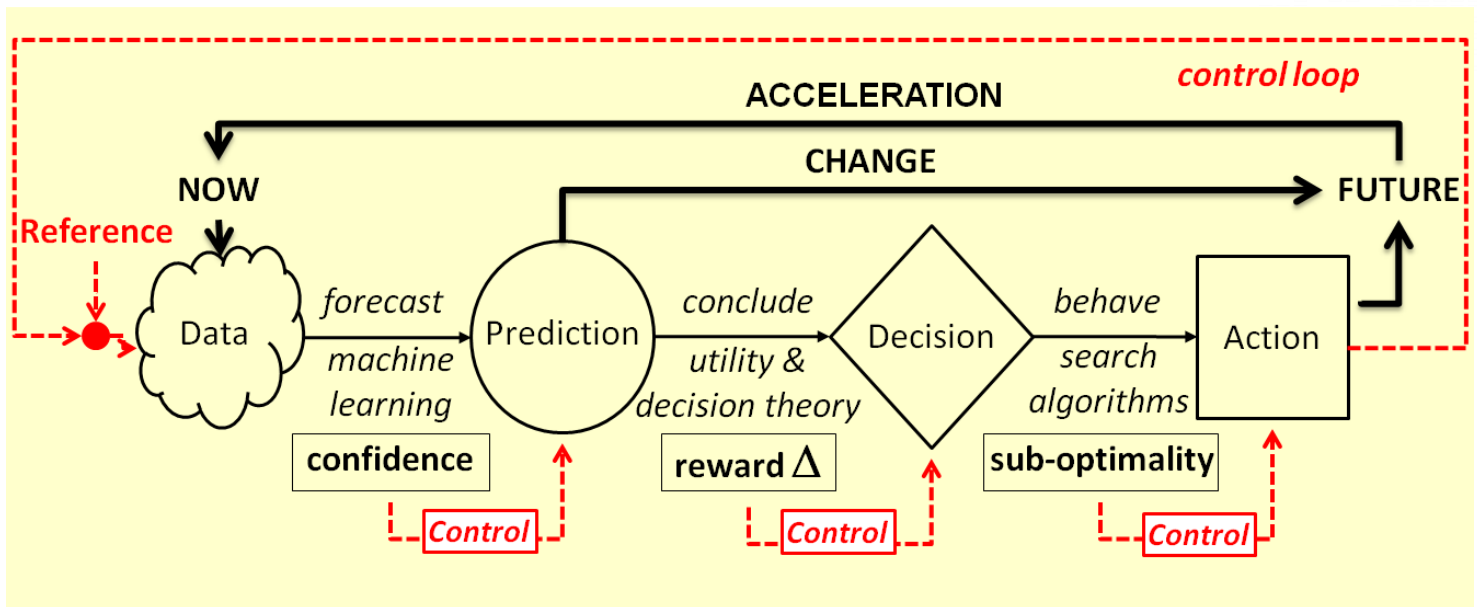


## Business Process Innovation with AI - Benefits and Operational Risks

Artificial Intelligence (AI) is gaining a strong momentum in business leading to novel business models and accelerating business process innovation. The application of key AI technologies such as machine learning, decision theory, and intelligent search holds great promises, but also comes with operational risks that need to be controlled.



### Machine Learning

- + No explicitly engineered prediction model required
- + Many different learning algorithms
- + Can flexibly adjust to change
- Hidden data dependencies
- Representational shift can lead to concept drift
- Non-explainable AI
- Confidence semantics?

### Utility & Decision Theory

- + Evaluation of uncertain and conflicting situations/goals
- + Finite or infinite decision horizons
- + Transparent reward model
- Only expected reward steers A.I. behavior
- Delta between expected and received rewards
- Infeasible calculations on distant horizons

### Search Algorithms

- + Evaluation of huge sets of alternatives
- + Can find solutions in giant search spaces of  $> 10^{100}$  states
- + Heuristics steer search for the optimum & quickly arrive at good solutions
- Heuristics difficult to design
- How far is "good" from the optimal?
- Implementation matters

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