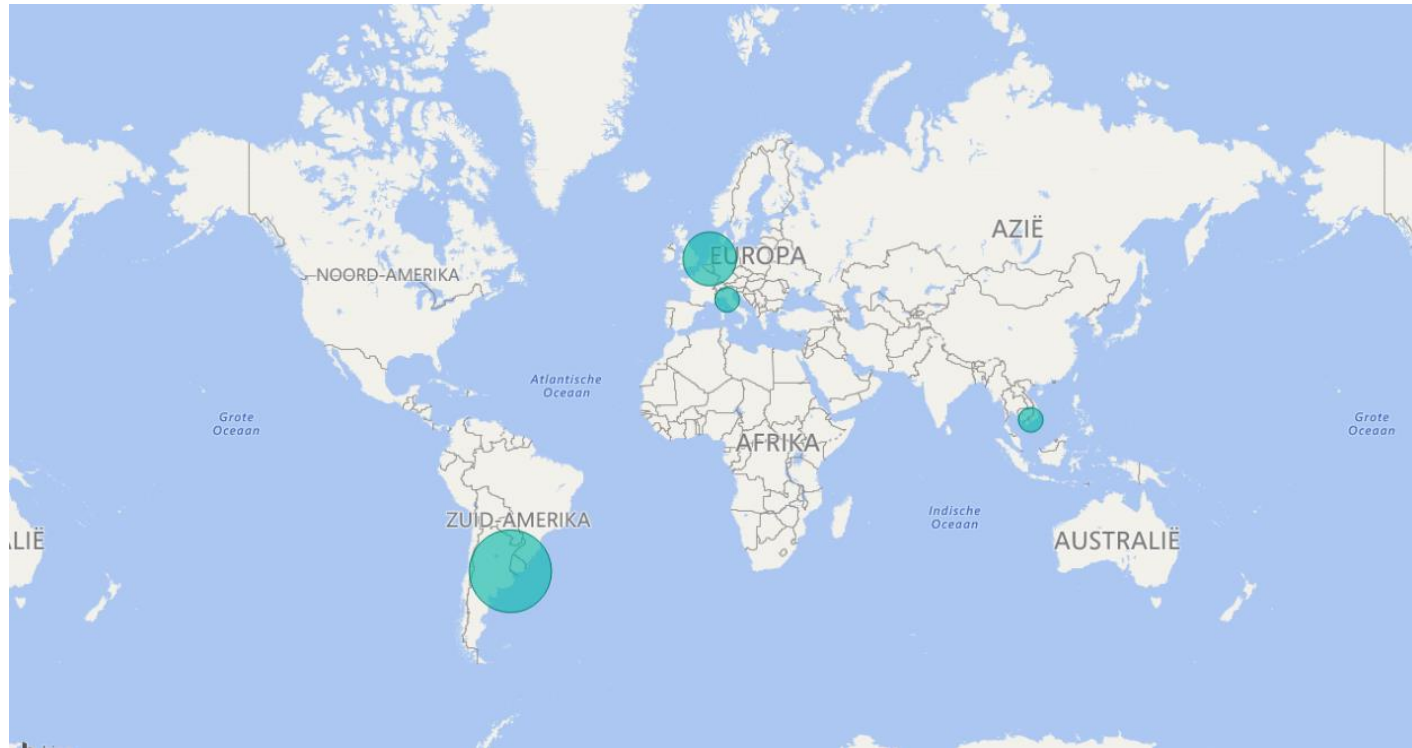
VeRoLog Solver Challenge 2016-2017



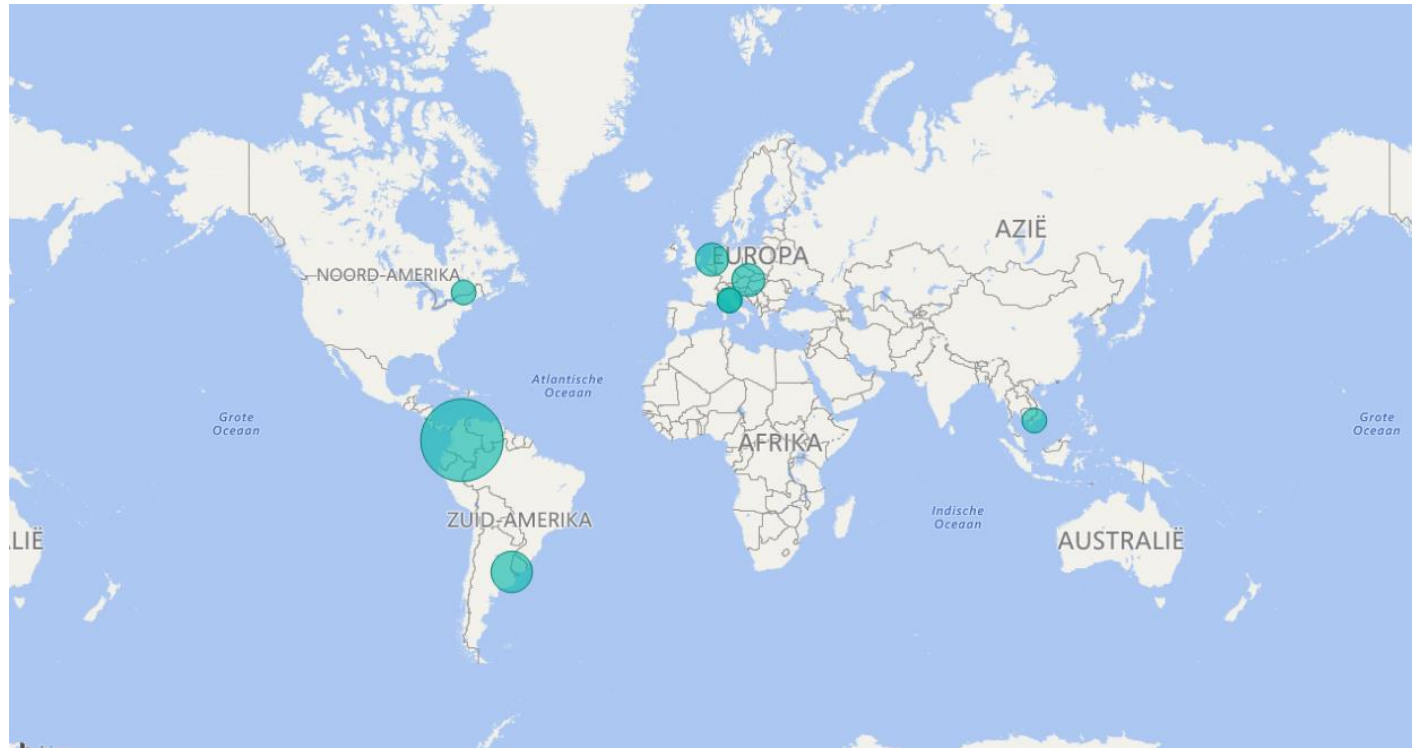
The nutcrackers



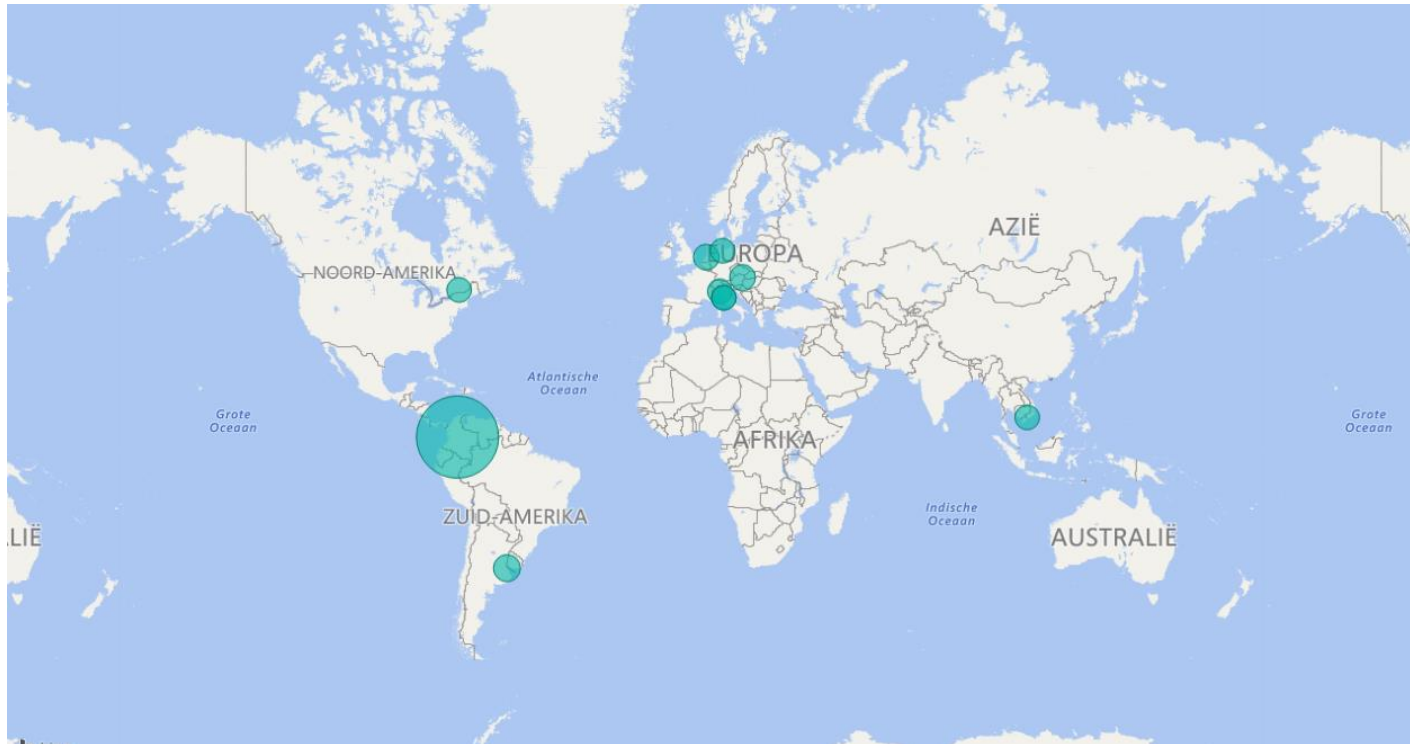
The nutcrackers



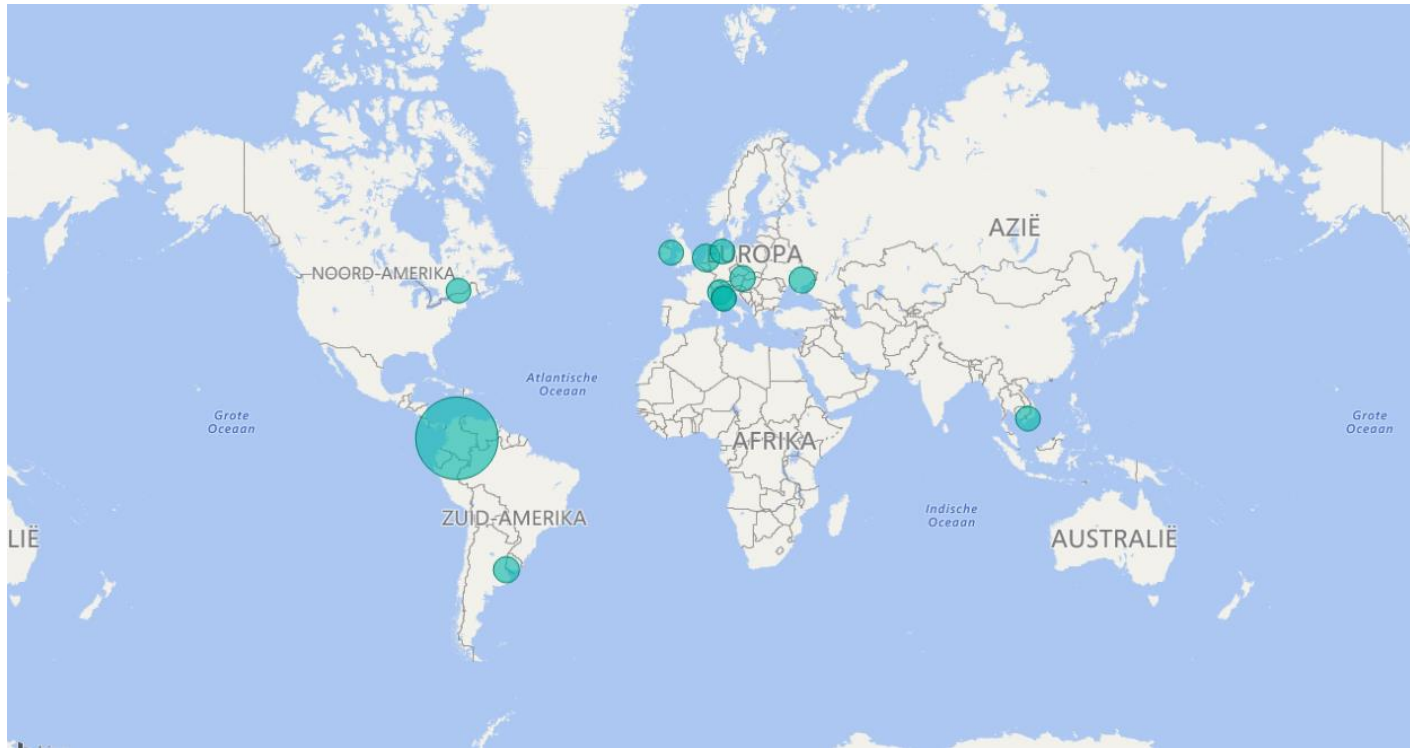
The nutcrackers



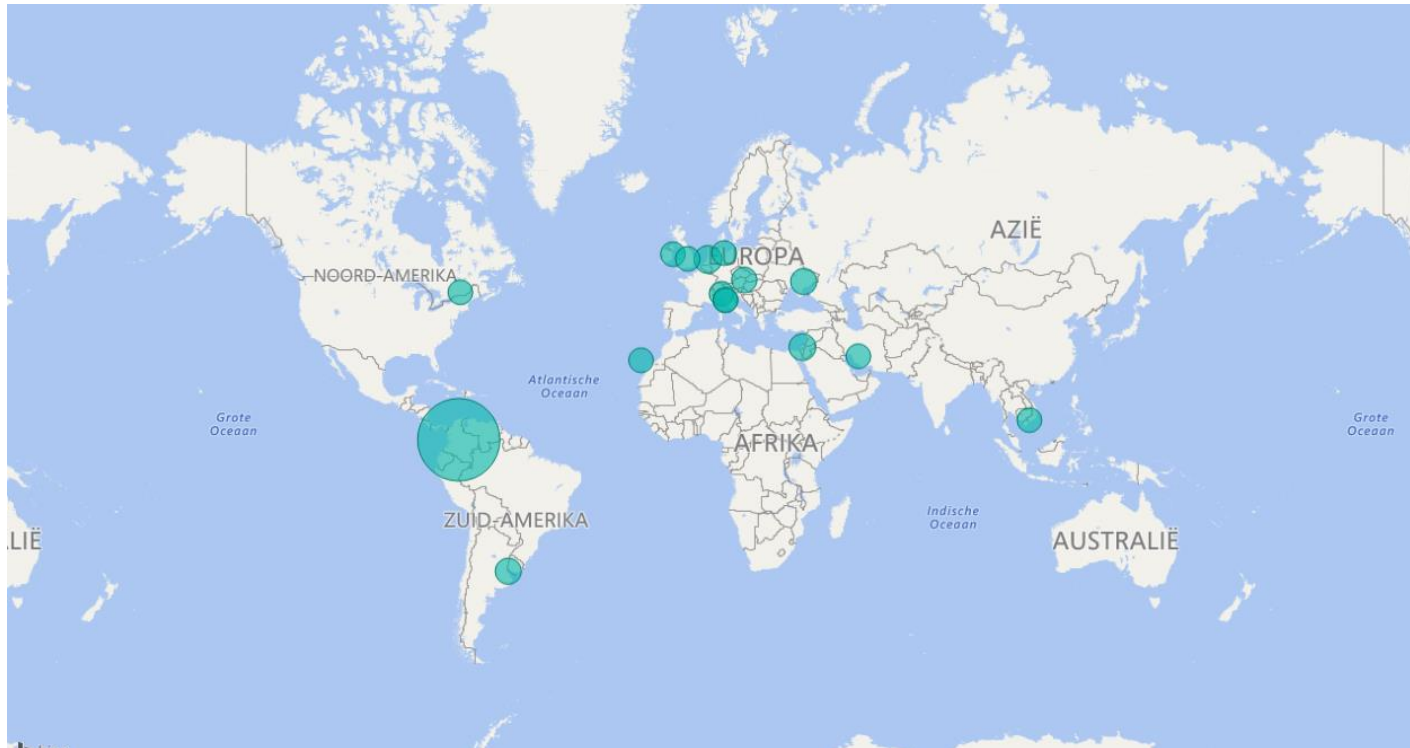
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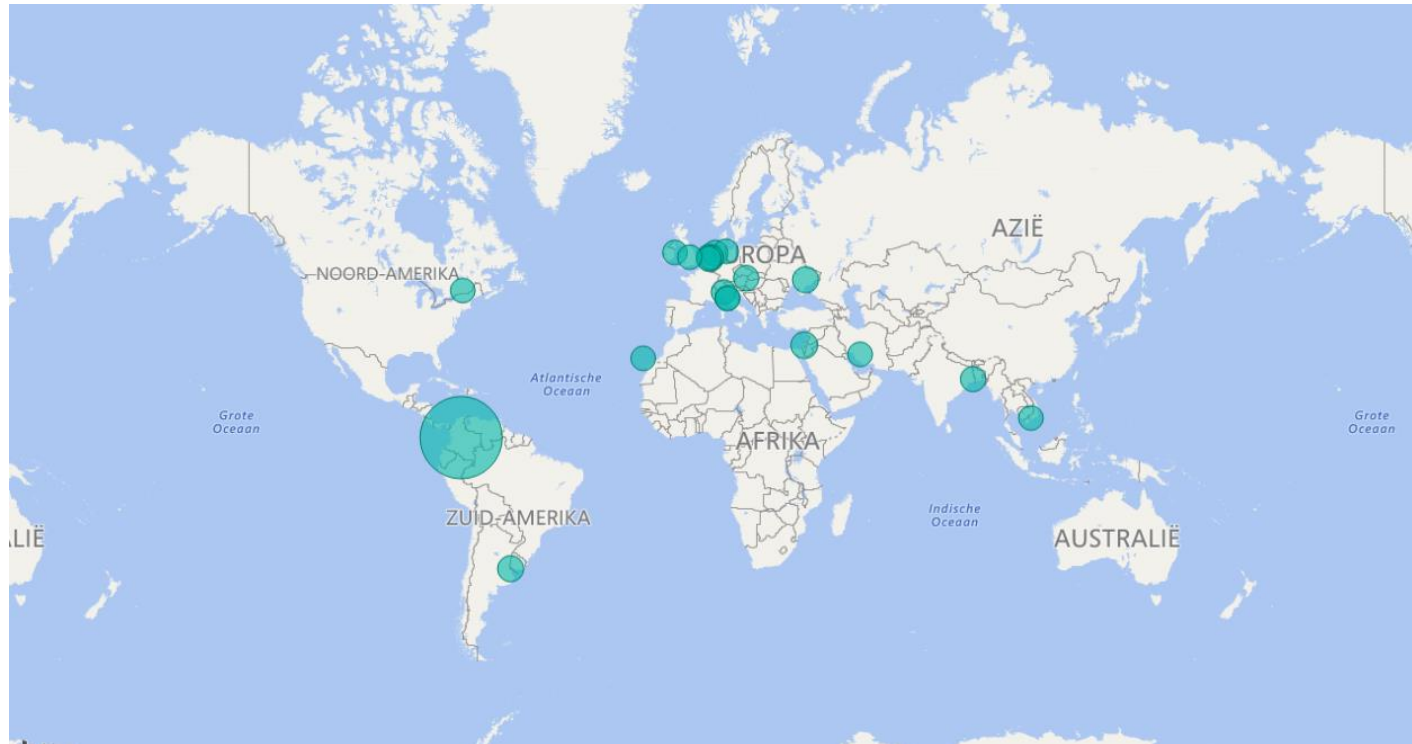
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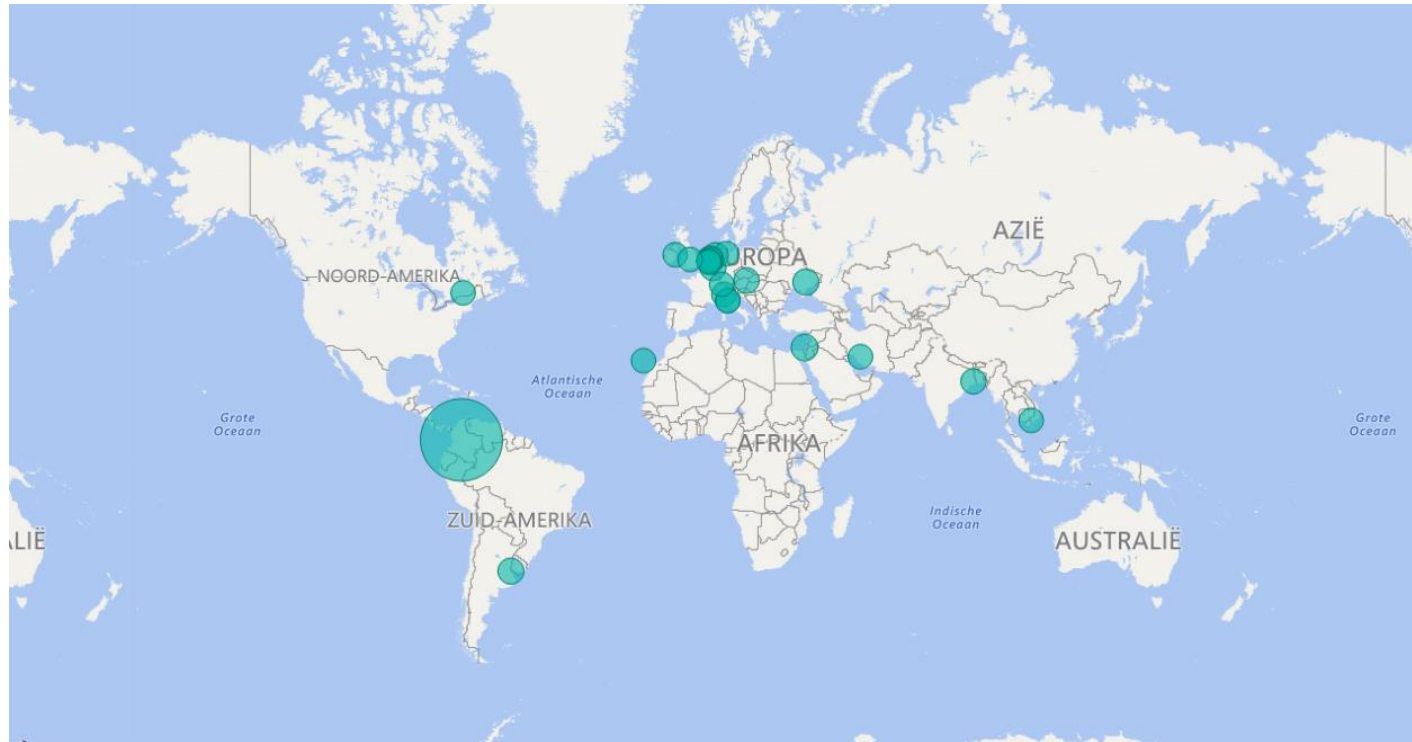
The nutcrackers



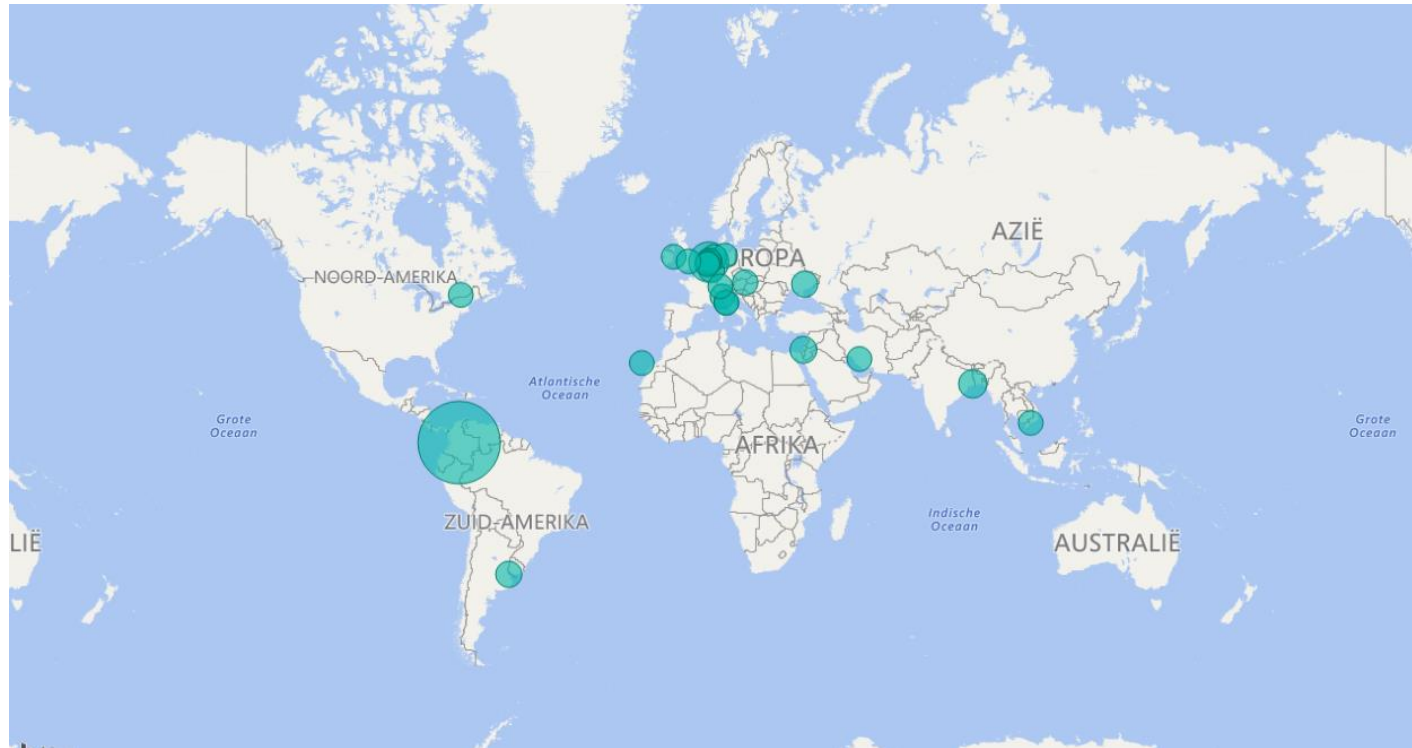
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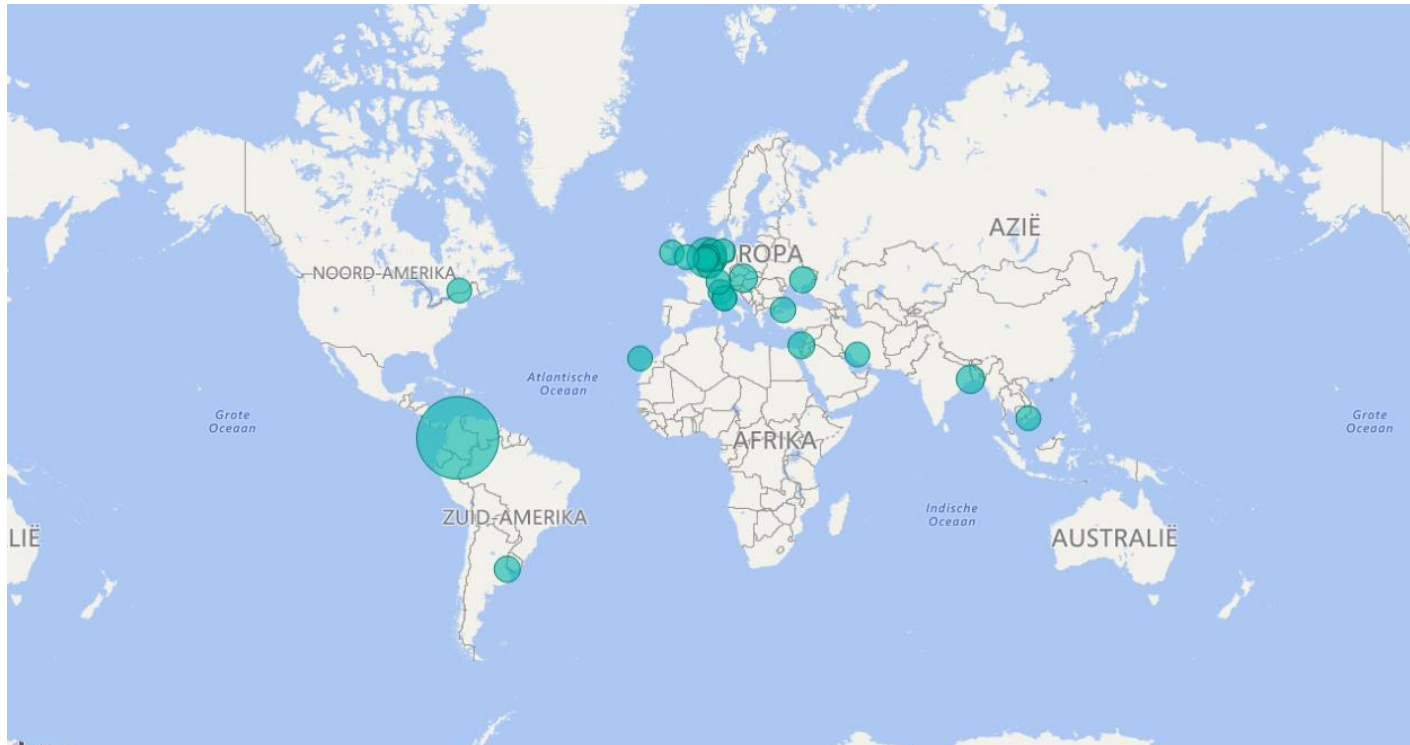
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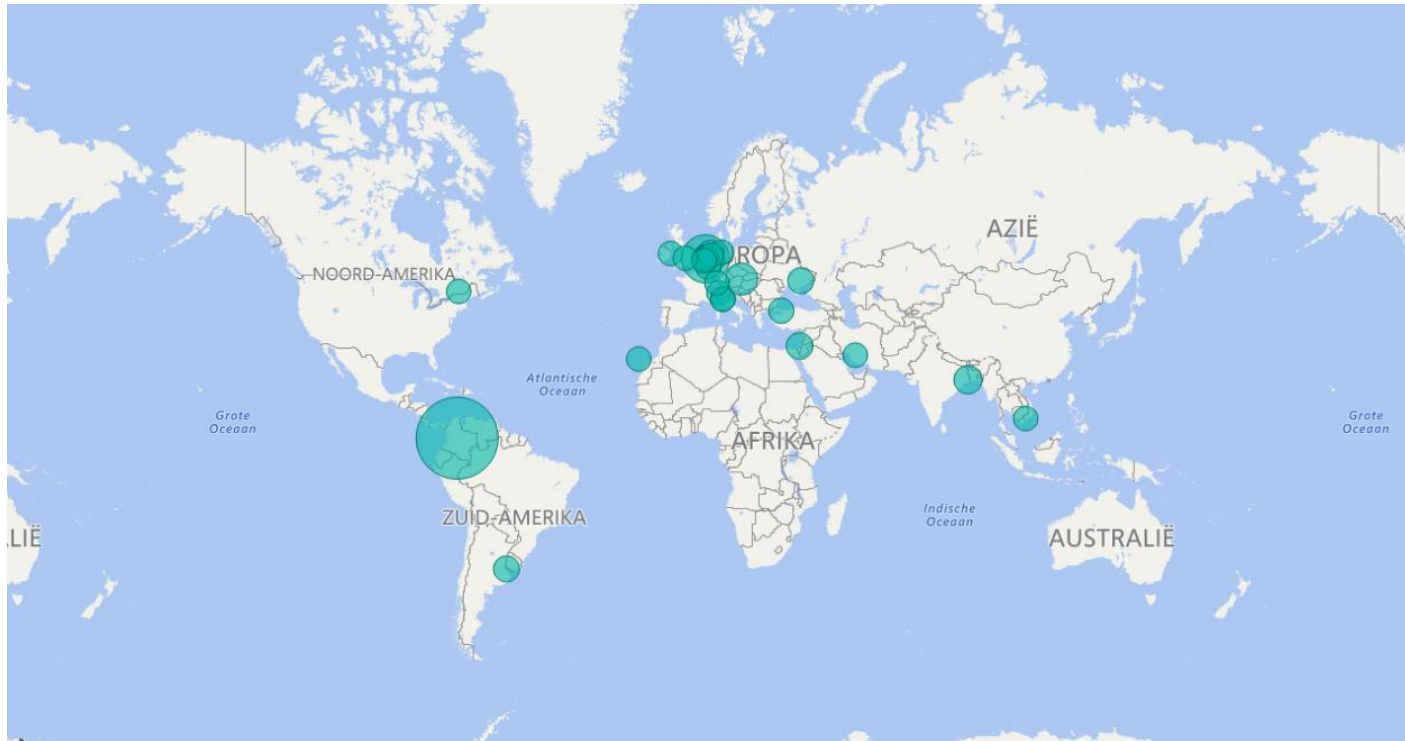
The nutcrackers



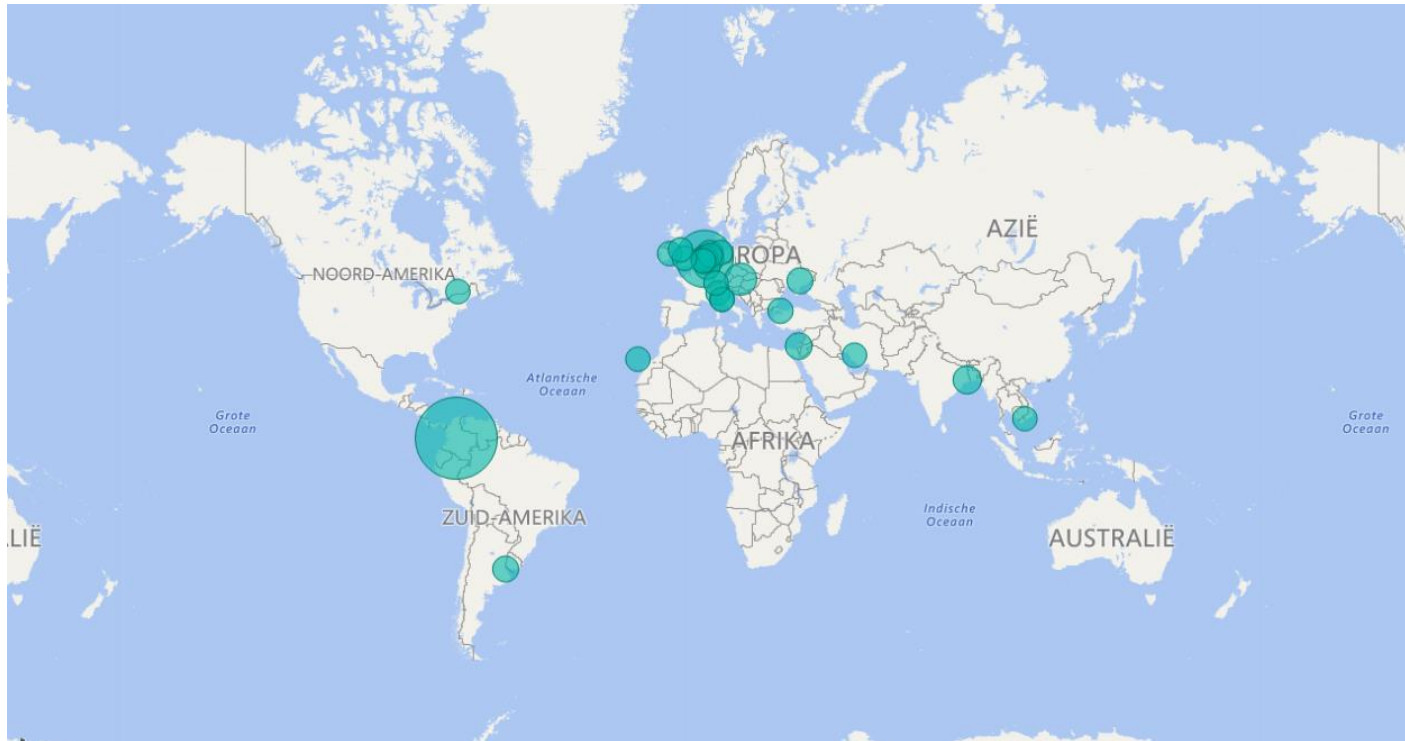
The nutcrackers



The nutcrackers



The nutcrackers

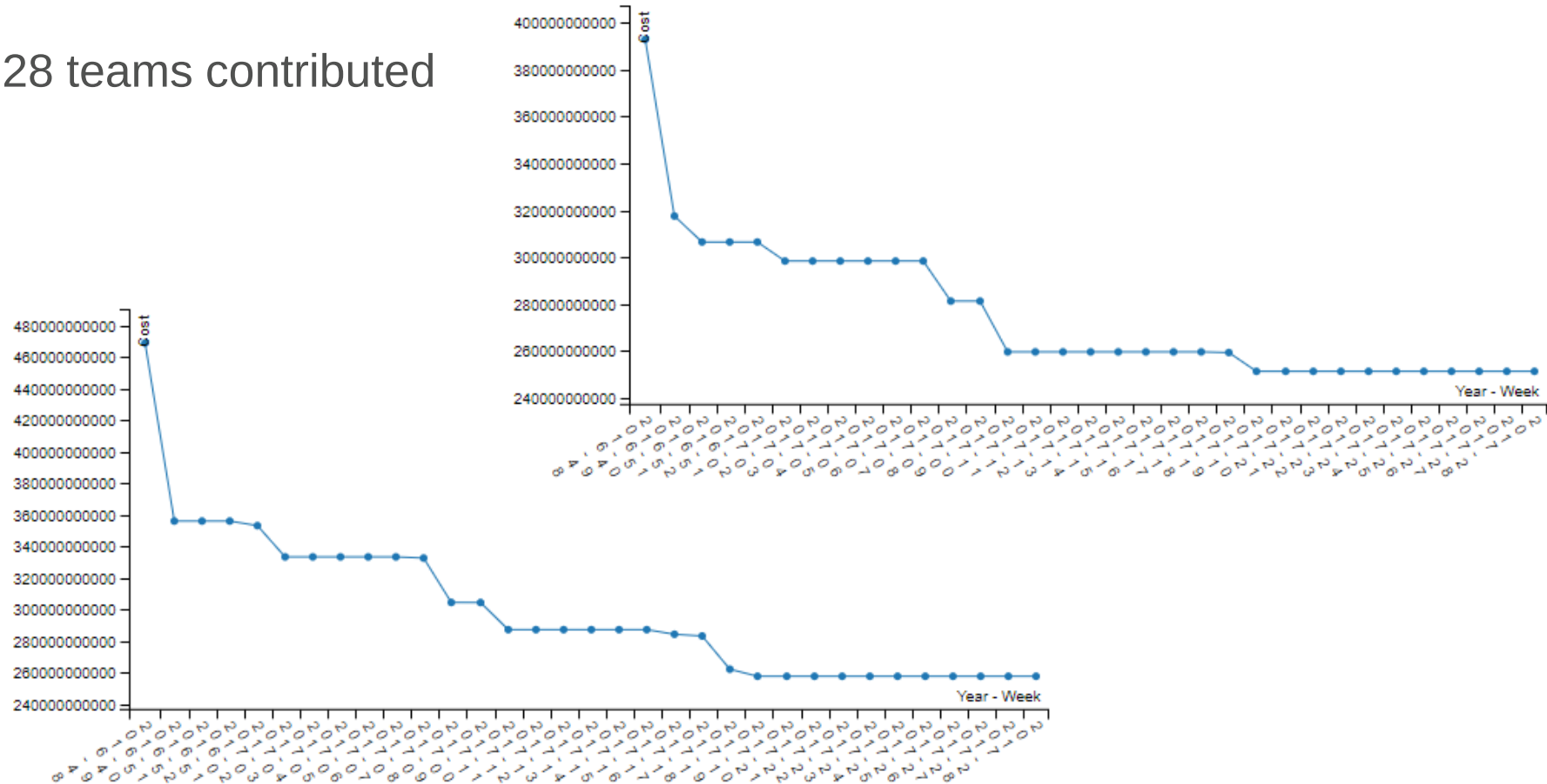


Institutes

CIRRELT	Tages s.c.
Erasmus University Rotterdam	Tata Consultancy Services
Universidad Torcuato Di Tella	Tel Aviv University
Universidad de Buenos Aires	Universidad de Los Andes
Ho Chi Minh City of International University	University College Dublin
Vienna University of Technology	University of Laguna
Koc University	University of Pavia
Lancaster University	University of the Federal Armed Forces, Hamburg
University of Pisa	University of Twente
Los Andes University	University of Vienna
Maastricht University	Vrije Universiteit Amsterdam
University of Groningen	Warwick University
Shiraz University	Zaporizhzhya National University

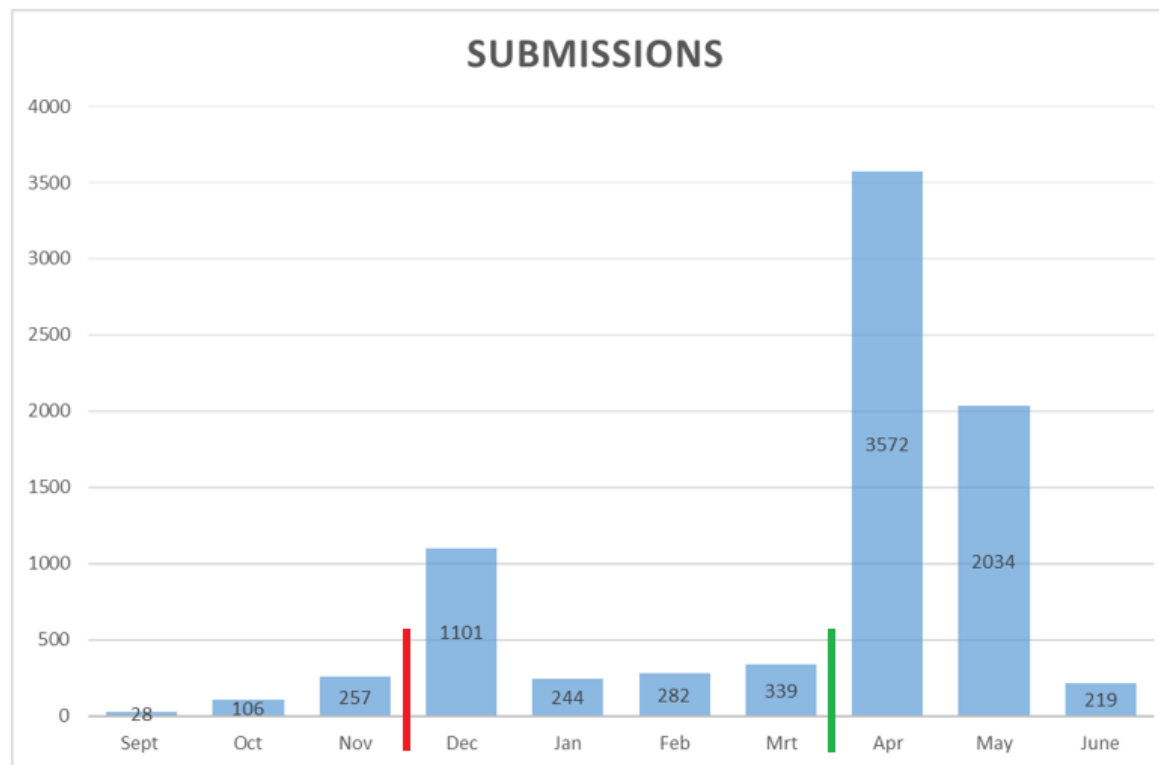
All-time best

28 teams contributed



All-time best

8182 submissions

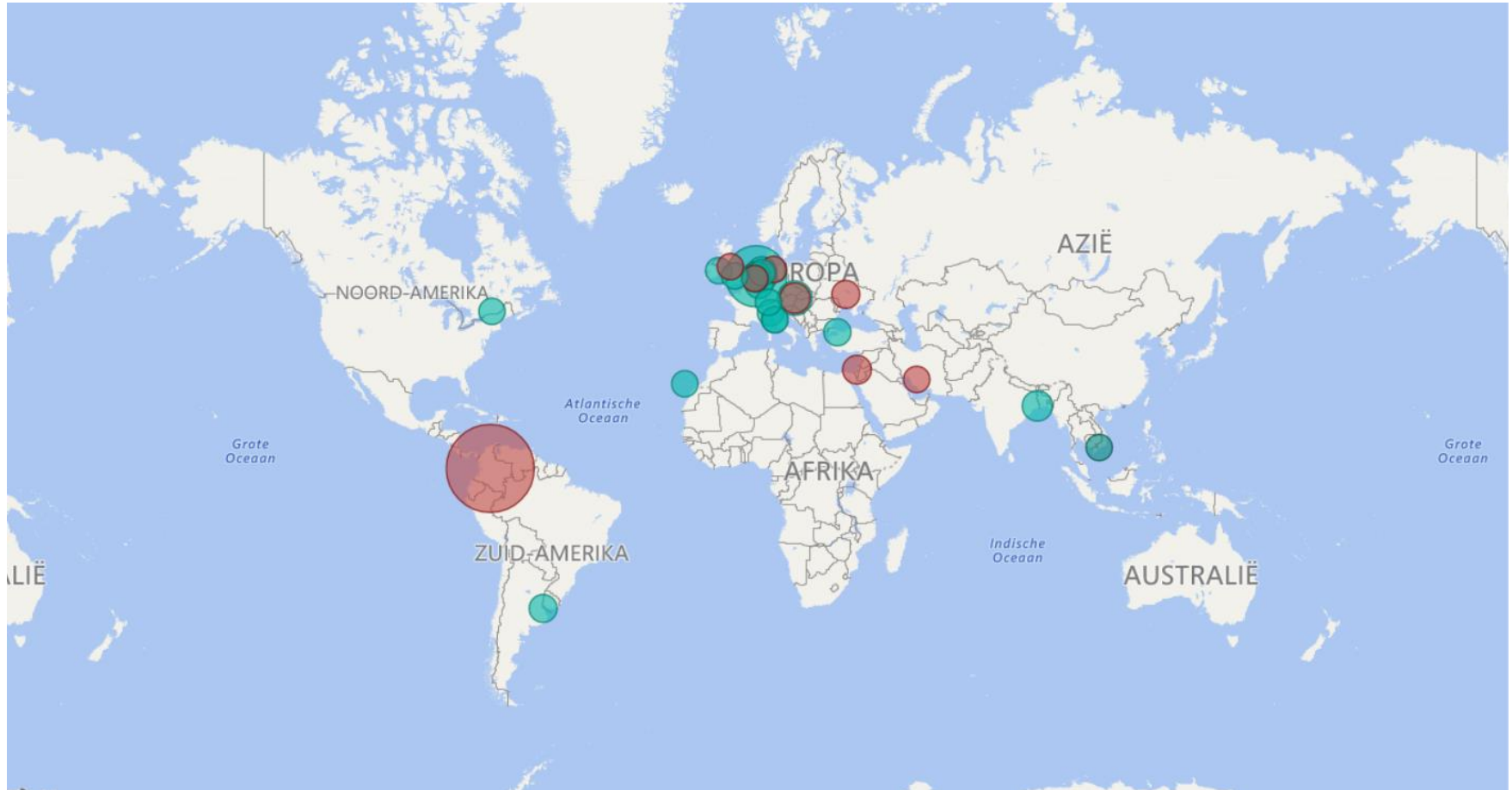


- Start all-time-best competition
- Publish ORTEC-late instances

Restricted Resources Challenge

- Executable to be submitted by May 8th.
- 9 teams participated
- last submission:
23:59:35 CEST (team Equipo MLS)

The semi-finalists



Organizational challenges

- Submission

- Size limit

- Evaluation

- Rebooting of machines

Restricted Resources Challenge

Calculation time

➤ SUBMISSIONS

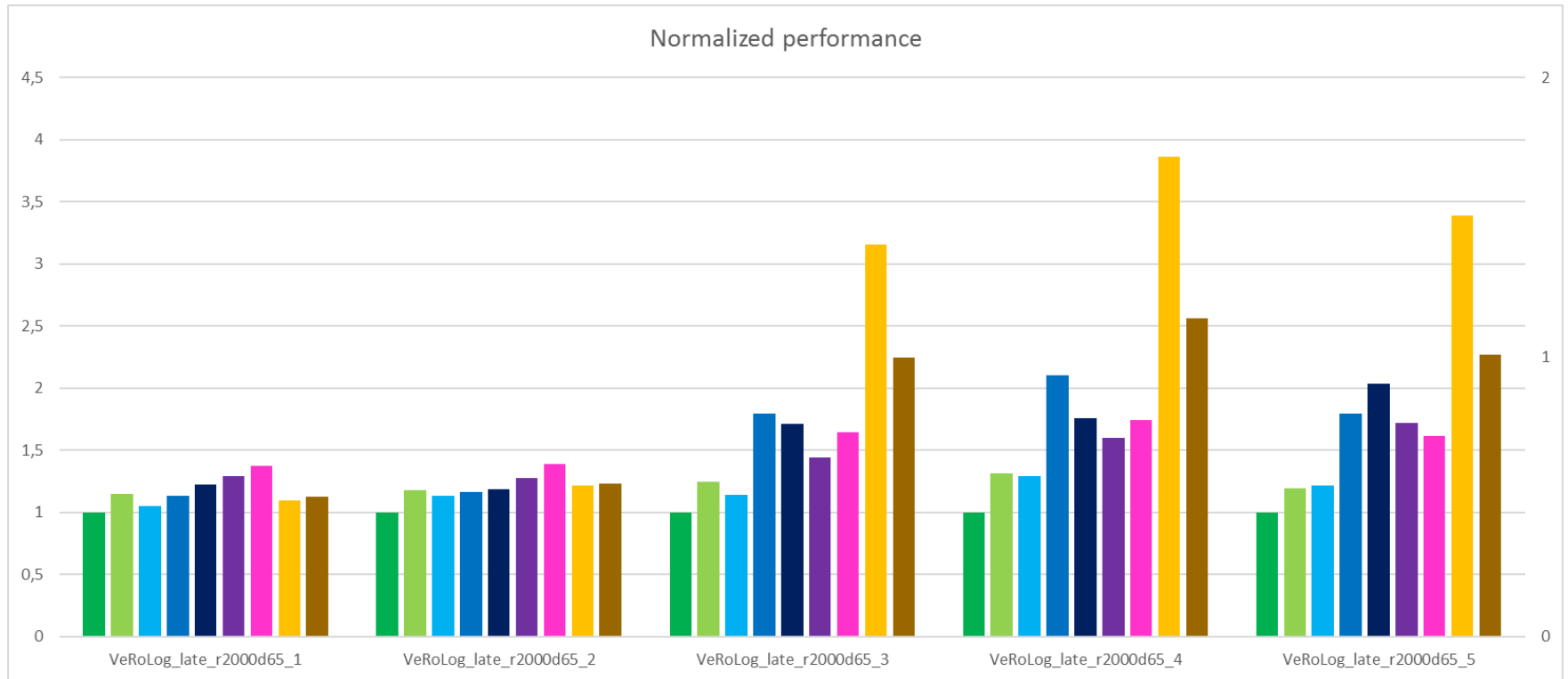
- 25 “late” instances (1000 – 2000 customers, 20 - 65 days)
- verification computation time: ca. 23 days

➤ FINALE

- 50 “hidden” instances (500 – 2500 customers, 10 – 75 days)
- verification computation time: ca. 33 days

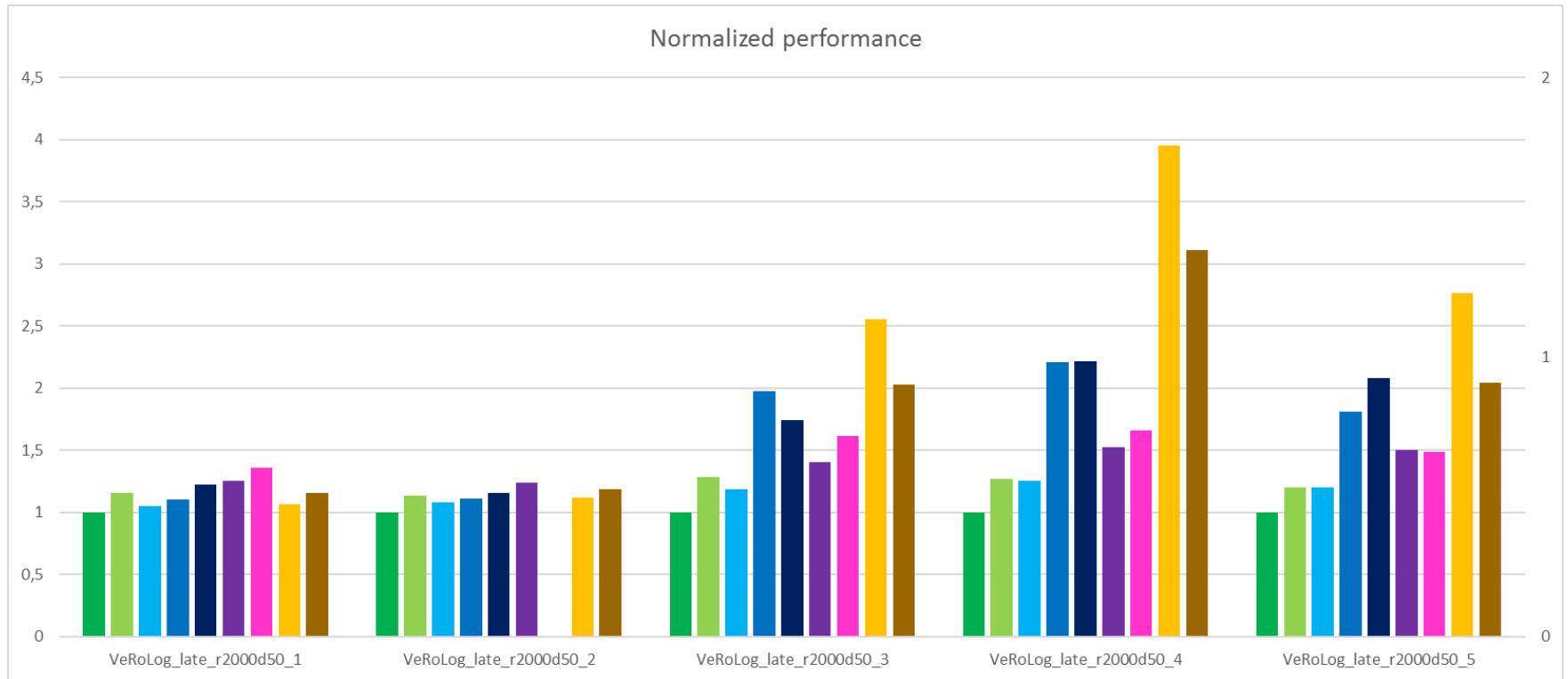
Restricted Resources Challenge

Late instances



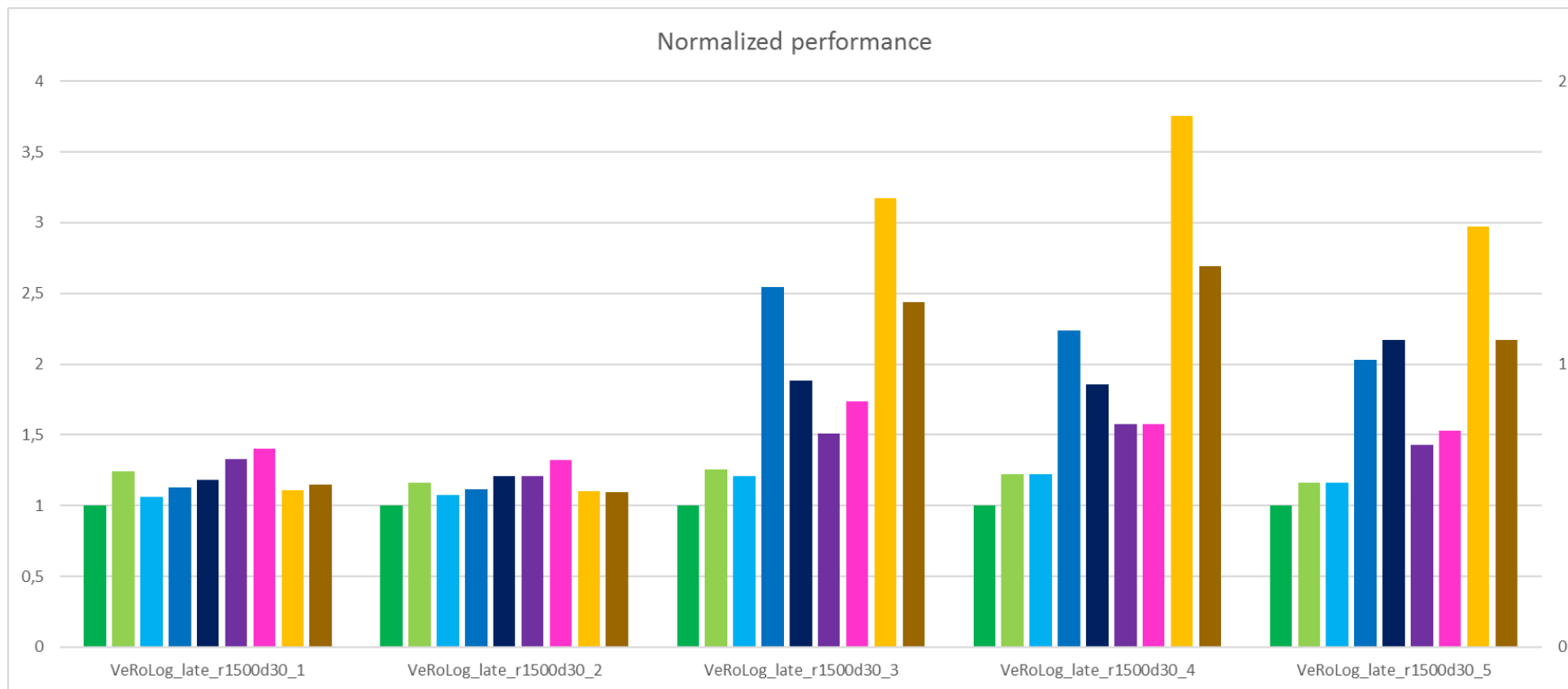
Restricted Resources Challenge

Late instances



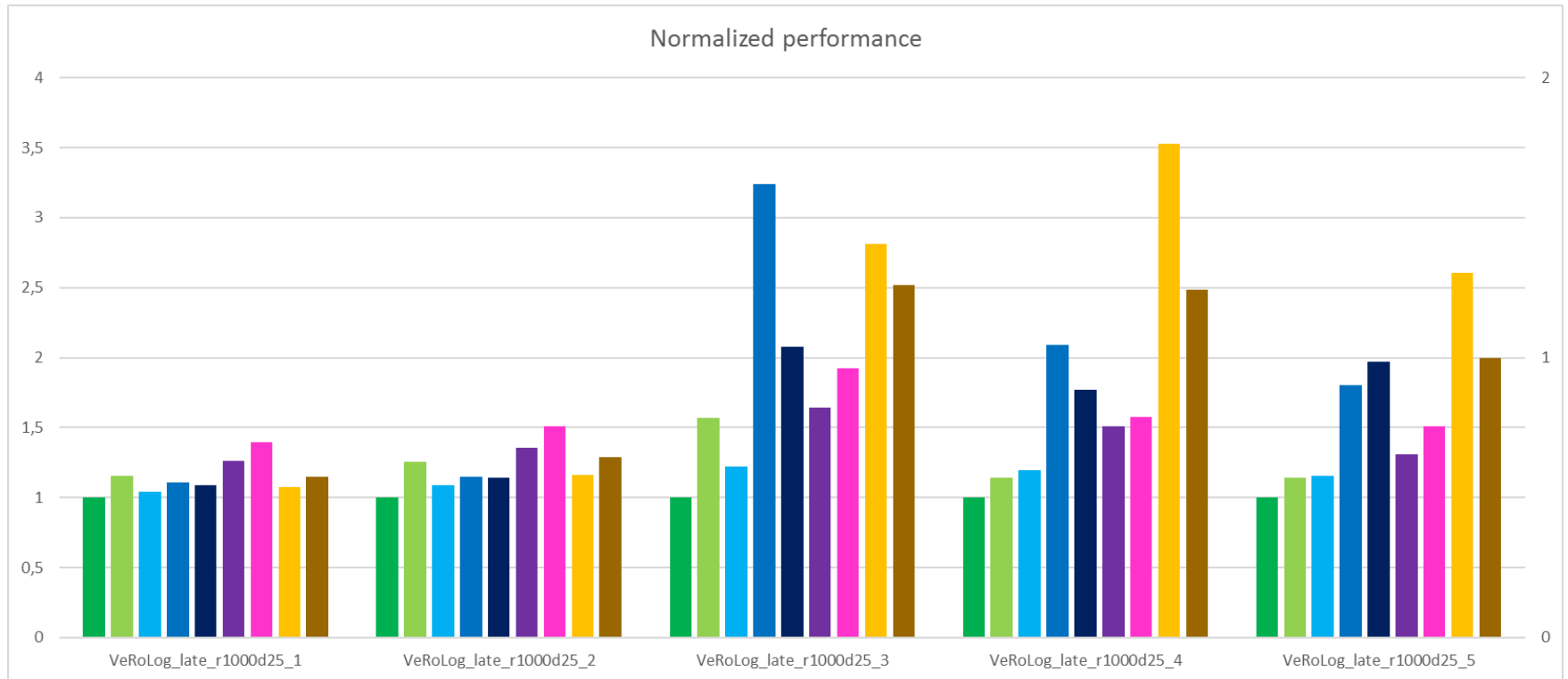
Restricted Resources Challenge

Late instances



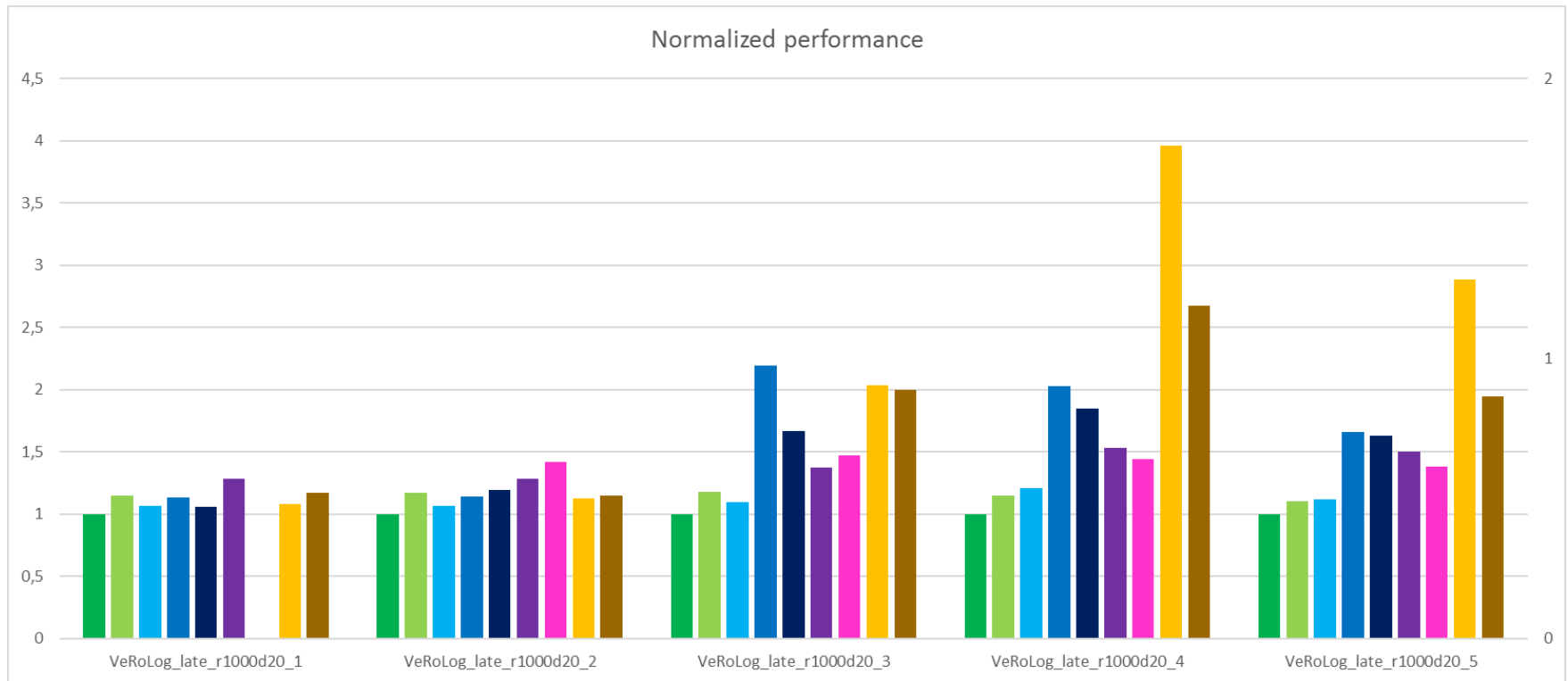
Restricted Resources Challenge

Late instances



Restricted Resources Challenge

Late instances



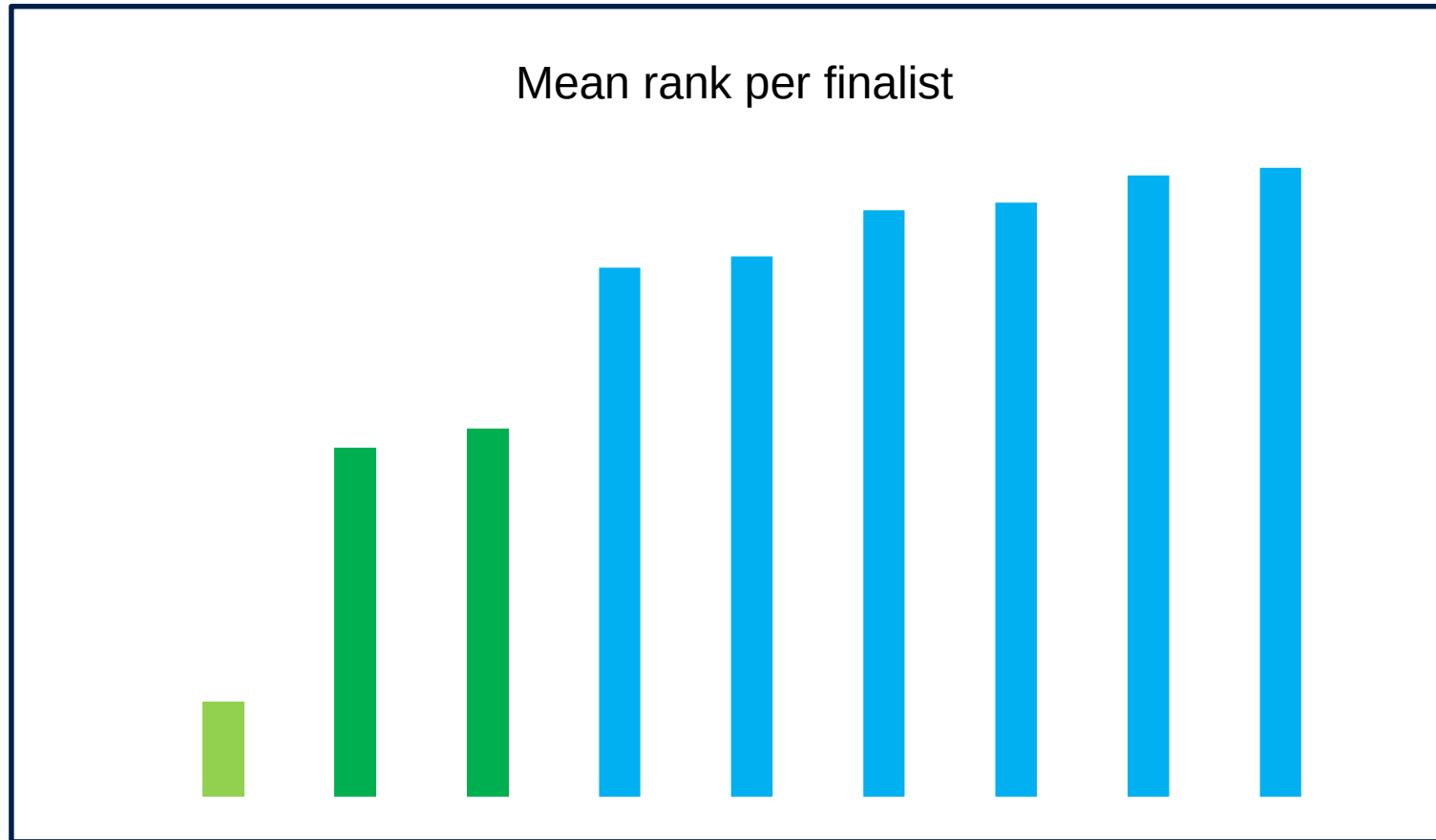
Restricted Resources Challenge

Setup

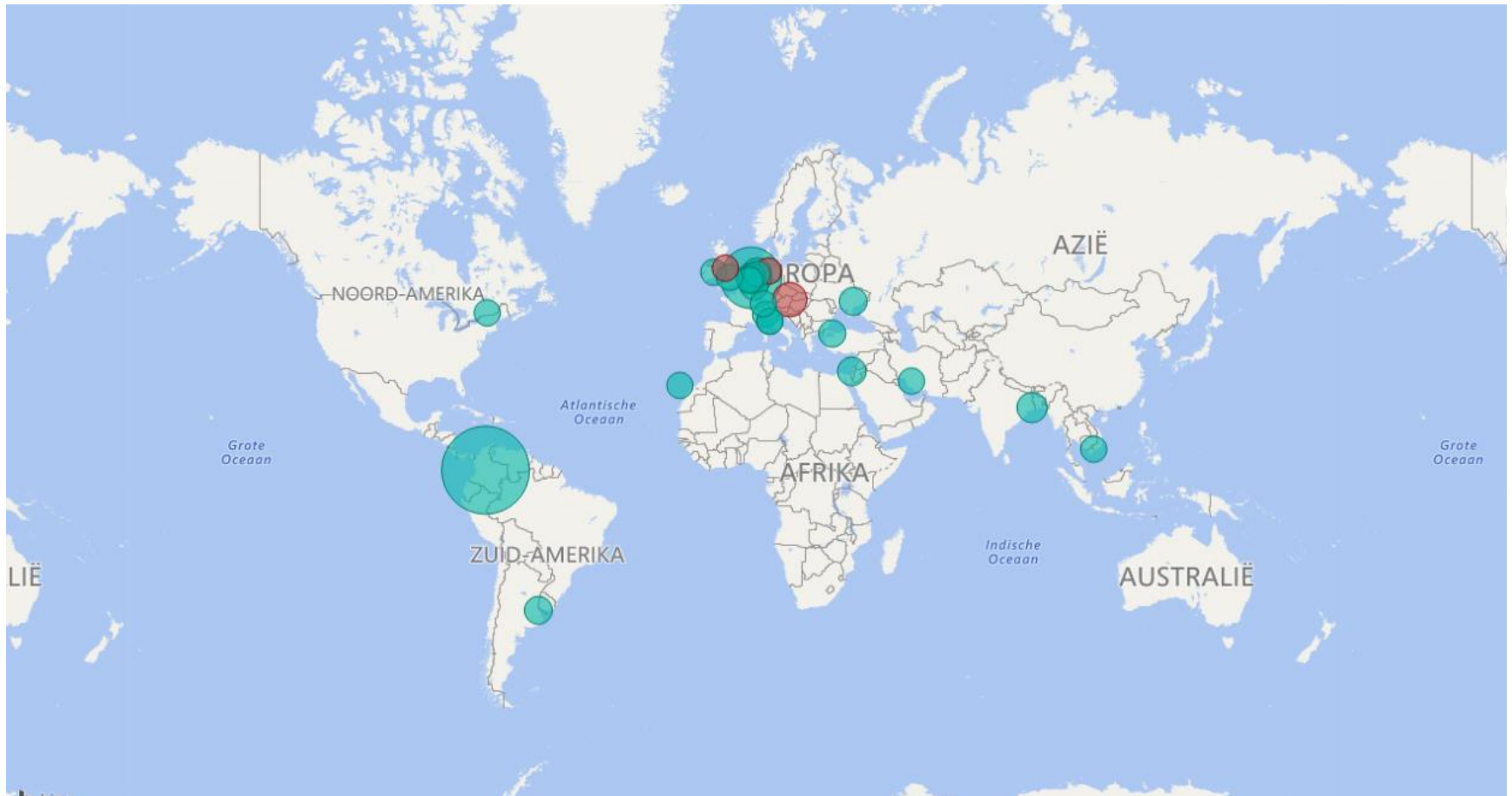
A restricted resources challenge, this is a challenge in the more "traditional" form. Here the resources are restricted, especially time. To participate you have to run your algorithm on a set of instances (dataset ORTEC-late) and send in your results and solver binaries on May 1, 2017. Based on these results, around 5 finalists will be selected. The solvers of the finalists are then applied to a set of hidden instances. Per instance the participants are ranked and the participant with the lowest mean rank is the winner of the challenge.

Restricted Resources Challenge

Late instances



The finalists



Restricted Resources Challenge

Hidden instances

Row Labels	Score	Infeasible	Rank	Score	Infeasible	Rank	Score	Infeasible	Rank
VeRoLog_hidden_r1000d20_1	9716251459	0	3	8542334269	0	2	8195901045	0	1
VeRoLog_hidden_r1000d20_2	5320563746	0	3	4687530740	0	2	4488010146	0	1
VeRoLog_hidden_r1000d20_3	621469663	0	3	550366509	0	2	478241653	0	1
VeRoLog_hidden_r1000d20_4	2199247820	0	3	2138844192	0	2	1838580602	0	1
VeRoLog_hidden_r1000d20_5	805492432011	0	3	763138273213	0	2	6.83054E+11	0	1
VeRoLog_hidden_r1000d25_1	2866565755	0	3	2580761019	0	2	2476636726	0	1
VeRoLog_hidden_r1000d25_2	7272438519	0	3	6387530652	0	2	5990567956	0	1
VeRoLog_hidden_r1000d25_3	277448517	0	3	216653498	0	2	176404957.8	0	1
VeRoLog_hidden_r1000d25_4	8661437160	0	2	8783122813	0	3	7363510843	0	1
VeRoLog_hidden_r1000d25_5	507618900005	0	2	516249959207	0	3	4.49928E+11	0	1
VeRoLog_hidden_r1500d30_1	7848014014	0	3	6881717534	0	2	6467120269	0	1
VeRoLog_hidden_r1500d30_2	7788925107	0	3	7127091955	0	2	6489993680	0	1
VeRoLog_hidden_r1500d30_3	131376619	0	3	127751602	0	2	115315363.8	0	1
VeRoLog_hidden_r1500d30_4	13173341132	0	3	13166641854	0	2	10703447930	0	1
VeRoLog_hidden_r1500d30_5	1317284786010	0	2	1348280702010	0	3	1.15184E+12	0	1
VeRoLog_hidden_r1500d40_1	4320649929	0	3	3865210740	0	2	3599106687	0	1
VeRoLog_hidden_r1500d40_2	7316145898	0	3	6535928682	0	2	6081597171	0	1
VeRoLog_hidden_r1500d40_3	378641946	0	3	316000036	0	2	266249046.8	0	1
VeRoLog_hidden_r1500d40_4	3568036772	0	3	3269104825	0	2	2688601902	0	1
VeRoLog_hidden_r1500d40_5	1925433518020	0	2	2034230196010	0	3	1.62762E+12	0	1
VeRoLog_hidden_r2000d50_1	5810784719	0	3	5298648594	0	2	5030224679	0	1
VeRoLog_hidden_r2000d50_2	5328466675	0	3	4866236414	0	2	4308682151	0	1
VeRoLog_hidden_r2000d50_3	486474150	0	3	418201601	0	2	324847200.8	0	1
VeRoLog_hidden_r2000d50_4	25001890955	0	3	23252981136	0	2	18510562245	0	1
VeRoLog_hidden_r2000d50_5	1284282228010	0	3	1253239037210	0	2	1.05629E+12	0	1
VeRoLog_hidden_r2000d65_1	4810734214	0	3	4294615936	0	2	3990007875	0	1
VeRoLog_hidden_r2000d65_2	3083403319	0	3	2702857405	0	2	2465266227	0	1
VeRoLog_hidden_r2000d65_3	261437817	0	3	238093078	0	2	195919945.6	0	1
VeRoLog_hidden_r2000d65_4	20897565143	0	2	21949270729	0	3	16051327503	0	1
VeRoLog_hidden_r2000d65_5	1645441474410	0	3	1617515168010	0	2	1.38209E+12	0	1
VeRoLog_hidden_r2500d70_1	5923449374	0	3	5114335854	0	2	4751953813	0	1
VeRoLog_hidden_r2500d70_2	7171256068	0	3	6556981185	0	2	5643936333	0	1
VeRoLog_hidden_r2500d70_3	519502106	0	3	469897674	0	2	354745805	0	1
VeRoLog_hidden_r2500d70_4	18895390762	0	3	18836590052	0	2	14619186238	0	1
VeRoLog_hidden_r2500d70_5	1518880368010	0	3	1432903921610	0	2	1.18559E+12	0	1
VeRoLog_hidden_r2500d75_1	6952945996	0	3	6156231838	0	2	5597113528	0	1
VeRoLog_hidden_r2500d75_2	4335142495	0	3	4135070761	0	2	3556430390	0	1
VeRoLog_hidden_r2500d75_3	428374927	0	3	383930752	0	2	301433094	0	1
VeRoLog_hidden_r2500d75_4	20347372369	0	3	19519419317	0	2	15493912178	0	1
VeRoLog_hidden_r2500d75_5	2014665465010	0	3	1973704986010	0	2	1.63357E+12	0	1
VeRoLog_hidden_r500d10_1	0	5	3	8543852756	0	2	8365899289	0	1
VeRoLog_hidden_r500d10_2	7301404930	0	3	5903916399	0	2	5771493723	0	1
VeRoLog_hidden_r500d10_3	863711081	0	3	814843760	0	1	819673854	0	2
VeRoLog_hidden_r500d10_4	4561034407	0	2	4587216376	0	3	3799479893	0	1
VeRoLog_hidden_r500d10_5	195043512013	0	2	220579316421	0	3	1.70088E+11	0	1
VeRoLog_hidden_r500d15_1	3267429112	0	3	2838813151	0	2	2697367524	0	1
VeRoLog_hidden_r500d15_2	6264518370	0	3	5518848425	0	2	5311310871	0	1
VeRoLog_hidden_r500d15_3	300157427	0	3	258486750	0	2	217665072.8	0	1
VeRoLog_hidden_r500d15_4	2333125167	0	2	2603742796	0	3	2071346776	0	1
VeRoLog_hidden_r500d15_5	179541640011	0	2	179854745014	0	3	1.55013E+11	0	1



The winners

Two categories:

- All-time best contest
- Restricted resources finale



The winners

- All-time best contest
- € 0.50 per instance per week for each instance's frontrunner



Team	Members	Institute	Prize

The winners

- All-time best contest
- € 0.50 per instance per week for each instance's frontrunner



Team	Members	Institute	Prize
goc-ar	Dr. Juan Jose Miranda-Bront MSc Agustin Montero Mr. Santiago Aboy Solanes	Universidad Torcuato Di Tella Universidad de Buenos Aires Universidad de Buenos Aires	€ 22.50

The winners

- All-time best contest
- € 0.50 per instance per week for each instance's frontrunner



Team	Members	Institute	Prize
Success	Dr. Morteza Keshtkaran	Shiraz University	€ 23.00
goc-ar	Dr. Juan Jose Miranda-Bront MSc Agustin Montero Mr. Santiago Aboy Solanes	Universidad Torcuato Di Tella Universidad de Buenos Aires Universidad de Buenos Aires	€ 22.50

The winners

- All-time best contest
- € 0.50 per instance per week for each instance's frontrunner



Team	Members	Institute	Prize
ADDM	MSc Alina-Gabriela Dragomir MSc David Mueller	University of Vienna Vienna University of Technology	€ 25.50
Success	Dr. Morteza Keshtkaran	Shiraz University	€ 23.00
goc-ar	Dr. Juan Jose Miranda-Bront MSc Agustin Montero Mr. Santiago Aboy Solanes	Universidad Torcuato Di Tella Universidad de Buenos Aires Universidad de Buenos Aires	€ 22.50

The winners

- All-time best contest
- € 0.50 per instance per week for each instance's frontrunner



Team	Members	Institute	Prize
mjg	Prof. Dr. Martin Geiger	University of the Federal Armed Forces Hamburg	€ 316.50
ADDM	MSc Alina-Gabriela Dragomir MSc David Mueller	University of Vienna Vienna University of Technology	€ 25.50
Success	Dr. Morteza Keshtkaran	Shiraz University	€ 23.00
goc-ar	Dr. Juan Jose Miranda-Bront MSc Agustin Montero Mr. Santiago Aboy Solanes	Universidad Torcuato Di Tella Universidad de Buenos Aires Universidad de Buenos Aires	€ 22.50

The winners

- All-time best contest
 - € 40 for each instance's all-time best solution

Team	Members	University	Prize

The winners

- All-time best contest
 - € 40 for each instance's all-time best solution

Team	Members	University	Prize
Mjg	Prof. Dr. Martin Geiger	University of the Federal Armed Forces Hamburg	€ 880
Success	Dr. Morteza Keshtkaran	Shiraz University	€ 120

The winners

- Restricted resources finale

**VeRoLog
Solver Challenge**
2016-2017



The winners

- Restricted resources finale

3rd prize



The winners

- Restricted resources finale

3rd prize

Team ADDM



Alina-Gabriela Dragomir University of Vienna
&

David Mueller Vienna University of Technology

The winners

- Restricted resources finale

2nd prize



The winners

➤ Restricted resources finale

2nd prize



Team AKHE



Ahmed Kheiri
Lancaster University

The winners

➤ Restricted resources finale

1st prize



The winners

➤ Restricted resources finale

1st prize



Team MJG



Martin Geiger

University of the Federal Armed Forces Hamburg

Restricted Resources Challenge

A well-deserved first prize:

On the “late” instances, the winner’s solution is better than any other solution from any seed - on every instance.



Without doubt this is one of the best challenges I have ever participated in, and a very interesting one. Thanks for organizing such a wonderful competition.”

- Ahmed Kheiri

This was, for many months, a lot of fun.

- Martin Geiger

This has been a great and challenging experience.

- Lucía París

This is a great contribution to the scientific community. In my opinion, it deserves high recognition.

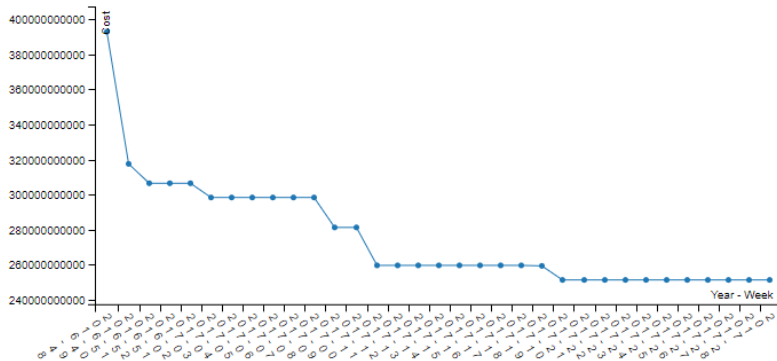
- Martin Geiger

I would like to thank the organizers for making this valuable contest.

- Team Success

What's next?

- “Hidden” instances will be published soon.
- verolog.ortec.com will evolve to become a benchmarking site.
- ORTEC is proud to also organize the VeRoLog Solver Challenge 2018-2019.
 - Curious? Keep an eye on verolog.ortec.com



VeRoLog Solver Challenge

2016-2017



Extra info

- <https://verolog.ortec.com>
- Announcement Solver Challenge 2016-2017
(<https://link.springer.com/article/10.1007/s41604-016-0001-7>)
- Solving a Real-Life VRP with Inter-Route and Intra-Route Challenges
(<http://dx.doi.org/10.2139/ssrn.2610549>)