DIRECTIVES FOR PROJECT FORMULATION AND MANAGEMENT IN DRDO (DPFM 2021)

30 APRIL 2021

Directorate of Planning & Coordination

Defence Research and Development Organisation

DRDO Bhawan, Rajaji Marg

New Delhi-110011

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सत्यमेव जयते
भारत सरकार
Government of India

स्वच्छ भारत
एक कदम स्वच्छता की ओर

सचिव, रक्षा अनुसंधान तथा विकास विभाग
एवं
अध्यक्ष, डीआरडीओ

Secretary, Department of Defence R&D
&
Chairman, DRDO

Self-reliance in defence technologies, systems and platforms will be a key factor towards ***Aatmanirbhar Bharat.*** DRDO, with its technology spectrum encompassing the entire range of defence requirements, will be a significant contributor for the same. Technologies and systems remain relevant for a limited time due to ever-evolving threat perceptions and require continuous upgrades / improvement over existing technology base. The R&D organisations should be agile and flexible to meet these emerging challenges. Development of complex technologies and systems required to provide decisive edge to Armed Forces necessitates structured planning and flexibility in execution without losing sight of the timeline.

R&D projects have a high probability of unexpected challenges and constraints. Due diligence before taking up a project, close monitoring of the activities planned and factoring for unforeseen technological challenges become key ingredients for planning. ***'Directives for Project Formulation and Management (DPFM 2021)'*** in DRDO is a guideline to assist the labs to formulate projects in a structured manner and monitor the progress including the risk management.

In pursuit of our endeavor for delivering successful projects and products to the armed forces, **DPFM 2021** is being released with due emphasis on simplification, adequacy and effectiveness of the procedures. Initiatives like quantifiable Technology Readiness Levels (TRL) in DRDO context, Project Readiness Indices (PRI), Quantified Progress Reporting Framework, Risk Management and Online Project Monitoring will serve as a uniform yardstick for measuring project progress during monitoring and reviews.

I am sure that DPFM 2021 will help DRDO and ADA in achieving the goal of self-reliance in critical defence technologies and systems.

JAI HIND.

Date: 30 April 2021

(Dr. G Satheesh Reddy)

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No. DRDO/DPC/DPFM/32609/PR/C/M/01/**306**/D(R&D)
Government of India
Ministry of Defence
Dept. of Defence Research & Development
New Delhi – 110011
Dated: 30 ***April,*** **2021**

To,

The Chairman
Defence Research & Development Organisation
Ministry of Defence
New Delhi – 110 011

Sub: **ISSUE OF 'DIRECTIVES FOR PROJECT FORMULATION AND MANAGEMENT IN DRDO (DPFM 2021)'**

Sir,

1. I am directed to convey the sanction of the President of India for adoption of **'Directives for Project Formulation and Management in DRDO (DPFM 2021)**' as enclosed.

2. Procedures laid in **DPFM 2021** will be **applicable** for **all projects of DRDO and ADA** taken for sanction subsequent to date of this letter. This document will also be applicable for execution / monitoring and closure of all ongoing projects of DRDO. DPFM 2021 is **not applicable** for Projects approved through EC/PC route.

3. Sanctions and corrigendum issued in respect of **Ongoing Projects** will remain valid. However, all such projects shall be aligned with **DPFM 2021** with respect to project execution, reviews, monitoring and closure.

4. Activities costing less than ₹ 5 Cr. shall be classified as **Tasks**. Ongoing Projects costing ₹ 2 Cr. to ₹ 5 Cr. will be converted into **Tasks** and continue till their PDC.

5. All projects costing more than ₹ 5 Cr. shall require Acceptance-in -Principle (AIP) and Acceptance-of-Necessity (AON) of DMC before sanction.

6. Sanction of certain classified special projects (irrespective of their cost) which needs to be executed on "need-to-know basis" may be processed on file and will be sanctioned by a Standing Committee comprising of DG cluster, Addl. FA (R&D) and Secretary DD R&D. Lab Director would initiate the case for grant of special project status before moving the Project Proposal. Approval for the same shall be accorded by Secretary DD R&D based on

recommendation of DG Cluster and concurrence by Additional FA (R&D). Sanction letter shall be processed by DP&C, DRDO HQ in all such projects (irrespective of their cost).

7. Detailed supplementary procedures, forms and formats, which are to be read in conjunction with DPFM 2021 are being released separately as **'Handbook of Supplementary Procedures to DPFM 2021'**, with the approval of DG R&M.

8. Amendments to **DPFM 2021** will be issued with the concurrence of Addl. FA (R&D) and approval of Secretary DD R&D, whereas, amendments to '**Handbook of Supplementary Procedures to DPFM 2021**' will be issued by DP&C with the approval of DG R&M.

9. Any clarification w.r.t implementation / interpretation of the procedure will be referred to DP&C, DRDO HQr for examination and necessary action.

10. This issues with the concurrence of the Ministry of Defence (Fin/R&D) vide their Dy. No. **144**/MOD/Fin.(R&D) dated ***26 April*** 2021.

Yours faithfully,

Harsha
30/4/2021

(HARSHA RANI)
Under Secretary to the Govt. of India

Enclosures : as above

Ink Signed Copy to -

Director General of Audit, DS, New Delhi

PCDA (R&D), New Delhi
CDA (R&D), Hyderabad
CDA (R&D), Bangalore
DP&C, DRDO HQr
US (R&D), New Delhi

Copy to -

CGDA, New Delhi
Addl. Secy. & Addl. FA (R&D)
All DGs
All Directors, DRDO Labs / Corporate Dtes.
CDA (R&D), New Delhi
Principal Director of Audit, Defence Services, Pune
All IFAs (R&D)
ADA, Bangalore

PREFACE

A structured approach is followed by DRDO to bridge the knowledge gaps, enhance technological capabilities, develop contemporary test methodologies, establish advanced test facilities and infrastructure and develop systems based on the requirements of Services Head Quarters (SHQs) or on its own assessment of requirements for the future. These activities are carried out in the form of Projects / Programmes.

DPFM 2021 will further streamline the project sanction process and effectively implement the standardized monitoring and review structure in DRDO projects.

DPFM2021 will be ***applicable*** for all Projects/Programmes of DRDO and ADA. Projects routed through Empowered Committee/ Political Committee (EC/PC) will not be in the scope of this document.

Salient features of DPFM 2021 are given below :-

(a) During **Annual Selection of Projects exercise**, for every non-plan project being considered (if User recommendation does not exist), a Plan project may be dropped.

(b) Technology Demonstration (TD) projects will be sub-categorized as **Technology Level TD projects i.e TD(T)** and **Systems level TD projects i.e TD(S)**. Similarly, Science & Technology (S&T) projects have been categorized as **'Applied S&Ti.e. S&T(A)'** and **'Basic S&T i.e. S&T(B)'**.Sub category of project will be used for allotment of project number. However for cost estimation common budget headswill be used for TD(T) & TD(S) projects and similarlyfor S&T(A) & S&T(B) projects.

(c) Pre-requisites for taking up a project and the expected outcome has been qualified.

(d) Activities costing less than ₹ 5.0 Cr. shall not be considered as projects**.**

(e) Provision for sanction of special projects by Standing Committee has beenincorporated.

(f) Projects and sub-projects are to be treated at par for execution.

(g) For objective assessment of project progress during execution stages, a **Progress Reporting Frame Work,Six-monthly Technical Milestones** and **Online Monitoring of Projects** with associated financial outlays have been introduced.

(h) Number of **design iterations** at component /sub-system level stages and at overall system level and **associated additional time requirements** will be stated in TD and MM projects as a risk assessment and contingency aspect to be considered at project sanction and execution stages.

(i) **Roles and responsibilities** of project stakeholders within DRDO have been introduced.

(j) DRDO will work on advanced and critical technologies. The same will be certified by the Project Director and Lab Director while seeking project sanction.

(k) Procedure for **transfer of projects** from one lab to another lab has been introduced. Similarly, procedure for **change of category** of projects without changing the timelines and cost has also been introduced.

(l) The Project / Programme monitoring is aligned to the provisions of Defence Acquisition Procedure 2020 (DAP 2020).

(m) Fast-tracking of pre-project activities concurrently with AON process.

Any amendment to DPFM 2021 shall be issued with the concurrence of Addl. FA (R&D) and approval of Secretary, DD R&D. Exceptions, where DPFM 2021 procedures are not applicable, should be submitted for approval of Secretary DDR&D along with Financial Concurrence.

The applicable forms, formats, templates and checklists which are to be referred in conjunction with this guideline document are being promulgated as '***Handbook of Supplementary Procedures to DPFM 2021***. For ease of cross-reference, Handbook Contents are denoted as DRDO.DPFM.GL.SN for Supplementary Guidelines; DRDO.DPFM.FF.SN for Forms, Formats and Templates; DRDO.DPFM.CL.SN for Checklists; and DRDO.DPFM.AL.SN for Abbreviation Lists.These contents are indicative and may be revised and issued by Directorate of Planning and Coordination (DP&C) with the approval of DG (R&M) on requirement basis.

ACKNOWLEDGEMENT

The **Directives for Project Formulation and Management in DRDO (DPFM 2021)** have been finalized after several deliberations and discussions.

Valuable inputs and comments provided by Project Directors, Lab Directors, Directors (PM), Cluster DGs, Director Finance and Material Management (DFMM), Director Interaction with Services for Business (DISB), Integrated Financial Advisors (R&D) and Additional Financial Advisor (R&D) have been incorporated.

Theteam at DP&C,led byShriShobhNath Yadava, Scientist 'F' and comprising membersShri Yogesh Shakya, Scientist 'E', Smt. Mendu Shree Lakshmi, Scientist 'E', Shri Sanjeev Kumar, Scientist 'E' and Shri Lalit Mohan, Scientist 'D' have worked hard with full dedication to ensure the methodological compilation of the guidelines. Contribution made by the team is exemplary.

Directions and support of Mrs. Nabanita R Krishnan, DG (R&M) and Shri Prateek Kishore, Director TBRL, (previous Directors DP&C) for initiating and bringing this DPFM 2021 to this shape is well appreciated.

Acknowledgement is alsoextended to Director DESIDOC and team for printing this document.

New Delhi
Date :30 April 2021

Director Planning & Coordination
DRDO HQ, New Delhi

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

1.1.1 A Project/Programme essentially consists of well-defined objectives which are planned to be achieved under given time and cost constraints. Research and Development (R&D) requires exploration of existing knowledge and skills along with developing new knowledgeand skill-setto bridge gaps required to develop a product/technology/process/system not developed hitherto indigenously. Accordingly, uncertainties in the final outcome become an integral part of the R&D processes and its management. A R&D Project/Programme would plan to achieve pre-defined objectives, with an anticipation of bridging the knowledge gaps within the project period, by defining the milestones and also identifying some of the risks involved and its planned mitigation.

1.1.2 R&D project management is a typical process and should not be compared with conventional projects where uncertainties are minimal. Certain flexibilities need to be accorded to R&D projects where the development quotient is high in meeting all the objectives defined with associated risks. The knowledge and experience gained during any project is a capital asset and is useful in many other subsequent projects /activities. Hence, not meeting the objectives verbatim of such projects is not considered as a failure of the project.

1.1.3 The basis of undertaking Projects/Programmes by DRDO is the problem statement or the requirements mentioned in Plan Documents of Services/MoD/DRDO. Long Term Integrated Perspective Plan (LTIPP) of HQ Integrated Defence Services (IDS), 5-Year Plan and Annual Acquisition Plans of respective Services are used as guideline documents. Internal documents of DRDO like DRDO Vision Document (D-ViDOC), Roadmap of DRDO (D-RdMAP), DRDO Five Year Plan (D-FYP) and DRDO Long Term Technology Perspective Plan (D-LTTPP) will also be referred. These projects shall be classified as **'Plan Projects'**. In specific cases, Projects / Programmes shall be undertaken either to meet immediate requirements of Armed Forces or to develop indigenous capabilities in emerging technology areas not fully captured in Plan documents. Such projects will be referred as **'non-plan projects'**.

1.2 CRITERIA FOR CLASSIFICATION OF PROJECT AND PROGRAMME

1.2.1 Programme and Project are similar in type and scope of activities, but differing on the scale of execution, cost, timeline and level of involvement of stakeholders. Following guidelines will be adopted for classifying Programmes and Projects for execution purposes in DRDO:

1.2.2 **Programme:**All proposals in the delegated financial power of CCS shall be classified as Programmes. Furthermore, all such proposals which require multiple projects at different work centers (labs) may also be classified as Programmes with the concurrence of Addl. FA(R&D) and approval of Secretary DDR&D.

1.2.3 **Project:** All proposals which have financial outlay upto the delegated financial powers of Finance Minister and with minimum financial outlay requiring Acceptance-in-Principle (AIP) by DRDO Management Council (DMC) as amended from time to time shall be classified as Projects. The minimum financial limit for project requiring AIP and AoN by DMC shall be notified by Directorate of P&C with the concurrence of Addl. FA and approval of Secretary DD R&D.

1.2.4 Project / Programme shall be used interchangeably in the document with the meaning restricted to as defined above.

1.2.5 A group of activities whose cumulative value is less than the minimum financial outlay for AIP by DMC shall be classified as Tasks. AIP for Tasks shall be given by CCM. Project number and Unit Code will not be assigned in all such cases. Expenditure will be borne from Lab under Build-up.

1.3 TECHNOLOGY READINESS LEVELS (TRLs), TECHNOLOGY READINESS ASSESSMENT (TRA) & PROJECT READINESS INDICES (PRIs)

1.3.1 The aim of Projects / Programmes would be to increase the technological capabilities at its completion. **Technology Readiness Levels (TRLs)** have been used by NASA, US DoD and European Agency(reference 'Technology Readiness Assessment Guide' on Best Practices for Evaluating the Readiness of Technology for Use in Acquisition Programs and Projects issued by the U.S. Government Accountability Office in January 2020). TRLs are the most common measure for systematically communicating the readiness of new technologies or new application of existing/ heritage technologies to be incorporated into a system or program. They serve as a compendium of characteristics that describe increasing

levels of technical maturity based on demonstrated (tested) capabilities. TRL is traditionally measured on a scale of 1–10, with 10 being the highest. **The expected TRLs, in the context of DRDO are given in Table 1.**

1.3.2 TRL enhancement should be monitored as a project is progressed through the process called **Technology Readiness Assessment (TRA)**. It is a systematic, evidence based process which evaluates maturity of critical technologies vital to the performance of a larger system. It is a measure to identify risks and formulate risk mitigation strategy.

1.3.3 In DRDO Projects / Programmes, a technology assessed and proved in a previous project can be introduced at TRL 3 for current project. Same TRL of a legacy system will not be carried forward if there is change in any one of the aspects such as changes in design (including material and manufacturing process) and/or changes in operating environment conditions etc.

Table 1: Technology Readiness Levels Adapted for DRDO

TRL INDICES	DRDO DEFINITION	QUALIFIERS	SUPPORTING DOCUMENTS
1	**Basic principle and research**	• Scientific publication with probable concept / application.	• Scientific Publication/ Research Reports
2	**Basic technologies assessed and technical concept formulated**	• Scientific/Technical report with **feasibility** and potential application. • Literature study of world-wide trends, identification of final development model, testing and validation plan and possible technical risk areas.	• Feasibility Study Report • Concept Design Report
3	**Experimental proof of concept and**	• Laboratory results showing validation of critical properties, studies and lab measurements to	• Preliminary Design Document (PDD) and Preliminary Layout

	preliminary design	validate analytical predictions. • **Preliminary Design Review** for components/sub-systems completed.	Drawings • Report on similar system developed with test details of specifications achieved. • System Definition Document (SDD)
4	**Technology validated in lab environment**	• Configuration finalisation for system / product specifications. • Generation of System/Product Tree. • **Detailed Design Review** completed. • Lab prototype realised.	• Identification of LSI/DcPP/ PA for a TD(S)/MM Project. • Detailed Design Document and Layout Drawings. • Integration Layouts.
5	**Technology validated in simulated environment**	• Components / Sub-systems manufactured as per Acceptance Test Procedures (ATP). • **Design validation** for performance at component / sub-system level. • Components/sub-systems integrated in lab environment for functional assessment.	• ATP document. • Approved sub-system/ component design and drawings for prototype manufacture. • Approved integration Plan. • Component/Sub-system Functional Test Reports. • Quality Assurance Plan for sub-system / component.
6	**System/ Sub-system model or prototype demonstration in simulated**	• Sub-systems/Systems manufactured as per Quality Assurance Plan (QAP) & accepted as per ATP. • Completion of Qualification	• Qualification Test Certificates for components/ sub-systems. • Approved Interface Control Documents

	environment	tests for components/sub-systems from LSI / DcPP / PA. • **Critical Design Review** and implementation of recommendations. • Readiness for Prototype Trials in simulated environment.	• Critical Design Review report of components/ sub-system. • Manufacturing Drawings of QAP and ATP cleared sub-systems/ components. • Prototype Trials Plans.
7	**System prototype demonstration in relevant / simulated environment**	• Realisation of prototype from LSI / DcPP / PA • Completion of Prototype Trials. • Prototype cleared for PSQR Validation Trials. • Completion of Technical Documentation	• Prototype Trial Reports. • PSQR Validation Trial definition document at system/ sub-system level. • Approved Technical Documents • Approval by Executive Body
8	**Actual system completion and qualified through PSQR validation trials for performance requirement against Trial Directive.**	• Completion of PSQR Validation Trials on systems manufactured by LSI/ DcPP/ PA based on QA/ ATP, for performance requirements. • Completion of Technical Documentation.	• PSQR Validation Trial (for performance evaluation) reports duly vetted by the Trials Team.

9	**Actual System operated over the full range of operational conditions as per PSQR parameters against Trial Directive.**	• Completion of PSQR validation/ User Trials / Final Acceptance Trials.	• Jointly vetted PSQR Validation Trial reports. • Approval by the highest Monitoring Body
10	**System in production/ COTS**	• System/sub-system/components under production meeting the performance requirements.	• Production order.

1.3.4 **Project Readiness Indices (PRIs):** Lowest of the TRLs of Sub-systems / Components / Technologies envisaged under a project will be considered as the Project Readiness Index. It is a single index which represents readiness level of the whole project at any stage. It should be used as a reference during selection of new projects under a category. **PRIs for selection of projects under different categories are given in Table 2.**

Table 2 : Project Readiness Indices (PRIs) and Project Categories

SN	Project Category	Minimum PRI at Project initiation	Minimum desirable PRI at Project completion
1	Basic S&T Projects	1	2
2	Applied S&T Projects	1	2 to 3
3	Technology level Demonstration Projects i.e TD (T) Projects	2	6
4	Systems level Technology Demonstration i.e TD (S) Projects	3	7
5	Mission Mode (MM) Projects	6	8 to 9
6	User Trial (UT) Projects	7	9
***Note*: TRLs/ PRIs will not be applicable for PS, IF, LSP projects and RDR Works.**			

1.3.5 The Project Director designate has the responsibility of carrying out self-assessment of TRLs for each sub-system in the project based on Work / Product Breakdown Structure. However, for an independent verification, TRA should be conducted at lab level by Technology Council. The council will measure technology maturity on the TRL scale based on qualifiers and supporting documents stated at **Table 1**. TRA report stating PRI will be verified by Lab Technology Council and will be further vetted by Chairman,PRC/PDR (for MM and TD(S) projects vetting will be done by Chairman PDR). TRLs will be progressed during project execution phases as per the TRA Roadmap. The detailed methodology for assessment of TRLs, PRI and TRA Roadmap during project execution are given at DRDO.DPFM.GL.02 in Handbook of Supplementary Procedures to DPFM 2021.

1.4 PROJECT/ PROGRAMME CATEGORIES, PRE-REQUISITES AND EXPECTED OUTCOME

DRDO undertakes projects under different categories aligned to the requirements. The categories give an indication about the broad nature of activities and also to help DRDO Management to allocate resources in a manner meeting the organisational goals. Different categories of projects, its selection criterion, broad scope for each category of project and expected outcome have been given in succeeding paragraph. Pre-requisites and expected outcome of various project categories have been stated in the **Pre-requisites and expected outcome** diagrams given at subsequent sections. **A single or combination of pre-requisite/s can be considered during project selection. A single or combination of outcome/sisfeasible during project completion.**

1.4.1 Science and Technology (S&T) Project:

1.4.1.1 **S&T projects are undertaken for basic or applied research activities in alignment with long term technology needs and for competence build-up in emerging scientific and technological areas.Thus, S&T projects can be undertaken under the sub-categories 'Basic S&T' or 'Applied S&T' depending on the nature of the project scope**. The scope could include ab-initio research, design studies and analysis, design and development of working models / prototypes, modelling and simulation and tests in controlled environment. Bridging the knowledge gap in partnership with academia on work-share basis can be an important feature. The objectives of such projects are expected to be optimistic given the current knowledge base and the outcomes are also expected to have widely varying results. Partial achievement of the project objectives or not meeting few of the

pre-defined objectives would not be considered failure, since uncertainties will be high under these projects. It is suggested that labs should aim to have 10% of their projects by numbers in this category.However basic R&D labs will have a much greater percentage of S&T projects in this category.**The *reference*diagram with pre-requisites and expected outcome for S&T category of projects is given in Fig. 1.**

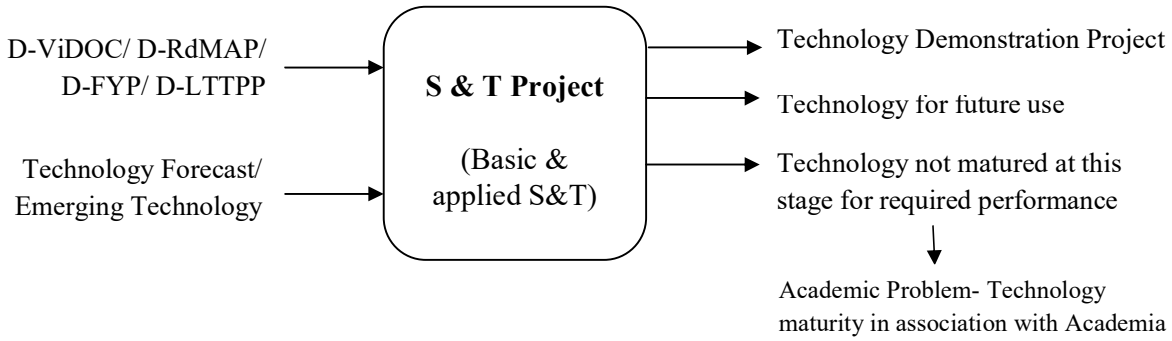

Fig.1: **Pre-requisites and expected outcome of S&T Projects.**

1.4.1.2 The expected outcome of an S&T project would be study report establishing the feasibility of converting some or all of its objectives in technologies, suggesting the probable applications of the knowledge / technology. **The minimum TRL at the completion of S&T project should be 2-3**.

1.4.1.3 In case, some of the objectives of the project have not been achieved or met partially, a follow-on study project in S&T category can be taken up by the lab in collaboration with academia to bridge the knowledge base. All such cases would not be considered a shortfall in performance or failure of the project to achieve desired objectives. Such projects will be stage closed as per the procedures at Chapter 7. Some of the study results of these projects would be towards knowledge generation and competence build-up and may not have an immediate application.

1.4.2 Technology Demonstration (TD) Project

1.4.2.1 **Technology demonstration and maturity is the key for self-reliance in defence equipment and systems. TD projects would be taken up to establish a technology or to develop a product / process or to evolve a test methodology or to develop a system for which the basic technologies are already developed or available ex-industry.** TD projects could be initiated as a follow-up action of S&T projects or based on D-ViDOC/ D-RdMAP/

D-FYP/ D-LTTPP. These projects may also be taken up to meet Non-plan requirements of Services or to develop competency in emerging technology areas. Academia could be involved to handle specific problems. The scope of a TD project should include design and development of prototypes, its testing and evaluation, analytically and experimentally establish a product / process / test methodology.

1.4.2.2 TD projects can be further sub-categorised as **Technology level TD projects i.e. TD(T)** and as **System level TD projects i.e TD(S)**. **The *reference* diagram for pre-requisites and expected outcome of TD category of projects is given in Fig. 2.**

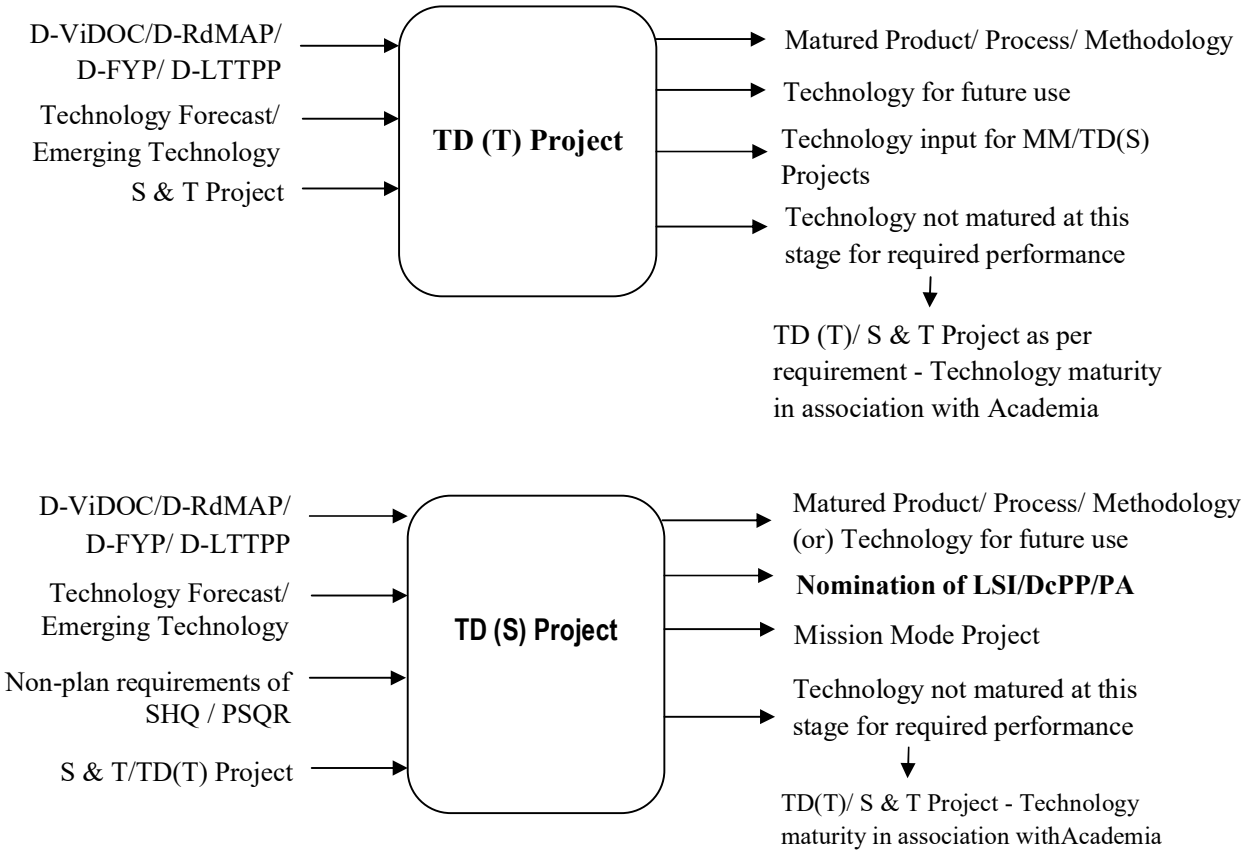

Fig. 2 : Pre-requisites and expected outcome of TD projects.

1.4.2.3 The TD (T) projects shall be undertaken for enhancement of technology levels for realisation of a component/ system, such that the technology can be customised for development of variants of the components/systems. Technology development for a product / process / test methodology under a TD(T) project is expected to have higher uncertainties. Therefore, shortfall in the pre-defined objectives or not meeting all the pre-defined objectives

would not be considered as a failure of the project. **At completion of TD (T) project, the TRL should increase from 2 to 6** or higher.

1.4.2.4 Availability of Draft Provisional Staff Qualitative Requirement (PSQR) is desirable to take up a system level TD project. Lead System Integrator (LSI)/ Development-cum Production Partner (DcPP) / Production Agency (PA) maybe identified in the TD(S) project along with other technical objectives. It is expected that all essential performance parameters shall be met. Participation of Services Head Quarters (SHQ) reps in all system level TD projects is desirable. **At completion of TD (S) project, the TRL should increase from 3 to 7**or higher**.**

1.4.2.5 Specific test facilities and infrastructure required for validation of the technology should be identified and created in a TD project.

1.4.2.6 A TD(S) project is expected to lead to Mission Mode (MM) projects, whereas, the outcome of TD(T) projects, the products / technologies / processes may be used in subsequent system level TD projects or as an input for MM projects. In case, a TD(T) project does not meet all the objectives, it will be stage closed as per the procedures inChapter 7. A follow-up TD or S&T project can be taken up to build the necessary technological capabilities.

1.4.3 Mission Mode (MM) Project

1.4.3.1 Mission Mode projects should be undertaken where requirements have been projected by the Services in terms of Operational Requirements (ORs) or PSQRs or Minimum Order Quantity (MOQ) or Acceptance of Necessity (AoN) has been provided by the SHQ.

1.4.3.2 Project proposals initiated by SHQs as per **Chapter IV of DAP 2020** will be undertaken by DRDO as MM Projects. The mandatory pre-project activities upto DMC AON stage as stipulated for MM projects should be concurrently progressed and completed by the Nodal Labs, such that, project sanction proposal could be immediately progressed upon accord of AoN by DMC.

1.4.3.3 MM projects may also be taken up by the Labs to meet non-plan requirements of Services or as a follow-up of TD(S) category projects with the concurrence of SHQs pending AoN.

1.4.3.4 PDR should be completed before sanction of MM project. Lab/DISB should aim to get the Trial Methodology from the Services. Partial funding from Services is also desirable.

It is expected that major technology blocks are already available and demonstrated in similar systems. Basic or applied research should not be undertaken in MM projects. **The *reference* diagram for pre-requisites and expected outcome of MM category of projects is given inFig. 3.**

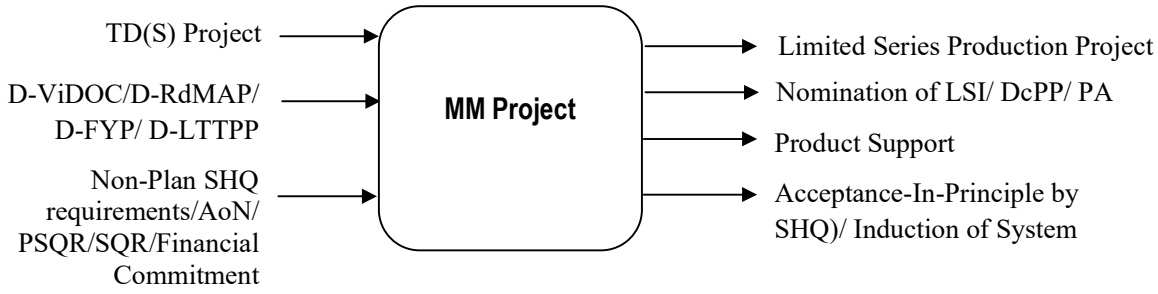

Fig.3: **Pre-requisites and expected outcome of MM projects**

1.4.3.5 MM projects should lead to readiness of systems as per the PSQR parameters so that it can be changed to SQR leading to induction and production. MM projects would envisage manufacture of specific number of deliverables required for demonstration of system capability vis-à-vis PSQRs during validation trials. It is essential that the systems used for PSQR validation trials should be produced by the LSI / DcPP / PA (if they are involved)as this will reduce the trial cycle as per provisions of DAP 2020.Successful completion of a MM project could lead to a Product Support Project (described at Para 1.4.5) upon acceptance of the system by Services, and in some cases it could also lead to Limited Series Production Project (described at Para 1.4.7). Since MM projects are SHQ intensive, their participation at different stages of project is mandatory. A Joint Project Monitoring Team (JPMT) of DRDO and SHQ would be constituted on case-to-case basis.

1.4.3.6 MM projects are to be taken up to demonstrate system level capability against SHQ requirements. It is expected that minimum TRL should be 6 at the start of the project. The TRL at the completion of MM project is expected to be 8/9. In case a COTS or imported sub-system/ component is being considered for a MM project, indigenous development of the sub-system/ component may be undertaken by the Labs through separate projects.

1.4.4 User Trial (UT) Project

1.4.4.1 **UT Projects are undertaken to meet subsequent requirements of PSQR Validation Trials for systems developed where AoN was not accorded at the time of sanction of the project or LSI / PA has been identified after completion of the**

development phase. Number of systems required for PSQR Validation Trials may be catered from the pre-cursor MM and TD(S) Projects also. The *reference* diagram for pre-requisites and expected outcome for UT category of projects is given in **Fig. 4.**

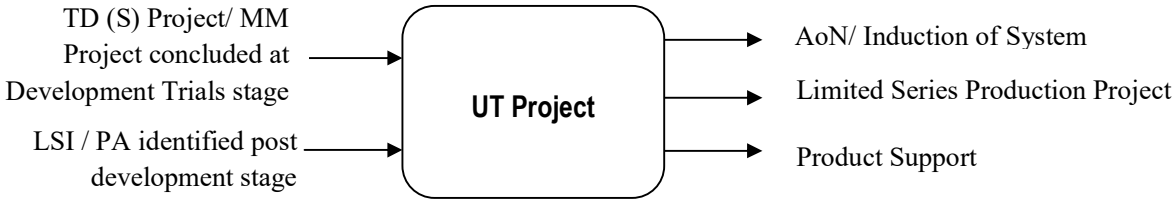

Fig. 4 : Pre-requisites and expected outcome of UT project.

1.4.4.2 Availability of PSQR and Trial Directives/ Methodology, Acceptance Test Procedure (ATP), minimum quantity for induction, selection / nomination of LSI / DcPP / PA and successful completion of development trials are pre-requisites for this category of project. Trial report jointly vetted by DRDO and SHQ with Trial sentencing by the SHQ, and acceptance of the system by the User shall be the outcome of the project. PS or LSP projects may be undertaken as a follow-up action. **The expected TRL after completion of UT project is 9.**

1.4.5 Product Support (PS) Project

1.4.5.1 **PS projects may be undertaken to provide technical support for systems which are inducted or are in production, but LSI / DcPP / PA were not selected during the development stage. These projects can be taken up in parallel to on-going MM/TD projects provided systems developed under those projects have been inducted**. Duration of PS projects should not exceed 3 years after which, these systems should be maintained / upgraded as regular inducted systems by an identified partner for life cycle management. **Part funding from the SHQ is desirable.** Cost of PS projects should be restricted to 30% of the pre-cursor MM/TD project cost. **TRL assessment is not applicable for PS Projects**.**The*reference* diagram for pre-requisites and expected outcome for PS category of projects is given in Fig. 5.**

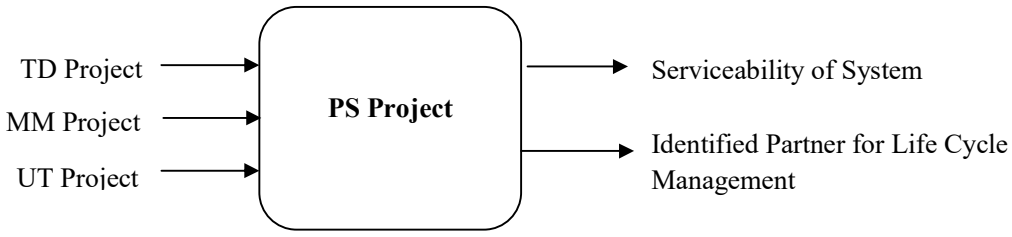

Fig. 5: **Pre-requisites and expected outcome of PS project.**

1.4.6 Infrastructure and Facilities (IF) Project

1.4.6.1 IF projects are undertaken for setting up typical and advanced infrastructure (including construction of technical facilities) and test facilities for validating the technology/ system developed or proposed to be developed under ongoing/ future projects and for evolving test methodologies and protocols. IF projects have to be a mix of construction (civil works) and equipment to be procured and installed therein.

1.4.6.2 Commissioning of test equipment and facility is the expected outcome of the project. **TRL assessment is not applicableforIF Projects**.

1.4.7 Limited Series Production (LSP) Project

1.4.7.1 **LSP projects are undertaken as a follow-up project of TD/MM/UT projects where the requirement is to produce limited quantity not viable for commercial production or to establish production agency. LSP projects can be undertaken for those systems which have already been accepted for induction.** LSP projects would normally be funded in full or in part by the Services. TRL assessment is not applicable for LSP projects. Detailed GoI guidelines on LSP projects are hosted on DRONA DIITM portal. DPFM guidelines for LSP projects are available at supplementary guideline DRDO.DPFM.GL.08.

1.4.7.2 Production of the required quantity or establishing production agency is the expected outcome of the project. **The *reference* diagram for pre-requisites and expected outcome for LSP category of projects is given in Fig. 6.**

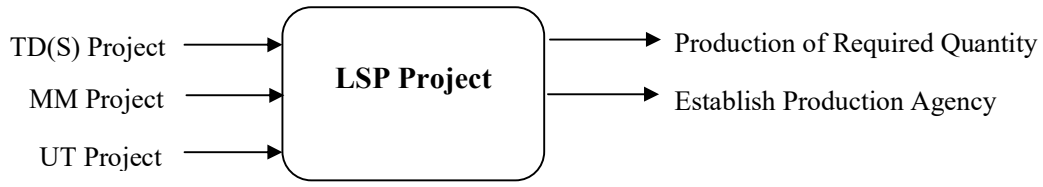

Fig. 6: **Pre-requisites and expected outcome of LSP project.**

1.4.8 REVENUE DEBT REMITTANCE (RDR) WORK

1.4.8.1 **RDR Works can be undertaken at the request of external agencies (such as OFBs, ADA, ISRO, BARC, DPSUs/PSUs, Central / State government Agencies and Private Industries etc.) on the basis of their requirements.** Project scope would include consultancy services, development of prototypes for technology demonstration, manufacture of limited number of prototypes for a developed system in the absence of ToT to a production agency, and providing test support at DRDO labs etc.

1.4.8.2 RDR Works are to be exclusively funded by the external Agency. Detailed RDR Works guidelines for execution of RDR Works are available at supplementary guideline DRDO.DPFM.GL.10. SOP for fund allocation and expenditure management is available on DFMM DRONA portal. TRL assessment is not applicable for such projects.

1.5 COLLABORATIONS UNDER PROJECTS

1.5.1 Labs may collaborate within and outside DRDO to tap expertise for fulfilling project objectives through following provisions.

1.5.2 **Sub-Projects** can be awarded by Nodal lab to participating DRDO Labs/Estts. Sub-projects should preferably be indicated while processing the project for sanction.

1.5.3 **Work Packages** can be awarded through MoU by the nodal/participating lab to constituents of other Govt. Departments such as Department of Atomic Energy (DAE), Indian Space Research Organisation (ISRO), Department of Science and Technology (DST) etc. Funds for the work package will be released to the Govt agencies by DFMM, DRDO HQ. Procedures for work packages will be the same as sub-project procedures.

1.5.4 **CARS and CAPSI:** Labs may avail professional expertise through (i) Contract for Acquisition of Research Services (CARS) from academic institutions (ii) Contract for Acquisition of Professional Services with Institute (CAPSI)of Defence Scientists and Technologists (IDST). CARS may be avoided in MM, UT, PS, IF and LSP projects.

1.5.5 **Consultancy Contracts**will be awarded for seeking professional expertise which cannot be met through CARS and CAPSI.

1.5.6 Guidelines for sanction and execution of sub-projects and work packages are given at relevant sections of relevant chapters whereas the guidelines issued by DFMM, DRDO HQ shall be followed for sanctioning and execution of CARS,CAPSI and Consultancy contracts.

1.6 SYSTEM ANALYSIS OF PROJECTS

SystemAnalysis activity should be carried out for MM & TD projects. S&Tprojects may also employ the system analysis activities in accessing technology development requirements for the specific projects if required. System Analysis should be carried out to assess the requirement of the Products/Systems/Technologies in the simulated war scenarios.Detailed guidelines formulated bythe Directorate of Systems and Technology Analysis (DSTA) as amended from time to time may be considered.

CHAPTER 2

PRE-PROJECT ACTIVITIES

Pre-project activities are the foundation for the project during its sanction and execution process. These activities use minimum resources but have maximum impact on the outcome of the project.

2.1 ANNUAL SELECTION OF PROJECTS

- Roadmap of DRDO (D-RdMAP) & DRDO Five Year Plan(D-FYP) Document to be considered for DRDO Technology & Systems Perspective Plan.
- D-RdMAP to have 2-year, 5-year and 10-year Plan for Initiating development of Technologies, Systems and Infrastructure & Test Facilities.
- 2/5 year Plan shall be used to derive Annual Plan by labs / Clusters.
- Approval of cluster Council is required for finalising the list of projects for annual selection of projects (Annual Plan) for presentation in DMC for accord of Acceptance -in -Principle (AIP) by DMC.
- Annual Plan (CCM approved) shall be presented in DMC before forthcoming Financial Year and Acceptance-in-Principle (AIP) shall be accorded for shortlisted projects by DMC.The validity of AIP for the projects approved during Annual Selection of Projects shall be for the forthcoming FY
- Pre-project activities (PRC/PDR) to be completedforAIPgrantedprojects and proposals will be presented in DMC individually for Acceptance-of-Necessity (AoN) including detailed Objectives, Scope, Cost and Duration. DMC to also accord validity of AoN.
- Review D-RdMAP every 2 years, update 5 and 10 years Plan based on technology requirements at that time.
- Project based on requirements of Services may be taken up for sanction independent of its listing in D-RdMAP. CCM to recommend, PDR to be completed then be presented in DMC for AoN for processing for project sanction.
- There may also be situations when a project needs to be undertaken on an urgent requirement basis. Such projects, if not a part of Annual Selection of project, may be taken up with the recommendation of Cluster Council &AoN by DMC as special case.

2.1.1 **Review of Completed projects / Projects completed with partial success.** All the completed projects / projects completed with partial success during lastFinancial Year should be presented to DMC (during the presentation for Annual selection of projects) highlighting outcomes of technology maturity, future roadmap for use of these technologies/developed systems/products/ processes which have not culminated into another project / product / prototype / process / adopted for manufacturing (refer Pre-requisites and outcome of Projects).

2.2 DRAFT PROJECT PROPOSAL

2.2.1 A Draft Project Proposalshould be prepared,incorporating details of feasibility studies, project objectives, scope, preliminary work done, comprehensive technology scan in related areas, plan for development and tests, identified risks in development. Additionally, it may also include its mitigation plan and possible effect on completion schedule, requirement of additional specialised infrastructure and test facilities, resource requirement in terms of scientific and technical manpower and funds, estimated time and the current and expected TRLs. Detailed guidelines for **Draft Project Proposal** are available at DRDO.DPFM.GL.01

2.3 RISK ANALYSIS AND RISK MANAGEMENT PLAN

2.3.1 Risk Mitigation Plan should be a top-down approach. The risk identification and its mitigation plan together with the Product Breakdown Structure (PBS)/Work Breakdown Structure (WBS) should be included in the Draft Project Proposal. It should be reviewed and vetted by the Peer Review Committee. It should also be presented as part of PDR, CDR and project reviews at every stage.

2.3.2 Risks in an R&D management project occurs primarily in areas given below(the list is illustrative and not exhaustive):

(a) **Technical Risk:** Design iterations to meet the performance and operational requirements, change of components due to obsolescence or due to design requirements, changes in operating environment due to changed concept of operations, limitations of manufacturing processes etc.

(b) **Procurement Risk**: Delays due to procedural issue related to procurement, development contracts, non-performance of vendors, technology/ export denial.

(c) **Test & Evaluation Risk**: Test requirements vis-à-vis availability of test facilities and necessary infrastructure, availability of test methodology, additional test requirements due to changed design/ operating conditions.

2.3.3 Risk **Mitigation Plan** broadly should involve the following steps -

(a) **Identify the risk** - to be drawn from the PBS/ WBS

Therisks can be identified through one or more of the following: Reviews & analysis, SWOT analysis, brainstorming among experts, Delphi techniques, assumption analysis, cause-and effect & influence diagrams, Monte Carlo simulations etc.

(b) Assess the **probability of occurrence of the risk** and impact on project duration, cost and performance. This assessment should be based on past experiences and qualitative judgement, ABC analysis etc.

(c) **Prioritise risks** - Based on Impact/Probability.

2.3.4 Plan and implement the risk mitigation strategy.

2.3.5 Track and monitor the risks throughout project cycle.

2.3.6 The projects may adopt any other suitable method for specific requirements.

2.4 PROJECT PEER REVIEW

2.4.1 **All TD(T) and S&T projects shall be mandatorily peerreviewed**by an expert committeei.ePeerReviewCommittee(PRC) for assessment of viability and technical adequacy of the proposal. For MM & TD(S) projects / programme, PDR should be conducted in lieu of PRC.For all such MM / TD(S) projects where PRC is not applicable but TRA and PRI are applicable, TRA and PRI will be reviewed by PDR Committee and vetted by Chairman PDR Committee.Specific recommendations of PRC should be recorded for consideration/ implementation. Articulated recommendations (Minutes in accordance with Terms of Reference) of the PRC, duly approved by the Chairman should be appended with the project proposal.There should be a clear acceptance of PRC recommendations on file. PRC recommendations that are not agreed to, needs to be highlighted in DMC during presentation for AoN.

2.4.2 Competent authorities for constitution of PRC is given below in **Table 3**:

Table 3 : Competent Authority for Approving PRC Constitution

PROJECT CFA	COMPETENT AUTHORITY
Lab Director	Lab Director in consultation with Director (PM) of O/o Cluster DG
Cluster DG	Cluster DG
Secretary DDR&D and beyond	Secretary, Defence R&D

2.4.3 **Broad Constitution of PRC should be as under:-**

(a) Chairman (Eminent person preferably from outside DRDO)

(b) Two external experts (eminent domain experts from academic institutions/ R&D institutions/ Industry)

(c) Two DRDO experts (preferably from other labs/HQ Dte)

(d) DP&C, DRDO HQ

(e) Director (PM) of cluster DG

(f) Chairman / Rep Technology Council Members to address TRL & PRI values/analysis

(g) Representatives of participating labs (if applicable)

(h) Rep DISB / Rep DQRS (DRDO HQ) andRepSHQ (for QR based/SHQ AON cases)

(i) Rep DSTA, DRDO HQ (if applicable)

(j) Project/ Programme Director designate (Member Secretary)

(k) Other members co-opted by the PRC Chairman on need basis.

Terms of references of PRC Committee and related detailed guidelines are given at DRDO.DPFM.GL.03.

2.5 PRELIMINARY DESIGN REVIEW (PDR)

2.5.1 The competent authority for Constitution of PDR, Detailed Design Review (DDR) and Critical Design Review (CDR) Committee Constitution isgiven in **Table 4**. Detailed description of guidelines related to design reviews has been given under Chapter 4.

Table 4 : Competent Authority for approving PDR/ DDR/CDR constitution	
Project CFA	**Competent Authority**

Lab Director	Lab Director
Cluster DG	Cluster DG
Secretary, Defence R&D and beyond	Secretary, Defence R&D

2.5.2 The committee of PDR/DDR/CDR should comprise of the following members:

(a) Chairman (eminent technology expert preferably external to DRDO)

(b) Two external experts (eminent academicians with domain expertise)

(c) Director P&C or Rep. forMM & TD(S) projects (only PDR)

(d) Director ISB or Rep. for all User QR driven projects (only PDR)

(e) Two DRDO technical experts

(f) Representative from DSTA (if applicable, Only PDR)

(g) Rep SHQfor all User QR driven projects

(h) Director DQR&S (if CFA is beyond Cluster DG)

(i) Director SQR from O/o Cluster DG (if CFA is Cluster DGor Lab Director)

(j) Project Directors of sub-projects

(k) Project Director will be the Member Secretary of the committee

Note: Chairman may co-optany eminent person to participate in review process.

2.6 ACCEPTANCE-OF-NECESSITY (AON) BY DMC

2.6.1 PRC/PDR recommendations will be presented in DMC. PRC recommendations that are not agreed to/agreed with qualification (if any) have to be highlighted during presentation to DMC. DMC, if agreed, shall accord AON to project. In case of urgent requirements projected by SHQ, DMC would approve taking up projects not listed in AIP for the forthcoming year based on the recommendations of the Cluster Council.

2.7 PROCUREMENT PLAN & DEMAND APPROVALS

2.7.1 An overall procurement plan should be prepared, detailing all products, components to be procured with their estimated timelines for different procedural actions, cost and source of supply.

2.7.2 Demand approval can be sought along with the processing for project sanction as per Procurement Manual 2020 as amended from time to time.

2.7.3 Labs may initiate procurement actions for projects submitted for approvals/ PDC extension/ cost enhancement as per Procurement Manual 2020 as amended from time to time.

2.7.4 The Procurement Plan will be reviewed by PMRC and EB and necessary corrective actions, if any, may be recorded.

2.8 COST ESTIMATION

2.8.1 An R&D project is different from a traditional project on account of uncertainties of conversion of knowledge into products/systems. Many components/sub-systems/ technologies would be attempted for the first time in the project. Cost of the bought-out or commercially-off-the-shelf (COTS) items can be realistically assessed; however, the assessment of development cost would be a challenge. Hence, professional judgement of cost based on past experience of project team would be an integral part of the Cost Estimation.

2.8.2 Cost estimation should be supported by a clear statement of items/services to be procured, quantities/scope of the same and basis for estimating the cost of those items/services. The said basis could be the Last Purchase Price (LPP) or Budgetary Quote (BQ) or Professional judgement. Scope of the Project / Objectives and deliverables should be translated into modules/ systems/ activities, associated test equipment, software, works, etc. and each further decomposed to its sub-system/component level, which should be costed. Assumptions on which costing is based should be defined e.g.

(a) Basis of calculation of numbers/spares of modules/systems/sub-systems taken for costing.

(b) Specifications frozen or accepted by the appropriate authority, peer-reviewed.

(c) Methodology of implementing the project as accepted/proposed.

2.8.3 The general principle of product costing should apply to the costing of project too. Every estimated cost should have a basis/a supporting data in the form of one of the following:

(a) **Annual EscalationandForeign Exchange Rate Variation (FERV)**may be applied on LPP. Percentage of escalation on the above per year should be taken into account. For example, Previous Purchase Price/Supply Order (SO)/Purchase Order (PO) either from the same Lab/ Cluster/ any other Govt. agency normalized to the present day estimated cost by including a 2% escalation per year for imported items and 3% escalation per year for indigenous items.

(b) And/or **Internal Cost Estimationbased on Experience**. Especially in case of sub-systems for which components/Line Replaceable Units (LRUs) are known to the Project/Lab. Internal estimation is particularly relevant in cases of customization, development of hardware and software.

(c) If a previous cost is available (old PO for same or similar item) and modification is required, then percentage of work to be done should be indicated to give an idea of proportionate additional cost over the **non-recurring engineering (NRE) cost** of the referral order.

(d) If **new development** is required, then **Bill of Material (BOM)** and Development / NRE Cost break-up is required. That is assessed LRUs/components with approximate numbers and cost + estimated work (skilled members + unskilled members with prevailing man hour rates taken for cost estimation).

(e) **Completely new tasks/jobs** can be supported with **Budgetary Quote (BQ)/or Expert Inputs**. Only one BQ shall be considered adequate at this stage. BQs have to be discounted by minimum10% while including in the estimates.

(f) **Reserve stocks** of critical components for system level TD (S) projects and MM projects may be created to support production during initial phases. It may be considered as a **risk mitigation strategy** and should be highlighted with detailed justification and costing. However, the cumulative cost of reserve stocks should **not exceed 5% of the total project cost**.As provided in PM2020, such reserve stock pile may be procured after clearly indicating to the CFA that it is a stock pile.

(g) In the case of major equipment and high value stores the justification for procuring them and not opting for hiring or outsourcing as a services, should be clearly brought out.

(h) In certain cases where estimation of quantity may not be practically feasible, a bench- mark percentage of project cost/revenue expenditure could be considered.

2.8.4 Overall estimated cost including taxes and duties shall be the basis for determining project CFA. AIP andAoN of DMC will be on indicative cost estimation. However, the cost estimated by **Cost Estimation Committee (CEC)** will be considered while processingproject sanction case file. A CEC shall be constituted by Competent Authorities as given in **Table 5**.

Table 5: CEC Composition and Approving Authority

Project	Approving	Chairman	Technical	Finance	Member

CFA	Authority		Expert	Member	Secretary
Lab Director	Lab Director	Nodal Lab Scientist 'G' / 'H' (non-member of project)	Internal to Cluster	Dir (Finance) / Sr. Dy. IFA / Dy. IFA (R&D)	Project Director Designate
Cluster DG	Cluster DG				
Secretary DDR&D and beyond	Cluster DG	Scientist 'H'	Internal to Cluster	IFA(R&D) Cluster	
Note : - Constituting authority/ Chairman may co-opt members as necessary					

2.8.5 A detailed cost estimation report shall be prepared by the lab including the detailed cost estimation sheets supported bydocuments like previous Purchase Orders (POs) / Supply Orders (SOs), internal estimations, POs from other labs, BQs etc., professional judgment indexed as per the module /activity /sub-system matrix for review by the CEC. In cases, where it is proposed to seek demand approvals along with the project sanction; the same may specifically be indicated to the CEC. The list of proposed procurements / demands have to be appended to the project cost estimates for due scrutiny by the CEC. The Spread Sheet format for Cost Estimation to be used is given in DRDO.DPFM.FF.01 in Handbook of Supplementary Procedure to DPFM 2021.

2.8.6 The CEC report, duly incorporating recommendations and vetted by all members shall be a part of the Statement of Case of the Project. Overall cost estimate approved by CEC should be incorporated in the SoC under appropriate budget heads in the cost break-up tables for various project categories given at Table Nos. 6 and 7**.**The signed Cost Estimation sheets may be appended to the SOC of the project.

2.8.7 The bill of Materials (BOM) and activities in the project cost estimation is as envisaged during project Formulation. Given the inherent uncertainties of R&D projects, these are to be considered indicative and variation in BOM items and activities can arise during project execution and should not hold up procurement action.

2.8.8 Basis for considering a cost item under a particular budget head is thegoverning Controller General of Defence Accounts (CGDA) correction slip no 20/2018 issued vide CGDA note No A/B/I/13626/XXXI/32 dated 04 Jun 2018. The approved estimates and

support documents should be uploaded by nodal and participating labs on the **Cost Estimation Module** software available on DRONA.

2.8.9 For all SHQ initiated design and development projects as per provision of DAP 2020, as amended from time to time, which will be undertaken as MM projects, the SHQwould seek the estimated product cost through DISB. The product cost should be computed by the project team and vetted by the Director (Cost) in the office of Addl. FA (R&D). For past cases of Design & Development by DRDO, where product cost is sought by SHQ for AON , the cost vetting would be done by Director (Cost). All such cases of cost vetting would be processed through DISB.

2.8.10 A Head wise summary for cost Estimation is given in **Table 6 & 7**. Regardless of CFA, as per classification code and correction slip No.20/2018; MM, TD, UT & IF projects will be booked entirely to Capital.

Table 6: Cost Break-up Table for MM, TD, UT & IF projects

(in ₹ Cr.)

Minor Head	**Major Head 4076 – Capital** **Sub Major Head – 05**	Nodal Lab	Participating Lab, if any	Total (FE)
	Heads of Expenditure	Total (FE)	Total (FE)	
052 (Code Head-929/25)*	Transportation (Movement of Stores)			
	Equipment/Stores			
	CARS/CAPSI			
	Consultancy Contracts			
	Job Work/Contracts/Technical Services			
	Hiring of Transport			
	Fuel/Oil/Lubricants for Project Vehicles			
	Contingency & Miscellaneous			
	Plant & Machinery			
	Project related Vehicles			
111	Works			
	Total			

*Total project expenditure related to MM, TD, IF and UT projects including equipment, hardware, consultancy, project related contingency, purchase/hiring of transport, freight,

contracts for "Acquisition of Research Services (CARS)" under the project etc will be compiled to this head.

Table 7: Cost Break-up Table for S&T & PS projects (in ₹ Cr.)				
Minor Head	**Major Head 2080 - Revenue**	Nodal Lab	Participating Lab, if any	Total (FE)
	Heads of Expenditure	Total (FE)	Total (FE)	
105	Transportation (Movement of Stores)			
110 (Code Head-856/01)**	Equipment/Stores			
	CARS			
	CAPSI			
	Consultancy Contracts			
	Job Work/Contracts/Hiring of Technical Services			
	Hiring of Transport, Fuel/Oil/Lubricants for Project Vehicles			
	Contingency & Miscellaneous			
111	Works			
	Total (Revenue)			
	Major Head 4076 - Capital			
052 (Code Head-929/24)***	Plant & Machinery			
	Project related Vehicles			
	Works			
	Total (Capital)			
	Grand Total (Revenue & Capital)			

**Expenditure under Product Support (PS) and Science & Technology (S&T) on Project, Hardware on the basis of items less than ₹ 10 Lakhs and with less than 7 year expected life will be compile to this Head, Consultancy, Transport, Freight, CARS and other Project related contingencies which do not create tangible assets related to Science & Technology (S&T) and Product Support (PS) Projects.

***Cost of any upgrades/ improvements in the existing product and creation of permanent infrastructure (such as testing facilities) for PS projects; and all expenditures resulting in creation of tangible assets such as testing equipment, testing infrastructure, permanent facilities such as ranges/ buildings etc, which remain after project closure, for S&T projects.

2.9 SCHEDULING AND PROJECT DURATION ESTIMATION

2.9.1 Project schedule and overall project duration are estimated for the objectives set-in and the identified scope. It should be drawn using a standard project scheduling tool / software. Experience of time taken in similar activities and professional judgement should be factored to estimate the project duration.

2.9.2 In a R&D project, design iterations are in-built into the process. Design iteration cycle can vary from case-to-case. Number of design iterations considered to arrive at the project duration should be documented. Complex technology areas, development of which may have a bearing on the project duration, should be highlighted.

2.10 NOMINATION / SELECTION OF LSI /DcPP /PA

2.10.1 Selection / Nomination of LSI/DcPP/PA is required to develop the industry partner for manufacturing, testing and life-cycle management of products/systems. Preparatory activities for the nomination of a LSI/DcPP/PA may be initiated during pre-project sanction stages wherever the commensurate details are available. The process for nomination/selection of LSI/DcPP/PA shall be governed by DISB guidelines DISB/DPP/27656/P-1/Para-72 dated 15 Mar 2019 as amended from time-to-time.

2.11 TESTING PLAN /TEST INFRASTRUCTURE/ TEST METHODOLOGY

2.11.1 A first level of test plan including time and cost estimations should be evolved. It should contain assessment of existing facilities and its suitability to meet the test requirements proposed in the projects. Project proposal must include tests required, test equipment/facilities required and its availability, test methodologies to meet the performance as envisaged in the project. The project proposal should document whether the requirement test facilities are available or being created.A project may be taken only if the required test facilities are either available or being created as part of the current project / build up. In case such facilities are not available with DRDO, a long term Contract / Inter Govt Agreement

(IGA)/ Memorandum of Understanding (MOU) with agencies or a plan / way ahead mutually agreed by DRDO and User for testing will be considered for sanction of project.

2.12 DETAILED PROJECT PROPOSAL/ STATEMENT OF CASE (SoC)

2.12.1 The Draft Project Proposal and Cost Estimation Report should be concurrently detailed by the project team duly incorporating DMC and PRC/PDR recommendations, combining it intoa Detailed Project Proposal / Statement of Case (SoC) as per the Supplementary Guidelines at DRDO.DPFM.GL.04. It should contain a detailed project execution plan and procurement plan.

2.12.2 Statement of Case (SoC) should be prepared as per the format at DRDO.DPFM.FF.04. Overall project cost should be provided under appropriate budget heads as per the Costbreak-up templates provided in the SoCformat. Deliverables of the project should be specified. The proposal should also contain the number of design iterations required at the component/ sub-system level in a TD(T) project and number of design iterations required at the overall system / project level in TD(S) and MM projects. Expected time penalties should be mentioned with each iteration.

2.12.3 **Six-monthly technical milestones with linked financial outlay** shall be worked out by the Project Team and integrated in the SoC in the format given at **Table 8**. Due care should be exercised in identifying the milestones as the project progress shall be monitored based on these.

Table 8 : Six-monthly Technical Milestones with Linked Financial outlay Forecasts

S. No	Milestones	Time (Months)	Financial Outlay (₹ Cr.)
	Total		

2.12.4 DRDO will work on advanced and critical technologies .The same will be certified by the Project Director and Lab Director while seeking project sanction. The list of sub-systems / technologies, issued from time to time by DG(PC&SI)/ DISB, to be developed

exclusively by Industry would be considered as bought out/ Build to Specification (BTS) items and shall be detailed in the project proposal.

2.12.5 **Sub-project and Work Packages Proposals** (if any) should be concurrently expedited by the Nodal lab in coordination with the participating labs/ other agencies. Category of sub- project shall be the same as the main project. Probable Date of Completion (PDC) of Sub-Project should be at least 3 months prior to that of the main project. The sub-project/ work package proposals will be made as per the specimen format for new project SoC at DRDO.DPFM.FF.04. The participating labs along with their sub-projects have to be associated from the Draft Project Proposal stage so that they can assess the technical challenges and work load vis-à-vis their own project commitments, at the inception stage.

2.12.6 Labs should identify the **Project Team** in the SoC and should also confirm that undertaking a new project would not affect any of the on-going activities directly or indirectly.

CHAPTER 3

PROJECT SANCTION

3.1 OVERVIEW

3.1.1 Project sanction is a physical process of consolidating all approvals-in-principle dovetailed with the procedural requirements authorizing the expenditure of public fund for given objectives. Necessity of prudence and clarity of purpose supported by necessary documents should be followed. The project proposal should be prepared as per the DPFM 2021 guidelines and other statutory and regulatory documents issued from time to time.

3.1.2 Detailed project proposal should be moved by Nodal Lab for sanction within the validity of AoN by DMC.

3.2 COMPETENT FINANCIAL AUTHORITIES (CFAs) FOR SANCTION OF PROJECTS/ PROGRAMMES

3.2.1 The Delegation of Financial Powers (DFP) within Dept. of Defence R&D are governed by '**Schedule of Financial Powers**' issued by DFMM vide DRDO/DFMM/PL/83226/M/01/1976/D(R&D) dated 18 Dec 2019 as amended from time to time.

3.2.2 Financial powers to CFAs beyond Secretary DD R&D i.e Hon'ble Raksha Mantri, Hon'ble Finance Minister and Cabinet Committee on Security (CCS) are as per MoD ID no. 14(23)/2003/IFDP II dated 30 July 2010 as amended from time to time.

3.3 SUBMISSION OF PROJECT PROPOSALS

3.3.1 A case file with title/ project code name and security classification (Top Secret/ Secret/ Confidential/ Restricted / Unclassified) with following essential documents should be processed for project sanction.

(a) AoN accorded by DMC and PRC/PDR recommendations (MoM copies/ extracts).

(b) Cost Estimation Committee report duly vetted by CEC.

(c) Draft PSQR/SHQ AON and PDR document (for MM and TD(S) category Projects).

(d) Detailed Project Proposal and SoC containing details of sub-heads of sub-projects/ work package proposals/ CARS/CAPSI requirements, stakeholder responsibilities,project timelines / schedule, Six monthly technical Milestones with financial outlay, Risks identified and mitigation plan, Key Performance Indicators and Deliverables etc.

(e) Modality for identification of LSI/ DcPP/PAs (for all MM, UT & TD(S) projects).

(f) Procurement plan and actions initiated (mandatory for MM projects).

(g) List for procurement items for demand approval by respective CFA with concurrence of Designated Finance Authority.

(h) Sub-Project SoCs.

(i) Draft Govt. Letter (DGL) conveying project sanction (DRDO.DPFM.FF.06) with Project No (DRDO.DPFM.GL.05). Lab code names to be incorporated in project numbers are listed at DRDO.DPFM.AL.02. Unique sanction code should be provided in the DGL as per DFMM guideline no. DBFA/FA/83301/M/01 dated 31 Mar 2014, as amended from time to time.

3.3.2 Routing of case file for approval of CFA by the designated offices shall be as per **Table 9** . Checklist at DRDO.DPFM.CL.01 may be referred before submitting the proposal.

Table 9 : Project Sanction File Routing and Issue of Sanction Letter

CFA	**Concurrence Level as stated in latest DFP**	**Proposed Routing of Files**
Director of Labs/Estts.	Without consultation of Finance	Internal arrangement by Lab Director
	Dy. IFA/ DFA	Project Director → Dy IFA / DFA (R&D) → Lab/Estt. Director for Sanction → Officer designated by lab Director for issue of Sanction letter
Cluster DG	IFA (R&D)	Lab Dir→ Dir (PM) of O/o Cluster DG → IFA (R&D) → Cluster DG for sanction→ Dir (PM) of Cluster DG for issue of Sanction letter

Secretary Defence (R&D)	Addl. FA (R&D)	Lab Dir → Dir (PM) of O/o Cluster DG → IFA (R&D) → Cluster DG→ DP&C → DFMM → DG (R&M) → Addl. FA(R&D) → Secretary DD R&D for sanction → DP&C for processing of Govt. Sanction letter → US(R&D) for issue of Sanction letter
Raksha Mantri (RM)	FA(DS) / SecretaryDefence (Finance)	Lab Dir → Dir (PM) of O/o Cluster DG → IFA(R&D)→ Cluster DG→ DP&C → DFMM → DG (R&M) → Addl. FA(R&D) → Secretary DD R&D → Secretary Def (Finance) → Hon'ble Raksha Mantri for Sanction → DP&C for processing of Govt. Sanction letter → US (R&D) for issue of Sanction letter
Finance Minister (FM)		Lab Dir → Dir (PM) of O/o Cluster DG → IFA (R&D) → Cluster DG→ DP&C → DFMM → DG (R&M) → Addl. FA(R&D) → Secretary DD R&D → Secretary Defence (Finance) → Hon'ble Raksha Mantri→ Hon'ble Finance Minister for Sanction→ DP&C for processing of Govt. Sanction letter→ US (R&D) for issue of Sanction letter
Cabinet Committee on Security (CCS)		Lab Dir→ Dir (PM) of O/o Cluster DG → IFA (R&D) → Cluster DG→ DP&C → DFMM → DG (R&M) → Addl. FA (R&D) → Secretary DD R&D → Secretary Defence (Finance) → Hon'ble Raksha Mantri → Hon'ble Finance Minister → CCS for Sanction→ DP&C for processing of Govt. Sanction letter→ US (R&D) for issue of Sanction letter

3.3.3 For projects beyond Cluster DG powers, DP&C will arrange for issue of sanction letter. Project proposal file and other documents will be sent back to cluster DG office, thereafter. Office of cluster DG will maintain Lab-wise 'Projects Master Control Register' for their records regarding Project Number.

3.3.4 EXAMINATION OF PROJECT PROPOSAL: ROLES & TIMELINES

Before sanctioning any DRDO project by the Competent Financial Authority, it has to be examined at various levels. Indicated timeline and Roles of sanctioning Authority is given in Handbook to DPFM under DRDO.DPFM.GL.06.

3.4 SANCTION OF SPECIAL PROJECTS BY STANDING COMMITTEE

Sanction of certain classified special projects(cost upto, Secretary DD R&D as CFA of project), which should be executed on "need-to-know basis" may be processed on file and will be sanctioned by a Standing Committee comprisingof cluster DG, Addl. FA (R&D) and Secretary DD R&D. Lab Director would initiate the case for grant of special project status before moving the Project Proposal. Approval for the same shall be accorded by Secretary DD R&D based on recommendations of Cluster DG and concurrence by Additional FA (R&D). Sanction letter shall be processed by DP&C, DRDO HQ in all such projects(cost upto, Secretary DD R&D as CFA of project).

3.5 PROJECT SANCTIONLETTERAND UNIQUE SANCTION CODE

3.5.1 Project sanction letter shall be issued as per following authorization.

Table 10: Project Sanction Letter Issuing Authority

Project CFA	Vetting Authority and UO Number Allotment	Letter Issuing Authority
Lab Director	Director (Finance) / Sr. Dy. IFA / Dy. IFA	Officer nominated by Lab Director vide DO Part I
Cluster DG	Cluster IFA (R&D)	Director (PM), O/o Cluster DG
Beyond Cluster DG	O/o Addl. FA (R&D)	US (R&D)

3.5.2 All project sanction letters must also have a **"Unique Sanction Code"**, the details of which have already been circulated separately by DFMM (Maintenance of a control register containing details of Unique Sanction Code for each financial sanction issued by the individual CFA will be mandatory). Project sanction letter will be considered incomplete/invalid, if Project Number and Unique Sanction Code have not been mentioned in the letter.

3.6 SUBMISSION OF PROJECT PROPOSALS FOR CCS SANCTION

3.6.1 Format as specified by Cabinet Secretariat (DRDO.DPFM.FF.05), as amended from time to time, shall be followed. The relevant guidelines are available at website *www.cabsec.nic.in*.

3.7 SUB-PROJECT SANCTION

3.7.1 **Sub-project** to different participating labs should preferably be identified during the AoN stage. DMC may add or modify the list of participating labs and their scope. In-principle approval of respective Cluster Council Meetings (CCM) would be sought by the sub-project proposing lab, if the nodal and sub-project holder labs are from different technology clusters. SoC for sub-project should be forwarded by the concerned lab Director to the nodal lab. Cost estimation for the sub-projects shall be done along with the main project. Designated IFA of the technology cluster of nodal lab shall concur the composite project proposal including all sub-projects. **Labs holding sub-project cannot allot further sub-projects,** however CARS / CAPSI may be sanctioned. **There is no distinction between 'Project' and 'Sub-Project' for work execution and PDs may be appointed for sub projects.**

3.7.2 **Sub-projects** detailed in the main project SoC, while seeking original sanction, shall be sanctioned along with main project. The main project sanction letter will include sub projects and respective sub-project numbers.

3.7.3 Sub-projects not sanctioned along with main project, but indicated in SoC may be sanctioned by the CFA as per **Table 11**, during the currency of the main project. These sub-projects shall also be in the same category as of main project and should have Probable Date of Completion (PDC) at least 3 months before the PDC of the main project. The procedures for sanction of sub-project shall be as specified in Para 3.7.1 above.

3.7.4 Sub-projects not planned during the project sanction stage can be sanctioned with recommendation of highest monitoring body and will be sanctioned by the Competent Financial Authority as per **Table 11.** The procedures for sanction of sub-projects shall be as specified in Para 3.7.1 above.

3.7.5 Copies of sub-project sanction letters and subsequent revisions should be forwarded to DP&C by the issuing office.

3.7.6 Labs holding sub-projects shall approach the Dte. of Finance and Material Management (DFMM), DRDO HQ for allotment of Unit Code

Table 11: Competent Authority to Sanction Sub-project After Main Project Sanction*	
Cost of sub-project	**Competent Authority to sanction sub-project**
Less than ₹10 Cr.	Nodal Lab Director
₹10 Cr.< Cost of sub-project <₹75 Cr.	Cluster DG of Nodal Lab
More than ₹ 75 Cr.	Secretary, DD R&D
* Levels indicated based on GoI Letter No. DRDO/DFMM/PL/83226/M/01/1976/D(R&D) dated 18 Dec 2019	

CHAPTER 4

PROJECT EXECUTION

The physical activities to achieve the project objectives take place in the execution phase, which is the manifestation of the planning and pre-project activities. Following guidelines shall be followed during this phase.

4.1 APPOINTMENT OF PROJECT/PROGRAMME DIRECTORS AND PROJECT TEAM

4.1.1 Project / Programme Director and the project team shall be appointed to steer the project. A Programme can have multiple Project Directors at same or different labs. A Project Director shall be appointed for the sub-project also. The Project Directors of the project / sub-projects, concerned lab Director and concerned Cluster DG would exercise delegated financial powers, as amended from time to time, for executing the projects / sub-projects.

4.1.2 The Competent Authorities to appoint the Project / Programme Director is given in **Table 12**.

Table 12: Competent Authority to Appoint Project / Programme Director for Projects & Sub-Projects

Project covered under Appendix 'A' of DFP vide DFMM Letter No. DRDO//PL/83226/M/01/1976/D(R&D) dated 18 Dec 2019	
Project CFA Level	**Authority to Appoint Project / Programme Director**
Lab Director	Lab Director
Cluster DG/ Secretary DD (R&D)	Cluster DG
RM/FM	Secretary DD R&D
Project covered under Appendix 'B' of DFP vide DFMM Letter No. DRDO/DFMM/PL/83226/M/01/1976/ D(R&D) dated 18 Dec 2019	
CCS	Secretary DD (R&D)

4.1.3 A Letter of Authority appointing PDs to exercise financial powers in accordance with the DFP in vogue amended from time to time will be issued by Authority as per Table 12 toLAO / AO(R&D) / CDA (R&D) /PCDA(R&D).The specimen format for appointment of Project / Programme Director is given at DRDO.DPFM.FF.07 in Handbook of Supplementary Procedure to DPFM 2021.

4.2 PROJECT REALISATION PLAN AND RESPONSIBILITY MATRIX

4.2.1 The project team should prepare a detailed baseline for the project, which should be recommended by the first meeting of PMRC and approved by the EB (detailed in subsequent sections). It should contain detailed Work-Breakdown Structure (WBS), planned schedule of activities, major milestones, critical path activities, project execution plan and strategies, responsibility matrix,risk areas with mitigation plan and procurement cases as envisaged during project sanction stage.

4.2.2 Clarity to work centres for their responsibilities are key to success of the project. Accordingly, a Responsibility Matrix for different activities of the project needs to be put up for recommendations of PMRC and approval of EB during its first meeting. Thereafter, as further details/ changes evolve during project execution, the responsibility matrix should be updated and made available to the key stakeholders.

4.2.3 It is expected that during the execution of project, due to earlier identified risks and some unforeseen technical challenges, change in implementation and development strategies may become essential. Resultant changes in the realisation plan, if any, and its implications on time and cost should be recorded and reviewed in all subsequent progress review meetings.

4.3 SUB-PROJECTS

4.3.1 Participating labs will conduct all technical and progress monitoring reviews for the sub-projects as stipulated for the main projects. The Project Director of the sub-project will forward status updates and technical review reports to the nodal lab during the main project reviews and also in the interim as and when sought by the nodal lab.

4.4 AWARD OF WORK PACKAGES, CONSULTANCY CONTRACTS

4.4.1 CFAs for **work packages** will be as stated for sub-projects in **Table 11.**

4.4.2 Funds for work packages and consultancy contracts will be released by Nodal/ participating labs as per the payment terms and conditions laid in the MoU/ Contract.

4.5 DETAILED DESIGN, DESIGN REVIEWS AND CONFIGURATION FINALISATION

4.5.1 System/Sub-system/Component level design exercise should be undertaken during the earliest phase of project. The project team may use in-house capabilities andexternal expert consultations. Configuration details, wherever required, should be finalised in the initial phase itself. Documentation of the design exercise is very important for records and continuity and special emphasis on these documents should be placed by the project team.

4.5.2 A **documentation team** shall be nominated in the SoC for all MM projects and system level TD projects. This team shall be responsible for preparation of all the documents required as per the project timelines for different purposes.

4.5.3 The following design reviews are mandatory for all TD and MM projects and should be with respect to identified milestones for the project. These reviews are optional for S&T category projects and not required for other category of projects.

4.5.4 **Preliminary Design Review (PDR):** PDR should be done as a pre-project activity specifically for MM & TD(S) projects (wherever requirements are firmed up). In all other cases, it should be done as the first technical activity after the sanction of the project. **PDR** should focus on the design constraints, design methodology, test and validation of system and sub-systems, hardware and software development plan, system interface requirements and system realization plan. A committee of experts should review the Preliminary Design Document (PDD). The approved PDD should be the baseline technical document.

4.5.5 **Detailed Design Review (DDR):** The review would focus on sub-systems level detailed design. Acceptance of DDR committee report should be the milestone gateway for manufacturing clearance of first prototype.

4.5.6 **Critical Design Review (CDR):**Should be carried out based on feedback of initial functional trials and performance validation trials including Environmental Tests. After CDR approval, the system with or without design changes can be cleared for manufacturing in numbers and full-fledged testing. CDR committee may suggest additional tests or retrials for performance validation.

4.6 DESIGN, DEVELOPMENT AND FABRICATION CONTRACTS

4.6.1 The core team should initiate procurement cases in accordance with prevailing DFP and Procurement Manual. **Development contracts** should be in conformance with Procurement Manual 2020 as amended from time to time. 'Standing Committee' provisions stated in subsequent sections may be utilized by labs for urgent procurement needs (Monitoring and Review section in subsequent Chapter).

4.6.2 Interim design iterations and refinements is a continuous process in R&D projects. The consequent changes in procurement plans due to changes in design approach and realization plan specified in project SoC and entailing changes in components/ sub-systems/ equipment within the overall cost of the project can be undertaken with the recommendation of PMRC. The same should be ratified by EB in subsequent review.

4.7 ToT to LSI / DcPP / PA

4.7.1 Preparatory activities for nomination of the LSI/DcPP/PA should be initiated during pre-project sanction stages. Selection of the DcPP should be in accordance with DISB guidelines no. DISB/DPP/27656/P-1/Para-72 dated 15 Mar 2019 as amended from time to time. A formal nomination/ selection of the LSI/ DcPP/ PA may be accorded after project sanction. ToT to LSI/ DcPP/ PA and Development Partners will be in accordance with the prevailing 'DRDO Policy and Procedures for Transfer of Technology' promulgated by DIITM, DRDO HQ in Oct 2019 as amended from time to time.

4.8 REALISATION OF SYSTEMS AND INTEGRATION

4.8.1 Realization of sub-systems / components, their testing, validation and integration should be progressed by the core team. Quality Assurance, Acceptance Test Plans and other Quality and Reliability documents should be formulated as per the DRDO Quality and Reliability Policy Guidelines (issued vide letter no. DQR&S/02/9201/M/01 dated 19 August 2020) by Project Teams and approved by Lab R&QA / MSQAA / other designated QA Agency. **E-waste management guidelines by CFEES** should be adhered, where applicable.

4.9 TEST AND EVALUATION

4.9.1 Test Plan for internal trials would be prepared by the Project Team and approved by the Lab R&QA / MSQAA / other designated QA Agency. Development trials on systems shall be done as per Trial Directives and Trial Methodology of SHQs, where applicable.

JPMT / PMT shall be associated with trials, where applicable. DQRS, DRDO HQ shall be involved in test and evaluation activities. DISB, DRDO HQ shall be the nodal Directorate to coordinate with the concerned SHQ Directorates for conducting trials as per trial directives. .

4.9.2 Trial results shall be reviewed by the JPMT (for AoN cases), PMRC and EB. Way ahead shall be given by the highest monitoring body.

4.10 ANNUAL AUDITED STATEMENT OF EXPENPENDITURE

4.10.1 Annual Audited Statement of Expenditure duly vetted by the concerned AO(R&D)s/CDAs/PCDAs preferably be sought at the end of each Financial Year (FY) by the Nodal/Participating labs as per the format at DRDO.DPFM.FF.08.

4.11 TRANSFER OF A PROJECT FROM NODAL LAB TO ANOTHER LAB

4.11.1 The steps to be followed for transfer of a sanctioned project from one Lab to other are:

(a) The case will be presented during CCM and EB review. Recommendations of the EB should be recorded in the minutes.

(b) SoC for **project transfer between labs within cluster** shall be progressed with EB recommendations.

(c) Proposals for **project transfer between labs of different clusters** shall be presented to the DMC also. Such SoCs will be progressed with EB and DMC recommendations.

(d) Audited statement of expenditure should be sought from the concerned audit authorities, till the cut-off date.

(e) A sanction letter would be issued by the CFA stating closure of old project number and old unit code and allotment of new project number and new unit code. Project number and unit code of the sub-projects will also be changed.

(f) Transfer of expenditures as per audited statement of expenditure will be done from old unit code to new unit code.

(g) Project inventory and Inventory records will be transferred to new Lab/Estt. along with outstanding audit observations.

(h) All procurement case files should be transferred on as-is-where-is basis. New lab will be authorized by the CFA to place supply orders for all cases initiated by the previous lab.

4.11.2 Specimen formats for transfer of a project are given at DRDO.DPFM.FF.18.

4.12 CHANGE OF CATEGORY OF PROJECT

4.12.1 There may be instances where a project need to be initiated pending the completion of process of AoN / PSQR finalization and quantity commitment from the SHQs. In all such cases, the project can be initiated in TD(S) category and can be changed to MM category subsequent to completion of procedural requirements. Change of category of projects shall be done with the recommendations of the highest monitoring body & approval of CFA with concurrence of corresponding Financial Advisor.

4.12.2 Specimen formats for change of a project category during project currency is given at DRDO.DPFM.FF.19.

CHAPTER 5

PROJECT MONITORING AND REVIEW

5.1 REPORTING OF MILESTONE STATUS AND ACHIEVEMENTS

5.1.1 Project progress reporting should be linked with milestone stages/ Key Performance Indicators. **An indicative** reference for TD(S) and MM category projects with assigned percentage completion at each stage is given in **Table 13**.

Table 13 :IndicativeProgress Reporting Framework

Major Milestone/ Stage	Activities	Percentage Completion (%)
Project Sanction	Cluster Council Approval	1
	Peer Review/ PDR in Case of MM and TD(S) Projects	2
	AoN by DMC	3
	Cost Estimation Committee	4
	Sanction of the Project	**5**
1st Level Design Finalization	Configuration Analysis	7
	Configuration Review	8
	Configuration Approval	10
	Preliminary Design Review (sub-system Level)	11
	Preliminary Design Review (System Level)	13
	Approval of Acceptance Test Plan (ATP)	**15**
1st Prototype System Realization/ Integration	Approval of Manufacturing Process Plan (MPP)/ Interface Control Document (ICD)	17
	Approval of Quality Assurance Plan	19
	Realisation of working model of sub-systems	22
	Approval of sub-systems	25
	Integration of sub-systems & its acceptance	28
	Realisation of Prototype	**30**

Successful Performance Demonstrationof1st System	Realisation of sub-system hardware for Performance validation	33
	Qualification testing of sub-systems	37
	Approval for integrated tests	39
	Completion of integrated tests for design clearance	44
	1st Successful Technology Demonstration Trial	47
	Critical Design Review	**50**
Completion of Development/ Internal Trials	Selection of Lead System Integrator (LSI)/ Development-cum-Production Partner (DcPP)/ Production Agency (PA)	55
	Start of Development Trials	60
	25% Completion of Schedule of Development/ Internal Trials	65
	50% Completion of Schedule of Development/ Internal Trials	70
	75% Completion of Schedule of Development/ Internal Trials	75
	Completion of Schedule of Development/ Internal Trials	**80**
Completion of Development	Confirmation of system performance as a part of PSQR Validation Trials from DcPP / LSI / PA produced system	90
	Completion of MET Trials	95
	Acceptance by JPMT / PMT / SHQ based on PSQR Validation Trials	**100**

Note - Activities specified in the above table is for **reference** only and may change as per the objectives and scope of the projects. It should be a part of the Scope of Project as well as a part of the Milestones for Review by all Review Committees (AB/ EB/PMRC). The major

milestone for all the projects shall remain the same, however; intermediate activities (if deviation required) be aligned to nature of project / systems /subsystems.

5.2 ONLINE MONITORING

5.2.1 Online monitoring of project milestones will be done through DRONA based **Project Management and Information System (PMIS**). Access to PMIS will be provided to **Lab Directors and Project Directors** for initial one time uploading of the six monthly-technical milestones and linked financial outlays, to be followed by periodic updating of status/ progress made vis-a-vis each milestone.

5.2.2 Standard Operating Procedures (SOPs) for the users to upload project technical milestones and for subsequent updates for the purpose of online monitoring of project progress will be promulgated by DP&C from time to time.

5.2.3 The **responsibility of ensuring updated project status** on Online Monitoring System shall be of Project Director. Director (PM), O/o Cluster DG shall ensure updated status for all projects before scheduling EB reviews and Nodal Lab Director shall ensure the same before AB reviews respectively. This status shall be reflected in the respective minutes.

5.2.4 For the project proposals under sanction, the details shall be uploaded based on an interim Project Number, which shall be changed after allocation of Project Number post sanction of project.

5.2.5 While seeking new project sanctions or revisions under ongoing projects, **Lab Director shall certify in the SoC** that above stated details are uploaded on PMIS.

5.3 CO-ORDINATING REVIEWS

5.3.1 Director PM / PD in consultation with Lab Director and O/o Cluster DG should ensure conduct of monitoring reviews at intervals as stipulated in subsequent sections. Conduct of progress monitoring reviews at stipulated intervals (as stated in subsequent sections) will be the responsibility of the Member Secretary.

5.4 PROJECT MONITORING AND REVIEW

5.4.1 For all **Programmes / CCS projects /** a three-tier monitoring mechanism should be constituted i.e. ‘Apex Board’, ‘Programme Management Board (PMB)’ and the ‘Project Management Board (PJMB)’ for periodic monitoring and review of the programmes.

5.4.2 For **Projects under delegated financial power of Finance Minister (FM), Raksha Mantri (RM), Secretary DD R&D & DG Cluster,** the two-tier monitoring mechanism would be constituted i.e. 'Executive Board (EB)' and 'Project Monitoring and Review Committee (PMRC)'.

5.4.3 For '**Special Projects Sanctioned by Standing Committee'** the Review mechanism will be akin to APEX Board under the Chairmanship of secretary DD (R&D) and comprising members as DG Cluster and Addl FA (R&D). The Chairman may co-opt/invite member/s. Director Nodal labs will coordinate the meetings. Director P&C may help in conduct of the meetings / issue of Minutes of meeting.

5.4.4 For **Projects under Delegated Financial Power (DFP) of lab Director**, PMRC shall be the highest monitoring body. Projects may adopt additional internal review mechanisms as required.

5.4.5 For all SHQ **AoN accorded Project / Programme,** as per**Chapter IV of DAP 2020** on 'Procedures for Acquisition of Systems Designed and Developed by DRDO/DPSU/OFB' will also be used for Monitoring and Review with agenda specified therein. **Review by JPMT as per Chapter IV of DAP will be in addition to AB, PMB/EB, PMRC/PJB mentioned in this document.**

5.4.6 The nomenclatures PMB and PJMB used for CCS Programmes are equivalent to EB and PMRC respectively in other cases except for delegated financial powers vested with PMB and PJMB. Constitution of the three-tier monitoring boards is given in the subsequent Section.

5.5 BRIEFING PAPERS FOR REVIEW MEETINGS AND MINUTES OF MEETINGS

5.5.1 Briefing papers for the reviews should be provided by the Member Secretary to all concerned at least a week in advance as per the template available at DRDO.DPFM.FF.09.

5.5.2 Minutes of Meeting (MoM) should be submitted by the Member Secretary **within a week of conduct of the review for approval**. The minutes should essentially record issue/agenda point, deliberation/discussion, proposed way-ahead/action-points/other decisions, expected date of completion of the action and responsible agencies. Delayed milestones should be recorded in minutes along with their implication on time, cost and mitigation plan. Additional requirements and changes in the design with its implication on

cost and timeline should be specifically mentioned. Specimen template for MoM is given at DRDO.DPFM.FF.10.

5.6 AGENDA OF THREE-TIER MONITORING COMMITTEES

5.6.1 COMMON ESSENTIAL AGENDA POINTS FOR MONITORING COMMITTEES

- Confirmation of MOM of previous reviews
- Programme overview.
- No. of Reviews by subordinate boards since last review meeting.
- Programme activities since last meeting.
- Action Taken Report for Action points of previous review.
- Review of the six monthly technical & financial milestones, reasons for slippages, discussion on risks and its mitigation measures, impact on overall project milestones.
- Achievement vis-a-vis technical and financial milestones.
- Assess reasons for delay and suggest corrective measures.
- Review of procurement issues of respective CFA level, Expenditure status (Spent, commitments made and in pipeline).
- Financial status including procurement status.
- Decision Points.
  - Programme related technical issues
  - Issues raised by User
  - Issues having Financial implications
  - Other relevant issues

5.6.2 APEX BOARD (AB)

- Common essential Agenda points for monitoring committees (refer Para 5.6.1)
- Deliberation on key management issues which have cropped up during execution of Projects/ Programmes and solutions thereof.
- Discussion on unresolved techno-managerial recommended by EB / JPMT.
- Resolutions of issues with SHQ and other inter-departmental issues.

- Review and way ahead on the additional requirements of Services/ Changes in design with implication on cost and timeline.
- Ratification of recommendation made by lower level committees i.eProgramme Management Board (PMB), Project Management Board (PJMB), Executive Board (EB) in respect of Project / Programmes cost enhancement, re-allocation of funds and PDC extension.
- Ratification of recommendation made by the lower committees on project closure.
- Any other point with the approval of Chairman.

5.6.3 EXECUTIVE BOARD (EB) / PROGRAMME MANAGEMENT BOARD (PMB)

- Common essential Agenda points for monitoring committees (refer Para 5.6.1)
- Techno-managerial issues.
- Ratification of the TRL based on Qualifiers and Supporting Documents.
- Review sub-projects.
- Review the Recommendations of JPMT, wherever applicable.
- Recommendations on the additional requirements of SHQ / design changes with implication on time and cost.
- Discussion on unresolved technical issues by PMRC and related managerial issues with their proposed solutions.
- Ratification of PMRC recommendation for change in realization planincluding system/equipments not envisaged in project proposal, project cost enhancement, re-allocation of funds and PDC extension
- Ratification of PMRC recommendation for closure of projects.
- Any other point with the approval of Chairman.

5.6.4 PROJECT MONITORING and REVIEW COMMITTEE (PMRC) / PROJECT MANAGEMENT BOARD(PJMB)

- Common essential Agenda points for monitoring committees (refer Para 5.6.1)
- Detailed Schematic/Product Tree (indicating Bought out/BTP/BTS) indicating status of each module.
- Discussion on unresolved technical issues and their proposed solutions.
- Recommendations on the TRLs based on Qualifiers and Supporting Documents.
- Resolutions of issues internal to Lab.

- Recommend alternate approach, whenever necessary.
- Recommending proposals for change in realization planincluding system/equipments not envisaged in project proposal, enhancement of funds, Re-allocation of funds and PDC extension.
- Recommending proposals for closure of projects.

5.7 COMPOSITION OF PROJECT MONITORING AND REVIEW COMMITTEES

5.7.1 Apex Board (AB)

Secretary, Defence (R&D)	Chairman
Secretary Defence (Fin)/ Finance Advisor (Defence Services)	Member
Vice Chiefs / CISC / Deputy Chiefs or equivalent of User Services	Member
DG (Acquisition) (for AoN Projects only)	Member
Cluster DG of Nodal Lab	Member
Cluster DGs of participating labs	Member
DG (R&M)	Member
DG (PC&SI)	Member
Addl. FA (R&D)	Member
Director, Nodal Lab	Member
Directors of participating labs	Member
Chairman, JPMT (where nominated)	Member
CE, CEMILAC (as applicable)	Member
DGQA/AQA (as applicable)	Member
Programme Director	Member Secretary

Chairman may co-opt/nominate other members as and when necessary.

Periodicity of meeting : Once in Six months

Standing Committee for Apex Board

Secretary, Defence (R&D)	Chairman
Cluster DG of Nodal Lab	Member
Addl FA (R&D)	Member
Director, Nodal Lab	Member
Programme Director	Member Secretary

5.7.2 Executive Board (EB) / Programme Management Board (PMB)

Cluster DG of Nodal Lab	Chairman
ACNS/ACAS/ACOAS Plans (for AON accorded MM Projects only)	Co-Chair
Rep DG (Acquisition) (for AON accorded MM Projects only)	Member
Director, Nodal Lab	Member
Directors/PDs of participating labs	Member
Chairman, JPMT / Rep SHQ (for AoN / MM cases)	Member
Director DP&C, DRDO HQ	Member
Director DISB, DRDO HQ	Member
IFA (R&D), Nodal cluster	Member
Director (PM) of Cluster DG	Member
Director QR&S, DRDO HQ (MM cases)	Member
Rep of CEMILAC (as applicable)	Member
QA Agency (as required)	Member
Programme Director	Member Secretary

Chairman may co-opt/nominate other members as and when necessary.

Periodicity of meeting : Once in six months

Standing Committee for PMB

Cluster DG of Nodal Lab	Chairman
Director, Nodal Lab	Member
IFA (R&D)	Member
Programme Director	Member Secretary

5.7.3 Project Monitoring & Review Committee (PMRC) / Project Management Board (PJMB)

Director, Nodal Lab	Chairman
Subject experts from R&D Centers/Academia/other DRDO Labs *(as required)*	Member
Director (PM) of Cluster DG	Member
DFA/Dy. IFA/Jt. IFA/Director (Fin)	Member
Reps of participating labs	Member
Programme Director	Member

Head PMT (for AoN / MM Projects) / Rep SHQ (as applicable)	Member
Rep of CEMILAC (as applicable)	Member
Rep of DGQA/AQA (as required)	Member
Lab QA/IV&V	Member
Project Director	Member Secretary

Chairman may co-opt/nominate other members as and when necessary.

Periodicity of meeting : Once in three months

Standing Committee for PJB

Nodal Lab Director/ Work Centre Director	Chairman
DFA/Dy. IFA/Jt. IFA/Director (Fin)/Rep of IFA (R&D)	Member
Project Director	Member Secretary

5.7.4 Role and Functions of Standing Committees for AB, PMB & PJB

The role of Standing Committee for demand approvals, financial sanctions, PDC extensions and other financial approvals will be as per DFP of DRDO and Procurement Manual 2020 as amended from time to time.

Standing Committee is not applicable for EB and PMRC.

CHAPTER 6

PROJECT SCOPE, DURATION AND COST REVISION

All efforts shall be made by the Project Team to complete the project within the allotted time and cost. However, due to the unforeseen technological challenges and other issues, duration of the project and / or its cost may require changes. During the execution of projects, re-allocation of funds under the same major head may be required. These corrigenda are to be considered as exceptions and need to be justified for the reason for changes, proposed way-ahead for completion of balance activities, risk mitigation strategies etc.

6.1 SCOPE REVISION, PDC EXTENSION, RE-ALLOCATION OF FUNDS & COST REVISIONS

6.1.1 Extension of the project duration, changes in the project cost and re-allocation of funds, for reasons specified, shall be recommended by the highest monitoring body.

6.1.2 Extension in the Project duration (PDC) from the originally sanctioned duration shall be approved by the CFA with the concurrence of respective Financial Adviser as following:

(a) All PDC extensions up to 2 times with cumulative period of extension not exceeding 50% of the original sanctioned PDC extension cases will be approved by the concerned CFAs.

(b) Changes in the original sanction cost without changes in the CFA shall be approved by the concerned CFA as per **Table No. 09.**

6.1.3 PDC extension for 3rd time onwards or Extension in PDC beyond 50% of the original sanctioned period shall be presented to DMC. Based on the recommendations of the DMC, the changes in the duration of the project and / or its cost shall be sanctioned by the corresponding CFA with the concurrence of respective Financial Adviser.

6.1.4 In respect of Projects/ Programmes sanctioned by Raksha Mantri, the case for extension in PDC shall be dealt with as per provisions of para 1.3 of DFP 2019, as amended from time to time.

6.1.5 An SoC has to be initiated by the nodal lab as per DRDO.DPFM.FF.11. Checklist at DRDO.DPFM.CL.02 may be utilized by the O/o Cluster DGs while progressing PDC extension cases.

6.1.6 The guidelines stipulated at para 1.2 of DFP 2019, as amended from time to time, will be followed for re-allocation/ enhancement/ reduction of funds of a sanctioned Project / Programme. Re-allocation of funds and cost revision proposals should be submitted as per DRDO.DPFM.FF.12 and the checklist at DRDO.DPFM.CL.03 may be utilized by the office of Cluster DGs while progressing the cases. Cost revision proposals resulting in approval of higher CFA should be supported by cost estimations duly vetted by CEC.

6.1.7 **All PDC and cost revision sanctions**, issued by designated CFA, will be assigned fresh **"Unique Sanction Code"**. Specimen Govt sanction letters for PDC extension and cost revisions are at DRDO.DPFM.FF.15 and DRDO.DPFM.FF.16 respectively.

6.2 SUB-PROJECTS REVISIONS

6.2.1 Scope revision, PDC extensions / cost revisions and re-allocation of funds under sub-projects will be sanctioned by the CFAs stated in **Table 11**, with the recommendations of highest monitoring body.

CHAPTER 7

PROJECT/ PROGRAMME COMPLETION AND CLOSURE

Closure of project has to be initiated by the nodal lab upon completion of sanctioned PDC or on project meeting all its stated objectives, whichever is earlier. **Upon completionof the Project PDC, no expenditure should be committed.** All items/stores must be received in the Lab before end of project PDC. However, payment of committed stores can be released beyond PDC. Like project sanction, a case for project closure has to be moved for approval of CFA.

7.1 PROJECT CLOSURE CATEGORIES

7.1.1 A sanctioned DRDO project may be closed under following categories. Detailed procedures for closure of projects under these categories are given at subsequent sections.

(a) **Successfully Completed Project.** Project closure upon its meeting all specified objectives within the original/ revised cost and duration approved by the CFA.

(b) **Projects Completed with Partial Success**. Projects with **multiple objectives** may result in successful completion of certain objectives and partial accomplishment of balance objectives. Such projects, where part of objectives could not be completely met, would be considered as partial success.

(c) **Staged Closed Project.** A sanctioned project can be stage closed, where considerable effort and funds have been spent and partial success has been achieved, yet concrete results could not be achieved. Stage closure is resorted to only in extra-ordinary circumstances e.g. when faced with insurmountable scientific or technical challenges, obsolescence, changes in specifications/requirements causing major changes in cost and timelines. Labs should amply justify theadvantage of **stage closing** a project rather than pursuing it further and also provide utilization plan of assets/ hardware and benefits accrued under the project.

(d) **Cancelled Project.** A sanctioned project can be cancelled, where continuing the project is not considered viable due to changed requirements / technology or due to administrative reasons. In all such cases, expenditure of <5% of the sanctioned project cost should have been incurred.

7.1.2 For closing a project under above categories, SoC has to be prepared for CFA approval as per format at DRDO.DPFM.FF.13for Projects completed with partial success, stage closure projects

and cancelled projects and as per DRDO.DPFM.FF.14 for projects completed successfully along with way forward.

7.2 RECOMMENDATION OF HIGHEST MONITORING BODY

7.2.1 The highest monitoring body shall recommend the closure of the project. Approval of DMC shall be required for Projects completed with partial success, Stage-closing and cancelling a project.

7.3 PROJECT SUCCESS EVALUATION

7.3.1 Once the last task is completed, the project has to be evaluated for measuring achieved outcome vis-à-vis defined success criteria, i.e the qualifiers and support documents defined in **Table 1**. Evaluation method is given below.

(a) Success evaluation of SHQ**AoN based MM projects** will be in accordance with the provisions under Chapter IV of DAP 2020.

(b) For **other MM, TD(S) and UT projects**, PSQR validation trial outcome will be regarded as success determinant by the highest monitoring body while recommending project closure.

(c) For **TD(T), S&T, IF and PS projects**, an **Independent DRDO Technical Committee for Evaluation of Project Success**drawn from outside project (DRDO.DPFM.GL.10) will evaluate project outcome and certify successful completion.

7.4 TECHNICAL CLOSURE REPORT

7.4.1 A detailed Technical Closure Report (DRDO.DPFM.GL.11) for all **completed Projects / Programmes** should be prepared by the documentation team/project team **within 06 months** of project completion/ expiry of PDC. **Participating labs and agencies** should submit the report to the nodal lab for respective **sub-projects and work packageswithin 01 month of expiry of respective PDCs**. The report should be endorsed by Project Director and Lab Director for all projects and accepted by Cluster DG.

7.4.2 Technical Closure Report is an in-house document. It should **essentially contain** the following –

- Complete project history
- Details of objectives envisaged vis-à-vis achieved/Shortfall
- Achievements of the project
- Detailed justification/reasons for shortfalls

- References to design documents/technical reports evolved during the project execution
- TRL assessment reports
- Test results
- Lessons Learnt
- Proposed utilization of developed technologies
- Suggestions for Way Forward

7.4.3 A copy each of the technical closure report should to be retained by the lab and the O/o Cluster DG for future reference. A hard copy along with soft copy of the report should be forwarded to DP&C, DRDO HQ for archival. The achievements/ shortfalls, references to technical reports evolved during the project, their location of archival/repository should be stated in the Technical Closure report. All Technical closure reports and supporting documentation should be stored in central repository of the Nodal Lab and O/o Cluster DG for future reference.

7.5 ADMINISTRATIVE CLOSURE REPORT

7.5.1 Administrative closure report of the project should be prepared by the PD and Documentation/Project team. The report duly vetted by the Project Director and Lab Director and accepted by the Cluster DG should be forwarded for approval of CFA within**12 months** of expiry of PDC. The report serves the purpose of audit authorities. Participating labs and agencies should submit the admin closure report to the nodal lab for respective sub-projects and work packages within 06 month of expiry of respective PDCs.

7.5.2 Audit observations, not settled, may continue to be active till settled, however, Administrative closure should not be delayed only on account of this.

7.5.3 Administrative Closure report should **essentially contain -**

- Project attributes
- Brief summary of technical achievements (objective envisaged vis-à-vis achieved)
- Certificate from the Material Management/ Store Sections stating no outstanding commitments of any kind under the project and completion of all payments i.e. no outstanding commitments, no live supply orders or contracts, not even pertaining to warranty which sometimes extends beyond the project PDC.

- No expenditure should be committed in the project after expiry of the PDC. The items / stores must be received in the lab before the expiry date of PDC. However payment of committed stores can be released beyond PDC i.e. within 06 months of expiry of PDC.
- Statement of expenditure vetted by concerned CDA (R&D)/ LAO.
- Minutes of the highest monitoring body recommending closure of the project.

7.6 COMPETENT AUTHORITY FOR ADMINISTRATIVE CLOSURE OF PROJECT/PROGRAMME

7.6.1 **Successfully Completed projects,** with all specified objectives achieved within approved cost and timelines, which have been recommended for closure by the highest monitoring body, will be closed with the approval of Secretary, DDR&D or CFA whichever is lower, with concurrence of designated Financial Advisor.

7.6.2 **Projects completed with partial success, Stage Closed & Cancelled projects,** where project objectives are not met,labs should identify reasons for not achieving the pre-defined objectives. These should be reviewed by a committee constituted by DG Cluster. Findings of the committee should be submitted to the highest monitoring committee, which will recommend closure of the project with further way ahead. Approval of DMC shall be obtained before processing such projects for closure. Thereafter, case should be moved for approval of CFA for formal closure with the concurrence of designated Financial Advisor.

7.6.3 Routing of closure case file will be the same as stated at **Chapter 3**. Upon accord of approval for Project closure, a sanction letter will be issued by the designated office (DRDO.DPFM.FF.17).

7.6.4 CFA for administrative closure of **sub-projects** will be as stated at **Table 11** with the recommendations of Nodal Lab Director and concurrence of designated Financial Advisor. Participating Labs will submit the Administrative Closure Letter to Nodal Lab.

7.6.5 **Closure of Work Packages.** Statement of expenditure duly vetted by CFA of organization executing the work package should be annexed with the closure report. CFA for Work package closure will be as stated for sub-projects at **Table 11**.

7.7 WAY FORWARD AFTER PROJECT CLOSURE

7.7.1 Way forward forSHQ**AoN based MM** projects shall be as per the guidelines at Chapter IV of DAP-2020 as amended from time to time. Nodal labs should forward the proposal for AoN /

Induction / Production / User for **MM, TD(S) Projects** which have completed PSQR validation trials, through Cluster DG and DG (PC&SI) to SHQ.

7.7.2 The proposal shall be moved by the nodal lab through the cluster DG and DG (PC&SI) for finalization of PSQR and AoN for **TD(S)** category of projects, if the same were not provided earlier. Subsequent category of project, if required, shall be decided by the Cluster DG based on agreed way ahead with the SHQ.

7.7.3 TD (T) Projects. If the technology is matured for Mission Mode**,** file should be moved to Services HQ based on the output of TD(T) to intimate about the advanced technology maturity achieved through the project and to enable Service to formulated draft QRs for developing product based on their requirement. If TD(T) results Matured Product/Process/Methodology be informed to DRDO labs/Concerned agencies for use in future projects/related activities, the same be informed to DRDO labs.

7.7.4 In case of **S&T projects**, probable use should be identified. A brochure about the research may be created or a product should be made from the research outcome. Based on the inputs, DRDO labs may take a TD project. A next level/next generation of the S&T project may also be undertaken.

7.7.5 IF Projects should be put to maximum utilization for in-house requirements within DRDO. The facilities may also be extended for utilization by other Govt. and private agencies, through provisions under Deposit Works for revenue generation.

7.7.6 PS Projects. Systems/ sub-systems up gradations under the PS projects should be put to use in subsequent projects.

ABBREVIATIONS

ACAS	Assistant Chief of Air Staff
ACE	Armaments & Combat Engineering
ACNS	Assistant Chief of Naval Staff
AIP	Acceptance-In-Principle
ACoAS	Assistant Chief of Army Staff
AO (R&D)	Accounts Office (R&D)
AoN	Acceptance of Necessity
ATP	Acceptance Test Procedure
BARC	Bhabha Atomic Research Centre
BTS	Build to Specification
CAPSI	Contract for Acquisition of Professional Services
CARS	Contract for Acquiring Research Services
CCM	Cluster Council Meeting
CCS	Cabinet Committee on Security
CDA	Controller of Defence Accounts
CDR	Critical Design Review
CEC	Cost Estimation Committee
CFA	Competent Financial Authority
CGDA	Controller General of Defence Accounts
CNC	Cost Negotiation Committee
DAE	Department of Atomic Energy
DAP	Defence Acquisition Procedure
DCAS	Deputy Chief of Air Staff
DCNS	Deputy Chief of Naval Staff
DCoAS	Deputy Chief of Army Staff
DcPP	Development cum Production Partners
DDR	Detailed Design Review
DFMM	Dte. of Finance and Material Management
DFP	Delegation of Financial Powers

D-FYP	DRDO Five Year Plan
DG	Director General
DGL	Draft Govt Letter
DG (PC&SI)	Director General (Production Coordination & Service Interaction)
DG(R&M)	Director General (Resource and Management)
DHRD	Directorate of Human Resource Development
DIITM	Directorate of Industry Interface & Technology Management
DISB	Directorate of Interaction with Services for Business
D-LTTPP	DRDO Long Term Technology Perspective Plan
DMC	DRDO Management Council
DP	Development Partner
DP&C	Directorate of Planning & Coordination
DPFM	Directives for Project Formulation and Management
DD R&D	Department of Defence Research & Development
DQR&S	Dte. Of Quality Reliability &Safety
DRDO	Defence Research & Development Organisation
DRONA	DRDO Rapid Online Network Access
D-RdMAP	Roadmap of DRDO
DST	Department of Science & Technology
DSTA	Dte. of Systems and Technology Analysis
D-ViDOC	DRDO Vision Document
RDR	Revenue Debt Remittance
EB	Executive Board
EoI	Expression of Interest
FADS	Finance Advisor Defence Services
FE	Foreign Exchange
FERV	Foreign Exchange Rate Variation
FIM	Free Issue Material
FM	Finance Minister
FOL	Fuel, Oil &Lubricants

FY	Financial Year
GoI	Govt of India
GS	General Staff
GSQR	General Staff Qualitative Requirement
HQ	Head Quarters
HR	Human Resource
IC	International Cooperation
ICD	Interface Control Document
IDDM	Indigenous Design Development and Manufacturing
IDS	Integrated Defence Staff
IDST	Institute of Defence Scientists and Technologists
IF	Infrastructure Facility
IGA	Inter Government Agreement
ISRO	Indian Space Research Organization
IV&V	Independent Verification and Validation
JPMT	Joint Project Monitoring Team
LAO	Local audit Officer
LPP	Last Purchase Price
LSI	Lead System Integrator
LSP	Limited Series Production
LTIPP	Long Term Integrated Perspective Plan
LTTPP	Long Term Technology Perspective Plan
MM	Mission Mode
MoD	Ministry of Defence
MoM	Minutes of Meeting
MoU	Memorandum of Understanding
MPP	Manufacturing Process Plan
MSS	Missiles & Strategic Systems
MSQAA	Missile System Quality Assurance Agency

NS&M	Naval Systems & Materials
PA	Production Agency
PCDA	Principal Controller of Defence Accounts
PDC	Probable Date of Completion
PDD	Preliminary Design Document
PDR	Preliminary Design Review
PEP	Project Execution Plan
PERT	Project Evaluation and Review Technique
PJMB	Project Management Board
PM	Project Monitoring
PMB	Programme Management Board
PMIS	Project Management Information System
PMRC	Project Monitoring and Review Committee
PMT	Project Monitoring Team
PRC	Peer Review Committee
PRI	Project Readiness Index
PS	Product Support
PSQR	Preliminary Staff Qualitative Requirements
QA	Quality Assurance
QAP	Quality Assurance Plan
QR	Qualitative Requirement
R&D	Research & Development
R&M	Resource & Management
R&QA	Reliability & Quality Assurance
RE	Revised Estimate
RFP	Request for proposal
RM	Raksha Mantri
S&T	Science & Technology
SDD	System Definition Document
SHQ	Services Head Quarters

SoC	Statement of Case
SOP	Standard Operating Procedure
SoW	Scope of Work
S&T	Science & Technology
S&T(B)	Science & Technology (Basic)
S&T(T)	Science & Technology (Technology)
SWOT	Strength Weakness Opportunity & Threat
TD	Technology Demonstration
TD (T)	Technology Demonstration (Technology Level)
TD (S)	Technology Demonstration (System Level)
TRA	Technology Readiness Assessment
TRL	Technology Readiness Level
ToT	Transfer of Technology
UATT	User Assisted Technical Trials
USC	Unique Sanction Code
US(R&D)	Under Secretary (Research & Development)
UT	User Trials
VCAS	Vice Chief of Air Staff
VCNS	Vice Chief of Naval Staff
VCoAS	Vice Chief of Army Staff
WBS	Work Breakdown Structure

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The 'HANDBOOK OF SUPPLEMENTARY PROCEDURES TO DPFM 2021' shall be referred in conjunction with DPFM 2021 for Supplementary Procedures, Forms, Formats and Checklist