







HEARING THE VOICE OF APP DEVELOPERS

This briefing reports scientific evidence on the use of Q&A repositories as a mechanism to understand and define strategies to support developers in Mobile Software Ecosystems (e.g., Android, iOS and Windows Phone).

FINDINGS

 Evidence related to developer activity (i.e., developers' posts) suggests that there is no difference between the amount of developers' posts among MSECOS (Fig. 1)

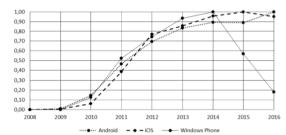


Figure 1. New questions by year

- Regarding the number of answers by year, considering a growth function for each MSECO. Android function a(x) is 38.4% greater than iOS function and 97.2% greater than Windows Phone function w(x). iOS function i(x) is 95.3% greater than w(x).
- The findings presented in this briefing also consider four key insights constructed from a data mining process in Stack Overflow, a Questions & Answers repository.
- Key Insight #1: The most commonly used tags in recently added questions may indicate the most frequent barriers faced by developers willing to participate in a MSECO. This scenario can serves a monitoring strategy to support a keystone in recruiting and educating developers.

Table 1. Extracted topics from all questions

Android	Project	
	User Interface	
	Notifications	
	Exceptions	
ios	User Interface	
	Data Binding	
	Project	
WP	Services	
	Data Binding	
	Frameworks	

- There are common points in the intersection between topics of different MSECO: data binding mechanisms, user interface (UI) programming, and development support infrastructure.
- Key Insight #2: The most viewed topics as well as the topics in which developers are most committed to respond can indicate a

community of experts who can help to reduce frequent barriers to participation in MSECO.

Table 2. Hot-topics: developer engagement

	Most viewed	Most answered	
	Topic		
Android	IDE	Data Binding	
	User Interface	IDE	
	Basic Steps	User Interface	
	Interface behavior	Back-end Infrastructure	
WP	Platform	Event Handler	
	Notification Services	IDE	
	Data Binding	Handletanford	
	Page Navigation User Interface		
ios	IDE	User Interface	
	Programming Language	Data Binding	
	Hand betaufans	Notification services	
	User Interface	Programming Language	

- Key Insight #3: Questions posted in a Q&A repository next to official MSECO announcement periods can help a keystone to manage strategies to add new MSECO resources (e.g. platforms, SDKs, APIs, programming languages). When such new technologies are released to the market, a keystone should be able to manage them easily.
- The use of tags related to the announcements maintains an accumulated growth of questions until the fourth month. After that, the behavior stays almost constant based on the difference between the last month and the current one.
- Technical questions emerge when a keystone delivers new technologies. A keystone must effectively deliver new technologies, processes or ideas to the ecosystem's participants.
- There is a difference between IT governance where business strategies are not necessarily reflected in the IT decisions and MSECOs in which business strategies affect the developers' communities (e.g. APIs and SDKs announcements).
- Key Insight #4: The badges can help a keystone to manage strategies related to technical resource exploration, active developer in the community, and community control by fostering relationships with top developers in the ecosystem.
- The five most frequent badges on MSECO Android are participation-related and one is focused on answers
- The five most earned badges on the MSECO iOS are related to moderation and one of them refers to answers
- The five most frequent badges in the MSECO Windows Phone are related to participation, response, and moderation

Keywords:

Software ecosystems

Mobile application development

Mining Software Repository

Stack Overflow

Who is this briefing for?

Software engineering practitioners who want to make decisions about developers' governance in Mobile Software Ecosystem based on scientific evidence.

Where the findings come from?

All findings of this briefing were extracted from the data mining of all mobile related questions on Stack Overflow conducted by Fontão et al.

What is not included in this briefing?

The statistical analysis, threats to validity and graphs of the original empirical study.

Detailed descriptions about the research questions analyzed in the

Original Empirical Study Reference:

original investigation.

Awdren Fontão, Fabrício Lima, Bruno Ábia, Rodrigo Santos and Arilo Dias-Neto. Hearing the voice of developers in Mobile Software Ecosystems. Brazilian Symposium on Software Engineering. 2017.

For additional information about this research:

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