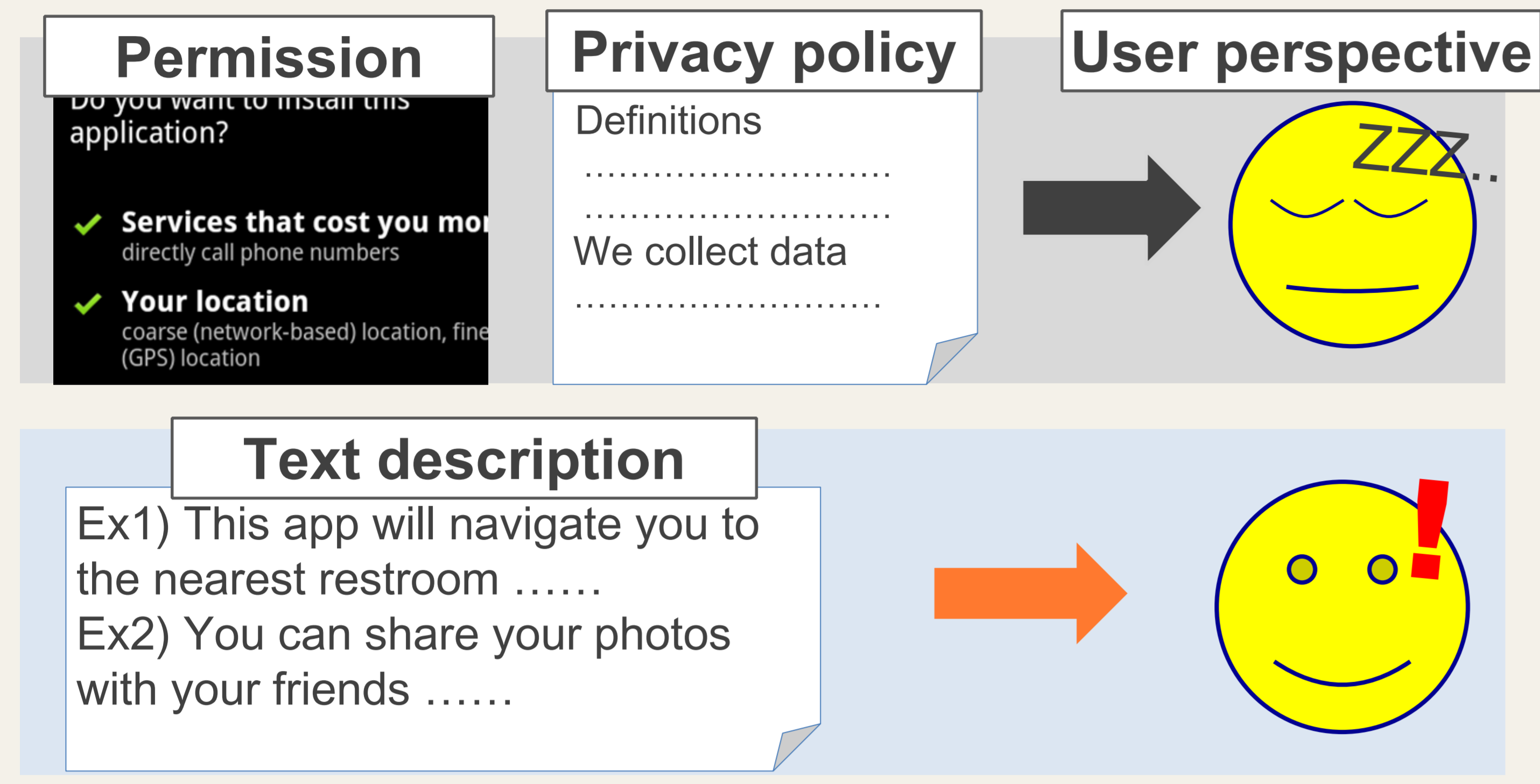


Understanding the consistency between words and actions for Android apps

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Motivation

Text descriptions can be an alternative approach to informing users about the use of privacy-sensitive resources.



Research Questions

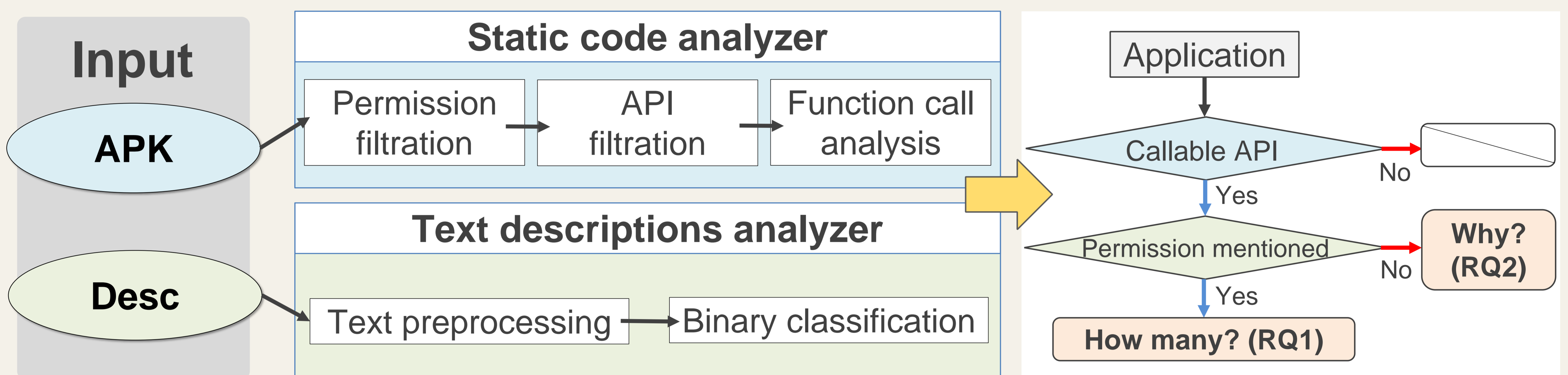
This work aims to address the following two research questions:

- RQ1:** How many apps provide text descriptions that successfully inform users about the use of privacy-sensitive resources by the app?
- RQ2:** What are the primary reasons due to which text descriptions fail to refer to the use of privacy-sensitive resources?

To answer these questions, we developed a framework called ACODE.

Key Idea: ACODE Framework

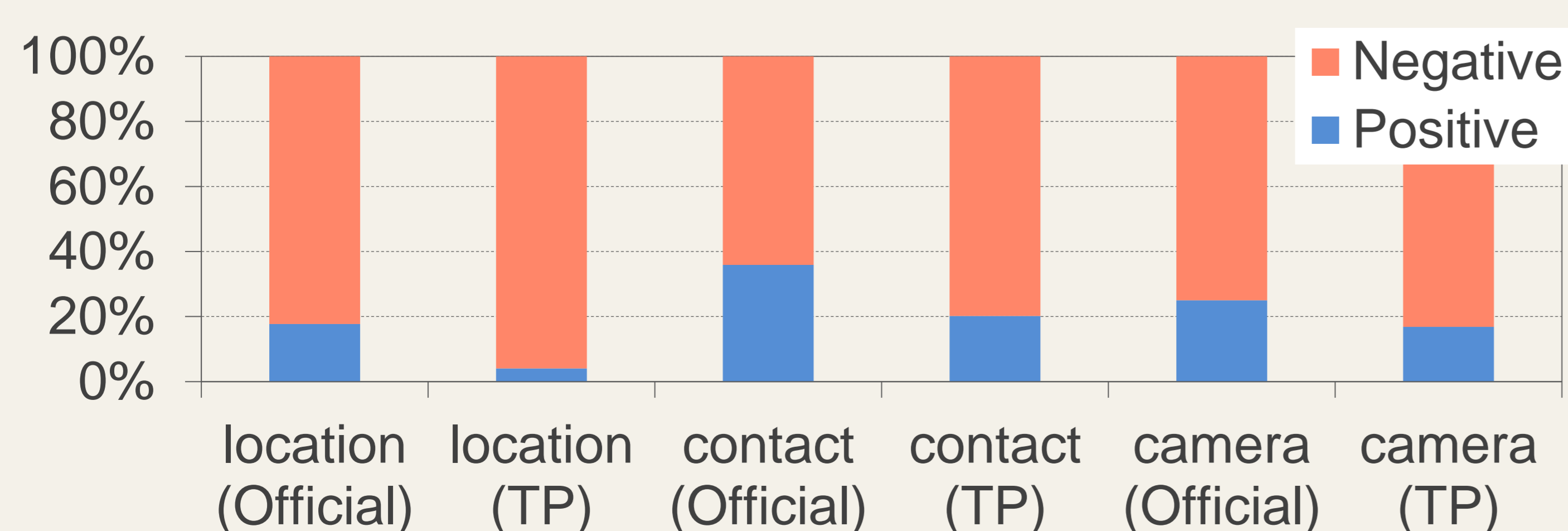
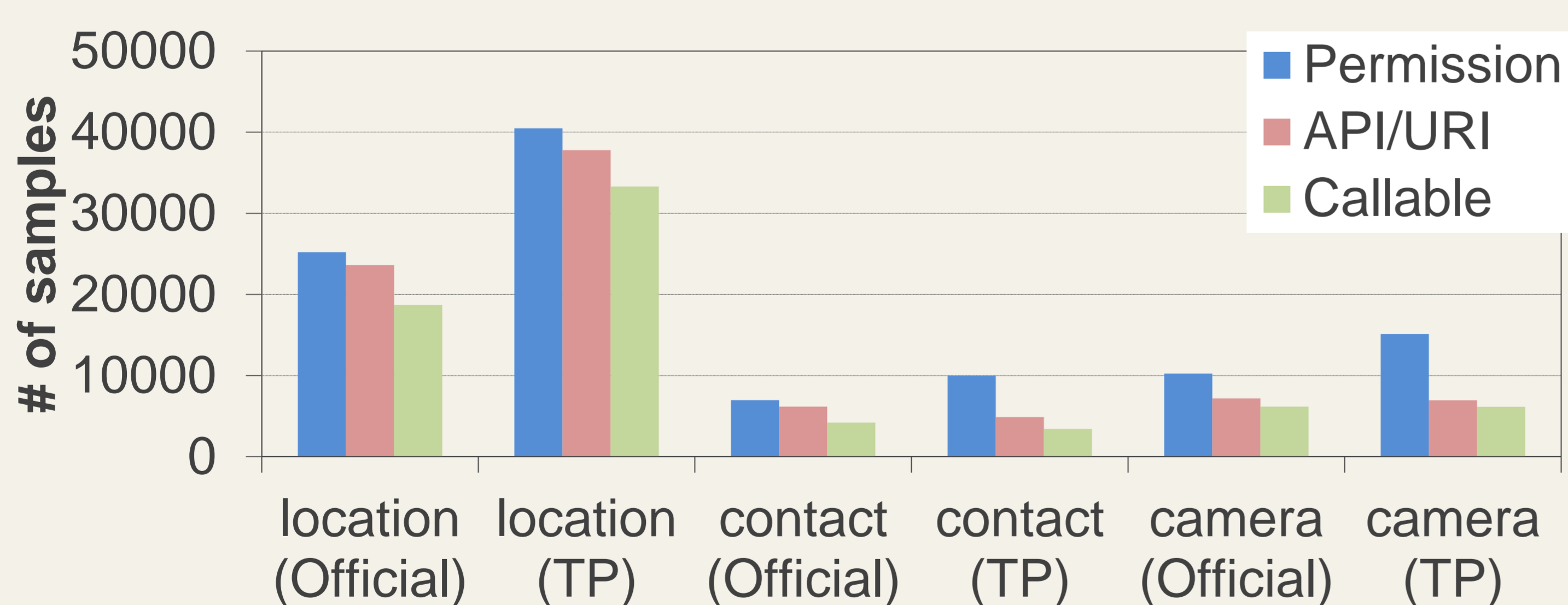
We combine two technical approaches: (1) Static code analysis and (2) Text description analysis



Data set

	# of apps		# of labels		
	Official	TP	Location	Contact	Camera
English	100,000	0	3,000	3,000	3,000
Chinese	0	100,000	3,000	3,000	3,000

Results



Key Findings

Answers to Research Question 1 :

- Of the Official market apps, 17–35% refer to use of permissions in their descriptions.
- Of the TP market apps that can access location resources, only 4% of the text descriptions refer to use of permission. For other resources, 17–20 % of text descriptions refer to use of permissions.

Answers to Research Question 2 :

Resource	The primary reasons of the inconsistency	Official	TP
Location	Apps with ad libraries use location resource without description	55%	78%
Contact	Apps developed with cloud-based app building services contain unnecessary APIs	25%	0%
Camera	Apps with BAR/QR code reader access camera without description	53%	66%

We believe these findings will be useful for improving users' awareness of privacy on mobile software distribution platforms.