



Survey of State Government R&D

Supporting Document

What is Research and Development (R&D)?

Research and development (R&D) is creative work conducted systematically to extend scientific knowledge, or devise new applications, which may include materials, products, devices, processes, systems, methods, or services.

- R&D is aimed at new findings
 - It has not been done before
 - It may produce findings that could be published in academic journals
 - It includes ideas that could be patented
- R&D increases our knowledge of the subject
 - Helps create new products or applications
- R&D creates solutions that others may find useful
 - Findings can be generalized to other situations and locations
- R&D outcomes are uncertain (because it has never been done before)
 - Solutions are not always obvious or expected

What is NOT R&D?

- Construction and acquisition of land and facilities used primarily for R&D (this is reported separately in Question 11)
- Fixed equipment used primarily for R&D (this is reported separately in Question 11)
- Program planning and evaluation
- Business development services for new companies
- Commercialization (includes promoting/producing the products/services from R&D projects)
- Economic/policy/feasibility studies
- General patient services
- Information systems
- Management studies
- Marketing of products/services
- Market research or analysis



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- Routine data collection/dissemination
- Routine monitoring/testing
- Strategic planning
- Technology transfer

Examples of R&D

What makes it R&D	When it is R&D	When it is not R&D
 R&D is novel. It increases our knowledge of the subject. It has not been done before. 	You are testing blood samples as part of a research project to find out the side effects of a new cancer treatment.	You are collecting information from samples of patients to estimate the incidence of chicken pox in the state's population. (You are using a standard approach to estimate the spread of chicken pox.)
P&D creates solutions	You are testing a	You are testing payament
 • Others might benefit from the findings. • The findings can be generalized to other situations and locations. 	pavement on your highways that is currently used only at airports. Other states will want the results.	on your state's highways to estimate how much you need to Budget for pavement replacement over the next five years. (Other states will not benefit from your specific state information.)
The outcome of R&D is	Your research involves	You are monitoring
 The solution is not obvious to an expert in that field. 	monitoring steams to determine whether a new program is increasing the population of a particular type of fish.	streams as part of plan to implement long-term monitoring for a particular type of fish. (The monitoring plan has already been tested and you are certain of the quality of the plan.)





Reporting Unit

The reporting unit is your department, agency, commission, public authority (herein referred to as agency) including all divisions and offices regardless of location that either perform or fund R&D.

Estimates are acceptable

Please report all items to the best of your ability.

Examples of classifying R&D from four activities

Activity	It is R&D	It is not R&D
Technical Assistance	You hire a technical consultant to test the disease resistance for the new fish species you are developing. (The assistance addresses the uncertainty of the science/technology aspects of the product or service.)	You hire a technical consultant to help you design the graphic design for the package to ship your new fish species when you begin offering it for sale to other states. (The assistance addresses the uncertainty of the marketing/production aspects of the product or service.)
Help for new businesses	You provide funding to new businesses to help them with the costs of	You provide funding for new technology

Tou provide furfulling to	Tou provide furfulling for
new businesses to help	new technology
them with the costs of	companies to help them
building prototypes of	acquire basic skills to
products they are	market their new
developing.	products.

Consulting	You use a consultant to plan testing of a highway pavement material that your transportation research center is trying	You use a consultant to help you secure health and safety approval for your new pavement material.
	to develop.	



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Developing a product	You hire a university	You hire a law firm to
from your research	research center to test a new type of grass you developed to test whether it will survive actual conditions along the coastline.	help you with the process for patenting the new grass that you developed.

Examples Applied Research Basic Research Experimental Development You are testing a newly You are studying the You are conducting properties of blood to developed chicken pox research on how a new determine what affects chicken pox vaccine vaccine with various ages coagulation. affects blood coagulation. of school children before implementing it statewide. You are studying the You are conducting You are testing a newly properties of molecules research on the developed pavement under various heat and properties of particular under various types of cold conditions. substances under various heat and cold conditions heat and cold conditions prior to using it on your

	with the objective of finding longer lasting components for pavement.	state's highways.
You are studying the	You are examining	You are designing a new
heart chambers of	various levels of a toxic	system for monitoring a
and a second	Le le cher e contra de la constructione de la construction de la const	

various fish species.	substance to determine the maximum safe level for fish in a stream.	stream that will try out the results of your recent research in a real world situation.
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You are studying the	You are studying the	You are using research in
effects of various	implementation of a	the field to develop
strategies for teaching	specific math curriculum	education software and
math in order to	to determine what factors	support tools for math
understand which is the	lead to successful	curriculum.
most effective.	implementation by	
	teachers.	