

Strategic design

Strategic design is concerned with the construction and manipulation of environments in which strategic entities interact. The entities involved may be smart machines or humans interacting through smart machines. These interactions are typically taking place across a network, thus presenting the designer an opportunity to shape these interactions. The aim of strategic design is not to analyze the interaction given the existing playground, but rather to design and construct the playground so as to shape the interaction to achieve a desired outcome. An important challenge of strategic design is to determine effective design rules, devices and institutions that monitor and sanction/reward entities on the basis of their behavior such that the goal of the designer is attained

Strategic design has something in common with traditional economic mechanism design and multi-agent systems, but its methods, focus and aims are quite different. Traditional economic mechanism design focuses on the elicitation of information by the designer and aims to delineate the boundaries of what is possible. By contrast, strategic design focuses on the strategic delivery and facilitation of information by the designer and on the construction of systems that are practicable given informational constraints, physical constraints, communication and complexity costs, etc. The focus of multi-agents systems is on obedient agents who have a common goal to achieve; the challenge is to achieve this goal in a distributed way, using local information. By contrast, the focus is on entities that are self-interested; the challenge is to induce behavior that is desired by designer despite the self-interest of the entities.

Strategic design has many applications, including wireless communications systems, multi-hop routing, peer-to-peer networks, network security, cloud computing and crowdsourcing. For more details, see our work at http://medianetlab.ee.ucla.edu/publications.html#journal_strategic_design