

# How Cloud Providers Elicit Consumer Requirements

## An Exploratory Study of Nineteen Companies

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**University of  
Zurich** <sup>UZH</sup>

**RE'13**  
**July 17, 2013**

**Requirements  
Engineering  
Research  
Group**











**THE CLOUD IS COMING**



**THE CLOUD IS COMING**



**How do cloud providers  
elicit consumer  
requirements?** 🌐



**What's new**

**Method**

**Findings**

**Discussion**

**What's new**

**Method**

**Findings**

**Discussion**























# Globally distributed





# Globally distributed Heterogeneous





# Globally distributed

# Heterogeneous

# No local market





**Globally distributed**  
**Heterogeneous**  
**No local market**  
**Frequent change requests**





**Globally distributed**

**Heterogeneous**

**No local market**

**Frequent change requests**

**Volatile requirements**



**Globally distributed**

**Heterogeneous**

**No local market**

**Frequent change requests**

**Volatile requirements**

**Young age of the cloud**

**How do cloud providers  
elicit consumer  
requirements?** 🌐



What's new

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Discussion

# **Our Approach: Qualitative Research**

**Semi-structured  
interviews**

# **Our Approach: Qualitative Research**

**Semi-structured  
interviews**

**19**

**Providers**

# Our Approach: Qualitative Research

**Semi-structured  
interviews**

**26**

**Respondents**

**19**

**Providers**

# Our Approach: Qualitative Research

**Semi-structured  
interviews**

**10**

**Countries**

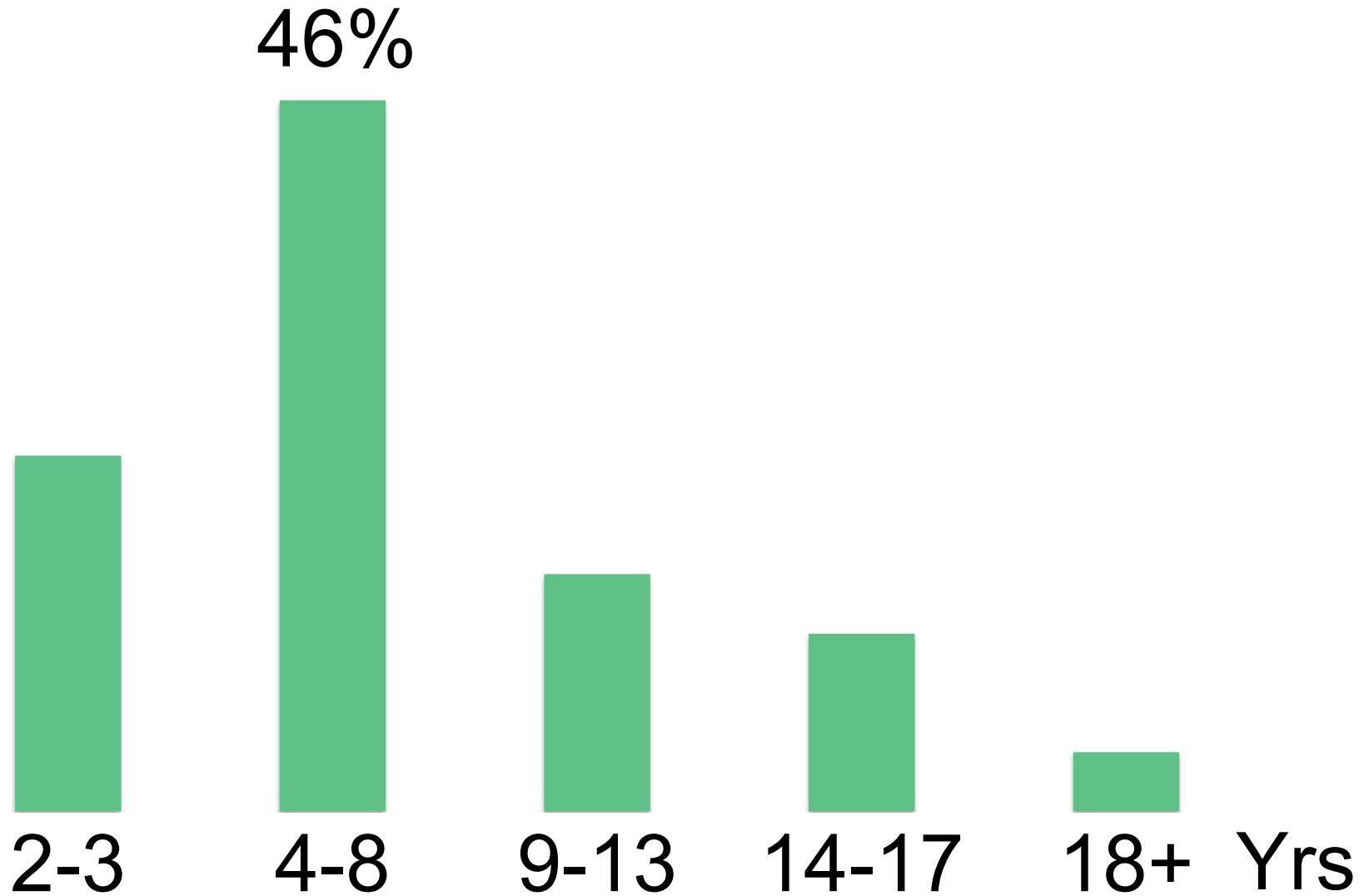
**26**

**Respondents**

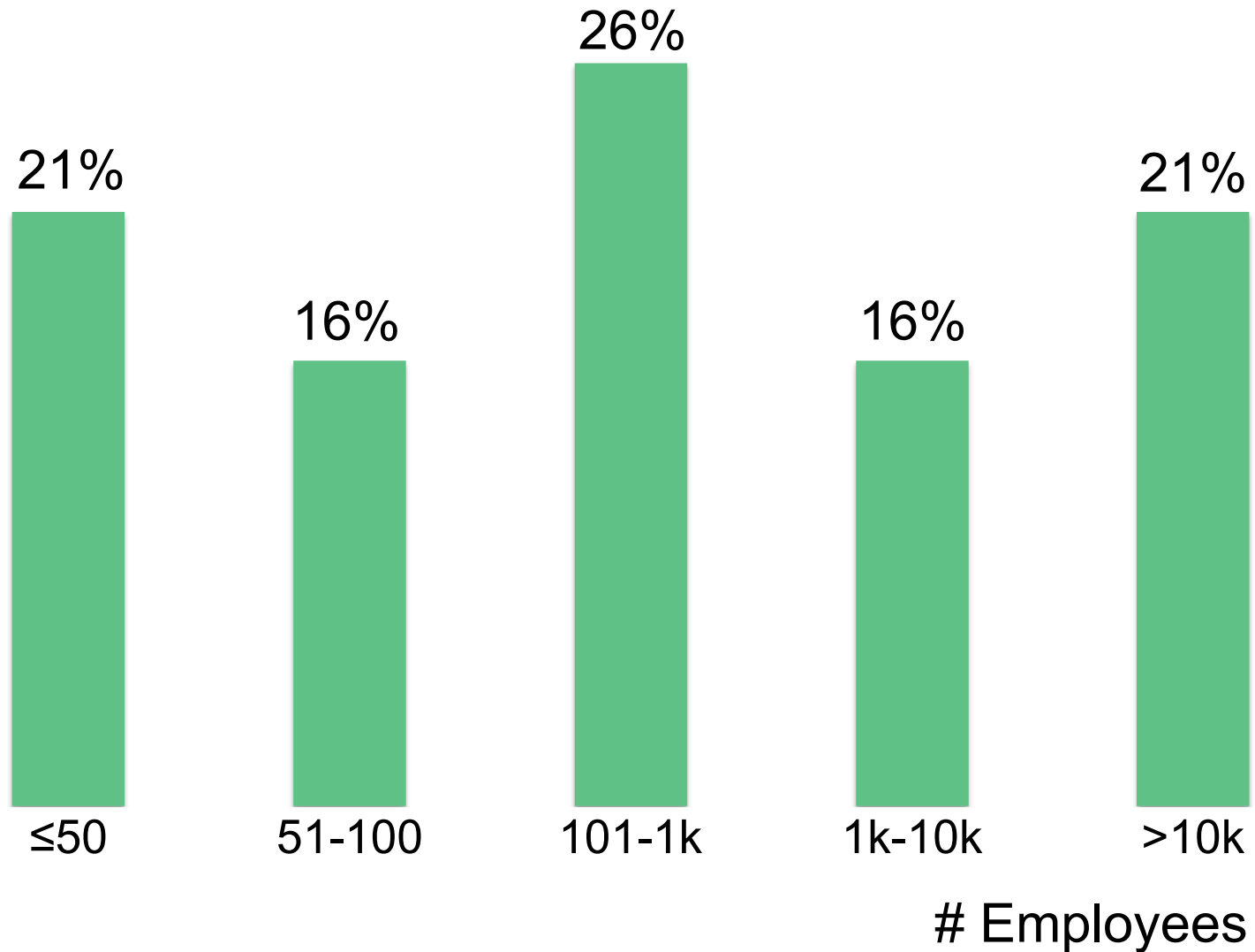
**19**

**Providers**

# Respondents' RE Experience



# Company Size





What's new

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# Most Popular Elicitation Methods

## A Traditional

- A1 Questionnaires
- A2 Surveys
- A3 Interviews
- A4 Documentation Analysis

## D Model-Driven

- D1 Scenarios
- D2 KAOS
- D3 i\*

## B Group Elicitation

- B1 Brainstorming – externally
- B2 Brainstorming – internally
- B3 Focus Groups
- B4 RAD/JAD Workshops

## E Cognitive

- E1 Protocol Analysis
- E2 Laddering
- E3 Card Sorting
- E4 Repertory Grids

## C Prototyping

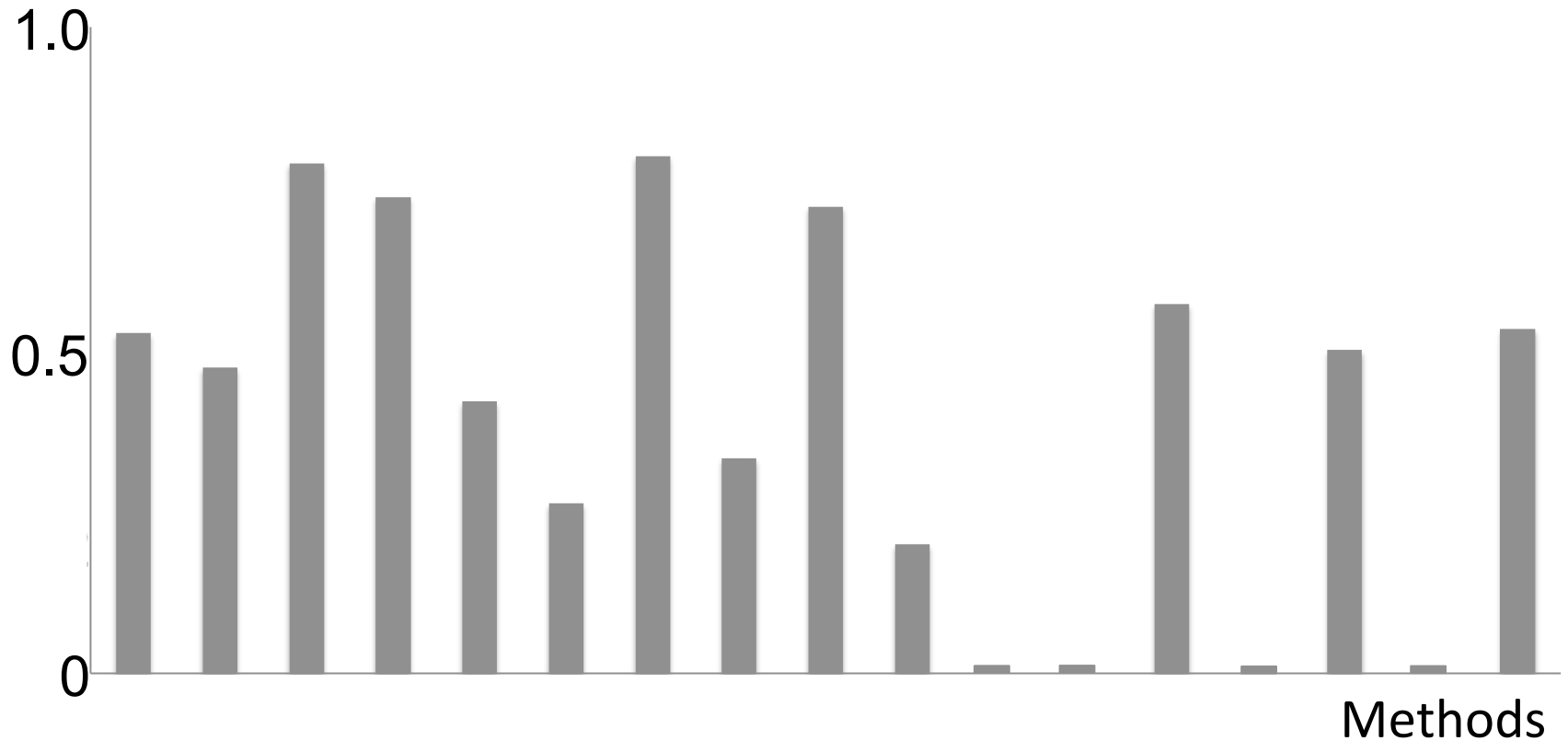
## F Contextual (Ethnography)

# Most Popular Elicitation Methods

$$\text{Importance}(i) = \frac{N_{f,i}(i)}{N_f(i)}$$

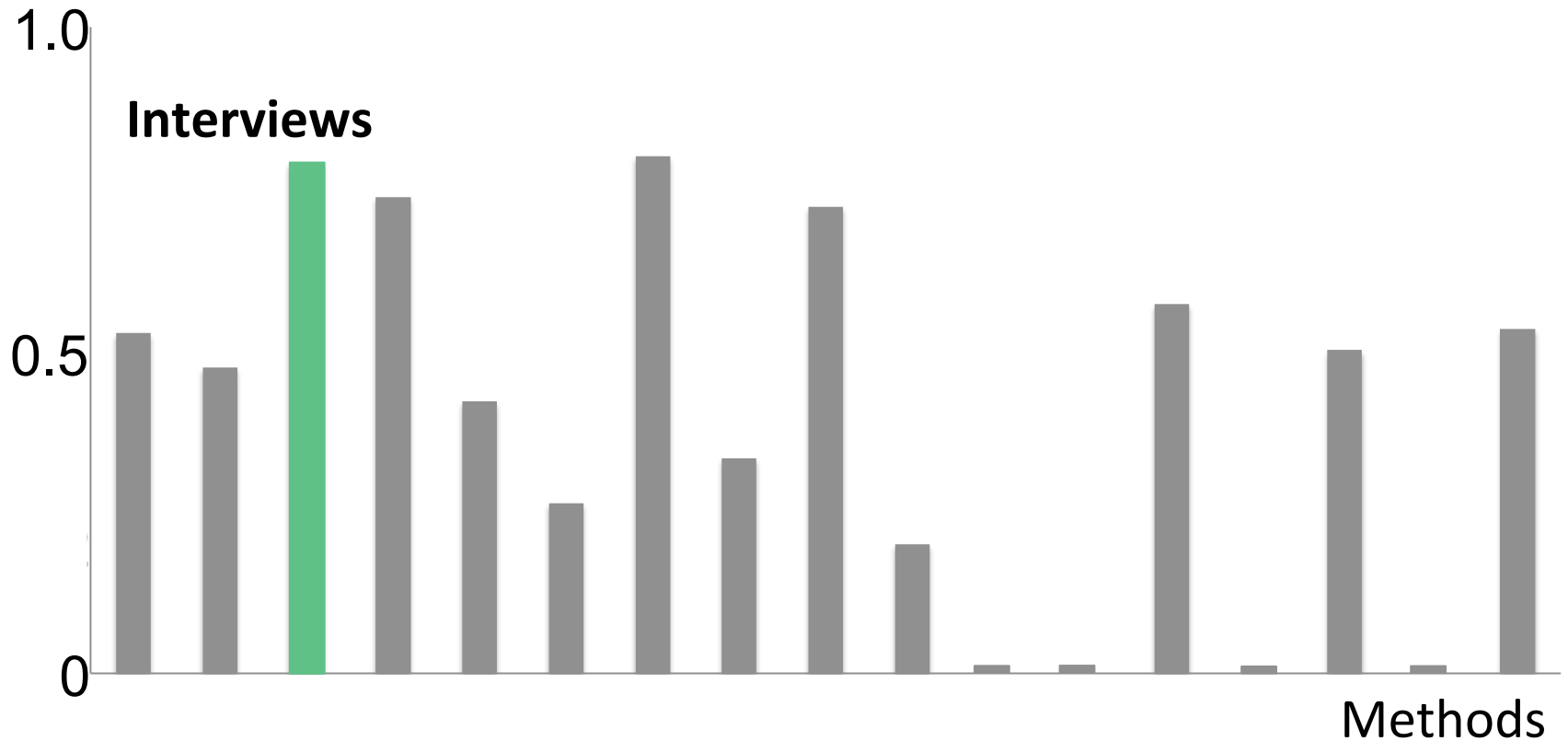
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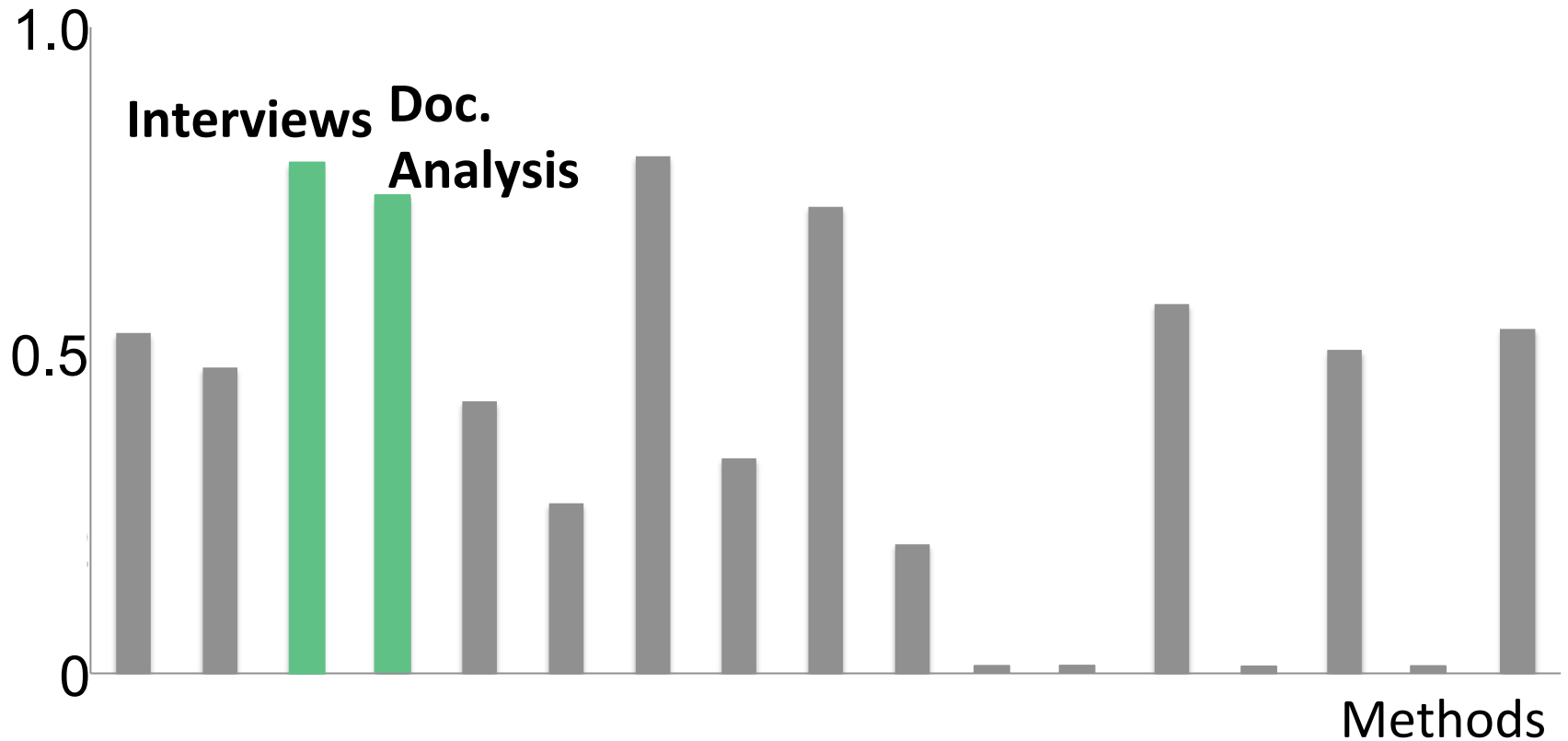
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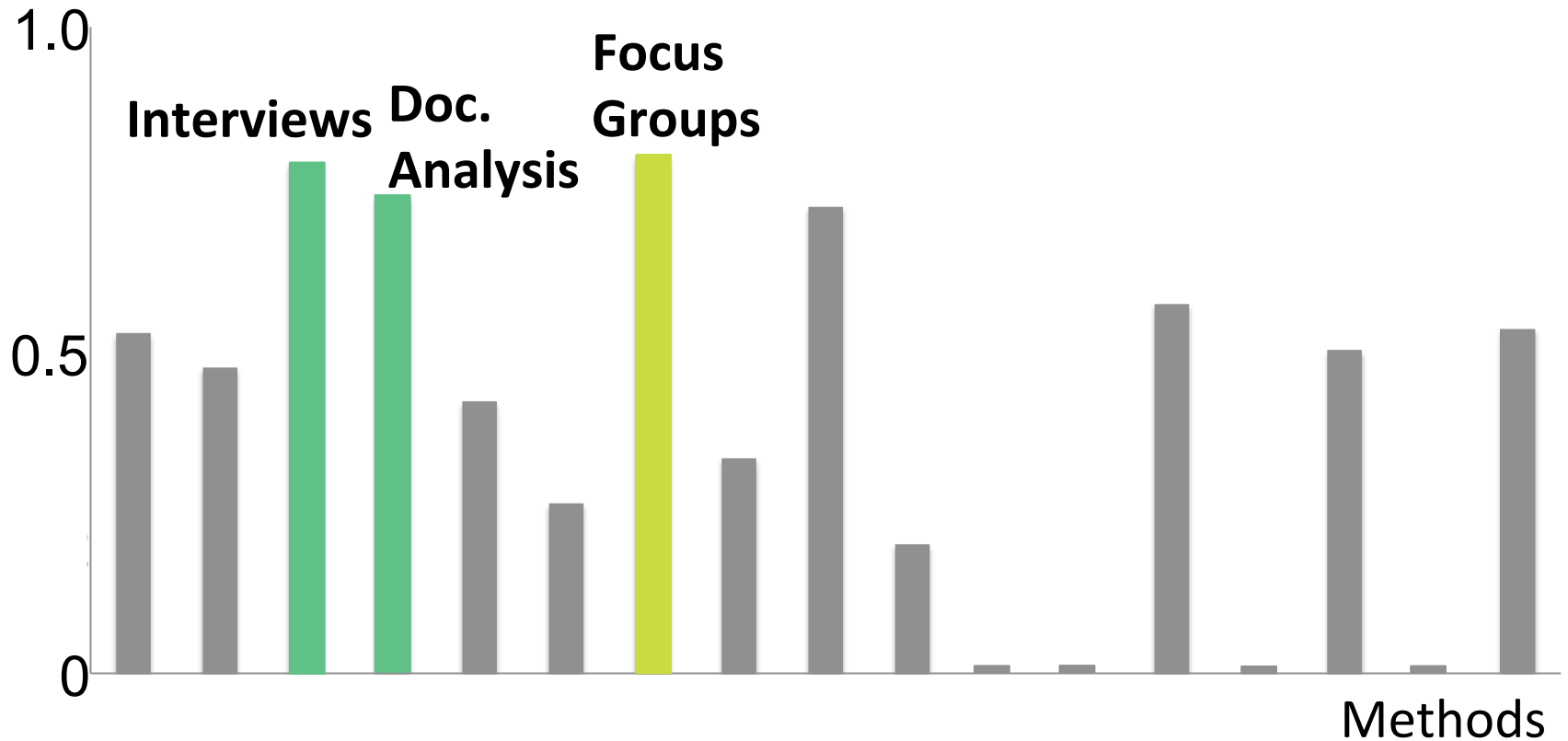
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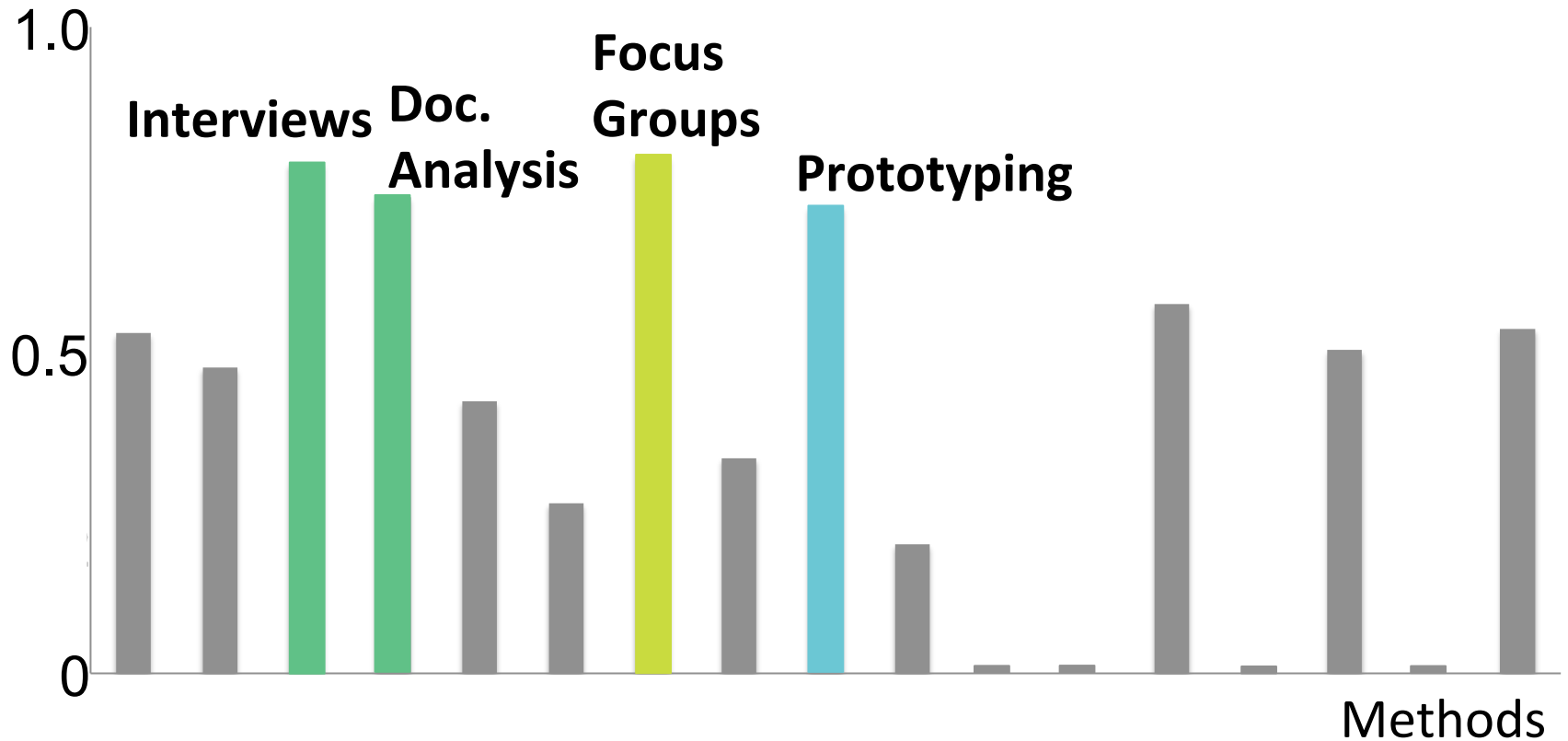
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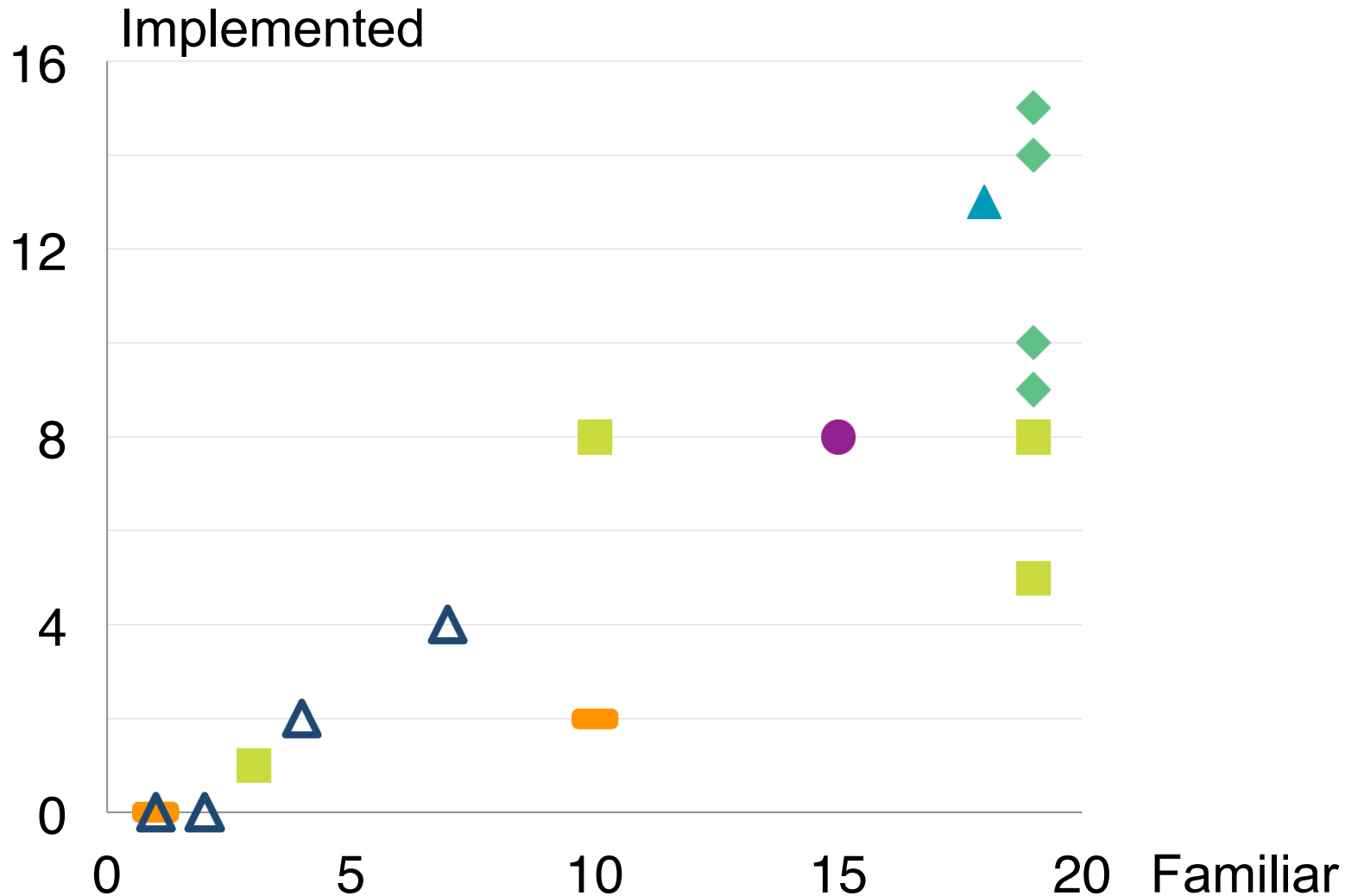
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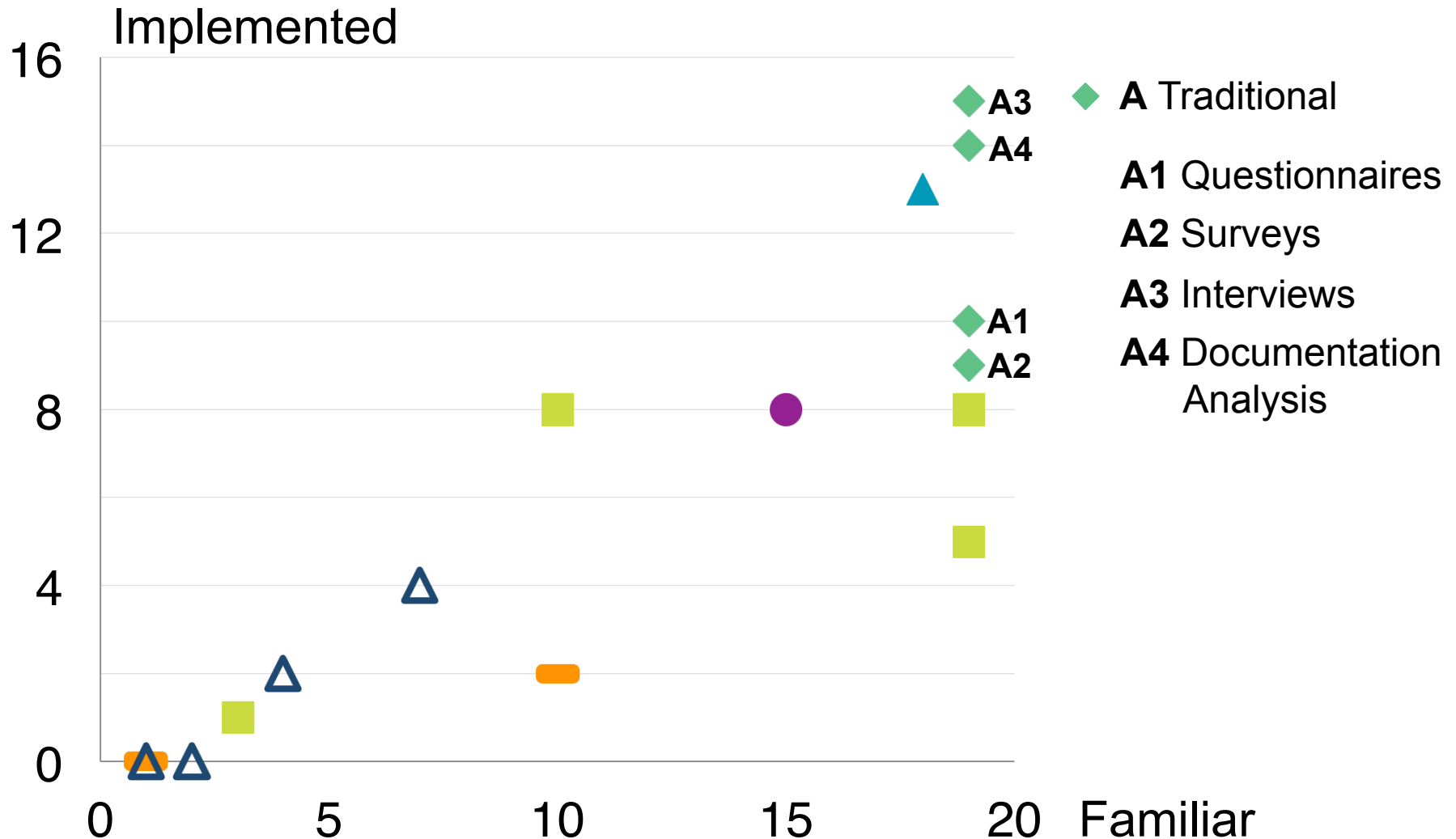


**These methods are**  
**inadequate**  
**for the cloud.**

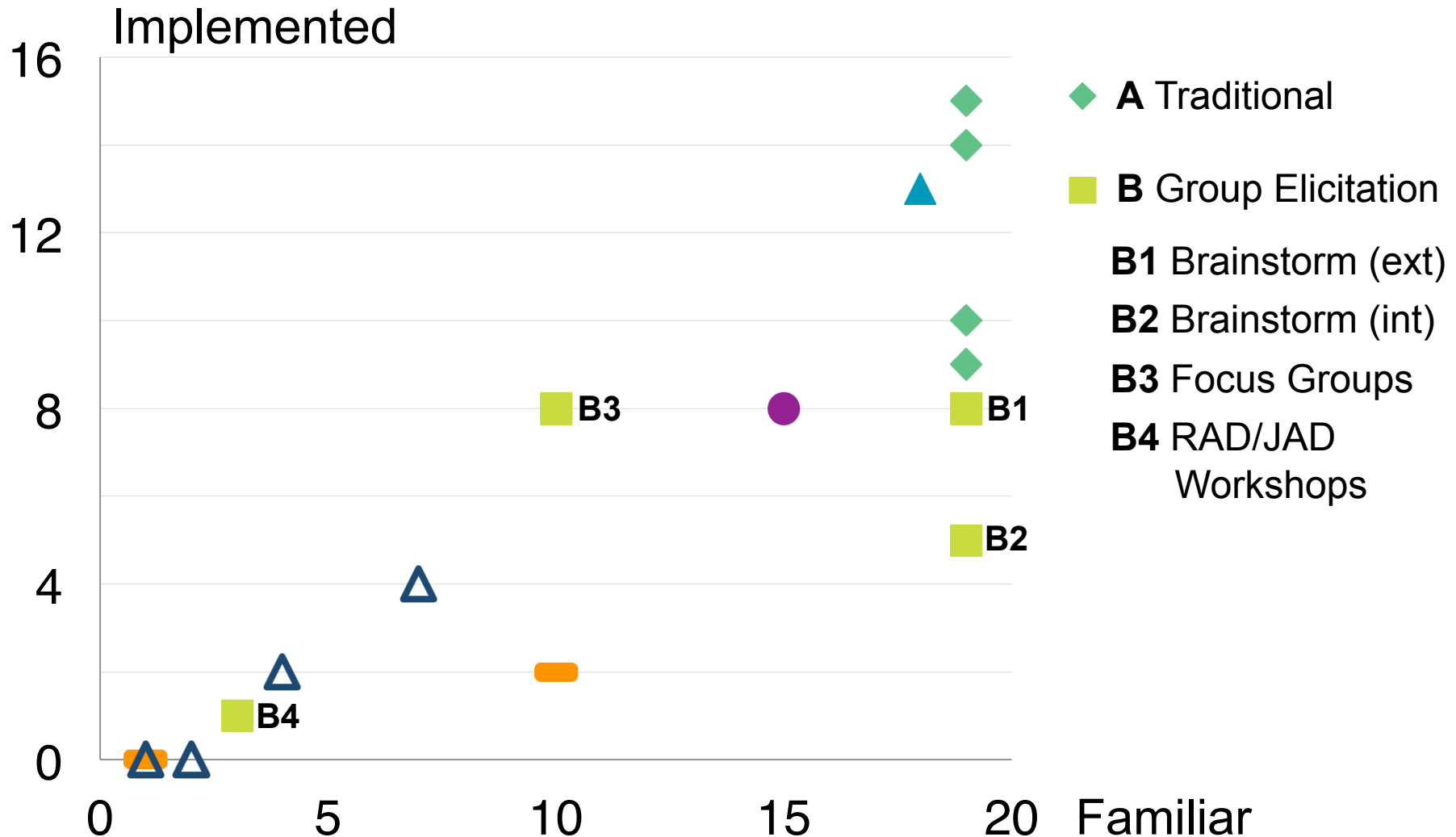
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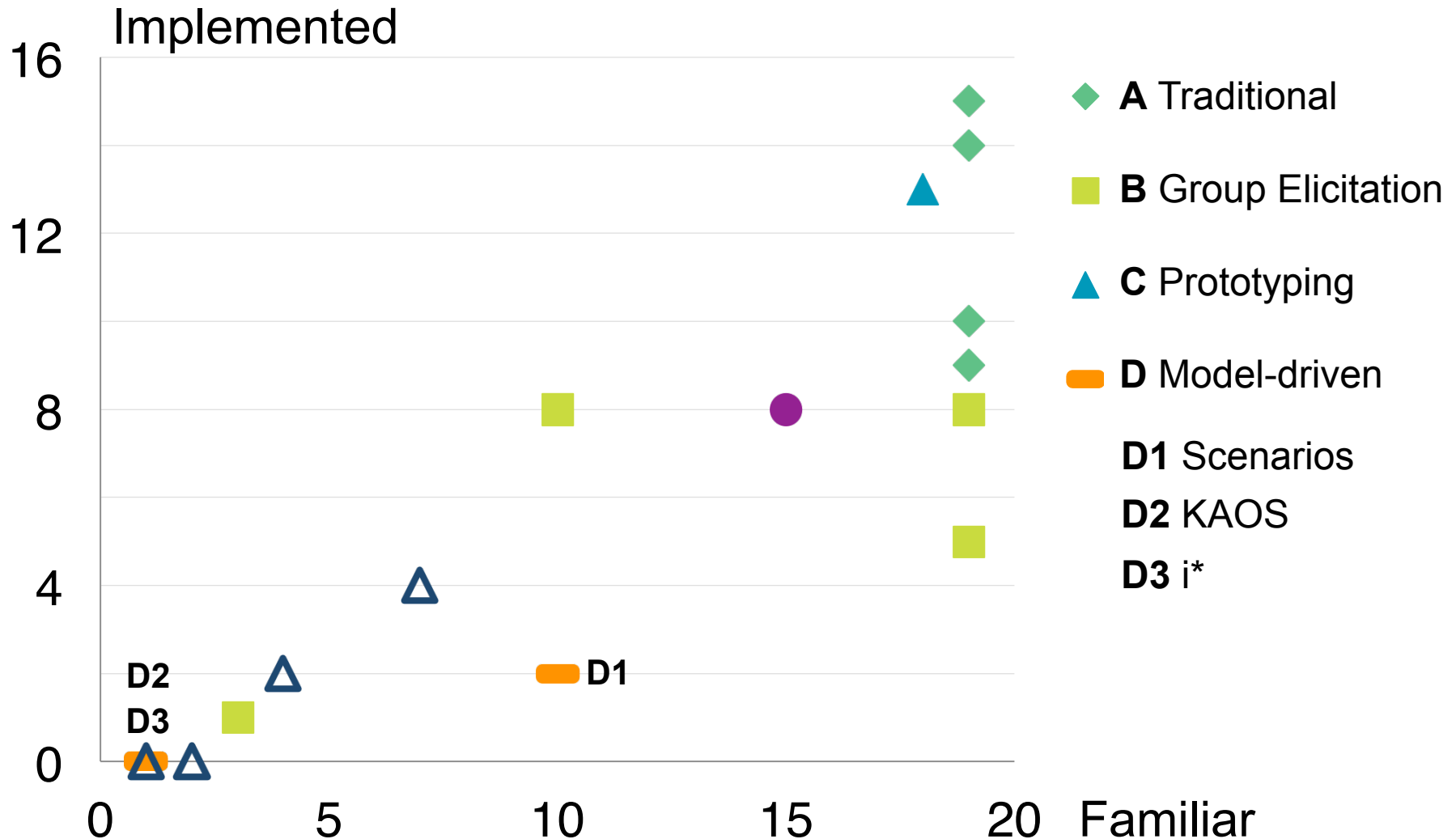
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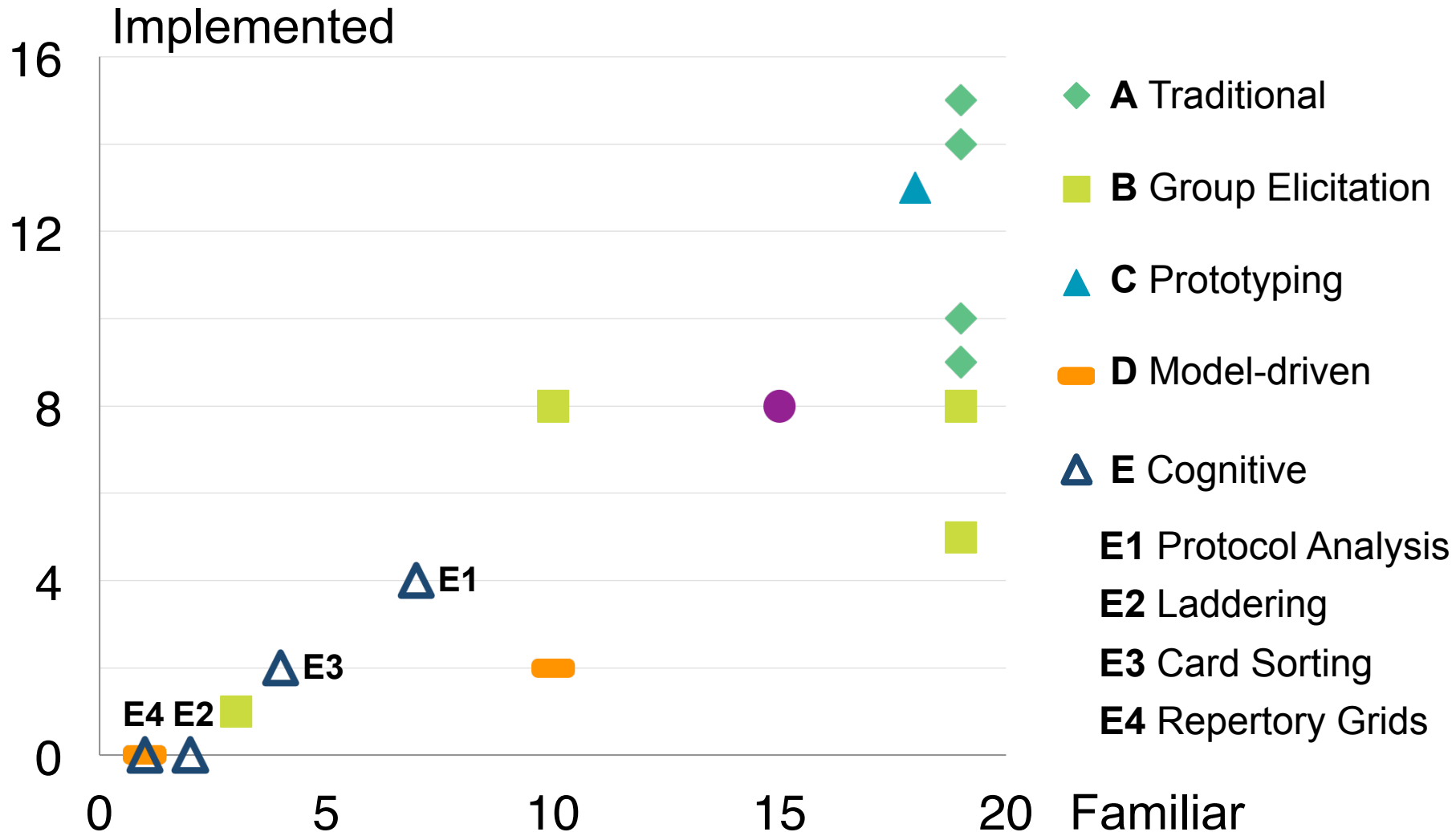
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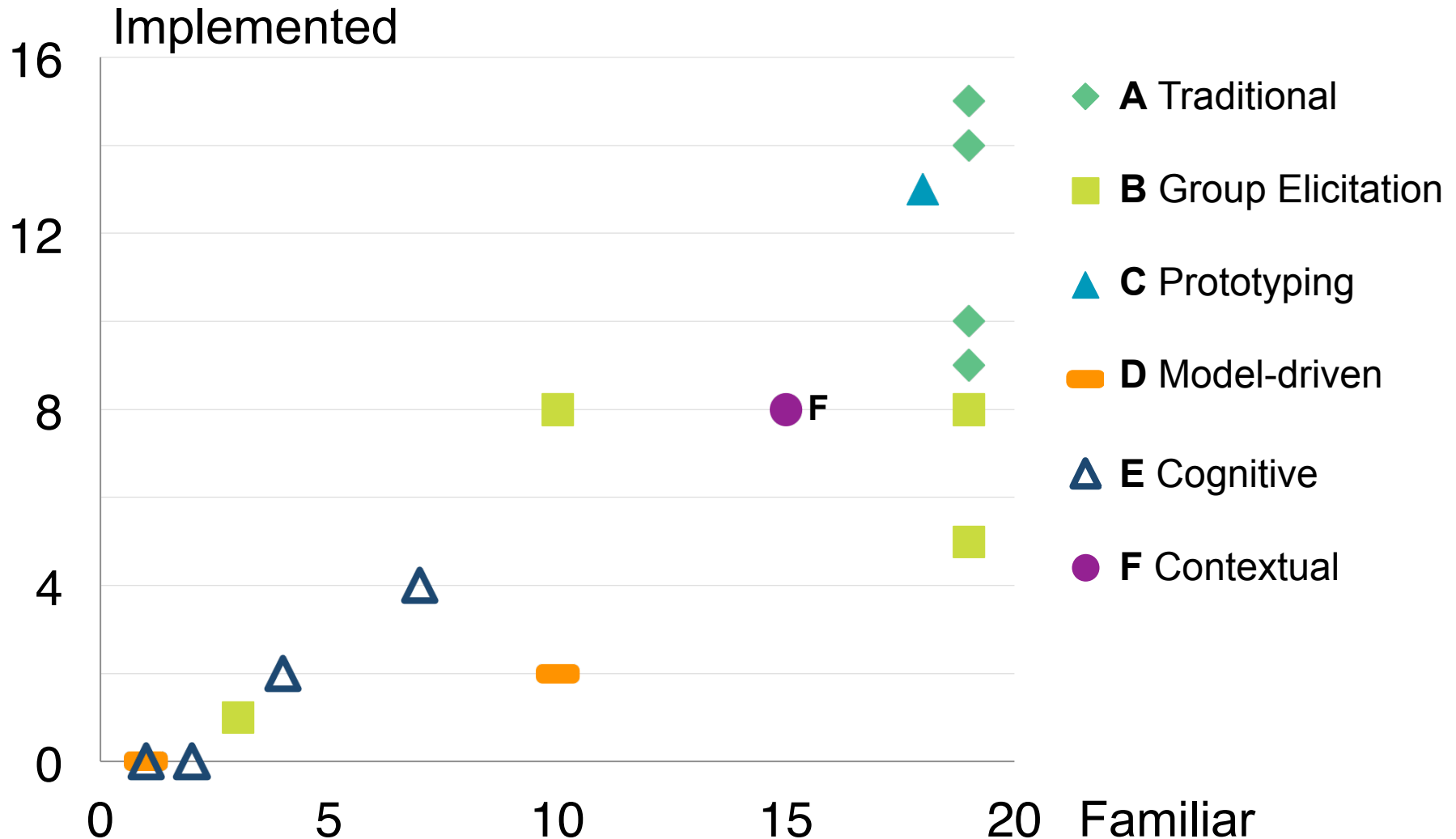


# Most Popular Elicitation Methods

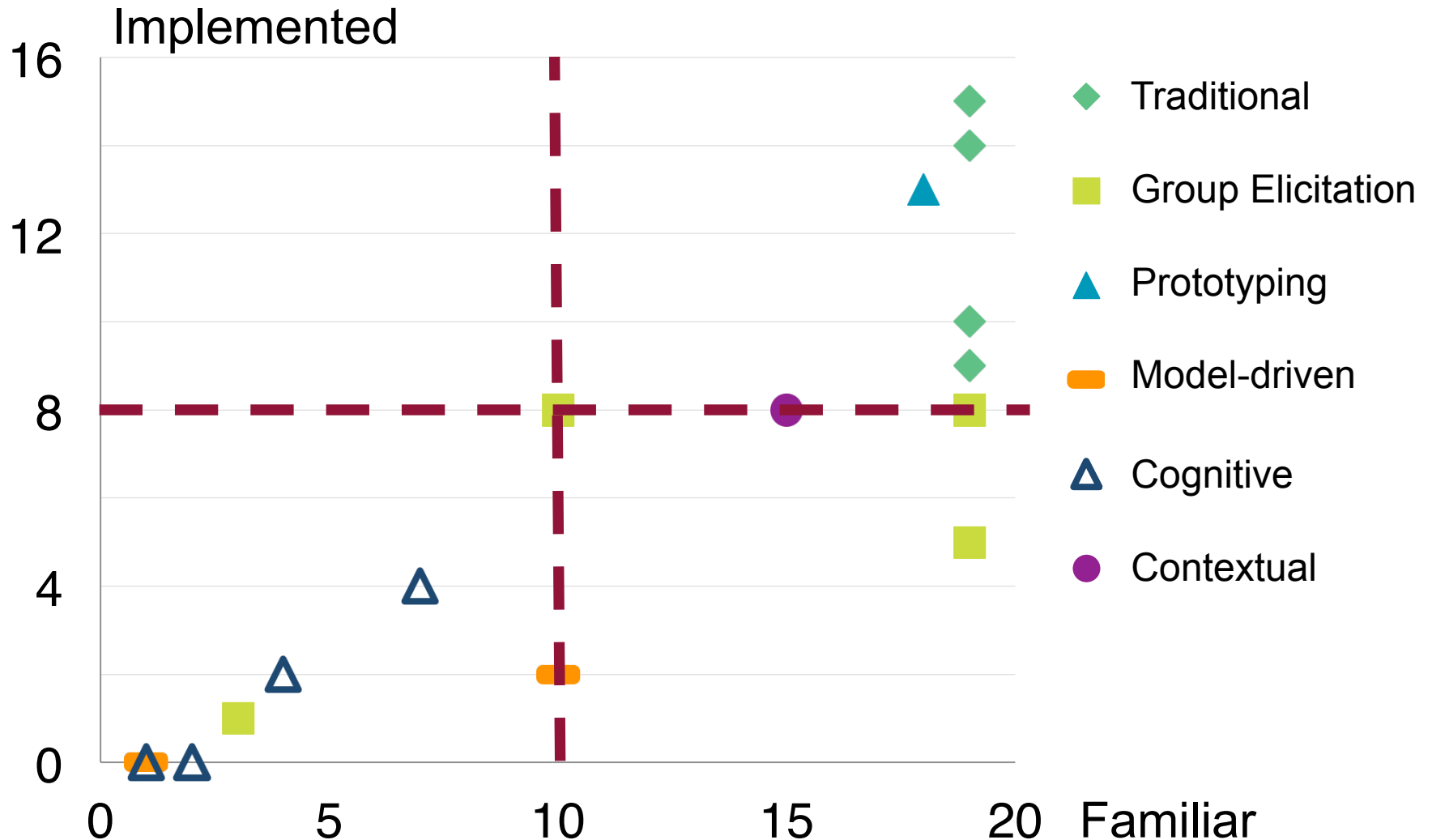




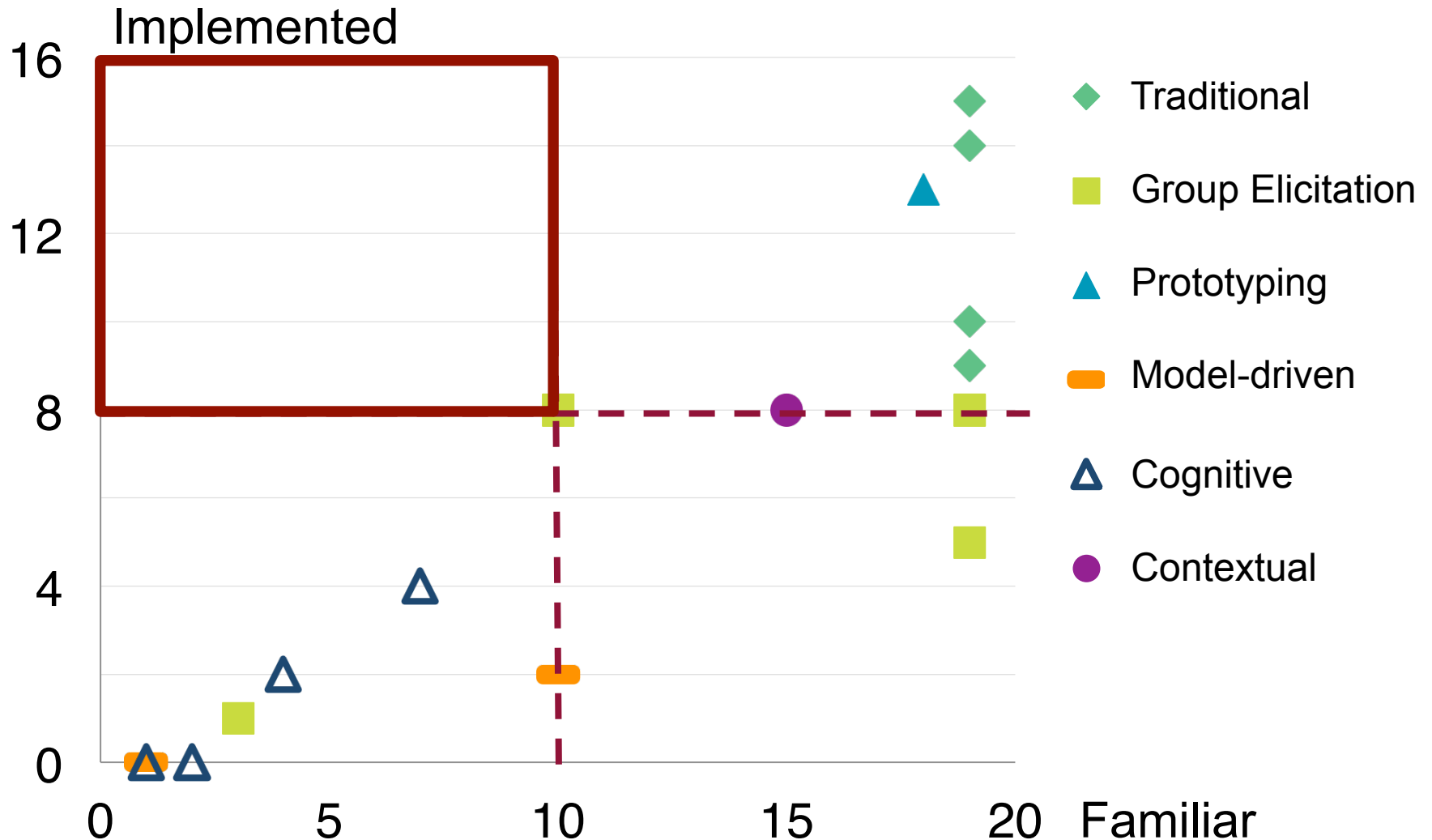
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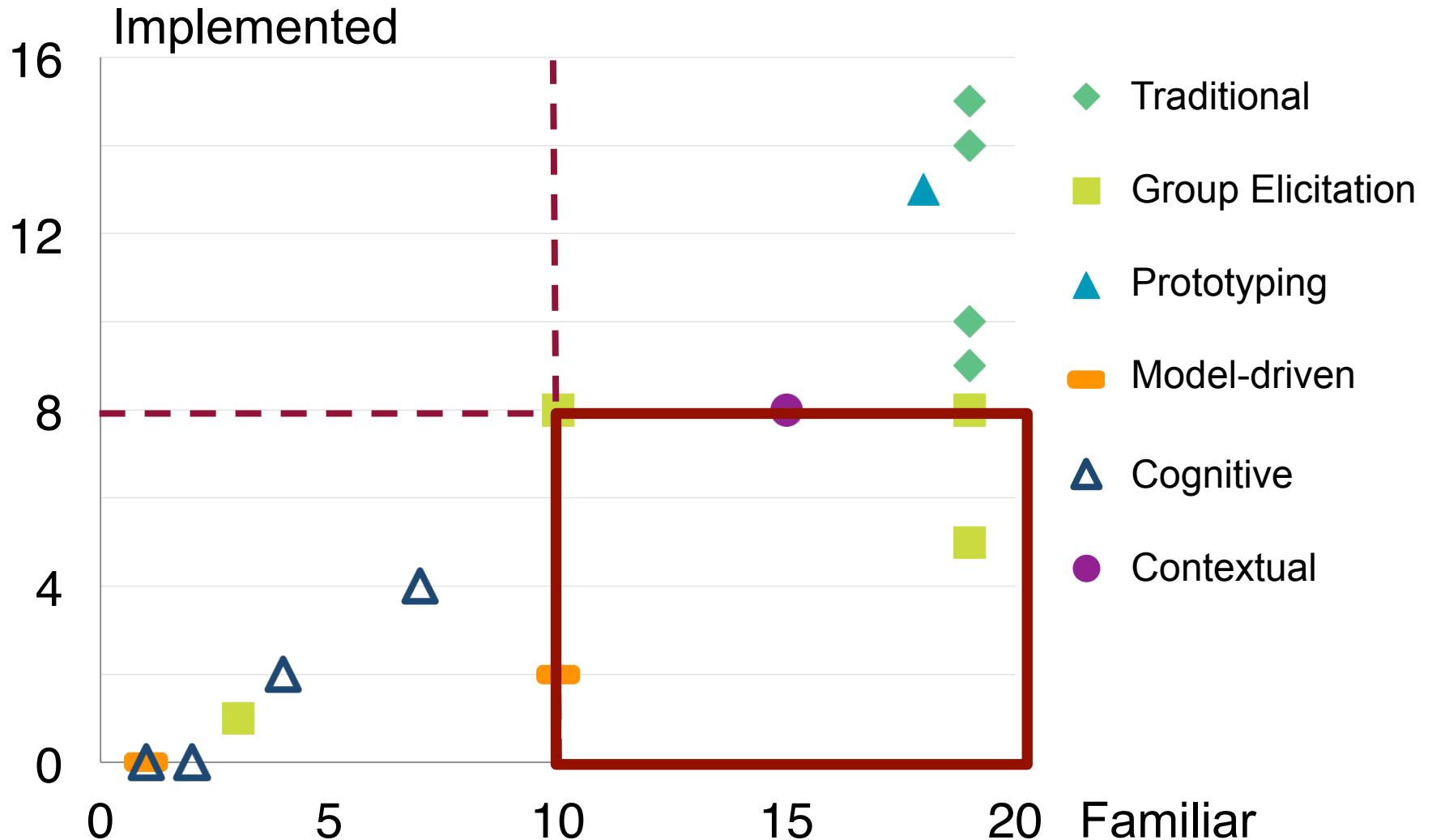
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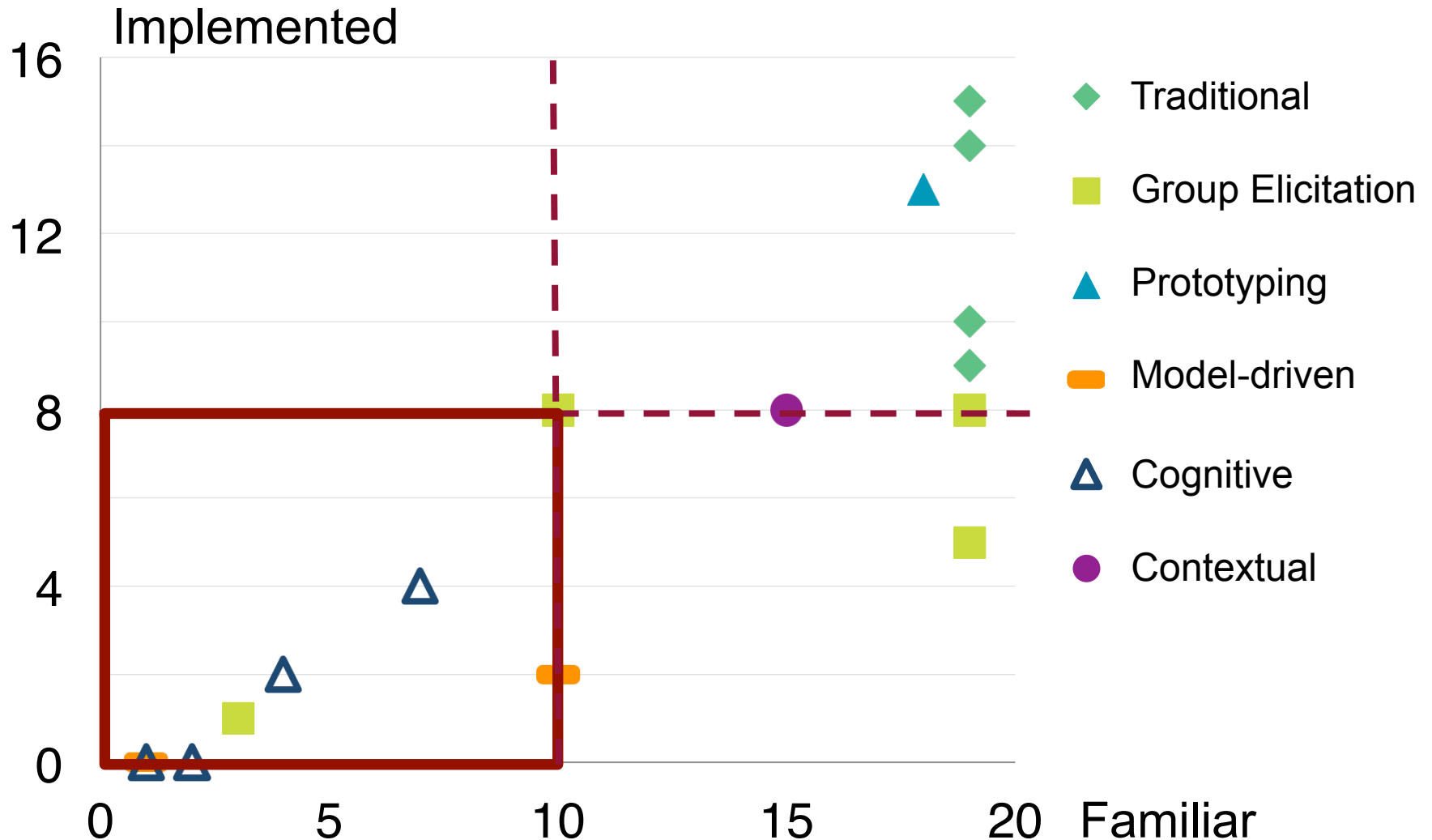
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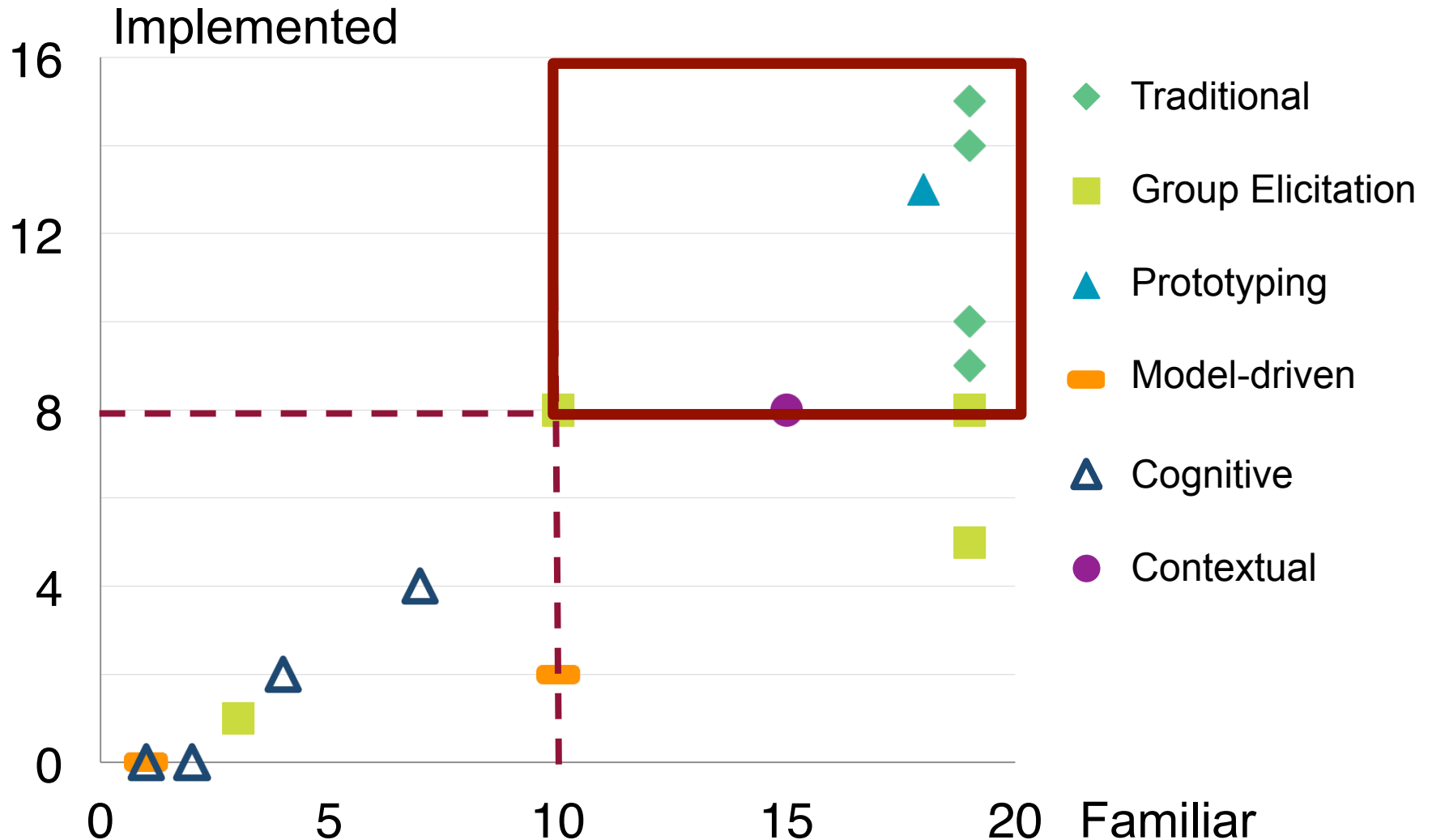
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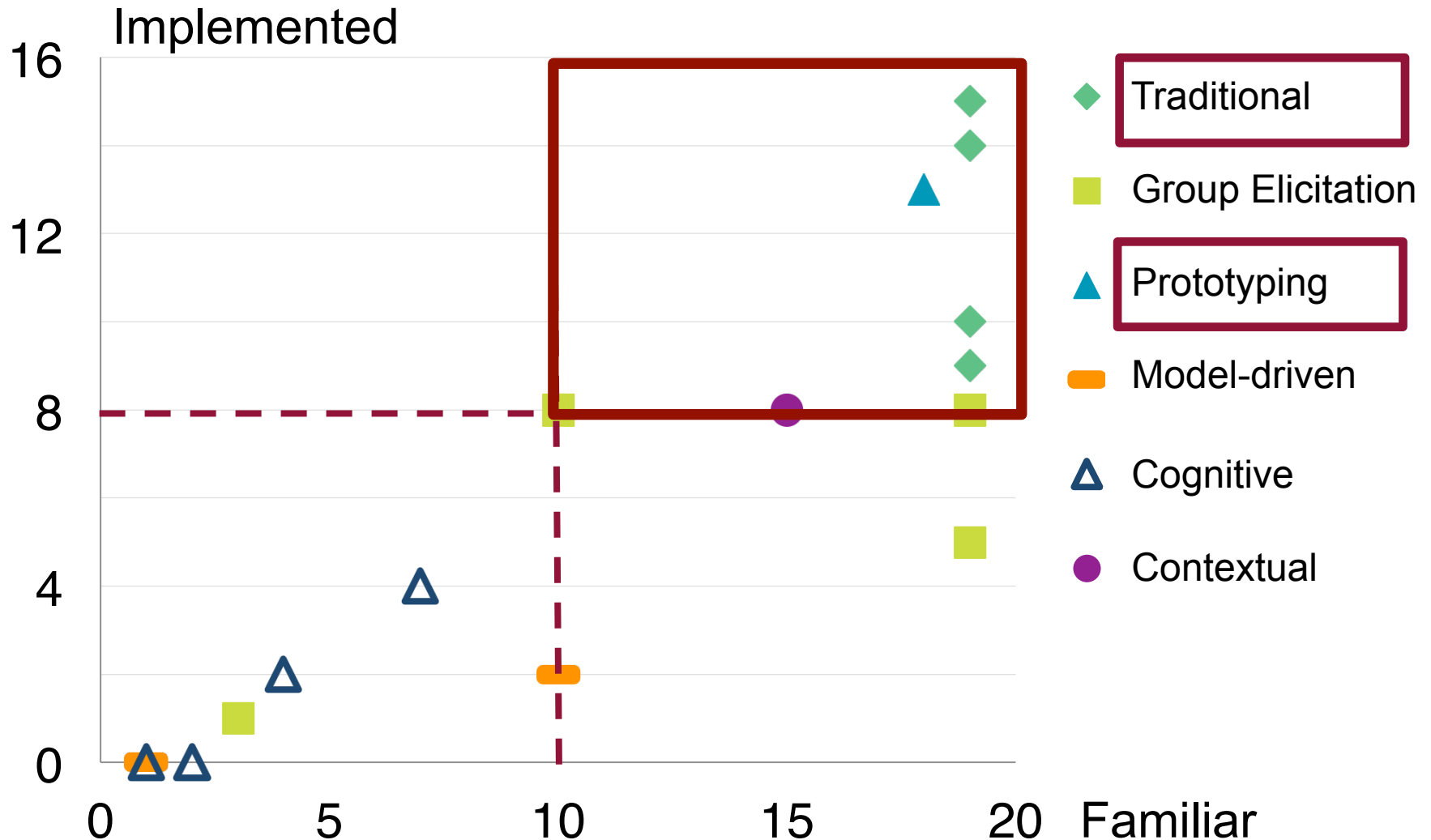
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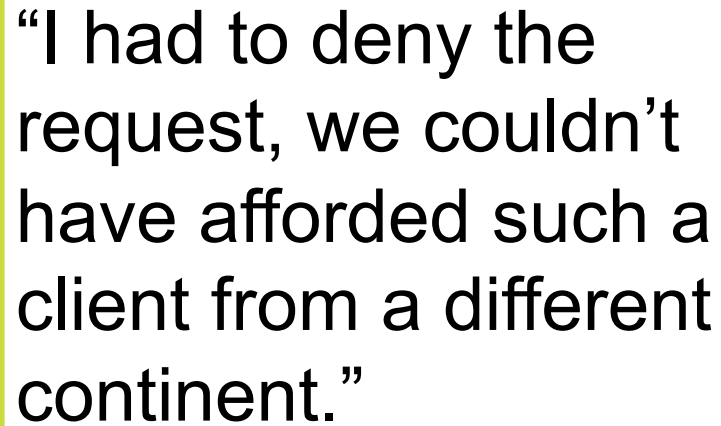
# Most Popular Elicitation Methods



**...still inadequate  
for the cloud.**

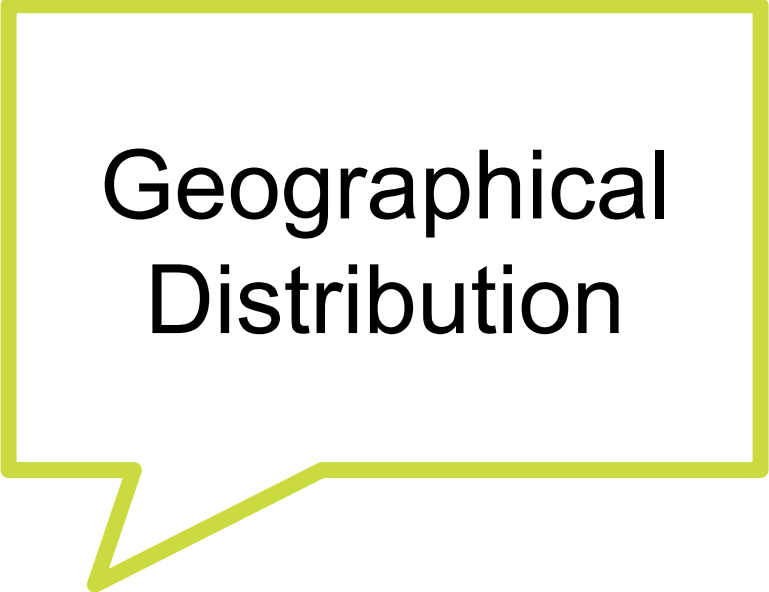


# Cloud Providers Say...



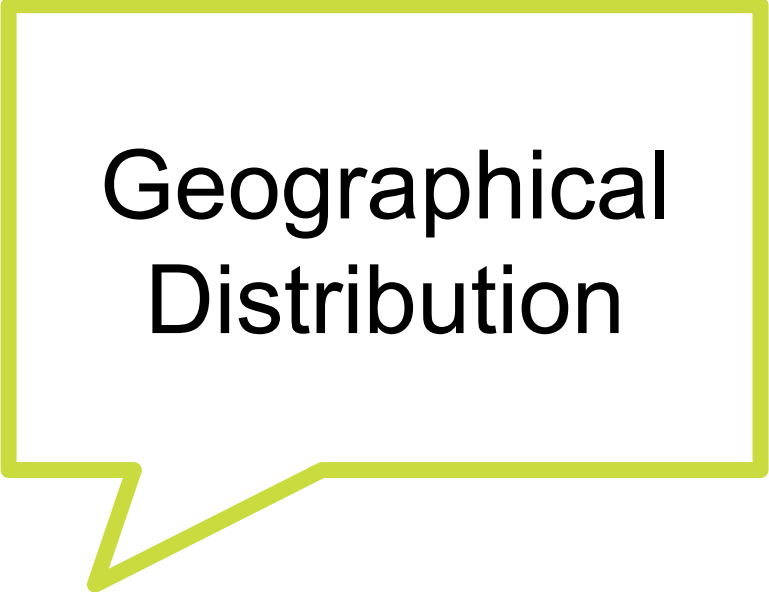
“I had to deny the request, we couldn’t have afforded such a client from a different continent.”

# Cloud Providers Say...



Geographical  
Distribution

# Cloud Providers Say...



Geographical  
Distribution

**63%**

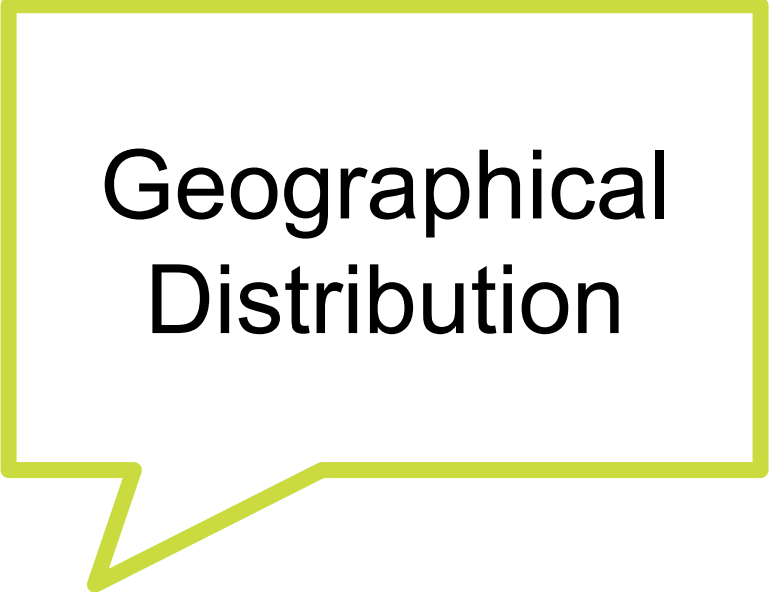
# Cloud Providers Say...

Geographical  
Distribution

63%

“It’s difficult to use our  
old practices in the  
cloud.” [interviews]

# Cloud Providers Say...



Geographical  
Distribution

63%



Known Practices:  
Inadequate

# Cloud Providers Say...

Geographical  
Distribution

63%

Known Practices:  
Inadequate

90%

# Cloud Providers Say...

Geographical  
Distribution

63%

Known Practices:  
Inadequate

90%

“We had some  
attempts to adapt.  
Most failed.”

# Cloud Providers Say...

Geographical  
Distribution

63%

Known Practices:  
Inadequate

90%

Failed Attempts



# Cloud Providers Say...

Geographical  
Distribution

63%

Known Practices:  
Inadequate

90%

Failed Attempts

65%

**So what is adequate?**

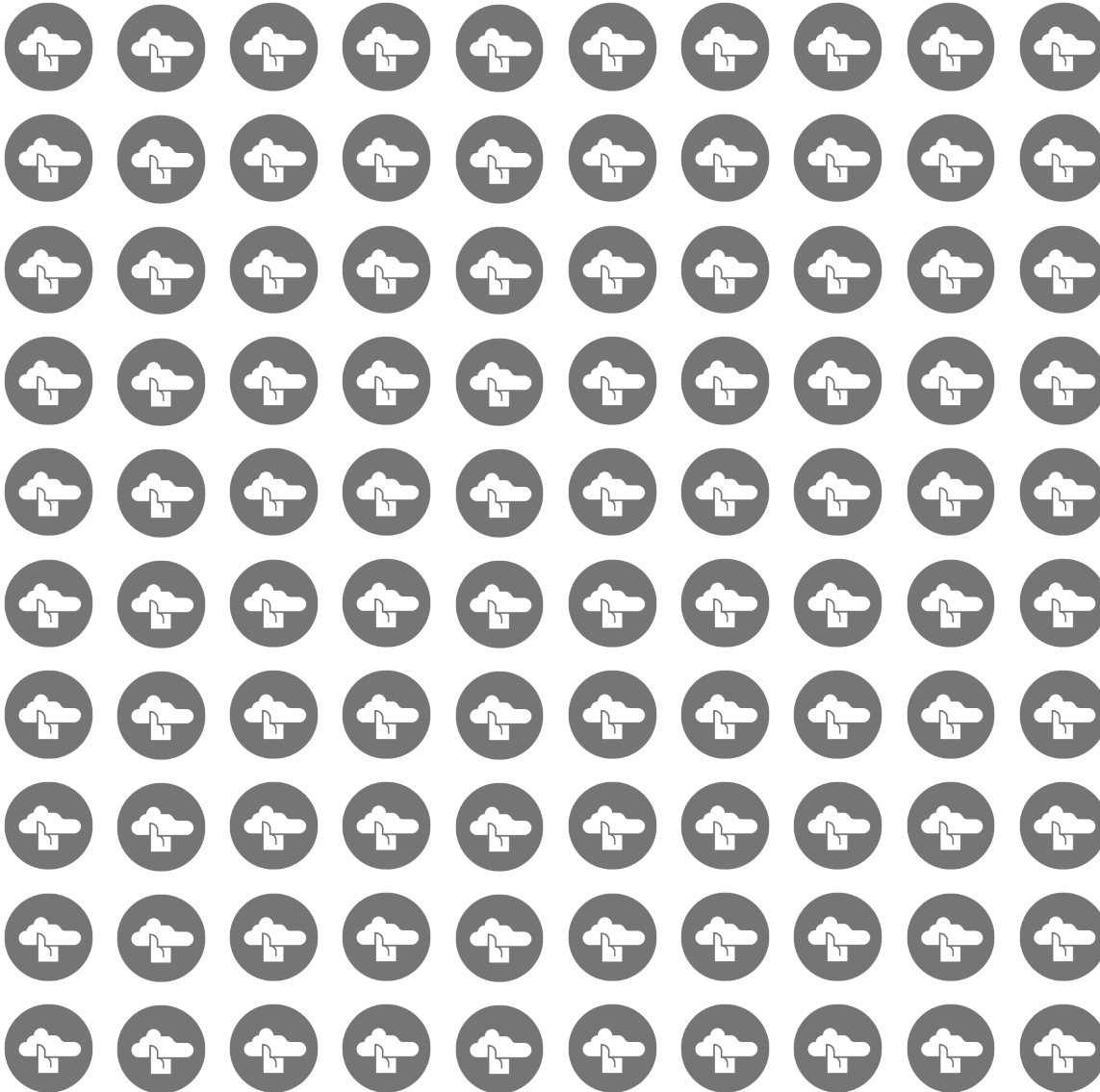
# What do Providers Use?

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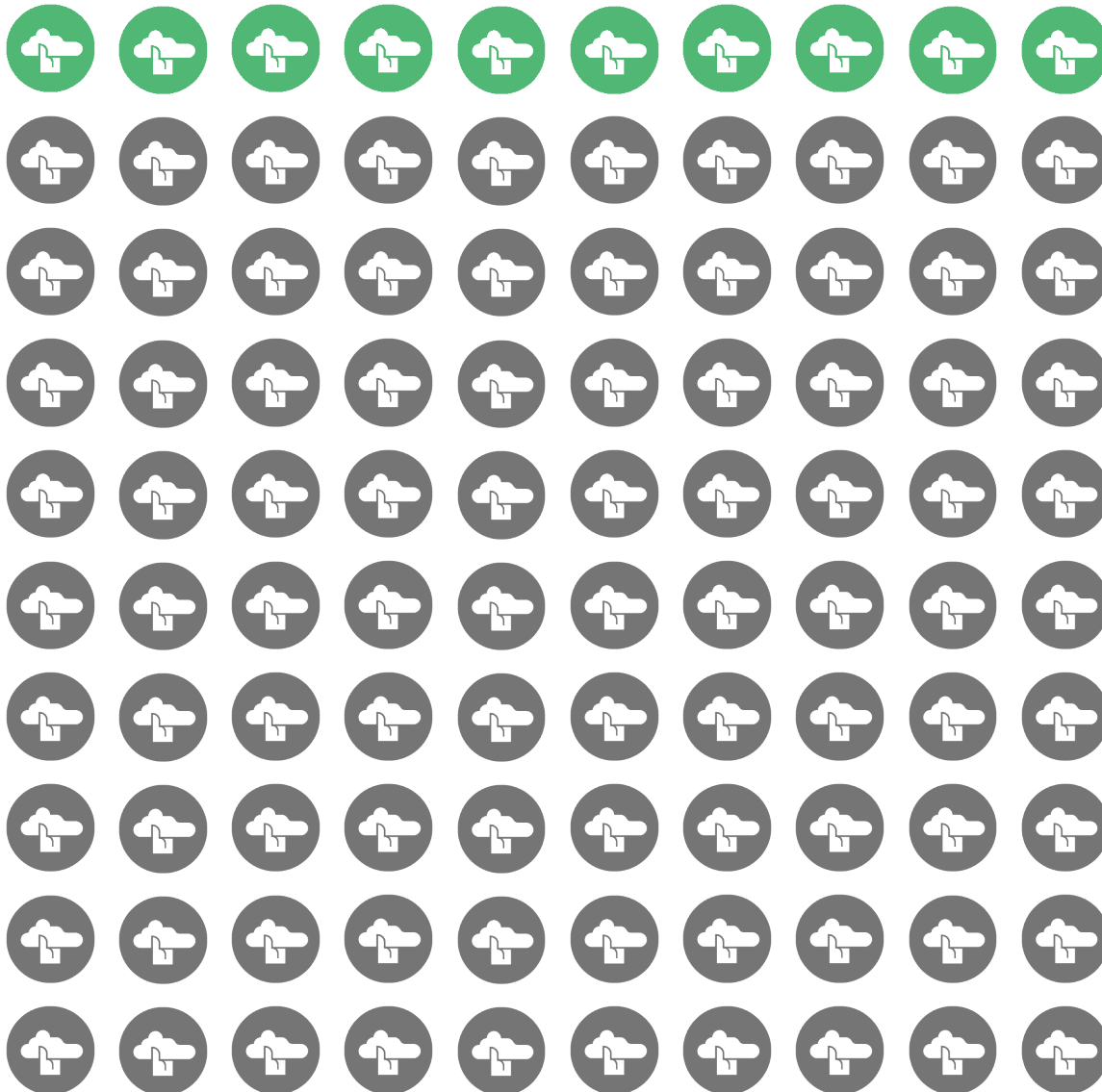
94.7%

ad-hoc

# What do Providers Use?



# What do Providers Use?



10%

invent & guess

# What do Providers Use?



10%

invent & guess

21%

imitate

# What do Providers Use?



10%

invent & guess

21%

26%

own knowledge



# What do Providers Use?



10%

invent & guess

21%

imitate

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# What do Providers Use?



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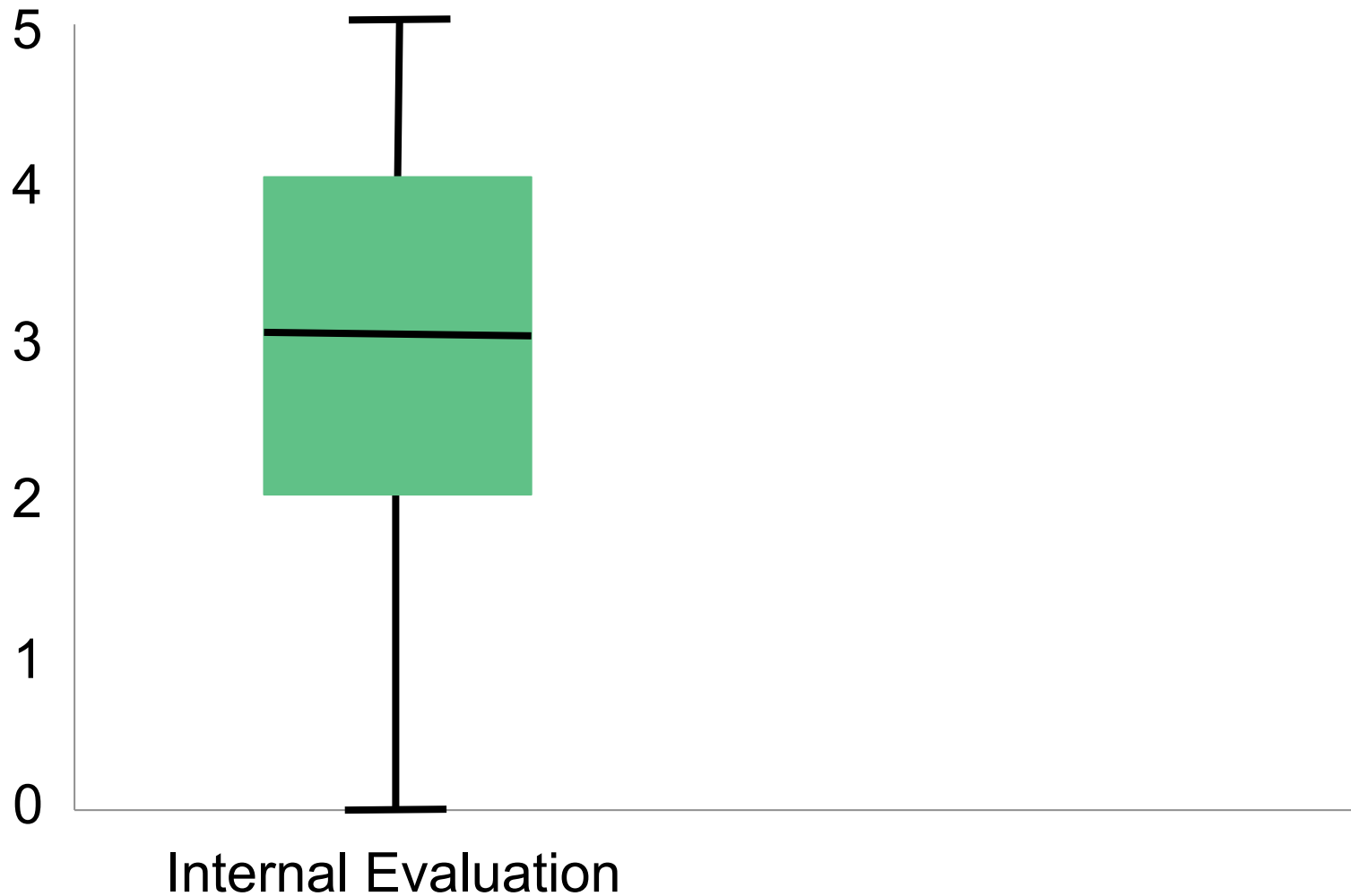
own knowledge



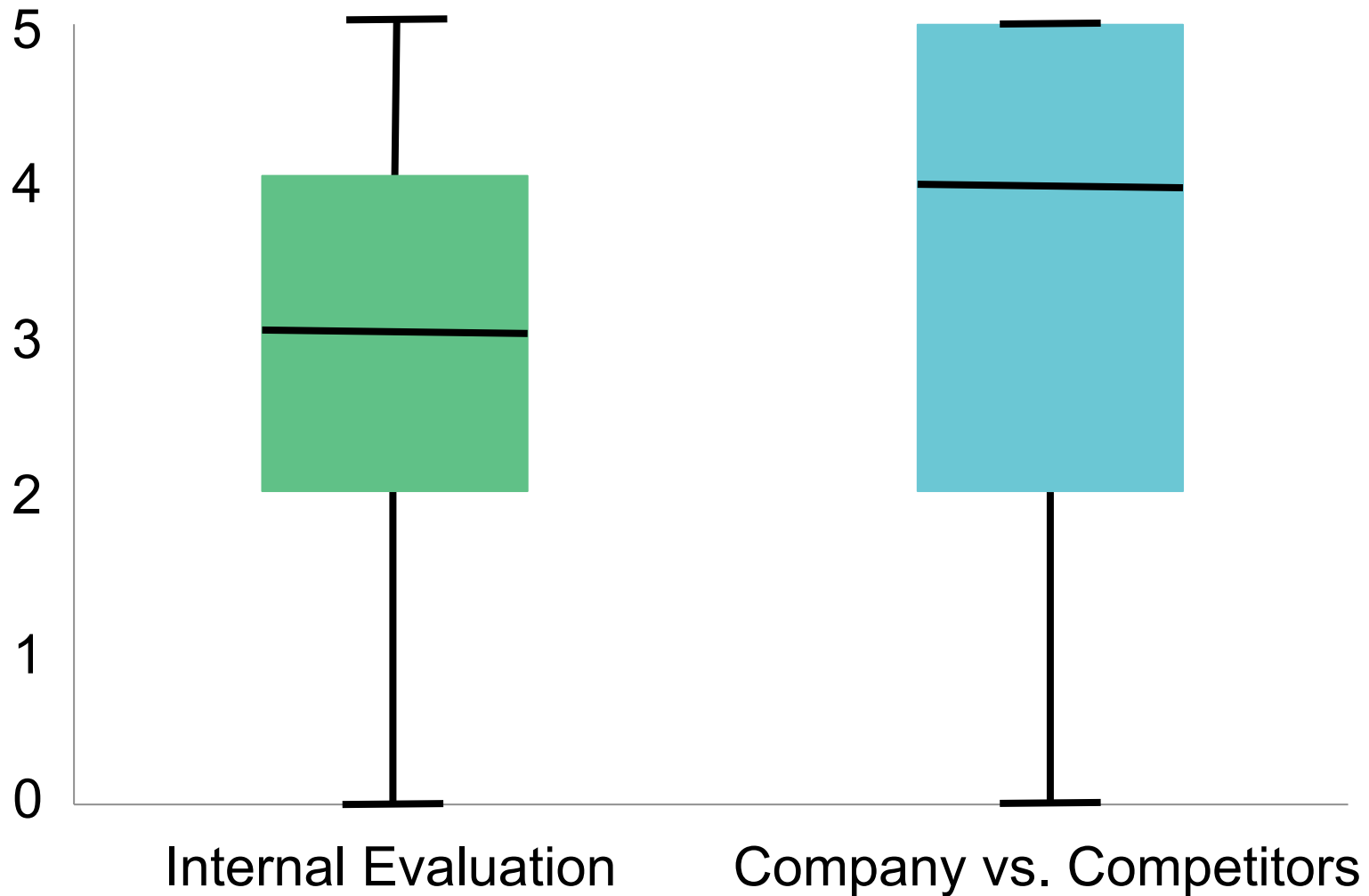
**Good enough?**

# Satisfaction Level with Existing Methods

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# Satisfaction Level with Existing Methods



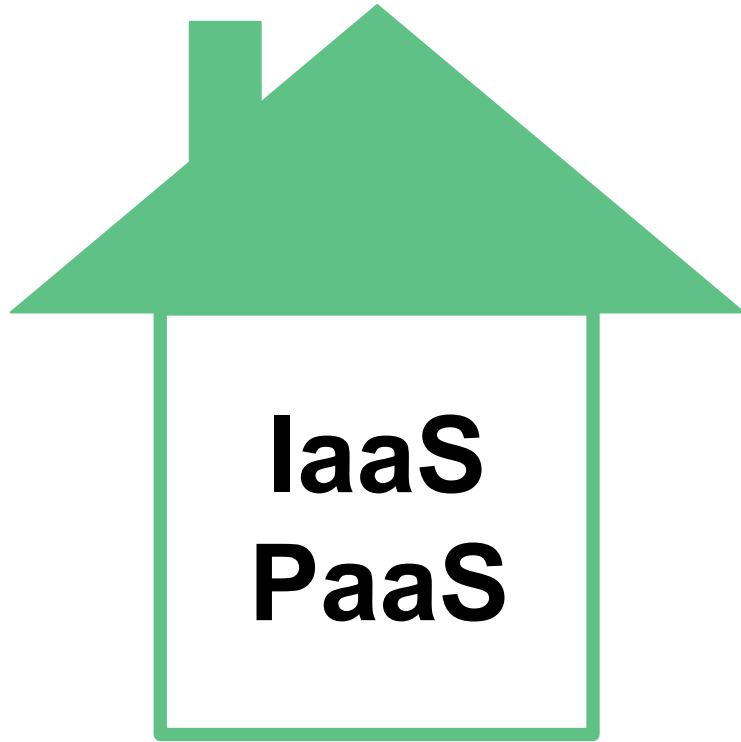
# Causes for the Dissatisfaction Level



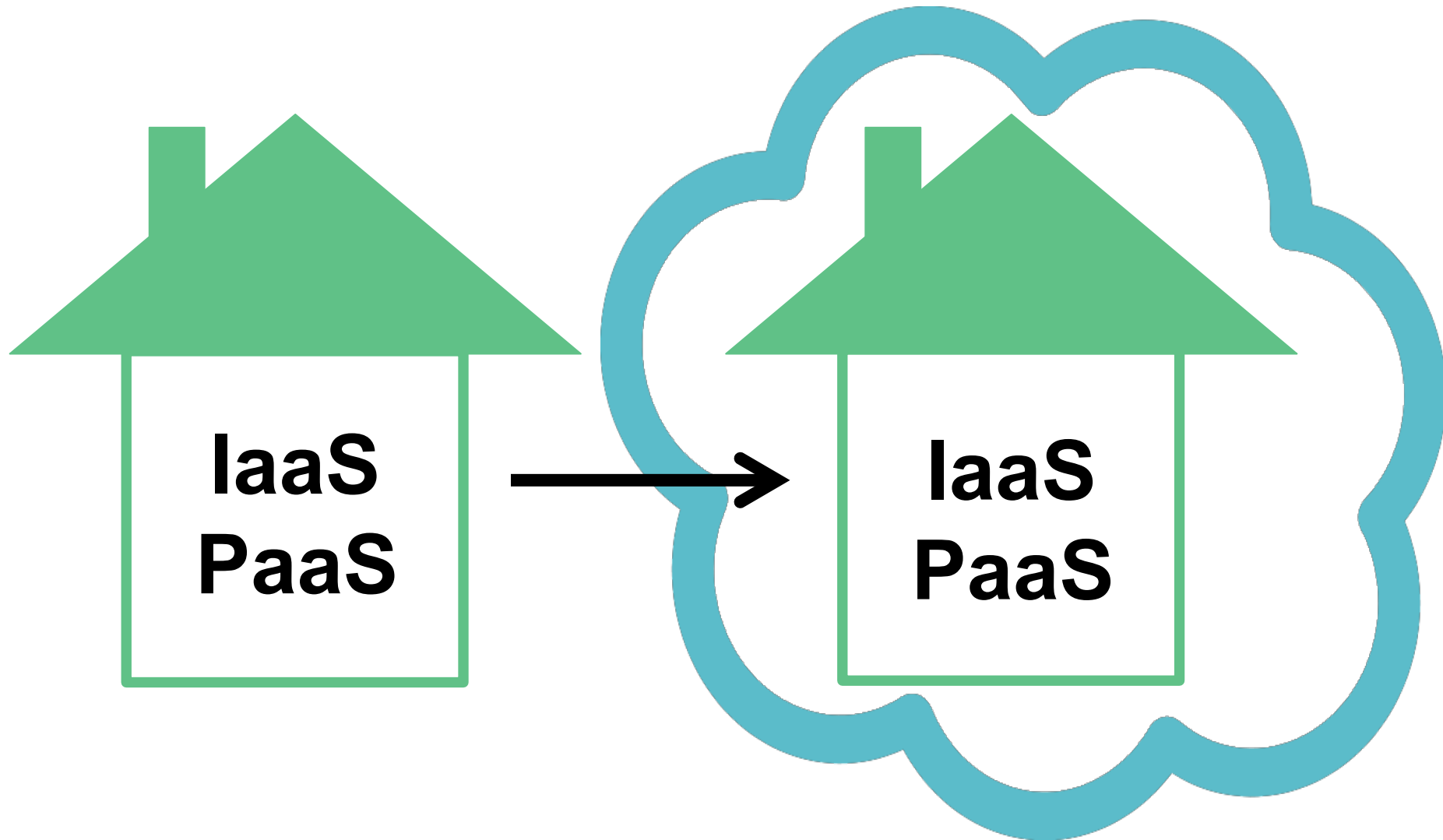
**IaaS**  
**PaaS**



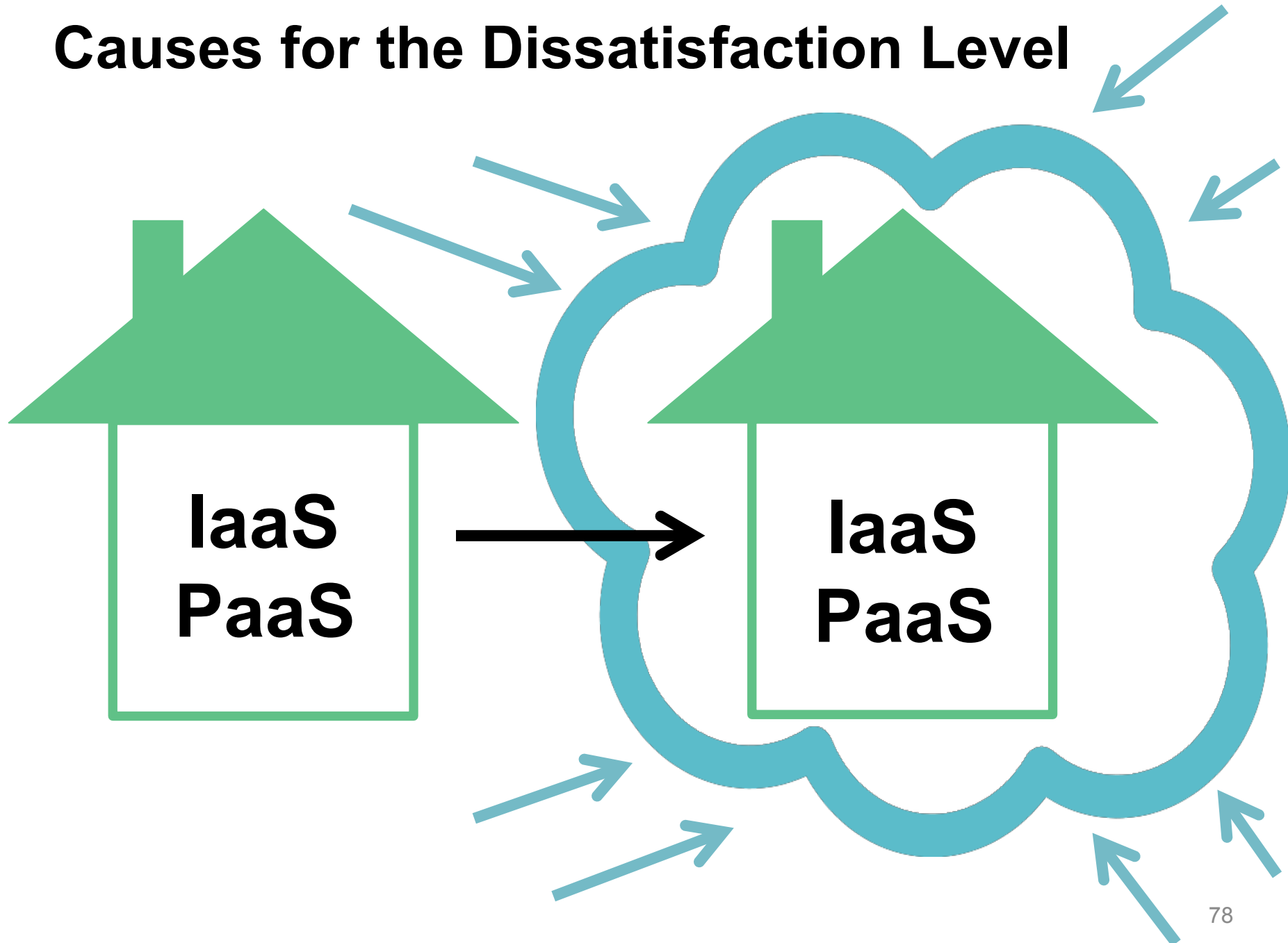
# Causes for the Dissatisfaction Level



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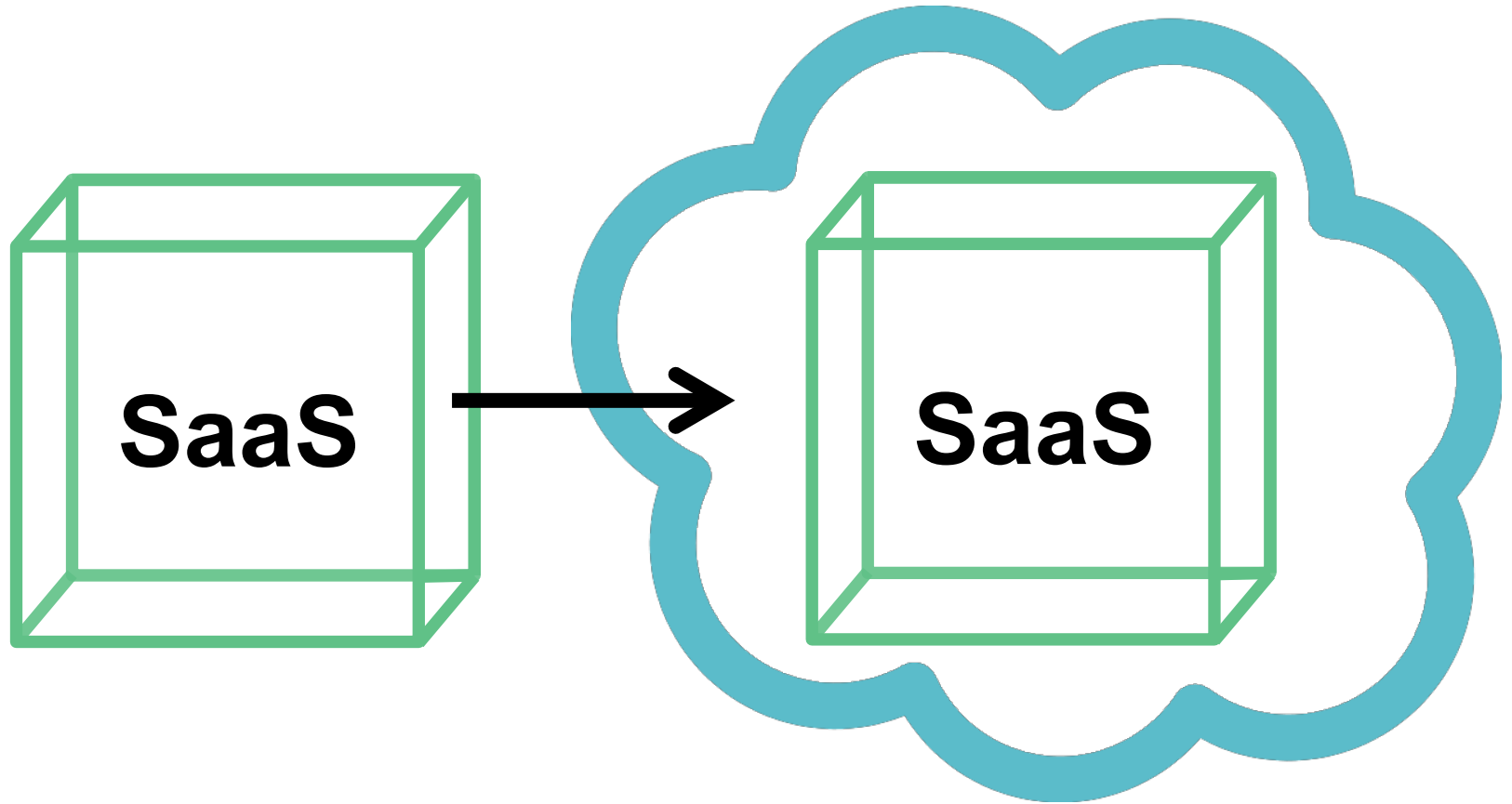


**SaaS**

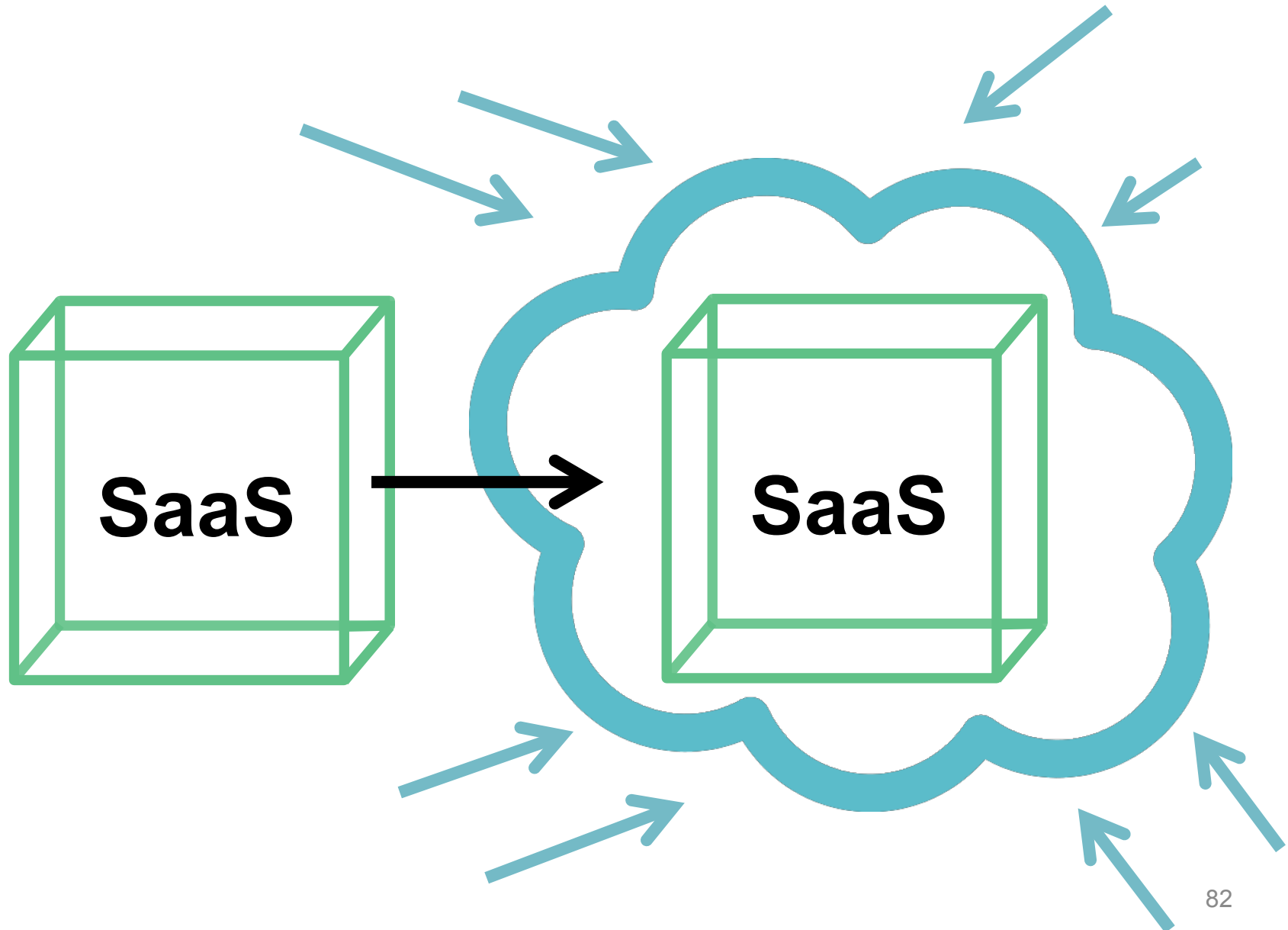
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# Causes for the Dissatisfaction Level





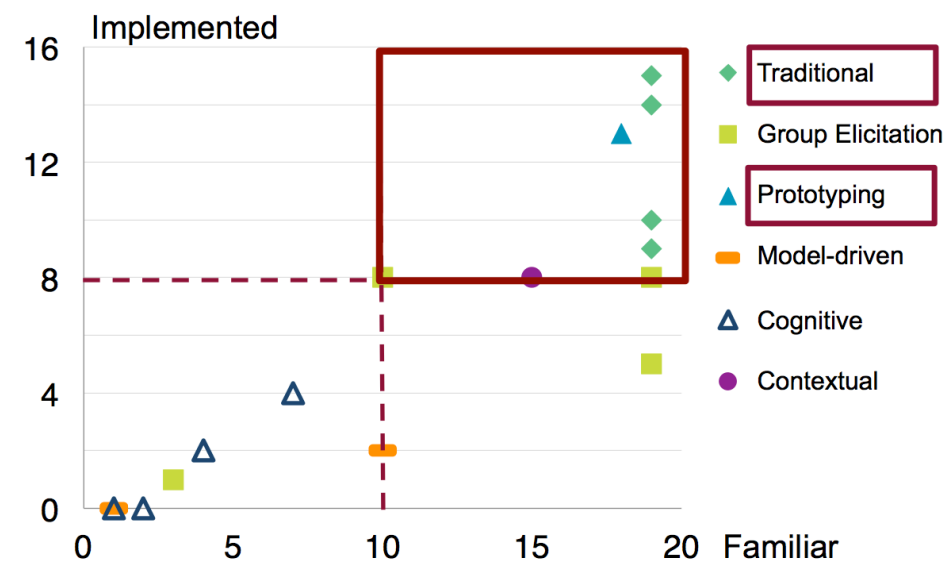
What's new

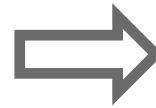
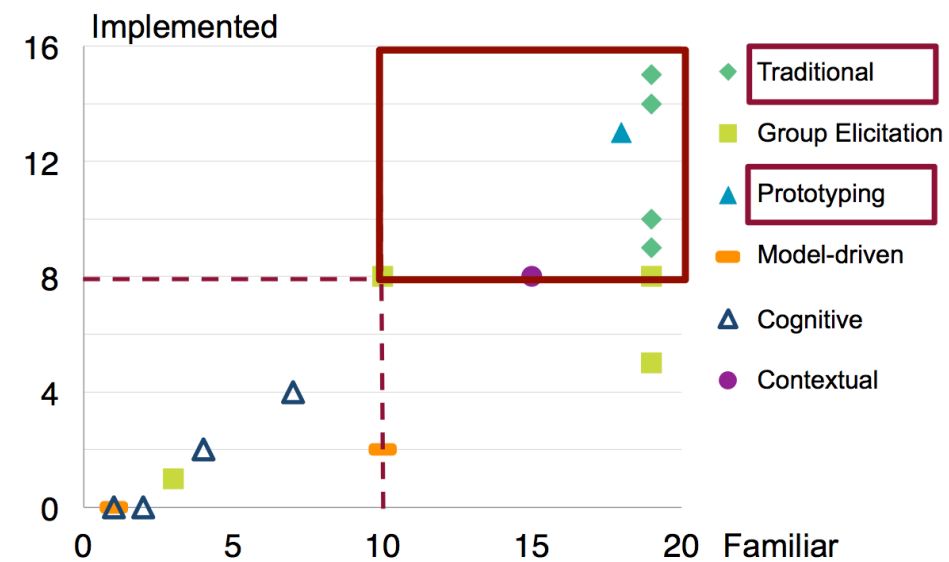
Method

Findings

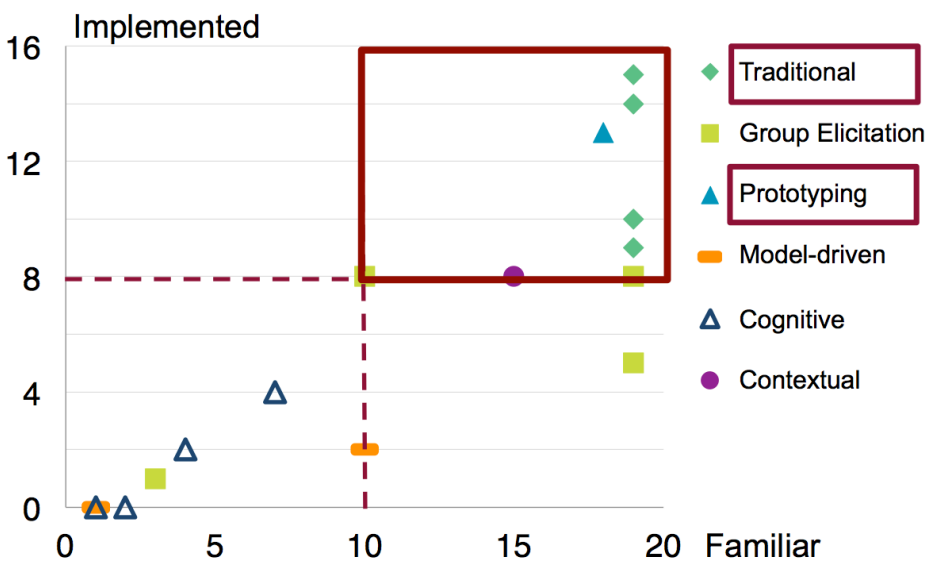
**Discussion**



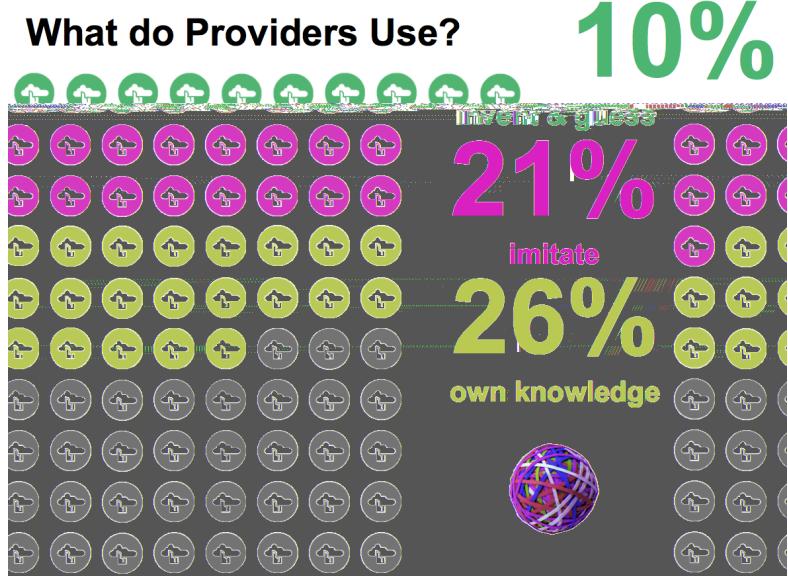


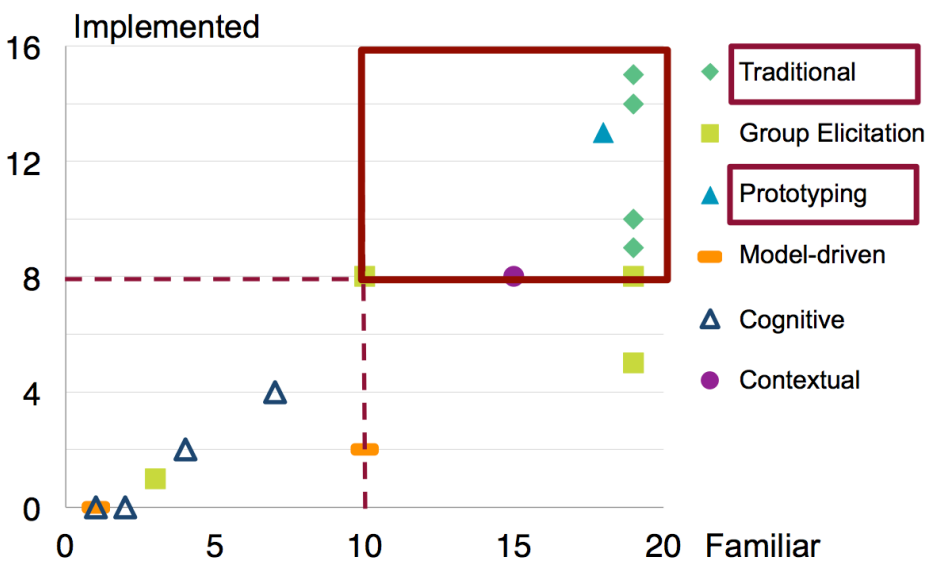


94.7%  
ad-hoc



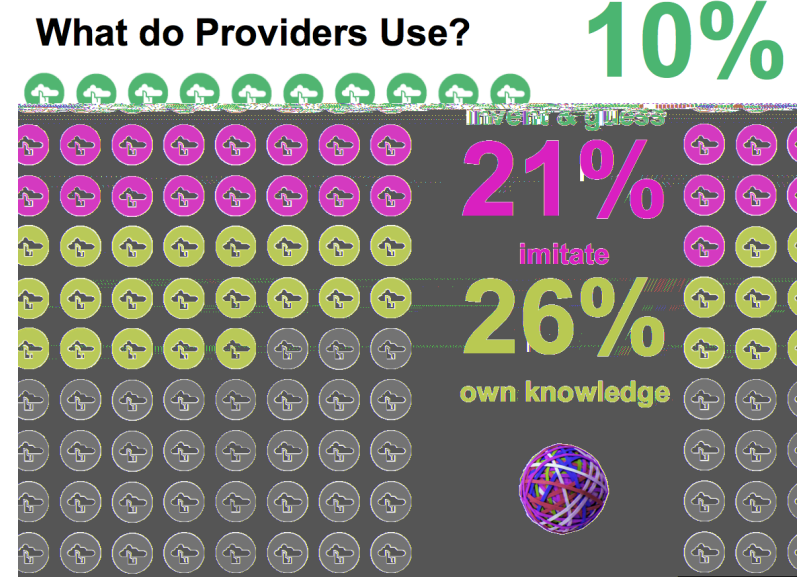
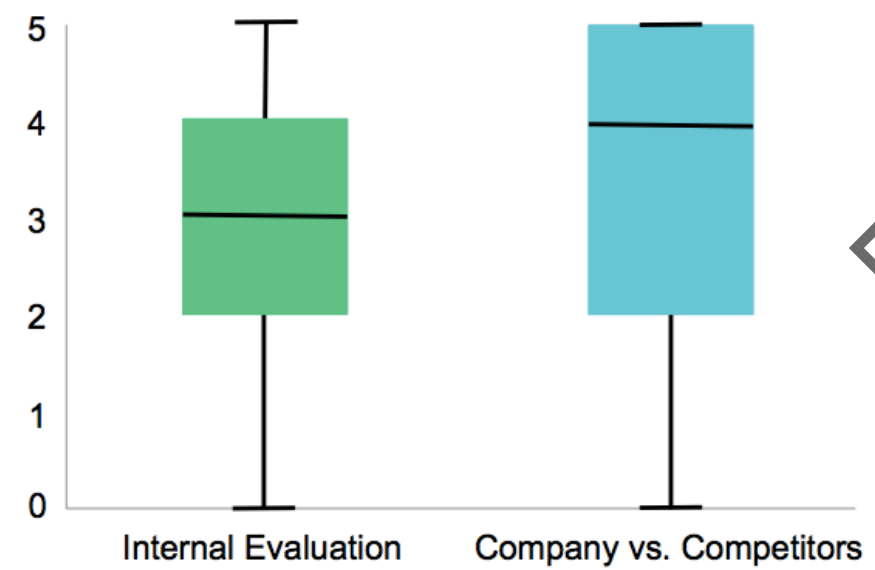
94.7%  
ad-hoc





94.7%

ad-hoc





**The methods used are  
inadequate  
for the cloud.**

**Future Work:**  
**Investigate**  
**elicitation methods**  
**for cloud providers.**

# **Future Work:** **Investigate** **elicitation methods** **for cloud providers.**

**Irina Todoran**  
**todoran@ifi.uzh.ch**

**Thank you.**

## [A1] Companies' Domains of Activity



## [A2] Geographical Distribution

