

## Charge

InCommon Steering, based on discussions at its Sept 13th meeting, charged InCommon staff to find an authoritative external source to more broadly define Research, similar to the external eligibility references for Higher Education Institutions in the regional and national accreditation organizations. The effects of bad/fraudulent science and InCommon's potential reputational harm were additional considerations.

## Research and Discovery

After much searching, InCommon staff found a comprehensive review of the definitions of R&D in a reference published in 2018 by the NSF, through its National Center for Science and Engineering Statistics. <https://www.nsf.gov/statistics/randdef/>

## Selection of Authoritative Source

The NCSES resource above compiles a comprehensive survey of 16 separate sources for definitions of research and development across business and governmental sources from the state, national, and international levels. Each definition has more similarities than differences. In fact, all of them appear to rely upon the oldest and first reference mentioned in the review, that of the OECD's foundational Frascati Manual created in 1963. From the Frascati Manual's introduction:

"The Frascati Manual has provided the definition of research and experimental development (r&d) and of its components, basic research, applied research and experimental development, for more than half a century, and the definitions have stood the test of time."

The Organisation for Economic Co-operation (OECD) comprises 38 countries today. <https://www.oecd.org/about/document/ratification-oecd-convention.htm>

The OECD's Frascati Manual has become a foundational element for many economies and global financial standards. Recently updated, no significant changes were made to the R&D definitions in the 2015 Edition.

<https://www.oecd.org/sti/frascati-manual-2015-9789264239012-en.htm>

Excerpts from the manual related to the R&D definition:

2.5 Research and experimental development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge—including knowledge of humankind, culture and society—and to devise new applications of available knowledge.

2.6 A set of common features identifies R&D activities, even if these are carried out by different performers. R&D activities may be aimed at achieving either specific or general objectives. R&D is always aimed at new findings, based on original concepts (and their interpretation) or hypotheses. It is largely uncertain about its final outcome (or at least about the quantity of time and resources needed to achieve it), it is planned for and budgeted (even when carried out by individuals), and it is aimed at producing results that could be either freely transferred or traded in a marketplace. For an activity to be an R&D activity, it must satisfy five core criteria.

2.7 The activity must be:

- novel
- creative
- uncertain
- systematic
- transferable and/or reproducible

2.8 All five criteria are to be met, at least in principle, every time an R&D activity is undertaken whether on a continuous or occasional basis. The definition of R&D just given is consistent with the definition of R&D used in the previous editions of the Frascati Manual and covers the same range of activities.

2.9 The term R&D covers three types of activity: basic research, applied research and experimental development. Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. Applied research is original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective. Experimental development is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

## **InCommon Policy and Procedure: A Proposal**

The InCommon FOPP

<https://incommon.org/federation/fopp/>

Section 4.1.1.(2) defines the eligibility characteristics—as well as the privileges—of those organizations classified as “Research Organizations” by InCommon (**bold and underline emphasis added**).

(2) Research organizations. InCommon acknowledges that research organizations are critical partners in the research and education efforts supported by InCommon. **A Research organization is defined as a lab, facility, or center related to a particular federal research agency and listed on an official publicly available government listing to InCommon's satisfaction.** A Research organization may sponsor into the Federation any sponsored partner organization by a formal letter of sponsorship from the active InCommon executive contact at the research organization.

InCommon staff propose that we change the sentence in bold, above, to the following:

A Research organization is defined as a lab, facility, or organization that attests to the following research principles based on the standard definition of Research and Development by the Organisation for Economic Co-operation[1]. The Research Organization attests that its Research and experimental development (R&D) comprises creative and systematic work undertaken in order to increase the stock of knowledge—including knowledge of humankind, culture and society—and to devise new applications of available knowledge. And, the Research Organization holds the following principles as core to its research practice: research must be novel, creative, uncertain, systematic, and transferable and/or reproducible.

[1] See the OECD's long-standing Frascati Manual, available online through <https://www.oecd.org/>

With this policy change, InCommon staff would implement a process whereby a candidate organization would make this affirmative declaration in a documentable manner. Possibilities include adding a statement in the legal Participation Agreement, or, as we do with other documented attestations for InCommon and eduroam, we could provide a webform that outputs the declaration into recordable formats for our official record-keeping files.

Alternatively, we considered a proposal whereby InCommon would require evidence of compliance from the candidate organization. However, we concluded that nothing practicable seems appropriate, other than asking the organization to attest to the basic principles of good science as described above.

Faithfully submitted, and with thanks to Angi Sizemore in Service Management for discovery in the research process.

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