



the dtic

Department:
Trade, Industry and Competition
REPUBLIC OF SOUTH AFRICA



Aerospace Industry Support Initiative

an initiative of the dtic

Expression of Interest (Eoi)

Aerospace Industry Support Initiative (AISI)

Identifying Advanced Manufacturing Aerospace and Defence SMMEs and Non-SMMEs (Integrators or Sub-Systems Suppliers) to participate in:

AISI Aerospace and Defence Technology Based Industry and Supplier Development Programme

Eoi No: 001/25/04/2025

Date of Issue:	25 April 2025	
Closing date and time:	20 March 2026 at 16h30 (Potential beneficiaries can submit applications anytime between 25 April 2025 and 20 March 2026). Received applications will be evaluated monthly as they are received, until the closing date	
Submission Type:	Submissions to be emailed to: AISI at aisi@csir.co.za	
Enquiries and Submission	CSIR Business Integration and Excellence	E-mail: Livison Mashoko - lmashoko@csir.co.za

TABLE OF CONTENTS

1	INTRODUCTION.....	4
2	OVERVIEW OF THE EXPRESSION OF INTEREST	5
2.1	Key Application Information	5
2.2	Submission Template.....	5
2.3	Required Submission Documents.....	6
2.4	Eligibility Criteria.....	6
2.5	Evaluation Process	6
2.6	General Terms	6
2.7	Next Steps.....	7
3	AEROSPACE AND DEFENCE TECHNOLOGY BASED INDUSTRY AND SUPPLIER DEVELOPMENT PROGRAMME.....	8
3.1	Thematic Areas	9
4	EXPRESSION OF INTEREST TERMS OF REFERENCE.....	10
4.1	Definitions.....	10
4.2	Support Criteria	11
4.3	Procurement of Services.....	11
4.4	Validity of EoI Application.....	11
4.5	Submission Guidelines.....	11
4.6	Elimination Criteria	12
4.7	Evaluation Process and Criteria.....	12
4.8	Guidelines and Key Points	15
4.9	General Terms	15
4.10	Medium of Communication	16
4.11	Cost Associated with an EoI Application.....	16
4.12	Validity and Correctness of Responses	16
4.13	Responsibility to Execute and Failure to Comply.....	16
4.14	Verification of Documents	16

4.15	The AISI Reserves the Right to:.....	16
5	DISCLAIMERS.....	18
6	EOI APPLICATION DOCUMENTS	19
6.1	EOI Compliance Check List	19
6.2	Declaration of Conflict-of-Interest Form (Applicant).....	20
6.3	Final Declaration	21
	ANNEXURE A: TECHNOLOGY READINESS LEVELS	22

1 INTRODUCTION

The Council for Scientific and Industrial Research (CSIR) is one of the leading scientific research and technology development organisations in Africa. In partnership with national and international research and technology institutions, the CSIR undertakes directed and multidisciplinary research and technology innovation that contributes to the improvement of the quality of lives of all South Africans. The CSIR's main site is in Pretoria while it is represented in other provinces of South Africa through regional offices.

The **Aerospace Industry Support Initiative (AISI)** is an initiative of the Department of Trade Industry and Competition (**the dtic**). The AISI is hosted and managed by the CSIR and has a specific aim of industrial development. The AISI is a fully government-funded mechanism to support the local South African ***aeronautics, defence, space, marine and other advanced manufacturing sector-wide industries***.

The AISI closely aligns its objectives with those of **the dtic**. Through this alignment, the AISI seeks to contribute to the achievement of **the dtic's** apex outcomes of **industrialisation, jobs creation, transformation, and building a capable state**.

1.1 Call for Applications

The AISI is issuing an EoI for applications aligned to its goals and those of **the dtic**. The purpose of this document is to outline the framework for the Expression of Interest (EoI) and submission procedures with regards to identifying applicants who are involved in ***aerospace and defence advanced manufacturing*** and qualify to participate in the Aerospace and Defence (A&D) Technology Based Industry and Supplier Development Programme.

Potential beneficiaries should currently be (or could become with the assistance provided by AISI) system or component manufacturers or service providers. This document serves as a guideline to potential AISI beneficiaries interested in submitting EoI applications for consideration by the AISI technical review committee.

2 OVERVIEW OF THE EXPRESSION OF INTEREST

The Eol focusses on identifying aerospace and defence advanced manufacturing companies (SMMEs and non-SMMEs) who will benefit from the interventions. Successful applicants will receive financial and technical support to improve capabilities, secure relevant accreditations, and integrate into local and global supply chains.

The AISI invites eligible advanced manufacturing companies to apply for participation in the Aerospace and Defence (A&D) Technology Based Industry and Supplier Development Programme. This programme enhances industry competitiveness through the following key interventions:

- Standards and Accreditation Support
- Technology Enhancement
- Process Development and Optimisation

2.1 Key Application Information

- **Opening Date:** 25 April 2025
- **Closing Date:** 20 March 2026 at 16h30. Applications received after the closing date will only be considered in the next financial year (2026/2027).
- **Monthly Evaluation:** Applications are reviewed once a month
- **Submission Method:** Email electronic copies to **AISI** at aisi@csir.co.za
- **Technical Enquiries:** Contact **Livison Mashoko** at lmashoko@csir.co.za

2.2 Submission Template

The Eol application template documents can be downloaded by clicking on the following link:

- [Application Template](#)

2.3 Required Submission Documents

Incomplete applications will not be considered. Applicants must submit:

Document	Required (✓)
Completed EoI Application Template (Section 2.2)	✓
Signed EoI Compliance Checklist (Section 6.1)	✓
Declaration of Conflict of Interest (Section 6.2)	✓
Declaration of Financial Interest (Section 6.2)	✓
Final Declaration (Section 6.3)	✓
Valid BBBEE Certificate (if applicable)	✓
Proof of Compliant Tax Status	✓

2.4 Eligibility Criteria

- **South African-registered companies** in advanced manufacturing.
- **SMMEs:** <250 full-time employees and annual turnover < R170 million.
- **Non-SMMEs:** Not within the criteria for an SMME.
- **Preference given to SMMEs and companies aligned with the dtic's strategic objectives outlined in [Section 1](#) (paragraph 3).**

2.5 Evaluation Process

Applications will be assessed based on:

- **Qualification & Critical Factors:** Compliance with registration, tax, and sector-specific requirements.
- **Differentiation Factors:** Experience, black ownership, BBBEE level, and contributions to the local manufacturing industry.

Refer to [Section 4.7](#) for a detailed description of these factors. These tables can be used as part of a self-evaluation before completing the EOI application.

2.6 General Terms

- Only electronic submissions will be accepted.
- The AISI reserves the right to amend, withdraw, or cancel this EoI at any time.
- No costs incurred in the application process will be reimbursed.

2.7 Next Steps

Interested companies should review the full Terms of Reference ([Section 4](#)) if additional details are required before submitting their applications. For enquiries, contact **Livison Mashoko** at lmashoko@csir.co.za.

3 AEROSPACE AND DEFENCE TECHNOLOGY BASED INDUSTRY AND SUPPLIER DEVELOPMENT PROGRAMME

The Aerospace and Defence Technology Based Industry and Supplier Development Programme aims to enhance South Africa's aerospace and defence sector by supporting technology development, supplier competitiveness, and industrial growth. It provides mechanisms to improve productivity, quality management, and operational efficiency, facilitating the industry's integration into global supply chains.

The AISI selected three interventions to assist Aerospace and Defence SMMEs as well as non-SMME companies (higher integrators or sub-systems suppliers) and contribute to the global Aerospace and Defence manufacturing industry. The AISI will provide support for these interventions to be undertaken at approved companies. The interventions include:

1. Technology Enhancement:

- Technology Enhancement helps aerospace and defence companies (both SMMEs and non-SMMEs) grow and access new markets by developing or improving technologies, products, and processes.
- Projects may involve new product development, prototyping, enhancements for industrialisation, etc.
- Technology roadmapping is also offered to assist in identifying, selecting and developing technology and capabilities to meet future market needs.
- All projects supported must be at a **TRL value of 4 or higher** at the start of the project. Preference will be given to higher TRL projects. Evidence of this will need to be provided with the application. Refer to [Annexure A](#) for the TRL definitions.
- The support is limited to a maximum of R1 500 000 excluding VAT. The final amount to be supported will be determined by the actual project scope.

2. Standards and Accreditations (only SMMEs):

- Quality management is vital in the Aerospace and Defence industry, helping prevent costly errors and ensuring success.
- This intervention provides support to potential beneficiaries to implement and achieve certification for relevant industry standards, either for components/products or processes to ensure consistency and a strong industry reputation.
- Examples of standards include ISO9001 and the aerospace quality management standard AS/EN9100.

3. Process Development and Optimisation (only SMMEs):

- Efficient manufacturing relies on strong process development and optimisation.
- Key focus areas include lean manufacturing, theory of constraints, facility layout optimisation, production planning, new and optimised manufacturing processes, and quality management systems.

NOTES:

1. All SMME or non-SMME companies applying for assistance must be involved in aerospace or defence, or advanced manufacturing within the aerospace and defence sectors.
2. Only SMMEs can apply for support in more than one area of intervention. Non-SMME companies can only apply for technology enhancement.

3.1 Thematic Areas

The thematic areas are selected at the discretion of the AISI and are seen as those most relevant for technology advancement in the South African aerospace sector. The relevant thematic areas are:

- Aerostructures including advanced manufacturing and processing (digital manufacturing, unmanned aerial vehicles (UAVs), post-processing technologies, additive manufacturing, etc.);
- Space;
- Avionics;
- Propulsion;
- Surveillance and Sensor Systems; and
- Land Systems.

4 EXPRESSION OF INTEREST TERMS OF REFERENCE

This call is aimed at **aerospace and defence advanced manufacturing** companies (both SMME and non-SMMEs) that require interventions from the Aerospace and Defence Technology Based Industry and Supplier Development Programme that will contribute towards improved local and global competitiveness.

4.1 Definitions

4.1.1 SMME

A manufacturing SMME is defined in accordance with the Revised Schedule 1 of the National Definition of Small Enterprise in South Africa published on 15 March 2019 by the Department of Small Business Development. According to this schedule a manufacturing SMME is defined as having less than:

- 250 full time employees; and
- R170 million annual turnover.

In most cases, SMMEs work with higher tier integrators (Tiers 0, 1 and 2) as part of their supply chains but in some cases, they are integrators for their own products and systems. An Integrator and Sub-Systems Supplier is a company whose products are used as components in the products of another company. The integrators and sub-systems suppliers generally work closely with the company that sells the finished product and customises designs based on that company's needs. Only integrators and sub-systems suppliers who are involved in aerospace and defence manufacturing, will be considered.

Companies that do not meet the definition for SMMEs are classified as non-SMMEs for the purposes of this EoI.

4.1.2 Advanced Manufacturing

Advanced manufacturing is defined as “The application of innovative technologies to create new products, improve existing products, and undertake production activities that will improve the quality and process of manufacturing to give the organisation a competitive edge”. This includes design, development, manufacture, assembly or fabrication of products.

Only companies involved in **aerospace and defence advanced manufacturing** will be considered for support. Both large organisations (integrators and sub-systems suppliers) as well as SMMEs are eligible, although preference will be given to SMMEs.

4.2 Support Criteria

Organisations currently receiving support or historically have received support from mechanisms within the AISI will be considered for support based on project progress against deliverables.

NOTES:

1. Non-SMMEs only qualify for support under the Technology Enhancement intervention.
2. All applicants are required to include their BBBEE certificate, if applicable, and proof of Compliant Tax Status in their responses to the EoI. The BBBEE level is required to be maintained or improved throughout the duration of the project.
3. Manufacturers or services industry that are currently receiving support for or similar interventions from other South African Government departments or international organisations will not be considered for support. Submissions from organisations that have received (or are receiving) AISI funding may however be considered.
4. Some form of co-funding is required for all projects and will depend on the type, scope and budget of the project.

4.3 Procurement of Services

If the application for support for the standards and accreditation intervention is successful, suitable service provider(s) will be contracted. Procurement of these services will be according to the procurement framework of the CSIR (as host of AISI) in strict compliance with the Public Finance Management Act (PFMA).

4.4 Validity of EoI Application

Once an EoI has been approved, the application is valid for 2 years (24 months) from the date of approval.

4.5 Submission Guidelines

ONLY electronic copies will be accepted and must be submitted via email to **AISI** - aisi@csir.co.za. All EoI documents must be received no later than the stipulated closing date and time. Any EoI submitted after the stipulated time and date will only be considered in the next financial year provided there is enough funds in next year's budget to cater for that.

All queries pertaining to the EoI must be forwarded for attention: Livison Mashoko - lmashoko@csir.co.za with **EoI 001/25/04/2025 AISI A&D Technology Based Industry and Supplier Development Programme** as the subject.

4.6 Elimination Criteria

EoI applications will be eliminated under the following conditions:

- Incomplete submissions.
- Application templates ([Section 2.2](#)) not completed, signed and submitted.
- EoI compliance checklist not signed and submitted ([Section 6.1](#)).
- Declaration of Conflict of Interest not signed and submitted ([Section 6.2](#)).
- Declaration of Conflict of Financial Interest not signed and submitted ([Section 6.2](#)).
- Final Declaration not signed and submitted ([Section 6.3](#)).

4.7 Evaluation Process and Criteria

4.7.1 Evaluation of Submissions

All EoI applications will be evaluated by a technical review committee for functionality **monthly**. The template ([Section 2.2](#)) which is also published with this EoI is required to be completed and submitted. The evaluations of the EoI will be based on the information provided in the submitted EoI template and any additional documentation requested. The qualification, critical and differentiation evaluation will be done for all applications.

4.7.2 Qualification and Critical Evaluation Factors

The assessment criteria for the evaluation of all applications are firstly divided into qualification evaluation factors (based on the beneficiary) and critical evaluation factors (based on the submission).

For the qualification factors (Table 1), an application is immediately disqualified if **NO** is marked for a South African registered company. In cases where BBBEE is non-compliant these will be evaluated separately in conjunction with **the dtic** to determine if the proposed project meets other strategic objectives that would be beneficial to the industry and the country.

Table 1: Qualification Factors

Qualification Evaluation Factors	Yes	No
South African registered company		
Is the company an SMME? (as defined in Section 4)		
Compliant Tax Status		
Valid BBEE Certificate (Level 1-8)		

For the critical evaluation factors (Table 2), any **NO** answer immediately disqualifies the application. This evaluation will be done by the review committee.

Table 2: Critical Evaluation Factors

Critical Evaluation Factors	Yes	No
Is the company in one of the applicable thematic areas? (Section 3.1.1)		
Do they provide engineering services that support the aerospace and defence industry.		
Designing, supplying/manufacturing/integration/assembly of aeronautics, space and defence related products/components/systems and services locally or internationally		
Do they have access to manufacturing facilities? (e.g. owned/leased/subcontracted)		
If a non-SMME, do they provide assistance to a current SMME supplier base.		

4.7.3 Differentiation Evaluation Factors

The differentiation factors for the evaluation of all project applications are shown in Table 3. Each differentiation factor is assigned a score (maximum 10) which is then weighted according to the importance of the factor. Please note:

- A minimum total weighted score of **65** must be achieved. If this is not achieved the application will be disqualified.

Table 3: Differentiation Evaluation Factors for Assessing Applications.

Differentiation Factors	Score	Weight		Weighted Score
		Non-SMME ¹	SMME ²	
Factor Description	(/10)	(%)	(%)	
Experience in aerospace and defence advanced manufacturing as an integrator or sub-system or component manufacturer within one of the thematic areas (Provide proof of number of years) More than 10 years (assigned score 10) 3 – 10 years (assigned score 8)		20	20	

¹ Only use this column's weighting if you are a **Non-SMME**

² Only use this column's weighting if you are an **SMME**

Differentiation Factors	Score	Weight		Weighted Score
		Non-SMME ¹	SMME ²	
Factor Description	(/10)	(%)	(%)	
Less than 3 years (assigned score 5)				
Percentage of black ownership in the business (Please provide proof e.g BBBEE certificate. If using an affidavit, ensure this information is included) ≥ 50% Black Ownership (assigned score 10) 1 – 49% Black Ownership (assigned score 7) No Black Ownership (assigned score 5)		15	20	
BBBEE Level 1-2 (assigned score 10) BBBEE Level 3-4 (assigned score 8) BBBEE Level 5-8 (assigned score 5) BBBEE Level Non-Compliant (assigned score 0)		10	15	
Design, manufacture or integration of sub-systems or components for South African and International aerospace and defence OEMs, integrators or sub-systems suppliers, and SMMEs. Manufacturing for: More than 3 integrators/sub-system developers or other SMMEs, or more than 3 own products manufactured (assigned score 10) 2-3 integrators/sub-systems developers or other SMMEs, or 2-3 own products manufactured (assigned score 8) 1 integrators/sub-system developer or SMME, or 1 own product manufactured (assigned score 5) <i>(List the OEMs, Integrators/Subsystem developers supplied or own products produced)</i>		20	25	
<u>Only applicable to Non-SMMEs:</u> Level of support for current SMME supplier base. Support for SMMEs: More than 3 SMMEs (assigned score 10) 2-3 SMMEs (assigned score 8) Less than 2 SMMEs (assigned score 5) <i>(List the SMMEs)</i>		20	0	
Do you have access to manufacturing facilities and equipment? Own Facilities and equipment (assigned score 10) Subcontracted facilities and own equipment (assigned score 8) Subcontracted facilities and equipment (assigned score 5) No facilities or equipment (assigned score 0)		15	20	
Total		100	100	/100

4.8 Guidelines and Key Points

All South African aerospace and defence advanced manufacturing companies (SMME/non-SMME) are invited to submit Eol applications in support of this call. Please note the following:

- Complete the Eol Application Template ([Section 2.2](#)) for either SMMEs or Non-SMMEs and submit it with relevant documentation. (This is dependent on whether the applying organisation is an SMME or not based on the definition provided in [Section 4.1.1](#))
- All submissions relevant documentation, data and information will be treated as confidential.
- The process of evaluating all submissions will be conducted in a fair and confidential manner.
- All technical experts in the review committee are also bound by an obligation of confidentiality.
- Subject to the nature and scope of a project, a Project Manager from the AISI shall be the primary technical contact between the AISI and the recipient.

4.9 General Terms

- AISI reserves the right not to engage further with the participants should the Eol not meet or address the AISI's needs.
- Email technical enquiries must be sent to Livison Mashoko - lmashoko@csir.co.za.
- Failure to comply will render your submission non-responsive and disqualified.
- Any form of canvassing by an applicant to any member of staff or supplier, for purposes of influencing the process, will automatically disqualify the applicant from the evaluation process.
- Applicants shall not offer or give any consideration of any kind to any employee or representative of the CSIR/**the dtic**/AISI as an inducement or reward for doing, or refraining from doing, any act in relation to the obtaining or execution of this or any other contract with the AISI.
- The AISI will nominate the applicants' whose Eol are determined to be the most advantageous to the AISI, taking into consideration the technical suitability of the shortlisted participant.
- The AISI reserves the right to cancel this Eol, or not to appoint any participant should the business conditions warrant such a move.
- The term participant, applicant, beneficiary and SMME will be used interchangeably and must be read in context with the sentence in which they are used.

4.10 Medium of Communication

All documentation submitted in response to this Eol must be in English.

4.11 Cost Associated with an Eol Application

Applicants are expected to fully acquaint themselves with the conditions, requirements and specifications of this Eol before submitting their Eol. Each applicant assumes all risks for resource commitment and expenses, direct or indirect, of application preparation and participation throughout the Eol process. The AISI is not responsible – directly or indirectly for any costs incurred by applicants in the preparation and submission of the Eol.

4.12 Validity and Correctness of Responses

The participant confirms satisfaction regarding the correctness and validity of its application.

4.13 Responsibility to Execute and Failure to Comply

The successful applicant hereby accepts full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on him/her under this Eol.

The respondent hereby offers to render all the services described in the attached document (if any) to the AISI on the terms and conditions and in accordance with the specifications stipulated in this Eol documents.

4.14 Verification of Documents

Applicants should check the numbers of the pages to satisfy themselves that none are missing or duplicated. No liability will be accepted by the AISI in regard to anything arising from the fact that pages are missing or duplicated.

4.15 The AISI Reserves the Right to:

- Amend any Eol conditions, validity period, specifications, or extend the closing date and/or time of Eol before the closing date. All applicants, to whom the Eol documents have been issued, will be advised in writing of such amendments on time.
- Verify any information contained in an Eol.
- Request documentary proof regarding any Eol issue.
- Not appoint any applicant.
- Vary, alter, and/or amend the terms of this Eol, at any time prior to the finalisation of its adjudication hereof.

- Cancel or withdraw this EoI at any time, without attracting any liability.
- Cancel or withdraw from this EoI as a whole or in part without furnishing reasons and without attracting any liability.
- Request an applicant to do a presentation to the technical review committee.

5 DISCLAIMERS

- The AISI has produced this EoI in good faith. However, the AISI, its agents and its servants do not warrant its accuracy or completeness. To the extent that the AISI is permitted by law, the AISI will not be liable for any claim whatsoever and howsoever arising (including, without limitation, any claim in contract, negligence or otherwise) for any incorrect or misleading information contained in this EoI due to any misinterpretation of this EoI.
- This EoI is a request for EoI only and not an offer document; answers to it must not be construed as acceptance of an offer or imply the existence of a contract between the parties.
- The AISI makes no representation, warranty, assurance, guarantee or endorsements to any applicant concerning the EoI, whether with regard to its accuracy, completeness or otherwise and the AISI shall have no liability towards the respondent or any other party in connection therewith.

6 EOI APPLICATION DOCUMENTS

6.1 EOI Compliance Check List

To be completed by the applicant:

- I/We hereby undertake to render services described in the attached Eol documents as and when requested to the AISI in accordance with the requirements stipulated in Eol Number: **001/25/04/2025**.
- The following documents will be deemed to form and be read and construed as part of this Eol. The documents are:
 - Eol Terms of Reference (this document).
 - The response to the Eol.
 - Declaration of Conflict of Interest ([Section 6.2](#)).
 - Final Declaration ([Section 6.3](#))
 - Eol Template ([Section 2.2](#)).
- I/We confirm that I/we have satisfied myself/ourselves as to the correctness and validity of my/our Eol application and that the submission covers all the services specified in the documents.
- I/We declare that I/we have no participation in any collusive practices with any other applicant or third party regarding this or any other Eol.
- I/we confirm that I/we am duly authorised to sign this document.

NAME (PRINT)

CAPACITY

SIGNATURE

NAME OF FIRM

DATE

WITNESSES	
1
2

6.2 Declaration of Conflict-of-Interest Form (Applicant)

This declaration of interest must be completed and submitted with the EoI. Failure to do so may result in the elimination of the Applicant's EoI.

Declaration of Conflict-of-Interest - AISI EoI Number: 001/25/04/2025

I/We declare and undertake that:

1. Neither the company or its staff member/s are connected to or have any relationship with anyone employed by the AISI/CSIR/**the dtic** involved in the evaluation of this EOI.
2. If I discover during the application that such conflict exists or might exist, I shall declare it immediately.
3. Any breach by me as the applicant will entitle the AISI at its discretion to disqualify this application.

Yes		No	
-----	--	----	--

If there is any relationship to declare, please state below:

Declaration of Conflict of Financial Interest - AISI EoI Number: 001/25/04/2025

Is the applicant receiving support for similar interventions from any other South African government department or international organisation?

Yes		No	
-----	--	----	--

If yes, please state particulars:

6.3 Final Declaration

I, _____ (THE UNDERSIGNED), DULY AUTHORISED, CERTIFY THAT THE INFORMATION FURNISHED IN THIS EoI IS CORRECT. I ACCEPT THAT THE CSIR MAY TAKE APPROPRIATE ACTIONS, DEEMED NECESSARY, SHOULD THIS DECLARATION PROVE TO BE FALSE.

Signature

Date

Position

Name of applicant

END OF EoI

ANNEXURE A: TECHNOLOGY READINESS LEVELS

TRL 1 Basic principles observed and reported: Transition from scientific research to applied research. Essential characteristics and behaviours of systems and architectures. Descriptive tools are mathematical formulations or algorithms.

TRL 2 Technology concept and/or application formulated: Applied research. Theory and scientific principles are focused on specific application area to define the concept. Characteristics of the application are described. Analytical tools are developed for simulation or analysis of the application.

TRL 3 Analytical and experimental critical function and/or characteristic proof-of concept: Proof of concept validation. Active Research and Development (R&D) is initiated with analytical and laboratory studies. Demonstration of technical feasibility using breadboard or brass board implementations that are exercised with representative data.

TRL 4 Component/subsystem validation in laboratory environment: Standalone prototyping implementation and test. Integration of technology elements. Experiments with full-scale problems or data sets.

TRL 5 System/subsystem/component validation in relevant environment: Thorough testing of prototyping in representative environment. Basic technology elements integrated with reasonably realistic supporting elements. Prototyping implementations conform to target environment and interfaces.

TRL 6 System/subsystem model or prototyping demonstration in a relevant end-to-end environment (ground or space): Prototyping implementations on full-scale realistic problems. Partial integrated with existing systems. Limited documentation available. Engineering feasibility fully demonstrated in actual system application.

TRL 7 System prototyping demonstration in an operational environment (ground or space): System prototyping demonstration in operational environment. System is at or near scale of the operational system, with most functions available for demonstration and test. Well integrated with collateral and ancillary systems. Limited documentation available.

TRL 8 Actual system completed and "mission qualified" through test and demonstration in an operational environment (ground or space): End of system development. Fully integrated with operational hardware and software systems. Most user documentation, training documentation, and maintenance documentation completed. All functionality tested in simulated and operational scenarios. Verification and Validation (V&V) completed.

TRL 9 Actual system "mission proven" through successful mission operations (ground or space): Fully integrated with operational hardware/software systems. Actual system has been thoroughly demonstrated and tested in its operational environment. All documentation completed. Successful operational experience. Sustaining engineering support in place.