STARTER Project Funding
Application and Selection Guidelines

ADDITIVE MANUFACTURING CRC
Australia Makes

Australian Government
Department of Industry, Science and Resources

Cooperative Research Centres Program

CONTENT

1. INTRODUCTION

The Additive Manufacturing CRC (AMCRC) is a $57.5 million Commonwealth-backed Cooperative Research Centre that helps Australian industry unlock the transformative potential of additive manufacturing.

Established in July 2025, AMCRC brings together 12 leading Australian universities, CSIRO, and over 60 industry and membership organisations to co-invest in industry-led R&D projects and education programs that strengthen Australia's manufacturing capability and build a world-class additive manufacturing (AM) ecosystem.

Driven by a bold "Australia Makes" vision, AMCRC focuses on translating cutting-edge AM research into commercial outcomes. Its activities are directed towards accelerating innovation, improving supply chain resilience and sustainability, and supporting the growth of local manufacturing.

Through this collaborative approach, AMCRC aims to deliver new technologies, real-world industry applications, workforce capability development, and a more sustainable manufacturing future that enhances Australia's competitiveness and generates long-term economic, environmental, and social value.

More information about the CRC can be found on the AMCRC website (https://www.amcrc.com.au).

PURPOSE

These guidelines set out the requirements, processes and assessment framework for applicants seeking STARTER Project funding under AMCRC's Collaborative Funding Program.

Specifically, the guidelines describe:

- Purpose and objectives of the program
- Eligibility and assessment criteria
- Application requirements and submission process
- Project consideration and selection process
- Project administration and management, including responsibilities and expectations in relation to the opportunity

The guidelines should be read in conjunction with AMCRC's strategic priorities and four research programs.

Application must be submitted to AMCRC by the lead applicant. Applicants and project partners are encouraged to engage with AMCRC prior to submission to discuss project scope, alignment and eligibility.

Enquires should be directed to:
info@amcrc.com.au.

2. STARTER PROJECT FUNDING

AMCRC's **STARTER Project Funding Program** supports short-term, industry-led projects designed to accelerate early-stage adoption and application of additive manufacturing in Australia.

Focused on rapid, practical outcomes, the program brings together manufacturers, researchers, technology providers, and supply chain partners to test feasibility, de-risk adoption, and build capability across the additive manufacturing value chain. Projects are aligned with AMCRC's vision of creating a sustainable and resilient additive manufacturing future for Australia.

The Starter Project Program has been designed to:

- Build foundational additive manufacturing application capability within industry
- Encourage Industry to access capabilities and capital within university partners
- Support early-stage feasibility and proof-of-concept activities
- Accelerate initial adoption of additive manufacturing technologies
- Address targeted, industry-specific challenges
- Enable rapid knowledge transfer between research and industry
- Foster new industry–research collaborations

AMCRC will invest in focused projects that are led by industry and delivered in collaboration with one or more AMCRC partner universities and/or CSIRO. Projects are expected to be shorter in duration, lower in complexity than CORE projects, and deliver clearly defined, near-term outcomes. Projects should align with one or more of AMCRC's four research programs:

- **PROGRAM 1** – Sustainable manufacturing
- **PROGRAM 2** – Application and materials development
- **PROGRAM 3** – Technology and certified process development
- **PROGRAM 4** – Surface technologies and post processing

Projects should also align with priority sectors such as defence and aerospace, energy, resources, medtech, transport, and advanced industrial manufacturing.

3. SUMMARY OF THE STARTER PROJECT FUNDING OPPORTUNITY

The following provides a summary of the STARTER Project funding opportunity, including criteria:

Valuation	For eligible project expenditure, AMCRC matches industry cash contributions on a dollar-for-dollar basis (i.e. AMCRC co-funds up to 50% of the total cash value of the project). Research organisations that are already partner within the AMCRC are not required to contribute cash.
Eligible Applicants	Companies that have signed a Partnership Agreement with AMCRC by 1 July 2025 will be prioritised for funding, in line with the cash and in-kind contributions nominated in their respective agreements. Subject to funding availability, new companies may apply, provided they are Australian-registered businesses or manufacturers — with a particular focus on supporting the Australian additive manufacturing supply chain.
Eligible Research Partner Organisations (projects must be undertaken with one or more of these partners)	• Charles Darwin University • CSIRO • Curtin University • Deakin University • Flinders University • Griffith University • Monash University • Royal Melbourne Institute of Technology (RMIT) • Swinburne University of Technology (SUT) • Adelaide University • University of Queensland (UQ) • University of Technology Sydney (UTS) • University of Western Sydney
Manufacturing Readiness Level (MRL)	Eligible projects must address MRL 3-8 at commencement maturing readiness over the course of the project. Projects **may include elements of earlier or later MRLs**, provided they meet the overall eligibility and assessment criteria. Refer Appendix B of these Guidelines for the MRL framework, definitions and descriptions.
Commercialisation / Implementation Timeframe	Commercialisation timeframe will be assessed in line with initial maturity of manufacturing readiness and projects/s scope.
Project Activities	Project activities should align with AMCRC's four research programs and enable AM research and technology development, including, but not limited to: PROGRAM 1 - Sustainable manufacturing Support industry in advancing sustainable, inclusive and digitally enabled AM

	• Process optimisation - sustainable sourcing, circular economy, and end-of-life strategies • Sustainable business models and supply chains • Environmental and societal impact studies • Human factors and Industry 5.0 • Application of digital and automation technologies within manufacturing and supply chains PROGRAM 2 - Application and materials development Investigate specialised industrial applications, design optimisation (DfAM) and materials tailored for defence, transport and healthcare • Novel materials (metals, polymers, composites, and construction materials) • Optimisation of key properties (e.g., processability, strength, durability, and thermal performance) • Upcycling and local production of feedstocks PROGRAM 3 - Technology and process development Support industry to integrate data collection, simulation, modelling and new production and post-production techniques • Smart AM technologies and processes • Validation and certification • Sovereign manufacturing capabilities • New energy sources PROGRAM 4 - Surface technologies and post-processing Support the development of surface treatments, finishing, and coating technologies • Durable and functional surface modifications • Repair methods to restore surfaces to design or operational performance standards • Automation of finishing processes • Post-processing
Additional merit considered	Projects which are aligned with, or complementary to, the National Reconstruction Fund priority sectors and Australia's National Science Priorities.
Project (new) Intellectual Property (IP)	Project IP will be owned by the Industry Lead Partner(s), unless otherwise agreed by the project parties. AMCRC does not seek ownership of any new IP created through funded projects.
Background Intellectual Property (IP)	Background IP, and any improvements to that background IP, will remain the property of the party or parties that contributed the IP.
Eligible Project Expenditure	Cost of employee salaries plus up to 30% on-costs (such as superannuation and other employment costs, where these costs are directly attributable to the research project(s) and incurred in undertaking research activities).
	Operating costs including for example the cost for consumables, materials, prototypes, prototype tooling, software licenses, rental or hire of dedicated tools or systems, energy and utilities.

	Operating and 'out of pocket' costs for directly related and relevant project management
	Operating and 'out of pocket' costs for directly related and relevant travel, marketing, communications, etc
	Operating cost directly attributed to % of faculties access charges to conduct the direct research.
Ineligible Expenditure (Only considered as Other In-Kind)	Costs for initial IP protection and utilisation / commercialisation planning.
	Costs for buildings and facilities, or any purchase cost of capital equipment or production tooling
	Costs for the involvement of tenured management, senior staff, or key researchers otherwise directly employed by the research organisation in the project.
	Costs to reimburse any Partner for in-kind contributions
	Costs to pay a Partner for indirect costs of research in relation to CRC programme-funded staff located in their organisation; or
	Cost for the indirect support of research conducted overseas.
	Cost for Research Partner research costs
AMCRC Matching Cash Contribution	Overall investment level: Minimum: $20k – Maximum: $75k
Project Term:	Projects are expected to be completed within a 3 – 12 month timeframe.
In-kind Contribution:	AMCRC requires all in-kind contributions to be identified, determined and appropriately valued by the project parties. The combined value of Research and Industry in-kind contributions (including staff and other in-kind) must be no less than 1.5 time the value of the total project cash contribution.
Operational Expenses:	Operational expenses should not exceed 30% of the total project cash. However, costs of up to 50% may be considered where required for specialised materials, testing, or processes.

4. APPLYING FOR STARTER PROJECT FUNDING

STARTER Project Funding is subject to the continued availability of Commonwealth funding provided to AMCRC.

STARTER Project funding cannot be used to support activities or costs already funded through other government sources, including Commonwealth, State or Territory programs.

Project applications may be submitted at any time, as advertised on the AMCRC website. To be assessed, applications must be complete, compliant and include all required supporting documentation and financial information.

Project application must meet AMCRC's project funding and selection criteria and are subject to AMCRC approval.

The STARTER Project application and assessment process will typically involve a single assessment stage. AMCRC will endeavour to advise applicants of the outcomes within 21 days of receiving a complete and compliant application.

Successful applicants will be required to enter into a formal Project Funding Agreement with AMCRC and relevant project parties. The agreement will set out the terms and conditions of funding, including recipients obligations and compliance requirements.

5. OPERATING PRINCIPLES FOR STARTER PROJECTS

The management framework and budget structures applicable to STARTER Projects are underpinned by a set of key operating principles, outlined below. These principles are derived from the provisions of the AMCRC Commonwealth Agreement, Partner's Agreement and other relevant AMCRC governance and business processes.

5.1. Industry-led Project

Industry partners define a R&D problem aligned with one or more of AMCRC's four Research Programs, which collectively span the additive manufacturing value chain. This provides a clear foundation for research partners to develop a collaborative research plan and budget that addresses the identified problem while delivering measurable outcomes within the project timeframe.

Overview of AMCRC's Research Programs

Program 1. Sustainable Manufacturing	1.1 Sustainability-ESG Frameworks
	1.2 Human Factors and Industry 5.0
	1.3 Digital Ecosystem
	1.4 Industry Transformation
Program 2. Application and Materials Development	2.1 Advanced Metal Alloys
	2.2 High Performance Polymers
	2.3 Sustainable Materials
	2.4 Construction Materials
Program 3. Technology and Process Development	3.1 Smart AM Technologies
	3.2 Validation and Certification
	3.3 Sovereign Manufacturing Capabilities in Feedstock and Post Processing
	3.4 Optimised Energy Source Application
Program 4. Surface Technologies and Post Processing	4.1 Durable and Functional Surface Technology
	4.2 Repair and Remanufacture of Components
	4.3 Bioactive and Low Environmental Impact Surface Coatings
	4.4 Post Processing of AM Parts

5.2. Project Funding Criteria

AMCRC maintains oversight of the delivery of agreed milestones across the whole investment portfolio. Each research project is governed by an individual project agreement, which sets out the applicable terms and conditions.

New **intellectual property (IP)** generated through the project will be owned by the industry lead partner, unless otherwise specifically agreed by the project parties. Background IP, and any improvements to Background IP, will remain the property of the party or parties that introduced the IP, as recorded in the project IP register.

Each project must appoint an accountable **Research Leader (Research Partner)** and a **Project Leader** (Industry Partner). The key accountability of the research partner(s), for an industry-led project, is the definition and execution of the approved project plan, the management and delivery of the agreed project outcomes in accordance with the project agreement.

Projects are structured around a series of defined milestones, which, where possible, are aligned with **Manufacturing Readiness Levels (MRLs)** (see APPENDIX B). Research partner(s) receive milestone-based payments following the approval of quarterly progress reports that demonstrate satisfactory completion of projects milestones. Progress reports must be submitted by the Research Leader and approved by the Project Leader (an industry representative) and AMCRC. Payments are made quarterly in arrears in-line with the terms of the Project Agreement and are subject to approval of the required reports.

AMCRC project funding enables industry and research partners to **co-invest in highly valued, collaborative partnerships** that address identified capability gaps. Each project must intend to strengthen Australia's additive manufacturing capabilities, positively impact Australian manufacturing and importantly deliver marketable outcomes that enable access to broader Australian, and potentially global, supply chains.

Industry partners are invoiced monthly as specified in the Project Agreement and must pay AMCRC in advance of costs being incurred for agreed and budgeted research activities. Payment must be received no later than seven days prior to the end of the previous payment term to ensure coverage of upcoming project research costs.

6. PURPOSE OF THE PROJECT APPLICATION

To initiate the project selection process, a project application must be completed and submitted by the Project Leader (Research Partner) using the template which accompanies these guidelines. The template comprises sections that align with the requirements of the Project Agreement and the STARTER Project Funding and Selection Criteria.

The project application must clearly

- articulate industry demand for the proposed project outcomes
- specify the technology and manufacturing readiness of the project
- explain how the project will contribute to broader objectives, including knowledge diffusion, business innovation and/or industrial transformation
- provide sound justification for the investment, including estimated costs and anticipated benefits to the Research Partner and, where relevant, to SMEs, the wider manufacturing sector and the Australian economy

The project application must also outline a clear implementation strategy.

7. PROJECT SELECTION CRITERIA

Each project application will be assessed against defined selection criteria set out in APPENDIX A to these guidelines.

AMCRC will only consider industry-led projects that:

- Commence at MRL 3-4 or higher, and
- Clearly demonstrate how the project will advance the material, technology or processes in line with manufacturing level overviews (see APPENDIX B).

Project must include milestone and outcomes that are aligned with AMCRC Research Programs and contribute to AMCRC's overarching objectives and performance measures, including fostering collaborative investment in additive manufacturing and innovation that support the transformation of the Australian manufacturing sector.

Project applications that do not adequately address the selection criteria, or are otherwise incomplete or non-compliant, will be rejected or returned for revision prior to assessment by AMCRC.

The project applications are assessed using a scoring - based assessment process.

In determining whether a project application proceeds to contracting and funding, the assessors will consider:

- alignment with AMCRC's objectives and research programs
- completeness and quality of the project application,
- the level of funding requested, and
- any other considerations deemed relevant

Further details on project selection, management and reporting processes are provided in APPENDIX C to these guidelines.

Following review and assessment of all project applications, AMCRC management will prepare a report for the AMCRC Managing Director including recommendations regarding funding support.

8. PROJECT AGREEMENT

Project partners will be required to enter into a formal and legally binding Project Agreement with AMCRC. The Project Agreement will set out the terms and conditions under which funding is provided, including (but not limited to) payment schedules, project management and risk management requirements, IP ownership, performance monitoring, reporting obligations, audit and record-keeping requirements, insurances and indemnities. The Project Agreement will incorporate AMCRC's General Terms and Conditions, which are non-negotiable.

A template Project Agreement is available to prospective applicants upon request.

9. PROJECT MANAGEMENT ROLES AND STRUCTURE

The Project Management Committee (PMC) for the project will be responsible for project governance at the research and project team level. The PMC oversees the delivery of the project and monitors the research progress against timelines, milestones and budgets.

9.1. PMC Composition

The PMC will comprise if the following members:

- Project Leader
- Research Leader
- AMCRC Representative

9.2. PMC Meetings

PMC meetings must be held once per quarter (typically mid- and end-of-quarter). The meetings can be conducted either in person or via teleconference or video call.

AMCRC's Managing Director may convene a PMC meeting at any time for the purposes of obtaining an status update or confirming progress of the project.

9.3. Project Management and Reporting

The Research Leader will be responsible for the day-to-day project management within the research organisation. The Research Leader is expected to act as the project champion, providing leadership to the project team and maintaining regular, clear and consistent communications with all project partners. The Research Leader will work collaboratively with the PMC.

In addition to participating in the PMC, AMCRC's research management team will administrate the project in accordance with the AMCRC Project Management Guidelines. This includes:

- providing access and maintenance of the AMCRC project reporting platform,
- reviewing project reports and milestones submissions,
- monitoring progress, risk and issues,
- reporting to the Commonwealth as required, and
- coordinating PMC meetings, where necessary.

The project management framework / structure, including schedules for reporting, reporting tools and the responsibilities of project teams and leaders, is detailed in the AMCRC Project Management Guidelines.

This document is available upon request from AMCRC and is typically shared with project partners following the approval of the project application and during the development of the formal Project Agreement.

Once the Project Agreement is signed and officially executed, a project kick off meeting will be hosted where all project management aspects are discussed.

All project reporting must be completed by project partners using AMCRC's cloud-based platform. AMCRC will provide login credentials and other instructions regarding the use of this platform.

APPENDIX

APPENDIX A: STARTER Project Selection Criteria

Applicants must complete all sections and respond to each question set out in the project application template, ensuring that responses are directly aligned with the relevant questions and assessment criteria.

AMCRC reserves the right to request additional information or clarification as required to assess any application.

Applications will be assessed in accordance with the following selection criteria:

Assessment Criteria	Requirements	Weighting (Points)
WHY, WHAT AND HOW		
Problem / Opportunity	*What problem, gap, or opportunity will this project address - The response should specifically address the industry problem, gap, or opportunity that the proposed science, engineering, and research will aim to solve.and which cannot be known or determined in advance*	6
Outcomes	*Describe the key outcomes and explain how they will address the identified problem or opportunity within the industry partner's business context.*	6
R&D Plans Strategic Fit with AMCRC?		
Advanced Technologies and Innovations?	*Describe the advanced technologies and/or innovative approaches that will be adopted, and explain what makes this project unique.*	1
Sustainable Manufacturing	*How will the R&D contribute to sustainable manufacturing and digital transformation for the Industry Partners business if outcomes are adopted*	1
Collaboration	*Outline how you will encourage effective collaboration between industry and university partners.*	1
PROJECT BENEFITS		
Benefits to Industrial Partner and Broader Industry	*What is the anticipated return on investment (ROI), and commercial opportunity and broader benefits to the industry partner (e.g. market size, share, export potential, job creation, revenue generation, and IP utilisation)?*	2
Benefits to 'Others'	*What benefits will the project provide to broader Australian manufacturing and the community (e.g. supply chains, consumers, the public, and research organisations)*	2
Industry Partner Priority	*Provide evidence beyond the commitment to research and development activities within this application that this project is a strategic priority for the industry participant(s) (e.g. leadership buy-in, allocation of resources, financial commitment)?*	2
ADOPTION & UTILISATION		

Adoption Strategy	*Describe the Industry Partner's plans to adopt the technology within their business, including where and how it will be used?*	2
Adoption Timeframe and Investment	*What are the key steps, timeframe, and investment needed post-project to take the work from nominally prototype to real world application?*	2

APPENDIX B: Definition of Manufacturing Readiness Levels (MRLs)

Manufacturing Readiness Level (MRL) is a measure developed by the United States' Department of Defence (DOD) to assess the maturity of manufacturing readiness, similar to how Technology Readiness Levels (TRL) are used for technology readiness. The intent was to create a measurement scale that would serve the same purpose for manufacturing readiness as TRLs serve for technology readiness – to provide a common metric and vocabulary for assessing and discussing manufacturing maturity, risk and readiness. They can be used in general industry assessments, or for more specific applications in assessing capabilities of organisations, possible suppliers, etc.

MRLs are quantitative measures used to assess the maturity of a given technology, component or system from a manufacturing perspective. They are used to provide decision makers at all levels with a common understanding of the relative maturity and potential risks associated with manufacturing technologies, products, and processes being considered. Manufacturing risk identification and management should begin at the earliest stages of technology development and continue vigorously throughout each stage of a program's life-cycles.

MRLs were designed with a numbering system to be roughly congruent with comparable levels of TRLs for synergy and ease of understanding and use.

MRLs provide a common language and standard, for example, in:

- assessing the manufacturing maturity of a technology, product, or manufacturing process
- understanding the level of manufacturing risk to produce a system or transitioning a technology into a system
- integration of manufacturing into the acquisition process and milestone decisions
- establishing the agenda for manufacturing risk management within existing Systems Engineering processes and technical reviews
- achieving manufacturing maturity at critical acquisition decision points
- pinpointing potential risk areas through independent Manufacturing Readiness Assessments

Manufacturing Readiness Assessments (MRAs) address these unanswered questions in order to reduce manufacturing risk. However, it still does not address the question of whether the product is reliable or maintainable.

AMCRC encourages partners of TRL and MRL terminology and milestones in their project plans. This supports:

- a common language and consistent performance measures across projects
- clear articulation of and alignment with AMCRC's focus areas for both research projects and business and industry transformation projects
- effective development and management of IP Utilisation Plans, outcome planning and measurement and project reporting.

Further information is available at:
https://www.dodmrl.com/MRL_Deskbook_2022__20221001_Final.pdf

MANUFACTURING READINESS LEVELS – STARTER PROJECT FOCUS IS MRL4 – MRL7

	Enabling Science & Technology Cabablility			Materiel Solution Analysis	Technology Maturation & Risk Reduction		Engineering & Manufacturing Development		Production Deployment	
	MRL1-3			MRL 4	MRL 5	MRL 6	MRL 7	MRL 8	MRL 9	MRL 10
Sustainable Industry Base	Global trends in emerging Industries and sustainability identified	Identified gaps in industry base and sustainability	Sustainability sources and industry capabilities identified, addressing system concepts, social factors, and gaps.	Industry base and sustainability capacities assessed, with key processes and manufacturing technology initiatives defined.	Industry base analysis begun to identify sustainable sources and mitigate risks, with manufacturing technology in development.	Industrial base analysis confirms sustainable capacity, supporting articles in a production-relevant environment.	Industry base sustainability analysed, with manufacturing articles demonstrated in a representative environment.	Industry sustainability analysis complete; ready for implementation. Primary manufacturing validated on the pilot line.	The industrial base's sustainable capacity and capability are established to support full-rate production.	Industry base supports sustainable full-rate production with ongoing improvements.
Application & Design	Technology-production hypotheses developed; design and capability gaps identified.	Studies test technology impact, identify producibility factors, and analyse solution feasibility.	System concepts evaluated for manufacturability and producibility through experiments, modeling, and simulations. Performance, lifecycle, technical requirements, and design trade-offs assessed.	Initial producibility assessment completed; form, fit, and function constraints identified. Strategy developed to validate manufacturing and manage lifecycle risks, with key performance and system criteria defined.	Key technology producibility and manufacturability initiated. Design trades assess processes, with performance requirements supporting preliminary design and prototype release.	Technology performance and producibility assessed, guiding manufacturing plans and design choices. DfAM efforts started, with requirements, subsystem data, and mitigation plans supporting reviews.	Producibility trade studies completed. DfAM and manufacturing reassessments ongoing. Design supports critical review. Essential manufacturing data released. Risks identified with mitigation plans.	System-level producibility improvements implemented, with risks and issues managed. Detailed design of features and interfaces complete. All essential product data for manufacturing released. Pilot line demonstrations	Prior producibility improvements analysed for low-rate initial production. Major design features and configurations stable. System design validated, and low-rate production meets quality standards.	Design producibility improvements demonstrated in full-rate production. Ongoing process improvements. Product design stable.
Materials	New material properties identified for research, with hazardous materials and safety procedures in place.	Potential effects of new material properties on design, manufacturability, and quality predicted, with supply chain gaps and regulatory requirements assessed.	New material effects on design, manufacturability, and quality validated through experiments and models. Safety risks identified, alternatives evaluated, and handling procedures applied.	New materials and components demonstrated in the lab. Quantities, lead times, safety, and compliance risks addressed, with handling and disposal procedures applied.	Materials produced in a prototype environment, with availability risks addressed for long-term production. Gaps in special handling identified and processes demonstrated in the lab.	Material maturity verified through demonstrations. Specifications, properties, safety, and handling procedures confirmed in production, with manufacturing assessment for	Material maturity confirmed for pilot line build. Specifications approved, with safety compliance and handling demonstrated. Work instructions for pilot line and material handling provided.	Material validated for low-rate production. Specifications stable. Supply chain secured, including secondary sources. Safety and handling demonstrated at pilot scale.	Materials controlled to specification in low-rate production and validated for full-rate. Supply chain secure, with procurement schedules and safety/handling demonstrated for full-rate	Materials controlled to specifications in full-rate production. Risks mitigated, with a proven supply chain. Safety and handling demonstrated at full-rate production.
Process Capability & Control	Modeling and simulation tools identified to support manufacturing and quality. Hypotheses developed on process variables, stability, repeatability, and future manufacturing yields.	Modeling and simulation initiated, with studies on cause-effect, yields, and rates. Initial process approaches identified.	Manufacturing and quality gaps identified through modeling and simulation. Cause-effect relationships and critical control variables validated in the lab. Initial yield and rate estimates for system concepts determined.	Modeling and simulation defined manufacturing and quality requirements. Critical process maturity assessed, with capability requirements, improvement plans, and yield assessments completed. Gap closure strategies identified.	Modeling identified component constraints; process maturity assessed in production. Capability requirements for pilot, low-rate, and full-rate production set, with yield and rate targets. Issues identified and improvement plans developed.	Modeling and simulations identified subsystem/system constraints. Manufacturing processes demonstrated, with capability data and yield evaluations refining requirements and informing the improvement plan.	Modeling identified system constraints and improvement opportunities. Manufacturing processes demonstrated in a production environment. Process capability data collected, and yields evaluated against pilot line targets to inform the improvement plan.	Simulation verified by pilot line build, demonstrating low-rate production feasibility. Process capability data met targets, refining requirements for low and full-rate production. Pilot targets achieved, and yield rates for full-rate production refined. Improvement plans	Simulations verified low-rate and full-rate production requirements. Stable, controlled manufacturing processes meet low-rate objectives. Variability experiments show full-rate impact, with yield and rate targets achieved.	Simulations verify and manage full-rate production builds. Manufacturing processes are stable, controlled, and capable, meeting full-rate production objectives. Yield and rate targets achieved, with ongoing improvements.
Product Quality	State-of-the-art quality metrology surveyed; hypotheses on technology variables' impact on quality developed.	Studies tested technology variables' impact on quality, identifying key factors like materials, processes, and capability limitations.	System concept quality evaluated via experiments, modeling, and simulation. Initial quality requirements, risks, and inspection technologies identified.	Product quality, inspection strategy, and risk mitigation evaluated and documented in engineering plans.	Roles defined for acceptance testing, inspections, and statistical process control in prototypes.	Key characteristics management approach defined, with initial requirements set for acceptance testing, inspections, and test	Quality data analysed to guide improvements; control plans finalized for key characteristics. Test and inspection plans in development for engineering	Key characteristics managed with controls (e.g., SPC, audits, corrective actions). Pilot line data meets requirements, and test/inspection plans validated for production units.	Quality data analysed to guide improvements; control plans finalized for key characteristics. Test and inspection plans in development for engineering	Key Characteristics controlled at rate. Results achieve targeted statistical level on all Key Characteristics. Results reflect continuous improvement.
Manufacturing Workforce	Workforce skill sets to support emerging trends in manufacturing and technology surveyed	Workforce skill sets to support emerging trends in manufacturing and technology evaluated	Workforce skill set reqiorements for system concepts identified. Workforce skill set gaps identified	Skill sets identified, plans developed, and alternatives analysed. Training needs defined, and workforce availability assessed to reduce technology risks.	Skill sets identified, and plans developed for prototype and production needs. Certification and training requirements established.	Manufacturing workforce skills available, with resources and initial plans for pilot line and production.	Manufacturing resource requirements identified, with plans for pilot line and Low Rate Initial Production workforce. Pilot line workforce trained in a production environment.	Manufacturing resource requirements identified, with plans for Low Rate Initial Production and Full Rate Production workforce. Personnel trained on the pilot line.	Low Rate Initial Production personnel requirements met, and Full Rate Production workforce plan implemented.	Full Rate Production personnel requirements met, with workforce skills maintained despite local attrition.
	TRL 1-3			TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9	
Definition	Basic principles observed and reported	Technology concept and/or applications formulated	Analytical and experimental function and/or characteristic proof of concept	Component and/or breadboard validation in a laboratory environment	Component and/or breadboard validation in a relevant environment	System/subsystem model or prototype demonstration in a relevant environment	System prototype demonstrated in an operational environment	Actual system completed and qualified through test and demonstration	Actual system proven through successful mission operations	

APPENDIX C: AMCRC Project Preparation and Selection Processes