

# Summary of "The Curious Case of the PDF Converter that Likes Mozart: Dissecting and Mitigating the Privacy Risk of Personal Cloud Apps"

Jens Becker, Katharina Mulack, Simon Weidmann

Security of complex Information systems

17. January 2018

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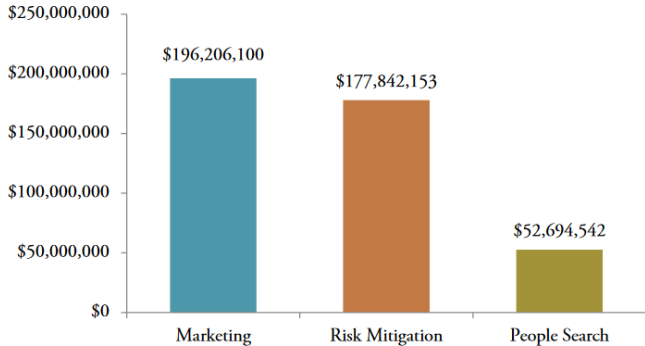
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# Revenue of 9 Key Data Brokers



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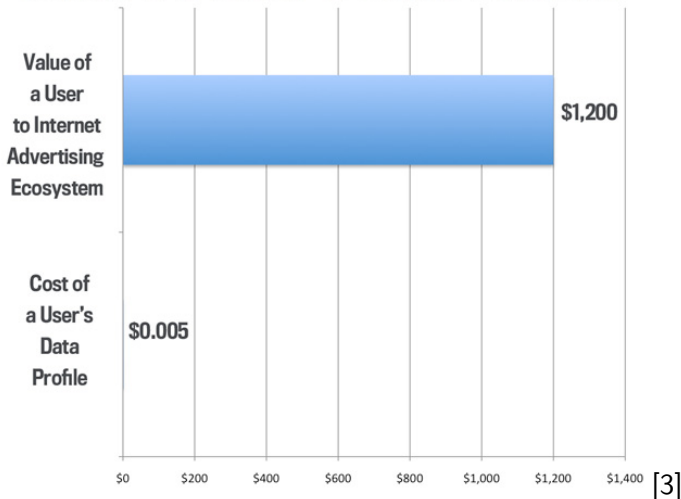
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## What's a User's Data Worth?



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# Who is Gathering Data?



▼ Egnyte for Google Drive would like to:



View and manage the files in your Google Drive



View your email address



View your basic profile info



By clicking Allow, you allow this app and Google to use your information in accordance with their respective terms of service and privacy policies. You can change this and other [Account Permissions](#) at any time.

Deny

Allow



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64 of 100 tested Google Drive apps are over privileged

76 request full access to the user's files

84% of apps that request full access are over privileged

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## Delta Permissions (DP)

Assumption: Users are deterred if told which permissions are unnecessary



Pdf Merger would like to:

**obtain permissions it doesn't need**



View and manage the files in your Google Drive. ⓘ

**obtain permissions it needs to function**



View and manage Google Drive files that you have opened or created with this app. ⓘ

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## Immediate Insights (IM)

Assumption: Users are deterred if told which informations can be gained



PDF Merger would like to:

## obtain permissions it doesn't need

View and manage the files in your Google Drive. ⓘ

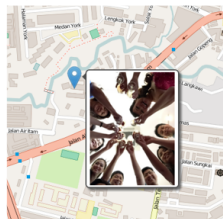
## obtain permissions it needs to function

View and manage Google Drive files that you have opened or created with this app. ⓘ

Insights Area

## What do the unneeded permissions say about you?

❗ They tell the app that you have an image, named 'dinner.jpg', which was captured at this location:



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## Far-reaching Insights (FR)

Assumption: Users are deterred if told which far reaching insights can be gained

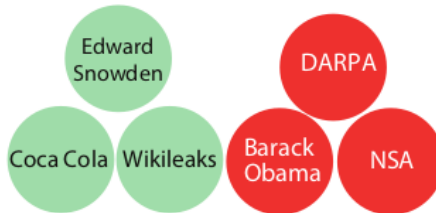


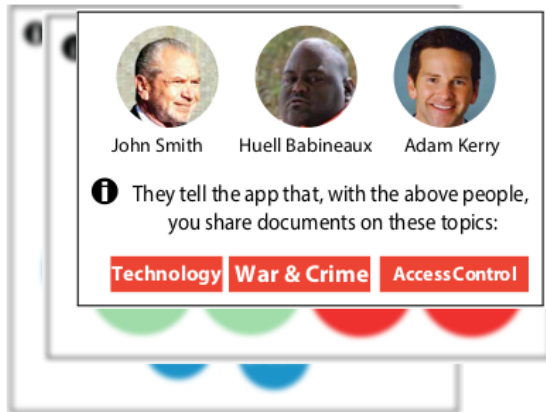


**i** They tell the app that you have the following views:

You're positive about:

You're negative about:





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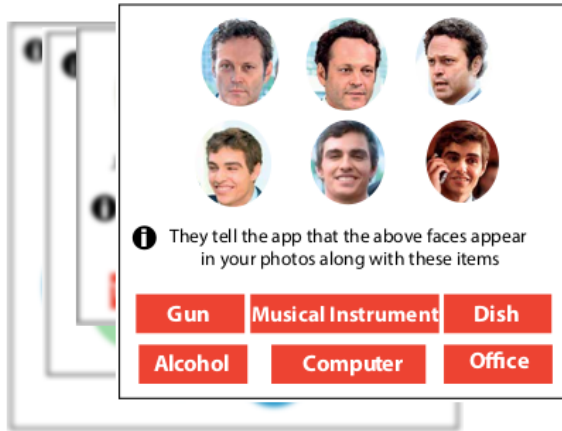
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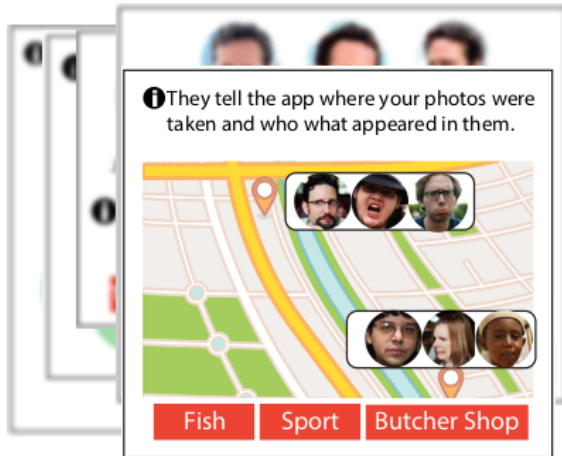
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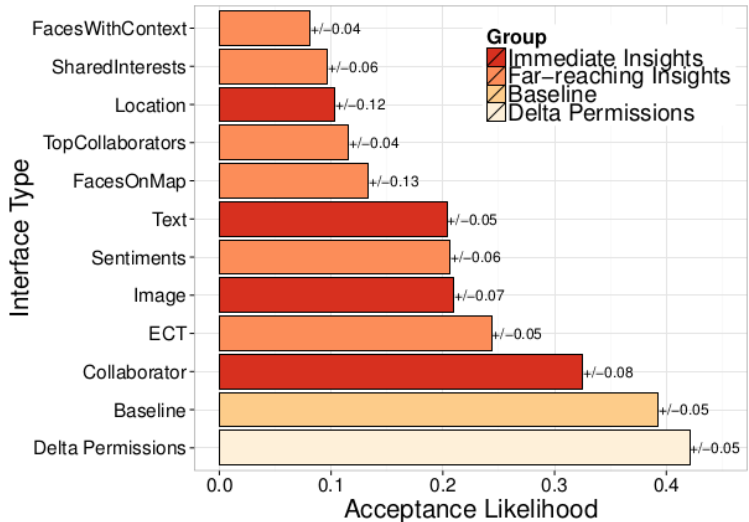
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210 participants

Four groups: DP (50), IM (54), FR (51), Control Group (55)

Procedure: Person confronted with an app and the wanted permissions  $\Rightarrow$  Would you install?





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# PrivySeal

App store developed by the authors

Focus on protection of the user's privacy

Three core feature

1440 registered users (effective 2016)

100 apps (effective 2016)

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# Current misbehaviour of developers: How have the permissions changed?

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Analysis 662 apps from three sources

Google Chrome Web Store: 159 apps

Other Google Web Stores : 66 apps

Outside of Google Web Stores: 437 apps

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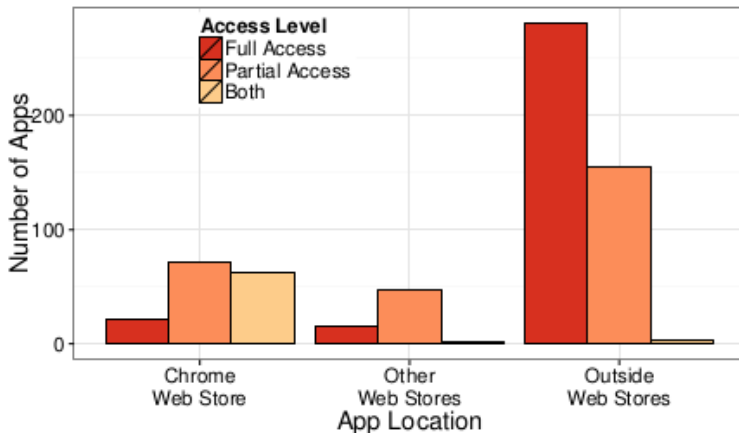
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# Current misbehaviour of developers: The importance of metadata

Analysis of the informations that can be gained by accessing the users metadata

200 registered users with each more than ten text files

"General Topics": 78 percent matches

"Specific Topics": 66 percent matches

"Concepts": 31 percent matches but 69 percent are mostly similar

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Use more granulated permissions

Add an overview to cloud platforms

Inform users about insights that could be gained

Add an additional API



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No further updates to PrivySeal App Store

Large scope  $\Rightarrow$  builds up to other papers

Cited seven times (acc. to google Scholar)

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- "If You Can't Beat them, Join them":  
A Usability Approach to Interdependent Privacy in  
Cloud Apps (H. Harkous, K. Aberer) about reducing  
privacy loss
- Data-Driven Privacy Indicators (H. Harkous, R.  
Rahman, K. Aberer)

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First version's ratings: 4/4/5, 4/4/3, 1/1/1

Shorter than the reviews we made

Two reviews have been very constructive and helpful

The last one was more of a judgement  $\Rightarrow$  not helpful

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# Thank you for your attention!

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- [2] Federal Trade Commission, *A Call for Transparency and Accountability*, <https://www.ftc.gov/system/files/documents/reports/data-brokers-call-transparency-accountability-report-140527databrokerreport.pdf>



- [3] Alexis C. Madrigal, *How Much Is Your Data Worth? Mmmm, Somewhere Between Half a Cent and \$1200*, <https://www.theatlantic.com/technology/archive/2012/03/how-much-is-your-data-worth-mmm-somewhere-between-h-254730/>
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- [5] <https://www.filecluster.com/howto/clear-dropbox-onedrive-google-drive-cache/>
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- [7] <http://www.hamzaharkous.com/modules/chat/client/img/hamza.jpg>