

The background features a stylized, high-contrast image of a bridge, likely the Krakow Bridge, with a complex lattice structure. Overlaid on this are several horizontal bars in magenta, yellow, and light blue, some of which are partially obscured by the central text box.

lambda D A λ S

22-23 FEBRUARY 2018
KRAKÓW | POLAND

REPORT

A TWO-DAY CONFERENCE
ON FUNCTIONAL PROGRAMMING
AND EMERGING TECHNOLOGIES

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1. OVERVIEW

Lambda Days is a two-day, multi-track conference on functional programming and emerging technologies. The fifth edition of Lambda Days took place at the Auditorium Maximum in Krakow on 22-23th February 2018.



2

DAYS



6

TRACKS



40

TALKS



500

ATTENDEES



2

PARTIES



43

SPEAKERS



5

WORKSHOPS

Lambda Days is an event like no other, gathering people passionate about non-mainstream tech and functional languages such as Scala, Erlang, Python, Haskell, F#, Elixir, Lisp, Elm and Clojure.

This year's programme included presentations by some of the **most respected industry experts** who are defining technology and pushing trends. Our speaker line-up included Philip Wadler, Felienne Hermans, José Valim, Evelina Gabasova, Tomas Petricek, Heather Miller, Mary Sheeran and many others, showcasing the strength and diversity of the growing functional programming community.



Scala

Clojure

Elm

Erlang

Elixir

Haskell

Lisp

Python

R

Ruby

Rust

F#

C#

Ocaml

Java

JavaScript

C++

Ruby

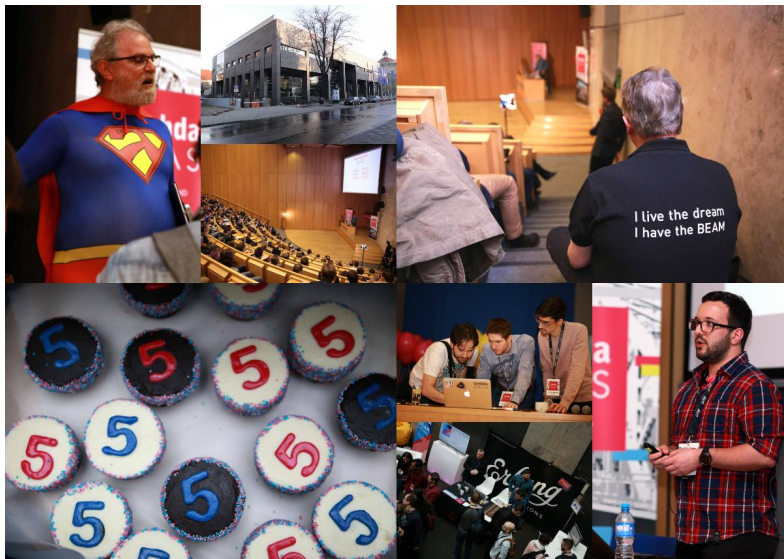
Swift



1. OVERVIEW

It became a tradition that Lambda Days takes place in **Auditorium Maximum** - one of the most prestigious venues of the Jagiellonian University in Kraków, Poland. Aware of the growing interest in the conference, we've decided to host our keynote talks in the main theater, that can accommodate 600 people.

Photo Gallery:



Highlights Video:



1. OVERVIEW

The number of Lambda Days attendees has been substantially growing.

Lambda Days 2018 was attended by **500** (420 in 2017) software professionals: developers, software engineers, architects, business leaders and executives, as well as students and academics. This makes the 2018 edition **the largest Lambda Days conference so far**.

Our ticket sales increased by **22,5%** compared to the 2017 edition.



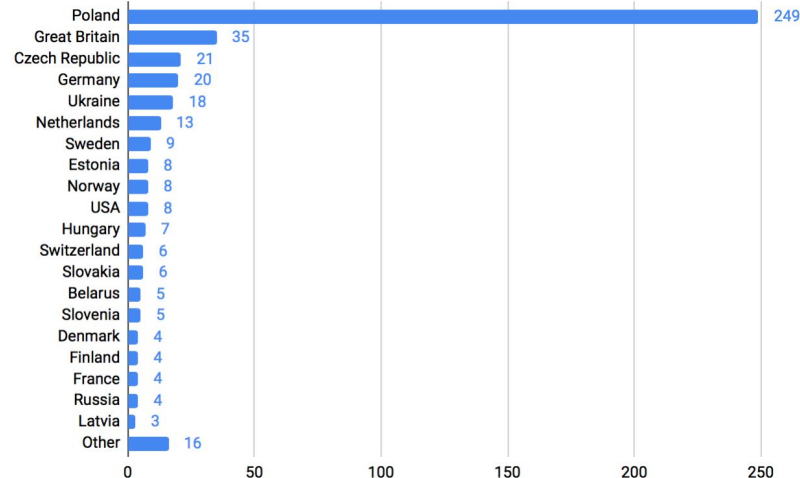
Lambda Days participants came from **32 different countries**. The majority of attendees came from Poland (55%), however the percentage of visitors from abroad goes up every year (29% in 2017, 45% in 2018).

2. ATTENDEES' DEMOGRAPHICS

The conference was visited by guests from **32 countries, 4 continents**. 55% of participants work in Poland, 41.3% came from other european countries (1/5 of that from United Kingdom), 2.6% from North America and 1.1% from other continents.

49% of Polish participants were based Kraków. The next two biggest groups of guests represented Warsaw (11%) and Wrocław (11%).

Attendee demographics by country



Other: Austria, Canada, Costa Rica, Portugal, Israel, etc.

Polish attendee demographics by city

Krakow - 54%

Warsaw - 13%

Wrocław - 12%

Poznan - 5%

Katowice - 3%

Łódź - 3%

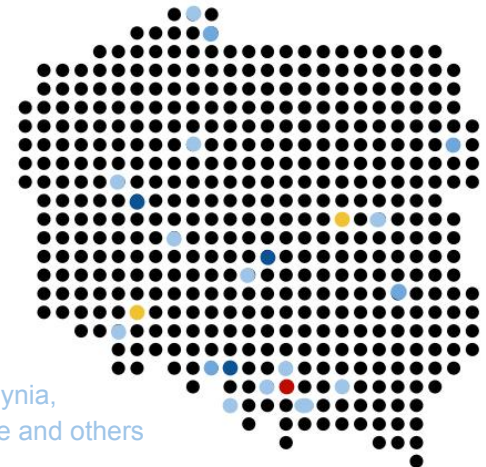
Gliwice - 2%

Lublin - 1%

Gdansk - 1%

Other - 12%

such as Bielsko-Biala, Gdynia,
Tarnow, Wieliczka, Zabrze and others



3. CONTENT



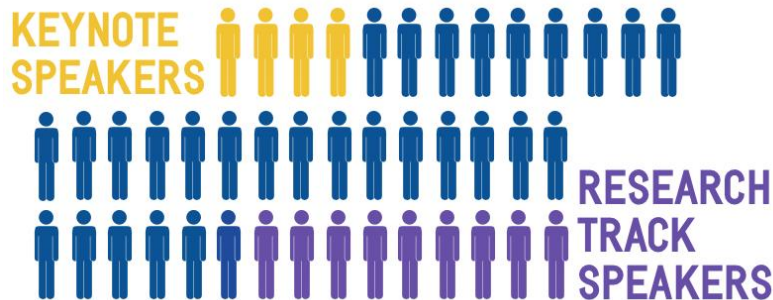
In response to our Call For Papers we received **84 submissions**. That gave us an opportunity to build a rich programme out of 40 talks (including 4 Keynotes), spread across 6 rooms (three rooms a day).

We had some quality presentations highlighting the importance of community building, history of programming and the upcoming trends. As always most of the talks focused on various areas of functional programming, relevant languages, technologies and innovative tools.

The **Research Track** was fully devoted to the newest academic research projects - powered by functional technologies.

We had a total of 9 research speakers, who came from all around the world, presenting their work on different functional programming concepts.

Moreover there were 6 lightning talks presented at the end of first day of the conference.



4. PROGRAMME COMMITTEE

Our programme committee contributed greatly to the success of our line-up. We are privileged to work with some of the industry's most interesting innovators and community leaders.



MARY SHEERAN

Professor at Chalmers



JOHN HUGHES

Co-Designer Of
Haskell And
Quickcheck



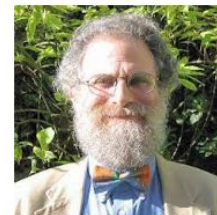
FELIENNE HERMANS

Delft University of
Technology



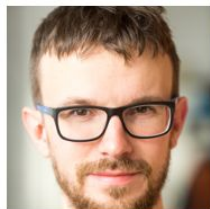
ROBERT VIRDING

Co-Inventor of Erlang,
Principal Language
Expert



PHILIP WADLER

Professor of
Theoretical Computer
Science at The
University of
Edinburgh



ADAM WARSKI

SoftwareMill



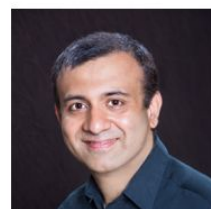
LAURA M. CASTRO

Teacher, researcher,
traveller. Constant
learner, feminist, geek.



KEVIN HAMMOND

Professor at the
University of St
Andrews



NIKHIL BARTH WAL

Functional
Programmer & Tech
Enthusiast



PAWEŁ SZULC

Scala Developer at
SlamData

We run a few programmes that aim to empower underrepresented groups to join our community:

- Partnerships with **communities focusing** on promoting diversity (Women in Technology, Geek Girls Carrots, Lambda Ladies), including handing over free tickets **to Lambda Days conference**,
- Ladies of Lambda programme: we offer discounts for each Lambda Lady in a party,
- Free workshops,
- Student discounts.



Ladies of Lambda

49 women participated in Lambda Days 2018 and accompanying programmes



Student outreach

31 students joined Lambda Days using student discounts or via the volunteer programme



Workshops

76 newcomers including 20 children took part in our free workshops on functional programming

6. WORKSHOPS

Lambda Days aims to connect people interested in functional programming, including those, who are just starting their journey in the functional programming world. We want to attract students and young people and help them explore the benefits of non-mainstream technologies, and find the right tool for the job. This is why, working in partnership with AGH University of Science and Technology, we have created a series of free of charge functional programming workshops, following the conference.

Under the Lambda Academy banner, children from primary school learnt about **programming without computers** and grownups participated in the beginner level courses on **Haskell**, **Scala** and **Elixir**.



5 COURSES



3 LANGUAGES



76 PARTICIPANTS



CLASSES FOR KIDS



1. "Computing without a computer (kids ages 7-11)" workshop in Polish by Michał Ślaski, 2 groups
2. "Practical introduction to Haskell" workshop by Adam Szlachta,
3. "Build a distributed Tic Tac Toe game in Elixir" workshop by Michał Muskała,
4. "Everything you wanted to know about Free Monads but were afraid to ask" workshop by Marcin Rzeźnicki.
5. "TDDing Functional Web Apps" by Michał Płachta

Since day one Lambda Days is about combining the best of the world of academia and commercial innovation to foster inspiration and growth. Our ongoing collaboration with the Department of Computer Science of the **AGH University** results in a steady increase of quality and popularity of our **Research Track**.

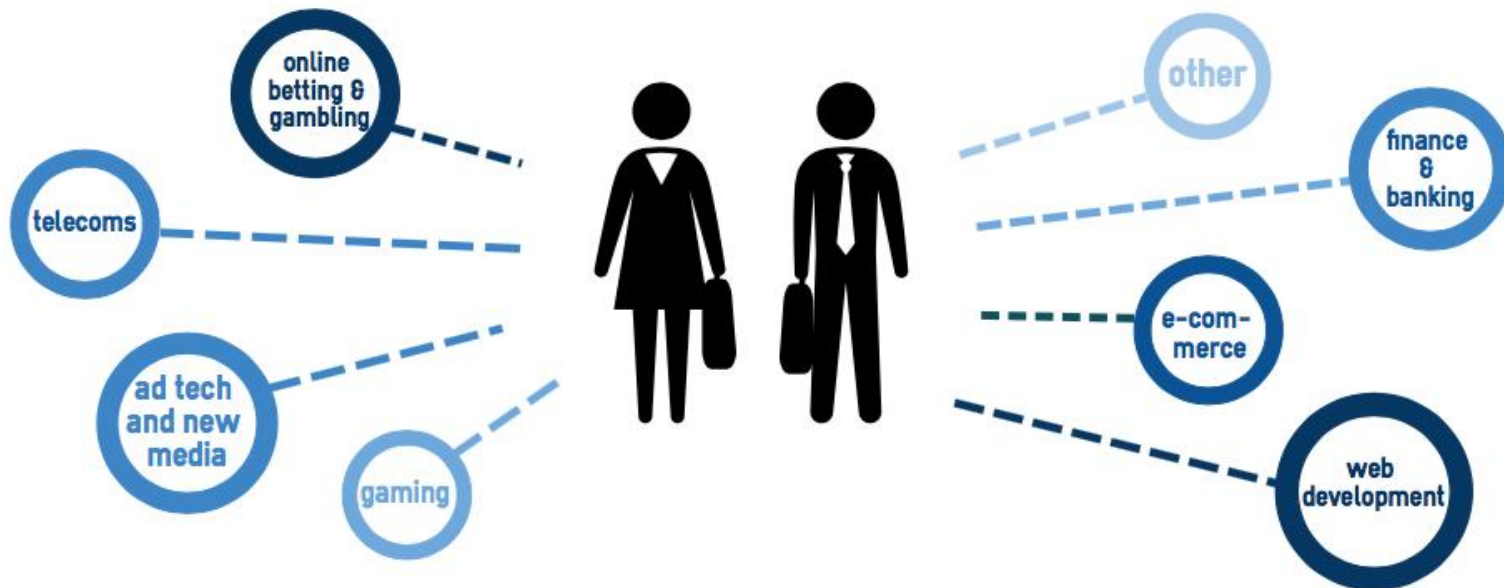
This year the selection was also supported by the **Jagiellonian University**. The best papers had a chance to be published in the Special Section of Science of Computer Programming (IF=1.064) or in Concurrency and Computation: Practice and Experience Journal (IF=1.133).

This is one of the reasons why the conference attracts more and more academics and research workers of leading tech universities from all around the world.

- AGH University of Science and Technology
- Alan Turing Institute
- Belarusian State University of Informatics and Radioelectronics
- Chalmers University of Technology
- Delft University of Technology
- Eötvös Loránd University in Hungary
- Gdansk University of Technology
- Norwegian University of Science and Technology
- Northeastern University
- Poznan University of Technology
- Technical University of Berlin
- Universite de Geneve
- University of Edinburgh
- University of Kent
- University of St Andrews
- Jagiellonian University
- Warsaw University of Technology
- Wigner Research Centre for Physics (Hungarian Academy of Sciences)
- Wroclaw University of Science and Technology



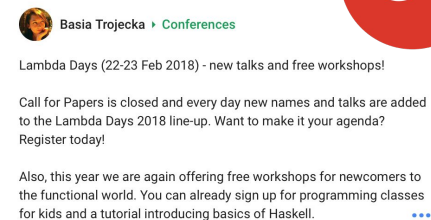
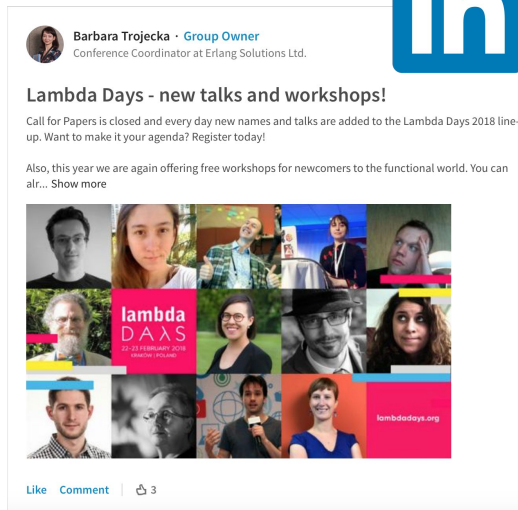
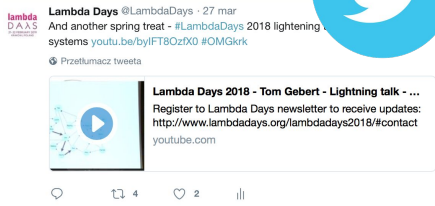
Lambda Days attendees and speakers represent both **start-ups** and **industry-leading companies** from various market sectors, such as web development, telecoms, gaming, online betting and gambling, e-commerce, ad tech and new media, finance and banking, and various others.



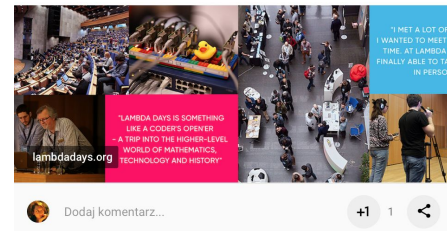
The success of the event lies in the coherent promotion strategy. We are very satisfied with both the outcome of the informational campaign and the final shape of the conference.

Lambda Days was promoted through:

- E-mail marketing;
- Social media channels, such as Facebook, Twitter, LinkedIn, Google+;
- Content distributed by Lambda Days media partners.



Lambda Days 2018



9.1. Website traffic

Between 4 May 2017 (set-up of the subpage for 2018 edition) and 23 May 2018 (set-up of the subpage for 2019 edition) Lambda Days website received **60 895 page views** from **19 768 users** which is 41% more than last year.



Users

19,768



New Users

19,619



Sessions

33,469



Number of Sessions per User

1.69



Page Views

60,895



Pages/Session

1.82



Avg. Session Duration

00:01:48

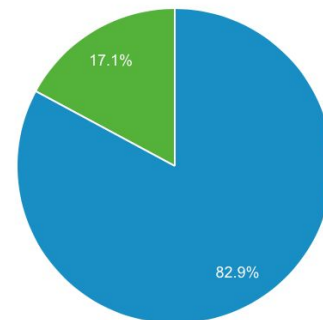


Bounce Rate

73.47%

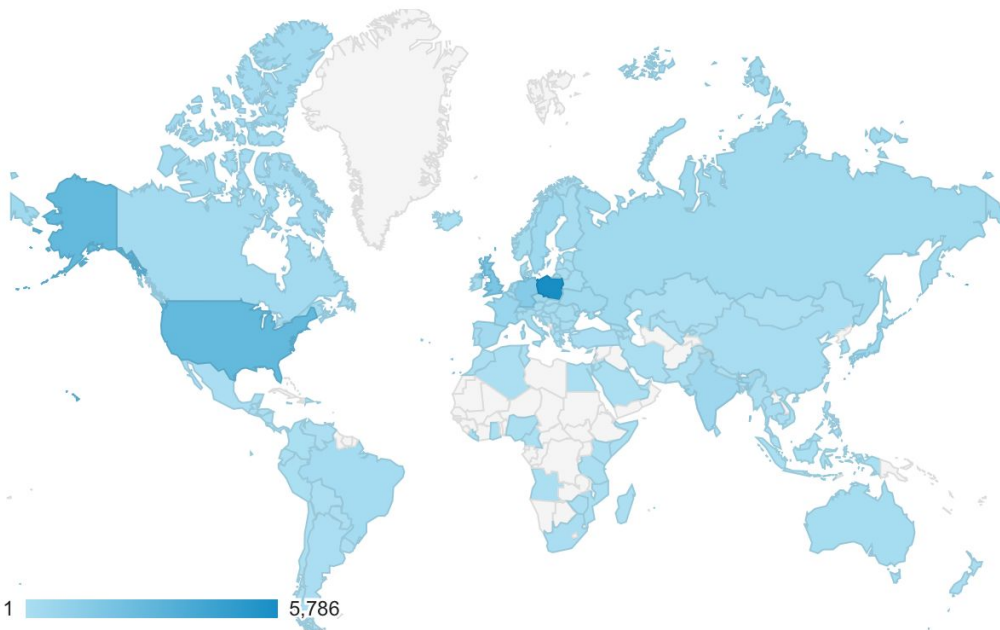


■ New Visitor ■ Returning Visitor



9.1.1 The Audience Overview

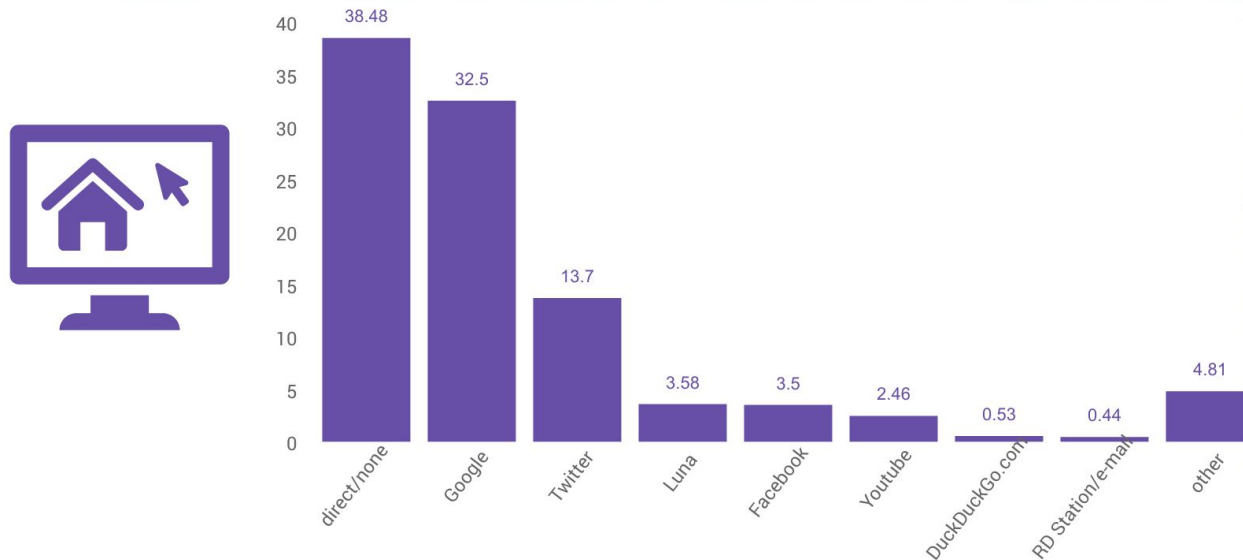
29% of users were from Poland, 13% from US, 9% from United Kingdom, 7% from Germany, and 3% from France.



Country ?	Acquisition		
	Users ? ↓	New Users ?	Sessions ?
	19,768 % of Total: 100.00% (19,768)	19,630 % of Total: 100.06% (19,619)	33,469 % of Total: 100.00% (33,469)
1. Poland	5,786 (28.58%)	5,539 (28.22%)	12,338 (36.86%)
2. United States	2,601 (12.85%)	2,563 (13.06%)	3,180 (9.50%)
3. United Kingdom	1,743 (8.61%)	1,691 (8.61%)	2,785 (8.32%)
4. Germany	1,377 (6.80%)	1,347 (6.86%)	2,114 (6.32%)
5. France	642 (3.17%)	628 (3.20%)	947 (2.83%)
6. Japan	550 (2.72%)	547 (2.79%)	598 (1.79%)
7. Netherlands	518 (2.56%)	504 (2.57%)	829 (2.48%)
8. India	466 (2.30%)	462 (2.35%)	579 (1.73%)
9. Sweden	445 (2.20%)	426 (2.17%)	822 (2.46%)
10. Ukraine	400 (1.98%)	391 (1.99%)	613 (1.83%)

9.1.2 Sources

The highest number of new users on www.lambdadays.org were directed to the website via a direct link (38.48%). One of the main source of traffic was Google Search (32.5%). This might indicate that a high number of recipients have already heard about the conference and wanted to learn more.



Next group of visitors found us on social media (19.78%), mostly on **Twitter** (13.7%).

Another popular source that redirected users to Lambda Days was luna-lang.org, where you could find a link to one of our speakers that was giving a talk about Luna.

Traffic from **Facebook** was similar to last year's numbers (3.5%).

9.2 TWITTER

Among all Social Media we have used, Twitter was the most effective promotional tool. @LamdaDays profile has **1900 followers**. From September 2017 until the end of March 2018 we have posted nearly 316 tweets.



**401
Tweets**



**1.9K
Followers**



**2.6K
Engagement**



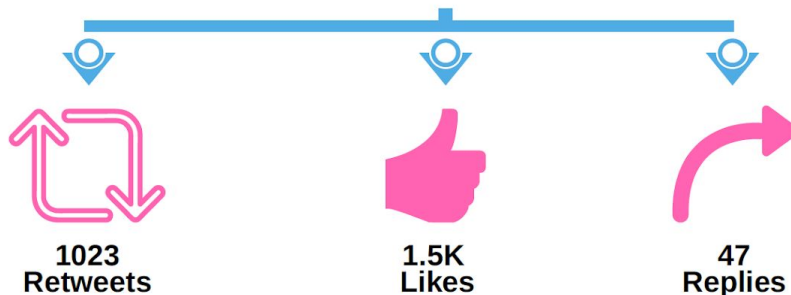
**3.6K
Traffic**

Tweets - total number of tweets published from Twitter account

Followers - number of people who are following Twitter account

Engagement - the sum of interactions received for all tweets: retweets, replies, quotes and likes

Traffic - Total clicks on all the Ow.ly links we've posted



9.3 E-MAIL MARKETING CAMPAIGN

15 promotional e-mails (containing our sponsors' logos) were sent out between 1 July 2017 and 1 June 2018 to **1600+ relevant contacts**, with a summed-up number of 6 244 unique opens.

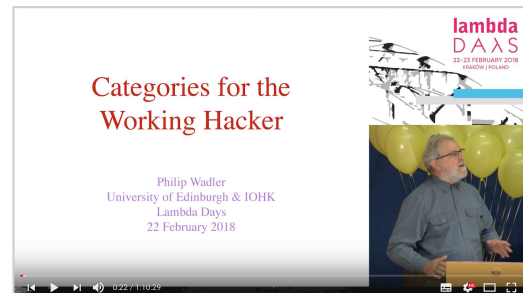
Name	Sent On	Sent	Delivery Rate	Unique Opens	CTR
Lambda days 2018 Call for papers + VEB	2017-07-04 18:00:00	1675	0.9821	722	0.0717
Lambda days 2018 Call for papers + VEB II	2017-07-27 14:34:00	1633	0.9933	598	0.0493
Lambda days 2018 EB on sale	2017-09-26 17:30:00	1606	0.9875	545	0.0492
Lambda days 2018C CFP end	2017-10-24 16:30:00	1566	0.9911	503	0.0238
Lambda days 2018 Keynotes	2017-12-14 16:00:00	1730	0.9919	701	0.0618
Lambda days 2018 Thank you for joining the line-up - Speakers	2018-01-12 19:00:00	37	1	32	0.5676
Lambda days 2018 Programme up	2018-01-16 17:30:00	1662	0.9928	664	0.1042
Lambda days 2018 Information pack - Attendees	2018-02-06 15:20:00	299	0.9766	222	0.2329
Lambda days 2018 Information pack - Speakers	2018-02-01 17:00:00	37	1	31	0.3243
Lambda days 2018 Regular sales end	2018-02-01 17:50:00	1485	0.9953	510	0.0467
Lambda days 2018 Last minute tickets!	2018-02-14 17:15:00	1462	0.9959	452	0.0288
Lambda days 2018 Welcome Attendees	2018-02-20 17:30:00	328	0.9939	229	0.1963
Lambda days 2018 Thank you Attendees	2018-03-06 16:45:00	329	0.9818	220	0.3065
Lambda days 2018 Thank you Speakers	2018-03-06 17:00:00	38	1	28	0.3684
Lambda days 2018 GDPR	2018-05-23 16:38:00	1811	0.984	787	0.0196

The table shows: the list of e-mail shots sent out to conference prospects (**no highlight**), registered attendees (**pink**) and speakers (**blue**); delivery date; the prospective delegates e-mailing base (number of receivers) for each e-mail shot; percentage of delivered messages; number of unique opens; Click-Through Rate - ratio of users who click on a specific link to the number of total users who view the e-mail.

All talks presented at Lambda Days 2018 have been recorded. The videos are published on the Erlang Solutions channel on YouTube (over 12 000 subscribers), and promoted through Lambda Days social media and Lambda Days website.

The most popular video was a talk titled “Categories for the Working Hacker” by Philip Wadler with 3,532 views.

Below you can see the top 5 videos from Lambda Days 2018 playlist.



Video	Views	Watch time (minutes)
Lambda Days 2018 - Philip Wadler - Categories for the Working Hacker	3 532	28 654
Lambda Days 2018 - Felienne Hermans - How to teach programming and other things?	1 338	13 794
Lambda Days 2018 - Mary Sheeran - In Praise of Higher Order Functions	1 207	10 860
Lambda Days 2018 - Heather Miller - We're Building On Hollowed Foundations (...)	947	8 223
Lambda Days 2018 - #5yearsOfLambda	1 540	1 551

lambda
DAYS
22-23 FEBRUARY 2018
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9.5 PROMOTIONAL ITEMS



lambda
DAYS



lambda
DAYS





LAMBDA
DAYS
2018
FEBRUARY 22-23, 2018

FEBRUARY 22, 2018

REGISTRATION
WELCOME!

Keynote: Categories for the Working Hacker / [Philip Wadler](#)

COFFEE BREAK

ROOM 1 / Auto Data A

Introducing HDD: Hughes Driven Development / [John Hughes](#)

Instrumenting mayhem: functional chaos engineering / [Szymon Martel](#)

12:45

These 10000 classes I never wrote / [Martin Fowler](#)

Finite-state machines? Your compiler wants it! / [Oskar Wozniak](#)

1:15

Signature Inference for Functional Property Discovery / [Tom Schoneboom](#)

Pattern-Based Optimization of Dense Linear Algebraic Computations / [Tamas Nagy](#)
Scaling functional multi-agent computations with reactive streams / [David Dierckx](#)
Scalable High-Performance Computing / [David Dierckx](#), [Jakub Bujak](#)

LUNCH BREAK

Ray a station: a developer's guide to programming / [Andreas Gierke](#)

Fun to Graphics Programming / [John Hughes](#)

Streams with Cljure / [John Hughes](#)

It's a small world / [David Bates](#)

Scripting with Lua! / [Barbara Chassard](#)

What, if anything, is a Boma? / [David Bates](#)

COFFEE BREAK

Tracing of Large-code Actor Systems / [Rafael Colindres](#), [Pavlos Vassilopoulos](#)

Broader Scales / [André van Driel](#)

Composable event sourcing with monads / [David Dierckx](#)

Healing side of functional programming / [Szymon Martel](#)

Keynote: Where Building On Well-defined Foundations: Worrying Trends in Open Source and What You Can Actually Do About It / [Reinier Hobbie](#)

Lightning talks



lambda
coin
CRYPTOCURRENCY FOR PARTIES ONLY



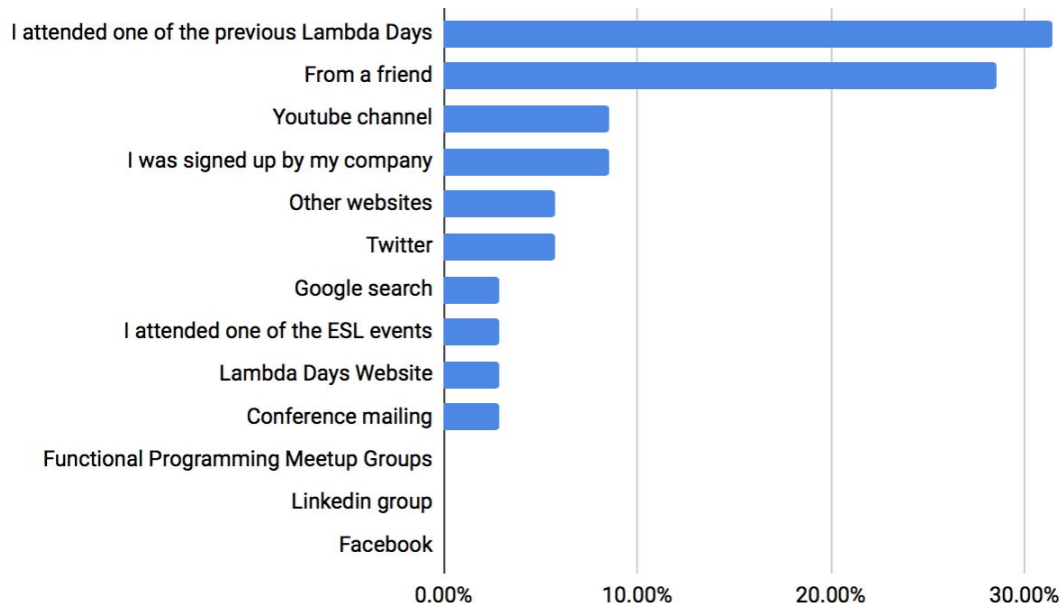
Getting the post-conference feedback helps to evaluate and improve the event in every aspect.

We have analyzed the results of the survey sent to all speakers and attendees.

How did you hear about Lambda Days Conference?

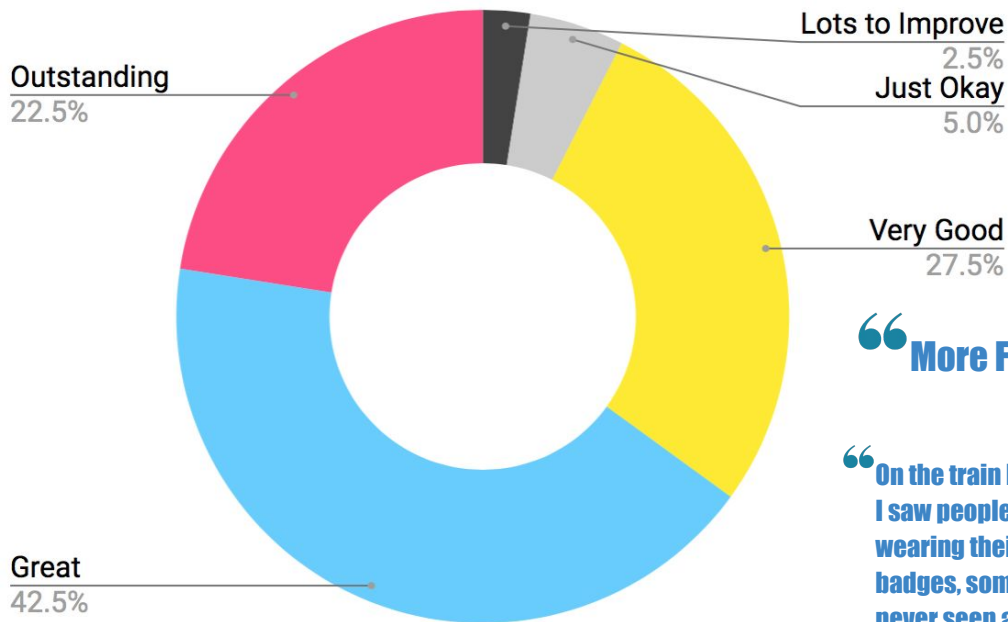
Many of the Lambda Days attendees had already participated in the previous edition (31%), heard about it from a friend (29%), were signed up for the conference by their company (9%) or watched videos on YouTube from our previous editions.

For us the most important takeaway from this is that over one third of the participants are **attracted through the good experience** they or their friends had and that people recommend the event to their friends and coworkers.



10. ATTENDEE FEEDBACK

What was your overall impression of the conference:



“An unusual combination science and practice, lets practitioners get a glimpse of the world behind their daily work.”

“Talks are very good - wide variety of programming languages, research track etc. makes it a place here you can hear about things that it'd be otherwise hard to discover.”

“It feels very personal.”

“The talks, schedule, coffee breaks were well-organized and great.”

“More F#! :-)”

“The conference was really well organized - kudos!”

“On the train back home I saw people still wearing their LD badges, something I've never seen anywhere else. Except rock festivals, maybe.”

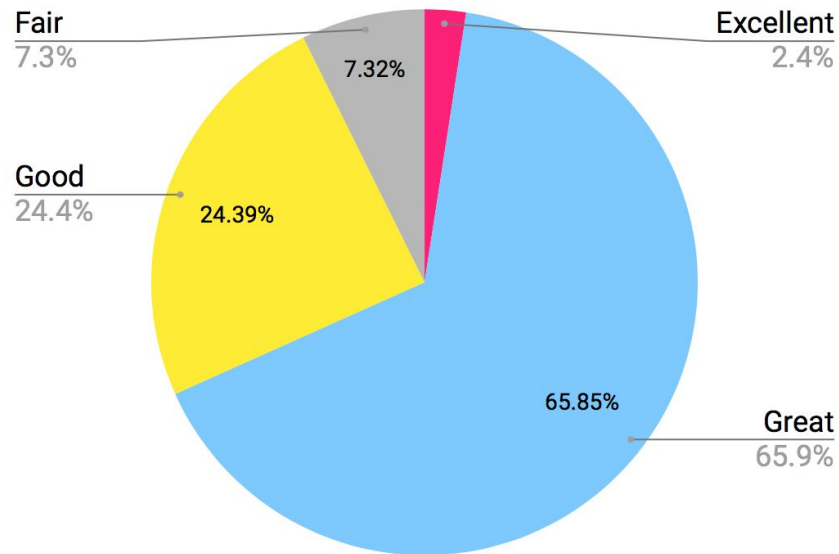
“What I liked: people from all over the world (or at least Europe). Good networking. Good food. What can be improved: would like to see more advanced stuff.”

Which subject were you most interested in?

TOP 10 topics based on our survey:

1. Foundations of Functional Programming 76%
2. Language Design 63%
3. Trends in software design/community building 51%
4. Haskell 51%
5. Testing & Verification 39%
6. Elixir 39%
7. Erlang 39%
8. Case studies from technology companies 34%
9. Web Programming 29%
10. Elm &/or Rust 27%

In general what did you think of the talk quality?



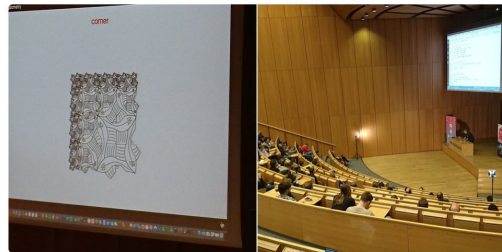
Based on our post-conference survey, voting at the door, and youtube feedback, here are our **most popular debuts**:

1. “Beauty and the beast Haskell on JVM” by Jarek Ratajski
2. “Stop Guessing and Start Measuring - Benchmarking in Practice” by Tobias Pfeiffer
3. “Functional Rust - An Exploration” by Lisa Passing



Follow

Fantastic live coding talk building recursive fish with #fsharp by @einarwh at #LambdaDays!



6:37 AM - 23 Feb 2018

9 Retweets 17 Likes



Follow

Really enjoyed the talk about Luna - visual textual function programming language @LambdaDays

4:19 AM - 23 Feb 2018

2 Retweets 18 Likes



Follow

Pretty hyped about property-based testing in Elixir after @josevalim 's talk at @LambdaDays

3:48 AM - 22 Feb 2018

1 Retweet 6 Likes



Follow

Thank you @Felienne for a great keynote on #LambdaDays. One of the best together with @heathercmiller.

10:22 AM - 23 Feb 2018

2 Retweets 6 Likes

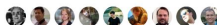


Follow

Blown away by amazing @Felienne talking on @LambdaDays about teaching kids programming. Please give this to talk to Czech minister of Education. 🙏

9:00 AM - 23 Feb 2018

3 Retweets 11 Likes



Follow

Probably one of the best talks at #lambdadays - @theimowski rocked the scene with awesome live coding using @safe_stack :-)

2:21 AM - 23 Feb 2018

4 Retweets 7 Likes



TOP 9 talks indicated by the survey (keynotes excluded):



“TDD as in Type-Driven Development”
by **Clément Delafargue**



“How to look like a statistician”
by **Evelina Gabasova**



“Picture combinators and recursive fish”
by **Einar W. Høst**

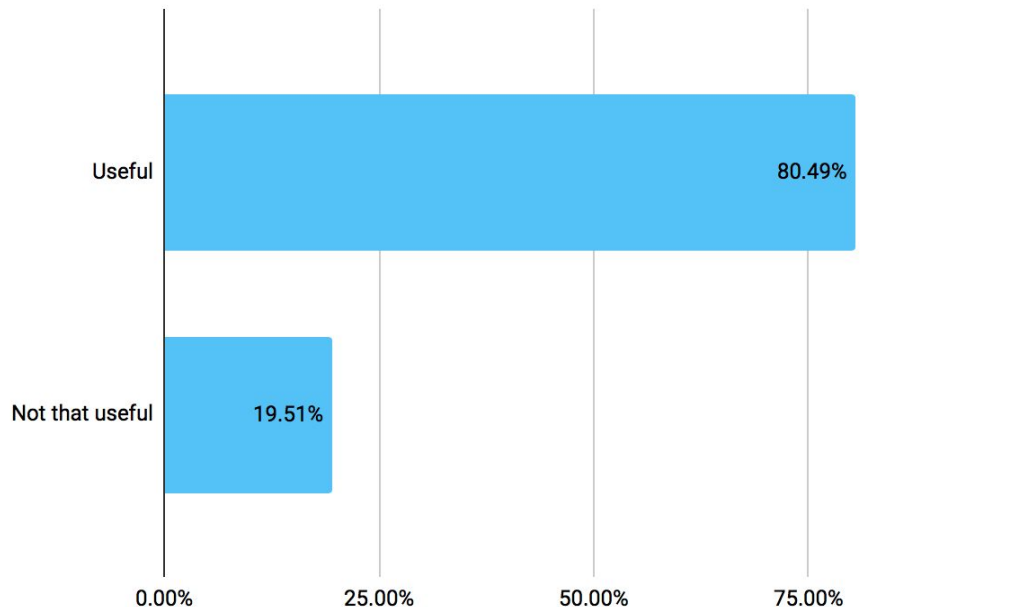


“Rethinking compilers with live coding”
by **Tomas Petricek**



- “Introducing HDD: Hughes Driven Development” by José Valim
- “SAFE apps with F# web stack” by Tomasz Heimowski
- “These 10000 classes I never wrote” by Valentin Kasas
- “Understanding Distributed Calculi in Haskell” by Paweł Szulc
- “Visual-textual functional programming with Luna” by Piotr Moczurad

How useful to your job/work were the talks?



*"It was great to see the directions the FP community is interested in, it **helps planning ahead**."*

*"In terms of raw usefulness I think the **"Guaranteed SLAs..."** was top-notch - it's an almost ready recipe."*

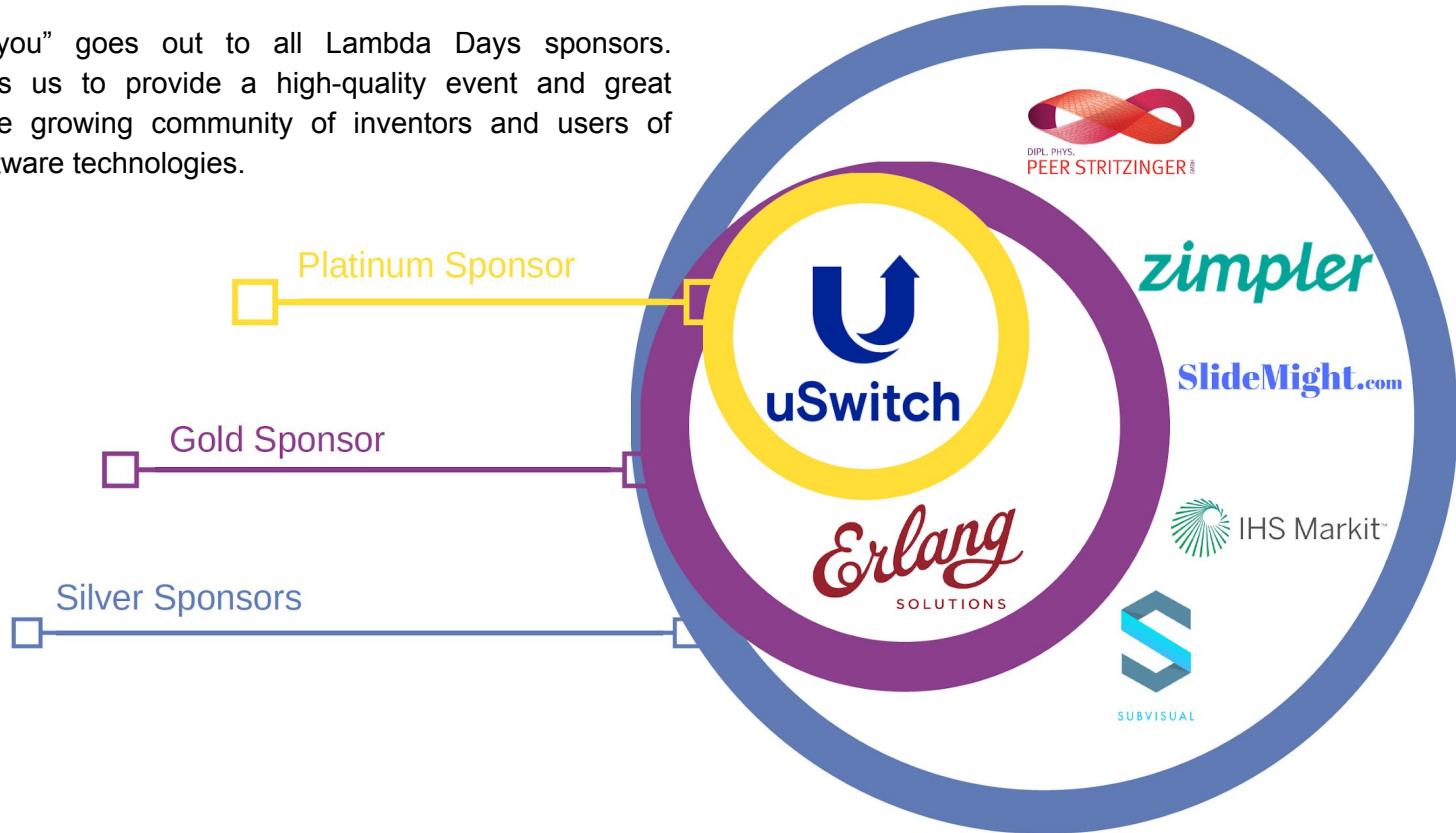
*"The keynote of Felienne Hermans was the most useful for me (...) Currently trying out that approach in my daily work (that is, programming for hours without compiling at all, like composing a novel), my **speed and enjoyment** from the work **improved** greatly."*

*"Unfortunately I cannot use anything at work, but the conference gave me some **boost to learn** on my own."*

*"Not using FP at work much. It was purely for my **career advancement** and **self improvement**."*

*"The talk about SLA **helped me solve the problem** in the project I'm currently working with. Besides that, a lot of fresh ideas, inspiration and a clear explanation of basic concepts in general."*

A special “thank you” goes out to all Lambda Days sponsors. Sponsorships allows us to provide a high-quality event and great opportunities for the growing community of inventors and users of non-mainstream software technologies.



SEE YOU NEXT YEAR!

Lambda Days 2018 was undoubtedly a big success. We managed to maintain a very high level of participation in both technical (talks and workshops) and social (lunch and coffee breaks, afterparty) parts of the event.

The conference was very well received, what has been proved by the comments on social media.

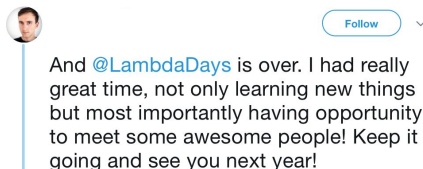
The date for Lambda Days 2019 is already established. The conference will take place on **21-22 February 2019** at the Auditorium Maximum UJ in Krakow.

We look forward to working with you on the next edition of Lambda Days!



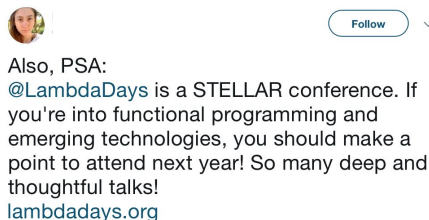
11:14 AM - 23 Feb 2018

2 Retweets 5 Likes



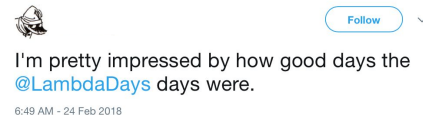
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