



GLOBAL HACKATHON REPORT

TRENDS AND INSIGHTS

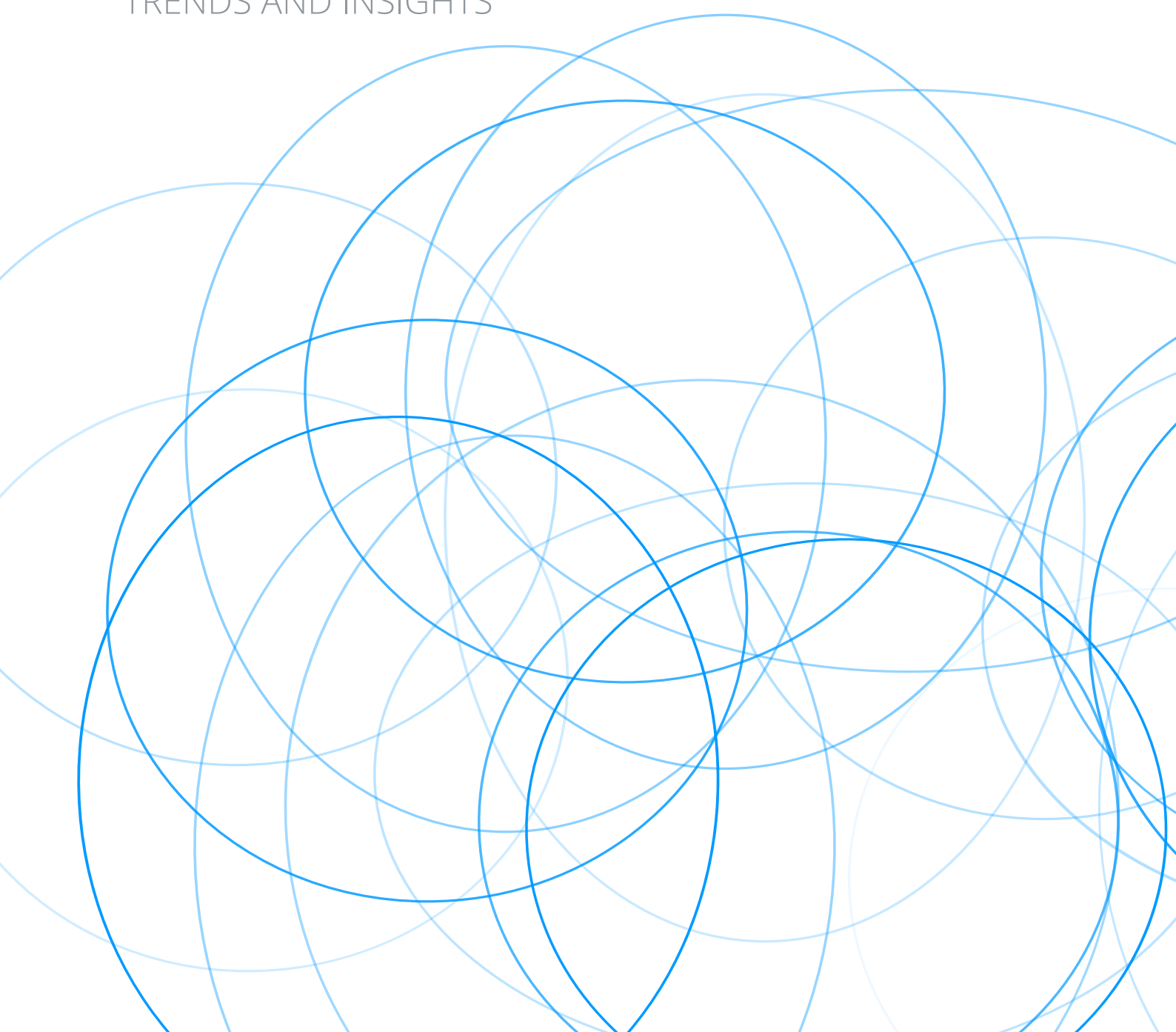


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PREFACE

The fundamental question underlying this research is how companies are addressing innovation-led growth today. Enhancing the performance or boosting the profitability of existing products or services and entering new markets or growing market share are key factors defining innovation strategies for businesses. In this age of cloud computing, Big Data, mobile technologies, and cyber security, every industry is scrambling to keep pace and leverage the benefits.

Globalization has taken on a new meaning in the era of digital disruption. Advanced technologies and an increasingly “connected” world necessitate out-of-the-box thinking. With new and emerging tools and models at their disposal, startups, global leaders, and civic authorities are doggedly dealing with talent and process challenges.

This report reinforces HackerEarth’s vision to help entrepreneurs, academicians, and public officials understand the power of hackathons as change agents, enabling tomorrow’s innovation today to address a multitude of challenges to create sustainability in every sphere.

From our analysis of nearly 1000 hackathons conducted across 75 countries in the world during a two-year period from 2015 onward, we discern a clear trend—hackathons are successfully battling talent scarcity, acquisition, and retention, as well as fueling innovation, across domains and functions. In this report, we discuss the hackathon format and culture and its exciting possibilities to help people adapt to the future. From ideation to execution, we see hackathons are upending traditional business models and rewiring the competitive landscape.

The background is a solid blue color. Overlaid on this are numerous thin, white, overlapping circles of various sizes. These circles are scattered across the lower half of the image, creating a complex, web-like pattern that suggests connectivity or a network.

HACKATHONS: WHAT, WHY, & HOW?

What is a hackathon?

The Oxford dictionary defines a hackathon as “an event, typically lasting several days, in which a large number of people meet to engage in collaborative computer programming.” Originating in the late 1990s, hackathon is a “portmanteau word of hack and marathon,” with no relation to cybercrime whatsoever.

Although hackathons, also called hackfests, have been typically painted as all-night tech fests fueled by coding and caffeine, they encompass much more. They are “focused” events with time and resource constraints to explore new modes of working in everyday environments, whether overcoming a technical impasse or addressing a civic challenge. At hackathons, participants with varied skill sets work collaboratively to come up with novel solutions to initiate change in diverse business areas.

TYPES OF HACKATHONS

Types of hackathons by participation



Private



Public



Semi-private

Types of hackathons by revenue model



Profit



Non-Profit

Time duration



Few hours to
multiple days long

What are the typical objectives and benefits of a hackathon?

The hackathon culture has spread widely in the last couple of decades. The range of objectives and themes has varied simultaneously. Hackathons can be done in less than a day, over a weekend, or over 2 to 3 days. They can be anything from idea workshops to innovation events to creating functional prototypes to community engagement.

For hackathons that focus on participants, the objective could be recruiting, developer engagement, or community creation. For hackathons that focus on the output, the objective could be IP development, branding, or innovation. Company hackathons have proven success in acquiring developer mindshare, finding the best hires, and reinvigorating the internal innovation culture. Hackathons are easily one of the most LGBTQ-inclusive events.

COMMON GOALS OF HACKATHONS



Exploring new technologies



Driving business innovation



Sourcing incubation programs



Creating potential startups



Branding



Creating solutions for social causes



Analyzing data to make predictions



Rewarding innovative thinking

From a participant's perspective, a hackathon is a fun, risk-free environment to showcase spontaneous genius while interacting with peers and networking extensively.

How does a hackathon work?

Hackathons are well-organized events that answer a set of logical questions to help design the format.

From an organizer's perspective



Identify hackathon objectives or goals



Decide what type of hackathon it will be



Identify the key partners, sponsors, suppliers, stakeholders



Decide the value proposition for the participants before, during, and after the hackathon



Decide the expected results, quality of the deliverable, judging criteria

Once an institution or firm decides why it wants to conduct a hackathon, it will:

- Identify sponsors (organizations, academic institutes, or customers), partners (media, communities, businesses), and suppliers (experts, mentors, organizers, facilitators)
- The organizers decide the event timing, venue, and format.
- Pre-hackathon activities include:
 - Getting the best attendees, keynote speakers, experts, and judges
 - Organizing workshops and knowledge sharing sessions for potential participants
 - Identifying methods and criteria to recruit the best participants and ideas or projects
 - Getting the datasets, tools, and other aspects of the working environment ready
- Challenges during the hackathon may include:
 - Motivating and monitoring the participants
 - Enhancing their hackathon experience by providing opportunities to network and learn
- After the hackathon, the host or organizer will need to:
 - Explain ownership details
 - Handle demos
 - Provide incentives in the form of prizes, gifts, or opportunities

From a participant's perspective



Brainstorm and find a winning pitch



Focus on the problem statement and on leveraging the mix of available skills



Get the A-team together



Get tons of feedback from potential users; judge the judges



Make a superb sales pitch

- Participants find an idea that checks the uniqueness and feasibility boxes. The idea must completely fulfill the singular purpose of the hackathon.
- Participants load up on passion, spirit of disruption, collaboration, innovation, requisite know-how, and energy.
- Participants typically create or join a team that has diverse strengths—say, front-end or full-stack developer, designer, sales—and delegate accordingly.
- After developing the prototype or coming up with the winning idea, participants prepare a visually pleasing demo about what the product does, who the audience of the product is, what problem or need it addresses, how it is different from similar products, and why it's exciting.

After analyzing close to a thousand hacking events, we went from chunks of data to meaningful insights. Some trends were as expected, while some others opened up new avenues in terms of scope and uncovered interesting correlations.

Hackathon phenomenon catching on world over

- Not surprisingly, the US hosted the maximum hackathons.
- The BRIC countries, with their economies picking up pace despite global setbacks, were strong players. The Russian Federation took the 11th spot on the list, which has data from 75 countries that conducted nearly 850 hackathons in the 2-year period.
- The list of top cities had no surprise entrants with London having conducted the most hackathons.

TOP 10 COUNTRIES WITH THE MOST HACKATHONS



USA 379



INDIA 105



UNITED KINGDOM 41



CANADA 32



GERMANY 28



PHILIPPINES 17



BRAZIL 14



CHINA 14



MEXICO 11



TURKEY 9

TOP 10 CITIES WITH THE MOST HACKATHONS



LONDON 31



SAN FRANCISCO 28



NEW YORK 28



BANGALORE 24



BOSTON 22



HYDERABAD 15



CAMBRIDGE US 12



MUMBAI 11



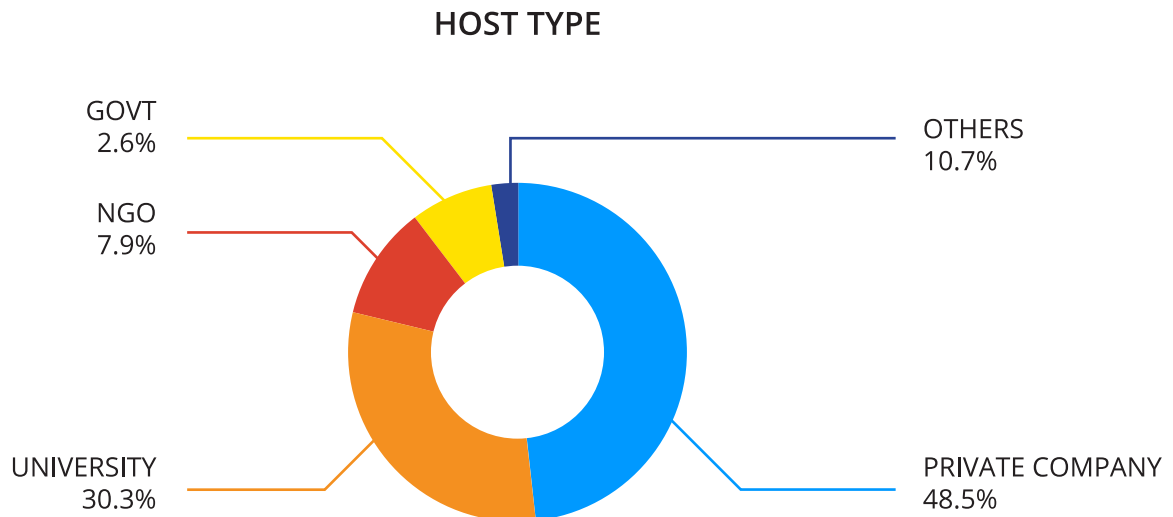
ST. LOUIS 10



ISTANBUL 10

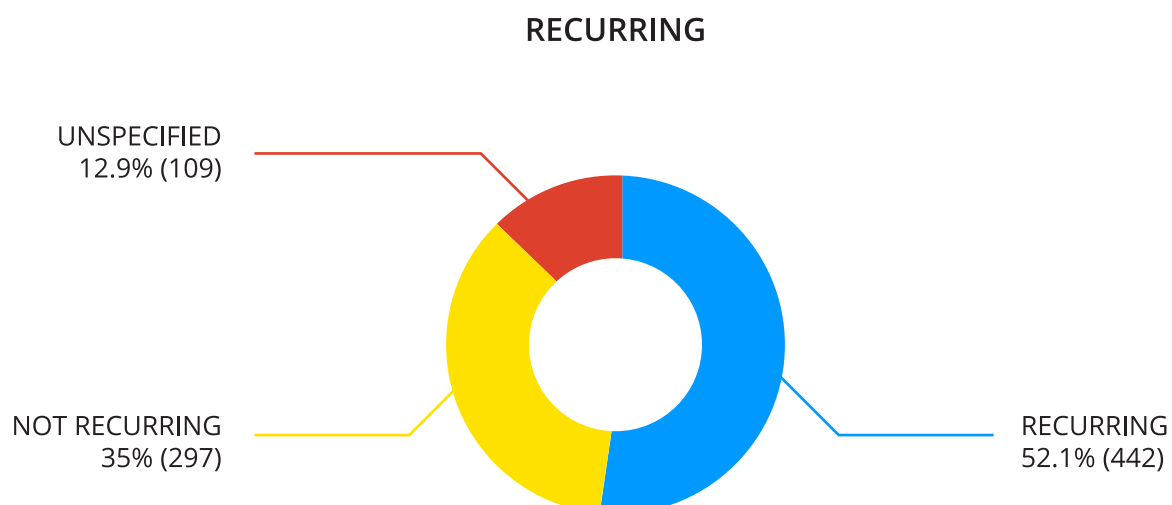
Private companies rule the roost

- Private organizations in different sectors hosted the most hackathons to develop low-cost solutions, fast-track innovative ideas, and encourage creativity among employees.
- Nonprofits primarily conducted hackfests for social good or the environment.
- Public companies or governments aimed at using imaginative ways to “build relationships between disciplines, mine data for new useful content, develop new technology approaches, create economic value, propel STEM education, provide prototypes for experimentation – often at a much lower cost than other more traditional approaches.”²



Hackathons are not one-off events

Our research shows that most hackathons are recurring events with annual editions. In spite of the promising frequency of hackathons, little data is available about the success rate of these events in terms of numbers; relevant information has not been made public. But the premise is they have obviously met the goals the organizers had in mind and continue to be a consistent channel to jumpstart change. Sustaining the momentum after the event requires effort from employees at all levels.



² The power of hackathons in government June 29, 2012, by Ali Llewellyn

Women-only hackathons are nowhere near enough

Studies show that women are markedly underrepresented at hackathons. But our data analysis did bring a glimmer of hope.

- The number of all-female events almost doubled from 2015 to 2016. We separately analyzed close to 40 women-only hackfests (not included in the graph).
- We saw organizations do understand the barriers—sexism, isolation, condescension, and frustration—women in technology face.

Companies have begun to recognize that gender disparity has far-reaching consequences and are making a conscious effort to mitigate them as the number of all-female hackathons in 2016 was almost twice that in 2015.

Student-only hackathons are open to all students in high schools and universities; some hackathons also permit participation if a student has graduated recently.

- The high number of student-only hackathons, with great mentorship opportunities, proved the popularity of the hackathon culture as a vehicle to promote innovative thinking and enforce the fact that age, gender, and race are not obstacles to creativity.
- Professionals-only hackathons, which typically allow only working professionals with specific skillsets, were the dominant type of hackathons.

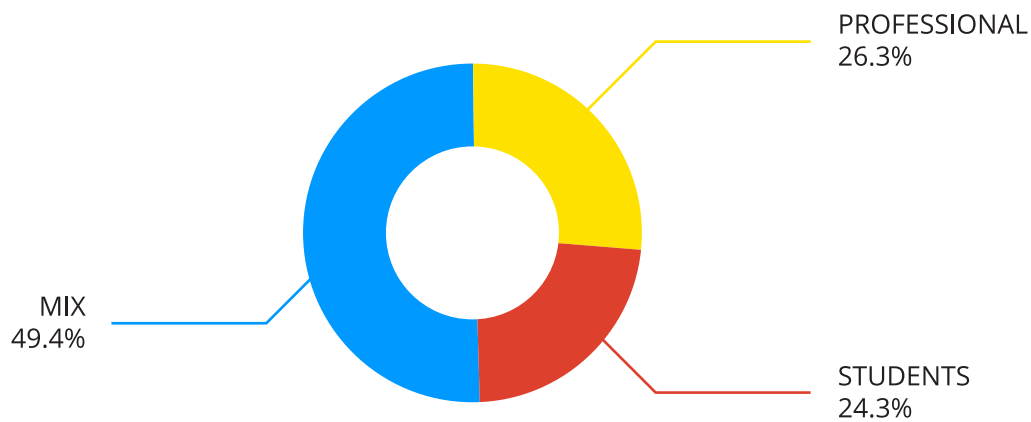
The dominant organizer of student hackathons is Major League Hacking, a maker community which calls itself a “community first, mission driven organization.” A certified B-corp, MLH organizes nearly 200 invention 24- to 36-hour events every year, and believes in encouraging good hacker ethos and promoting learning among developers by providing resources such as its Hardware Lab and exciting opportunities and tools from sponsors.

Domains and themes hinting at new possibilities

Traditionally, hackathons were conducted exclusively in the IT sector. However, in the last decade, this is no longer true. Firms in sectors as diverse as banking, food, climate, and health care are experimenting with hackathons to address problem-solving and new ways of thinking.

- The most popular domain and theme is Multi-discipline, which comprises hackathons where people (mostly high-schoolers and university grads) were asked to come together to “learn, build, and share” exciting ideas or creations using any language, tool, or platform of their choice; this category also includes events for which finer details were not made public on their websites.
- Mobile app and web development was the second most popular domain.
- Payment, geo, communication, social, and music APIs were also popular.
- As expected, emerging technologies such as IoT, Machine Learning and Artificial Intelligence, and Augmented reality/Virtual reality were among the top domains in the two-year period, reinforcing their positions as potential intelligent and digital disruptors across industries.
- Cloud and data science were also popular domains at the hackathons.

DEMOGRAPHIC-SPECIFIC HACKATHON



MOST POPULAR DOMAINS



MULTI-DISCIPLINE
422



APPLICATION DEVELOPMENT
256



INTERNET OF THINGS
75



MACHINE LEARNING /
ARTIFICIAL INTELLIGENCE
53



AUGMENTED REALITY /
VIRTUAL REALITY
16



OPEN SOURCE
14



BLOCK CHAIN
9

**Multi-discipline refers to all those hackathons which had no specific domain but just required participants to build creative, useful hacks. Note that in the App domain, participants were only required to code and develop an app — for specific themes, such as banking or healthcare, or for any theme the participant chooses.*

DOMAINS AND TOP CITIES

For each domain, we identified the top five cities where hackathons were conducted for that domain most often.



MULTI-DISCIPLINE



Berlin



Bangalore



San Francisco



New York



London



APP & WEB



London



San Francisco



New York



Mountain View



Singapore



IoT



Berlin



Hyderabad



St. Louis



San Francisco



New York



ML / AI



San Francisco



Philadelphia



New York



Bangalore



Ontario



OPEN SOURCE



Mumbai



Mannheim



St. Louis



New York



London



AR / VR



San Diego



Taganrog



Santa Ana



Cambridge US



New York



BLOCK CHAIN



Washington DC



Sunnyvale



Miami



Lisbon



Dublin

From the data, we see exciting and unexpected themes for hackathons. Aside from expected themes such as power, energy, real estate, agriculture, brand promotion, hiring, disability, chatbots, and the smart city concept, there were hackathons for a potpourri of themes - space exploration, music, online harassment, cycling, drunk driving, tourism, reimaging, fashion, religion, dance, science, athletic enhancement, audience engagement, ethereum products, fish farming, and air-traffic control.

MOST POPULAR THEMES



MULTI-THEMED
497



SOCIAL WELFARE
110



APP
47



FINTECH
46



BUSINESS
35



LIFESTYLE
29



HEALTHCARE
28



ENVIRONMENT
20



GAMING
16



EDUCATION
12

**Multi-themed refers to all those hackathons which had no specific theme but just required participants to build creative, useful hacks. Note that in the App theme, participants were required to code and develop an app — any app in no specific domain.*

THEMES AND TOP CITIES

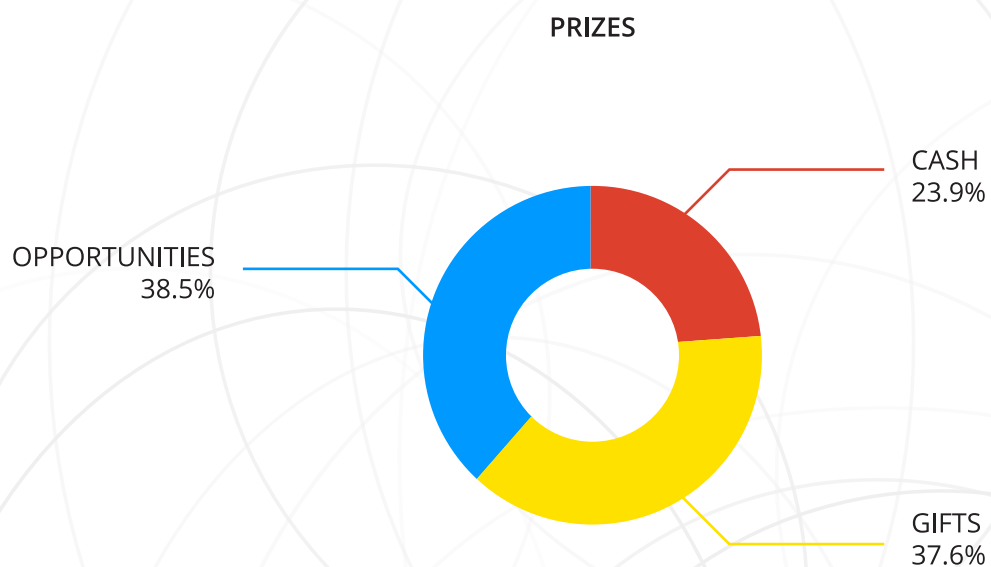
For each theme, we identified the top five cities where hackathons were hosted with that theme most often.

MULTI-THEMED	London	San Francisco	New York	Bangalore	Cambridge (US)
SOCIAL WELFARE	Manila	Hyderabad	San Francisco	Berlin	St. Louis
APP & WEB	Berlin	San Francisco	Sydney	St. Louis	Santa Barbara
FINTECH	London	Hong Kong	New York	Singapore	San Francisco
BUSINESS	Berlin	Zurich	Istanbul	New Delhi	New York
LIFESTYLE	New York	Ontario	Sao Paulo	Berlin	Vienna
HEALTHCARE	Columbus	Makati	St. Louis	London	Boston
ENVIRONMENT	Munich	Montreal	Pasadena	Durban	Calgary
GAMING	Vienna	Tokyo	Seattle	San Diego	Nottingham
EDUCATION	London	Washington DC	Amsterdam	Pune	Tokyo

Universities more keen on encouraging learning than offering cash prizes

Although there is some debate about prizes at hackathons turning them into competitions or instances of corporate exploitation and ruining the experience, we observe that awards or recognition remain motivating factors for attendees.

- It is interesting to note that opportunities from mentors, investors and accelerators / incubators were the most popular form of award at these hackathons.
- Student hackathons were more about learning and innovative thinking, in no specific domain or theme, than cash prizes and sophisticated gadgets. This hints at a culture where today's academia emphasizes out-of-the-box thinking, providing the students with chances to network and learn.



MOST POPULAR GIFTS



Gift Certificate



Tablet



Smart Watch



Go Pro



Amazon Echo



Gaming consoles



Drones



Portable hard drives



Apple MacBook



Paid Holidays

MOST POPULAR OPPORTUNITIES



Invitation to
global hackfests
& conferences



Incubator
opportunity



Seed
funding



Mentoring
by experts



Internship
opportunity



Scholarships



Entry into
accelerator
programs



Chances to
pitch to top
executives



Work with
NGOs



Memberships in
coding clubs

HOST TYPE AND THEMES

Here's a breakdown of the themes of hackathons conducted by each host type.

	 Govt.	 NGO	 Private Company	 University	 Others	
 Agriculture / Food		1	4			
 App	1	3	21	22		
 Business			33	2		
 Education		1	7	4		
 Environment	2	3	12	2	1	
 Fintech	2	3	41			
 Gaming		1	12	3		
 Healthcare	2	5	13	8		
 Lifestyle		9	18	2		
 Multi-themed	5	21	194	194	88	
 Social Welfare	10	20	56	20	2	

HACKATHONS ARE THE NEXT FRONTIER OF INNOVATION

Some companies are keen and able enough to innovate in-house, encouraging collaboration across business units. But many find that despite having dollars and resources to spare, joining forces with the right partners or using the right tools drives high performance faster. Realizing that open innovation will take time to generate, companies are turning to external innovation. Outside experts in the form of hackathon organizers, innovation consultants, or non-employees who are specialists invited to compete, help build an ecosystem of innovation.

“Truly innovative companies know the importance of leveraging external resources. The benefits include better quantity and quality of ideas, execution support, access to distribution and sales channels, and lower innovation costs—all of which deliver higher returns on innovation,” says Robert Shelton, Managing Director, Global Innovation Lead, PwC. He adds, “Companies mastering external collaboration—including co-development with customers—may end up having higher growth rates and lower costs.”

Fostering creative problem solving while boosting team spirit, internal hackathons help crowdsource ideas from a company's existing talent. Companies can use their resources and build on top of these ideas and come up with a go to market product. Mobilizing innovation internally in established companies can take long. Employees are hesitant to upset the status quo. A mature firm has a strong culture that does not lend itself easily to reinvention or new practices or path-breaking ideologies. Everyday operations focused toward meeting primary business objectives often leave very little room for experimentation. But a liberating atmosphere where employees don't have to play by any rules can lead to amazing results.

“If you look at history, innovation doesn't come just from giving people incentives; it comes from creating environments where their ideas can connect,” says author Steven Johnson.

Data shows that hackathons as a means of creating an innovative culture and attracting exceptional talent via hackathons have been increasingly adopted worldwide.

Hackathon platforms can be used as innovation management software. It acts as a platform to ideate and collaborate on interesting products and processes. When used correctly, hackathons can help immensely in crowdsourcing, fostering innovation, employee engagement, product marketing, or employer branding.

CONCLUSION

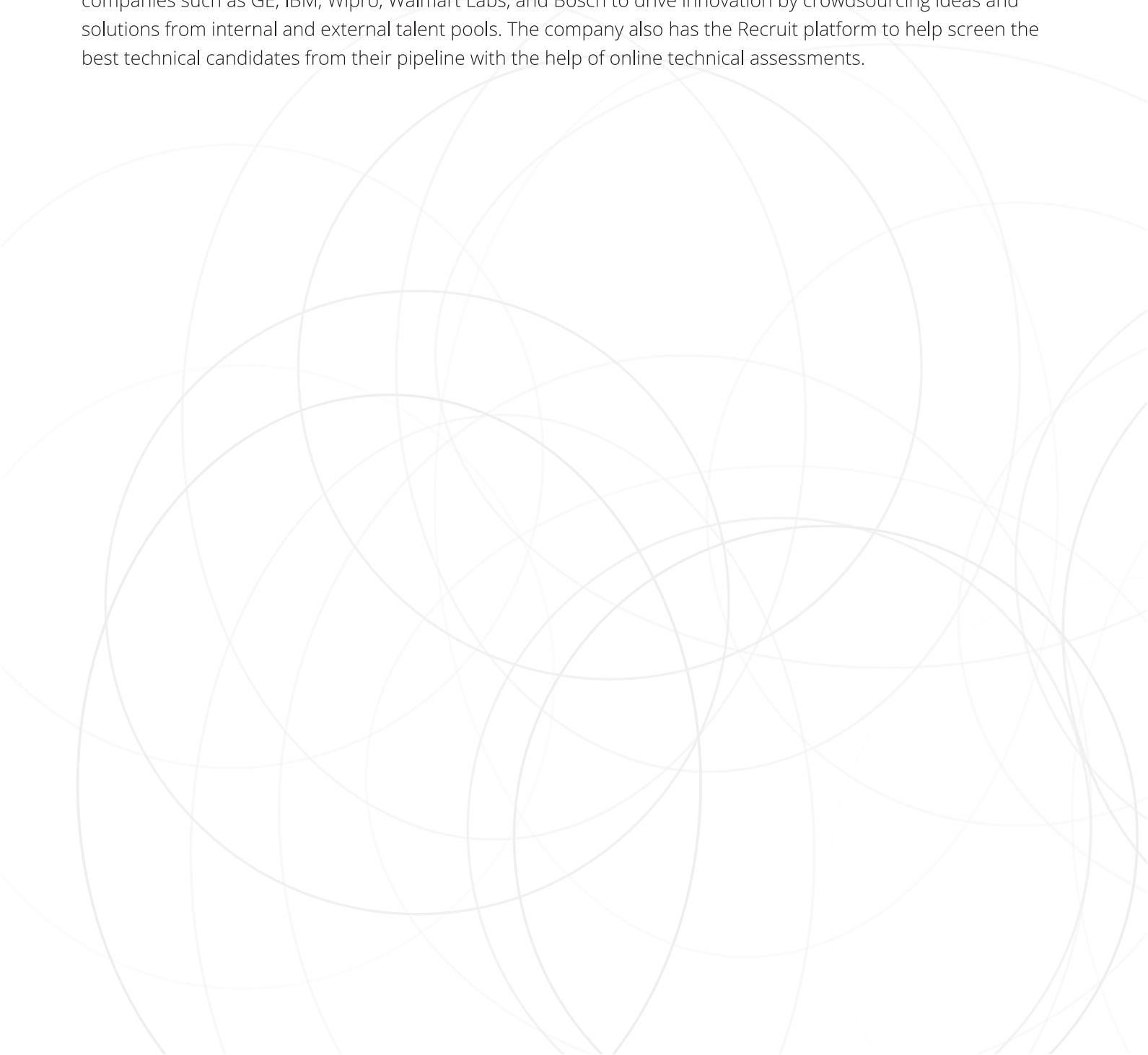
Market successes are quite possible with hackathons but major breakthroughs are not as common as these energy-driven events advertise. Hackathons seem to certainly jumpstart latent creativity in the diverse teams that come together to tackle problems with novel perspectives. But companies would do well to remember that for innovations to become practical possibilities, promising ideas need to be supported by exhaustive market research and technical expertise that bestow feasibility beyond doubt.

Both private and public-owned enterprises are moving toward an innovation-driven culture, breaking the shackles of organizational inertia. Hackathons are especially relevant when budget, resource, and time constraints hamper progress. Data shows the ubiquitousness of the hackathon format that is currently considered a valuable business tool world over. As hackathons are no longer restricted to the software sector or startups, the possibilities are endless.

ABOUT HACKEREARTH

Started in 2012, India-based HackerEarth provides enterprise software solutions that help organizations in their innovation management and talent assessment endeavors. HackerEarth has conducted close to 1000 hackathons and 10,000 programming challenges till date. Since its inception, HackerEarth has built a developer base of over 1 million.

Hackathons continue to contribute to 60 percent of its revenues. HackerEarth's Sprint platform is used by companies such as GE, IBM, Wipro, Walmart Labs, and Bosch to drive innovation by crowdsourcing ideas and solutions from internal and external talent pools. The company also has the Recruit platform to help screen the best technical candidates from their pipeline with the help of online technical assessments.





HackerEarth Inc
38350 Fremont Blvd,
Suite 203 Fremont, CA 94536, USA.

Website: www.hackerearth.com/hackathon
Email ID: contact@hackerearth.com

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