



The Definition of R & D

R & D for tax purposes takes place when a project seeks to achieve an advance in science or technology.

The activities that directly contribute to achieving this advance in science or technology through the resolution of scientific or technological uncertainty are R & D.

Certain qualifying indirect activities related to the project are also R & D. Activities other than qualifying indirect activities which do not directly contribute to the resolution of the project's scientific or technological uncertainty are not R & D.

Advance in Science or Technology

An advance in science or technology means an advance in an **overall knowledge or capability** in a field of **science or technology** (not a company's own state of knowledge or capability alone). This includes the adaptation of knowledge or capability from another field of science or technology in order to make such an advance where this adaptation was not readily deducible.

An advance in science or technology may have tangible consequences (such as a new or more efficient cleaning product, or a process which generates less waste) or more intangible outcomes (new knowledge or cost improvements, for example).

A process, material, device, product, service or source of knowledge does not become an advance in science or technology simply because science or technology is used in its creation. Work which uses science or technology but which does not advance scientific or technological capability as a whole is not an advance in science or technology.

A project which seeks to, for example:

- (a) extend overall knowledge or capability in a field of science or technology;
or
- (b) create a process, material, device, product or service which incorporates or represents an increase in overall knowledge or capability in a field of science or technology; or
- (c) make an **appreciable improvement** to an existing process, material, device, product or service through scientific or technological changes; or
- (d) use science or technology to duplicate the effect of an existing process, material, device, product or service in a new or appreciably improved way (e.g. a product that has exactly the same performance characteristics as existing models, but is built in a fundamentally different manner), will therefore be R & D.

Even if the advance in science or technology sought by a project is not achieved or not fully realised, R & D still takes place.

If a particular advance in science or technology has already been made or attempted but details are not readily available (for example, if it is a trade secret), work to achieve such an advance can still be an advance in science or technology.

However, the routine analysis, copying or adaptation of an existing product, process, service or material, will not be an advance in science or technology.

Scientific or Technological Uncertainty

Scientific or technological uncertainty exists when knowledge of whether something is scientifically possible or technologically feasible, or how to achieve it in practice, is not readily available or deducible by a competent professional working in the field. This includes **system uncertainty**. Scientific or technological uncertainty will often arise from turning something that has already been established as scientifically feasible into a cost-effective, reliable and reproducible process, material, device, product or service.

Uncertainties that can readily be resolved by a competent professional working in the field are not scientific or technological uncertainties. Similarly, improvements, optimisations and fine-tuning which do not materially affect the underlying science or technology do not constitute work to resolve scientific or technological uncertainty.

Example

- A1. A company conducts extensive market research to learn what technical and design characteristics a new DVD player should have in order to be an appealing product. This work is not R & D. However, it does identify a potential project to create a DVD player incorporating a number of technological improvements that the company's R & D staff (who are competent professionals) regard as genuine and non-trivial. This project would be seeking to develop an appreciably improved DVD player and would therefore be seeking to achieve an advance in science or technology.
- A2. The company then decides on a detailed specification for the desired new product, and devises a plan for developing it. Some elements of this plan involve planning of activities that directly contribute to resolving the project's scientific or technological uncertainties (such as the system uncertainty associated with an improved control mechanism for the laser that "reads" the DVD). This element of planning is R & D, as are the activities themselves. Other elements of the plan focus on obtaining intellectual property protection or cosmetic design decisions, for example, which do not directly contribute to resolving the project's scientific or technological uncertainties and are not qualifying indirect activities and are therefore not R & D. Neither this planning nor these activities are R & D.
- A3. The scientific or technological work culminates in the creation of a series of prototype DVD players, and ultimately a "final" prototype is produced and tested which possesses the essential characteristics of the intended product (circuit board design, performance characteristics etc). All the activities that directly contributed to resolving the scientific or technological uncertainty of creating the DVD player up to this point (such as the testing of successive prototypes) are R & D.
- A4. Several copies of this prototype are made (not R & D) and distributed to a group of consumers to test their reactions (not R & D). Some of these consumers report concerns about the noise level of the DVD player in operation. Additional work is done to resolve this problem. If this involves a routine adjustment of the existing prototype (i.e. no scientific or technological uncertainty), then it will not be R & D; if it involves more substantial changes (i.e. there is scientific or technological uncertainty to resolve), then it will be R & D.

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