How Developers Stay Current Using Twitter: Supplemental Materials

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ABSTRACT

We conducted a study of how software developers use Twitter [1]. To assist in the replication of this study, this technical report provides the necessary supplemental materials, including the questionnaires and the script for the semistructured interviews.

Categories and Subject Descriptors

H.5.3 [**Group and Organization Interfaces**]: Computer-supported collaborative work

General Terms

Human Factors

Keywords

Interviews, Surveys, Qualitative Research, Grounded Theory, Social Media, Microblogging, Twitter, Awareness, Learning

1. EXPLORATORY SURVEY

This section provides the questionnaire used in the exploratory survey. It was distributed via email and hosted by Google Forms[1]. The title of the survey was *"(How) do you use Twitter?"*. Answers could be entered either into a text field, using radio buttons, or check boxes. Here, we only display the latter two, while text inputs are implied in the absence of radio buttons or check boxes. Help text for questions is printed in *italic*.

- Your GitHub username

    Will give us some context for your responses. Delete if you're uneasy about it!

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[1] http://www.google.com/google-d-s/createforms.html

- Do you develop software?

    ☐ Yes, professionally

    ☐ Yes, non-professionally—e.g. pet projects, tinkering, ...

    ☐ Yes, I contribute to one or more open source projects (irrespective of size)

- Do you use Twitter at least about once a week?

    If you don't use it at all, please jump to the "nonuse" section below!

    ○ Yes

    ○ No

- What do you use Twitter for?

    Which problems does it solve for you? What does it support you with? What does it enable?

- What do you think are the benefits you personally get from using Twitter?

- Do you have a cool story to share about something on Twitter that stood out?

    Something that happened to you or that you were involved with?

- Why do you *read* posts from others on Twitter?

- Why do you *post* things to Twitter? What kind of content?

- What kind(s) of people do you follow?

    Can you group them into thematic clusters?

- Could you describe how you decide whether to follow someone?

    What kind of information do you need to decide that? Which signals are you considering?

- How do you discover new people to follow?

    Do you have any habits or a process that help you find new people to follow?

- What is your username on Twitter?

    Would help us give some context for your response—leave out if you're uneasy about that!

Non-use

- If you don't use Twitter: Why don't you use it, what keeps you from trying it?

  If you have tried it, why did you stop using it? Were there any barriers or challenges? Did you miss something?

Closing

- Please enter your email address if you're up for a short Skype / Hangout call so we can learn more about your response!

  We'll contact you to make an appointment at your convenience.

2. SEMI-STRUCTURED INTERVIEWS

This section provides the script used in the semi-structured interviews. We used these questions as a general guideline that we deviated from when the interview surfaced new directions that seemed relevant.

We had derived the initial questions from the responses to the exploratory survey. The questions reproduced here are the final version after all interviews and parallel analysis had taken place. Thus, some questions refer to phenomena we had found in previous interviews.

2.1 Intro

- Hello <NAME>! Thanks for taking the time to do this interview with me! How are you?

- First: is it OK to record the interview? We want to analyze interviews later for common themes.

- We're Software Engineering researchers at the universities in Victoria, Canada and Natal, Brazil. We want to find out how developers use Twitter. We have no commercial interest, this is a purely academic project. We'll handle your data confidentially and will anonymize everything you say. If you want to abort the interview at any point, you can do so without any negative repercussions.

- Is that OK with you? Do you have any questions?

2.2 Situation

- What's your job situation, exactly?
  - What are your main tasks—development, quality assurance, managing, ...?
  - What kind of company do you work for, how large is it?
  - Do you work in a team? If so, how is it distributed?

- What country are you based in?

- Which technologies do you use?

2.3 You and Twitter

- What do you use Twitter for, what are your most important use cases?
  - If not: why don't you use Twitter?
    * Do you use something else?
    * How do you keep on top of new stuff?
  - Do you use Twitter for work? Is your team also on Twitter?
  - What kinds of people do you follow on Twitter?

- Do you read every Tweet?
  - Why / why not?
  - How do you do that? What strategies do you use to keep up?
  - When skimming, do you use profile images as a visual help to quickly see whether something is worth reading? If so, how does that work for you? What is the effect of the native retweet on this strategy?

2.4 Reading and Posting

- You *read* things on Twitter because ...?
  - How did you start reading programming-related stuff on Twitter?
  - Do you remember the last time you read something really useful about software development on Twitter? Could you tell me more about it?
  - How did that impact your work as a programmer?

- You *post* things on Twitter because ...?
  - Do you expect your followers to find your posts useful? Why?
  - Do you get feedback from things you post? Could you give an example?
  - Are you actively seeking to build an audience / reputation among your followers?
  - Is that important to you? Why?

- You *don't* use Twitter (or don't use it so frequently) because ...?
  - Twitter's costs vs. its benefits—what are your thoughts?
  - Do you use Facebook, G+, RSS, blogs? Why those?
  - It's not very popular in our country: geographical location—how are microblogging alternatives working for developers in other countries where Twitter is not popular?
  - (depends on respondent's answer to our survey, go deeper into their response)

2.5 Interactions on Twitter

- Following <-> Follower relationships and decisions

- Could you remember the last time you started following someone?

- Why did you start following that person?

- Do you follow your co-workers? Why or why not?

- Have you ever stopped following someone? Why?

- Are there people that you would never stop following? Why?

- Do you interact with others on Twitter?
  - What kinds of people? Those you know already or new people?
  - Have interactions with others on Twitter helped you in some way?
  - Do you remember some interaction that you didn't like?

- What was the coolest thing that happened over Twitter to you?

- Twitter for a feeling of community / connectedness: why not just go to a meetup? What are the differences? Advantages, drawbacks?

- GitHub and Twitter. Both have social features like a following and a feed. Compare roles in professional life.
  - Do they complement each other? Why, how?
  - Interactions on GitHub? Newsfeed on GitHub?

2.6 Problems

- What kinds of problems do you see with Twitter?
  - If you're using it anyway: why?

- What could be better? Any ideas how to repair it?

- Do you see any problems that others could have with Twitter?

2.7 Debriefing

- Thank you so much for your time! Would you like to know when we have results, i.e., is it OK to email you?

3. VALIDATION SURVEY

This section provides the questionnaire used in the validation survey. We derived the questions and statements from the results of our exploratory survey, the interviews, and our qualitative analysis of that data. Like the exploratory survey, it was distributed via email and hosted by Google Forms. The title of the survey was *"How do you use Social Media?"*. Answers could be entered either into a text field, using radio buttons, or check boxes. Here, we only display the latter two, while text inputs are implied in the absence of radio buttons or check boxes. Help text for questions is printed in *italic*.

- Your GitHub username

    Will give us some context for your responses. Delete if you're uneasy about it!

- Do you develop software?

    ☐ Yes, professionally

    ☐ Yes, non-professionally—e.g. pet projects, tinkering, ...

    ☐ Yes, I contribute to one or more open source projects (irrespective of size)

- Do you use Twitter at least about once a week?

    If you don't use it at all, please jump to the "non-use" section below!

    ○ Yes

    ○ No

- What do you use Twitter for?

    ☐ Work, related to software development

    ☐ Work, not related to software development

    ☐ Entertainment

    ☐ Personal Relationships

    ☐ General News

- What is your username on Twitter?

    Would help us give some context for your response – leave out if you're uneasy about that!

Keeping up to date

- Twitter helps me keep up to date about technologies and tools I use for software development.

    Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me stay aware of new trends and practices in software development.

    Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me extend my knowledge by exposing me to technologies and practices I should learn in software development.

    Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter has helped me become a better programmer.

    Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me learn about things I wasn't actively looking for.

    Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- On Twitter, I follow leaders in my technological niche, which helps me stay current about the latest technologies and practices.

    Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me promote projects and technologies I work with.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Which of the following do you use at least once a week for STAYING AWARE of information regarding software development technologies and practices?

  ☐ Twitter
  ☐ Email
  ☐ Google+
  ☐ Blog posts and comments
  ☐ Chat (e.g. Hangouts/Skype/IRC channels)
  ☐ News aggregators (e.g. Hackernews, Reddit)
  ☐ Facebook
  ☐ In person (e.g. at work, conferences, meet-ups)
  ☐ Other:

- Which of the following do you use at least once a week for SPREADING INFORMATION regarding software development technologies and practices?

  ☐ Twitter
  ☐ Email
  ☐ Google+
  ☐ Blog posts and comments
  ☐ Chat (e.g. Hangouts/Skype/IRC channels)
  ☐ News aggregators (e.g. Hackernews, Reddit)
  ☐ Facebook
  ☐ In person (e.g. at work, conferences, meet-ups)
  ☐ Other:

Relationships with other developers

- Twitter helps me discover interesting software developers.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me do business networking.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me receive validation from others for my work.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me build community around projects I contribute to.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me give and get feedback about projects I work with.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me manage my own image as a developer.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me build trust or rapport with other developers.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter helps me access job opportunities.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Which of the following do you use at least once a week for forming or maintaining relationships with other software developers?

  ☐ Twitter
  ☐ Email
  ☐ Google+
  ☐ Blog posts and comments
  ☐ Chat (e.g. Hangouts/Skype/IRC channels)
  ☐ Facebook
  ☐ I'd rather meet them in person (e.g. at work, conferences, meet-ups)
  ☐ Other:

Challenges in Twitter usage

- I find it hard to cope with the amount of information I receive on Twitter.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- I carefully decide whom I follow in order to avoid information overload on my Twitter feed.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- On Twitter, I usually follow people on a trial basis and unfollow them if they post irrelevant or too much content.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- I appreciate the succinctness of 140 characters per post on Twitter.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter is fine for short discussions.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- Twitter doesn't allow for long discussions, and I prefer using other channels for that purpose.

  Strongly Disagree ① ② ③ ④ ⑤ *Strongly Agree*

- If you use Twitter, but use other channels for conversations originating from Twitter, which ones do you use?

  ☐ I basically only use Twitter

  ☐ Email

  ☐ Google+

  ☐ Blog posts and comments

  ☐ Chat (e.g. Hangouts/Skype/IRC channels)

  ☐ Facebook

  ☐ I'd rather discuss with them in person (e.g. at work, conferences, meet-ups)

  ☐ Other:

Closing

- Would you like to receive an email when we publish the results of the survey?

  ☐ Yes, please!

- Your email address:

  (we'll only email you if you checked the box above)

- Thanks so much for getting this far! Any questions, comments or concerns you'd like to tell us about?

4. ACKNOWLEDGMENTS

5. REFERENCES

[1] L. Singer, F. Figueira Filho, and M.-A. Storey. Software Engineering at the Speed of Light: How Developers Stay Current Using Twitter. In *Proceedings of the 2014 International Conference on Software Engineering (to appear)*, ICSE '14, Piscataway, NJ, USA, 2014. IEEE Press.