The Complex Systems Program is part of the National Institute of Standards and Technology’s Information Technology Laboratory. Complex Systems are composed of large interrelated, interacting entities which taken together, exhibit macroscopic behavior which is not predictable by examination of the individual entities. The Complex Systems program seeks to understand the fundamental science of these systems and develop rigorous descriptions (analytic, statistical, or semantic) that enable prediction and control of their behavior.

Program information at: www.itl.nist.gov/ITLPrograms/ComplexSystems

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In this simple example, the Markov chain can be represented as a directed graph with two paths (shown in red) from the Initial State to the absorbing state, Tasks Completed. If individual states, such as Discovering or Monitoring (circled) or individual state transitions corresponding to edges in a graph, such as Negotiating to Monitoring, are removed, then both paths to the absorbing states are cut. In graph theory, a set of edges in a graph, which if removed, would disconnect all paths between two vertices (or points), s and t, is referred to as an s-t cut set.

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