

# How to Inform Privacy Agents on Preferred Level of User Control?

Jessica H. Colnago  
Dr. Hélio Crestana Guardia

“THE MOST PROFOUND TECHNOLOGIES ARE THOSE THAT DISAPPEAR. THEY WEAVE THEMSELVES INTO THE FABRIC OF EVERYDAY LIFE UNTIL THEY ARE INDISTINGUISHABLE FROM IT.” – Mark Weiser, *The Computer for the 21<sup>st</sup> Century*



PRIVACY

INTERRUPTIONS

CONTROL



# PRIVACY IN THE INTERNET OF THINGS

Too many interruptions or  
too little control

High system autonomy

Low system autonomy

Low user control

High user control

**AUTOMATED  
APPROACHES**

**NOTICE AND  
CONSENT**

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## INTELLIGENT PRIVACY AGENTS

System-oriented

High system autonomy

Low system autonomy

Low user control

High user control

**AUTOMATED  
APPROACHES**

Copigneaux (2014)  
Schaub et al. (2012)  
Toch (2011)  
Bunnig and Cap (2009)

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System-oriented



**BALANCE AGENT  
AUTONOMY AND  
USER CONTROL**

Identify when the privacy agent should give  
the control to the user and when it should  
retain control in order to avoid interrupting  
him/her

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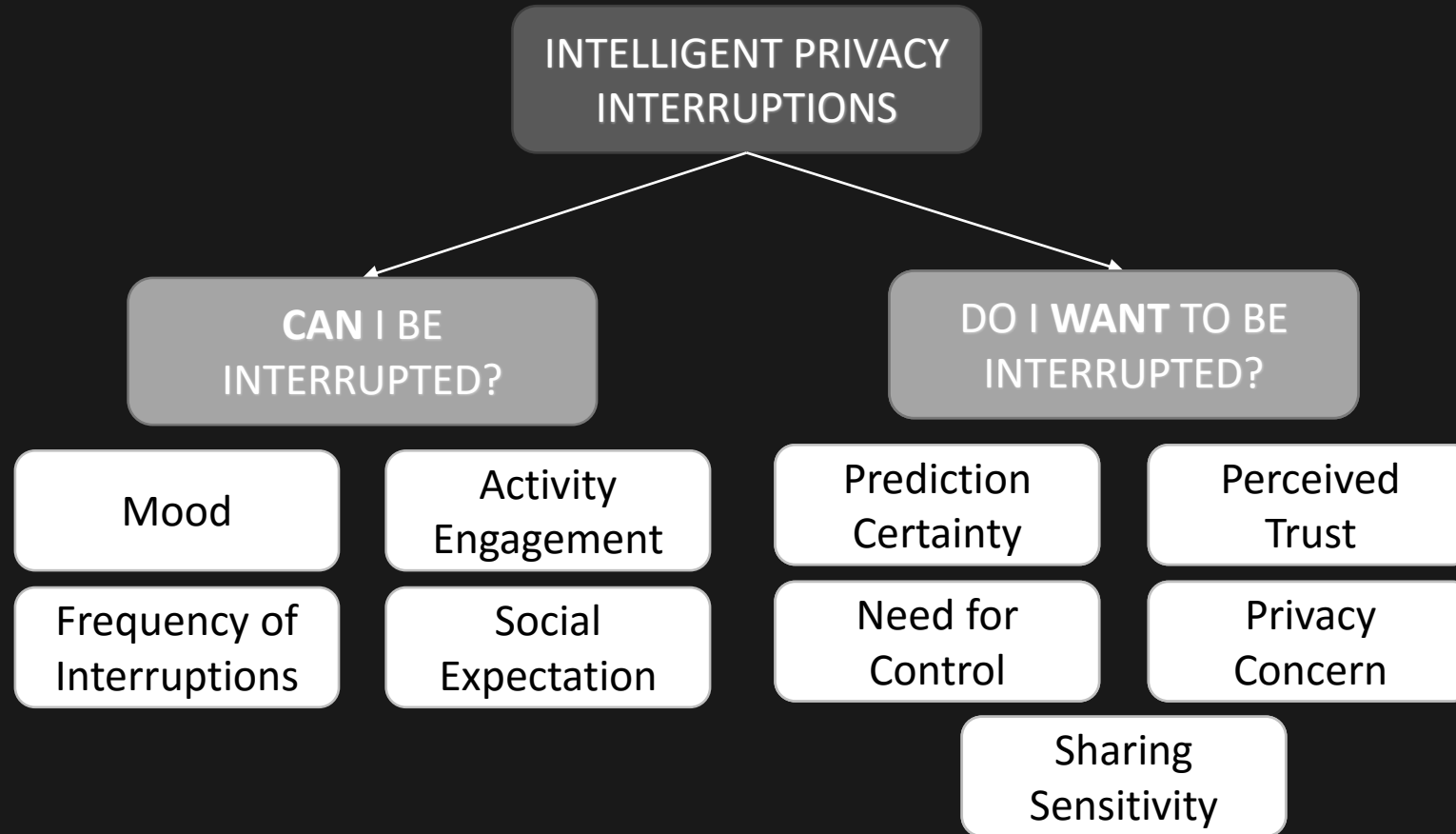
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PRIVACY AGENTS  
System-oriented



BALANCE AGENT  
AUTONOMY AND  
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Intelligent Privacy  
Interruptions



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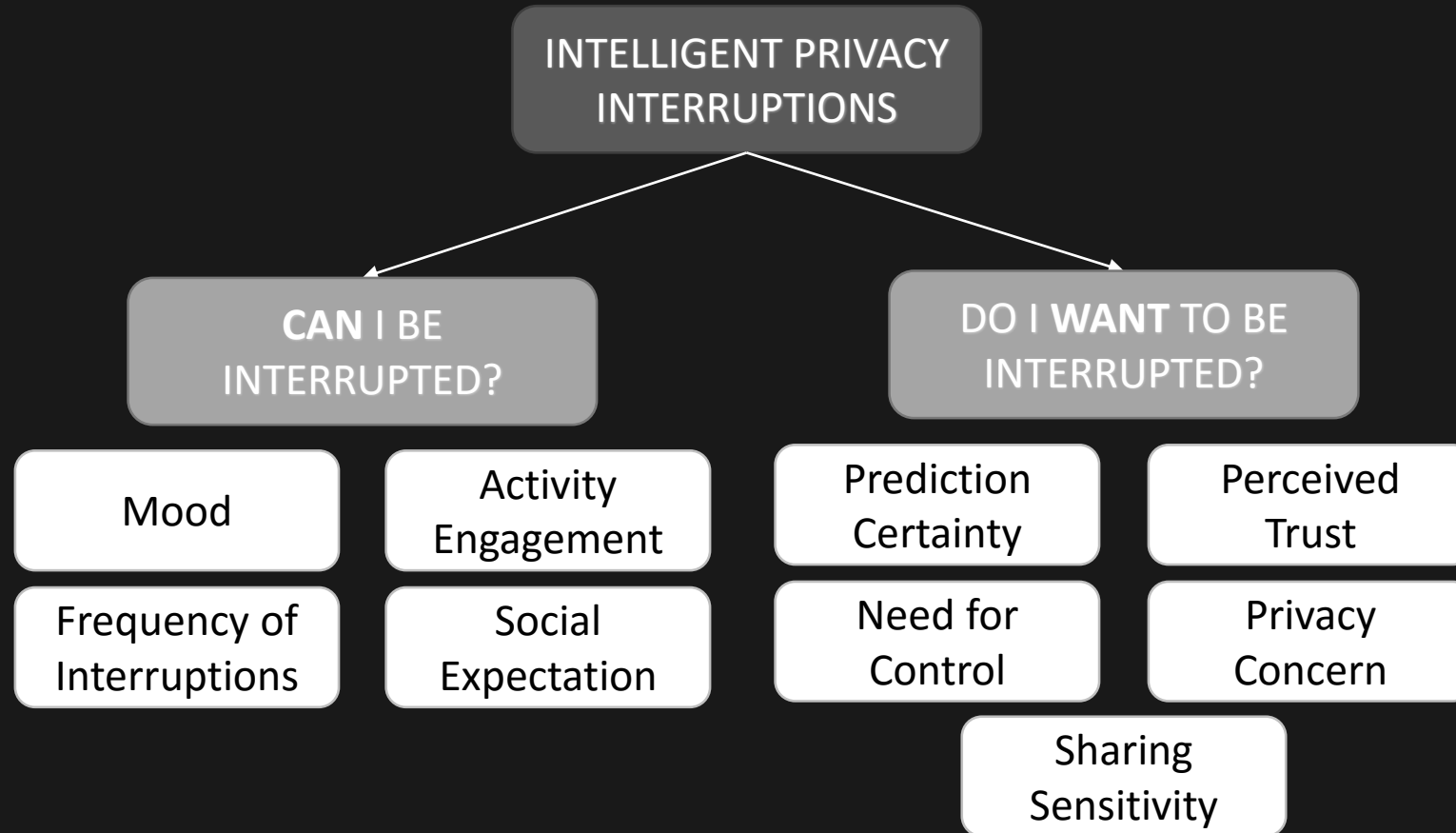
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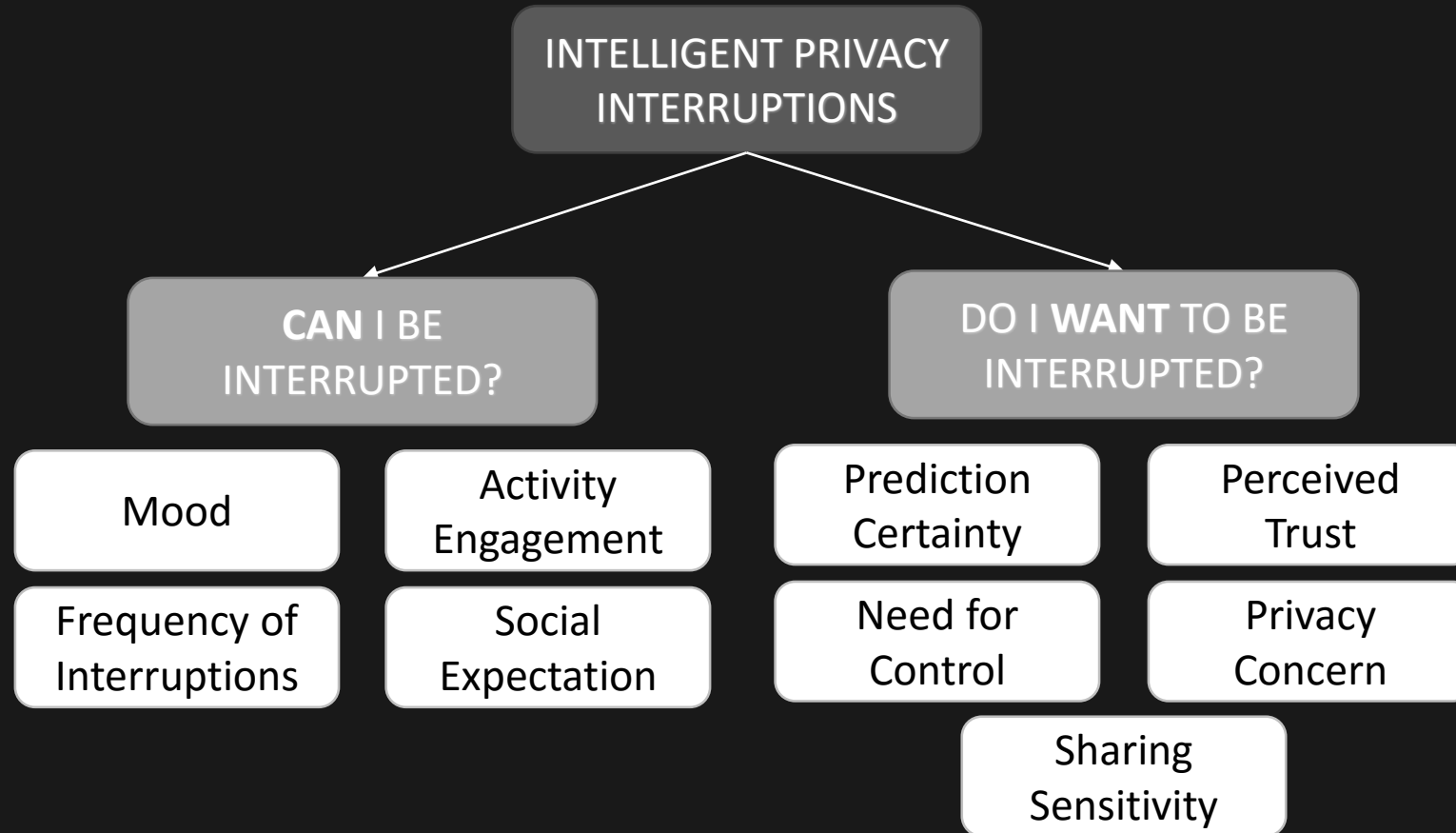
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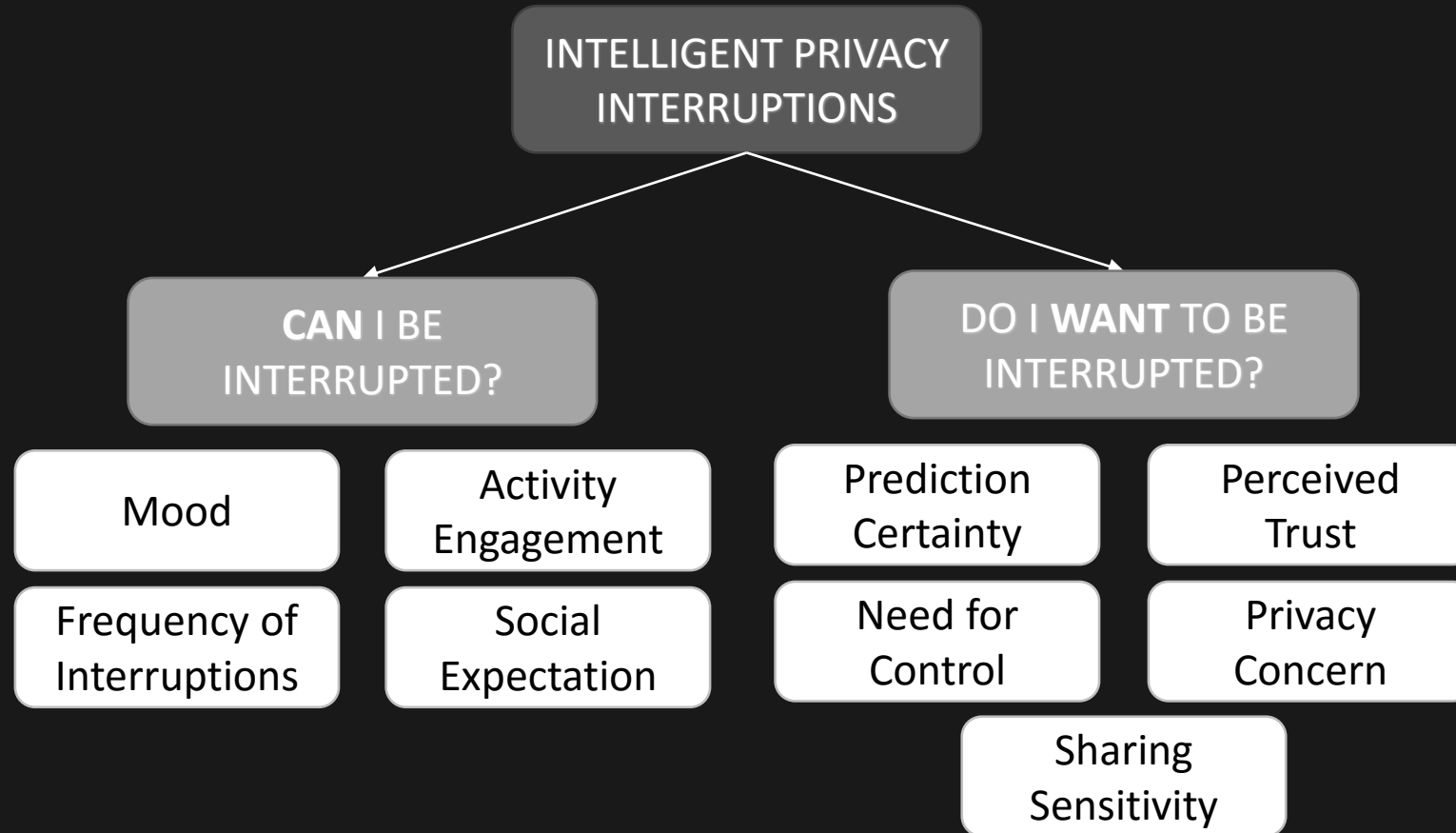
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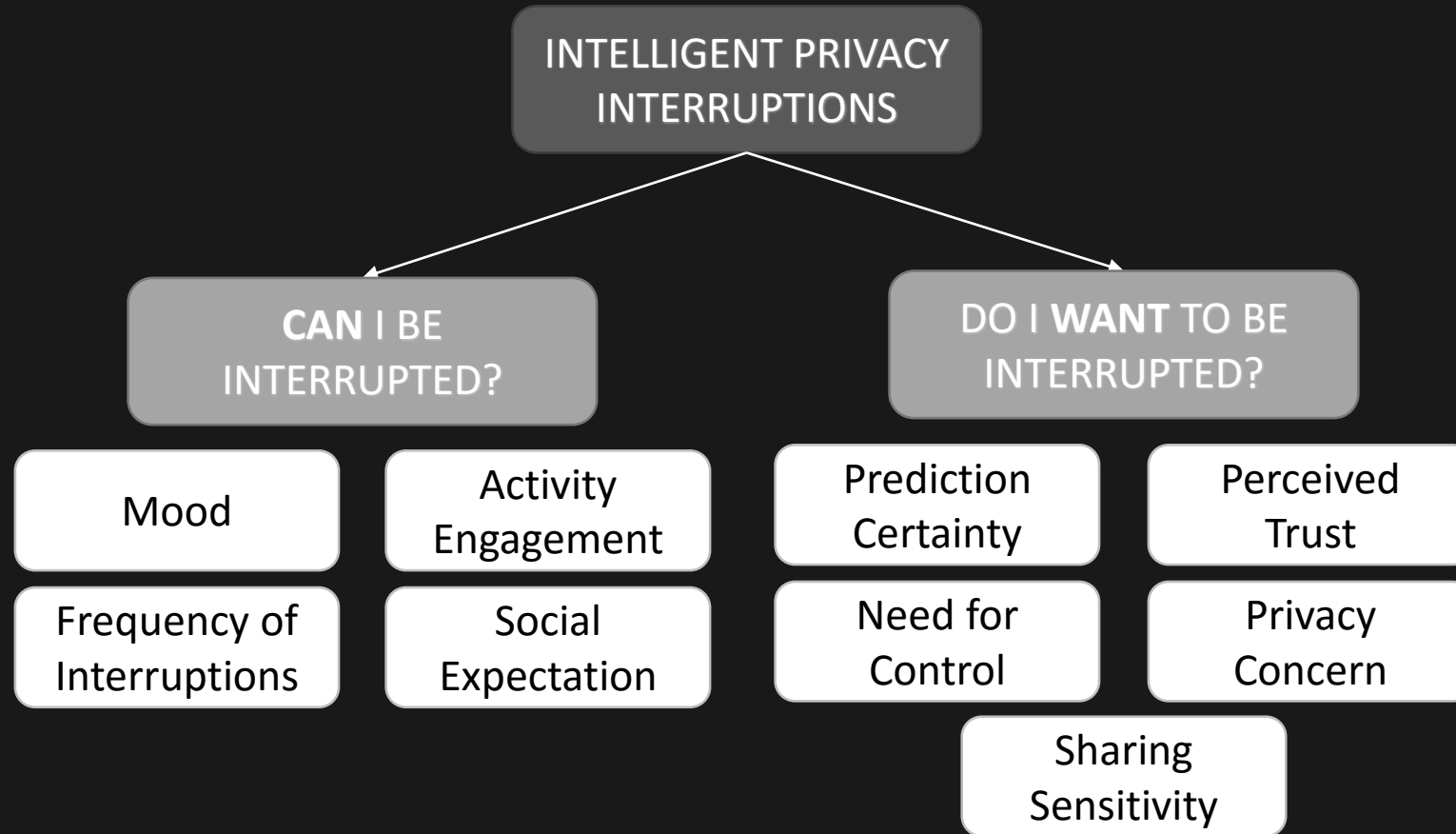
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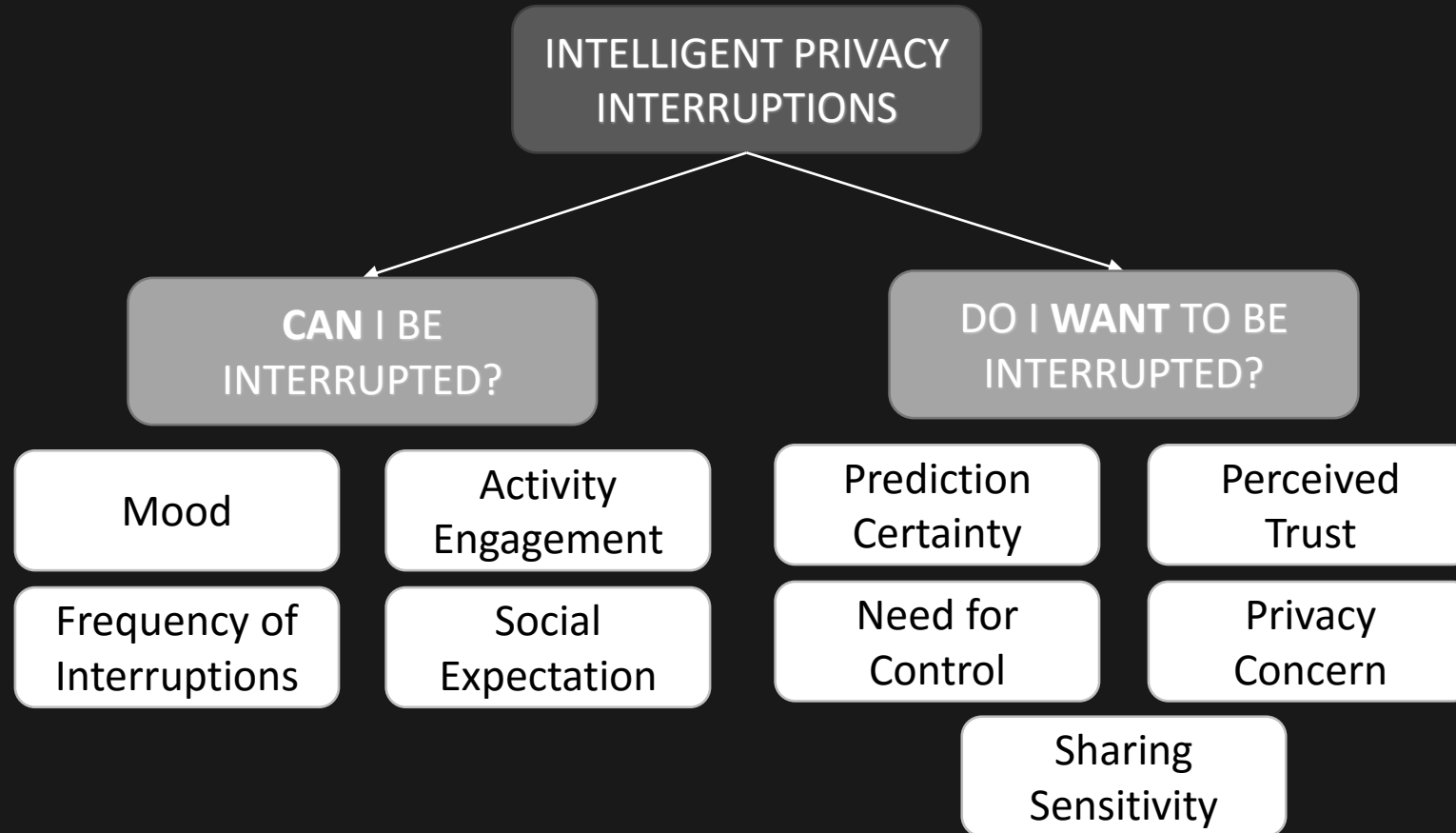
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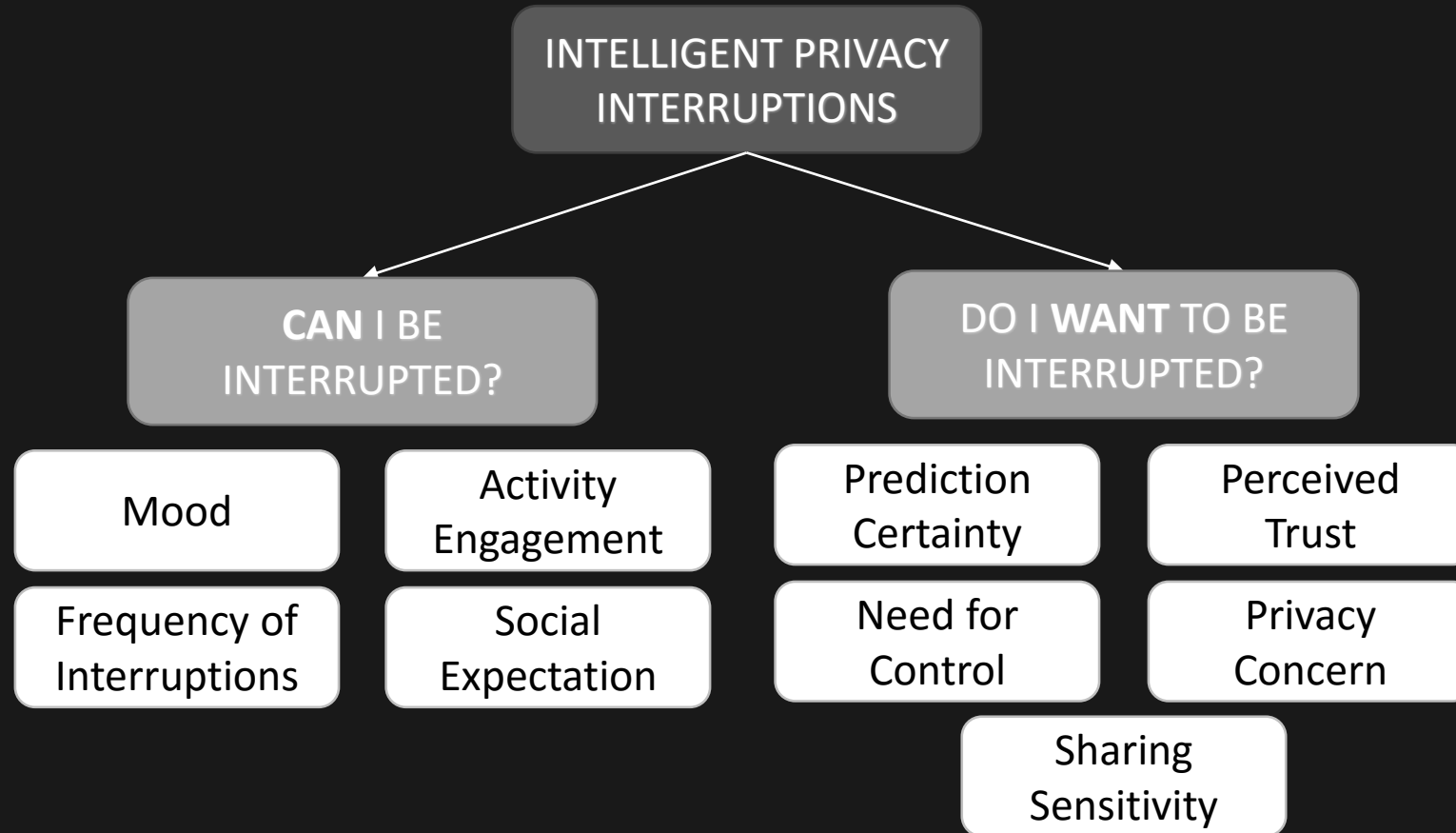
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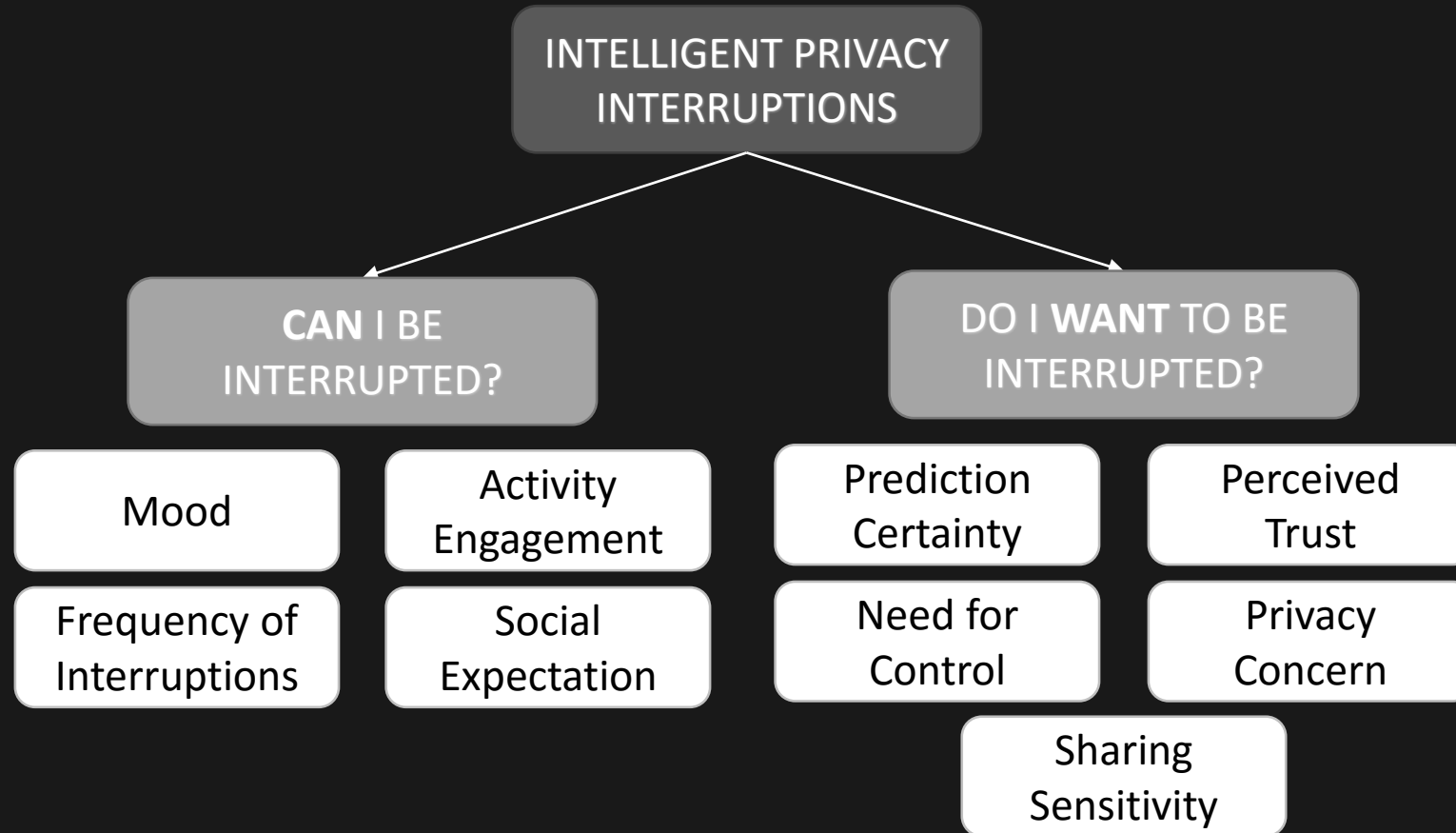
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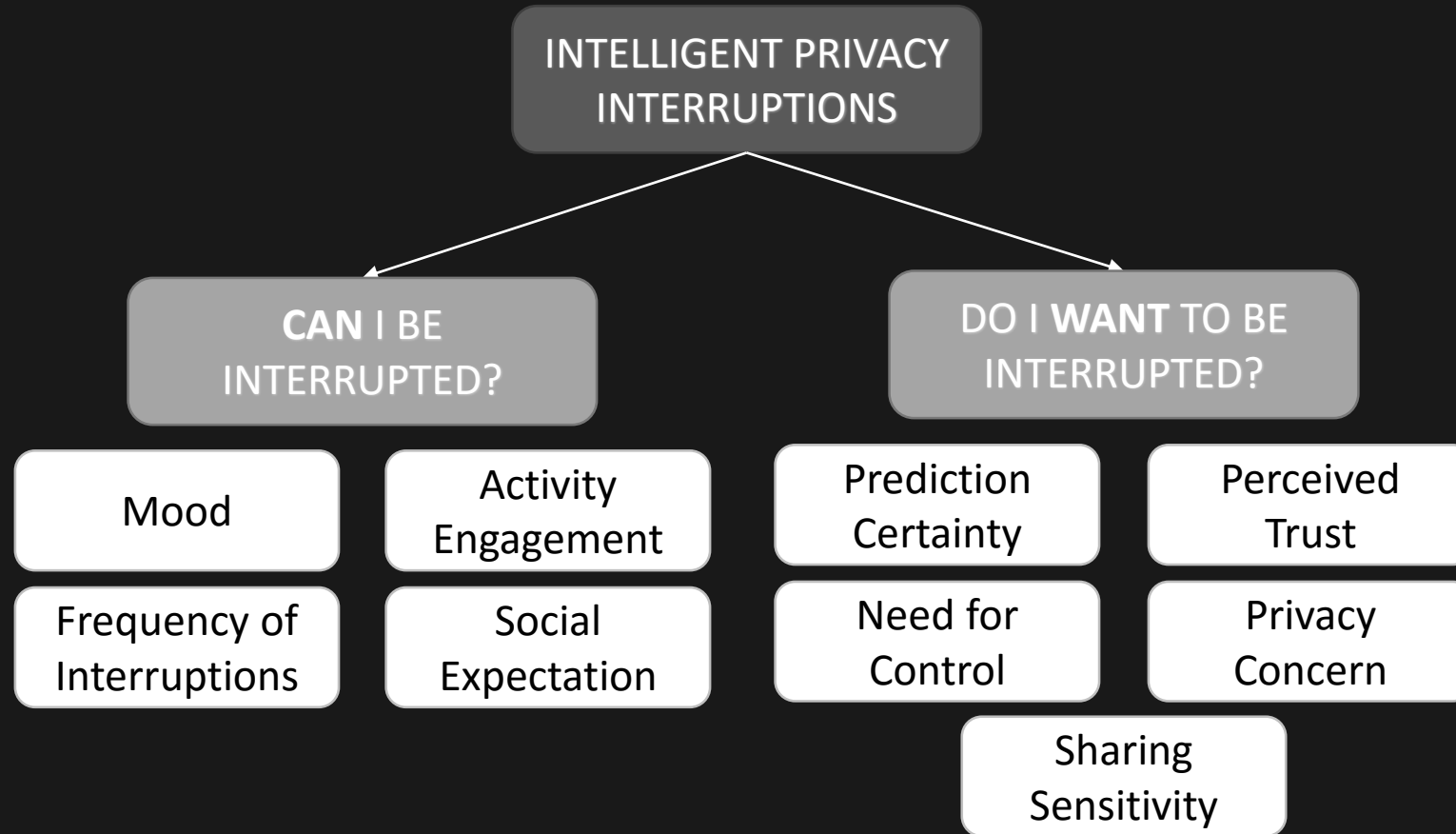
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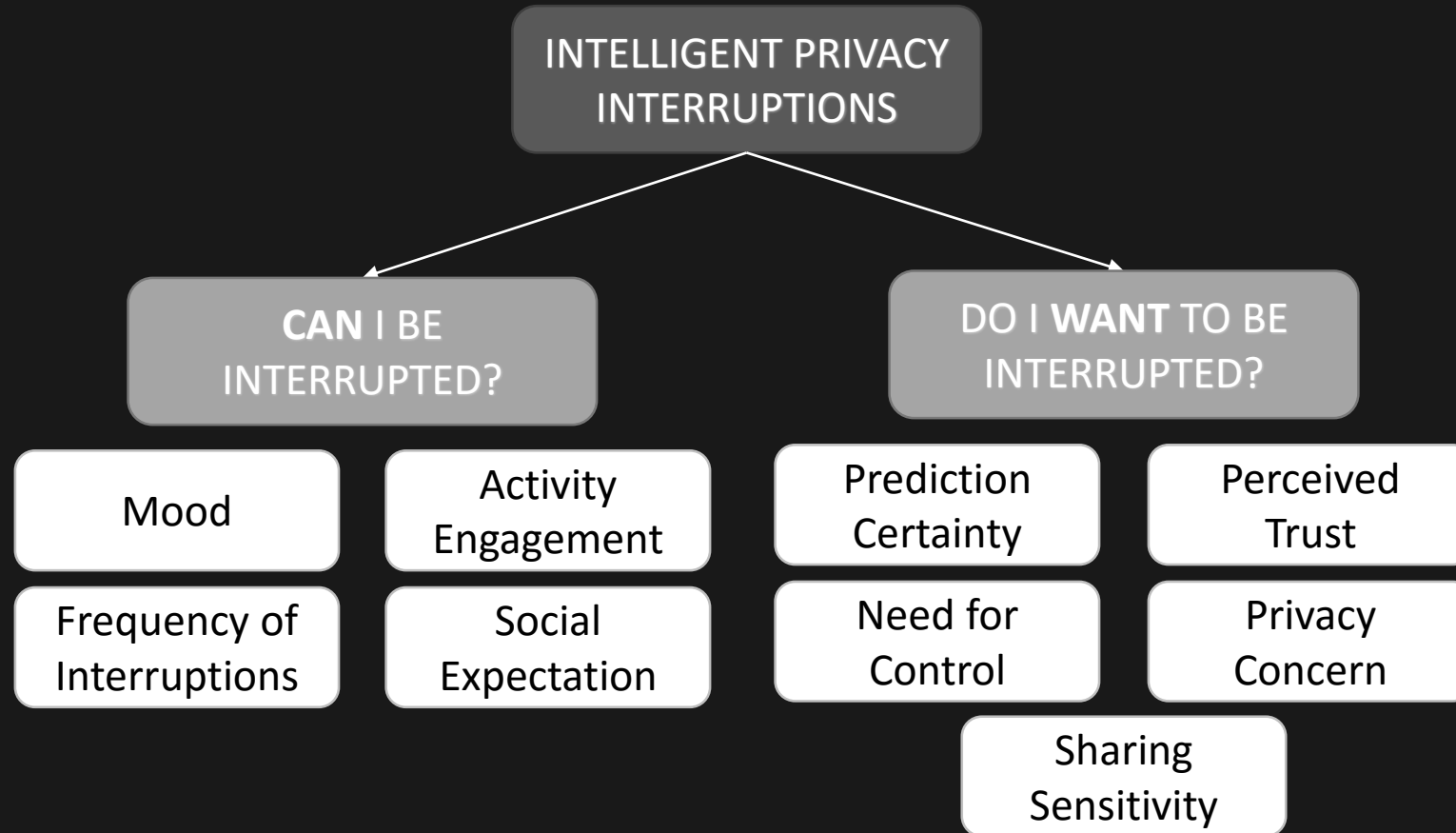
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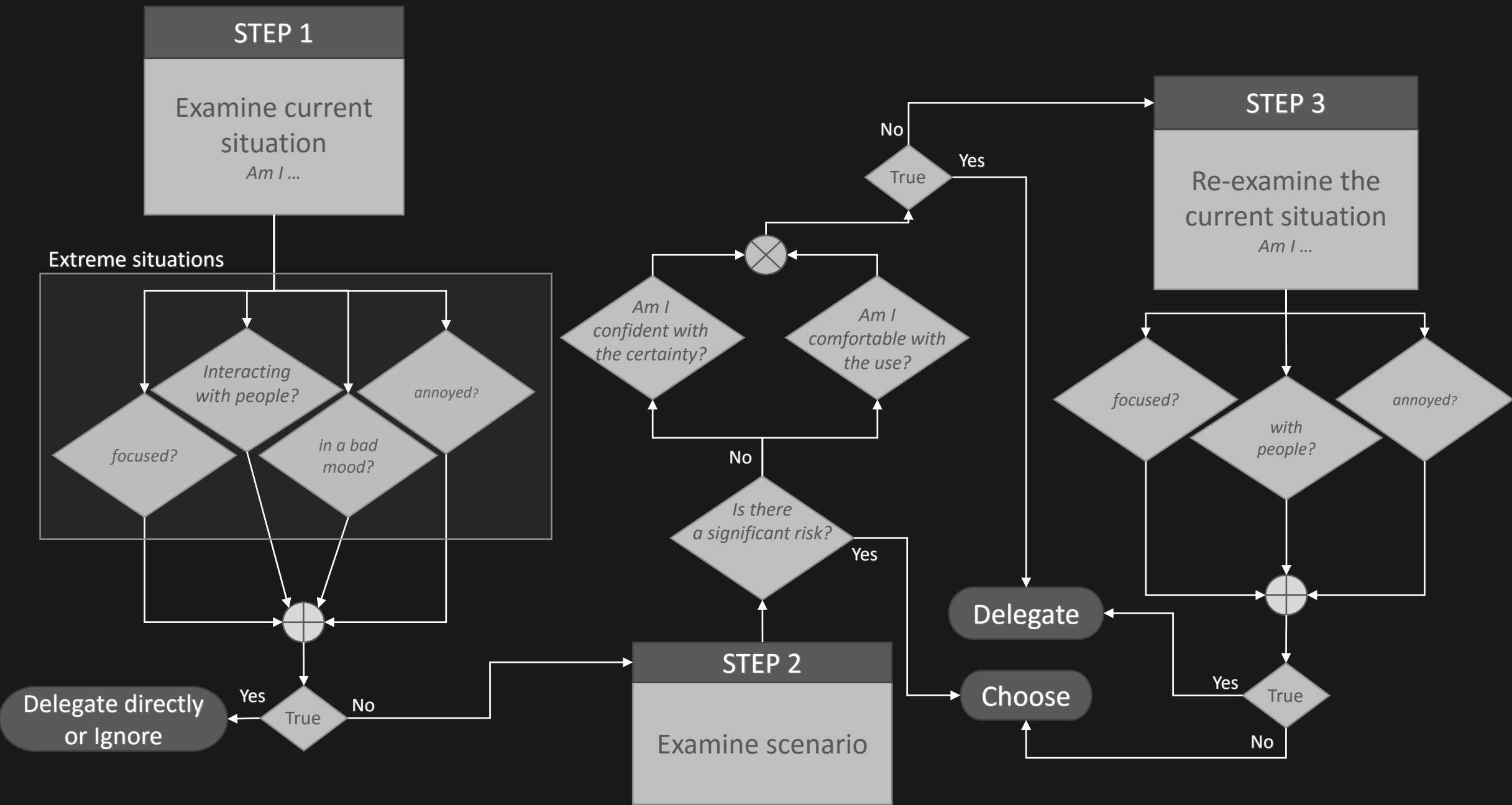
# In a nutshell...

# Thank you.

Contact me at [jcolnago@andrew.cmu.edu](mailto:jcolnago@andrew.cmu.edu)

# BUT HOW TO APPLY THE VARIABLES?

Mental process extracted from the interviews



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- The literature review was performed in **three stages** and based on an **exploratory approach**.
- The variables selected were the **most predominant and consistent** in the literature, either directly or indirectly identified.

### HISTORICAL PERSPECTIVE

#### Past 10 years

- Communications of the ACM
- IEEE Security and Privacy
- IEEE Pervasive Computing
- CHI
- Ubicomp
- SOUPS

### BROAD SEARCH

Keywords: “privacy”, “privacy solutions”, “interruptions”

- ACM
- IEEE

### FOLLOW-UP LITERATURE

References found in the first  
pass