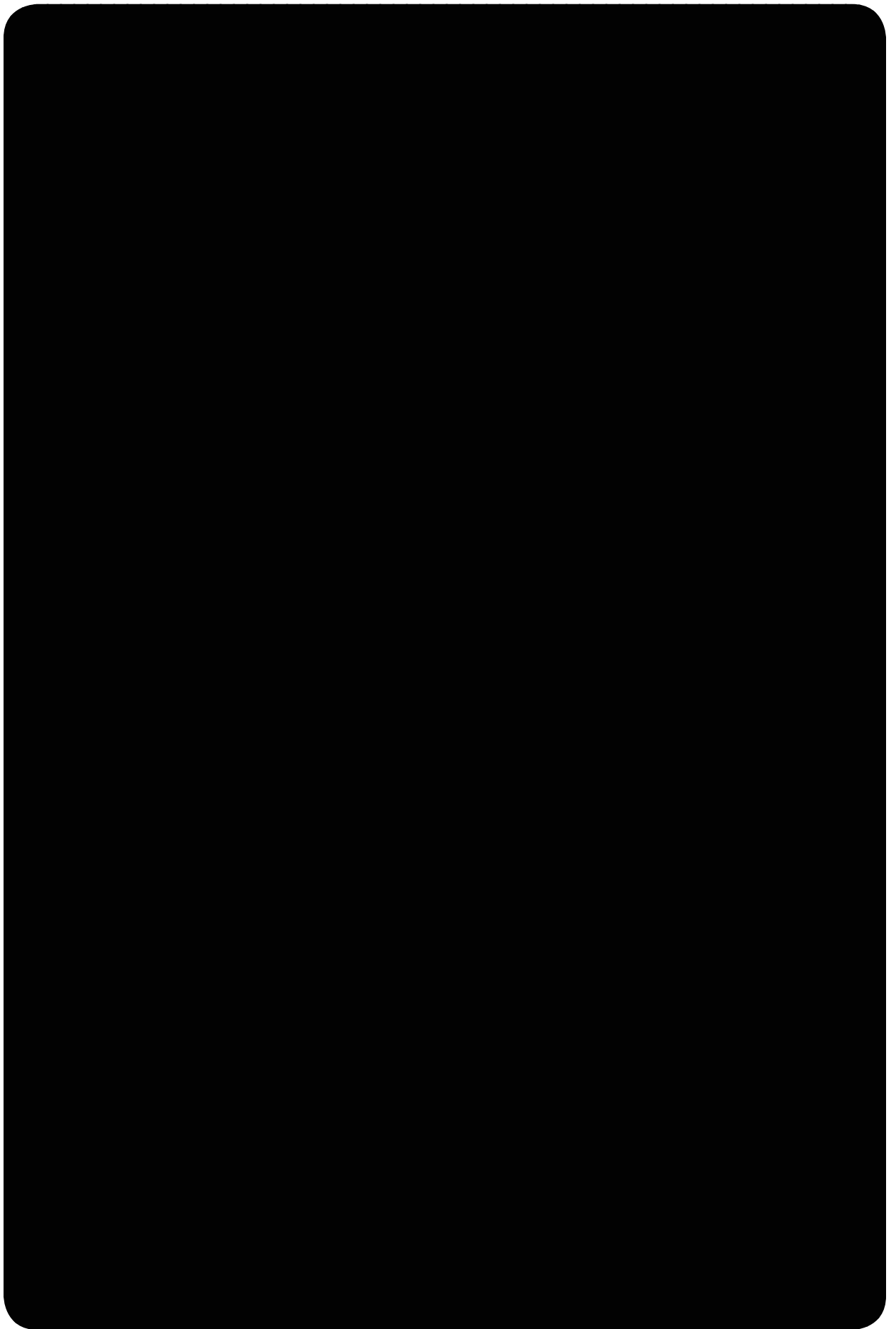# DC SCIENCE HACK DAY AT THE

by Elizabeth Tyson, Wilson Center; Anne Bowser, Wilson Center

The Science and Technology Innovation Program (STIP)
analyzes the evolving implications of such emerging technologies
as synthetic biology, nanotechnology, and geoengineering. STIP's
research goes beyond laboratory science to explore new information
and communication technologies, sensor networks, prediction markets,
and serious games. The pro)5 (o(at)rn)-5.8 (a)-3.1 (e p)-6.6 (r)7.4 (o53 (v)-9.6 (o)-5.2 dg)-9.5 (e)-3.5

Contents

The Commons Lab of the Science and Technology Innovation Program at the Woodrow Wilson International Center for Scholars partnered with ArtsEdge from the John F. Kennedy Center for the Performing Arts to bring Science Hack Day to DC. Thompson Reuter's ENDNOTE is a sponsor of Science Hack Days around the world and provided support for DC Science Hack Day. Github, an online code repository, offered their services to participants during the weekend and a free, year-long membership for the winning teams. I xit, a do-it-yourself online resource, donated their software xing toolkits and card game Cards Against Humanity, which was running a women in Science, Technology, Engineering and Mathematics (STEM) campaign, donated copies of the game as prizes. In addition, Ariel Waldman, founder of Science Hack Day, joined us to make the inaugural event an incredibly memorable one.

The Commons Lab would like to thank the generosity and logistical support from the internal staff at the Wilson Center, which agreed to he inho4s45 (c)-19.6 (a)-2 (2 (e)-9.8 (d c)-11 (v)6.9 (e)-3.3 (n)6.9 (t a)-2.6 (n in)- (d l)-5.4 (e)-3.8 (m5.8 (o)-11.4 (p)-

research initiative, among others, is a great example of smart investing for developing best practices surrounding open participation models, specifically crowdsourcing

The Good Judgement Project is part of the Aggregative Contingent Estimation Program (ACE) sponsored by the U.S. Intelligence Advanced Research Projects Activity.[5] The goal of the project is to test the efficacy and accuracy of crowd (defined as a large group of random and anonymous participants) forecasting. Five university teams competed to see who could accurately forecast world events using the predictions of 2,000 people who randomly signed up to participate.

The concept was simple: People signed up, were given questions about world events (e.g. Would North Korea launch a missile in 2014?), and would offer their opinion about the probability of the event occurring. The winning university team defined three factors that predicted the success of their system.[6]

1. Creating a one hour probability training module for the user to watch prior to participating;

2. Placing people on teams instead of having them work individually;

3. Tracking which users were better than others and advancing them to more difficult questions.

As the research builds surrounding the best way to aggregate and combine non-expert opinions on matters affecting the general public, we will see a shift in the way decisions are made. Instead of legislators relying on experts who might have their own agenda or are limited by the number of hours in a day, they will be able to ask the crowd for their input and predictions surrounding important decisions and needed information for policymaking. However, we should proceed with caution. More research is needed to design systems with safeguards that prevent over confidence isd61cTm.ice 2-12 (i)ed pf

Event Breakdown

Science Hack Day DC was the 51st Science Hack Day event. Each SHD unfolds on a similar schedule. The event traditionally runs from 9 AM on Saturday morning to 4 PM on Sunday afternoon. Science Hack Day is intentionally held outside of regular working hours to encourage wider participation. In the morning, a curated list of lighting talks (e.g., 5-minute speed talks) is presented, each introducing an idea, dataset, or tool that might inspire hackers.[14] After the lighting talks, participants mix and mingle over lunch. Then the hackers are prompted to self-organize, floating between groups that interest them. Some may eventually settle on a set team, while others may choose to hop from team to team.

Dinner is served and then participants are "locked out/in" after 10PM. Some choose to hack through the night, others find a couple hours to sleep, and everyone reconvenes in the morning for breakfast. At 1:30 PM, all participants submit their hack through an online submission form and at 2 PM each team has two and a half minutes to present their hack to a panel of judges.[15] After the presentations, the judges deliberate and reconvene to announce winners in the following categories: data, hardware, design, and best in show. Because this Science Hack Day was held in Washington, DC, a special policy category was added.

DC Science Hack Day Model & Partnerships

The Commons Lab of the Wilson Center

A common theme in hackathon research is the sustainability of the hacks produced, and what happens to the teams following such an energizing event. We attempted

policy award, PoliConnect, was invited back to the Wilson Center to demo their platform to their intended community: policy experts and lawmakers. They even took the initiative to incorporate themselves as a Limited Liability Corporation with plans to expand the platform to other subjects, such as tackling constructive feedback in large corporations. The best-use-of-data hack, If No One Hears It, was invited to present at NASA Goddard Space Flight Center's science jamboree. The participants behind the hack have incorporated their work into a website.

The U.S. government is making huge strides in opening up the policymaking process to the public.[26] Evidence of this comes in the National Action Plans for Open Government, which is currently using a Hackpad (a document-editing software that allows multiple users to edit at a single time) to generate ideas for its third iteration.[27] The growing number of aofemenrto eo g12.4 (615.3)-12.2 (e)-13 (r)-15.8 (n511.4 (m)-11

and UNU-Merit conducted a multilingual study on the demographics of Wikipedia users, they found 87 percent of contributors were male.[35] While it's encouraging to think one is garnering wider input from a larger audience, government must remain vigilant in understanding the demographics of the volunteer groups to avoid coming to conclusions based on a segmented part of the public. Government practitioners must keep in mind access issues if they hope to engage an accurate representation of the public in a decision-making process that affects all.

The benefits of public participation are multifold: doing more with less, leveraging the power of the crowd, and sustaining a more transparent process. But there are costs that still need to be recognized and planned for. Liaison organizations that specialize in volunteer management and professional associations that support re

search and practice are one easy target for investing research funds and building the infrastructure and human capital needed to execute these projects. Another is continual funding for studying best practices, as conducted by the Good Judgement Project.

By acknowledging the limits of open-participation models and tackling the emerging challenges, we can usher in the digital age of government and increased public participation in an equal and effective manner. By intentionally aligning government processes, policies, and missions with open-participation models, we can tackle the increasingly complex and wicked challenges of our time.[36]

After SHD, we asked each team to submit a brief profile of their project, asking them to answer the following prompts:
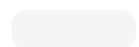
- Describe each hacker's identity (scientists, software programmer, hardware programmer, curious citizen, designer, artist, engineer).

- A paragraph describing the project.

-

Tools[36]

Ruby on Rails, HTML, CSS, Gems (pry, devise, faker, and cancancan), and Amazon Web Services hosting

Origin

In remarks at the Wilson Center this spring,[38] Former Secretary of State Madeleine Albright said there is a wealth of academic information about policy coming from think tanks, but that lawmakers never use that information. Part of the problem is that lawmakers cannot openly ask certain questions about radical initiatives without being vilified in the press along partisan lines. Think tanks already host closed-door sessions where lawmakers and experts interact, but this is inefficient unless everyone involved lives in Washington, D.C. We want to fix this issue with PoliConnect, where users can anonymously connect and ask these important u.7 (n)0.8 (p)(n)6.3 (t)11.7 6

If No One Hears It. . . – Best Use of Data Award

Tools

R programming language, .wav sound files,
and the academic text Bearman, N., and

LickitySplit – People's Choice Award

Tools

Appendix I: Tools Glossary

Time	What	Where
9:00 AM – 10:00 AM	Check-in & Breakfast: Coffee, Egg Sandwiches, Fruit and Yogurt	Check-in: Ground Floor Breakfast: 6th Floor Dining Room
10:00 AM – 10:15 AM	Welcome & Housekeeping: Elizabeth Tyson, Wilson Center Nuit Hansgen, Kennedy Center Ariel Waldman, Founder, Science Hack Day	6th Floor Auditorium Over ow Room: 6th Floor Boardroom & Din ing Room
10:15 AM – 11:15 AM	Lightning Talks (Details on Page 5)	6th Floor Auditorium Over ow Room: 6th Floor Boardroom & Din ing Room
11:30 AM – 12:00 PM	Self-Organize! Mingle while lunch is being prepared	6th Floor Auditorium, Boardroom & Dining Room
12:00 PM – 1:00 PM	Lunch: Variety of Sandwiches, Pasta Salad, Chips and Soda	6th Floor Dining Room
1:00 PM – 6:00 PM	Hacking! Resources available can be found on Page 6	Participants are welcome to spread out across the Wilson Center in any of the following rooms: 6th Floor Boardroom, Dining Room & Auditorium 5th Floor Boardroom 4th Floor Conference Room 4th Floor Atrium *Please note that the 3rd, 7th & 8th oors and all of ces are off limits. Wilson Center scholars may be working on Saturday and Sunday so please respect their space*
6:00 PM – 7:00 PM	Project Progress Report Out (not mandatory): Use this time to share your teams work and recruit others for troubleshooting or feedback	6th Floor Auditorium
7:00 PM	Dinner: Pizza (courtesy of wethepizza) and Soda	6th Floor Dining Room
8:00 PM	Science Trivia (with Prizes!) Hosted by the ingenious Kennedy Center Folks	6th Floor Dining Room
10:00 PM – Overnight	Lock Out:	

Sunday May 17th

Time	What	Where
9:00 AM – 10:00 AM	Doors Open & Breakfast: Coffee, Pastries, Fruit and Yogurt	Check-in: Ground Floor Breakfast: 6th Floor Dining Room
10:00 AM – 10:15 AM	Progress Updates (not mandatory): Use this time to share your teams work and others for troubleshooting or feedback	6th Floor Auditorium
10:00 AM – 12:00 PM	Hacking!	4th – 6th Floors
12:00 PM – 1:00 PM	Lunch: Variety of Sandwiches, Grilled Asparagus, Potato Salad, Chips and Soda	6th Floor Dining Room
1:30 PM	Upload Team Details for Demos: All demos must be uploaded to the GoogleDoc (Instructions on page 6)	6th Floor Auditorium
2:00 PM – 3:30 PM	Final Demos Teams will present their hack to the community in 2.5 minutes	6th Floor Auditorium Over ow Room: 6th Floor Boardroom
3:30 PM – 4:00 PM	Judging (Categories on Page 6) Beth Beck, NASA Greg Godbout, EPA Lakita Edwards, NEA Steven Kostant, TidePool Media	6th Floor Auditorium
4:00 PM	Awards Ceremony and Closing Remarks	

Lightning Talks

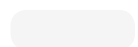| Time	Speaker	ORGANIZATION	THEME
10:20 – 10:25	Greg Poljacik, Stuntman-Scientist	John F. Kennedy Center for the Performing Arts	Emotional Contagion – can we place sensors on audiences to prove this theory?
10:25 – 10:30	Anne Neale, EnviroAtlas Project Lead	Environmental Protection Agency	EnviroAtlas – an online geospatial data resource managed by the EPA and available to external application builders
10:30 – 10:35	Talia Fox, Research Associate	Environmental Law Institute	Methane Hunting – how can we use sensors and citizens to track down rogue methane gas?
10:35 – 10:40	Allen Brooks, Interactive Content Producer	John F. Kennedy Center for the Performing Arts	Voyager X – 40 years ago, we sent a probe into the void carrying a cultural snapshot of the world in 1977. How do we send a new cultural picture into the stars? What medium will we use?
10:45 – 10:50	David Lagomasino, Biospheric Sciences Lab	National Aeronautics and Space Administration	Ground-Truthing Land Use Change – designing a platform to capture citizen science data on land-use change in order to ground-truth NASA satellite data of forest coverage
10:50 – 10:55	Thomas Debass, Deputy Special Representative	State Department	Coding for Fish – what types of open data are available to improve the livelihoods of shers around the world?
10:55 – 11:00	Elizabeth Tuck, Genetics and Education Fellow	National Institutes of Health	DIYBiohacking – what is it, what types of resources are available and what could you make?
11:00 – 11:05	Doug Cooney, Playwright, Author, Professor	John F. Kennedy Center for the Performing Arts	Making Modern Monsters – connecting Frankenstein's creature to contemporary science and arts learning
11:05 – 11:10	Sophia Liu, Mendenhall Postdoc Fellow	US Geological Survey	Open Data Storytelling – Integrate USGS mineral datasets with other datasets to uncover any economic, environmental, geopolitical, or public health consequences from developing, using, and disposing critical minerals.
11:10 – 11:15	James Tyrwhitt-Drake, Graphics Design & Visualization Expert	National Institutes of Health	3D Print Exchange – What is it and how can you contribute to it?
11:15 -11:20	Abdulkader Sinno, Global Europe & Middle East Program Fellow	Woodrow Wilson International Wilson Center for Scholars	UAVs for Forest Canopy Research – Can we develop a cost effective and ef cient method to collect canopy samples to determine air puri cation of forests?
11:20-11:25	Alyson Williams, Knowledge & Learning Specialist	Inter-American Development Bank	Numbers for Development – Open Data Portal, allows you to explore, visualize and reuse the Bank's data on social and economic development in Latin America and the Caribbean

Participation

DC Science Hack Day will be held at the Ronald Reagan Building in Washington, D.C. over the weekend of May 16 & 17th. You hereby certify and agree that your participation is fully voluntary and that you are not entitled to compensation, nor are you considered an employee of the United States for purposed of this event.

Furthermore, if you are a regular employee of the U.S. or D.C. Government, you hereby certify and agree that your engagement in the Summit is in your personal capacity (i.e., identifying yourself by your own name and without referencing your Federal employment) and on a voluntary basis outside of your working hours, and you will not be entitled to compensation for your time. Furthermore, you understand that any Federal Employee participating in their personal capacity should contact their Ethics Official to ensure they are in compliance with all ethics laws and regulations.

If you are a Federal contractor employee, you hereby certify and agree that you are participating in your personal capacity and that you understand that all questions regarding your participation should be directed to the corresponding contracting officer.

Intellectual Property

The Woodrow Wilson International Center for Scholars, The Kennedy Center for the Arts, Thomson Reuters End Note and GitHub (collectively referred to as the "Organizers ") make no claims to any intellectual property (IP) generated during DC Science Hack Day held at the Ronald Reagan Building in Washington, D.C. over the weekend of May 16th & 17th. The DC Science Hack Day goal is to bring together a diverse group of people to tackle challenges facing the civic center using hardware, software and science. By sharing any Solution Materials to or at the event, you hereby grant to the Organizers and all participants, their agents and affiliates, a non-exclusive, perpetual, irrevocable, worldwide and royalty-free license to display, copy, combine, compile, distribute, sublicense and disseminate your Solution Materials in the form shared by you or as a derivative or adapted work as needed to support DC Science Hack Day initiative. Solution Materials are any

Beth Beck

Open Innovation
Program
Manager, NASA

"Judging citizen-generated innovative thinking is always a joy. I jump at the op portunity to see what creative minds can do, which is why I was thrilled to be a Space Hack judge. I loved the students who worked so hard on the Minecraft Hack. It didn't work for the demo, but we all wanted it to. I loved how the audience was willing to wait for the team to come to the stage after the project broke. They were willing to suspend the relatively strict rules on how much time each team gets on stage. I saw in this moment the col

ENDNOTES

1   Noveck, Beth. Wiki Government: How Technology Can Make Government Better, Democracy Stronger and Citizens More Powerful. 2009, R. R. Donnelley, Harrisonburg, Virginia. Basanta, Thapa, Niehaves, Bjorn, et. al (2015). Citizen involvement in public sector innovation: Government and citizen perspectives. Journal of Information Polity, vol. 20, no. 1, pp. 3-17.

2   Open Government Partnership, "What is the Open Government Partnership." Accessed July 13, 2015, http://www.opengovpartnership.org/

3   Johnson, P. & Robinson, P. (2014). Civic hackathons: Innovation, procurement, or civic engagement? Review of Policy Research, 31, 4.

4   The White House: Of ce of Science and Technology Policy (2015). "FACT SHEET: Empowering Students and Others through Citizen Science and Crowdsourcing." Accessed July 20, 2015. https://www.whitehouse.gov/sites/default/ les/microsites/ostp/citizen_science_backgrounder_03-23-15.pdf

5   Of ce of the Director of National Intelligence, "Aggregative Contingent Estimation (ACE)." Accessed July 13, 2015, http://www.iarpa.gov/index.php/research-programs/ace

6   The Good Judgement Project, "Harnessing The Wisdom of the Crowd to Forecast World Events." Accessed July 13, 2015, http://www.goodjudgment-project.com/

7   Jan Lorenz, Heiko Rauhut, et al. (2011), "How social in uence can undermine the wisdom of the crowd effect," PNAS, Vol. 108, No. 22, 9020-9025.

8   A hack is a creative solution to a problem, maybe not the most elegant but often the cleverest.

9   Jon Gottfried, "Hackcon 2014 Twilio Presentation." Accessed June 12, 2015: https://www.youtube.com/watch?v=Zr6VPAe9CKU

10   Ibid

11   Ibid

12   https://www.codeforamerica.org/

13   Who is also an Alfred P. Sloan Foundation grantee, who the Commons Lab currently receives funding from.

14   See Appendix II (Page 19) for a draft of the schedule and lightning talks

15   See some of the judges pro les in the Appendix IV (Page 24)

16   An online platform where hobbyists organize and advertise events based on their shared interest

17   The Editorial Board, New York Times, October 4, 2014. "Silicon Valley's Diversity Problem." Accessed June 7 2015, http://www.nytimes.com/2014/10/05/opinion/sunday/silicon-valleys-diversity-problem.html?_r=0

18   Estimates are derived from the mar-
keting platform (Eventbrite) analytics

19   For an example of this document see
Appendix III (Page 22)

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