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Specification for evaluation of science and technology talent

科技人才评价规范

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Evaluation classification	2
5 Evaluation principles	2
6 Evaluation indicators	2
7 Evaluation process	4
8 Use of evaluation results	6
Annex A (informative) Process of evaluating science and technology talent	8
Bibliography	9

3 Terms and definitions

The terms defined in GB/T 40148 apply, together with five terms defined here.

3.1 science and technology talent: a worker who holds particular professional knowledge or skill, who has scientific thinking and the ability to innovate, who engages in scientific and technological innovation, and who contributes to science and technology and to economic and social development. A note states that the term covers people engaged in scientific research, technology development, engineering design, technology transfer, technology-based entrepreneurship, technology services, science and technology management and the popularisation of science.

3.2 consignor: the organisation or individual that states the need and purpose of an evaluation, commissions the evaluation task and provides the funds and conditions for it. Cited from GB/T 40148-2021, 5.1.

3.3 evaluation organization: the organisation that takes on the evaluation task, forms the result, issues the report and bears the corresponding responsibility. A note states that these are mainly specialised science and technology evaluation bodies but may also be organisations that carry out such evaluation alongside other work. Cited from GB/T 40148-2021, 5.4.

3.4 evaluation object: in an evaluation, the science and technology talent being evaluated together with the related behaviour and elements. Cited, with modification, from GB/T 40148-2021, 5.9.

3.5 evaluation indicator: a factor or variable reflecting a characteristic of science and

technology talent, used to measure and evaluate that talent concisely. A note states that indicators are of two kinds, quantitative and qualitative. Cited, with modification, from GB/T 40148-2021, 6.14.

4 Evaluation classification

4.1 An evaluation may be classified by the type of talent or by the purpose of the evaluation.

4.2 By type of talent, four cuts are given. By the nature of the activity: basic research, applied research, technology development, engineering design, technology transfer, product development, public-interest research, technology-based entrepreneurship, technology services, popularisation of science, and science and technology management. By the type of employing body: government departments, higher education institutions, research institutes, medical and health bodies, enterprises, and science and technology social organisations. By occupation: research personnel, engineering and technical personnel, agricultural technical personnel, health professional and technical personnel, teachers in higher education, and other categories connected with innovation activity. By group characteristic: strategic scientists, leading science and technology talent, young science and technology talent, and outstanding engineers.

4.3 By purpose, the evaluation activity may be for recruitment and selection, post allocation, appraisal and accreditation, training and development, competitive support, talent introduction, or commendation and incentive.

5 Evaluation principles

5.1 Integrity together with ability. Integrity comes first as a precondition, and attention is paid to the scientific spirit and professional ethics of the person evaluated, so that problems of research integrity and research ethics do not arise.

5.2 Scientific soundness. Classified evaluation is carried out on the basis of the laws of talent growth and of innovation, according to the category of talent, the purpose of the evaluation and the intended use of the result, and it shall reflect the actual position of different talent objectively, truthfully and accurately. The evaluation cycle shall be set soundly, combining process evaluation with result evaluation and short-term with long-term evaluation, giving weight to medium- and long-term aims and encouraging sustained research and long accumulation, particularly for people in basic research and for fast-growing young talent. The conditions for selecting evaluation experts shall likewise be set soundly.

5.3 Openness and fairness. The process shall be independent, objective, fair and impartial. Evaluation experts shall balance the interests of the parties and observe the agreed conditions for recusal. The rules, standards, process, results, experts and the progress of the relevant stages shall be made public in good time within a defined circle.

5.4 Workability. The information behind the indicators shall be easy to obtain, quantitative indicators easy to calculate, qualitative indicators easy to judge, and the process easy to carry out.

6 Evaluation indicators

6.1 The indicator framework rests on integrity together with ability, so that scientific spirit, professional ethics, research integrity and research ethics are reflected when indicators are set and evaluation carried out, and it is built according to the purpose and needs of the evaluation and the characteristics and management requirements of the talent category. The framework is made up of three first-level indicators, innovation value, capability and innovation contribution, and a number of second-level indicators which may be adjusted, added to or removed.

6.2.1 Innovation activity should include, without being limited to: projects, meaning research and development projects and their application; scientific experiments, covering qualitative, quantitative, measurement, controlled, confirmatory, decisive and pilot experiments; transfer and commercialisation of results, covering joint development, technology assignment, technology licensing and investment of technology valued as equity; teaching work, covering the teaching duties of those holding teaching posts, teaching reform projects led by them, guidance of students in innovation, entrepreneurship and social practice activities, and the training of graduate students; and clinical work, covering clinical research, diagnosis and treatment, health management, teaching practice and evaluation feedback.

6.2.2 Innovation output should include, without being limited to: papers and monographs, meaning papers published in scientific journals, papers presented at academic conferences and published books; patents, meaning patents granted by domestic and foreign patent bodies together with their commercialisation and application; standards, meaning international, national, sectoral and local standards led or contributed to, and influential association or enterprise standards; scientific data, meaning data produced through basic research, applied research and experimental development in the natural sciences and engineering sciences, and original and derived data obtained through observation and monitoring, survey and investigation, and inspection and testing for research purposes; scientific and technological reports describing the progress or results of research, design, engineering, testing and appraisal work; teaching results such as textbooks written; clinical results such as case records and diagnostic and treatment guidelines; engineering results such as engineering design, construction methods and management, drawings and models, codes and procedures, large-scale application and user feedback; computer software and integrated circuit layout designs; germplasm resources, covering development, preservation, extension, protection and use; popular science results such as exhibitions, books and audio and video material; and science and technology management results such as policies, regulations and advisory reports.

6.3 Capability is broken into six second-level indicators. Learning and research ability: holding the necessary knowledge and skill, learning new knowledge and technology quickly, analysing the innovation needs of the field accurately, and being able to carry out the related research and development. Innovation and entrepreneurship ability: grasping the technical frontier of the field, carrying out technical innovation and integration, using existing and new knowledge to put forward new theories, technologies, models, services and methods, turning results into products and industries, driving industrial upgrading, and solving real problems or serving innovation and economic and social development. Experimental technique ability: operating instruments and equipment, recording data accurately, and completing experiments efficiently under an experimental scheme or procedure. Team organisation and collaboration ability: as team leader, organising members to complete a research task and to develop the team; as team member, communicating, coordinating and cooperating effectively to complete the task together. Strategic judgement ability: strategic thinking, forward judgement, cross-disciplinary understanding, and the ability to pose, analyse and solve major scientific and technological questions. Science and technology management ability: drawing up development plans and policies, organising the implementation of projects, coordinating the management of activities, raising the level of governance and releasing innovation vitality.

6.4 Innovation contribution is broken into four second-level indicators. The effect of the results: the contribution of the person's results in scientific, technical, economic, social and cultural value. Satisfaction with technology services: the performance of public-interest and technology service work and the satisfaction of those served, applied mainly to talent in public-interest and technology service work. Participation in the scientific community: holding office as chair or committee member in important academic bodies at home or abroad, such as learned societies, associations and standardisation bodies, serving as editor-in-chief, editorial board member or reviewer of academic journals, taking part in influential academic forums and lectures, and other service to the scientific community. Awards: national science and technology awards, provincial and ministerial awards, awards established by social forces, international awards, and other lawfully established awards connected with innovation activity.

7 Evaluation process

7.1 The process runs in five stages: initiation, preparation, implementation, formation of the result, and the recording of the process with archive management. The flow is shown in Annex A.

7.2 Initiation. The consignor shall start the evaluation according to its own needs, either commissioning an evaluation organisation or assembling an expert panel itself.

7.3 Preparation. The consignor shall settle the purpose of the evaluation and, from that purpose, the range of evaluation objects and the eligibility conditions, and shall, with the