Table 1.1 Examples of Systems at Different Complexity Levels

System level[a]	Occupational example
Equipment without human	A building heating system with thermostats, furnace, and air circulation ducts
Individual and equipment	A plumber repairing a leaking faucet. An OSH manager composing a memo on her personal computer
Workgroup level	An assembly line with interactions among employees and their workstations, supervisors, equipment, and materials
Multiple workgroups	A construction site with work being performed by employees of a general contractor and several subcontractors
Highest	All employers in a region or country operating under the same laws and regulatory processes

[a]These levels are adaptations of those described by Erik Hollnagel in Ref. 4.

The "forward-looking" phrase in the definition indicates attention on the future—necessarily involving anticipating problems that might occur. In contrast, a backward-looking focus attends more to investigating past incidents with the intent of assigning blame. A backward-looking focus is driven by the needs of politicians and parties to personal injury litigation, with system safety professionals seeing incident investigations as an opportunity to learn things potentially useful for the future. The core of the system safety community embraces the forward-looking focus by making use of systematic analyses, lessons learned from past incidents, and applicable standards. Another part of the forward-looking focus involves integrating controls into systems to mitigate damage during an incident. Familiar examples are occupant protection features of modern cars like seat belts, air bags, and safety glass in windows. Other examples are engineering devices and software used for monitoring and controlling the complex processes found in industrial systems such as nuclear power plants and chemical processing facilities.

The phrase "identification, and control of hazards" refers to the logical, interrelated steps of first identifying hazards within the system and then determining appropriate means to control those hazards. These steps are almost identical to those used in the practice of occupational safety, industrial hygiene, ergonomics, and pollution prevention. History has shown that hazards can easily be overlooked if systematic processes are not used.

"Throughout the life cycle" reflects the importance of thinking about the full life of a system during the development stage in order to head off future problems. For example, if a project involves hazardous materials, how will the materials be disposed of at the end of the project? How will ship bodies be dismantled and the materials recycled? What will become of outdated weapon systems? What will become of old respirators?

The phrase "system project, program, or activity" indicates that system safety tools and expertise apply to various projects, programs, and activities involving a broad range of systems. Examples of these references to systems are a new fleet of