



Understanding Personal Data Practices in Everyday Life

日常生活における個人データの取り扱いの理解

Jack Jamieson, NTT Social Informatics Labs
2024.10.22

Computer Security Symposium 2024. 1A4: UWS招待講演



Jack Jamieson (ジャック ジェミソン)
NTT社会情報研究所 准特別研究員

専門分野) HCI, Computer-Supported Collaborative Work (CSCW)
人間とコンピュータの相互作用、コンピュータ支援協調作業

キーワード) Social well-being, collaboration, values and design, inclusion
社会的ウェルビーイング、協力、価値観とデザイン、
インクルージョン

経歴) After completing a PhD in Information from University of Toronto, I was a post-doctoral researcher at NTT Communication Science Labs, before becoming a staff researcher at NTT Social Informatics Labs.

トロント大学で情報学の博士号を取得した後、NTTコミュニケーション科学基礎研究所で博士研究員を務め、その後、NTT社会情報研究所で研究員として働きました。

Core message:

- We must investigate how technologies fit into people's everyday lives
- Surveys and interviews are a useful method (but imperfect)

Outline

1. My general perspective and important theoretical concepts
2. Recent studies investigating information practices with surveys and interviews
3. Reflection on strengths and weaknesses of our methods

People use technology in surprising ways

携帯小説



もしもキミが。

中学3年～冬①～

こんにちは。僕は秋山優基。突然ですが、世の中は偶然でできている。と、僕は思う。誰と出会うのも何が起きるにも偶然の連発だ。

僕は偶然今の母から生まれ偶然この高校までやってこれた。この高校は超が付く程レベルが低い。僕はこの高校にすら偶然入れたのだから、まあ僕の頭のレベルはわかってもらえるだろう

僕の外見ははっきり言うのも何だが、悪くないと思う。茶色のさらさらヘアはなかなかの人気だ。背も178と普通くらいはある。まあ告白も少しはされたほうだ。

こんな僕には彼女はいない
それは好きな子がいるからだ。その子は幼なじみで、隣の家に住んでる、冬本麻樹。彼女もまた彼氏はおらず、少くらしい恋のなめなめな関係だ。



Family relationships

家族関係

Long school/work hours

長時間の学校/仕事

To understand surprising uses of technology, we need to understand how the technology fits into people's daily lives

驚くべきテクノロジーの使い方を理解するには、日常生活への適合を把握する必要があります。

Literary culture

文学文化

Popular serialized media (漫画)

人気の連載メディア(漫画)

Mobile internet availability

モバイルインターネットの利用可能性

Not all “surprising” uses of technology are good



Crime/scams
犯罪/詐欺



「日本が寿司の消費を禁止へ」

Misinformation 誤情報

PW:
password1

MacBook Air

“Information practices” 情報の取り扱い

The ways people interact with
information are **embedded in work
and other social practices**

人々が情報と関わる方法は、仕事や他の社会的慣
習に組み込まれている

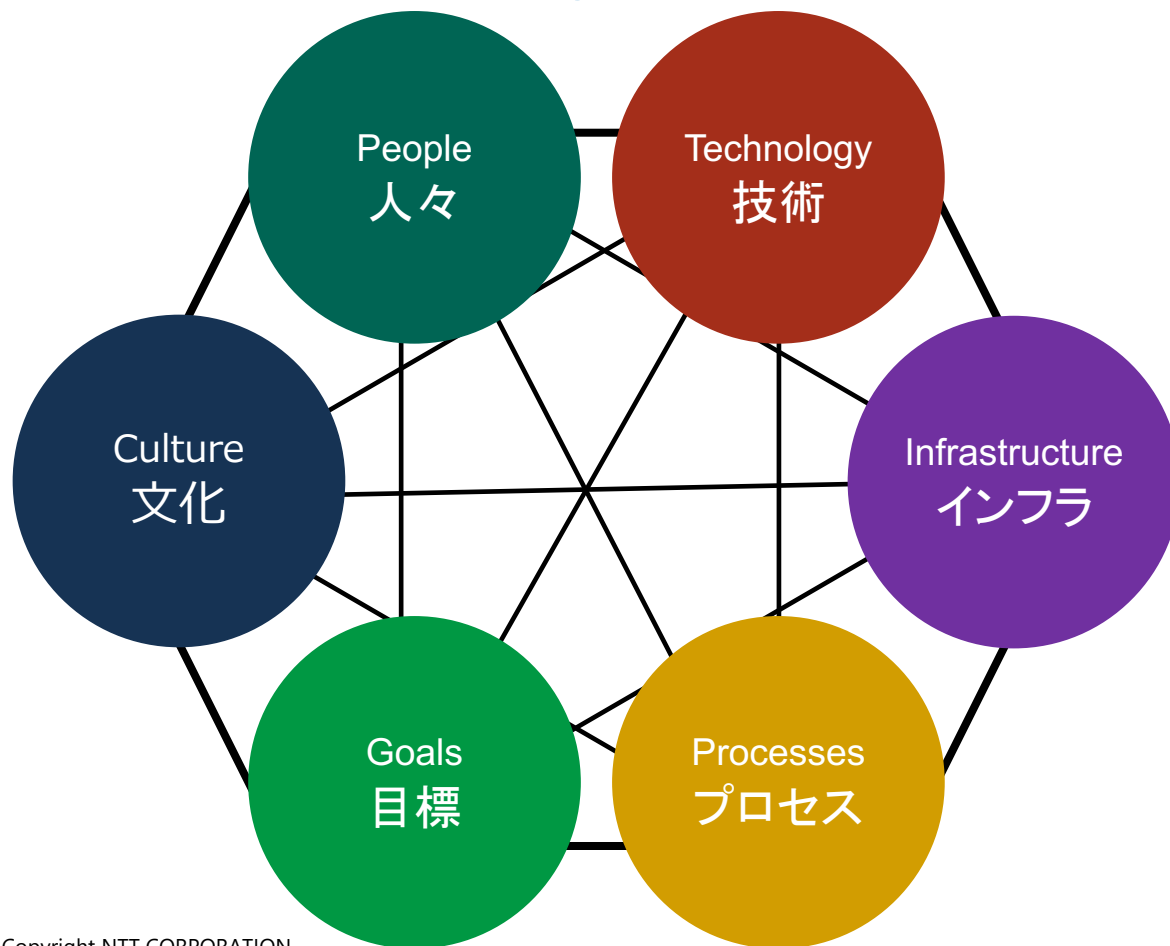
Savolainen, R. (2007). Information Behavior and Information Practice:
Reviewing the “Umbrella Concepts” of Information-Seeking Studies.

PW:

password1

MacBook Air

Socio-technical systems



Clegg, C., Robinson, M., Davis, M., Bolton, L., Pieniazek, R., & McKay, A. (2017). Applying organizational psychology as a design science: A method for predicting malfunctions in socio-technical systems (PreMiSTS). *Design Science*, 3, E6. doi:10.1017/dsj.2017.4

Power dynamics
権力関係

Technical
proficiency
技術的な習熟度

Data privacy
データ
プライバシー

Security policies:
セキュリティポリ
シー

Work
responsibilities
仕事の責任

Social norms
社会規範

Stress
ストレス

Supporting
infrastructure
支援インフラ

Language
言語

User
experience
ユーザー体験

Family
responsibilities
家族の責任

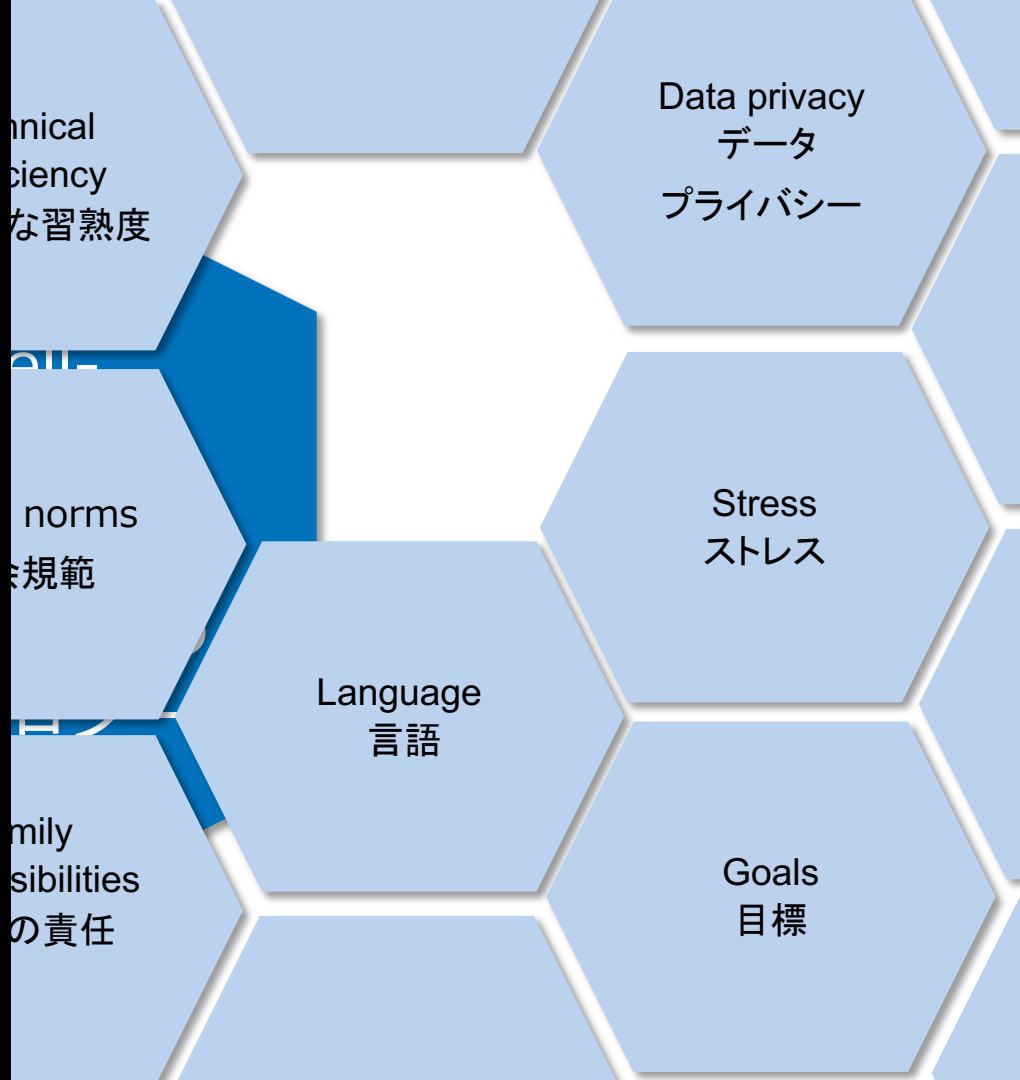
Goals
目標

Lucy Suchman

“Artful integration” 巧みな統合

Good design is not about an individual piece of technology.
The important part of design work is making a technology fit into a specific context.

良いデザインとは、個々の技術だけに
関わるものではない。デザイン作業の
重要な部分は、その技術を特定の文脈に
適合させることにある。



Power dynamics
権力関係

Security policies:
セキュリティポリ
シー

Work
responsibilities
仕事の責任

Supporting
infrastructure
支援インフラ

User
experience
ユーザー体験

Technical
proficiency
技術的な習熟度

Social norms
社会規範

Family
responsibilities
家族の責任

Well-designed
technology
優れた設計の
テクノロジー

Language
言語

Data privacy
データ
プライバシー

Stress
ストレス

Goals
目標

Recent projects about information practices in daily life

Overview of two studies



Main research questions:

Will people use these technologies as intended? Why or why not?

Contact Tracing Apps 接触確認アプリ

Study A: Japanese participants

Survey + interviews

Study B: USA participants

Survey

Data portability データポータビリティ

USA participants

Survey + interviews

技術受容と利用の統合理論

Performance expectancy パフォーマンス期待
どのくらい有用/効果的か？

Effort expectancy 努力期待
どのくらいの労力が必要か？

Social influence 社会的影響
周囲の人は使っているか、または勧めているか？

Facilitating conditions 支援条件
組織やインフラの支援はあるか？

Perceived trust 信頼認識
どのくらい信頼できるか？

Perceived risk リスク認識
どのくらいリスクがあるか？

Behavioral intention

行動意図

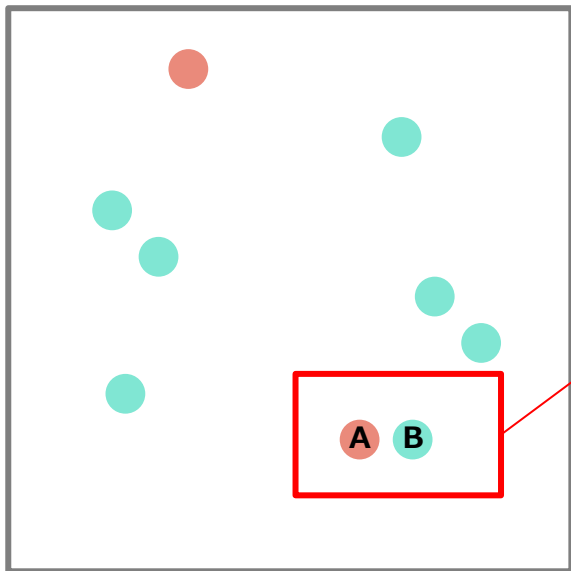
システムを利用する意図

Purpose of this model:

Which factors are most important to users?

Contact tracing apps

e.g., COCOA 



If **A** and **B** are close together for > 15 minutes, then **B** will receive a warning:

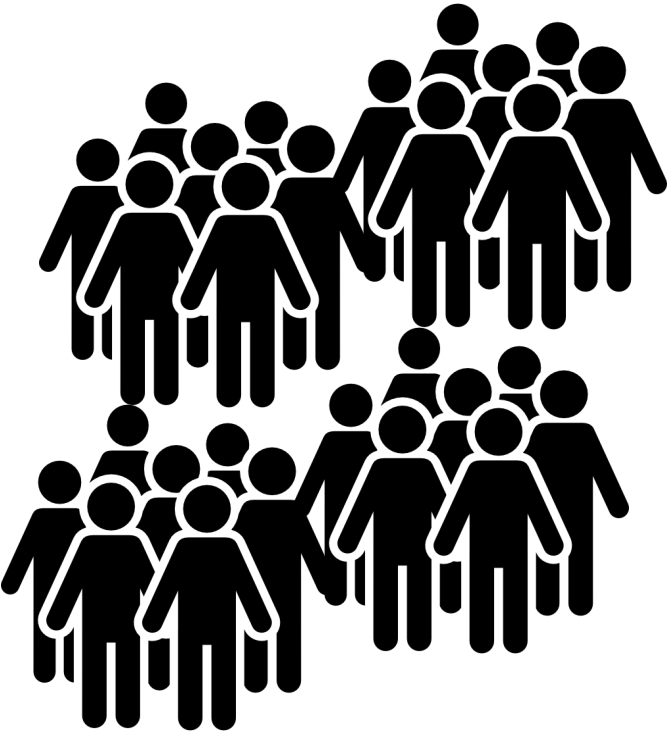
“You may have been exposed to COVID-19”

If...

- Both **A** and **B** had a contact tracing app installed AND **A** registered their infection information to the app.

 = No COVID

 = Tested positive for COVID



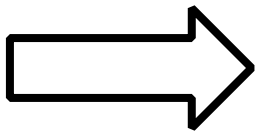
Digital contact tracing apps are more effective when more people use them, but adoption has generally been low.

Hinch et al., 2020, O'Neill et al., 2021



Digital contact tracing apps are more effective when more people use them, but adoption has generally been low.

Hinch et al., 2020, O'Neill et al., 2021



Governments targeted 60%
adoption

>70% **said** they would install

(Altmann et al. 2020)

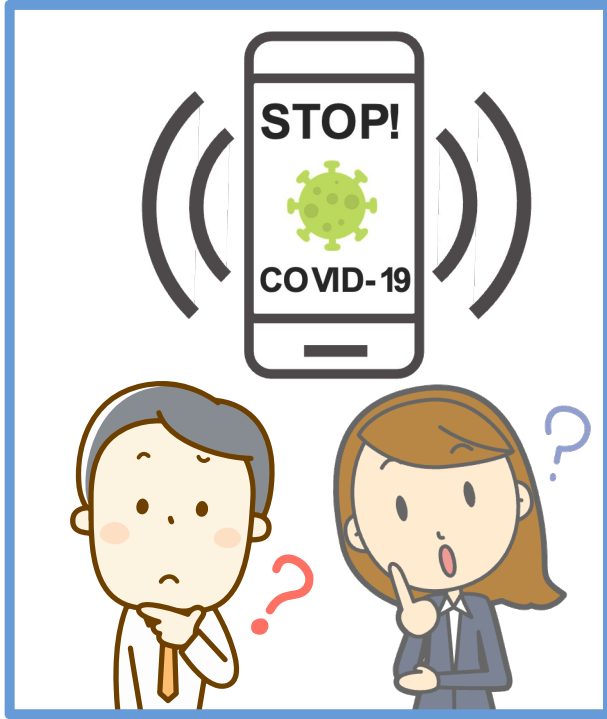
Actually installed

Globally: ~20%

USA: 14%

Japan 21%

(at time of these studies)

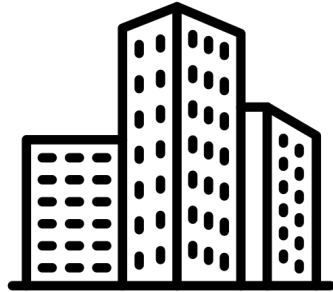


Many factors shape people's decisions to install and use a contact tracing app.

e.g., Altmann et al., 2020, Lu et al., 2021, Redmiles, 2020, Walrave et al., 2020



There is a gap in knowledge about how these apps fit into people's everyday lives.



Deciding If and How to Use a COVID-19 Contact Tracing App: Influences of Social Factors on Individual Use in Japan. Jack Jamieson¹, Naomi Yamashita¹, Daniel A. Epstein², Yunan Chen.² CSCW 2021

1: NTT. 2: University of California Irvine

Survey (N=153) and follow-up interviews (N=15)

RQs:

- What factors shape people's attitudes about installing and using a contact tracing app?
- What risks do participants encounter during the pandemic? How might COCOA relate to those risks?

Survey design:

- Ask about demographics
- Explain how COCOA works, then ask about impressions and intentions to use COCOA
- Ask about general life circumstances (e.g., work situation) and attitudes and behaviors regarding the pandemic (e.g., mask wearing)

Included open-ended questions

- e.g., “How do you think daily life is affected by installing COCOA?”
[open-ended]

Invited 15 survey participants to interviews

Purpose: Deeper insights into participants' feelings and impressions.

- Changes in daily life circumstances before/after the pandemic.
- More details about reasons for using or not using COCOA
- Asked participants to imagine how they would act:
 - If they got an exposure notification from the app
 - If they became sick with COVID-19.

RQ1: Factors shaping adoption decisions

People were less likely to install COCOA if they said:

- Installing this app would be difficult or inconvenient
OR = 0.04, 95% CI = 0.00, 0.32
- I don't know how to use the app
OR = 0.09, 95% CI = 0.01, 0.8

People were more likely to install COCOA if they said:

- I know at least one person who uses COCOA
OR = 18.39, 95% CI = 4.03, 83.88

People were less likely to register if they got infected if they said:

- I think using COCOA will increase my anxiety (不安)
OR = 0.02, 95% CI = 0.00, 0.12





Financial consequences 金錢的影響

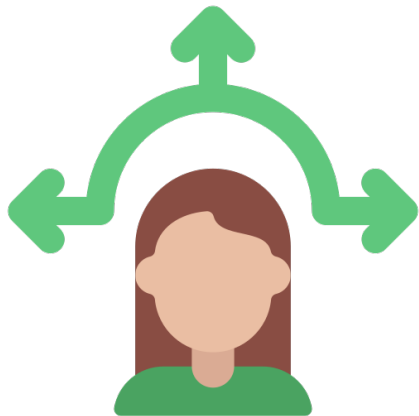
“I’m a little worried [about getting a notification] because I see in the news that people will lose their job when they disclose to the workplace.” (P15-S)

Social stigmatization 社会的烙印

“Since I live in the countryside, people will immediately identify who I am and the rumors after infection will be very serious. [. . .] I am more afraid of social obliteration than illness.” (P84-S)

Controlling the flow of information

情報の流れを管理する



“Whether or not to register my infection with COCOA would depend on my symptoms and affordability at the time of infection.” (P100-S)

“I was afraid of people’s eyes around me in case I got notifications, so I never opened the app in public places.” (P31-S)

Key takeaways 重要なポイント:



Social influence was very significant
社会的影響は非常に大きかった

Anxiety about the app was based in social contexts:
アプリへの不安は社会的な文脈に基づいていた :

e.g., fear of losing work 仕事を失う恐れ

e.g., fear of social stigma 社会的烙印の恐れ

Key takeaways 重要なポイント:



App designers' POV/アプリ設計者の視点:

Privacy means “Preventing unauthorized leaks of private data”

プライバシーとは「私的なデータの無許可な漏洩を防ぐこと」

Japanese users' POV/日本のユーザーの視点 :

Privacy means “Having control over how infection status is disclosed, and to whom”

プライバシーとは「感染状況が誰に、どのように開示されるかを自分で管理すること」

As technology providers, we can't solve this type of problem only within the app.

Users' perspectives were deeply connected to surrounding social structures, so we must think about how to “artfully integrate” the technology into users' social context.

テクノロジーの提供者として、私たちはこの種の問題をアプリ内で解決することはできません。ユーザーの視点は周囲の社会的構造と深く結びついているため、私たちは技術をユーザーの社会的文脈に「巧みに統合する」方法について考える必要があります。

Contact tracing apps: USA study



Unpacking Intention and Behavior: Explaining Contact Tracing App Adoption and Hesitancy in the United States. Jack Jamieson¹, Daniel A. Epstein², Yunan Chen², Naomi Yamashita¹. CHI 2022

1: NTT. 2: University of California Irvine

Survey (N = 290). Representative sample of USA residents.

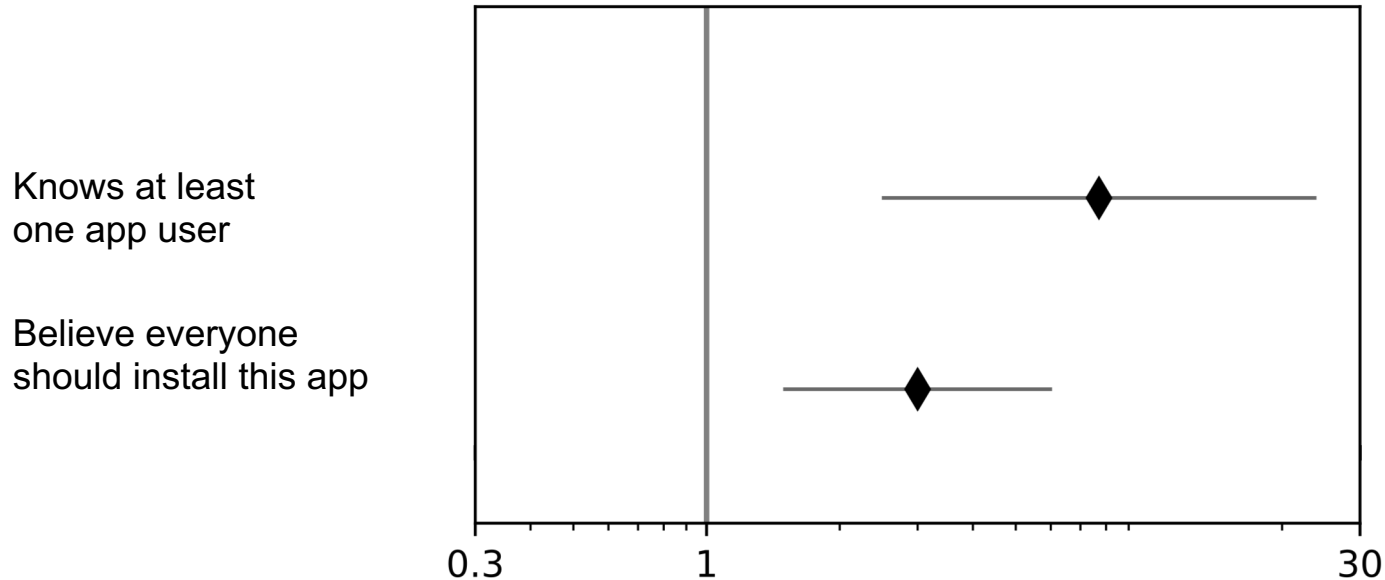
No follow-up interviews, but open-ended survey questions helped capture qualitative data.

Survey design:

- Basically the same as the Japanese survey
- Difference: In many U.S. States, there was no contact tracing app available. So, instead of introducing a specific app like COCOA, we described a hypothetical (仮説的な) app.
- 基本的には日本のアンケートと同じです。
- 違い：多くのアメリカの州では、接触確認アプリが利用できませんでした。そのため、COCOAのような特定のアプリを紹介する代わりに、仮説的なアプリを説明しました。

Social influence was the most important factor

**Logistic regression:
Did people install a contact tracing app?**



Odds ratios with 95% Confidence interval. Logarithmic scale.

Right: Logistic regression. (Selected results)

Social stigma (社会的烙印) was not a factor in the USA

Many Japanese participants talked about social stigma. USA participants did not.

Why?

- COVID-19 infections were more common in USA, so it was more “normal” to be infected → Not embarrassing or shameful.
- Compared to USA, Japanese culture has stricter attitudes about illness and about causing trouble to other people

So what?

- In Japan, “artful integration” means thinking carefully about how to avoid stigma. In the USA, this is probably not important.



Escaping the Walled Garden?

User Perspectives of Control in Data Portability for Social Media



Jack Jamieson



Naomi Yamashita

NTT Communication Science Laboratories
Kyoto, Japan

Presented at CSCW 2023



Platforms capture
user content in
“walled gardens”

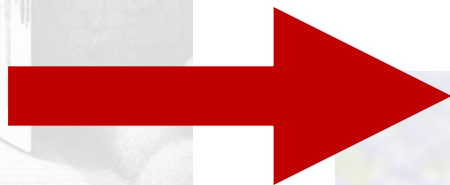


Platforms capture
user content in
“walled gardens”





Platforms capture
user content in
“walled gardens”



Data Portability



Data Portability

1

Receive data in machine readable format

データを機械可読形式で受け取ること。

2

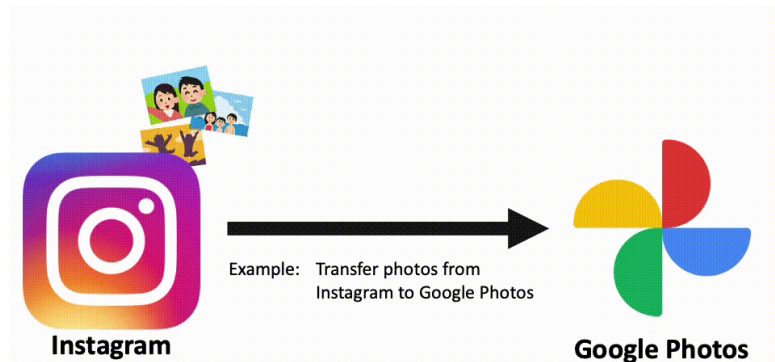
Transmit data to another platform

妨げなく別のプラットフォームにデータを送信すること。

3

Where feasible, transfer directly from platform to platform

可能な場合は、プラットフォーム間で直接データを転送すること。



Required by regulations:

e.g.,: GDPR in Europe; CPRA in California

Being implemented by major platforms

e.g., Data Transfer Project



Data Portability's Primary Goal:



- **enhance individual's control** over their personal data
- **'re-balance' the relationship between users and platforms**

-- European Commission

Our motivation:

Can data portability achieve this goal?



This study



Overarching RQ:

Do social media users feel that data portability can increase their control over their social media data?

Data collection:

Survey (N=295) + interviews (N=26) of USA social media users.

1. Current social media use and attitudes
2. Evaluate examples of data portability systems
3. Perceptions of how data portability will impact the future

Explaining data portability

Tutorial about using two data portability systems:

- (1) *Direct transfer system* (2) *Download transfer system*

Scenario:

Transferring photos from “Platform A” to “Platform “B”

Tutorial modelled after Facebook’s “Transfer your information” and “Download your information” tools

Survey: Data portability examples

Direct transfer system:

Transfer photos directly from
“Platform A” to “Platform B.”



Choose destination

Choose a destination based on what you want to transfer. In each destination you can see if they accept photos, videos, posts, notes, etc.

Choose destination



Destinations

All types

Photos

Videos

Posts

...

Platform B

Photos, Videos



Platform C

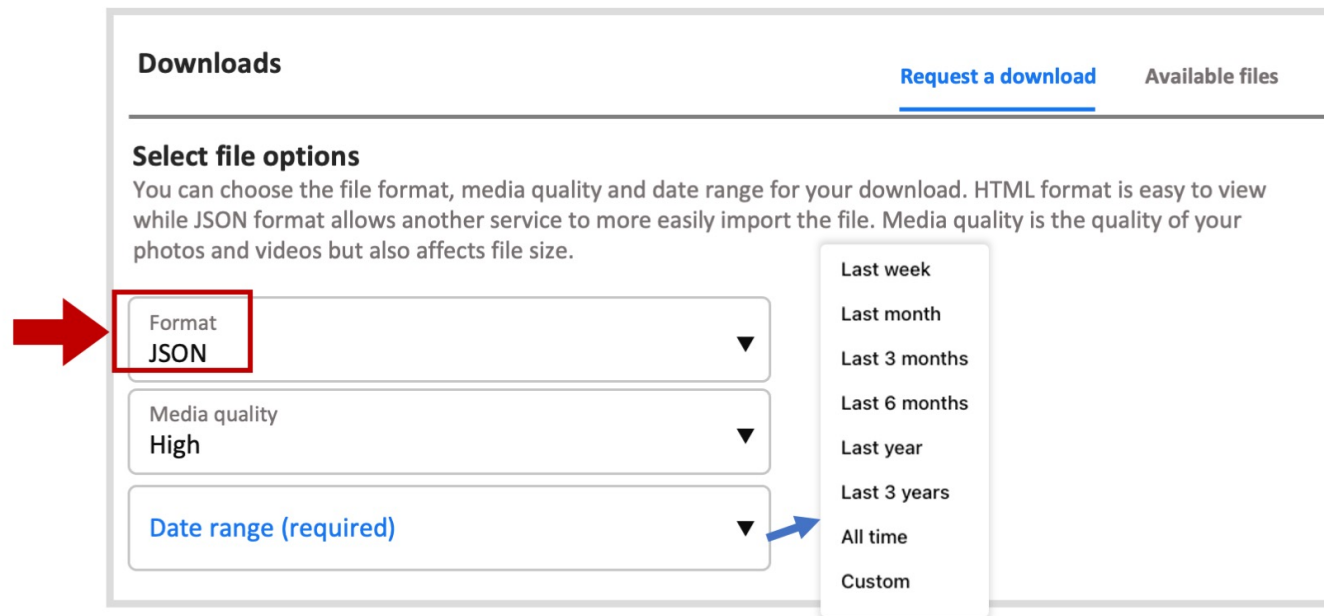
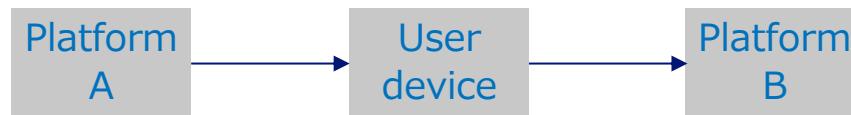
Posts, Notes

Platform D

Survey: Data portability examples

Download transfer system:

Download “Platform A” photos and metadata to computer, then upload to “Platform B.”



Downloads [Request a download](#) Available files

Select file options
You can choose the file format, media quality and date range for your download. HTML format is easy to view while JSON format allows another service to more easily import the file. Media quality is the quality of your photos and videos but also affects file size.

Format
JSON

Media quality
High

Date range (required)

- Last week
- Last month
- Last 3 months
- Last 6 months
- Last year
- Last 3 years
- All time
- Custom

A red arrow points to the 'Format' dropdown menu, which is currently set to 'JSON'. A blue arrow points to the 'Date range (required)' dropdown menu, which is currently open and showing a list of time ranges.

技術受容と利用の統合理論

Performance expectancy パフォーマンス期待
どのくらい有用/効果的か？

Effort expectancy 努力期待
どのくらいの労力が必要か？

Social influence 社会的影響
周囲の人は使っているか、または勧めているか？

Facilitating conditions 支援条件
組織やインフラの支援はあるか？

Perceived trust 信頼認識
どのくらい信頼できるか？

Perceived risk リスク認識
どのくらいリスクがあるか？

Behavioral intention

行動意図

システムを利用する意図

Selected findings

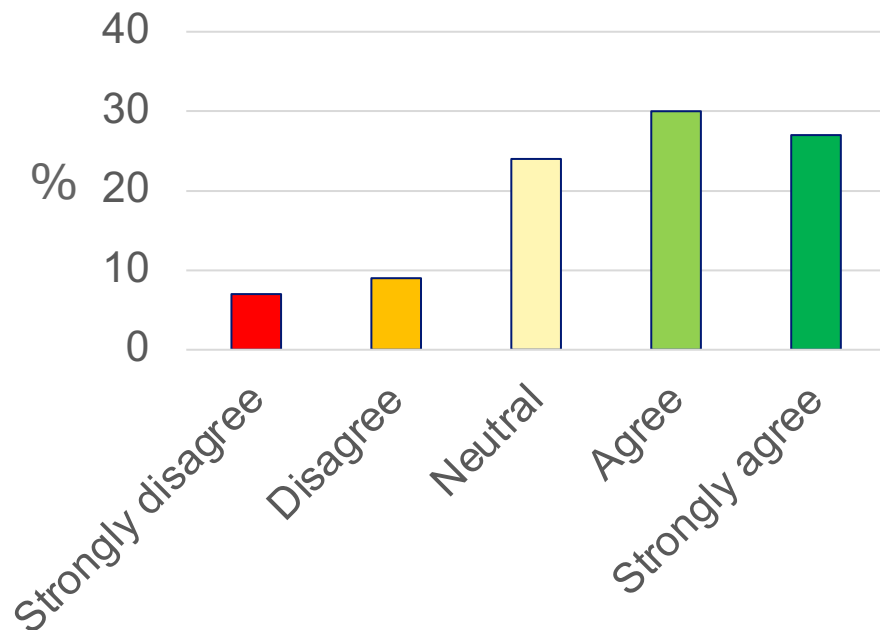
Findings: Increased feeling of control



現在: Lack of control over data
データに対する制御の欠如。

*“In control of getting it online? Yes.
In control of what happens after?
No. Absolutely not” [P15]*

Data portability would make
me feel **more in control** of
my online data:



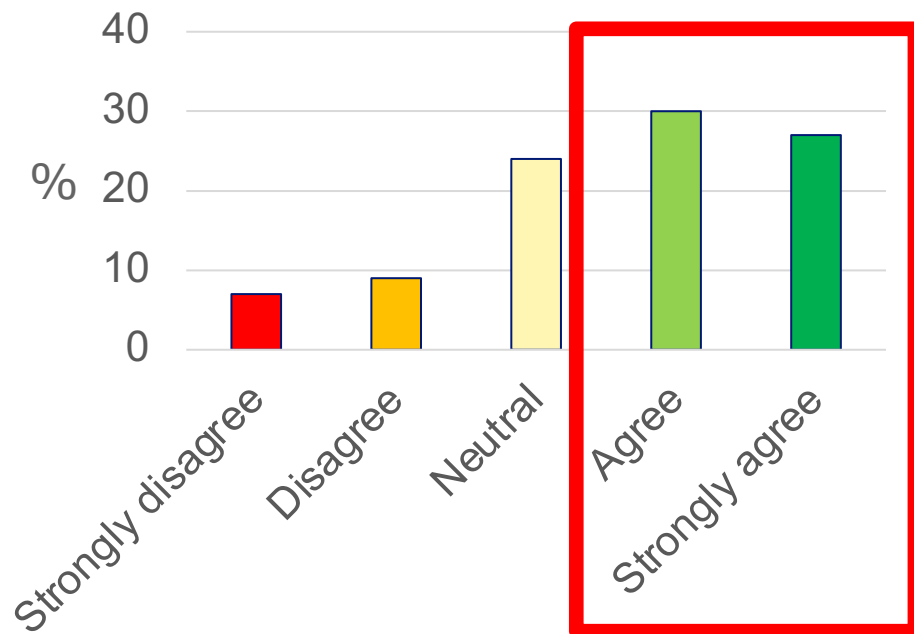
Findings: Increased feeling of control



現在: Lack of control over data
データに対する制御の欠如。

*“In control of getting it online? Yes.
In control of what happens after?
No. Absolutely not. ... it's the
price of admission” [P15]*

Data portability would make
me feel **more in control** of
my online data:



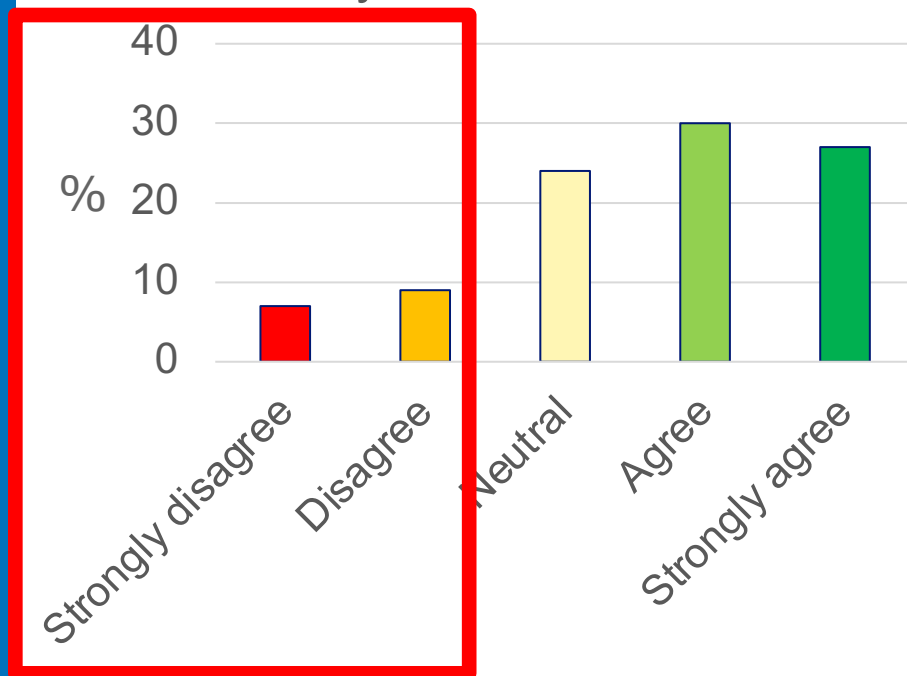
Findings: Increased feeling of control



現在: Lack of control over data
データに対する制御の欠如。

*“In control of getting it online? Yes.
In control of what happens after?
No. Absolutely not. ... it's the
price of admission” [P15]*

Data portability would make
me feel **more in control** of
my online data:



Findings: Increased feeling of control, But...



Just Convenience
ただの利便性。

*“Not much of a change.
It just makes it more
convenient to control
my data” [P12]*

Wrong type of control
間違った種類の制御。

*“I’m not out there
looking to join new
platforms and give them
all my information ... It’s
pretty much the
opposite of my mindset.”*

**Prefer not to transfer
data**

データを転送したくない。

*“I feel like a new
platform is like a new
start” [P06]*

Interviews identified specific limits to **data portability’s usefulness**
インタビューで、データポータビリティの有用性に関する具体的な限界
が明らかになった。

Social ties are vital



Social ties motivate switching
in the first place

ソーシャルつながりが、そもそも
切り替えの動機となる。

*“The real driver for whether or not
I’m going to move to a platform is:
If I go there, are my friends going
to be there? ... If they’re not, why
do I care about getting my data
moved over?” [P15].*

Importance of finding friends
after switching

切り替え後に友人を見つけることの
重要性。

*“When I tried new platforms with
some of my friends, one of the
things was how do we find each
other? ... We have to reach out ...
sometimes send private
messages on another platform”*

In social media, data portability should be **social**
ソーシャルメディアでは、データポータビリティは社会的であるべきだ。

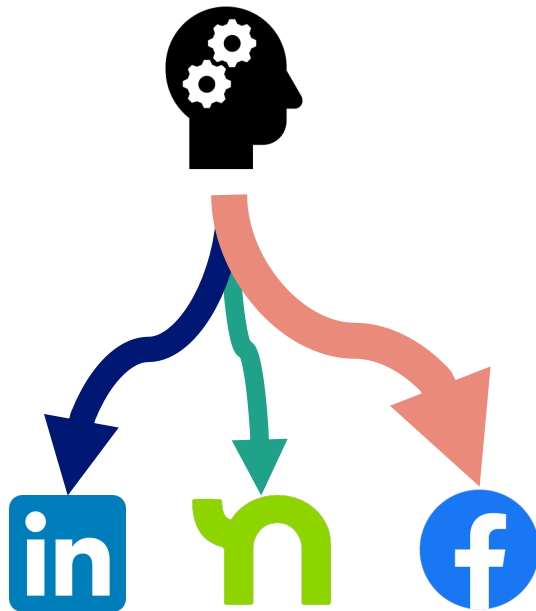
Findings: Importance of filtering data



Current filtering practices

現在のフィルタリングの実践。

“LinkedIn I’ll use for professional reasons. Facebook for personal reasons ...” [P10]



Filtering for data portability

データポータビリティのためのフィルタリング。

“It’s important to be able to have control over what is seen and what isn’t seen as you migrate over to a new platform because it may not be appropriate for that platform.” [P19]

Implication: Filtering data

The present:

Choose what to transfer

Photos



All your photos

Photos you uploaded can be found on your [profile](#).



Select date range



Specific albums...



None

[Facebook's "Transfer your information" tool]

The future:

Support users with automated filtering [1][2]

We've highlighted the content we think may be sensitive.

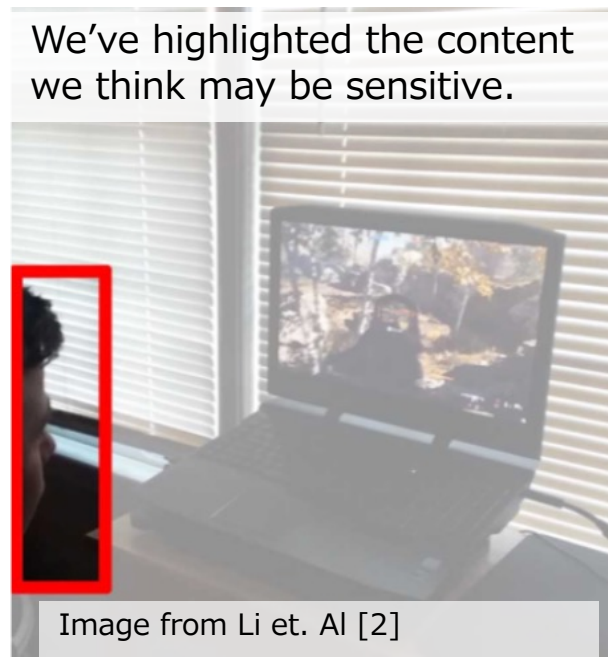


Image from Li et. Al [2]

[1] Vitale, F., Odom, W., & McGrenere, J. (2019). Keeping and Discarding Personal Data: Exploring a Design Space. Proceedings of the 2019 on Designing Interactive Systems Conference, 1463–1477.

[2] Li, Y., & Caine, K. (2022). Obfuscation Remedies Harms Arising from Content Flagging of Photos. Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems, 1–25.

Implication: Making data portability social

The present:

I want to transfer my **contact list**



users

No, transferring the **social graph** is a privacy risk



platforms

Result:

- Users rely on third-parties & workarounds (Bad UX; Privacy risk)
- Or users cannot transfer contact data

The future:

Designs should support both **Privacy** and **Portability**

Multi-party privacy is complicated!

Potential direction:

Group-level data portability

Coordinate transfer with a circle of peers

Current approaches to data portability are a step in the right direction, but there is room for improvement.

現在のデータポータビリティへのアプローチは正しい方向への一歩だが、改善の余地がある。

Looking closely at current everyday social media use can help reveal directions for better data portability.

現在の日常的なソーシャルメディアの使用を詳しく見ることで、より良いデータポータビリティへの方向性が見えてくる可能性がある。

Reflections on these projects

All of our studies highlighted that social influence is extremely important

- What do people around me think?
- Are my friends using this tech? Can I use it with them?
- Are there social risks if I use this tech?

- As designers and technology providers, we cannot change social influence directly.
- But if we understand how social influences affect a technology, we can adjust the technology to:
 - avoid social risk
 - increase social reward
 - encourage healthy social connections

Understanding social influence can help us fit the technology into users' everyday life circumstances

Strengths of our approach



- Participants are experts on their own lives. Let's listen to them!
- Surveys are fast and cheap
- Reach many people → Diverse, representative sample
- Surveys identify overall trends, and interviews/open-ended questions provide deeper qualitative insights

Weaknesses of our approach

- Self-report data: Actual behavior may be different from what people say
- We can clearly explain a technology, but people cannot actually interact with it through a survey
- Cross-sectional method: We did not explore how attitudes evolve over time
- This approach can help identify new design ideas, but additional work is needed to validate them

- **Follow-up studies** could evaluate if opinions have changed over time
- **Testing prototypes** is needed to evaluate proposed designs
- **Co-speculation and co-design** can help get deeper insights from participants. But, it is difficult to do with a large sample.

See UWS 2023 talk - 北崎 允子「データ利活用の未来のあり方を市民共創でデザインする—Co-Speculationの挑戦」



ありがとうございます！

Understanding Personal Data Practices in Everyday Life
日常生活における個人データの取り扱いの理解

Jack Jamieson, NTT Social Informatics Labs
2024.10.22

Computer Security Symposium 2024. 1A4: UWS招待講演