The (Un)usual Suspects –
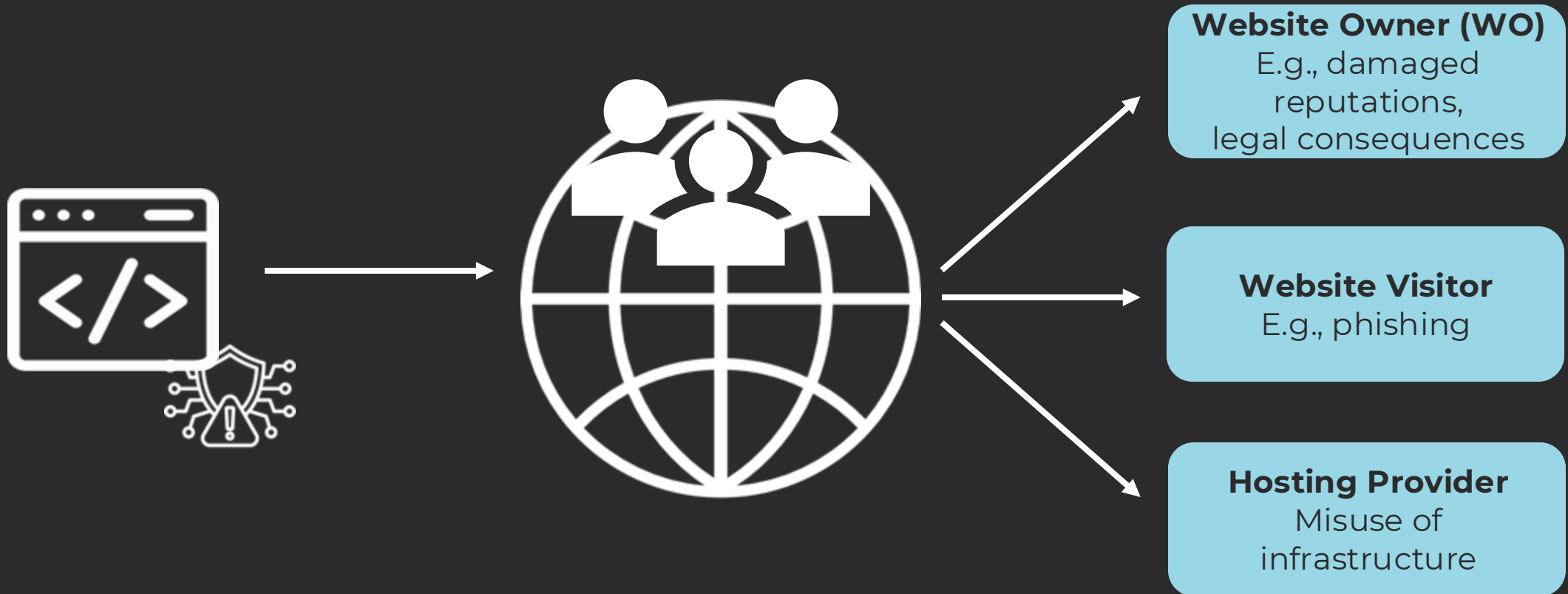Studying Reasons for Lacking Updates
in WordPress

Maria Hellenthal, *Lena Gotsche, Rafael Mrowczynski, Sarah Kugel,*
Michael Schilling, and Ben Stock

CMS Vulnerabilities: A Serious Risk

Website Owner (WO)
E.g., damaged reputations,
legal consequences

Website Visitor
E.g., phishing

Hosting Provider
Misuse of infrastructure

Maria Hellenthal - The (Un)usual Suspects

The Problem of Outdatedness & Research Question

The most effective way to reduce these risks
is to keep systems up-to-date.

Yet, over half of all CMS installations are outdated.

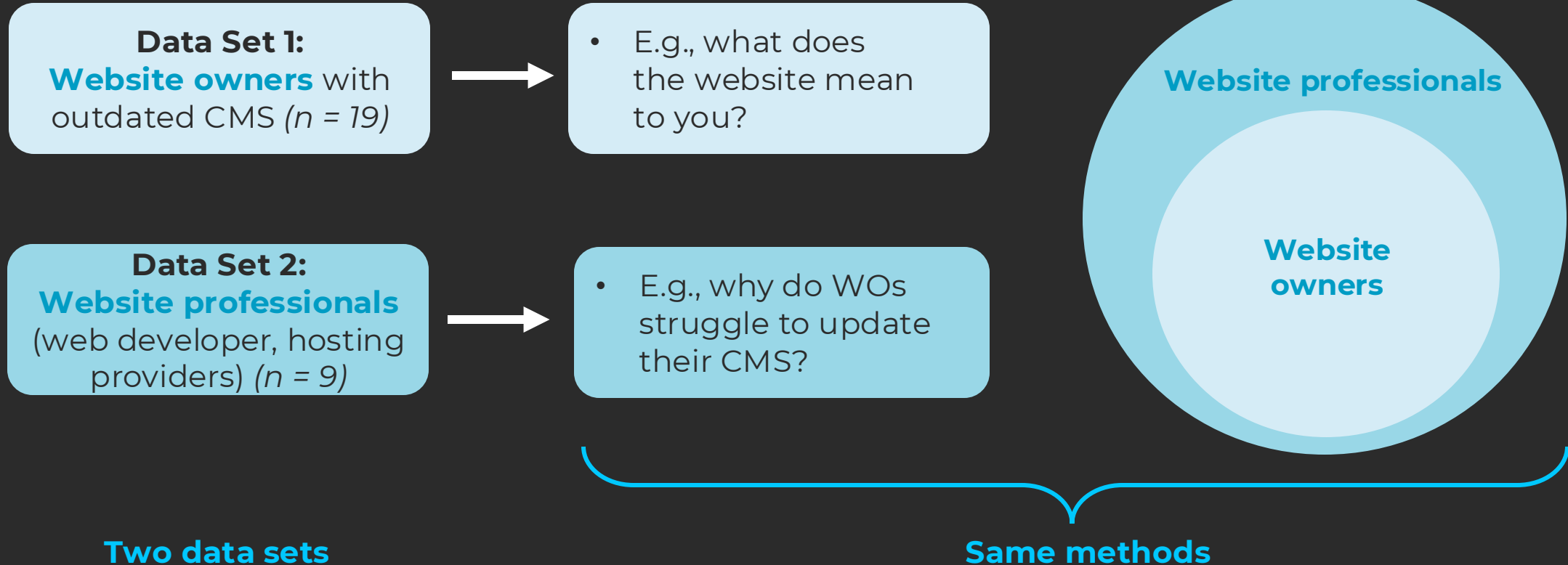**RQ**: Why do many website owners not update their CMS?

Maria Hellenthal - The (Un)usual Suspects

Methods: Grounded Theory-Based Study Design

Data triangulation

Semi-structured interviews

Grounded Theory-inspired data analysis

Data Set 1:
Website owners with outdated CMS *(n = 19)*

➔

- E.g., what does the website mean to you?

Data Set 2:
Website professionals (web developer, hosting providers) *(n = 9)*

➔

- E.g., why do WOs struggle to update their CMS?

Website professionals

Website owners

Two data sets

Same methods

Maria Hellenthal - The (Un)usual Suspects

Findings: Key Categories

Value of the Website

Delegation

Threat and Risk Awareness

Perception of Update Risks

Technical Competence, Understanding and Skills

Update Costs

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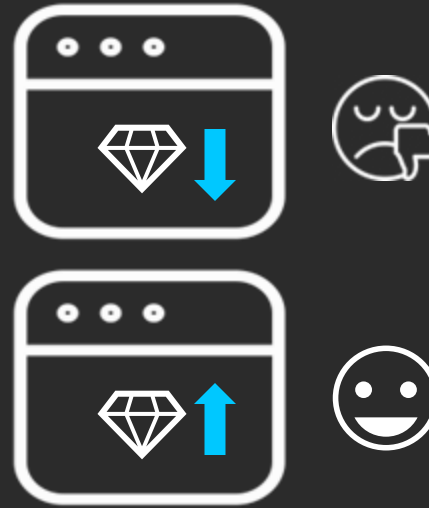Technical Competence, Understanding and Skills

Update Costs

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Findings: Value of the Website

Many participants did not value their website at all.

For others, the importance of their website was high or even very high.

Solving the puzzle: Why do website owners who do value their website not update?

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Findings: Delegation

The majority of participants delegated some tasks to collaborators

Dimensions of Delegation

1. Delegation Pattern

2. Formalization Degree

3. Coverage of Delegation

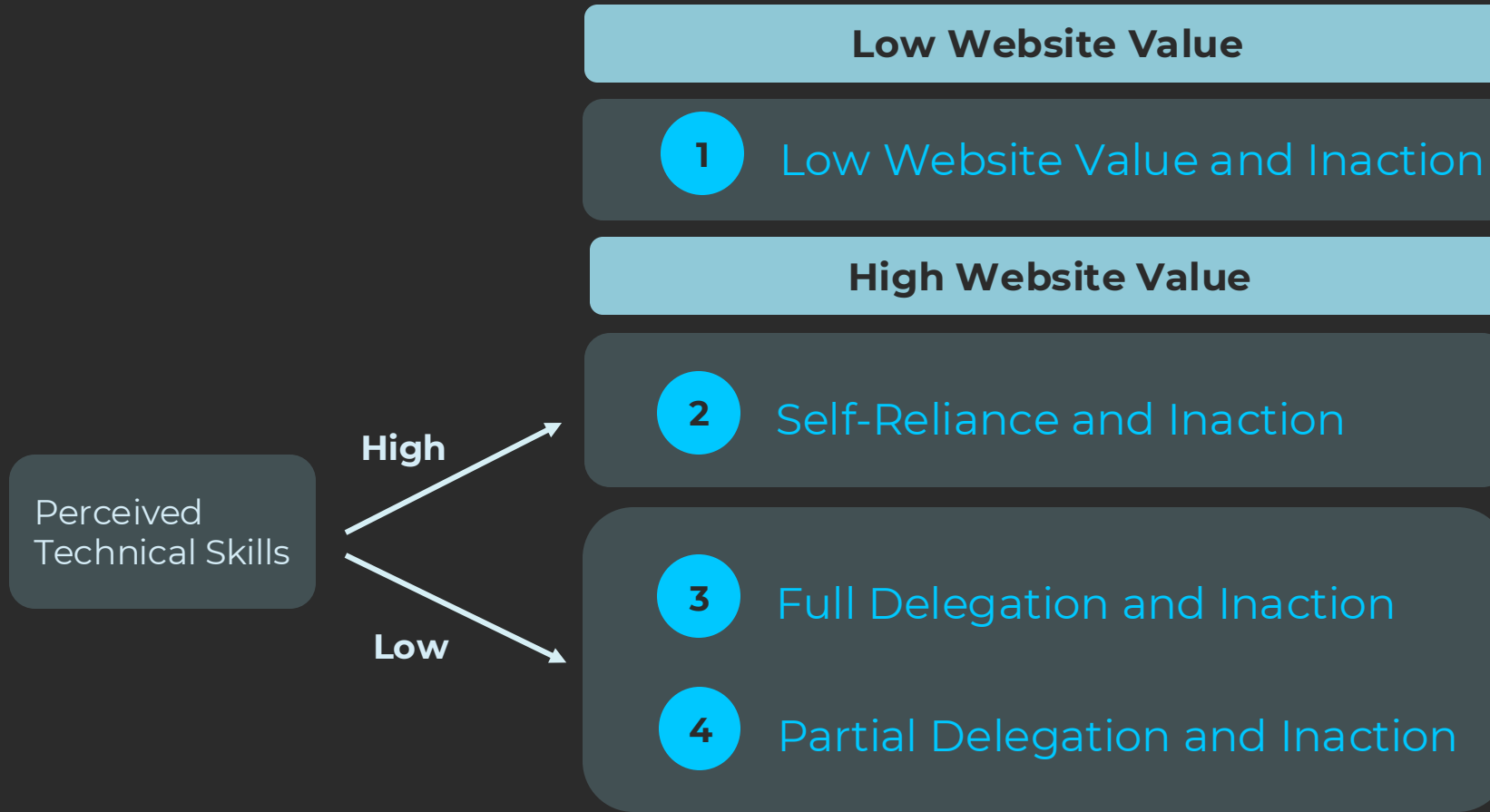4. Communication Pattern

Responsibility Diffusion

Disabling

Inhibition to Reach Out

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A Framework of Barriers Preventing CMS Updates

4 Non-Update Scenarios

Low Website Value

1 Low Website Value and Inaction

High Website Value

2 Self-Reliance and Inaction

3 Full Delegation and Inaction

4 Partial Delegation and Inaction

Perceived Technical Skills

High

Low

Implications for Remediation Activities

Low Website Value

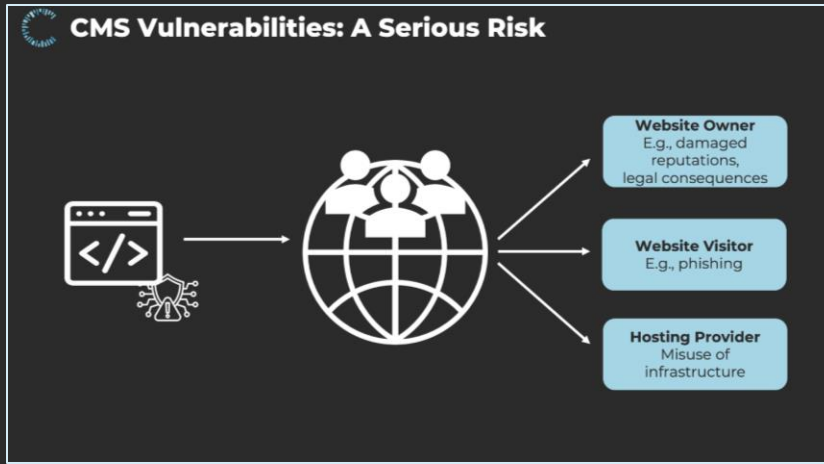Even the best-crafted vulnerability notification may fail

High Website Value

Communication (e.g. via VN emails) might be effective if:
- (All) the risks are communicated
- It states that the WO is responsible and accountable
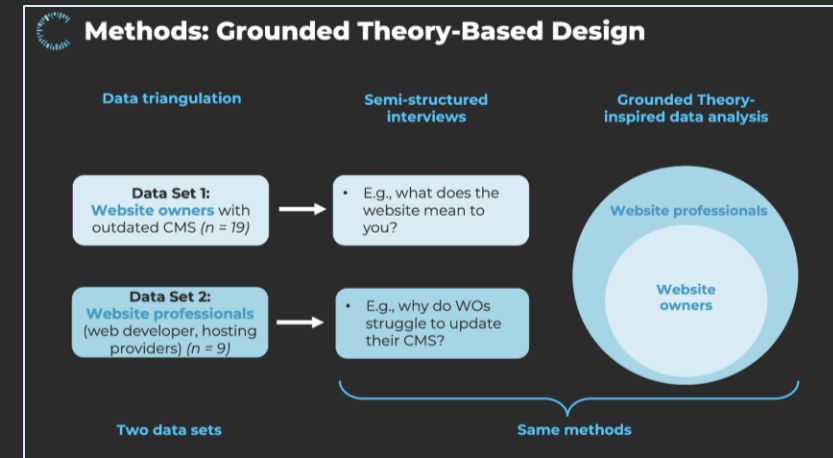- It states that technical support may be appropriate

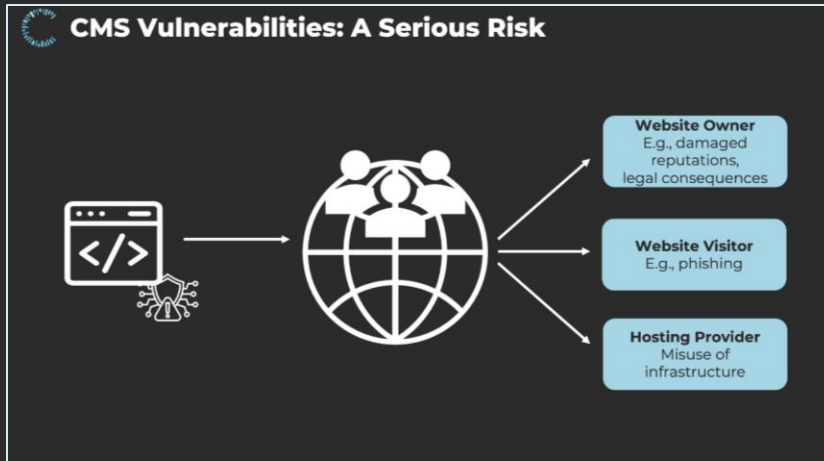Maria Hellenthal - The (Un)usual Suspects
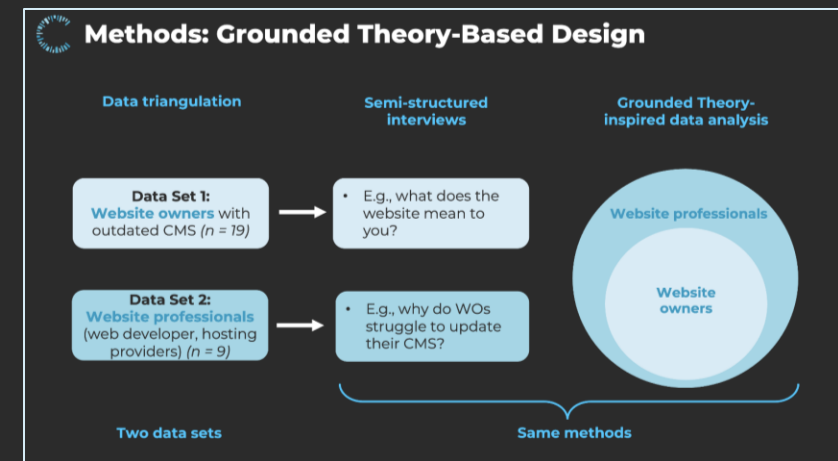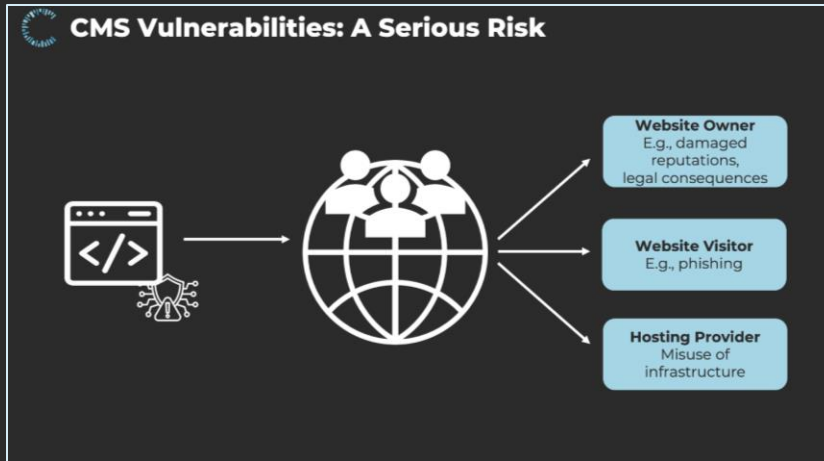
Summary – let's discuss

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- E.g., why do WOs struggle to update their CMS?

Website professionals

Website owners

Two data sets

Same methods

Summary – let's discuss

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Website professionals / Website owners

Two data sets — Same methods

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Perceived Technical Skills

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Let's discuss!
Maria Hellenthal
hellenthal@cispa.de
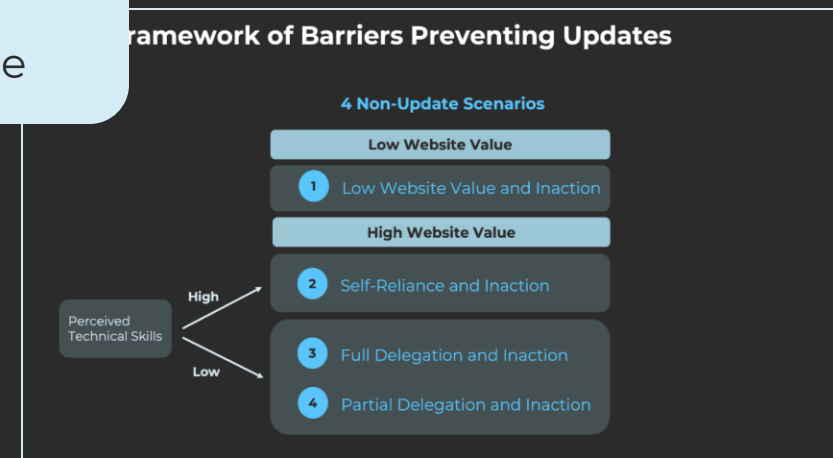
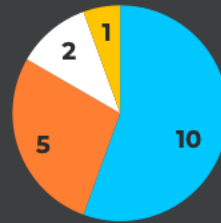# Data Sets

Website owners

Website professionals

Participants

- n = 19 (8 female)

- n = 9 (all male)
- Self-reported IT-professionals
- 8 web developers, 1 hosting provider

Websites

Website Types

- Business
- e-commerce
- Charity
- Private Hobby

Values shown: 10 (Business), 5 (e-commerce), 2 (Charity), 1 (Private Hobby)

- WP-versions outdated for: 0.5 – 8 years (all with known vulnerabilities)

- Websites created using CMS: 5-120