

HUMAN CENTERED AI

HCAI is about building systems that **support human judgment, not replace it.**

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Socio-Technical Action Research Lab



Winby, S. & Xu, Wei, *Human-Centered AI Maturity Model: An Organizational Design Perspective*, December 2025

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Human-Centered Artificial Intelligence (HCAI)

Shneiderman, 2020 & 2022

“The new goal is to seek **high levels of human control AND high levels of automation...**

... to produce computer applications that are
Reliable, Safe & Trustworthy.”

“HCAI technologies bring superhuman capabilities,
augmenting human creativity, while raising human performance and self-efficacy.”

Shneiderman, B. (2020), Human-Centered Artificial Intelligence: Reliable, Safe & Trustworthy

TWO-DIMENSIONAL HCAI FRAMEWORK: *Shneiderman*

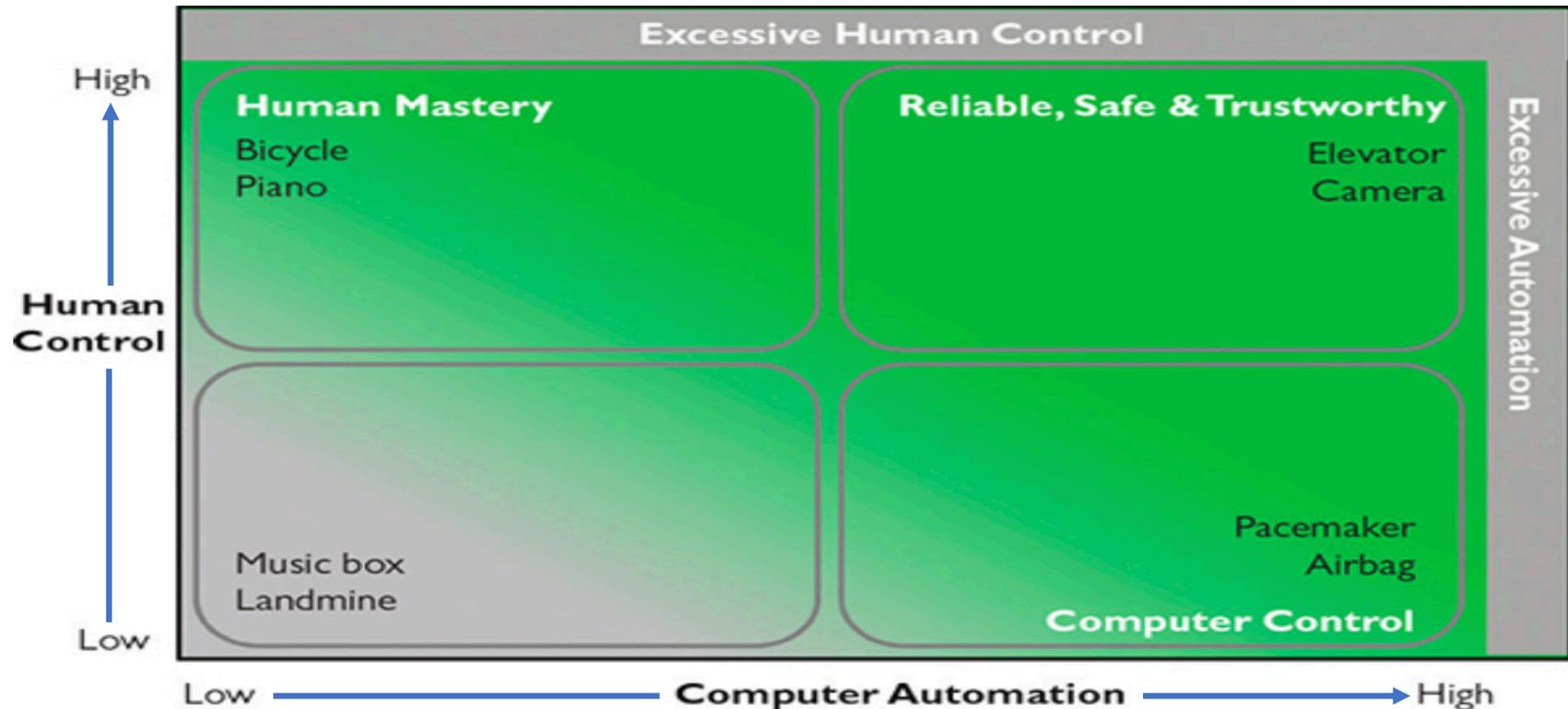
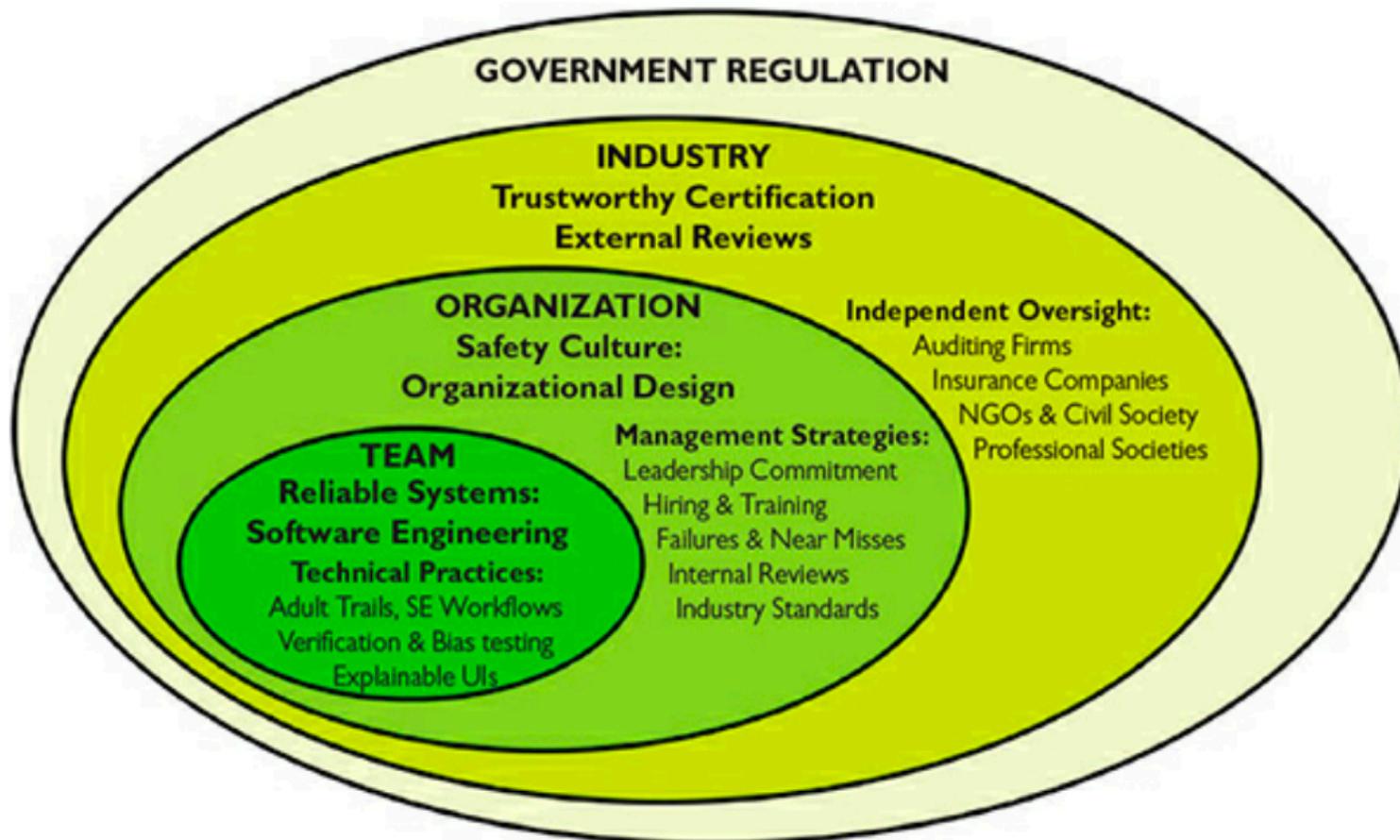


Figure 8.4 Designers need to prevent the failures from excessive automation and excessive human control (gray areas).

Shneiderman, B. (2022), *Human-Centered AI*, New York, Oxford University Press

GOVERNANCE Structures for HCAI: *Shneiderman*



Shneiderman, B. (2022), *Human-Centered AI*, New York, Oxford University Press

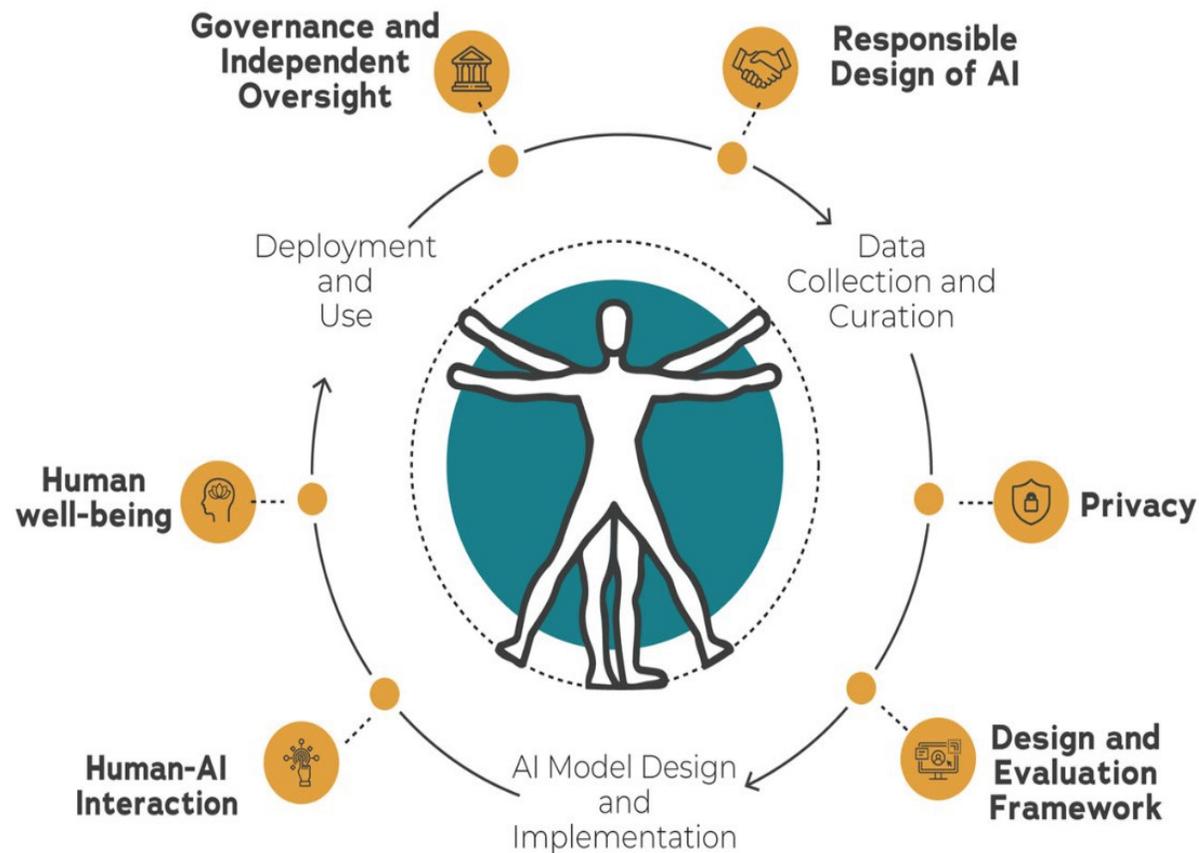
Human-Centered Artificial Intelligence (HCAI) DESIGN

- Purpose: create AI that is compatible with human values, protects human safety, and assures human agency
- Principles: improve human performance in ways that are reliable, safe, and trustworthy; augment rather than replace human capabilities
- Processes: consider individual human differences, demands, values, expectations, and preferences
- Products: AI systems that are accessible, understandable, and trustworthy



Ozlem Garibay (Univ. Central Florida) & Brent Winslow (Google), HCAI Online Workshop, STSRT, April 2024.

SIX GRAND CHALLENGES of Human-Centered Artificial Intelligence



Ozlem Garibay et al. (2023), Six HCAI Grand Challenges, *International Journal of Human-Computer Interaction* 39(3).

HCAI is a socio-technical system

- HCAI and STS are related in that **HCAI is a socio-technical system (STS)**
- HCAI and STS are both orientated to achieve **joint optimization** between humans and technology.
- Both HCAI and STS are concerned with designing organization systems that are effective, efficient, and satisfying for the people who use them.

Linking HCAI & Sociotechnical Systems Design (STS)

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Shneiderman, 2020 & 2022

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Correlated With

Sociotechnical Systems Design (STS)

Pasmore et al., 2018; Ref; Trist et al, 1951,1963.

” Work systems...devised by people for a ‘win-win-win-win’...so that employees have **greater control** over technology, while also **experiencing social and psychological rewards**, [with] technology operating **closer to its potential**, and the organization **performing better overall** while **adapting more readily** to change in its environment.”

See STSRT Webconference, “Linking STS Organization Design & Human-Centered AI”, November 2023