RESEARCH

Sign up today.

SOCIAL | ANALYST BLOG

Part 1: What makes teams successful?

by Stowe Boyd Jul. 31, 2014 - 2:06 PM PDT

I have uncovered several new research papers on team success, so I will be writing a short series exploring the topic.

In a paper [http://arxiv.org/abs/1407.2893] released this month, Michael Klug and James Bagrow of the University of Vermont took a deep mathematical dive into Github data looking for the magic that makes teams successful. This is possible because Github — a web platform initially devised for software development, but now used for literature, music, design, and many other disciplines — captures information like when people join a team, contribute, comment, and so on.

The researchers started the effort because there is little large-scale, quantitative data about how teams form and succeed. However, Github is an open source dataset with hundreds of thousands of projects that can be analyzed. So they analyzed around 150,000 self-organized, online projects using network analysis techniques, and what they found is fascinating.

They found that high impact teams — those that the community have high regard for — share several key attributes:

- High-impact teams tends to be larger than small teams. However, Github teams tend to be small, with less than one percent having more than 10 members.

- High-impact teams are more focused than lower-impact teams of the same size, and are likely to have members with diverse experience.

- Even in larger teams, high-impact teams have core and support cadres. A small number — sometimes just one — of the team do the majority of the work, while other, non-core members act in support roles.

- Perhaps just as important: high-impact teams are more likely to have members that are core members of other teams.

- High-impact teams are more likely to be 'dominated': where the lead member contributed more work than all the other contributors combined.

As the authors state,

> This mixture of size, focus, experience, and diversity points to underlying mechanisms that can be used to maximize the success of collaborative ventures.

Or, alternatively to evaluate — in advance — whether a newly formed team is likely to become successful. Does it have enough mass to do something of high impact? Are there one or more core contributors stepping forward to lead the push? Are the members experienced, and diverse?

These factors remind me of Sandy Pentland's work at MIT, where the use of wearable devices enabled tracking of teams in business. Pentand and his researcher's rapidly determined that they could judge the likelihood of team success merely by tracking the frequency and duration of face-to-face interactions of team members (see The future of work: 4 trends for 2014 [http://research.gigaom.com/2013/12/the-future-of-work-4-trends-for-2014/]). Too little interaction indicated less than top performance, as did too much interaction. Like The Three Bears, the middle bowl of porridge was just right.

Unlike Pentland, Klug and Bagrow weren't able to track frequency and duration of communications because that mostly occurs outside of Github, but my bet is that the core group is involved in intense conversation, with an exponential die-off with the less critical non-core members.

What we learn is something about the organizational dynamics of these high-impact teams: a small core group linked by very strong ties (maybe just a single dominating member), supported by a somewhat looser, although still relatively strong tie network (or networks) of diverse and experienced non-core team members. The non-core members support the activity in many ways, one of which is likely to be influencing the outside world through loosely tied networks, which is where the high impact comes from. The outside world knows about these projects, and promotes them.

In the business setting the same dynamics are likely to hold, although they may be buried in bureaucracy and hierarchy, and as a result, the efforts may be slowed or watered down by 'team members' that are neither core nor strong supporters. When larger teams — with hundreds or thousands of people are involved — the researchers suggest that success is fractal: successful teams larger than the small social scale of <10 person teams are likely made up of networks of small scale teams.

Next up, some research into the central role of strong ties in the networks that make up successful teams.

RELEVANT ANALYST

Stowe Boyd
Lead analyst
Gigaom Research

Do you want to speak with Stowe Boyd about this topic?

Learn More

NO COMMENTS
SUBSCRIBERS SIGN IN TO COMMENT

EXPLORE RELATED TOPICS

TAGS

successful teams, collaboration, software development

COMPANIES INSIDE

github

GIGAOM RESEARCH

CLOUD   MOBILE   SOCIAL   INTERNET OF THINGS   DATA   BUYER'S LENS

WEBINARS   ANALYSTS   DATA CONNECT

SUPPORT | SERVICES

O

NEWS   RESEARCH

About   Contact   Privacy   Terms of Service

RESEARCH

Sign up today.

SOCIAL | ANALYST BLOG

Part 2: What makes teams successful?

by Stowe Boyd Aug. 10, 2014 - 12:44 PM PDT

Last week I wrote a post about research from Michael Klug and James Bagrow based on mathematical analysis of Github data regarding 'high impact' teams (see Part 1: What makes teams successful? [http://research.gigaom.com/2014/07/part-1-what-makes-teams-successful/]). The skinny?

> They found that high impact teams — those that the community have high regard for — share several key attributes:
>
> - High-impact teams tends to be larger than small teams. However, Github teams tend to be small, with less than one percent having more than 10 members.
>
> - High-impact teams are more focused than lower-impact teams of the same size, and are likely to have members with diverse experience.
>
> - Even in larger teams, high-impact teams have core and support cadres. A small number — sometimes just one — of the team do the majority of the work, while other, non-core members act in support roles.
>
> - Perhaps just as important: high-impact teams are more likely to have members that are core members of other teams.
>
> - High-impact teams are more likely to be 'dominated': where the lead member contributed more work than all the other contributors combined.
>
> As the authors state,
>
>> This mixture of size, focus, experience, and diversity points to underlying mechanisms that can be used to maximize the success of collaborative ventures.

Other research on team interaction sheds light on the role of the the strong ties in collaborative teams. Research publish in June by Yves-Alexandre de Montjoye, Arkadiusz Stopczynski, Erez Shmueli, Alex Pentland, and Sune Lehmann, examined the way that teams' networks work. They found that

> while an assigned team's performance is strongly correlated with its networks of expressive and instrumental ties, only the strongest ties in both networks have an effect on performance. Both networks of strong ties explain more of the variance than other factors, such as measured or self-evaluated technical competencies, or the personalities of the team members. In fact, the inclusion of the network of strong ties renders these factors non-significant in the statistical analysis.

The research was conducted using 45 teams of four students during a semester at MIT. Eighty participants worked in teams for three separate projects for one course, and no one worked with the same person twice. The performance was measured by the grades given by the instructors to the team reports.

The authors use J.R. Lincoln's distinction between expressive and instrumental ties. Expressive ties are those that occur between friends while instrumental ties are those that arise in professional settings, and which support information transfer, esprit de corps, and interpersonal familiarity. The researchers used a questionnaire to determine the degree of connection between the students.

The results show that those that already were friends prior to the project work had the best results:

> Does a dense network structure help a team to perform well or does a performing team create dense networks? In this study, we measured the network of expressive ties before the experiment started. We then assigned participants to teams, and we see a positive correlation between the strongest expressive ties and team performance.

The work done by the teams required complex problems that required creativity and 'applying gained knowledge in a novel context'. Much like the work most of us are confronted with at work. The researchers also found that the strength of ties in instrumental and expressive networks is not independent, and that instrument tie strength was highest in the highest strength of expressive ties, as well.

Based on this research, a few comments on teamwork. Businesses that would like to see higher performing teams would be wise to be aware that expressive ties are the source of the best outcomes. The obvious comment is that this research supports the principle of self-forming teams. When people are allowed to choose who to work with they will likely opt for trusted friends and contacts. Note that this does not mean that all teams will have uniform performance, but on average, people working with friends will have higher performance than they would with non-friends.

RELEVANT ANALYST

Stowe Boyd

Lead analyst
Gigaom Research

Do you want to speak with Stowe Boyd about this topic?

Learn More

NO COMMENTS
SUBSCRIBERS SIGN IN TO COMMENT

EXPLORE RELATED TOPICS

TAGS
team performance

COMPANIES INSIDE
mit

GIGAOM RESEARCH

CLOUD   MOBILE   SOCIAL   INTERNET OF THINGS   DATA   BUYER'S LENS

WEBINARS   ANALYSTS   DATA CONNECT

SUPPORT | SERVICES

NEWS   RESEARCH

About   Contact   Privacy   Terms of Service