Maturation and Prototyping Matching Grant
Qualifications and Processing Procedures
Effective November 1, 2019

Chartered in 1983 by the State of South Carolina as a public, non-profit corporation, SCRA fuels South Carolina's innovation economy by accelerating technology-enabled growth in research, academia, entrepreneurship and industry. SCRA supports its stakeholders in the following industry sectors: Advanced Materials/Manufacturing, Life Sciences, and Information Technology.

Maturation and Prototyping Grants

SCRA awards up to a total of $100,000 in matching grant funds to South Carolina's institutions of higher education to expand the impact of institutional funds directly invested in the maturation of a technology or the development of prototypes based on intellectual property owned by the institution. Prototypes refer to preliminary models of a technology, whether functional or representative.

Eligibility Criteria

- Applicants must be a South Carolina institution of higher education, including research universities, comprehensive teaching universities and colleges, and technical colleges.
- Requests for funding must be matched by funds from the applicant institution's maturation fund or other direct institutional dollars. The matching funds must have been dispersed within 36 months of application submission date. Federal funding, in-kind matches, and patent expenses are not eligible as matching funds.
- The applicant must have exclusive rights to license all inventors' interests in the existing or potential intellectual property associated with the project.
- Performance period will be no longer than twelve (12) months after project funding.
- Prototyping capability and/or bench testing must be sourced through a South Carolina-based technical college.
- Projects must fit within one or more of SCRA's industry verticals: Life Sciences, Information Technology, and Advanced Materials/Advanced Manufacturing.

Funding Amount

- Each application may request funds ranging from $5,000 to $15,000, inclusive of 20% indirect costs (if applicable)
- Maximum funding per institution: $30,000 per fiscal year

  Note: Regarding applications with inventors from multiple institutions, such requests will count on a pro-rata basis towards each institution's annual $30,000 cap.

Use of Funds

- Funds must augment institutional funds and expand the development of technologies based on intellectual property from South Carolina's academic institutions.
- Applicants are encouraged to work with contractors and consultants within South Carolina. SCRA will assist with locating South Carolina-based providers, if requested. Please refer to attached chart *Prototyping Capabilities within South Carolina Technical Schools*.
- The funds may not be used for rent, licensing fees, legal fees, patent expenses, or reimbursement of past expenses.

Application Process

1. For projects that have been previously vetted through an institution's maturation fund review process, funding requests must include the following:
    a. **Maturation and Prototyping Matching Grant Application**
    b. **Statement of Commitment** or **Notice of Award** for institutional funding
    c. **Copy of Grant Application** as funded by the institution
    d. **Quotes** for services and/or equipment with delivery date, if applicable

    For projects from institutions that do not have a formal maturation fund, please contact academicprograms@scra.org before submitting an application.
2. Combine application and attachments into PDF file and email to academicprograms@scra.org.
3. Submissions must come from a Technology Transfer Office (TTO) or the most senior research administrator (e.g. Vice President of Research) if the institution does not have a TTO. Institutions are responsible for the technical review and prioritization of applications from their institutions.

Review Process

- SCRA will review applications on a rolling basis for compliance/eligibility and provide notice of award to the applicant institution within 30 business days.
- Eligible applications from all institutions will be funded in the order in which they are received, beginning November 1, 2019, until the full $100,000 has been awarded.
- To maximize the likelihood of receiving an award, we encourage the submission of applications as soon as possible.

Reporting Requirements

- A final report must be submitted within thirty (30) days of the end of the performance period. The final report will outline results of the project, including:
    - Milestones and deliverables achieved,
    - Publications resulting from the project,
    - New IP generated during the project,
    - Plans for pursuing follow-on funding (both academic and attributable to a startup),
    - New collaborations (both commercial and academic), and
    - New startups and jobs that have resulted from the project.
- Approval of the SCRA Program Manager (academicprograms@scra.org) is required for Changes in the project scope (e.g., changes to budget, milestones, and/or deliverables).
- Acknowledgement of SCRA as a funding source is required in all publications resulting from the performance of the funded project.
- SCRA will follow longitudinal progress of the technology and reserves the rights to request brief annual progress reports for 3 years after performance period.

Awardee Institution Requirements

- Awardee institutions must provide the necessary facilities and infrastructure for the research and accept the conditions of the award.
- If the research involves either animal or human subjects, IRB approval and Institutional Animal Care and Use Committee numbers are not required at the time of application submission but must be provided for final signature of the grant agreement.

- Institutions must assure compliance with the prevailing national guidelines for animal and human studies and provide proper oversight of the grant funds.
    - Institutions must safeguard the rights and welfare of individuals who participate as subjects in research activities by reviewing proposed activities through an Institutional Review Board (IRB) as specified by the U.S. Department of Health and Human Services Office for Human Research Protections, HHS OHRP.
    - Institutions must assure appropriate governance of animal studies.
- Awardee institutions must adhere to current federal and state regulations, including those regarding financial conflict of interest and research misconduct.

Intellectual Property Guidelines

- SCRA does not claim any rights whatsoever to patents, copyrights, trademarks or any other intellectual property (IP) created as a result of work sponsored under this grant.
- On all aspects of IP, principal investigators are encouraged to confer with their technology transfer office or equivalent office for guidance.
- Awardees should take measures to ensure protection of any IP in accordance with federal and institutional requirements.

Confidentiality and Release of Information

Confidentiality is important to SCRA, therefore please do not include confidential information in grant applications. The Project Summary, applicant's name, and institutional affiliation for awarded applications may be used by SCRA for promotional and marketing purposes at SCRA's sole discretion. Any potential promotion and marketing will be coordinated with the Principal Investigator.

All documents submitted to SCRA, including applications, are public records governed by South Carolina Code and applicable provisions of the General Statutes protecting confidential information. When specific information in an application is regarded by the applicant and by law as confidential and not subject to disclosure under the South Carolina Freedom of Information Act, the applicant should specifically and clearly designate it as such in writing on that portion of the application in which the information appears. An applicant should provide an explanation for why particular information is regarded as confidential. Applications should not be indiscriminately marked as confidential. However, the provisions of the South Carolina Freedom of Information Act shall govern the release of information.

For Additional Information

Inquiries about Maturation and Prototyping grants should be addressed to:
Program Manager, SC Academic Innovations
academicprograms@scra.org

SCRA

PROTOTYPING CAPABILITIES WITHIN SOUTH CAROLINA TECHNICAL SCHOOLS

	Denmark Technical College	Florence Darlington Technical College, SiMT	Greenville Technical College	Orangeburg-Calhoun Technical College	Technical College of the Lowcountry	Tri-County Techical College	Trident Tech	York Technical College
What types of prototyping services can you provide?	We have a Dimension SST 1200es	See attached	We can provide services with the 3-D printing and CNC department.	Prototyping services related to engineering design (CAD), 3D printing, 3D scanning, machine tooling, and CNC	It would depend on the current trends of the workplace. This would definitely be a project-based opportunity for students to create as part of their course curriculum and assignment requirements.	We have the capacity to offer prototyping services in engineering design, CNC, and 3-D printing.	Constructing $80M South Carolina Aeronautical Training Center. Also focused heavily on advanced manufacturing. Envision being able to provide prototyping services in Additive Manufacturing, CNC Machining, and Composites.	3D printing and protoype printing
What sort of materials are you able to work with?	Plastic Filaments	See attached	We are able to work with plastic and aluminum material.	Steel, brass, plastics, and aluminum	Electronics, HVAC, Plumbing, Solar Panel, Electrical Engineering, Building Construction	We are able to work with plastics and metals.	Composites, metal machining, additive manufacturing in stainless steel, thermoplastics, polymers, and Nylon 12 carbon fiber.	
Are there any limitations associated with materials, timelines, equipment or personnel?	One machine	Christmas break	There are no limitation associated with material, equipment and personnel. We only have limitation with timelines.	Limitations would be dependent upon the type of prototyping service requested. There are not any limitations to review and consider requests at any time.	We would have the space to create a prototype, but limited on resource materials and equipment.	Most equipment is used for instruction, so there are limitations in the amount of time we can dedicate to prototyping services.	The building is scheduled to be open the fall of 2019. It will take us some time to get up and running, so we should be able to do some prototyping early to mid-2020.	
What is the typical lead time to deliver a prototype?	Determined by Size and Make	1-5 days for 3D printing, depending on the size, quantity, workload, and the process involved. Machining may be 2-5 weeks, depending on size, quantity, processing and workload.	Estimated lead time on past project is two to three months.	Lead time would be dependent in the project or prototype being produced.	N/A. Depends on product to develop.	The lead time is dependent on the complexity of the project. It is difficult to answer this question.	This is yet to be determined. However, our business model includes rapid prototyping and limited production, so our goal is to be as accommodating as possible to the customer.	

ADDITIVE MANUFACTURING CENTER

The SiMT provides world class services to businesses, organizations, educational institutions, entrepreneurs, inventors, and governmental entities. Our additive manufacturing capabilities include the ability to build with an array of materials: durable plastic and metal parts and prototypes suitable for real-world testing. Our additive technologies offer a new set of solutions to swiftly improve conventional manufacturing, prototyping, and product development.

EOS M290

Create sintered parts from a wide range of metals.

Build Area: 9.8" x 9.8" x 11.8"

STRATASYS CONNEX 500

Ability to build a fully assembled part with multiple materials at the same time, combining both rubber and rigid polymers.

Build Area: 19.7" x 15.7" x 7.9"

3D SYSTEMS SINTERSTATION PRO 230

Features automated powder handling and a large build volume; designed to offer repeatable part quality.

Build Area: 19.5" x 19.5" x 29"

3D SYSTEMS SINTERSTATION HiQ

SLS printer with the ability to handle medium-sized projects, utilizing a wide range of nylon powders.

Build Area: 12" x 10" x 17"

FARSOON EFORM

Designed to have the functionality and power of an industrial additive manufacturing (AM) machine.

Build Area: 8.6" x 8.6" x 12.6"

3D SYSTEMS iPRO 9000

Ability to build a fully assembled part with multiple materials at the same time, combining both rubber and rigid polymers.

Build Area: 25" x 29" x 21"

3D SYSTEMS ProX 800

Delivers part accuracy and surface quality equal to the iPro 9000, with a more advanced material.

Build Area: 25" x 29" x 21"

STRATASYS FORTUS 900MC

Quickly build strong, accurate tools and prototypes using real world thermoplastics.

Build Area: 36" x 24" x 36"

EOS M290 (DMLS)

Material	Appearance	Tensile Strength	Elongation at Break (%)	Hardness
EOS StainlessSteel 316L	Metallic	540-640 MPa	40-50%	85 HRB
EOS Aluminum AlSi10Mg	Metallic	440-480 MPa	7-11%	114-124 HBW

Stratasys Connex 500

Materials (Rigid)	Appearance	Tensile Strength	Elongation at Break	Heat Deflection	Water Absorption %
VeroWhite Plus	White	7,250-9,450 PSI	15-25%	113-122 F	1.1-1.5%
VeroBlack Plus	Black	7,250-9,450 PSI	15-25%	113-122 F	1.1-1.5%
Vero Blue	Blue	7250-8700 PSI	15-25%	113-122 F	1.5-2.2%
Vero Gray	Gray	7,250-9,450 PSI	15-25%	113-122 F	1.1-1.5%
Rigur	White	5800-6500 PSI	20-35%	120-129 F	
VeroClear	Clear	7,250-9,450 PSI	10-25%	113-122 F	1.1-1.5%
RGD 525	Ivory	10,000-11,500 PSI	10-15%	167-176 F	1.2-1.4 %
ABS-Like	Green/Beige	8,000-8,700 PSI	25-40%	198-203 F	Not for Water
Med610	Clear				

Materials (Rubber-like)	Appearance	Tensile Strength	Elongation at Break	Shore Hardness	Special Notes
Tango Plus	Yellow-Clear	115-220 PSI	170-220%	26-28 Shore A	
Tango Black Plus	Black	115-220 PSI	170-220%	26-28 Shore A	*Combining these materials with a rigid plastic can yield multiple Shore A Values*
Tango Black	Black	115-350 PSI	45-55%	60-62 Shore A	
Tango Gray	Grey	435-725 PSI	45-55%	73-77 Shore A	

3D Systems Sinterstation Pro 230 (SLS)

Material	Appearance	Tensile Strength	Elongation at Break (%)	Heat Deflection	Hardness
Duraform PA (Nylon)	Yellow-White	6,237 PSI	14%	356 F	73 Shore D

3D Systems Sinterstation HiQ (SLS)

Material	Appearance	Tensile Strength	Elongation at Break (%)	Heat Deflection	Hardness
Duraform PA (Nylon)	Yellow-White	6,237 PSI	14%	356 F	73 Shore D
Duraform GF *(Glass-Filled Nylon)*	White-Grey	3,916 PSI	1.40%	354 F	77 Shore D

Farsoon Eform (SLS)

Material	Appearance	Tensile Strength	Elongation at Break (%)	Heat Deflection
FS3300PA	White	6,671 PSI	36%	295 F

3D Systems iPro 9000 (SLA)

Material	Appearance	Tensile Strength	Elongation at Break (%)	Heat Deflection	Hardness
Accura 25	Beige	5,540-5,570 PSI	13-20%	136-145 F	80 Shore D

3D Systems ProX 800 (SLA)

Material	Appearance	Tensile Strength	Elongation at Break (%)	Heat Deflection	Hardness
Accura Xtreme	Grey	2,450-2,900 PSI	25-30%	97-100 F	70-74 Shore D

Stratasys Fortus 900MC (FDM)

Material	Appearance	Tensile Strength	Elongation at Break	Heat Deflection	Hardness
ABS	Ivory-Black	5,200 PSI	4%	204 F	R 109.5
Polycarbonate	White	9,800 PSI	5%	280 F	R 115
PC-ABS	Black	5,900 PSI	6%	230 F	R 110
Nylon 12	Black	7,000 PSI	30%	206.6 F	
PPSF	Tan	8,000 PSI	3%	372 F	M86
Ultem 9085	Tan	10,400 PSI	6%	307 F	

SIMT ADVANCED MACHINING CAPABILITIES

Vertical milling machines:	**Platforms:**		
Haas VF4	X Axis - 50”	Y Axis - 20”	Z Axis - 25”
Haas VF6	X Axis - 64”	Y Axis – 32”	Z Axis – 30”
CNC Lathes:	**Capacities:**		
Haas DS30SSY	Maximum Cutting Diameter – 16”	Maximum Cutting Length – 23”	Bar Capacity – 2”
EMCO Hyperturn 45	Maximum Cutting Diameter – 2”	Maximum Cutting Length – 8”	Bar Capacity – 2”
EMCO Hyperturn 645	Maximum Cutting Diameter – 2”	Maximum Cutting Length – 8”	Bar Capacity – 2”
Water Jet:	**Size:**		
OMAX 55100	Maximum Cutting Table – 4’ x 8’		