





Summary Sheet

Revenue's R&D Tax Credit Guidelines state that identifying which Technology Readiness Level ("TRL") stage an R&D process is operating may be beneficial in identifying qualifying R&D expenditure. Created by NASA in the 1990's as a way to measure the development stage or maturity of a given technology, the TRL typically spans over nine levels. Generally, products will go through the various TRL stages during their lifecycle and it is possible that iterations may occur during R&D activity.

The Revenue's TRL scale is designed to be used on a self-assessment basis and the headings are quite broad. This creates challenges when trying to determine what TRL is appropriate for a product, process or system that is under development. Limited information is provided on the use of the TRL scale, therefore we have looked to other TRL scales and compiled a description of what each stage might include to assist you with your selection.

Revenue TRL	Revenue Definition	TRL	*H2020	**EARTO	KPMG definition and description
0	Idea	0			Idea formulation
1	Basic Research	1	Basic Principles Observed	Basic Principles Observed	Basic principles translated from scientific research.
2	Technology Formulation	2	Technology Concept Formulated	Technology Concept Formulated	A technology concept is formulated in terms of how the basic principles can be applied.
3	Applied Research	3	Experimental Proof of concept	First assessment of feasibility of the concept and technologies	First assessment of concept through actual research assessing technical and market feasibility.
4,5	Small Scale Prototype ----- Large Scale Prototype	4	Validation of integrated prototype in a laboratory	Validation of integrated prototype in a laboratory	Early feasibility tested in laboratory by integrating basic technological components.
6	Prototype System	5	Testing of prototype in a user environment	Testing of prototype in a user environment	System, actual use and manufacturing tested and validated in user environment
7	Demonstration System	6	Technology demonstrated in relevant environment	Per-production of the product, including testing in a user environment	Full integration of product and manufacturing technology now established in pilot line/ plant.
8	First kind of commercial System	7	Low scale pilot production, producing actual commercial products	Low scale pilot production demonstrated	Low scale pilot production demonstrated. Product launched to early markets.
9	Full commercial application	8	System Completed and qualified	Manufacturing fully tested, validated and qualified	Manufacturing of system has been fully completed. Product is launched to majority markets.
		9	Market expansion, incremental changes in product create new versions	Production and product fully operational and competitive	Product fully operational and competitive. Production and manufacturing optimised through continuous incremental innovations.

Industry Specific Examples

Industry	Prototype System	Demostration System	First Kind of Commercial System
 Biotechnology	GMP Pilot Production, phase 1 clinical trials	Scale-up, initiation of GMP Process Validation, phase 2 clinical trials	GMP Validation Consistency Lot Manufacturing, Efficacy Studies, FDA approved
 Software	Operational environment integrated with actual external entities. "Beta" SW releases.	SW releases are in distinct versions. Verification Validation & Accreditation completed.	SW releases are production versions and configuration controlled, in a secure environment. SW deficiencies are rapidly resolved through support structure.
 Electronics	RTL Model, Simulated Model, Gate Level Simulation (GLS), Testing (Regression, Functionality, Unit, System, Integration)	Functional SoC (System on Chip) with limited functionality, HW finished, SW still may have improvements	nth Stepping, Production unit (Tests and quality checks should be passed and deemed a certain quality by company before being rolled out)
 Manufacturing	Device prototypes built and tested Engineering Verification Testing (EVT)	Process Validation Process Qualification	Commercial batches of devices

***H2020** – Horizon 2020.

****EARTO** – European Association of Research and Technology Organisations.

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