The (R)Evolution of Social Media in Software Engineering

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The paper discusses the usage patterns of developers while using social media channels as preferred environments suitable for development. It also discusses the emergence of new technologies and tools and how they have gained momentum and popularity over the years. The paper addresses issues that the developers face while trying to navigate through these online communities and how these can be solved in effective ways. The dissemination of technology into among the developer communities and the fast-paced evolution of such platforms has paved way for collaborative learning and sharing of technical knowledge in a widespread manner.

According to Wasko, knowledge can be distinguished into different theories:

1.) **Knowledge embedded in people**: This includes the tacit, inherent knowledge in people which enables people to build solutions, design systems and resolve bugs.

In the olden times (80s), this type of knowledge was inherited via face to face communication. Now, in today's world, people still rely on face-to-face communication but media like Skype/Google Talks has also become prevalent.

With the surge of WWW, emails too have become an important medium of communication alongside the already existing telephone and the newly created instant messaging.

The open source culture has begun the system of IRC which allows a group of developers to chat via texts.

2.) **Knowledge embedded in project artifacts**: It is the knowledge about design, code, requirements and architecture of the project. It is generally discussed in a community of practice i.e. a group of people with a common interest learn together about the subject.

The commonly used media for the communication of this type of knowledge are IDEs, online hyperlinked documentation, project forges, version control, bug trackers and project management tools.

Also in use are wikis which allow collaborative authorship to documentations online.

Platforms like GitHub and Source forge allow developers to host their projects online with version control features. Also commonly in use are email lists which enable the developers working in a project to update information about the project.

3.) **Knowledge in socially constructed communities**: The knowledge gained via public forums like reedit, question-answer sites like Stack Overflow. This knowledge can be obtained through the public media like blogs, microblogging sites and podcasts.

4**.) Knowledge about developers through social networks**: the pervasive use of public social media by developers makes the participants and their relationships more transparent to software engineering researchers who want to understand how methods and tools are used in practice. Research so far has
Indicated that social networking features influence which projects developers participate in, impact project success, and play a role in developer assessment and recruitment. Gamification elements add feedback and improve trust in developer contributions.

The paper considers opportunities and challenges related to four entities involved in development environments: developers, communities, content and knowledge of the developer community and the ecosystem of social media channels.

For each of these, the authors have proposed ways in which these entities can progress on various fronts of software engineering. In the study, the authors conducted surveys on GitHub and were able to successfully analyze the usage patterns of developers and stakeholders involved. Code hosting sites emerged as the top social media channel used by developers, followed by face-to-face communication and Q&A sites such as Stack Overflow. While majority of users felt overwhelmed by the notifications and information overload on these platforms, trusting content posted by the developers was identified as another issue. The identities of some developers is questionable as it is difficult to determine the technical competencies and genuine profile information of some developers. Also, some developers may prefer to be private in their conversations. Many developers reported difficulties in learning new technologies and keeping up with various tools being built every day.

The paper talks about social media literacy – the proficiency of developers in terms of using the social media channels and general awareness and how the social media literate population faces lesser problems. They further suggest solutions to these issues so that the best quality content comes to the surface and privacy and security of users is further increased.

The paper leaves future scope for software engineering researchers to consider these social media channels and accept them, and not to be skeptical about their effects on pre-existing research methodologies.