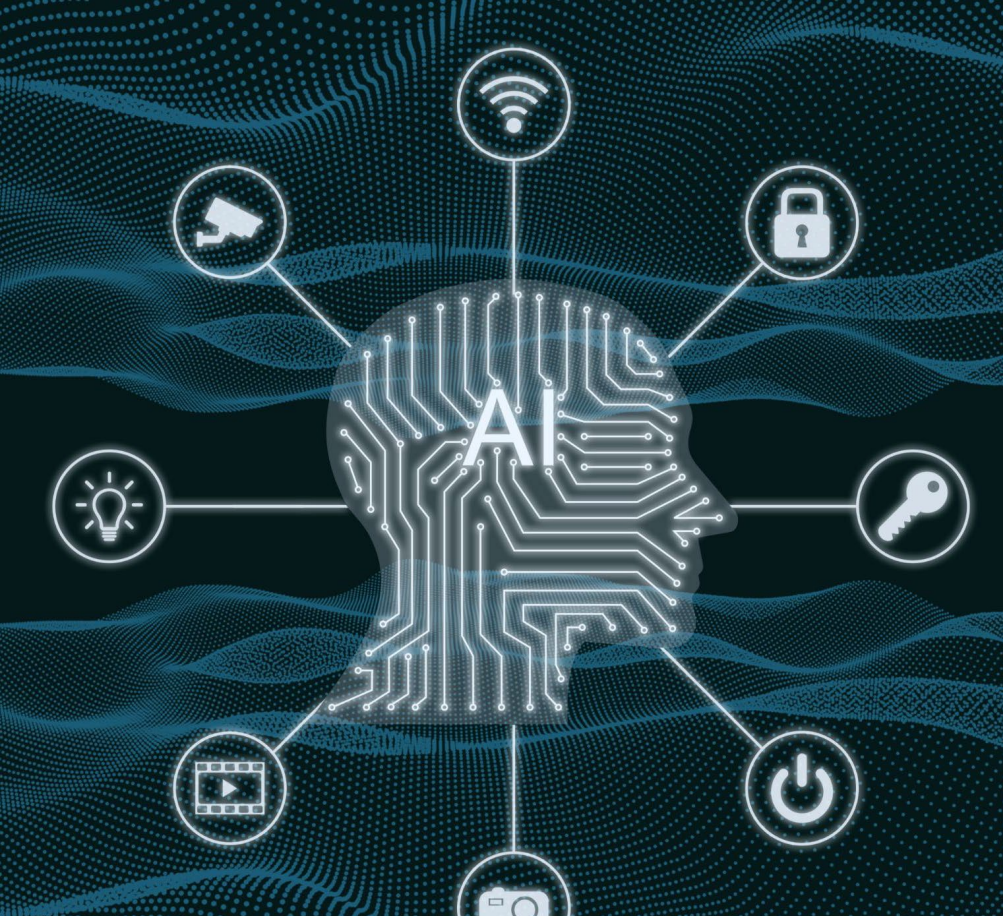


HUMAN-CENTERED AI IMPLEMENTATION FROM A JOB DEMANDS- RESOURCES PERSPECTIVE

HUMAN AI FROM JD-R

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WHEN AI MEETS HUMANS

Expectations vs Reality

AI promises productivity and well-being, but outcomes & reality often differ

Key Interaction Elements

Outcomes depend on worker $\times$ AI $\times$ task

Verification Workload

Additional workload and cognitive strain

Designing AI Implementation

Organizations prioritize performance over well-being

AI outcomes depend on implementation, not technology alone



THE AI PRODUCTIVITY PARADOX

AI increases productivity

- +14–15% (customer support)
- +26% (developers)
- +30–40% (writing / knowledge work)

BUT

- Gains are uneven across workers
- Larger for less experienced employees
- Lower or negative for complex/expert tasks

AI works for certain tasks and workers

Macro gains may remain modest despite strong micro effects

THEORETICAL FRAMEWORK

JOB DEMANDS



JOB RESOURCES

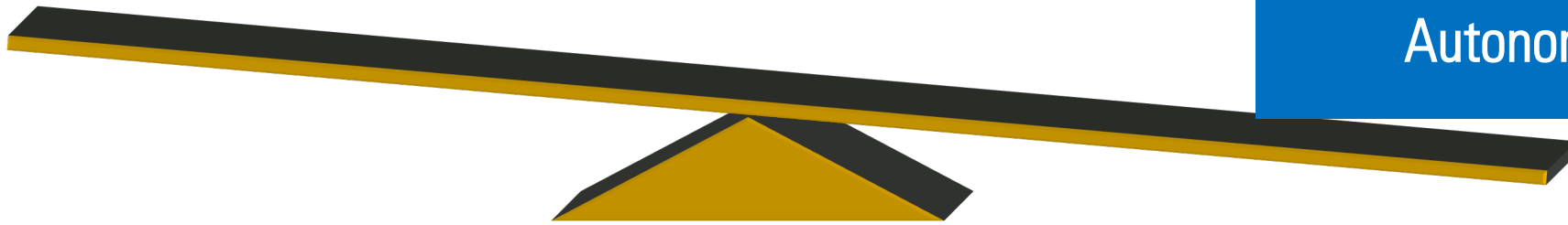
Skill variety

Developmental possibilities

Coaching

Social support

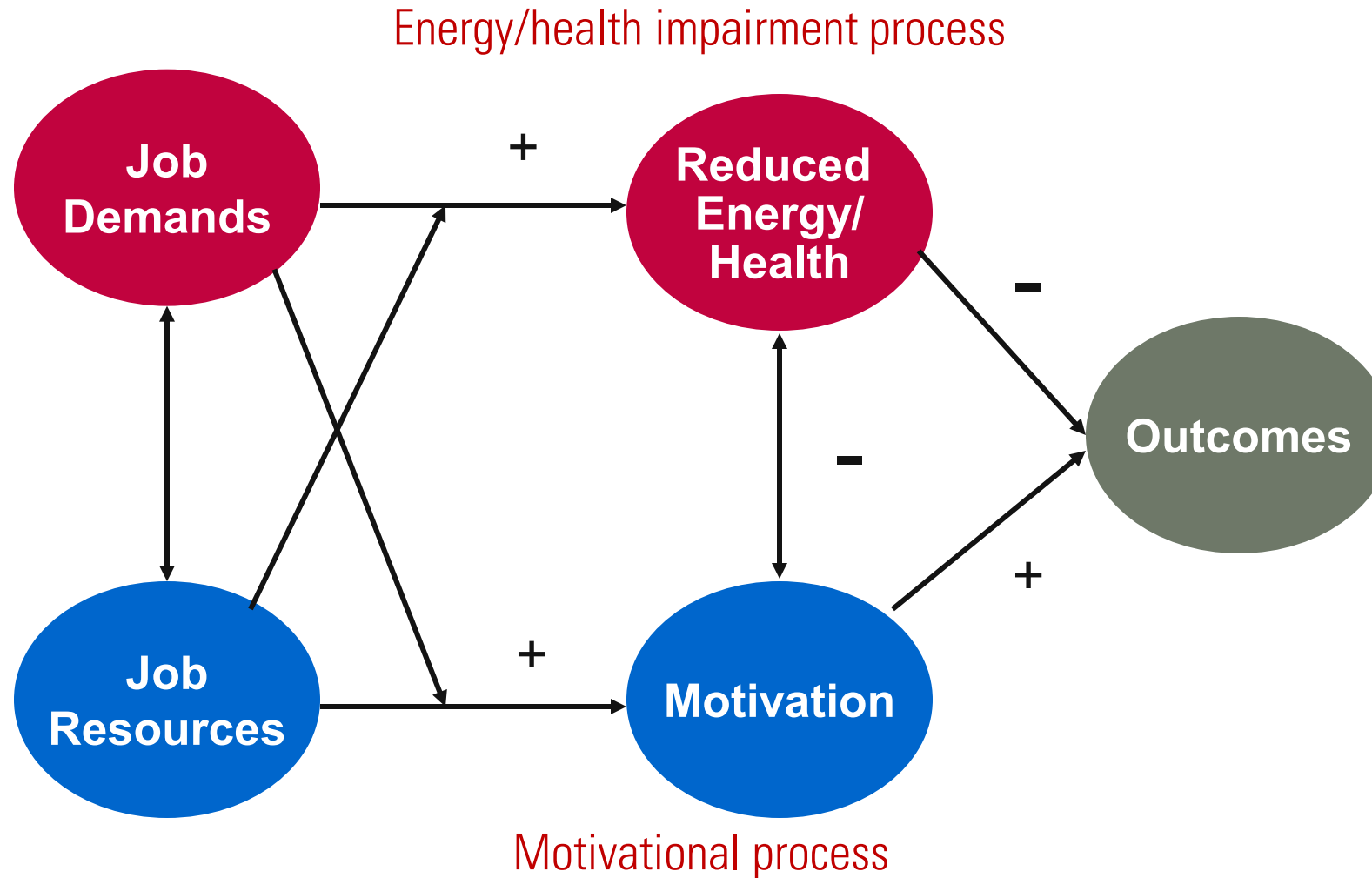
Autonomy



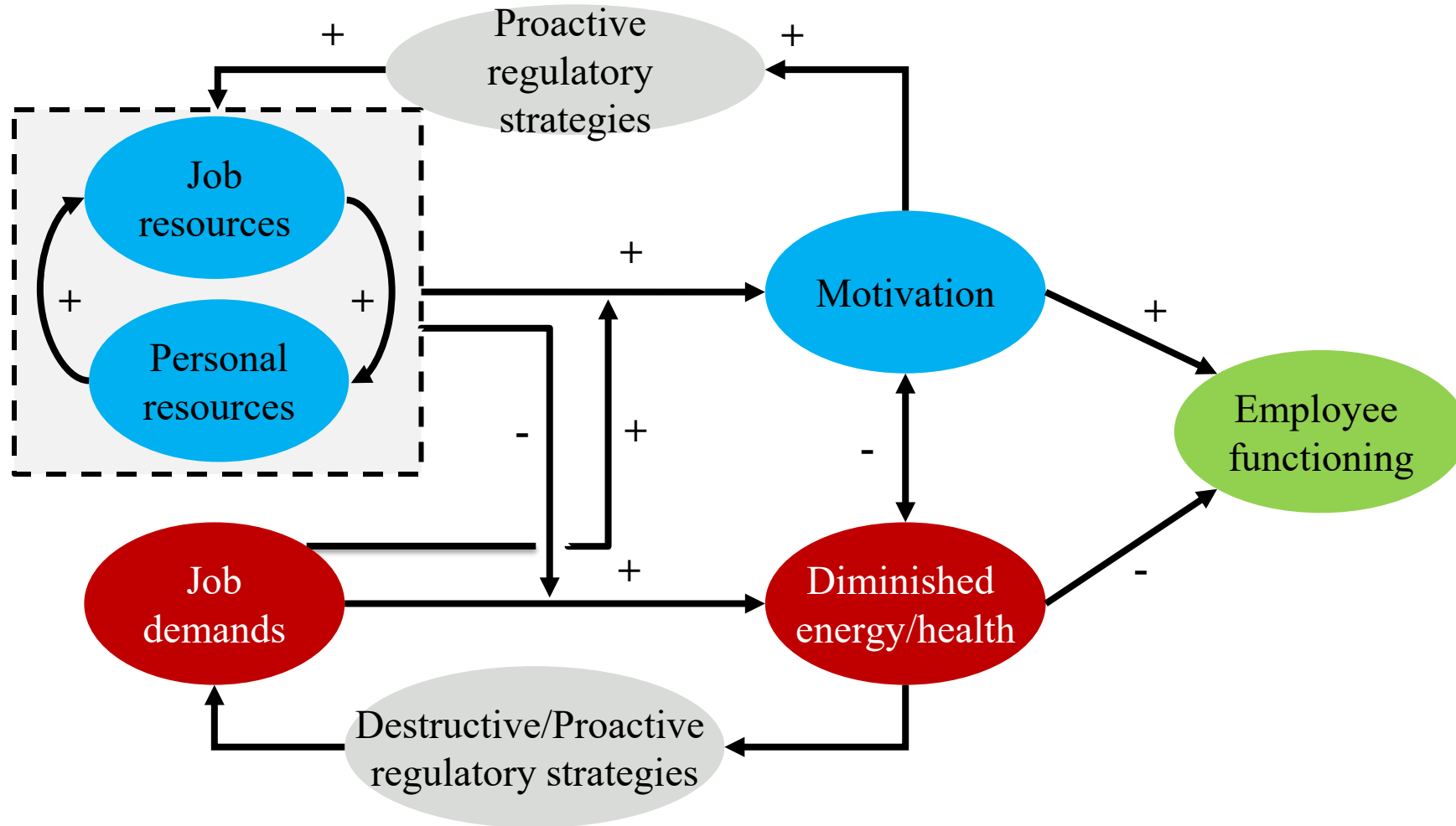
DEMANDS AND RESOURCES



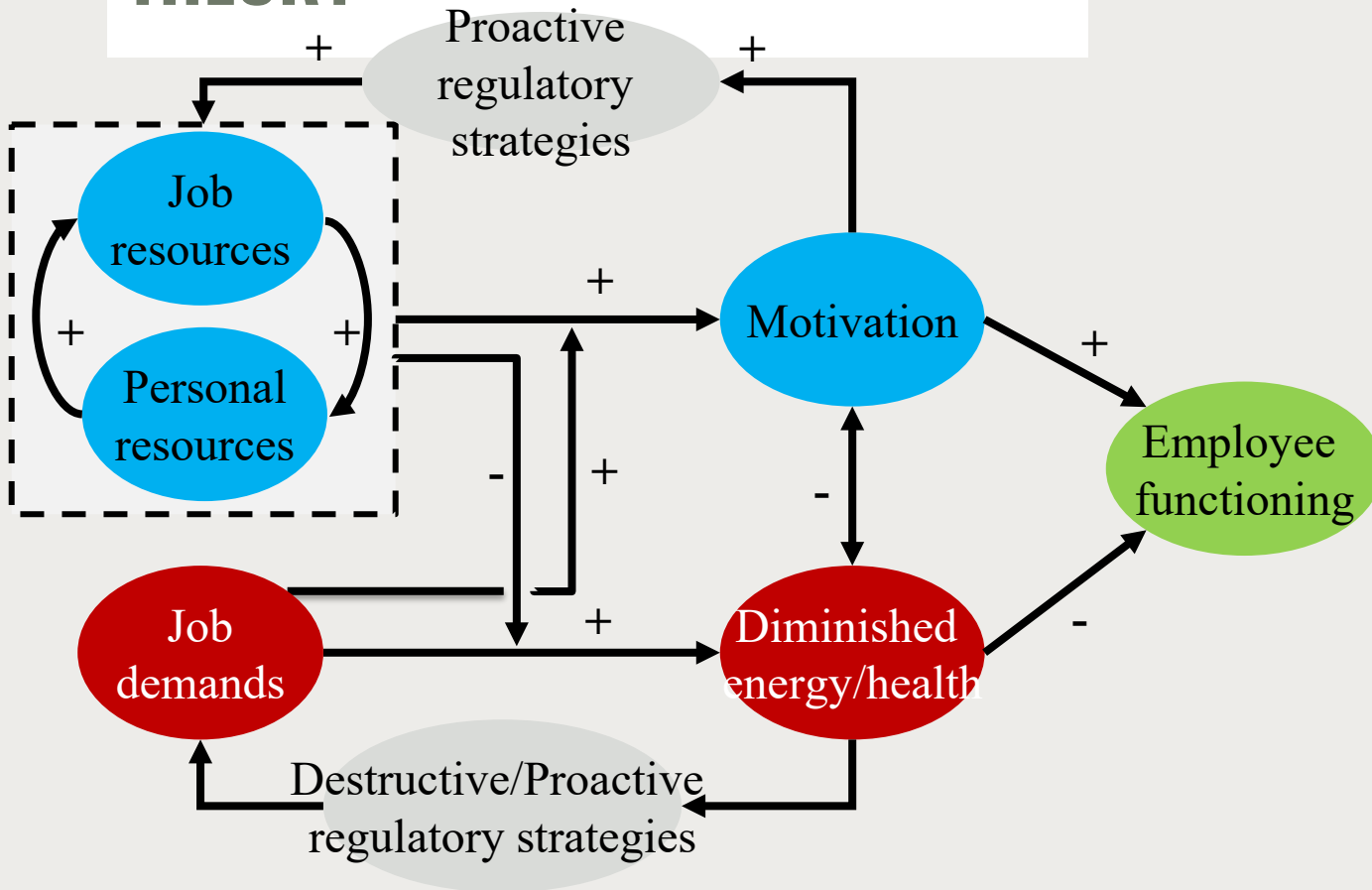
JOB DEMANDS-RESOURCES (JD-R) MODEL



JOB DEMANDS-RESOURCES (JD-R) THEORY



JOB DEMANDS–RESOURCES THEORY



Balance Determines Outcomes

A balance between demands and resources influences key outcomes like engagement, burnout, and overall performance.

Implications for Change

Effective change implementation retains the balance between demands and resources to improve outcomes.

Emerging pattern: dual pathways of AI impact

AI often improves some aspects of work while worsening others.

Resource pathway

AI-supported autonomy
Efficiency gains and more learning opportunities
Relief from repetitive or analytical tasks
Better concentration / flow and stronger engagement

Demand pathway

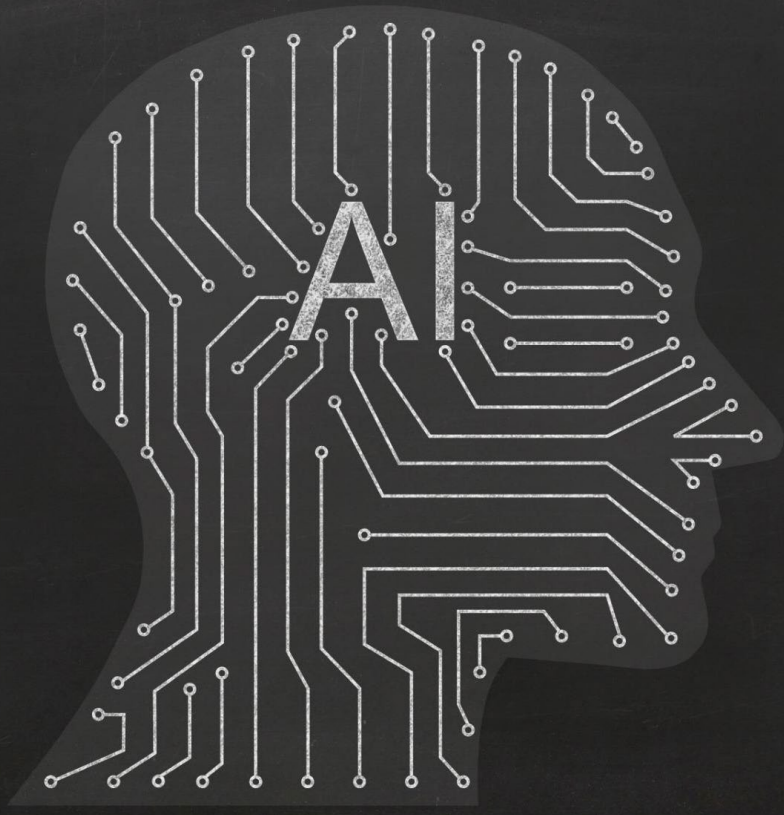
Workload relief
Job insecurity
AI anxiety
Uncertainty / reliability concerns
Compliance ambiguity
Verification and traceability work
New skill demands and the requirement for prompt/AI literacy

Moderators / conditions

AI literacy
Trust in AI
Job complexity
Knowledge sharing
Human oversight and governance

AI has no fixed effect but it becomes a demand or resource depending on design and implementation choices

KEY MECHANISMS FOR IMPROVEMENT



WHY AI FAILS IN PRACTICE

Implementation Gap

The implementation gap is the mismatch between AI design and the way work is actually performed and experienced.

Human Factors Overlooked

AI development often neglects employee needs, workflows, and tasks, leading to poor system alignment/misfit.

Consequences of Misalignment

Misaligned AI systems cause low adoption, resistance, dissatisfaction, and reduced workplace performance.

Often driven by automation-focused design rather than worker support



HIGH DEMANDS AND LOW RESOURCES RISK SCENARIO

Increased Job Demands

AI implementation can increase cognitive load through monitoring, error correction, and learning new systems.

Reduced Employee Resources

Employees may face diminished autonomy and less organizational support, limiting their ability to cope.

Need for Balanced Implementation

Organizations must manage task redistribution and provide resources (training, support, feedback) while keeping demands tolerable.



SKILLS DETERMINE AI OUTCOMES

AI increases skill demands

- evaluation & verification
- prompting & interaction
- critical thinking

What determines outcomes?

- Low skills turns AI to demand
- High skills help to deal with AI demands and turn it to resource

👉 Adaptive behavior and lifelong learning are key



EMPLOYEE AGENCY AND JOB CRAFTING

Employees do not just use AI, they shape it

- decide when and how to use AI
- adapt tasks to fit AI capabilities
- seek support and develop skills

What does this do?

- change the level of demands and resources
- reduce overload and uncertainty
- improve performance

👉 Job crafting creates the context for effective AI adoption

INTERVENTION AND DESIGN

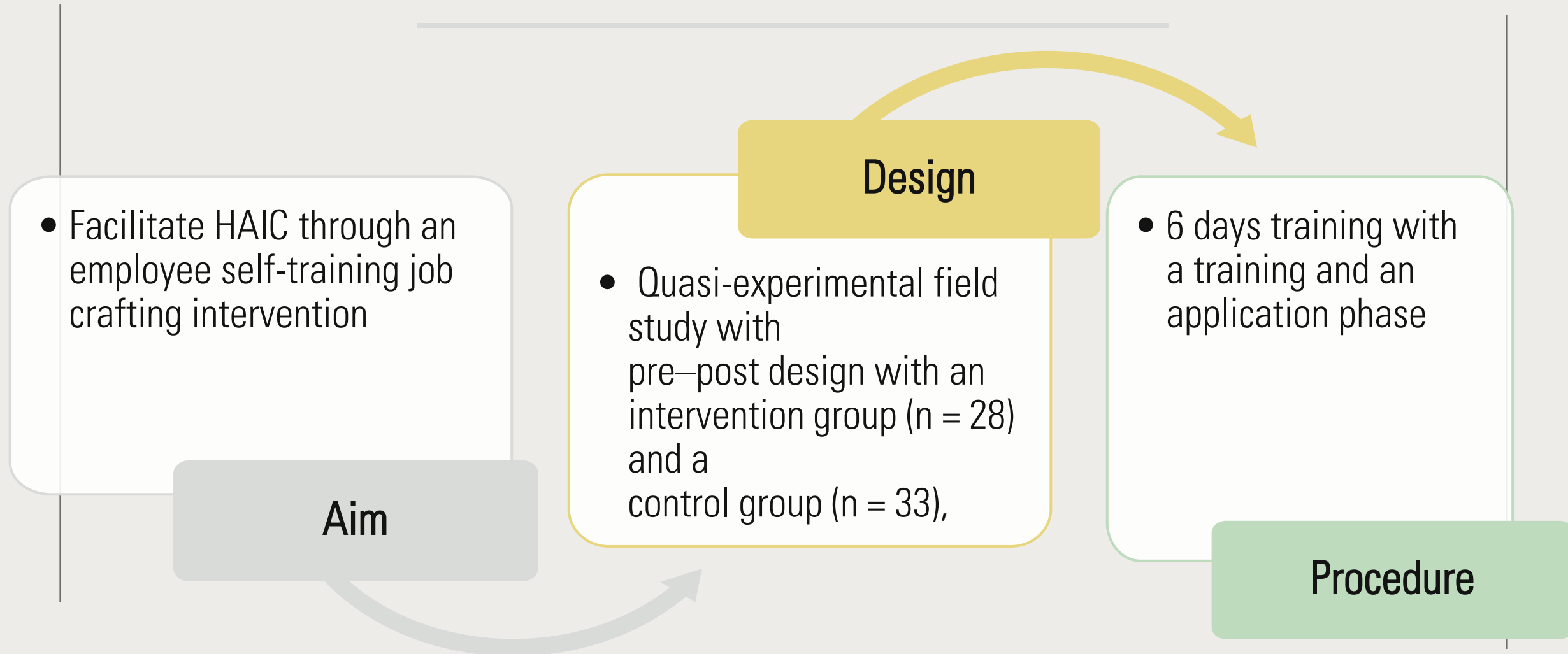
JOB CRAFTING AS THE MECHANISM OF CHANGE



- **Proactive work modification**
Employees reshape tasks involving AI
- **Bottom-up adaptation**
Employees adapt how AI is used in daily work
- **Performance mechanism**
Job crafting can reduce AI-related demands and increase resources

Job crafting –AI intervention

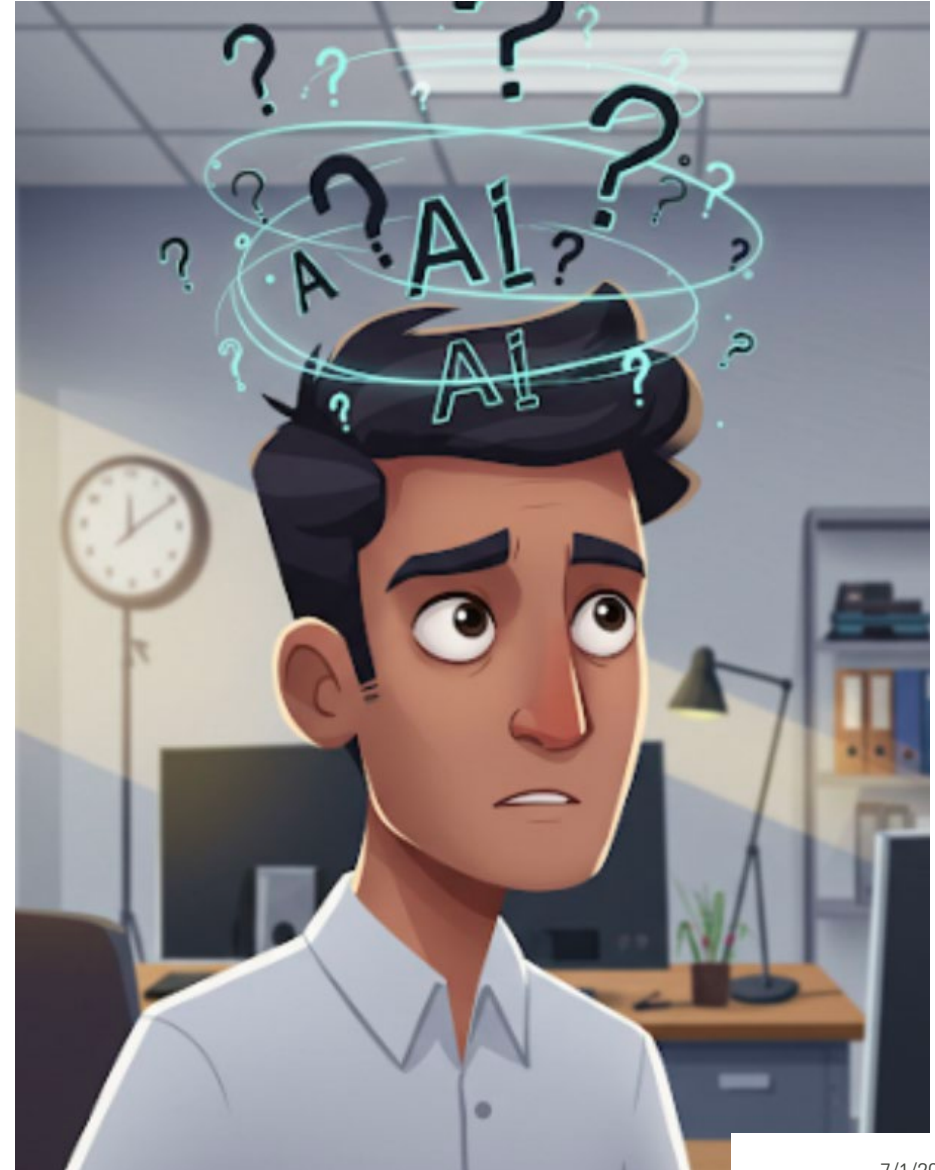
HUMAN AI FROM JD-R



MODULE 1: IMPROVING HUMAN- TASK-AI FIT

Identify tasks where AI could (not) help and create SMART collaboration plans:

"AI will help me organizing multiple documents. I provide AI with the relevant data. The AI organizes the information in table format. I review the output for accuracy and completeness"



MODULE 2: SEEKING RESOURCES

Identify what resources would support you
in working with AI and create SMART plans

*"I will ask my colleague to help me with using AI to write reports,
and I will help her with data analyses"*



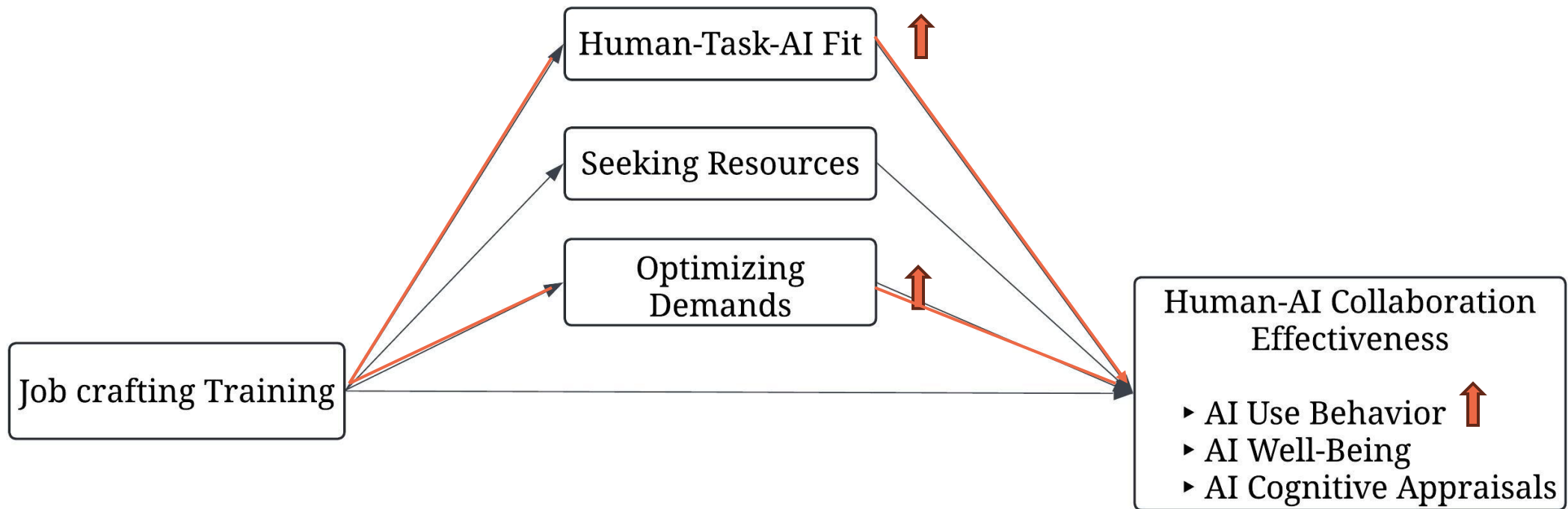
MODULE 3: OPTIMIZING DEMANDS

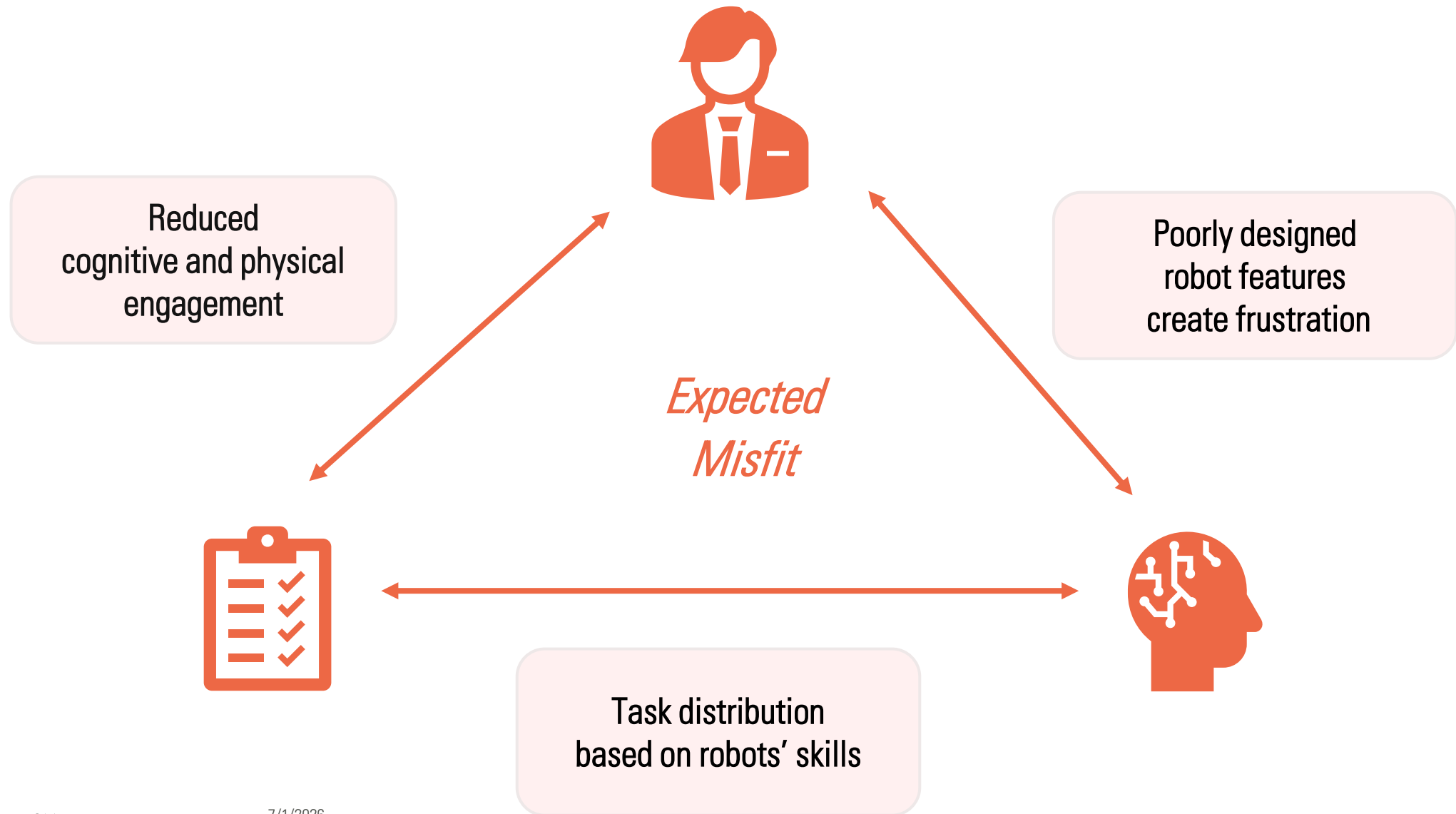
Identify tasks to optimize and create
SMART plan

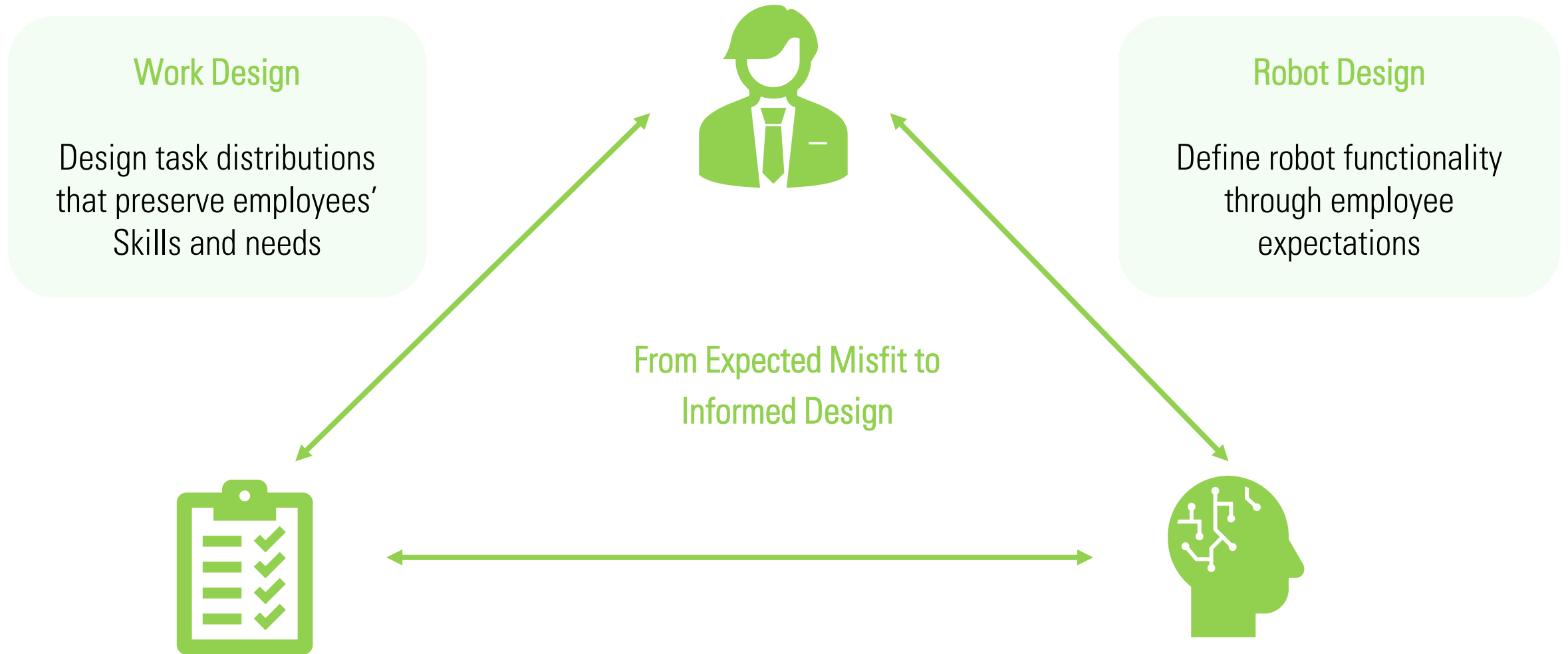
"I want to explore how collaborating with AI can help me creating marketing summaries.

I will watch the recommended video tutorial on basic prompt techniques and take notes









CONCLUSION AND IMPLICATIONS



LINKING JOB QUALITY AND PRODUCTIVITY

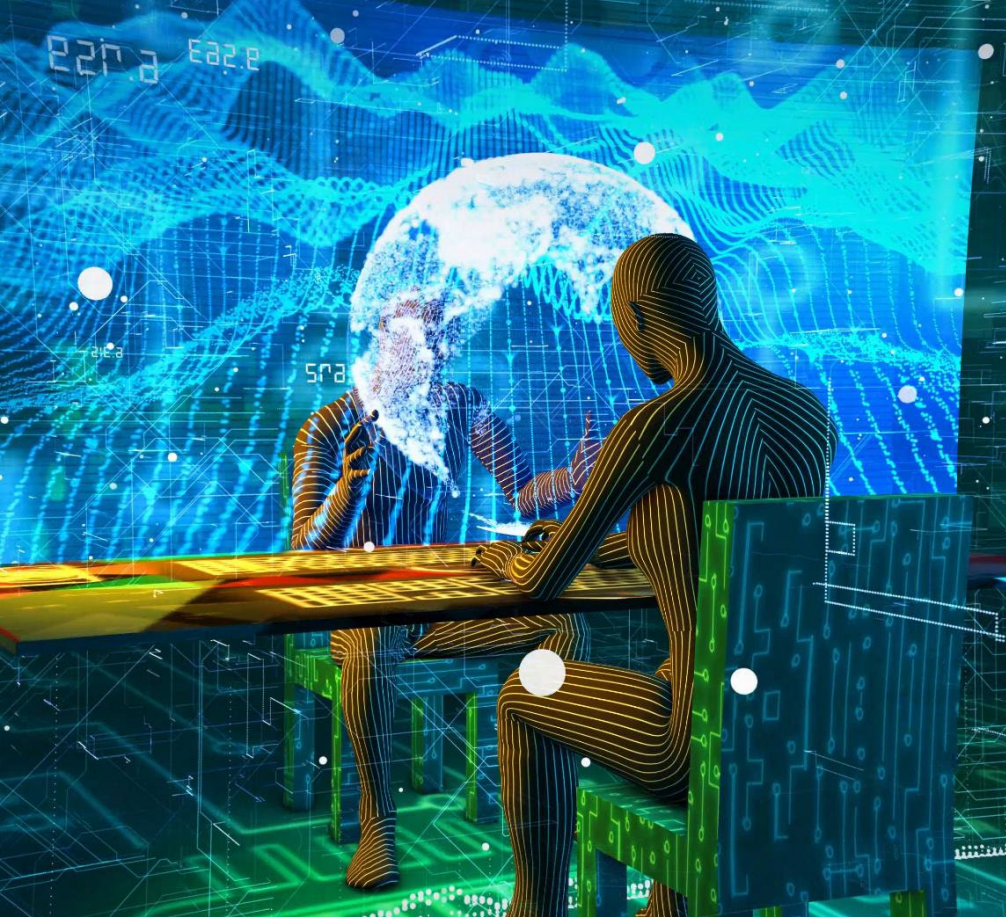
AI changes work, and that changes performance

- It reshapes what people do and how work is done
- AI introduces new job demands and new resources
- outcomes depend on tolerable demands and sufficient resources

This is why outcomes differ

- same AI → better or worse performance
- depends on how work is designed and experienced
- high demands low resources → errors, lower performance & wellbeing

Performance is not a technology outcome but depends on how work is designed



POLICY IMPLICATIONS

Design: AI impact on JD (cognitive load) JR (autonomy/human oversight)

Implementation: align AI-humans-tasks / systems & job design approach

Regulation: combine human-centric design with worker upskilling and agency / invest in job quality (not only tech) / monitor job quality (not only productivity)

Governance: steer AI toward complementing (not replacing) workers / shape incentives and governance, not just adoption

THANK YOU!
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