

# 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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Katharina Mulack,  
Simon Weidmann

Preface

New permission models

Permission model study

PrivySeal

Current misbehaviour of developers

Best practices

Influence

Reviews

- 1 Preface
- 2 New permission models
- 3 Permission model study
- 4 PrivySeal
- 5 Current misbehaviour of developers
- 6 Best practices
- 7 Influence
- 8 Reviews

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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

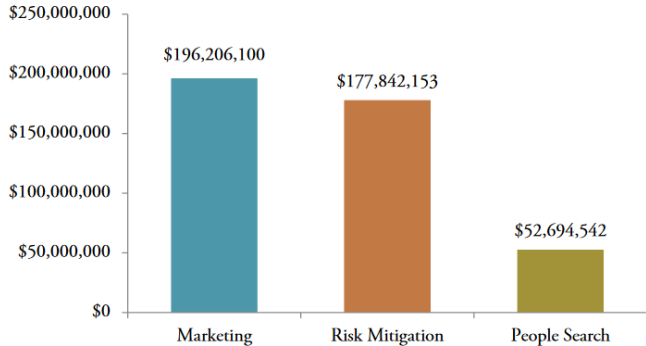
Best practices

Influence

Reviews

# Preface

# Revenue of 9 Key Data Brokers



[2]

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

Preface

New permission  
models

Permission model  
study

PrivySeal

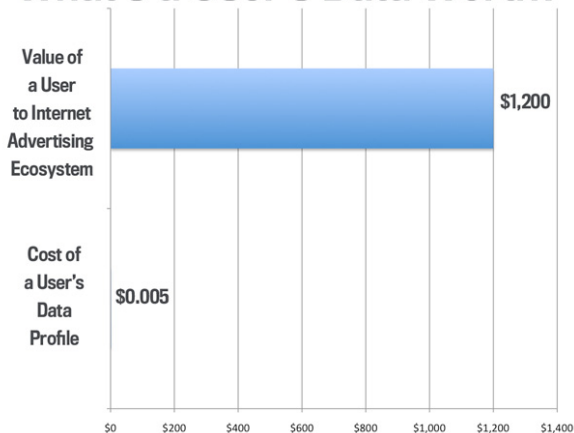
Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

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



[3]

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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

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

## Preface

New permission models

Permission model study

PrivySeal

Current misbehaviour of developers

Best practices

Influence

Reviews



[2]

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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews



# 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

[2]

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

Preface

New permission models

Permission model study

PrivySeal

Current misbehaviour of developers

Best practices

Influence

Reviews



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

## Preface

New permission models

Permission model study

PrivySeal

Current misbehaviour of developers

Best practices

Influence

Reviews



[2]

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

# New permission models

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

Preface

New permission models

Permission model study

PrivySeal

Current misbehaviour of developers

Best practices

Influence

Reviews

## 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. ⓘ

[1]

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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

## 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:



[1]

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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

## Far-reaching Insights (FR)

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

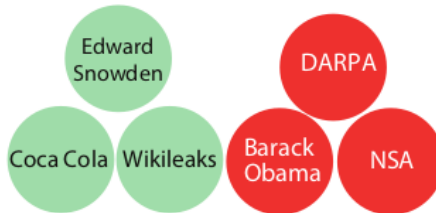




**i** They tell the app that you have the following views:

You're positive about:

You're negative about:





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

Preface

New permission models

Permission model study

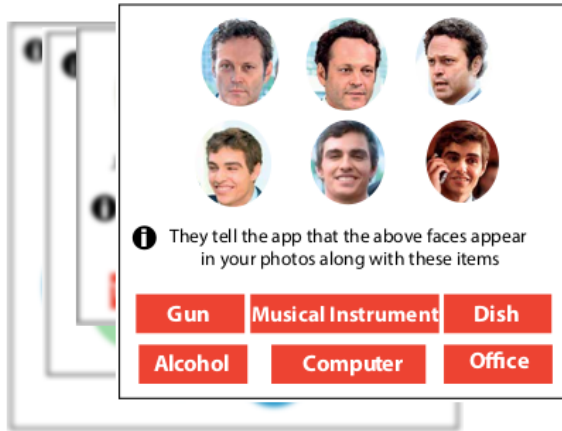
PrivySeal

Current misbehaviour of developers

Best practices

Influence

Reviews



[1]

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

Preface

New permission models

Permission model study

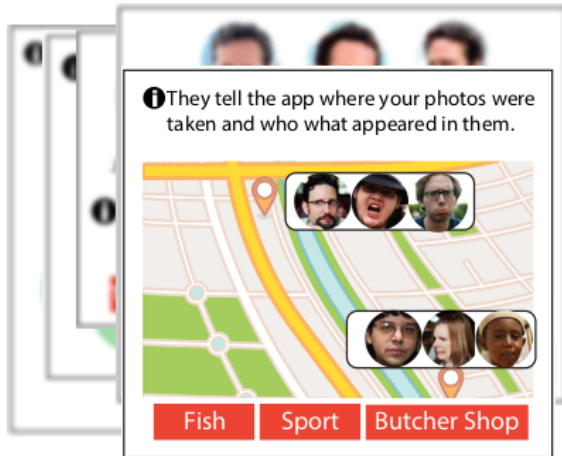
PrivySeal

Current misbehaviour of developers

Best practices

Influence

Reviews



[1]

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

# Permission model study

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

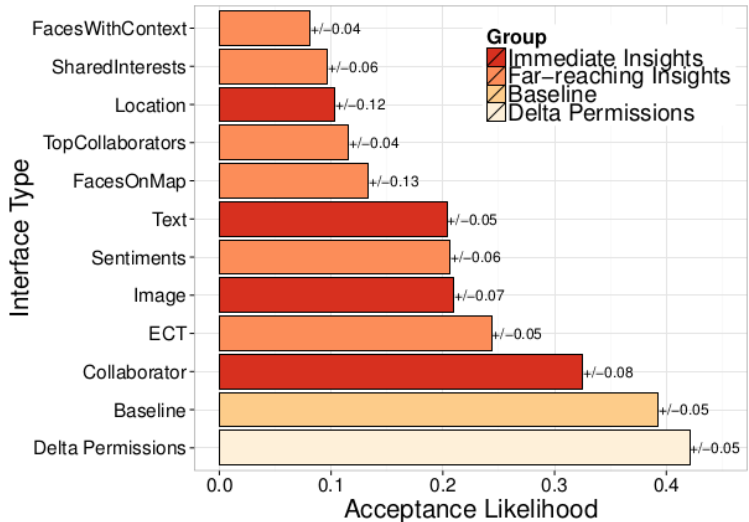
Influence

Reviews

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?





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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

# 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)

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

# Current misbehaviour of developers

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

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

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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

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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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

Preface

New permission  
models

Permission model  
study

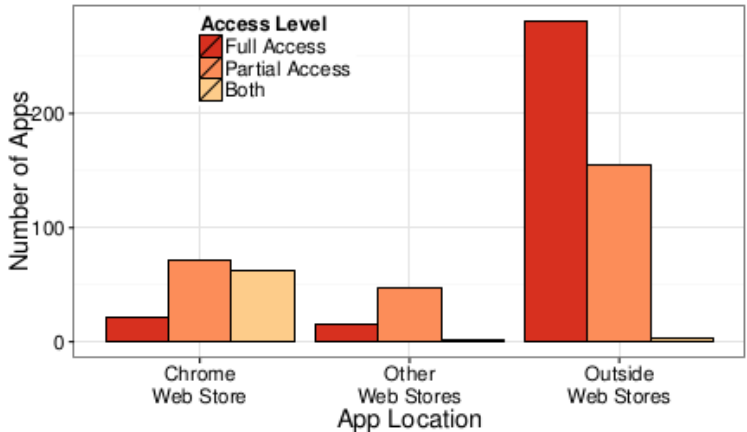
PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews



[1]

# 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

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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

# Best practices

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

Preface

New permission models

Permission model study

PrivySeal

Current misbehaviour of developers

**Best practices**

Influence

Reviews

Use more granulated permissions

Add an overview to cloud platforms

Inform users about insights that could be gained

Add an additional API



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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

# Influence

## 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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

**Influence**

Reviews

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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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Jens Becker,  
Katharina Mulack,  
Simon Weidmann

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

- 1 "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
- 2 Data-Driven Privacy Indicators (H. Harkous, R.  
Rahman, K. Aberer,)

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

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

# Reviews

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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the PDF Converter  
that Likes Mozart:  
Dissecting and  
Mitigating the  
Privacy Risk of  
Personal Cloud  
Apps"

Jens Becker,  
Katharina Mulack,  
Simon Weidmann

# Thank you for your attention!

Preface

New permission  
models

Permission model  
study

PrivySeal

Current  
misbehaviour of  
developers

Best practices

Influence

Reviews

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

Jens Becker,  
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Simon Weidmann

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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/>
- [6] <https://helpdesk.egnyte.com/hc/en-us/articles/201638914-Using-Egnyte-s-Google-Drive-Integration-L>
- [7] <http://www.hamzaharkous.com/modules/chat/client/img/hamza.jpg>