

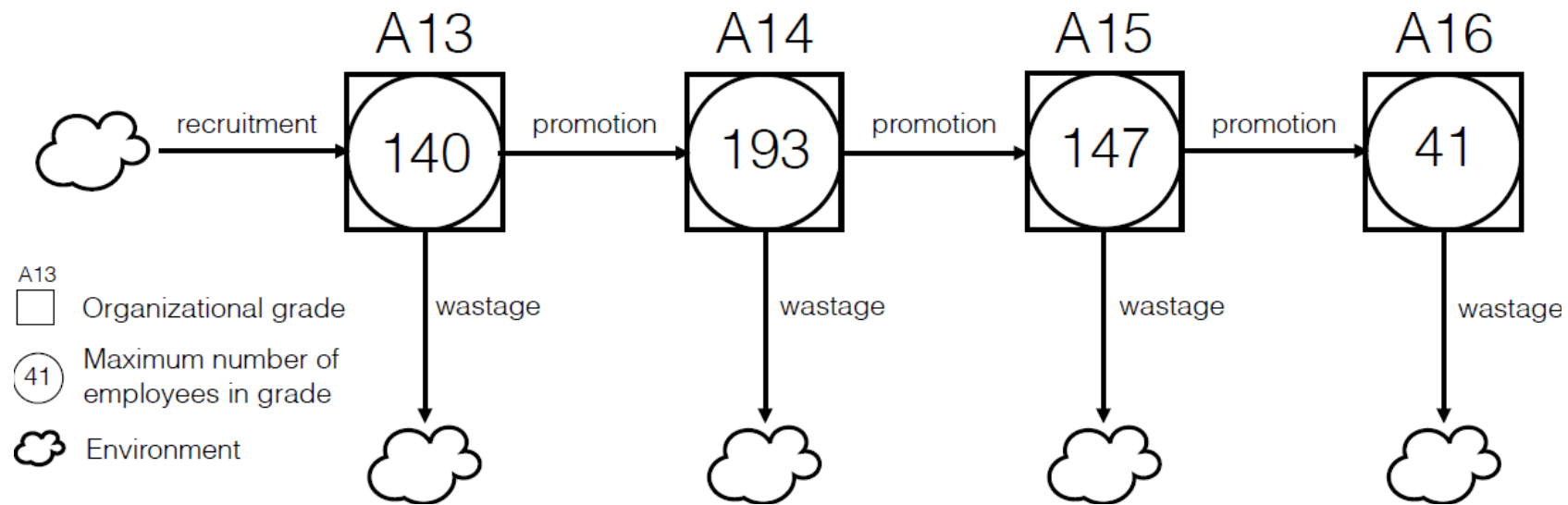
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A Hybrid Modeling and Simulation Approach for the Strategic Workforce Planning Problem

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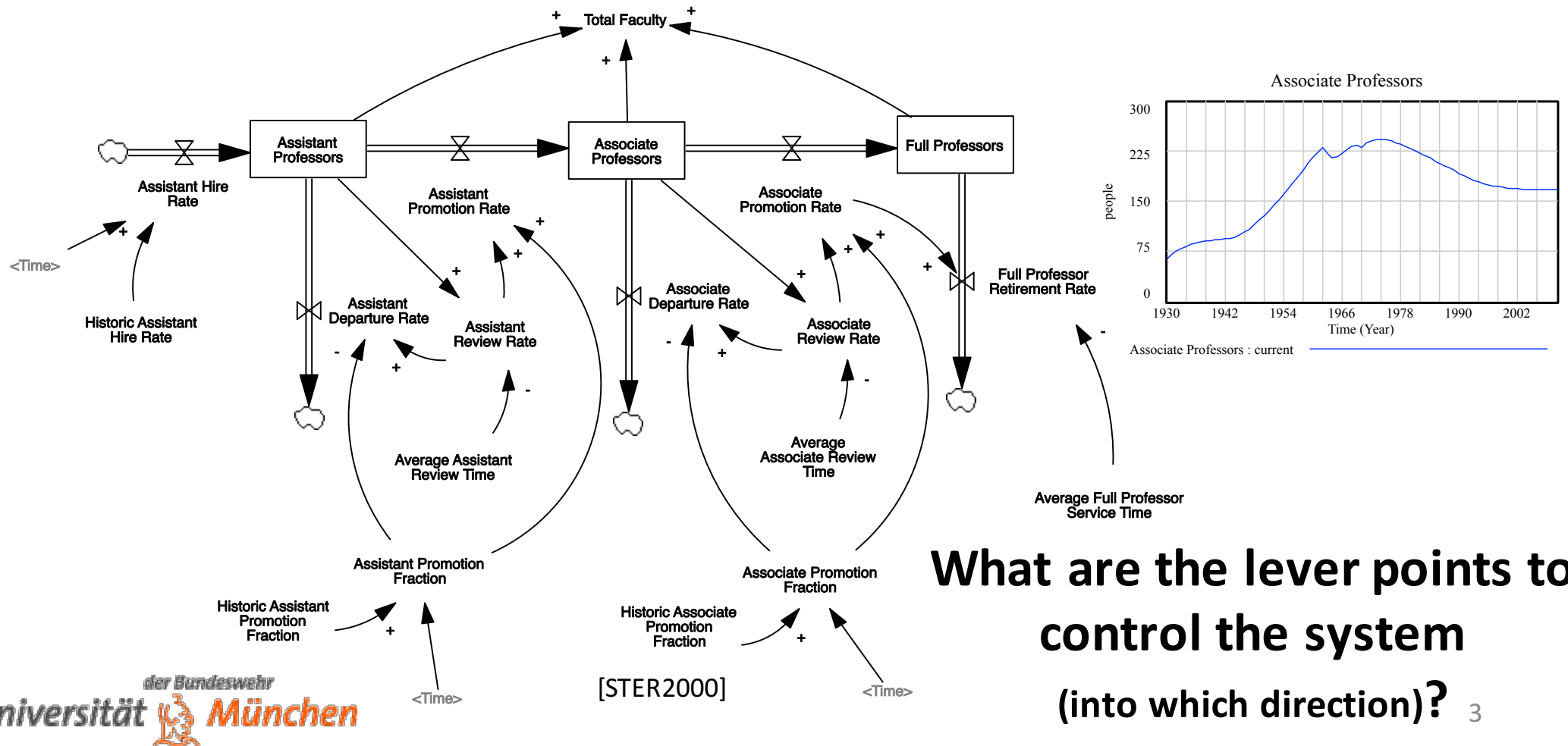
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Strategic Workforce Planning (in its basic form)



Modeling a workforce system concerns three types of flows, namely the recruitment flows, the internal personnel flows between the different personnel categories (among others promotion flows), and the wastage.

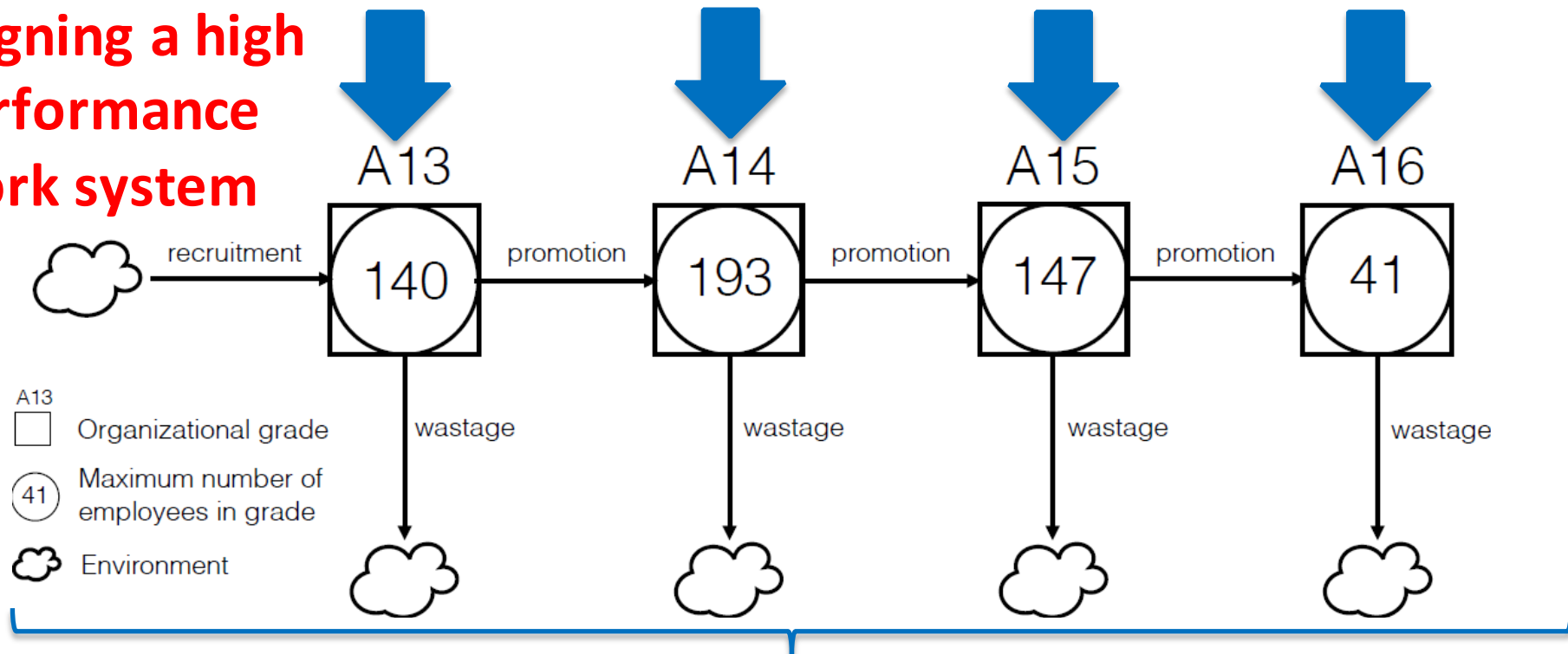
Strategic Workforce Planning (in its basic form)



Strategic Workforce Planning (revisited)

HR policies and practices, external environment

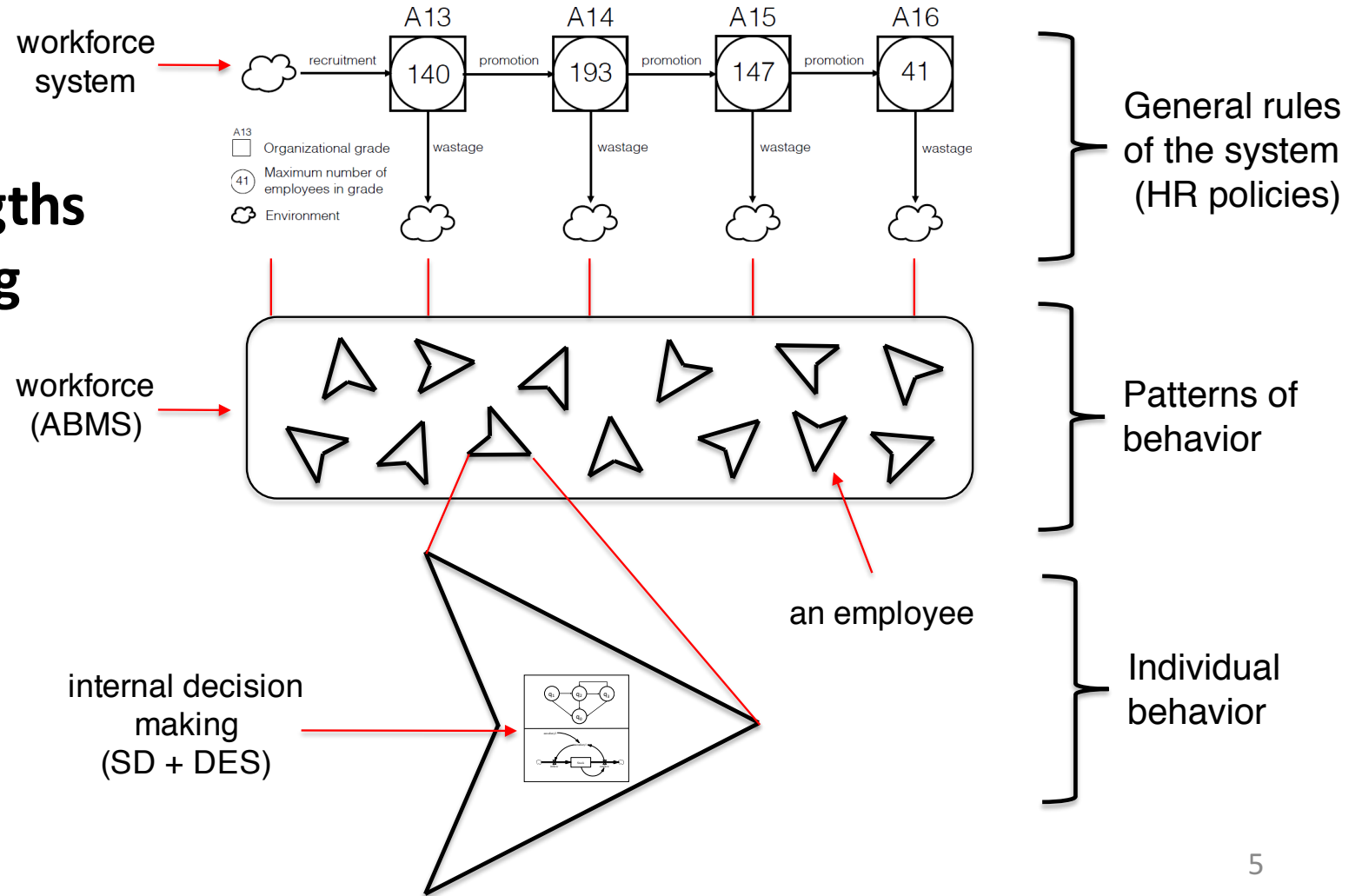
Designing a high performance work system



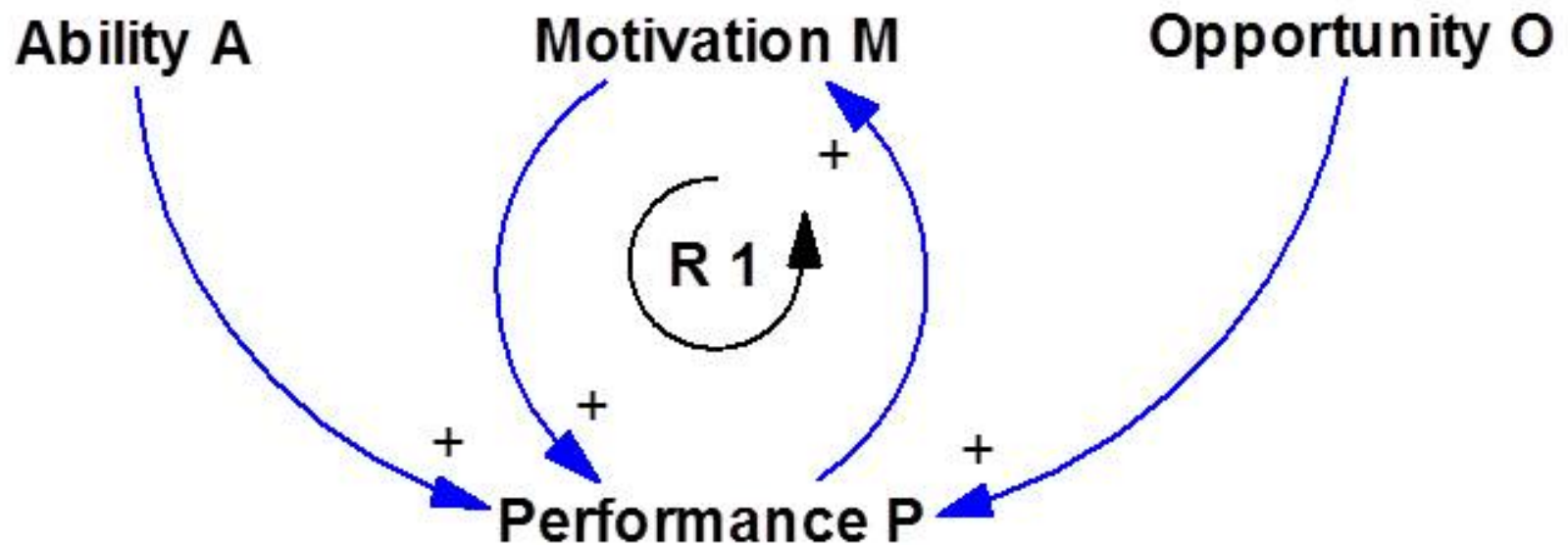
KPI's: turnover, vacancies, demography, performance, ...

Modeling the Complex Adaptive System

**Exploiting strengths
by overcoming
barriers**



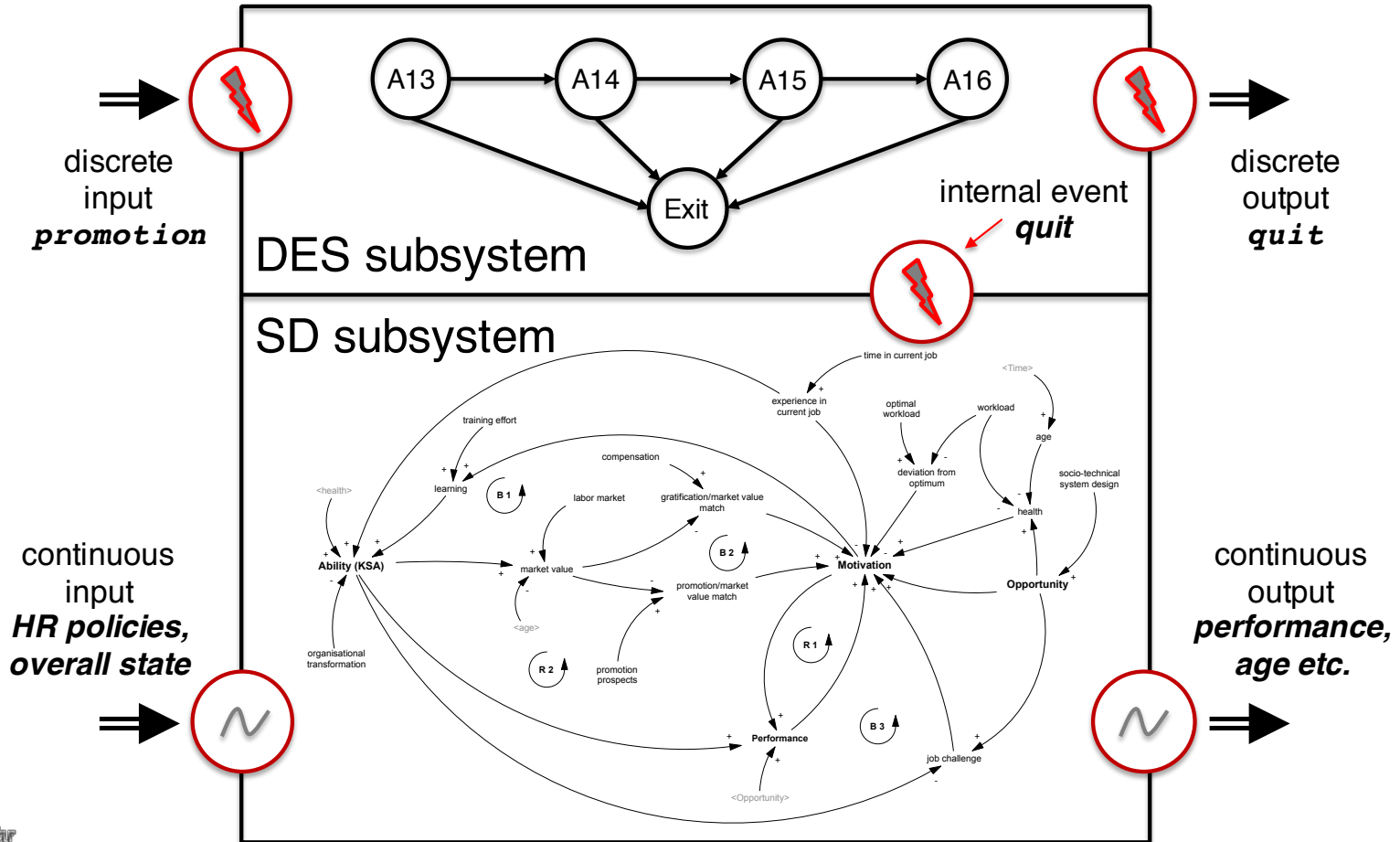
Behavior of an Employee



$$P = f (A, M, O)$$

The Hybrid Model of an Agent (an employee)

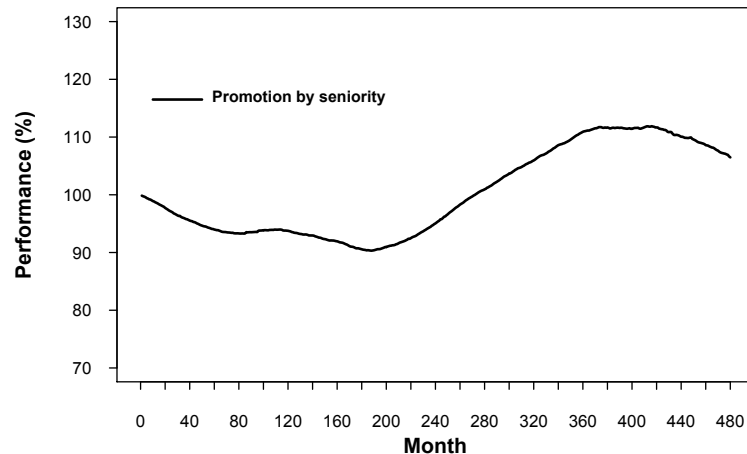
Based on
well
established
DEV&DESS
formalism



Running the Simulation (Promotion by Seniority)

Average performance/productivity per employee

Hybrid model



SD model

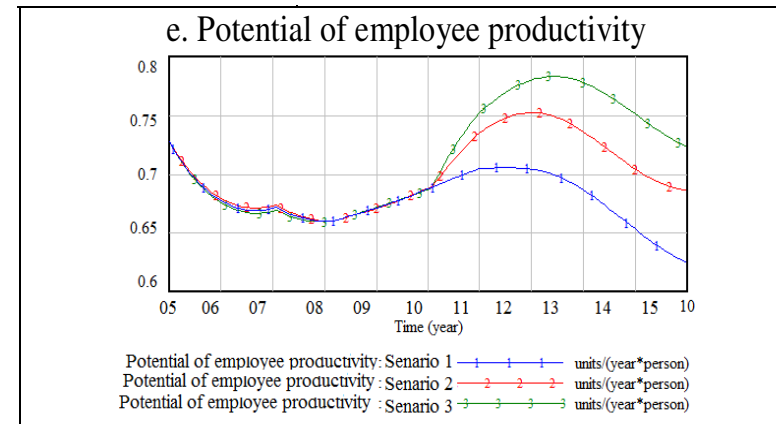


Figure: Nasiripour A. et al. (2012)

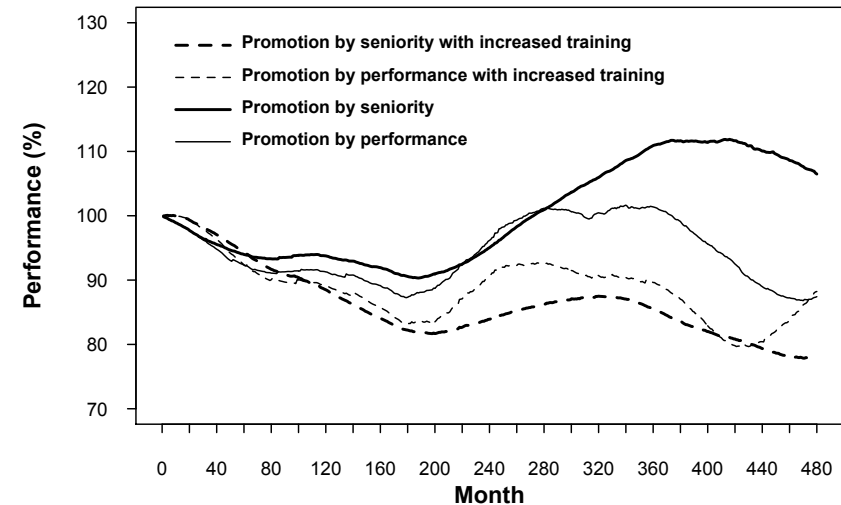


- complete different approach, but very similar patterns
- SD model limited to few KPI (e.g. no demography) and policies
- attrition fraction has to be set by user (fixed) in SD model

Running the Simulation (Different Policies)

Some important results:

- different HR policies reveal different results
- a training policy has to be flanked with other policies

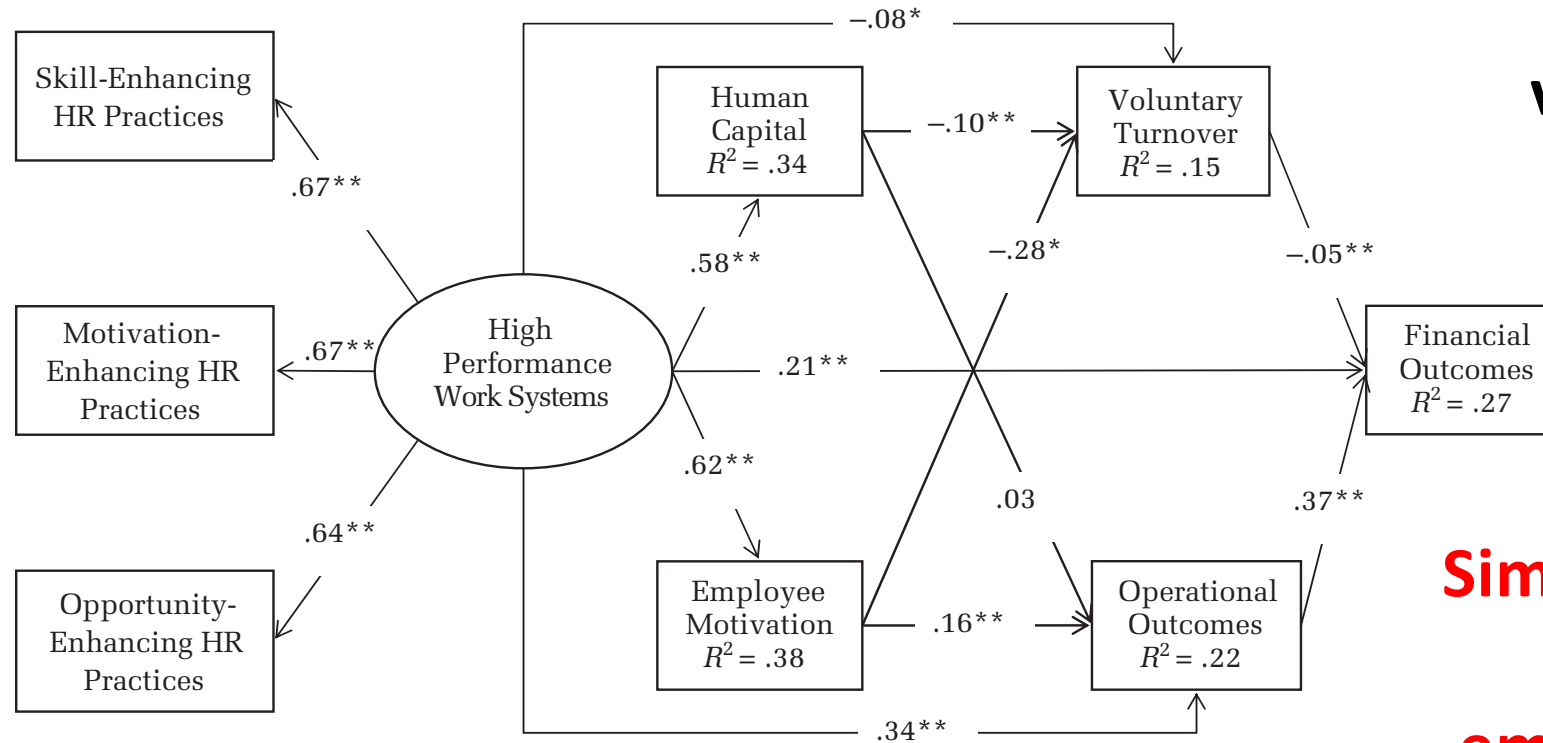


Voluntary turnover	years	seniority	seniority + training	performance	performance + training
	1 - 5	22	24	39	42
	6 - 10	24	53	36	87
	11 - 15	4	8	15	23
	16 - 20	0	0	15	59
	21 - 25	0	0	12	41
	26 - 30	0	37	16	73
	31 - 35	8	30	36	102
	36 - 40	8	18	22	54
	Sum	66	170	191	481

Evaluation of the Hybrid Approach

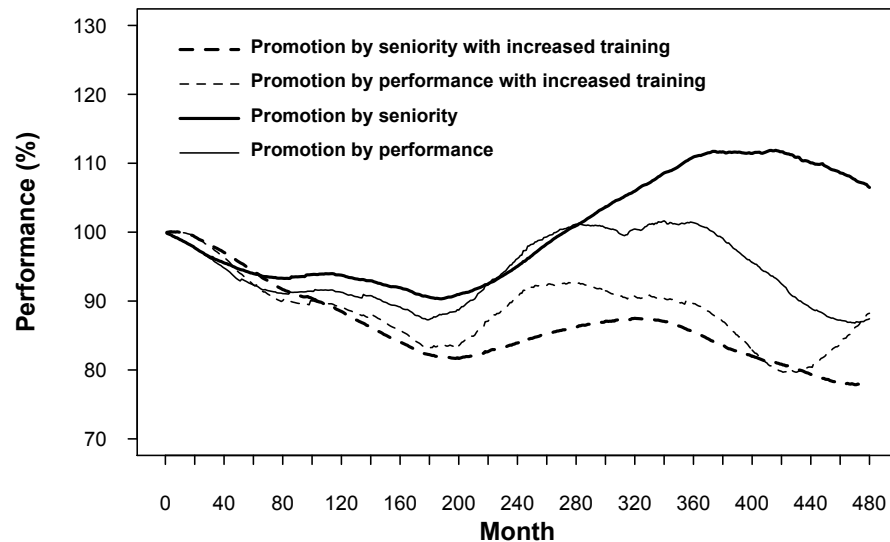
**Model
validation is
a challenge**

**Simulation results
resemble
empirical studies
(with one exception)**



[JIAN2012]

Evaluation of the Hybrid Approach



- different perspectives ✓✓✓
- more realism ✓✓
- reduced model complexity ✓
- facilitated interaction with stakeholders ✓✓

Predictive and explanatory power

Main disadvantages:

- data source
- multi method skills necessary

Selected References

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