

ICS 03.100.01
CCS A02



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 27921-2023

Risk management - Risk assessment techniques

风险管理 风险评估技术

Issued on: August 6, 2023

Implemented on: August 6, 2023

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1 Scope	1
2 Normative reference documents	1
3 Terms and Definitions	1
4 Core Concepts	2
4.1 Uncertainty	2
4.2 Risk	2
6.1 Develop a risk assessment plan	4
6.1.2 Understanding the background	4
6.1.4 Determine goals	4
6.1.6 Check Decision Criteria	5
6.2.1 Overview	6
6.2.2 Collecting information	6
6.2.3 Analyzing data	7
6.2.4 Developing and applying models	7
6.3 Application of risk assessment techniques	8
6.3.1 Overview	8
6.3.2 Identify risks	9
6.3.6 Analyze interdependencies and dependencies	11
6.3.7 Understanding risk metrics	11
6.4 Check analysis results	13
6.4.2 Uncertainty and sensitivity analysis	13
6.5.1 Overview	14
7.1 Overview	15
91 Reference	94

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents" Drafting. This document replaces GB/T 27921-2011 "Risk Management Risk Assessment Technology". Compared with GB/T 27921-2011, except for the structure In addition to adjustments and editorial

changes, the main technical changes are as follows:

- a) The chapter "Risk Assessment Concept" has been deleted (see Chapter 4 of the.2011 edition);
- b) Added a chapter on "Core Concepts" (see Chapter 4);
- c) Added contents such as "formulation of risk assessment plan" and "information management and model development" (see 6.1, 6.2), and revised the "risk assessment technology" Application" is explained in more detail (see 6.3, Appendix B);
- d) "Comparison of risk assessment techniques" was deleted (see Appendix A of the.2011 version);
- e) Added the classification and application of risk assessment techniques (see Appendix A). This document is equivalent to IEC 31010.2019 "Risk Management Risk Assessment Technology". Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents. This document is proposed and coordinated by the National Risk Management Standardization Technical Committee (SAC/TC310). This document was drafted by: Guangdong Jianmei Aluminum Profile Factory (Group) Co., Ltd., China Institute of Standardization, First Huida (Beijing) Data Technology Technology Co., Ltd., Anhui Huapu Testing Technology Co., Ltd., China Nuclear Power Co., Ltd., Zhejiang Jicheng Weaving Co., Ltd., Jiangsu Nuclear Power Electric Power Co., Ltd., the Fifth Research Institute of Electronics of the Ministry of Industry and Information Technology, Party School of the Central Committee of the Communist Party of China (National School of Administration), Peking University, Daxin Review (Beijing) Risk Management Consulting Co., Ltd., National Science and Technology Risk Development Center, China University of Mining and Technology (Beijing), China Jiliang University. The main drafters of this document. Lu Xiaowei, Gao Xiaohong, Liu Jian, Xu Han, Zhang Peng, Hua Chunxiang, Sun Youwen, Shi Ying, Lu Duoia, Cui Yanwu, You Zhibin, Liu Xinli, Wang Lei, Wang Lan, Zhang Jiejun, Zhou Yuhuan, Xu Longhui, Bin Jianwei, Liu Yihong, Yu Min, Ji Chunyang, Zhang Yueyi, Tao Yinghai, Xie Xueping. The previous versions of the documents replaced by this document are as follows:

---First published as GB/T 27921-2011 in.2011;

---This is the first revision.

This document provides guidance on the selection and application of various risk assessment techniques that can be used to help improve the way uncertainty is considered. formula, and help understand risks. Risk assessment techniques can be used in the following scenarios.

- a) Need to further understand what risks exist or the sources of specific risks;
- b) When comparing or optimizing risky options in decision-making;

c) When measures need to be taken to address risks. In the risk assessment steps of identifying, analyzing and evaluating risks as described in ISO 31000, and in the need to understand uncertainty and its impact. These risk assessment techniques are often used when dealing with risks. The risk assessment techniques described in this document can be used in a wide range of scenarios, but most techniques originated in the technical field. Some skills. The technical concepts are similar, but the names and methods are different, reflecting their development history in different fields. Technology evolves over time. As time goes by, many technologies can be used in a wide range of situations beyond their initial application areas. Technology can be adapted, combined and applied in new ways. Use, or expand, to meet current and future needs. This paper presents selected risk assessment techniques and compares their possible applications, advantages and limitations. It also provides more detailed sources of information as a reference. Potential users of this document are.

a) Anyone involved in assessing or managing risk;

1 Scope

GB/T 27921-2023 is the Chinese catalogue of risk assessment techniques, corresponding to IEC 31010. Risk management standards say that risk must be identified, analysed and evaluated but not how, and the gap between the two is where most assessments fail: a workshop with a whiteboard is used where a fault tree was needed, or a quantitative model is built on data that will not support it. This document fills the gap with a survey of the techniques themselves. It sets the core concepts of uncertainty and risk, then the use of the techniques - collecting information, analysing data, developing and applying models, and applying the techniques to identify risk, analyse consequences and likelihood, understand controls and understand risk metrics - the checking of the results, and the selection of a technique for a purpose, with extensive annexes describing each technique, from brainstorming and the Delphi method through structured interviews, checklists, scenario analysis, cause and effect analysis, HAZOP, FMEA, fault and event trees, bow tie analysis, Bayesian methods, Markov analysis and Monte Carlo simulation. It took effect on 6 August 2023.

This document provides guidance on the selection and application of risk assessment techniques in a variety of situations. These technologies are used to support uncertainty scenarios decision-making, providing information about specific risks and as part of the risk management process. This document provides an overview of a range of technologies summary, and references are made to other documents that describe these techniques in more detail.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document

through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 23694-2013 Risk Management Terminology (ISO Guide73.2009, IDT)

GB/T 24353-2022 Risk Management Guide (ISO 31000.2018, IDT)

3 Terms and definitions

The terms and definitions defined in GB/T 24353-2022, GB/T 23694-2013 and the following apply to this document.

3.1 likelihoodlikelihood The probability of something happening. Note

1. In risk management terminology, whether defined, measured or determined in an objective or subjective, qualitative or quantitative manner, or using general vocabulary or numbers Described in scientific terms (such as probability, or frequency within a certain period of time), "possibility" is used to express the probability of something happening. Note

2. The English word "likelihood" does not have a direct corresponding word in some languages, so "probability" is often used. This word replaces. However, in English, "probability" is often understood in a narrow sense as a mathematical word. Therefore, in risk management terminology, "may "Probability" has the same meaning as the word "probability" used in many languages, and is not limited to the meaning of the word "probability" in English. [Source: GB/T 24353-2022,3.7]

3.2 opportunityopportunity Anticipate situations that are conducive to goal achievement. Note

1. An opportunity is a positive situation in which it is possible to obtain benefits and to have a considerable degree of control over them. Note

2. An opportunity for one party may pose a threat to the other. Note

3. Seizing or not seizing opportunities are sources of risk.

3.3 probabilityprobability A measure of the probability of an event occurring, expressed as a number between 0 and

1. 0 means it is impossible to happen, 1 means it will definitely happen.

Note. See Note 2 of Definition 3.1.

3.4 risk driver riskdriver; driverofrisk Factors that have a significant impact on risk.