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From Interaction to Intervention: An Approach for Keeping Humans in Control in the Context of socio-technical Systems

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From continuous interaction to intervention

Intervention User Interfaces: A New Interaction Paradigm for Automated Systems

Schmidt, A., & Herrmann, T. (2017). *interactions*, *24*(5), 40-45.

Decrease of granularity of control:
self-controlled → highly assisted → completely automated + intervention

Interaction vs. Intervention

high granularity of steps	←→	intial step + occasional input
input leads to immediate response	←→	input starts • preprogrammed steps Followed by • implicit • or context-based actions
Input as a regular event	←→	Input as exceptional event

Transferring intervention to socio-technical processes

continuous monitoring and interaction (from inside or outside) is not appropriate in many cases:

- We have to deal with too many socio-technical processes
- no extra benefit if we stayed in a permanent loop of monitoring and interaction.

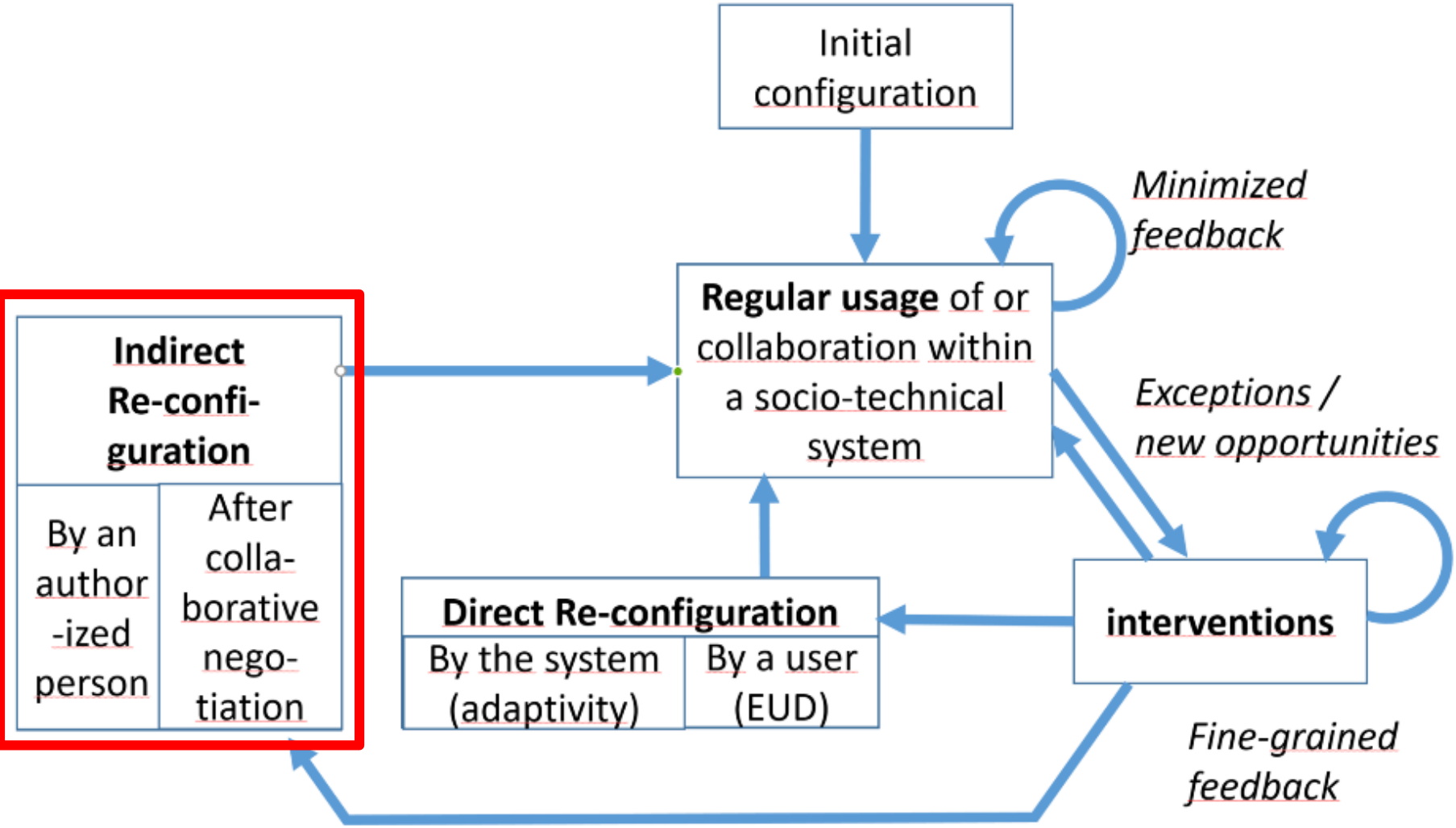
Applies to

- Highly routinized and self regulated processes (processing of e-commerce orders)
- Processes that include automated technical systems (public transportation)
- Software driven workflows (claims settlement by insurances)

Characteristics of intervening usage

- There is no pre-specified plan when and whether it occurs; intervention happens exceptionally
- Interventions are only effective for a limited period of time.
- Interventions support the exploration of effects of variations
- **Interventions can address automated technical systems as well as people who contribute to completing a routinized workflow.**
- People must be able to start interventions fast enough by applying technical means **or via communication** so that the demanded effects take place in time.
- Situations that require intervention are emergent and contingent and contribute to the emergence of new patterns of behavior.
- In alternation with re-configuration, intervention cyclically helps to improve automated or routinized behavior.

Intervening usage and configuration



Principles for intervention design

- **Strive for consistency:** intervention is possible in the case of experienced inconsistency; effect of intervention must meet expectations
- **Enable frequent users to use shortcuts:** immediate starting of an intervention with immediate effects; direct access not only to technology but also to people
- **Offer informative feedback:** need for intervention must be recognizable; effects of intervention are understandable / clearly communicated
- **Design dialogue to yield closure:** Intervention is an integrated means to be in control of complete and meaningful tasks
- **Offer simple error handling:** Intervention to avoid errors; robustness to avoid unsolicited effect of intervention

Summary: Intervention design is new

Interventions do not just happen but are systematically supported

It is not:

- A workaround (but accepted and promoted)
- EUD or Meta-Design (but before re-configuration)
- Exception handling within workflows (but initiated from outside).