



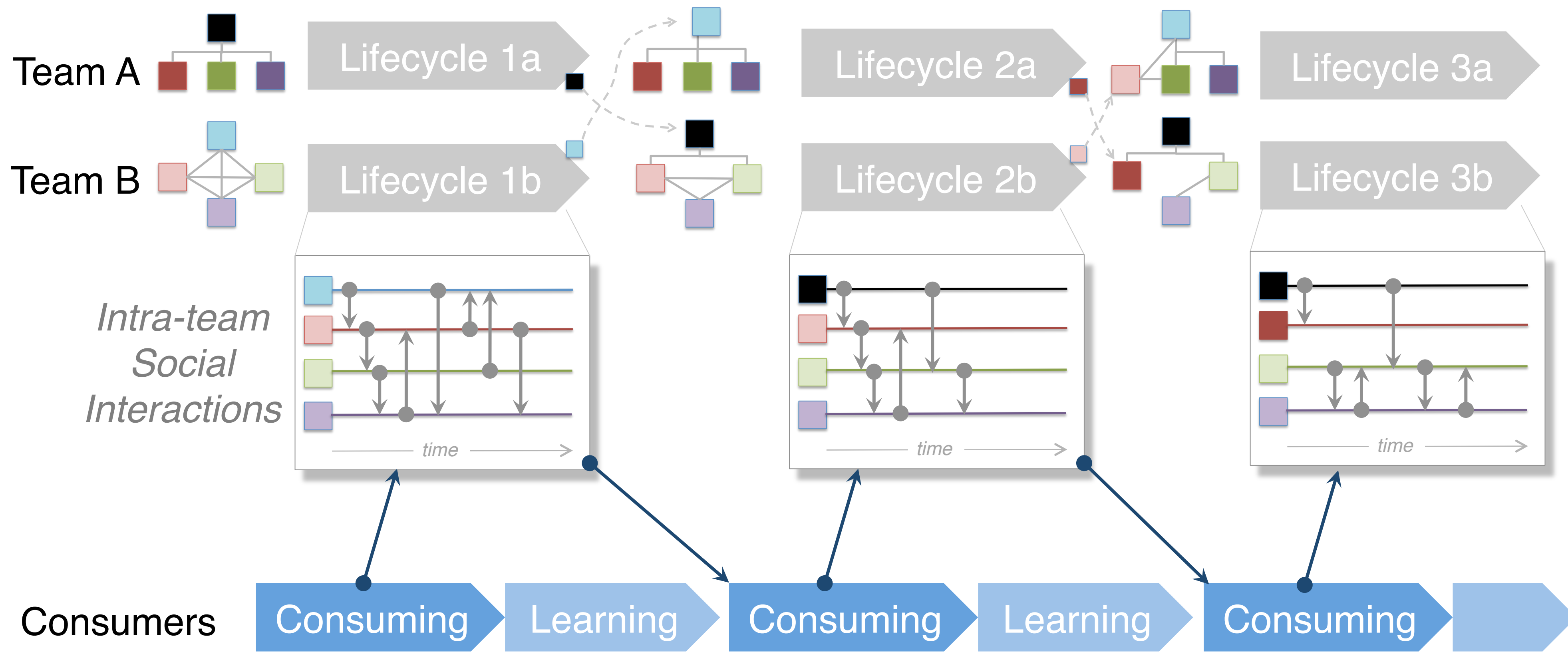
# Innovation Cycle of Engineering Design Teams

## Computational Modeling Using Situated Social Cognitive Agents

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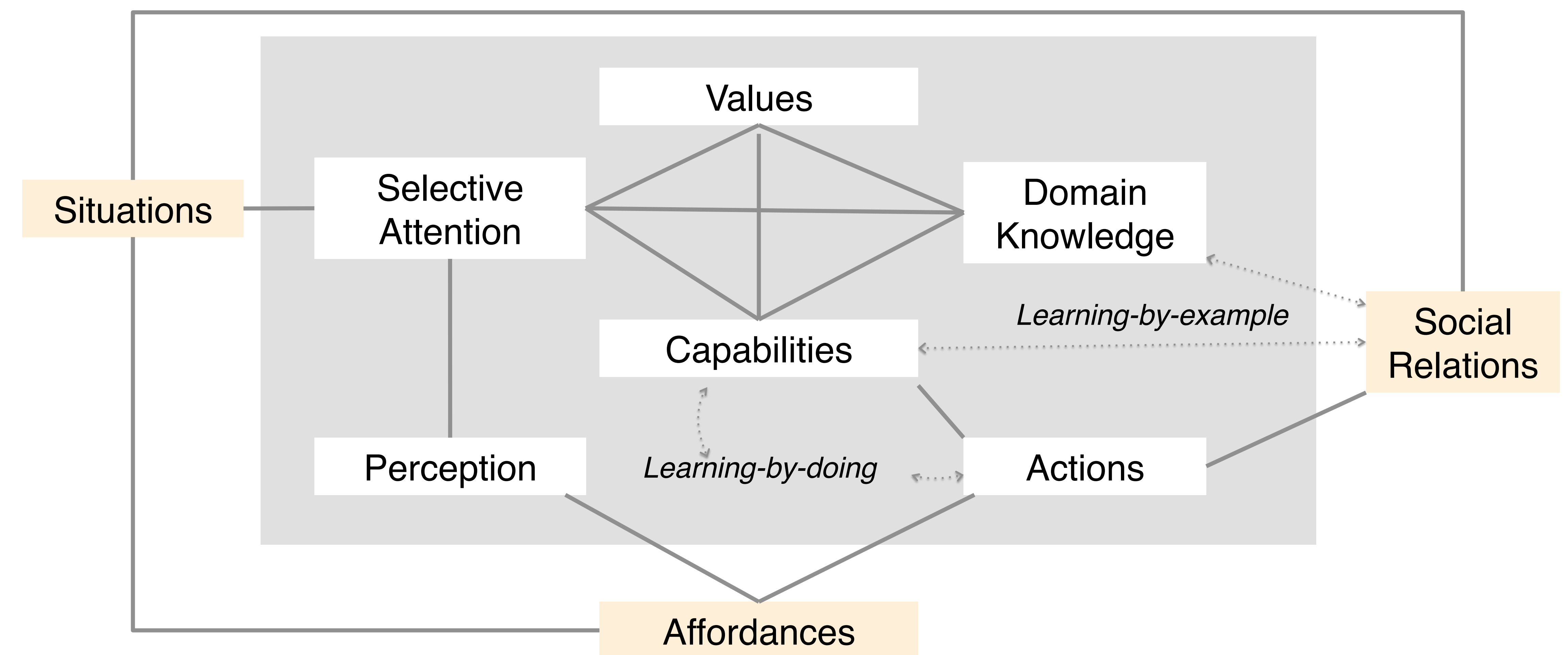
*Question: How are teams affected by migration of team members across lifecycles?*

### System of Interest



- Tacit learning from previous teams and projects
- Heterogeneous team styles, division of labor, sophistication, etc.
- Social interaction between team members, social learning
- Social interaction between products and consumers
- Team learning of consumer behavior

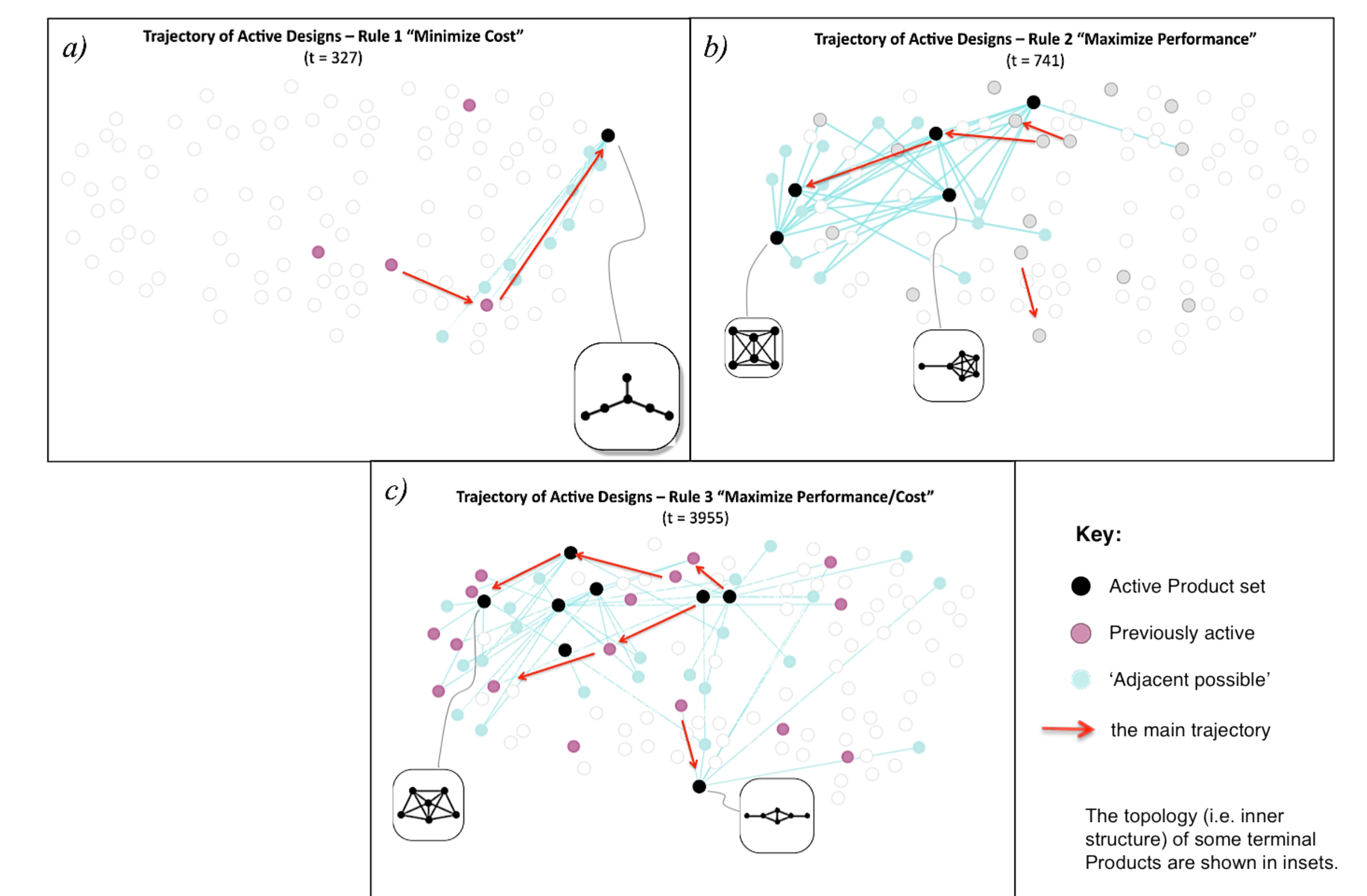
### Design Agent Architecture



### Illustrative Experiment

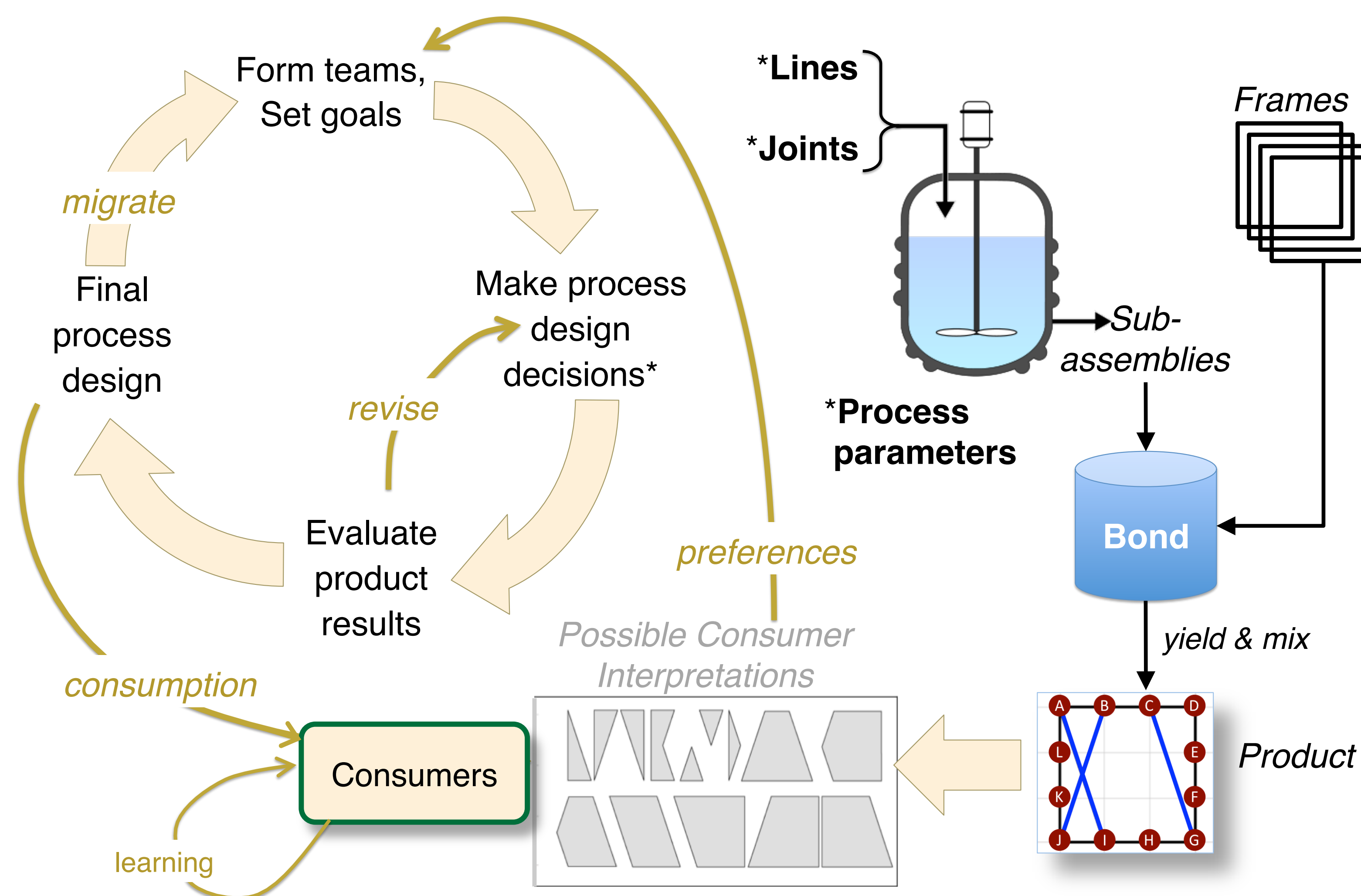
- ❖ Independent variables:
  - Migration rate (high vs. low)
  - Learning-by-example rate (high vs. low)
- ❖ Dependent variables:
  - Process sophistication
  - Product sophistication
  - Customer utility

### Results from Previous Work [3]



### Process Design Lifecycle

### Designing Process



### References

- [1] Clancey, W.J. (1997), *Situated Cognition: On Human Knowledge and Computer Representations*, Cambridge University Press.
- [2] Gero, J.S. (2011), A situated cognition view of innovation with implications for innovation policy, in K. Husbands-Fealing, J. Lane, J. Marburger, S. Shipp and B. Valdez (eds), *The Science of Science Policy: A Handbook*, Stanford University Press, pp. 104-119.
- [3] Thomas, R.C. and Gero, J.S. (2014), Computational modelling of designer-user interactions and value systems, in N. Gu, S. Watanabe, H. Erhan, M. Hank Haeusler, W. Huang, R. Sosa (eds), *Rethinking Comprehensive Design: Speculative Counterculture*, CAADRIA, pp. 75-84.



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