Quantitative Assessments

Quantitative assessments use simple techniques (like counting possible occurrences, or estimating how often they might occur) along with estimates of the typical cost of each loss:

SLE

Single loss expectancy (**SLE**): Usually measured in monetary terms, SLE is the total cost you can reasonably expect should the risk event occur. Typically expressed in monetary terms, it includes immediate and delayed costs, direct and indirect costs, costs of repairs, and restoration (for hardware, software, facilities, data, people). In some circumstances, it also includes lost opportunity costs, or lost revenues due to customers needing or choosing to go elsewhere.

ARO

Annual rate of occurrence (**ARO**): ARO is an estimate of how often during a single year a particular risk could reasonably be expected to occur. An ARO of 0.5, for example, says that this risk is expected to occur no more often than once every two years.

ALE

Annual loss expectancy (**ALE**): ALE is the total expected losses for a given year and is determined by multiplying the SLE by the ARO.

Safe-guard value

Safeguard value: This is the estimated cost to implement and operate the chosen risk mitigation control. You cannot know this until Boldi AG's management has chosen a risk control or countermeasure and an implementation plan for it.

Quantitative Assessments

Other numbers associated with risk assessment relate to how Boldi AG **deals with time** when its systems, processes, and people are not available to do business (downtime):

MAO

The maximum acceptable outage (**MAO**) is the maximum time that a business process or task cannot be performed without causing intolerable disruption or damage to the business. It is the time limit to restore all mission-essential systems and services so as to avoid impact to Boldi AG's mission.

MTTR

The mean time to repair (**MTTR**), or mean time to restore, reflects the average experience in doing whatever it takes to get the failed system, component, or process repaired or replaced.

Quantitative Assessments

One more important question remains: **how long** to repair and restore **is too long**?

RTO

The recovery time objective (**RTO**) is the amount of time in which system functionality or ability to perform the business process must be back in operation. They are established for each system that supports Boldi AG and its mission. Boldi AG's management may set more aggressive needs for recovery, and if so, they may be spending more than is necessary to achieve these shorter time objectives. All RTOs must be shorter than the MAO that they support; otherwise, the MAO cannot be achieved.

RPO

The recovery point objective (**RPO**) measures the data loss that is tolerable to Boldi AG, typically expressed in terms of how much data needs to be loaded from backup systems in order to bring the operational system back up to where it needs to be. They can be expressed as numbers of transactions or in units of time. Either way, the RPO represents work that has to be accomplished again and is paced by what sort of backup and restore capabilities are in place.