

What is System Dynamics

System dynamics is a methodology for studying and managing complex feedback systems, such as one finds in business and other social systems. In fact it has been used to address practically every sort of feedback system. While the word system has been applied to all sorts of situations, feedback is the differentiating descriptor here. Feedback refers to the situation of X affecting Y and Y in turn affecting X perhaps through a chain of causes and effects. One cannot study the link between X and Y and, independently, the link between Y and X and predict how the system will behave. Only the study of the whole system as a feedback system will lead to correct results.

The methodology identifies a problem, develops a dynamic hypothesis explaining the cause of the problem, builds a computer simulation model of the system at the root of the problem, tests the model to be certain that it reproduces the behavior seen in the real world, devises and tests in the model alternative policies that alleviate the problem, and implements this solution.

Rarely, is one able to proceed through these steps without reviewing and refining an earlier step. For instance, the first problem identified may only be a symptom of a still greater problem.

The field developed initially from the work of Jay W. Forrester. His seminal book Industrial Dynamics (Forrester 1961) is still a significant statement of philosophy and methodology in the field. Since its publication, the span of applications has grown extensively and now encompasses work in corporate planning and policy design public management and policy biological and medical modeling energy and the environment theory development in the natural and social sciences dynamic decision making complex nonlinear dynamics.

What is the relationship of System Thinking to System Dynamics Systems thinking looks at exactly the same kind of systems from the same perspective. It constructs the same causal loop diagrams. System dynamics takes additional steps of constructing and testing a computer simulation model, and testing alternative policies in the model.

What is the System Dynamics Society

The System Dynamics Society is an international, nonprofit organization devoted to encouraging the development and use of systems thinking and system dynamics around the world. With members in fifty-five countries, the Society provides a forum in which researchers, educators, consultants, and practitioners in the corporate and public sectors interact to introduce newcomers to the field, keep abreast of current developments, and build on each other's work.

Contact Information

For information about the Society, our conferences, on membership, the beer game, bibliography of System Dynamics, or older back issues of our journal please contact Roberta L. Spencer, Executive Director:

Telephone 518 442-3865

FAX 518 442-3398

Postal address

The System Dynamics Society

Milne Hall 300, Rockefeller College, U. of A.

135 Western Avenue

Albany, NY 12222

USA

Electronic mail

General Information: System.Dynamics@Albany.edu

Sales: System.Dynamics@Albany.edu