DES535
Ubiquitous Computing

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INDRAPRASTHA INSTITUTE *of* INFORMATION TECHNOLOGY **DELHI**
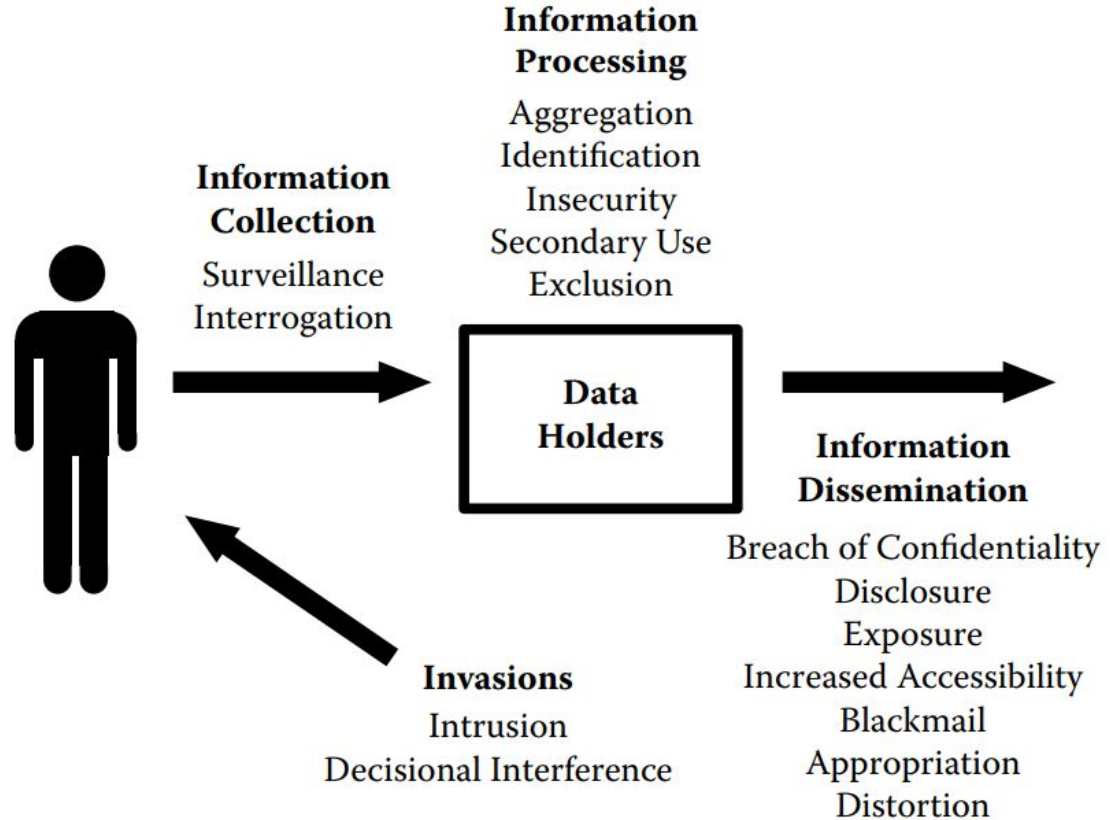
Google Classroom Code : pcwnf5t

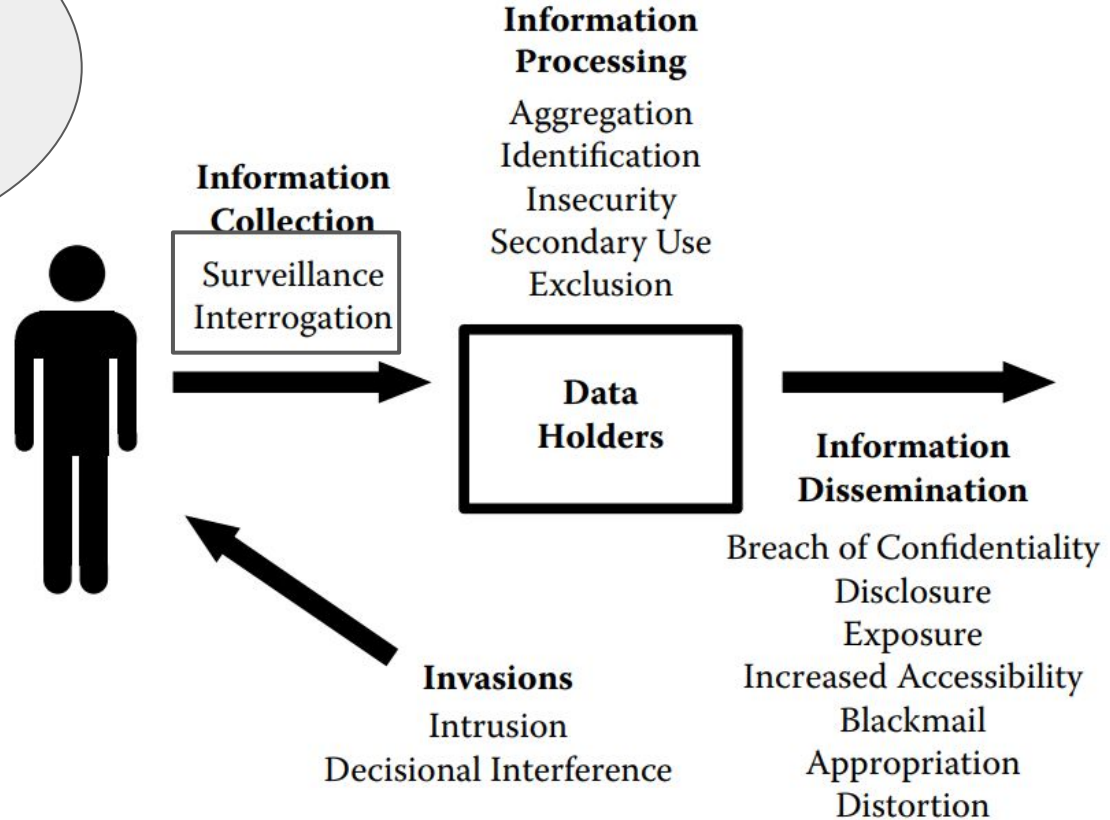# Aspects of Ubiquitous Computing

Module II

Privacy

- Solove's privacy taxonomy

Information Processing

Aggregation
Identification
Insecurity
Secondary Use
Exclusion

Information Collection

Surveillance
Interrogation

Data Holders

Information Dissemination

Breach of Confidentiality
Disclosure
Exposure
Increased Accessibility
Blackmail
Appropriation
Distortion

Invasions

Intrusion
Decisional Interference

Privacy

Most of the time this will be voluntary, but hidden or forced collections lead to these activities that violate the data subject's privacy.
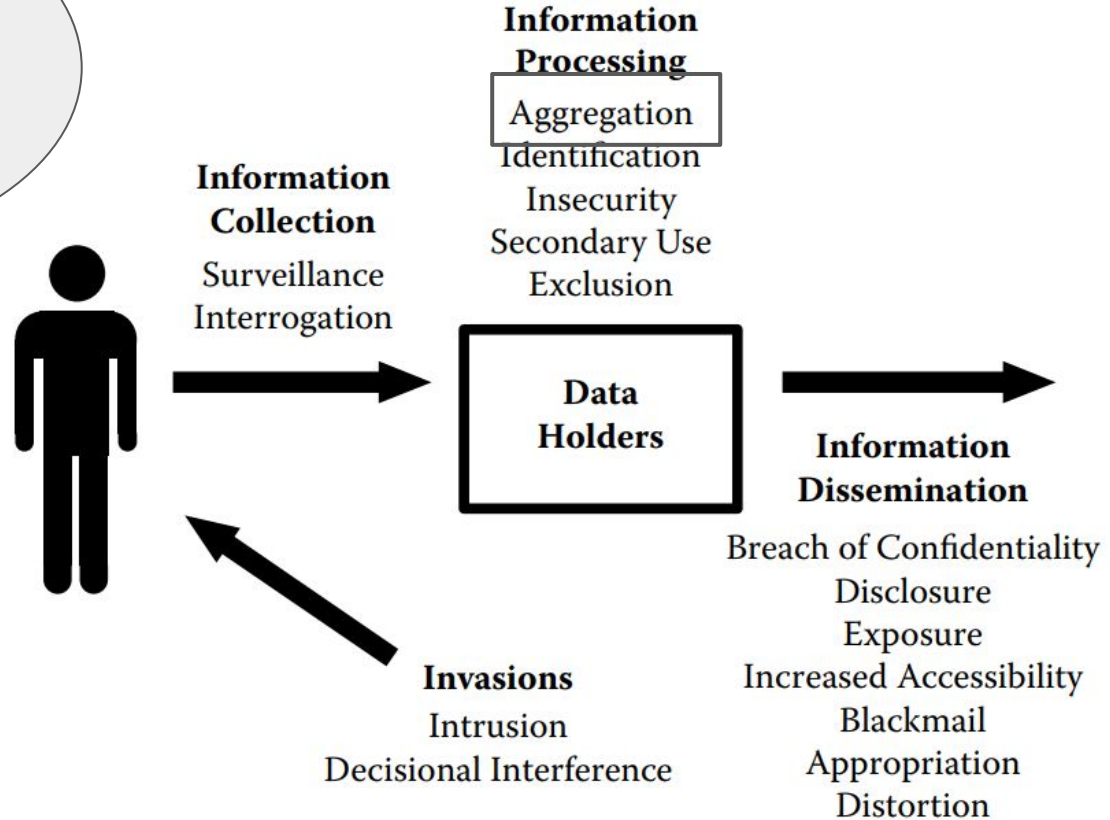
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multiple information sources might be linked that the subject might prefer to be separated

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which ties a particular information or activity to a person

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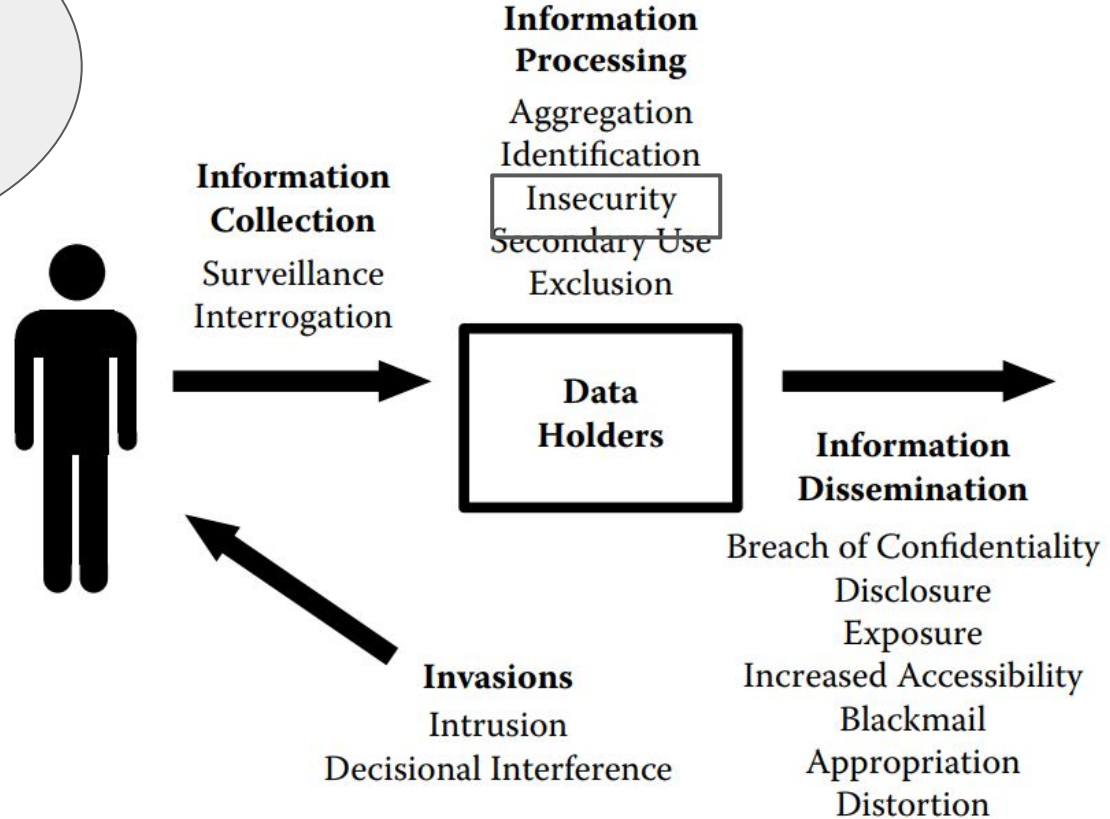Intrusion
Decisional Interference

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Privacy

a failure to properly protect the stored information that leads to improper access

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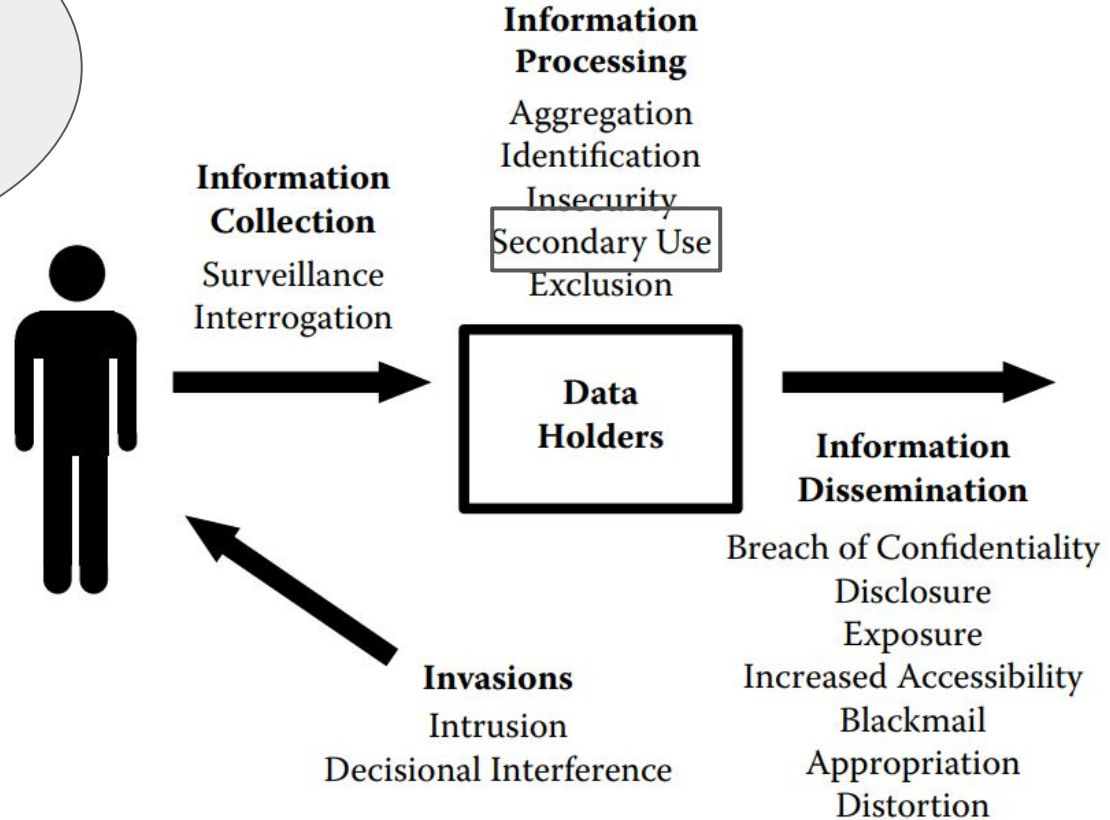
Privacy

using the collected data for a purpose other than what was agreed with the data subject

- Solove's privacy taxonomy

Information Collection
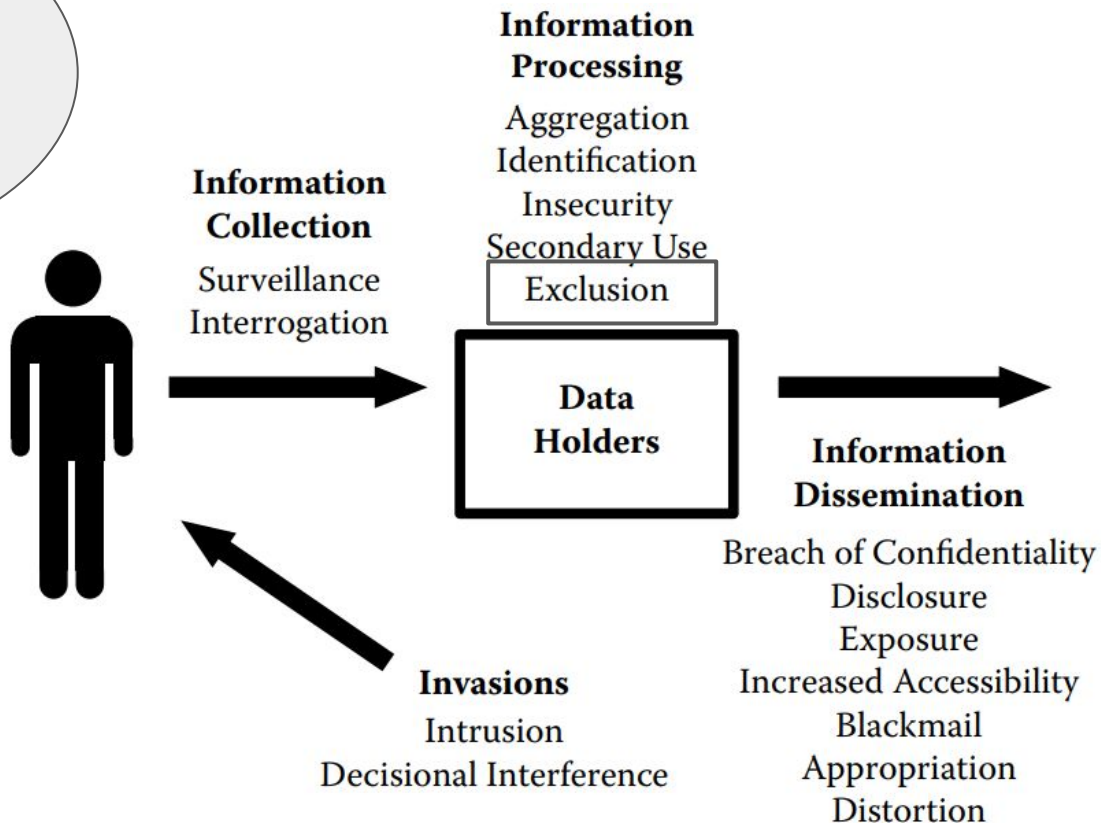Surveillance
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Privacy

the lack of letting the data subject know what data the holder has on hold about her and how it is used

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breaking a promise of keeping information confidential

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publication of truthful facts about a person that might affect the person's reputation

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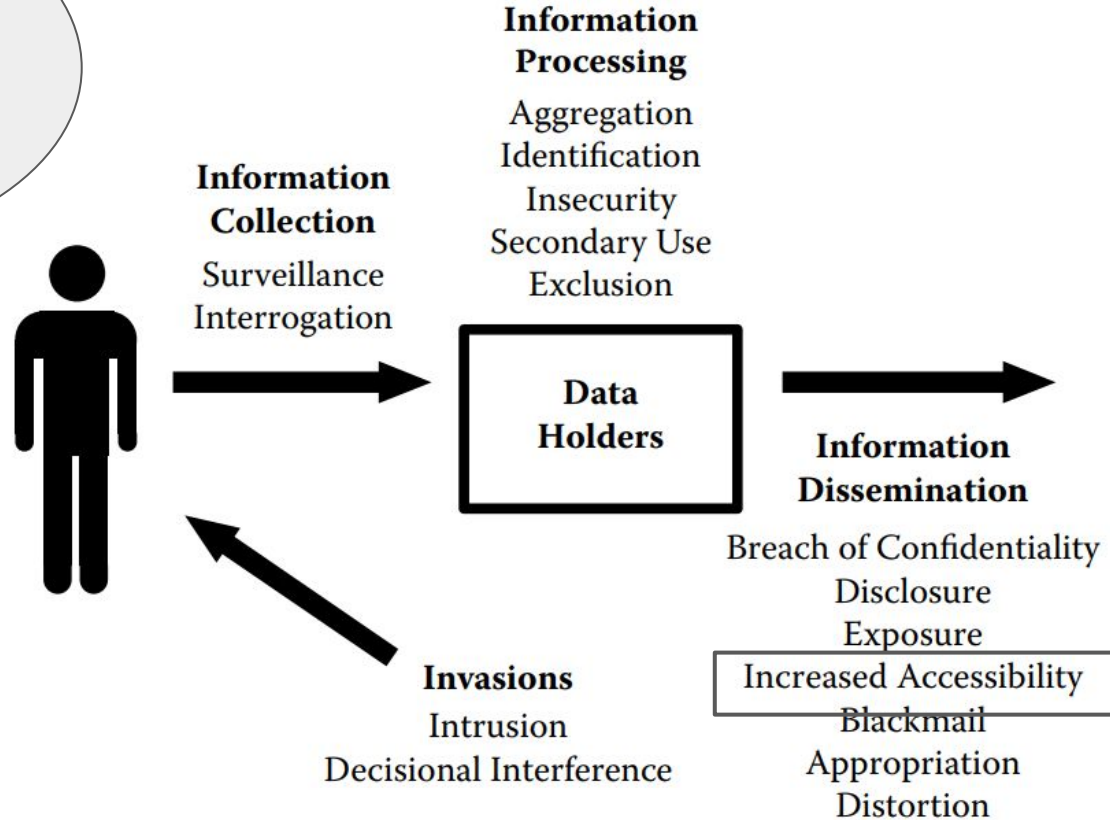Distortion

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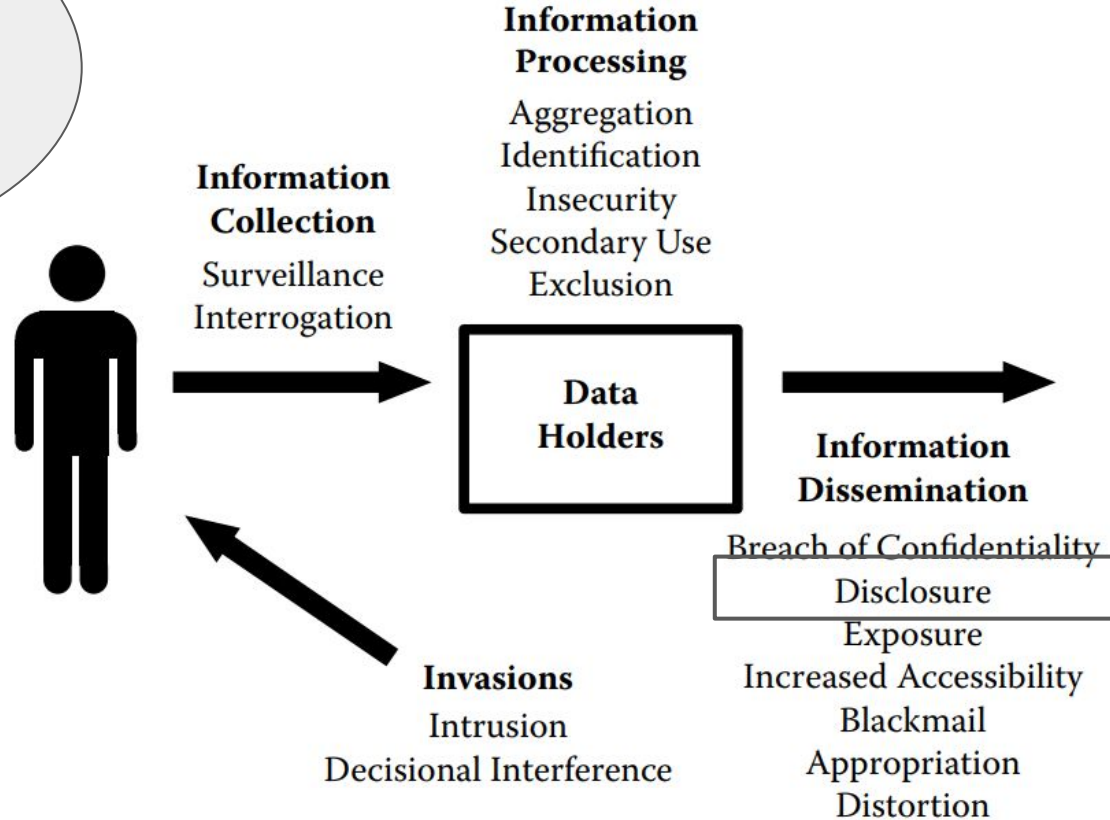
Privacy

revealing private details, for example, nude pictures or bodily disabilities

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Privacy

publication of, for example, telephone numbers or email addresses

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Privacy

threat of disclosing information

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use of the data subject's identity to serve someone else's interest

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Privacy

dissemination of false or misleading information about the data subject

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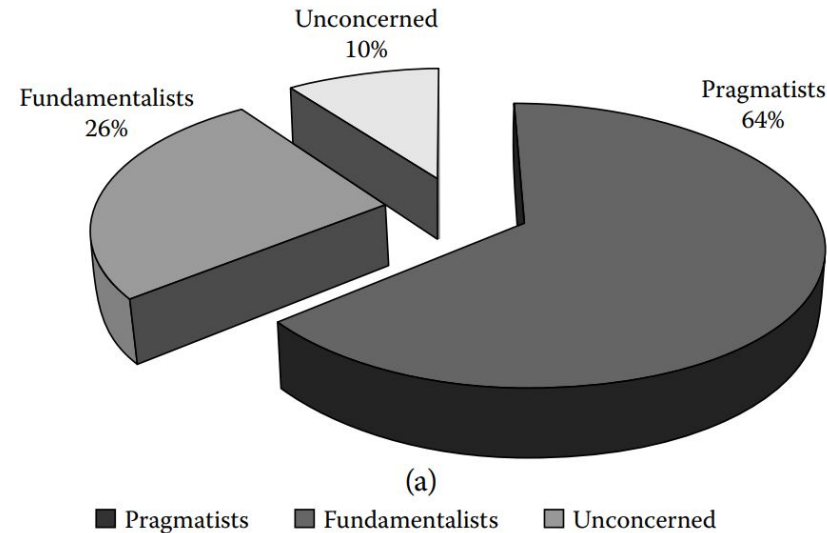Increased Accessibility
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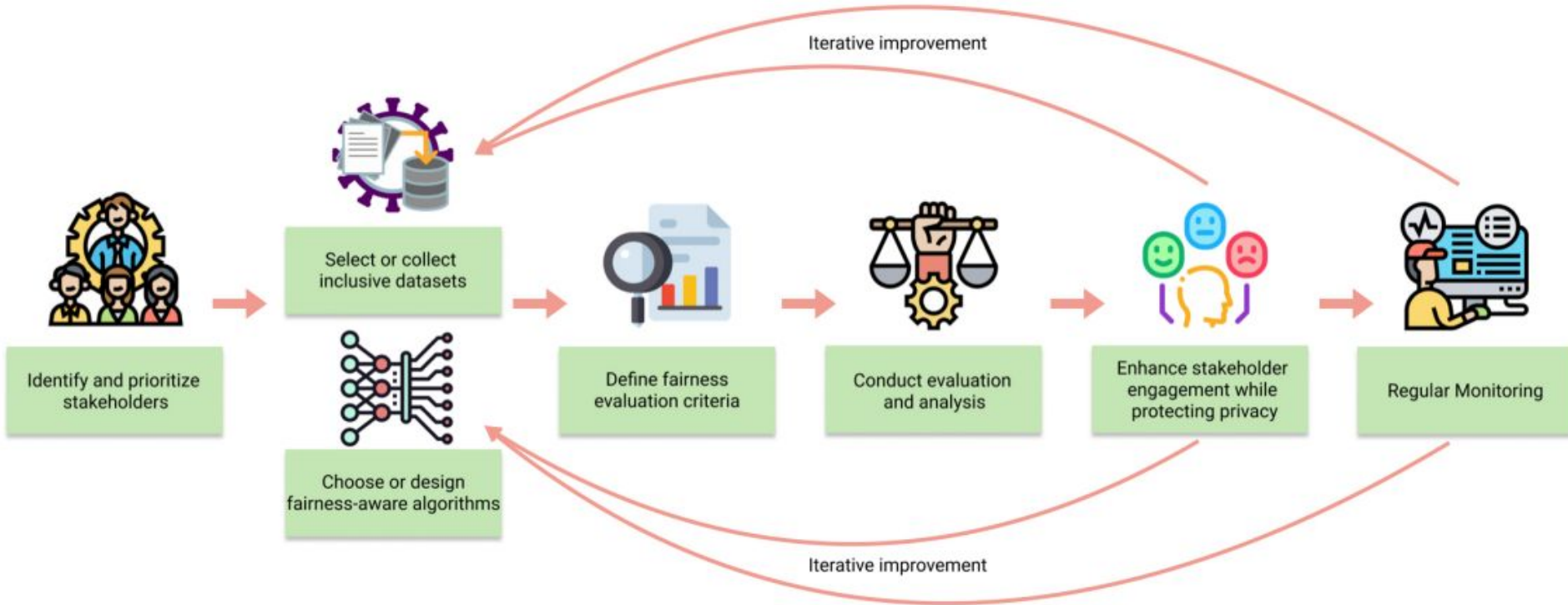Ubiquitous Computing Fundamentals, John Krumm

Privacy

- Do People Care about Privacy?
  - **Privacy Fundamentalists:** generally distrustful of organizations that ask for their personal information
  - **Privacy Pragmatists** : weigh the benefits to them of various consumer opportunities and services, protections of public safety or enforcement of personal morality against the degree of intrusiveness of personal information sought and the increase in government power involved
  - **Privacy Unconcerned** : generally trustful of organizations collecting their personal information, comfortable with existing organizational procedures and uses, and ready to forego privacy claims to secure consumer service benefits or public order values

Unconcerned 10%

Fundamentalists 26%

Pragmatists 64%

(a)

■ Pragmatists ■ Fundamentalists ☐ Unconcerned

Ubiquitous Computing Fundamentals, John Krumm

Framework For Designing Fair Ubiquitous Computing Systems

Identify and prioritize stakeholders → Select or collect inclusive datasets / Choose or design fairness-aware algorithms → Define fairness evaluation criteria → Conduct evaluation and analysis → Enhance stakeholder engagement while protecting privacy → Regular Monitoring

Iterative improvement

https://dl.acm.org/doi/pdf/10.1145/3594739.3610677

Activity

Develop an app that trains a ML model and uses the trained model to make predictions.

Resources:

1. A Python code to train the ML model and create the .pkl file.
2. A Python code that creates a Flask Application
3. The MIT App Inventor (Application)