

**BY ORDER OF THE COMMANDER  
AIR FORCE RESEARCH LABORATORY  
(AFRL)**

**AIR FORCE RESEARCH LABORATORY  
INSTRUCTION 61-102**

**29 FEBRUARY 2024**



**Scientific, Research, and Development**

**IMPLEMENTATION OF DOD  
FUNDING LABORATORY  
ENHANCEMENTS ACROSS FOUR  
CATEGORIES (FLEX-4)**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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**RELEASABILITY:** There are no releasability restrictions on this publication

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OPR: AFRL/XPO

Certified by: AFRL/XP  
(Colonel Jason Woodruff)

Supersedes: AFRLI61-102, 8 April 2019

Pages: 11

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This instruction implements DAFPD61-1 and 10 United States Code (U.S.C.) 4123, also known as the Department of Defense (DoD) Funding Laboratory Enhancements Across (X) Four Categories (FLEX-4) authority and shall be used in conjunction with Department of the Air Force Policy Directive (DAFPD) 61-1, *Management of the Science and Technology Enterprise*, and AFRL Instruction (AFRLI) 90-104 Volume 3, *Air Force Research Laboratory Innovative Solutions to Near-Term Needs*. 10 U.S.C. 4123 establishes mechanisms for the director of a defense laboratory to utilize an amount of funds equal to not less than two percent and not more than four percent of all funds available to the defense laboratory to be applied towards four specific categories. This instruction provides guidance and procedures for AFRL on the proper uses of funds and procedures for project selection as directed by 10 U.S.C. 4123. In addition, a description of roles and responsibilities of key personnel involved with AFRL's FLEX-4 authority implementation is described. Refer recommended changes and questions about this publication to the OPR using Department of the Air Force (DAF) Form 847, *Recommendation for Change of Publication*; route DAF Form 847 through the appropriate chain of command. Requests for waivers must be submitted to the OPR for consideration and approval. Ensure all records created as a result of the processes described in this publication are maintained in accordance with Air Force Instruction (AFI) 33-332, *Records Management and Information Governance Program*, and disposed of in accordance with the Air Force Records Disposition Schedule.

### ***SUMMARY OF CHANGES***

This publication has been substantially revised and must be completely reviewed. Renamed the instruction from Implementation of Section 219 of the Fiscal Year 2009 National Defense Authorization Act to Implementation of DoD Funding Laboratory Enhancements Across Four Categories (FLEX-4). Renumbered the U.S. Code from 10 U.S.C. 2363 to 10 U.S.C. 4123 throughout the document. Changed program to authority or portfolio throughout the document. Noted the use of both Air Force and Space Force funding throughout the document. Changed Technical Directorates (TDs) to Mission Organizations (Mission Orgs) throughout the document. Minor cover page updates. Changes made to Section 1 Background. Revised the language that defines Categories 1-4. Changes made to Section 2 Roles & Responsibilities - revised roles/responsibilities of the AFRL Commander, Chief Technology Officer, Center for Rapid Innovation Director, Executive Director, Vice Commander, Plans and Programs Director, and Financial Management. Changed FLEX-4 Program Manager to FLEX-4 Portfolio Manager (PfM) and revised the roles/responsibilities; the term FLEX-4 PfM replaces FLEX-4 Program Manager (PM) throughout the document. Added AFRL Financial Analysis roles/responsibilities. Removed Technical Directorates roles/responsibilities. Changes made to Section 3 Project Descriptions and Appropriate Use of Funds. Revised Category 1 objectives. Changed Commander's Research and Development Funds to S&T Seedlings for Disruptive Capabilities Program (SDCP) and described the SDCP projects. Removed the Category 3 Institutes and their description. Changes made to Section 4 Category Process and Criteria. Entire Section 4 revised to better define the current processes and project prioritization criteria of all four categories. Removed Figure 1.. Section 219 Schedule. Added current AFRL Commander signature block and signature.

## 1. Background.

1.1. 10 U.S.C. 4123, also known as the FLEX-4 authority, authorizes the Secretary of Defense, in consultation with the Secretaries of the military departments, to establish mechanisms for a director of a defense laboratory to utilize an amount of funds equal to not less than two percent and not more than four percent of all funds available to the defense laboratory for the following purposes:

1.1.1. Category 1 (Cat 1): To fund innovative basic and applied research that is conducted at a defense laboratory and supports military missions. Referred to as *Innovative Basic and Applied Research* throughout this instruction.

1.1.2. Category 2 (Cat 2): To fund development programs that support the transition of technologies developed by the defense laboratory into operational use. Referred to as *Transition of Technologies into Operation Use* throughout this instruction.

1.1.3. Category 3 (Cat 3): To fund workforce development activities that improve the capacity of the defense laboratory to recruit and retain personnel with necessary scientific and engineering expertise that support military missions. Referred to as *Workforce Development* throughout this instruction.

1.1.4. Category 4 (Cat 4): To fund repair or minor military construction (MILCON) of the laboratory infrastructure and equipment, in accordance with subsection (a)(1)(D) of 10 U.S.C. 4123. Referred to as *Laboratory Revitalization* throughout this instruction.

1.2. The AFRL FLEX-4 portfolio is defined as all projects funded under the four specific categories listed in Section 1.1.

1.3. The Department of the Air Force funding, plus assessed external customer funding, provided under this authority is used at the discretion of the AFRL Commander (AFRL/CC).

## 2. Roles & Responsibilities.

### 2.1. AFRL Commander (AFRL/CC).

2.1.1. Approves the percentage of the FLEX-4 authority to be used each fiscal year.

2.1.2. Approves the amount of funding allocated to each category of the FLEX-4 authority each fiscal year.

2.1.3. Approves the projects recommended by the Category Champions.

### 2.2. AFRL Chief Technology Officer (AFRL/CT).

2.2.1. Cat 1 Champion.

2.2.2. Responsible for all activities within Cat 1.

2.2.3. Chairs the Research Advisory Council (RAC) who are responsible for the prioritization of projects utilizing Cat 1 funding. Examples of projects within Cat 1 scope include Science and Technology (S&T) Seedlings for Disruptive Capabilities Program (SDCP) and Entrepreneurial Research Funds (ERFs).

- 2.2.4. Recommends Cat 1 projects to AFRL/CC for approval to fund.
- 2.3. AFRL Center for Rapid Innovation (CRI) Director (AFRL/RSC).**
  - 2.3.1. Cat 2 Champion.
  - 2.3.2. Responsible for all activities within Cat 2.
  - 2.3.3. Recommends Cat 2 projects to AFRL/CC for approval to fund.
- 2.4. AFRL Executive Director (AFRL/CA).**
  - 2.4.1. Cat 3 Champion.
  - 2.4.2. Responsible for all activities within Cat 3.
  - 2.4.3. Assigns a Cat 3 Portfolio Manager (PfM).
  - 2.4.4. Recommends Cat 3 projects to AFRL/CC for approval to fund.
- 2.5. AFRL Deputy Commander (AFRL/CD).**
  - 2.5.1. Cat 4 Champion.
  - 2.5.2. Responsible for all activities within Cat 4.
  - 2.5.3. Leads prioritization of Cat 4 efforts.
  - 2.5.4. Recommends Cat 4 projects to AFRL/CC for approval to fund.
  - 2.5.5. Leads FLEX-4 Portfolio Management Reviews (PfMRs), if desired or required.
- 2.6. AFRL Plans and Programs Director (AFRL/XP).**
  - 2.6.1. Orchestrates implementation of the FLEX-4 authority.
  - 2.6.2. Assigns a FLEX-4 Portfolio Manager (PfM) to implement a disciplined management process for the AFRL FLEX-4 portfolio.
- 2.7. FLEX-4 Portfolio Manager (PfM).**
  - 2.7.1. Prepares the FLEX-4 portfolio budget with AFRL FLEX-4 Financial Manager (FM) for leadership approval.
  - 2.7.2. Organizes a budget planning and execution meeting with all Category Champions who determine the recommendation for funding allotments to be applied towards the four categories.
  - 2.7.3. Coordinates with key AFRL leaders as necessary to ensure all projects comply with the FLEX-4 authority.
  - 2.7.4. Maintains a list of outyear funding requirements and forecasts from the category stakeholders.
  - 2.7.5. Maintains the instructions and guides that govern AFRL's use of the FLEX-4 authority and prepares FLEX-4 reports as required.

## 2.8. AFRL Financial Management (AFRL/FM).

2.8.1. Responsible for the budget, distribution, and financial tracking of the FLEX-4 portfolio.

2.8.2. Assigns a Financial Manager (FM) to implement a disciplined financial management process for the FLEX-4 portfolio.

2.8.3. Advises AFRL leadership on projected and actual/enacted FLEX-4 budgets, as based on percentage determined by AFRL/CC (see [paragraph 2.1.1](#)) and other available funding sources.

2.8.4. Continuously tracks funding execution rates of the FLEX-4 portfolio against OSD goals and recommends reallocation to FLEX-4 PFM, as necessary. Data is reported to the Category Champions and during Spring and Fall Program/Portfolio reviews.

## 2.9. AFRL Contracting (AFRL/PK).

2.9.1. If a recommended project will require the execution of an action by AFRL Contracting personnel, the effort will be coordinated with the supporting contracting office before being recommended to AFRL/CC for approval.

## 3. Project Descriptions and Appropriate Use of Funds.

3.1. **Cat 1:** Innovative Basic and Applied Research - supports cutting-edge research at AFRL and is executed through two different types of projects: S&T SDCP projects and ERF projects.

3.1.1. S&T SDCP projects: Innovative, cross-disciplinary in-house research projects are conceived and led by AFRL Government personnel, where the research is conducted at AFRL facilities by AFRL Government and on-site contractor research personnel. S&T SDCP projects must: 1). Significantly advance scientific progress of innovative concepts underpinning transformational operational capabilities, the future force, or kill web; 2). Enhance organic AFRL research capabilities in an enterprise-level, cross-Mission Org environment; and 3). Fortify external research partnerships with other DoD laboratories to leverage key emerging technology developments in academia, industry, and/or Government laboratories. S&T SDCP projects are multi-year efforts of up to three years duration and the funding threshold for an effort is not to exceed \$5 million per year. RAC members and representatives from Air Force Futures, select Major Command (MAJCOM) Chief Scientists, and SMEs from other services, academia, or others (as needed) assist the Cat 1 Champion in the prioritization of projects to recommend to AFRL/CC for funding. Active S&T SDCP projects undergo an annual S&T progress review by the selection committee (stated above) beginning approximately 12 months after initiation and must present a close-out briefing upon project completion.

3.1.2. ERF projects: Innovative one-year, in-house research projects conceived and led by AFRL Government personnel, where the research is conducted at AFRL facilities. ERF projects provide “seedling” money to initiate new research areas with the intent of providing initial proof-of-concept for possible follow-on research through some other funding source. The Cat 1 Champion may delegate the responsibility for the prioritization, management, execution, and review of ERF projects to the Mission Orgs Chief Scientists.

3.2. **Cat 2:** Transition of Technologies into Operational Use - supports projects that are initiated in response to near term needs from Combatant Commands, Acquisition Centers, and MAJCOMs, in accordance with AFRLI 90-104 Volume 3, *Air Force Research Laboratory Innovative Solutions to Near-Term Needs*. Once the determination is made that a suitable technology-enabled solution exists, a Rapid Innovation project is executed to develop and deliver a prototype solution quickly (usually within 12-18 months), transitioning the existing technology to operational use.

3.3. **Cat 3:** Workforce Development - an essential component in recruiting, training, developing, and retaining personnel for addressing the critical S&T areas to meet the future DoD requirements by providing cutting-edge capabilities to the MAJCOMs. Projects include improving existing workforce development initiatives, developing leaders across AFRL, and expanding initiatives to benefit the workforce.

3.4. **Cat 4:** Laboratory Revitalization - provides essential infrastructure for S&T research of AFRL high-priority areas and requirements, stakeholder interests, capabilities that satisfy new mission requirements, and environmental, safety, and security considerations.

#### 4. Category Process and Criteria.

##### 4.1. Cat 1 Process and Criteria.

###### 4.1.1. Cat 1 S&T SDCP Process.

4.1.1.1. AFRL/CT conducts annual data call for whitepapers (no more than three per Mission Org).

4.1.1.2. Review team (see [paragraph 3.1.1](#)) assesses, scores, and ranks and down selects to a few whitepapers (generally between 4 and 7 depending on actual funding available).

4.1.1.3. Selected whitepapers will be submitted as full proposals and the lead principal investigator will present their project to the review team (similar to a thesis defense), from which the review team will recommend a list of projects for funding to AFRL/CT for prioritization.

4.1.1.4. AFRL/CT recommends the final 1:N list to AFRL/CC for funding approval.

###### 4.1.2. Cat 1 S&T SDCP Criteria.

4.1.2.1. Project proposals must initiate and/or develop transformational, cross-disciplinary applied research to provide leap-ahead solutions through the presentation of high-risk technology development that has the high potential to serve as a starting point for transformational advanced technology development.

4.1.2.2. Project proposals must be cross-disciplinary and across multiple Mission Org participation (at least three).

4.1.2.3. Project duration is limited to 2-3 years and funding threshold for each project cannot exceed \$5 million per year.

4.1.2.4. Project selection will be competitive, emphasizing potential operational relevance and scientific quality.

- 4.1.2.5. Each project will have at least two exchanges/meetings per year with the identified senior mentor(s) as the review chair, once in the spring and again in the fall. Additionally, each SDCP must undergo an annual review to provide out-year funding based on demonstrated progress towards technical objectives.
- 4.1.3. Cat 1 ERF Process.**
- 4.1.3.1. ERF funding is calculated by multiplying the total President's Budget for the Program Elements assessed by 3 percent.
- 4.1.3.2. Funding is then provided to the Mission Org Chief Scientists to use at their discretion, so long as the work fits the language of 10 U.S.C. 4123(a)(1)(A).
- 4.1.4. Cat 1 ERF Criteria.**
- 4.1.4.1. ERF proposals are not prescriptive.
- 4.1.4.2. Criteria and approval are under the purview of the applicable Chief Scientist.
- 4.2. Cat 2 Process and Criteria.**
- 4.2.1. Cat 2 Process.**
- 4.2.1.1. Proposals based on near term needs are received from Combatant Commands, MAJCOMs, Numbered Air Force, Space Force and Acquisition Centers.
- 4.2.1.2. AFRL CRI conducts innovation workshops to identify root causes and ideate solutions.
- 4.2.1.3. Approved projects utilize small, empowered solution teams with customer involvement and rapid spirals, if required, to develop prototypes.
- 4.2.1.4. Technology transitioned via direct military support, gap filler/pathfinder for future acquisitions, or conversion to program of record.
- 4.2.1.5. AFRL CRI recommends the final 1:N list to AFRL/CC for funding approval.
- 4.2.1.6. Each selected team will work with an internal (AFRL) and external (non-AFRL) senior technical mentor to ensure technical rigor, provide guidance to the team during the period of performance, and provide candid and objective feedback to the RAC on scientific progress.
- 4.2.2. Cat 2 Criteria.**
- 4.2.2.1. Project proposals must develop and deliver a field-testable prototype(s) that addresses the warfighter needs.
- 4.2.2.2. Project proposals must be able to deliver solutions quickly (typically 12-18 months).
- 4.3. Cat 3 Process and Criteria.**
- 4.3.1. Cat 3 Process.**

4.3.1.1. AFRL/CA will determine prioritization and funding of Cat 3 projects based on an assessment of criticality and measurable outcomes towards achieving the enterprise-level goals and objectives of AFRL Human Capital Strategy, supporting action plan(s), and emergent AFRL/CC priorities.

4.3.1.2. Cat 3 PM will solicit proposals for Cat 3 projects from enterprise-level human capital stakeholders and SMEs to include, but not limited to, the AFRL Director of Personnel; the AFRL Chief Organizational Health and Development Officer; and the AFRL Diversity Equity Inclusion and Accessibility Officer.

4.3.1.3. AFRL/CA recommends the final 1:N list to AFRL/CC for funding approval.

#### 4.3.2. **Cat 3 Criteria.**

4.3.2.1. Workforce Development Impact proposals must maintain scientific and technical vitality of AFRL, now and in the future, and develop high performing, multi-disciplinary teams.

4.3.2.2. Value/Returns on Investment proposals must enhance AFRL's ability to address future DoD missions through the development of AFRL personnel and support high-risk, high-value approaches to developing the people of AFRL.

#### 4.4. **Cat 4 Process and Criteria.**

##### 4.4.1. **Cat 4 Process.**

4.4.1.1. PfM conducts annual data call for proposals and consolidates AFRL Mission Org and AFRL HQ responses.

4.4.1.2. AFRL/CD orchestrates meetings with AFRL Mission Orgs and AFRL HQ to obtain feedback and prioritize proposals prior to submittal to AFRL/CC for approval.

4.4.1.3. AFRL/CD recommends the final 1:N list to AFRL/CC for funding approval.

4.4.1.4. AFRL/CD distributes the list of approved projects to fund to the AFRL Mission Orgs.

##### 4.4.2. **Cat 4 Criteria.**

4.4.2.1. Projects must be minor MILCON (10 U.S.C. 2805(d)) or renovation/repair (10 U.S.C. 2811) and must be a complete, usable, and stand-alone when finished.

4.4.2.2. Projects must have a complete design before they will be considered for funding. Complete is defined as 35 percent or an AE/USACE prepared design/build request for proposal is considered complete for design/build; 100 percent is considered complete for design/bid/build.

4.4.2.3. All designs and programming must be in compliance with DAFI 32-1020, *Planning and Programming Built Infrastructure Projects*.

4.4.2.4. Projects must directly improve in-house research capabilities or critical organizational infrastructure. Proposals that include equipment will be evaluated on a case-by-case basis with AFRL/JA.



4.4.2.5. Project proposals must meet Base Civil Engineering planning and programming requirements.

4.4.2.6. Project design must be funded by the Mission Org.

SCOTT A. CAIN, Major General, USAF  
Commander

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 33-322, *Records Management and Information Governance Program*, 28 Jul 21

AFRI 32-1020, *Planning and Programming Built Infrastructure Projects*, 20 Jul 22

AFRLI 90-104 Vol 3, *Air Force Research Laboratory Innovative Solutions to Near-Term Needs*, 18 Jul 14

DAFPD 61-1, *Management of Science and Technology Enterprise*, 5 Feb 21

***Prescribed Forms***

None

***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*

***Abbreviations and Acronyms***

**AFI**—Air Force Instruction

**AFRL**—Air Force Research Laboratory

**AFRL/CA**—AFRL Executive Director

**AFRL/CC**—AFRL Commander

**AFRL/CD**—AFRL Vice Commander

**AFRL/CT**—AFRL Chief Technology Officer

**AFRL/FM**—AFRL Financial Management

**AFRL/FZA**—AFRL Financial Manager

**AFRL/FZF**—AFRL Accounting Operations

**AFRL/JA**—AFRL Judge Advocate

**AFRL/PK**—AFRL Contracting

**AFRL/RSC**—AFRL Center for Rapid Innovation

**AFRL/XP**—AFRL Plans and Programs

**AFRL/XPO**—AFRL Business Operations

**AFRL/XPT**—AFRL Strategic Planning and Transformation

**AFRLI**—AFRL Instruction

**Cat 1**—Category 1

**Cat 2**—Category 2

**Cat 3**—Category 3

**Cat 4**—Category 4

**COA**—Course of Action

**CRI**—Center for Rapid Innovation

**DAF**—Department of the Air Force

**DAFPD**—Department of the Air Force Policy Directive

**DoD**—Department of Defense

**ERF**—Entrepreneurial Research Fund

**FLEX-4**—Funding Laboratory Enhancements Across Four Categories

**FOG**—Front Office Group

**MAJCOM**—Major Command

**MICP**—Management of Internal Control Processes

**Military Construction**—MILCON

**Mission Org**—Mission Organization

**NDAA**—National Defense Authorization Act

**OPR**—Office of Primary Responsibility

**OSD**—Office of the Secretary of Defense

**PEC**—Program Element Code

**PfM**—Portfolio Manager

**PfMR**—Portfolio Management Review

**PM**—Program Manager

**RAC**—Research Advisory Council

**SAF/AQ**—Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics

**SDCP**—Seedlings for Disruptive Capabilities Program

**S&T**—Science and Technology

**TD**—Technology Directorates

**U.S.C.**—United States Code