



NATIONAL & KAPODISTRIAN UNIVERSITY OF ATHENS

# Technical Issues and Requirements for privacy risk identification through Crowd-sourcing



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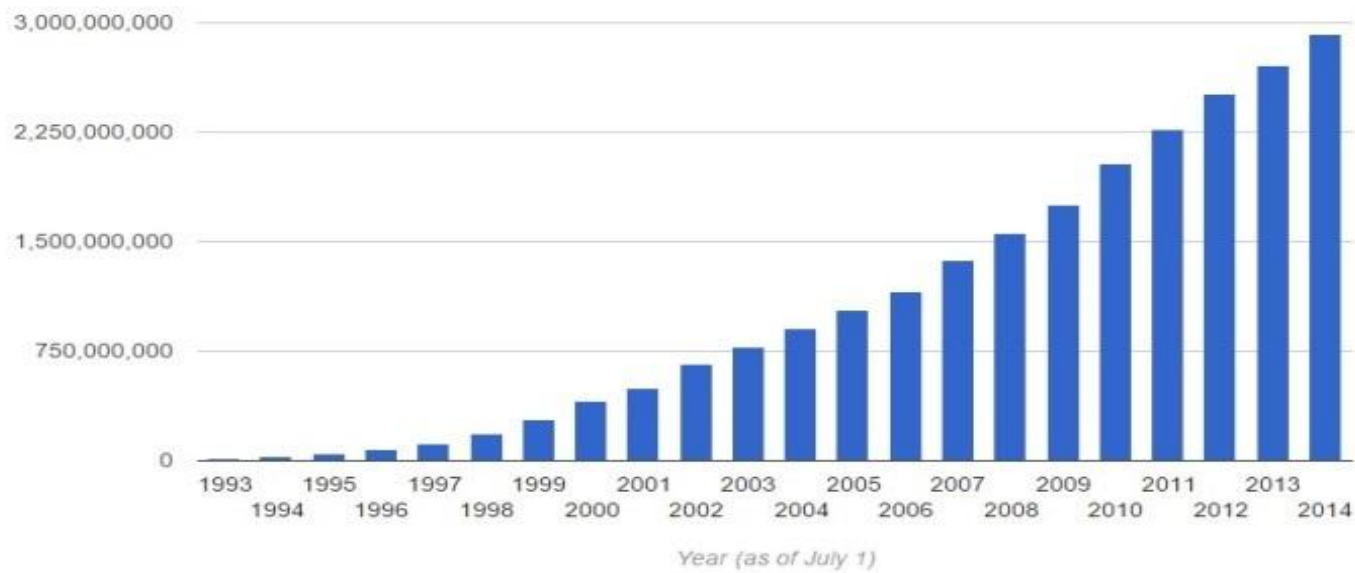
# Outline

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# Introduction

- Two major innovations have marked the evolution of internet and changed the way that people use it:
  - The social web
  - The mobile technology
- The figure below states the exponential growth of internet usage since the last decades.



# Introduction (1)

- The number of smartphone apps has undergone tremendous growth since the inception of app markets [1,2].
- The usage of mobile applications by smartphone users shows that
  - Over 460,000 are the offered applications in Google Market with more than 10 billion downloads.
  - Over 650,000 are the offered applications in App Store with more than 30 billion downloads.



# Problem statement

- However, the potential privacy and security risks associated with using applications (primarily mobile apps) are quite high as smart-devices become increasingly
  - Integrated in our lives
  - Used for our email
  - Used for Social networking accounts
  - Used for accessing Financial information
  - Used for Personal files(photos, songs, videos, etc.)
- Web applications, can make use of various device's capabilities (such as location, call logs, contacts), opening the door to new kinds of security and privacy instructions.
- Most of the times, web applications, gather sensitive user information without user's full awareness.



# Problem statement (1)

- Web applications may collect personal data information, with the full user awareness and transfer them to third-party companies such as:
  - Finance company
  - Shipping company
  - Arbitration company
  - Marketing company
- Latest solutions propose to use crowd-sourcing tools in order to “identify” such applications.
- Organizations/users use the crowd-sourcing in order to find applications/companies that collect users’ personal data without their permission.
- Through the crowd-sourcing, they build databases with sites/applications of high risk, which gather personal information without user permission.
- In the next slides, the crowd-sourcing technique is presented and how this may be a useful tool for the privacy risk identification.



# Crowd-Sourcing

- Crowd-sourcing definition: *is a type of participative online activity in which an individual, a nonprofit organization, or company proposes to a group of individuals of varying knowledge, heterogeneity, and number, the voluntary undertaking of a task.*
- Crowd-sourcing is the process of problem solving by seeking solutions through an open and public platform, in particular, through web-based technologies.
- Crowd-sourcing comes from the technology sector, where it has been applied as a novel method of generating creative solutions.



# Crowd-Sourcing Techniques

- Two primary roles that crowd-sourcing plays today as a dominant business model include direct crowd-sourcing for procurement and indirect crowd-sourcing to host transactions.
- Direct Crowd-sourcing to Procure:
  - Company → Community
  - Call to action in exchange for reward/recognition/compensation etc.
- Indirect Crowd-sourcing to Host
  - Company hosts
  - Client (buyer) -> Community (seller)
  - Call to action by Client – “I will buy, if what you sell meets my needs”
  - Action taken by Community – “I will sell, if what you pay meets my needs”





# Crowd-Sourcing Techniques (1)

- Some popular uses of crowd-sourcing include:
  - **Crowd wisdom** where many can contribute possible answers to questions.
  - **Crowd innovation** where many can participate in problem-solving.
  - **Crowd creation** where many can be part of producing something and often each participant takes a smaller piece of the whole based on their skills and abilities.
  - **Crowd voting** where the best ideas “climb” to the top by community review and voting.
  - **Crowd-agent** where many can use a(n) program / application / product and have to alert the "employer" if there is an issue



# Crowd-Sourcing issues

- Many companies have been engaging in crowd-sourcing as a way of finding solutions to difficult technical problems.
- Most of companies engage directly with the crowd, while others have used intermediaries or 'expert networks' who run crowd-sourcing platforms as a product.
- However there are many unforeseen, even fatal difficulties that have been encountered while companies engaging in these crowd-sourcing efforts.
- In the next slides, some big "issues" that a(n) company/organization may discover using the crowd-sourcing tools as experimentation environment are presented.



# Crowd-Sourcing issues (1)

- **Issue 1: Lack of confidentiality:**
  - Crowd-sourcing usually are unknown to you: Due to the risk of confidential information getting into your competitor's hands, there are usually details about the problem, your business intentions, or the technology that you must keep hidden.
- **Issue 2: Lack of communication**
  - Misunderstanding the problem, can't provide a solution: Due to the fact that reaching out to a group of people that you don't know very well, it becomes very difficult to help them achieve a deep understanding of the problem.



# Crowd-Sourcing issues (2)

- **Issue 3: Risk of IP contamination**
  - Getting dozens of information may not be a solution: Getting hundreds of potential information to your problem sounds great, but when you start to think it through from the management standpoint, it can create a headache that many of us would like to avoid.
- **Issue 4: Ideas are not the same as solution**
  - An idea without context or purpose is impossible to evaluate: If crowd-sourcing is providing only ideas, then even in the best case, it's only part of the way there. In the worst case, it simply causes more work for the company, resulting in disillusionment in the process.



# Conclusion

- Crowd sourcing can be a powerful tool for continuous monitoring about the identification of potential privacy
- Crowd sourcing is a good approach for the identification of privacy risks of various applications, sites etc..
- Privacy Risk identification is important for raising awareness about specific sites/applications and the kind of data they process



# References

- [1] Apple Inc. Apples App Store Downloads Top 25 Billion. Apple Press Info, Mar 2012.
- [2] Scott Lowe. Google Play celebrates 25 billion downloads with 25 cent apps, discounted books, music, and movies. The Verge, 09 2012



# A few about Privacy Flag

- The Privacy Flag project will research and combine
  - The potential of crowd-sourcing
  - ICT technologies
  - Legal expertise

to protect the citizens' privacy when visiting websites, using smartphone applications or living in a smart city.

- In the scope of project will be developed
  - **Crowd-sourcing** mechanisms
  - **Privacy** monitoring agents
  - **Universal Privacy Risk Area Assessment Tool**
  - Personal Data Valuation mechanism
  - **Privacy** enablers for citizens to retain control over their privacy
  - **User friendly interface** informing the users and raising citizens awareness
  - In-depth privacy risk analytical tool and services



# A few about Privacy Flag

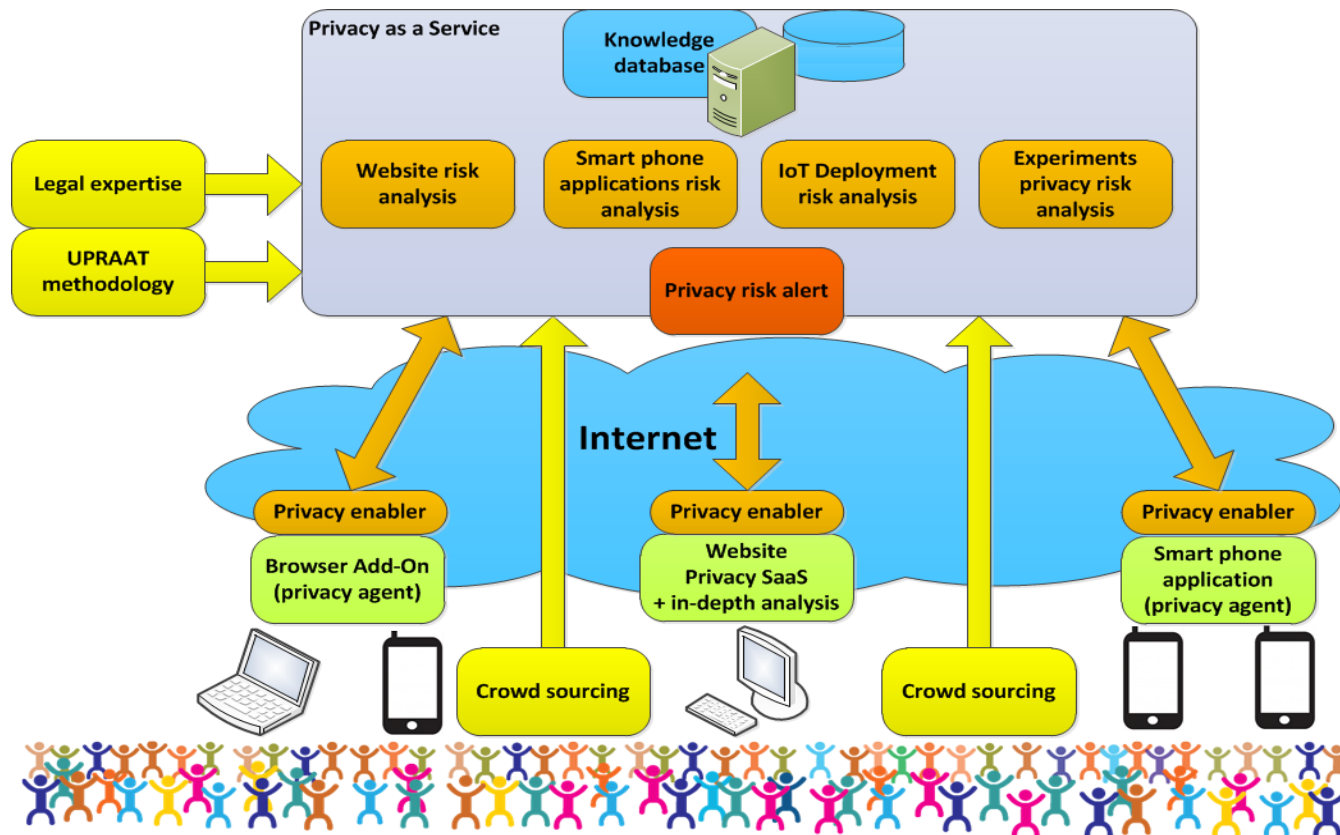
- Privacy Flag in order to address this multidisciplinary topic with efficiency, combines expertise in:
  - Privacy and personal data protection (IIP, MI, UoA)
  - Privacy evaluation process (MI)
  - Crowd sourcing (MI, CTI, DNET)
  - Personal data valuation (Velti, HWC)
  - End-user interaction, co-design and empowerment / living labs (LTU)
  - Network security (UL, OTE, MI, CTI)
  - Anonymization Techniques (UL)
  - Smartphone technologies (OTE, Velti, DNET,UoA)
  - Web technologies (Velti, DNET,UoA)
  - IoT technologies (MI, DNET, Velti)
  - International law and Human Rights (MI, UoA)
  - Standardization (UL, MI, OTE,UoA)





# Privacy Flag concept

- The **Privacy Flag** will provide several user-friendly and freely available tools to the citizens to be accessed:
  - As an add-on in their Internet browsers;
  - As an Android application on their smart phone;
  - As a public website.



# Thank you for your attention

