

TRAINING AND SERVICES CATALOG

AIG – Professional Services



Application Innovation Group (AIG)

Solve Your Biggest Design and Production Challenges

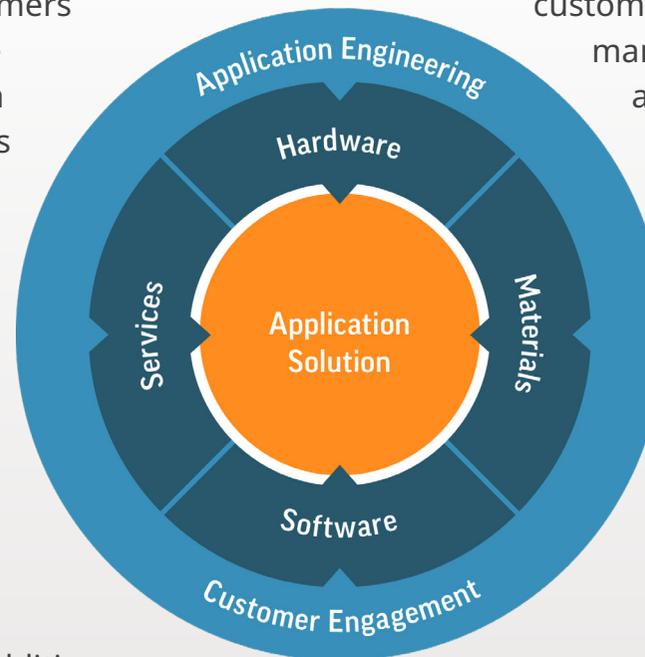
Innovation and Expertise

The Application Innovation Group is a broad team of application experts that enable our customers to adopt technology and solve their additive manufacturing (AM) challenges faster with a complete tailored solution. We have decades of experience across all technologies and broad experience in different industries — aerospace and defense, automotive and motorsports, dental, jewelry, medical devices, semiconductor, and more. We are experienced in each market and provide a state-of-the-art solution.

We accelerate the development of advanced applications and innovative additive manufacturing solutions. If you are just exploring or have some experience in additive manufacturing, the Application Innovation Group, regardless of the stage you are at, is here to help you get to the next level in your AM journey.

Know the Application Innovation Group

The 3D Systems' AIG collaborates closely with our customers to solve complex design and additive manufacturing challenges. Our customers' application requirements guide the solutions comprising hardware, materials, software and services we develop and deploy, accelerating and unlocking greater value and giving you a competitive edge, both as your organization grows with additive and scales production.



Introduction to AIG Professional Services

Accelerate the Development of Advanced Applications and Innovative Additive Manufacturing Solutions

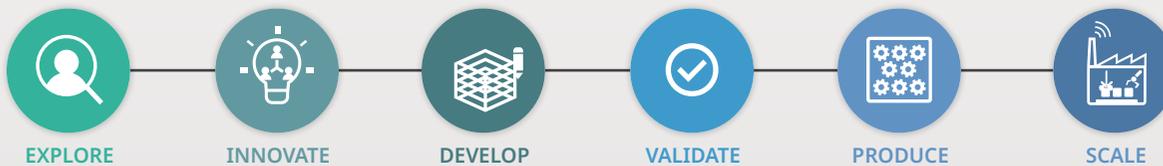
Our Professional Services

We are focused on solving challenging design and manufacturing problems with additive manufacturing solutions — and on delivering solutions for high criticality applications. We believe that the solution needs to be bespoke to the application journey as well as our customers' journeys in additive. What makes us unique is that we are not only a supplier of materials, software, hardware, and services but we are key users as well. We live and breathe in the same industries and applications as our customers, allowing us to truly partner with them, to expedite the path to market, remove risk, and improve ROI.



Our Approach

From Exploration and Implementation to Qualification and Scale

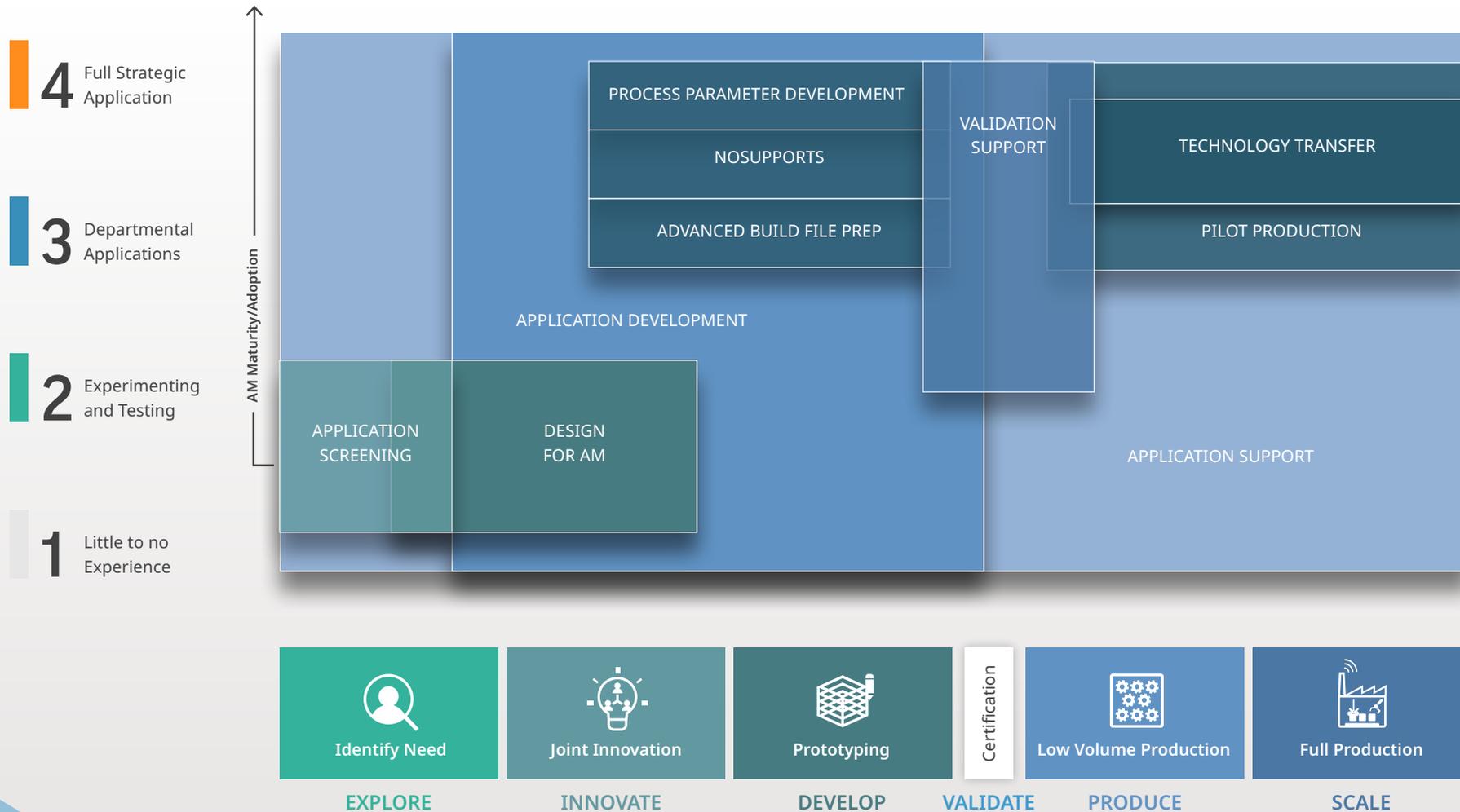


[Learn more about the Customer Success Stories](#)

Professional Services Matching Your Needs

Expedite Your AM Journey

Our dedicated team of application experts guides you from Exploration and Implementation to Qualification and Scale.



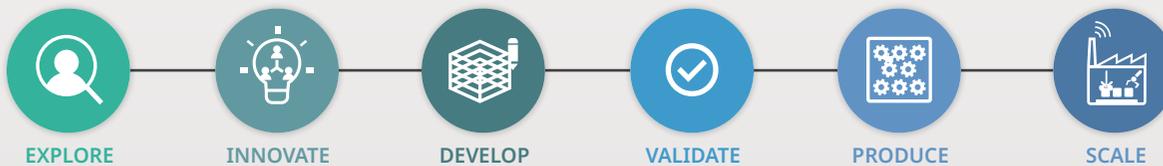
Professional Services Portfolio

AM JOURNEY	PROFESSIONAL SERVICE	PLATFORM	FORMAT	AM EXPERIENCE LEVEL	TYPICAL DURATION
Explore	Application Screening	DMP	Workshop	Beginner	1 day
Innovate	Design for Additive Manufacturing	DMP	Training	Beginner	1 day
Develop	Application Development	DMP	Engineering Service	All	6-18 months
	Advanced Build File Preparation	DMP	Training	Advanced	0.5 day
	NoSupports	DMP	Training	Advanced	0.5 day
	Process Parameter Development	DMP	Training Engineering Service	Advanced All	3 days 1-12 months
Validate	Validation & Qualification	DMP	Engineering Service	Intermediate	5-8 months
	Scalmalloy® Certification	DMP	Engineering Service	All	2-3 months
	Customer-Specific Acceptance Testing	DMP	Engineering Service	Purchasing DMP Equipment	1-4 months
Produce	Pilot Production	DMP	Contract Manufacturing	All	6-18 months
Scale	Technology Transfer	DMP	Engineering Service	Purchasing DMP Equipment	6-18 months

Professional Services Portfolio

PROFESSIONAL SERVICE	PLATFORM	FORMAT	AM EXPERIENCE LEVEL	TYPICAL DURATION
Application Support	DMP SLA SLS Figure 4 MJP CJP	Engineering Service	All	1-Day Modules (8h)
Customized Training Programs	All	Trainings, Workshops, Engineering Services	All	Based on Customer Needs

AM JOURNEY



Customized training programs are offered on customer demand. Contact us for more information or scan the QR code and talk to an expert.



TALK TO AN EXPERT



Application Screening

DESCRIPTION

The application screening workshop helps you identifying which products from your portfolio are most eligible for Direct Metal Printing (DMP), leading to cost savings, enhanced performance and shorter time to market.

LEARNING OBJECTIVES

- DMP benefits and limitations
- Product portfolio screening for DMP
- Methodology to find the technical fit
- Business case analysis and DMP cost drivers
- Create your DMP product development pipeline
- Access to world-class AM Application Experts

LEARNING PATH

- 1 Talk to an expert** – Identify and share your needs to get tailored training content. Pre-screening of target applications and products.
- 2 Onsite workshop** – Our application expert comes onsite for the interactive application screening workshop.
- 3 Deliverable** – Shortlist with best product candidates to develop and manufacture with DMP.
- 4 Promote your AM journey** – Discuss the next steps in your AM journey with an application expert (e.g., DfAM training or application development).

AM CUSTOMER JOURNEY

The diagram shows an 'AM CUSTOMER JOURNEY' with 'Additive Maturity' on the vertical axis and 'Application Maturity' on the horizontal axis. A box labeled 'APPLICATION SCREENING' is positioned in the 'EXPLORING' maturity level. Below the diagram is a horizontal bar with six stages: Explore, Innovate, Develop, Validate, Produce, and Scale, each with an icon.

Product	PROFSERV-01013
Format	In-person workshop
Technology	DMP
Duration	1 day
AM experience level	Beginner
Location	Onsite
Seats	5
Prerequisites	Access to product portfolio



TALK TO AN EXPERT



Design for Additive Manufacturing (DfAM)

DESCRIPTION

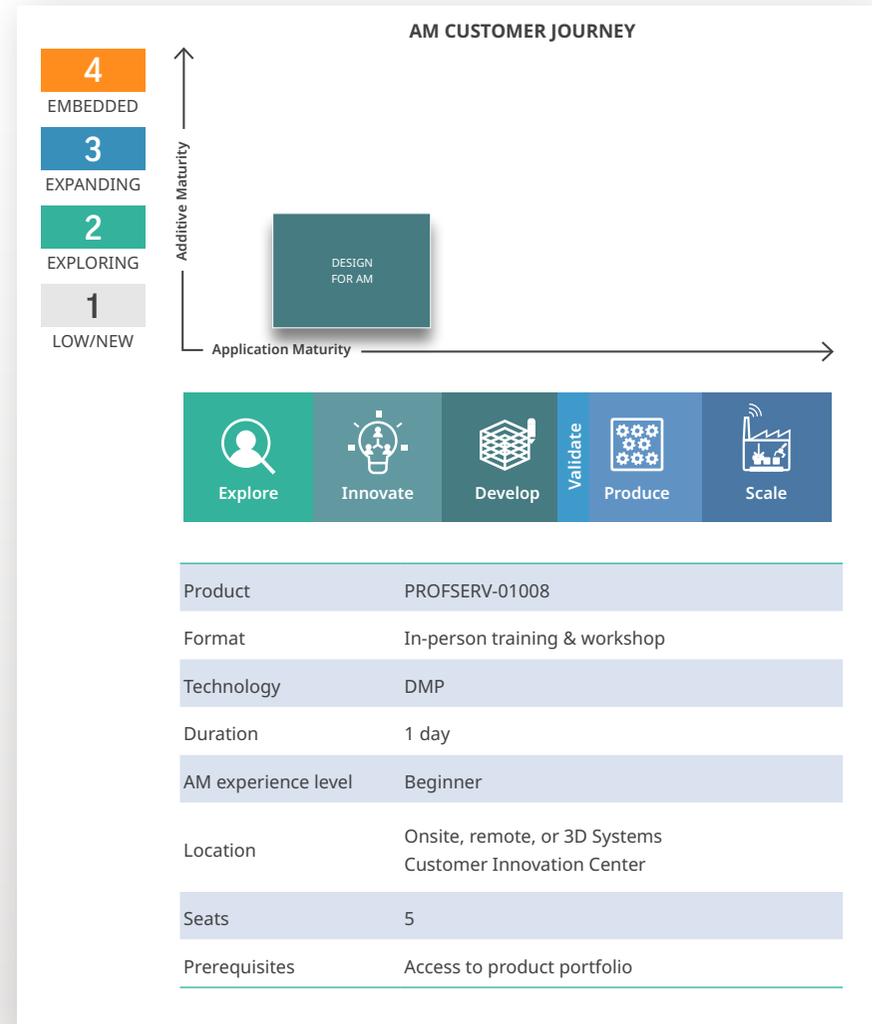
Learn how to adopt an additive design methodology. Get a fundamental background on the DfAM technology principles and understand how they affect product design and manufacturability. Learn how to apply AM design rules to deliver a successful part design and build layout.

LEARNING OBJECTIVES

- Intro to Design for Additive Manufacturing (DfAM)
- Intro to Direct Metal Printing principles
- Part design and build preparation guidelines for DMP
- Methodology to approach DMP product design
- Design workshop on customer applications

LEARNING PATH

- 1 Talk to an expert** – Identify and share your needs to get tailored training content. Discuss target applications and products.
- 2 Classroom training** – Learn how to apply AM design rules to deliver a successful DMP part design and build layout.
- 3 Design workshop** – Get the theory into practice. Apply the AM design rules on your parts with guidance from our application expert.
- 4 Promote your AM journey** – Discuss the next steps in your AM journey with an application expert. (e.g., application development).



[TALK TO AN EXPERT](#)

Application Development

DESCRIPTION

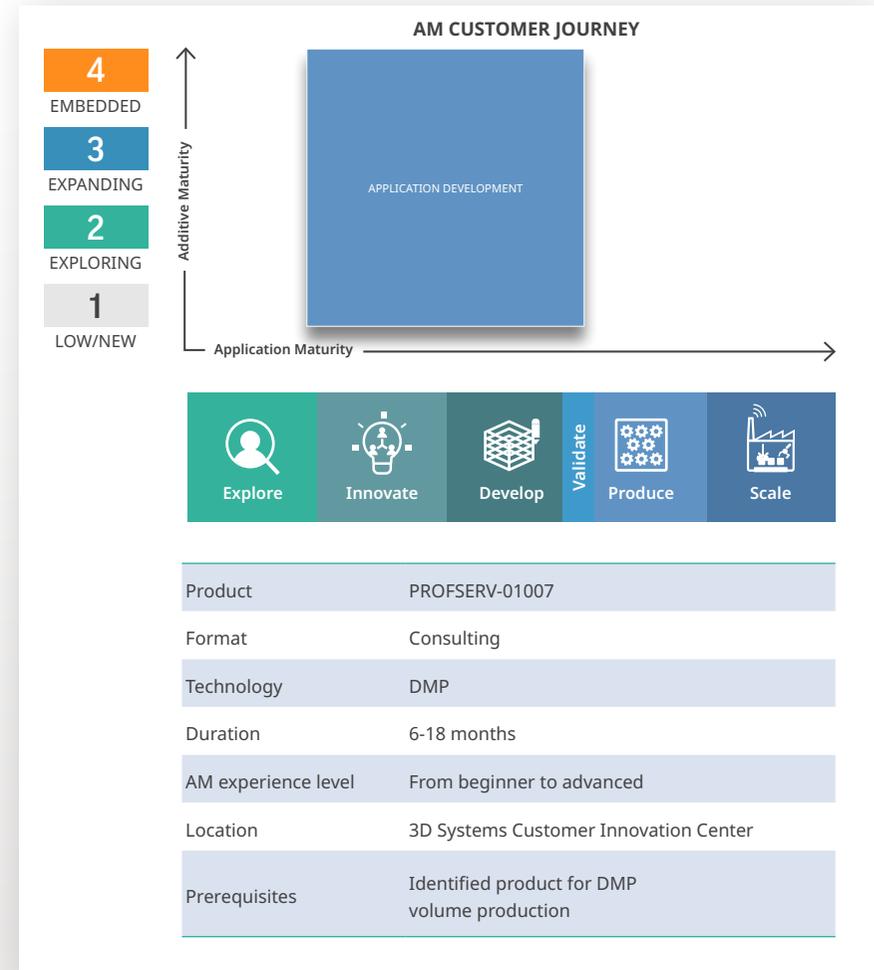
Do you seek to develop a metal AM part for volume manufacturing? This service delivers a controlled and documented process flow using DMP and all relevant post-processing steps. The entire manufacturing workflow is developed, validated and transferred to a volume production environment at the customer facility or a preferred third-party manufacturing partner.

DELIVERABLES AND BENEFITS

- Part production-ready manufacturing workflow
- Production and quality reports
- Manufacturing instructions and production files
- Optional: Supportive documentation for regulatory submission
- Optional: Technology transfer of product development know-how and documentation
- Access to world-class AM application experts

SERVICE TRAJECTORY

- 1 Talk to an expert** – Investigate the economic and technical feasibility. Create an application development framework and project plan.
- 2 Development** – Define and develop the manufacturing workflow and processes for producing a conforming product according to the technical specifications.
- 3 Validation** – Demonstrate the manufacturing readiness by delivering consistent and conforming finished products.
- 4 Design transfer** – Transfer the fully developed application to a volume production environment.



[TALK TO AN EXPERT](#)

Advanced Build File Preparation

DESCRIPTION

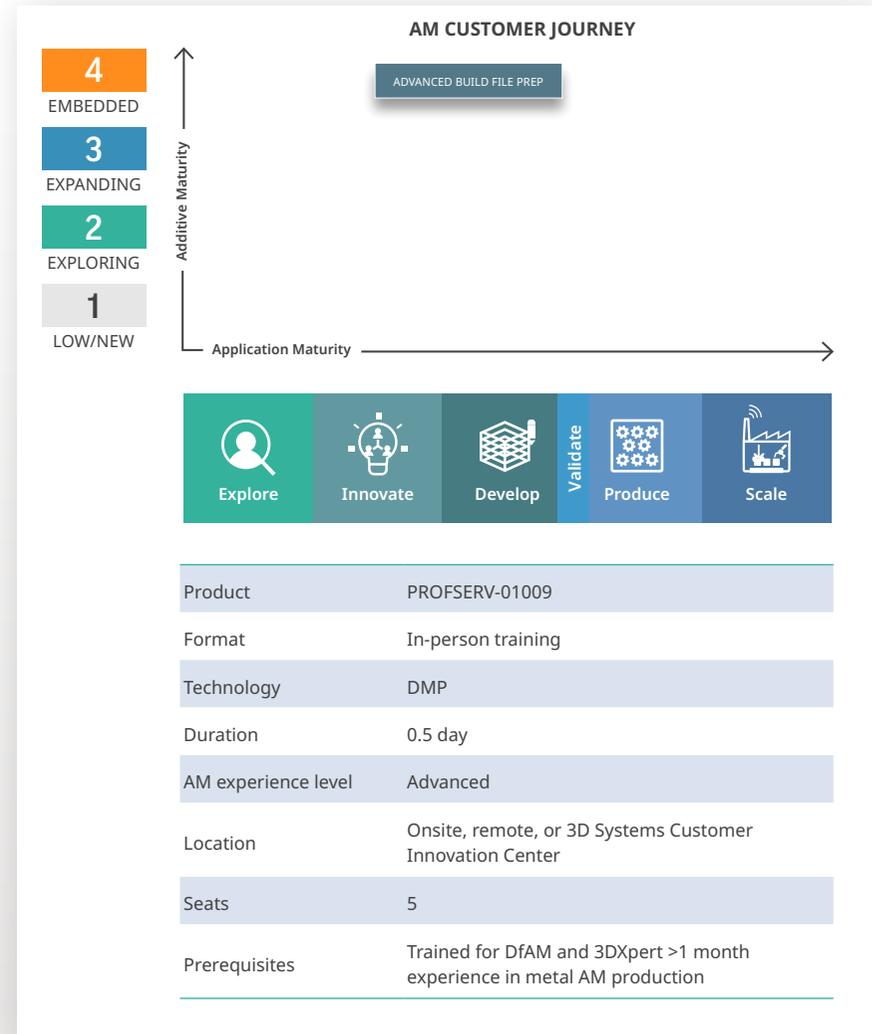
Understand thermal stresses in Direct Metal Printing and how to manage thermal stresses in DMP to improve part quality and reduce part scrap rates. Learn about savvy support strategies and advanced build file preparation practices preventing part deformation, defects and build failures.

LEARNING OBJECTIVES

- Understand thermal stresses in DMP
- Best practices and design settings for various support types
- Apply savvy support strategies and advanced build preparation practices preventing part defects and build failures
- Use advanced design features in Oqton's 3DXpert

LEARNING PATH

- 1 Talk to an expert** – Identify and share your needs to get tailored training content.
- 2 Classroom training** – Learn about managing thermal stresses in DMP and how to apply savvy support strategies for running successful DMP builds.
- 3 Practice** – Get theory into practice and apply these learnings on your DMP applications.
- 4 Promote your AM journey** – Discuss the next steps in your AM journey with an application expert.



TALK TO AN EXPERT

NoSupports

DESCRIPTION

This training provides a comprehensive understanding of the benefits and use of NoSupports for supportless metal printing. The training enables AM designers to create parts with greater design freedom and improved surface uniformity, while reducing cost and lead time.

LEARNING OBJECTIVES

- Understand challenges of printing downfacing surfaces
- Identify typical design features and use cases for NoSupports
- Applying NoSupports in Oqton's 3DXpert
- Develop your supportless DMP application

LEARNING PATH

- 1 Talk to an expert** - Identify and share your needs to get tailored training content. Pre-screening on target applications.
- 2 Classroom training** - Understand the challenges on downfacing surfaces and identify typical design features and use cases for supportless metal printing.
- 3 Design workshop** - Learn through hands-on experience on how to apply NoSupports in Oqton's 3DXpert and develop your supportless application.
- 4 Promote your AM journey** - Discuss the next steps in your AM journey with an application expert.

AM CUSTOMER JOURNEY



Explore

Innovate

Develop

Validate

Produce

Scale

Product	PROFSERV-01010
Format	In-person training
Technology	DMP
Duration	0.5 day
AM experience level	Advanced
Location	Onsite, remote, or 3D Systems Customer Innovation Center
Seats	5
Prerequisites	Identified product for NoSupports



[TALK TO AN EXPERT](#)

Process Parameter Development

DESCRIPTION

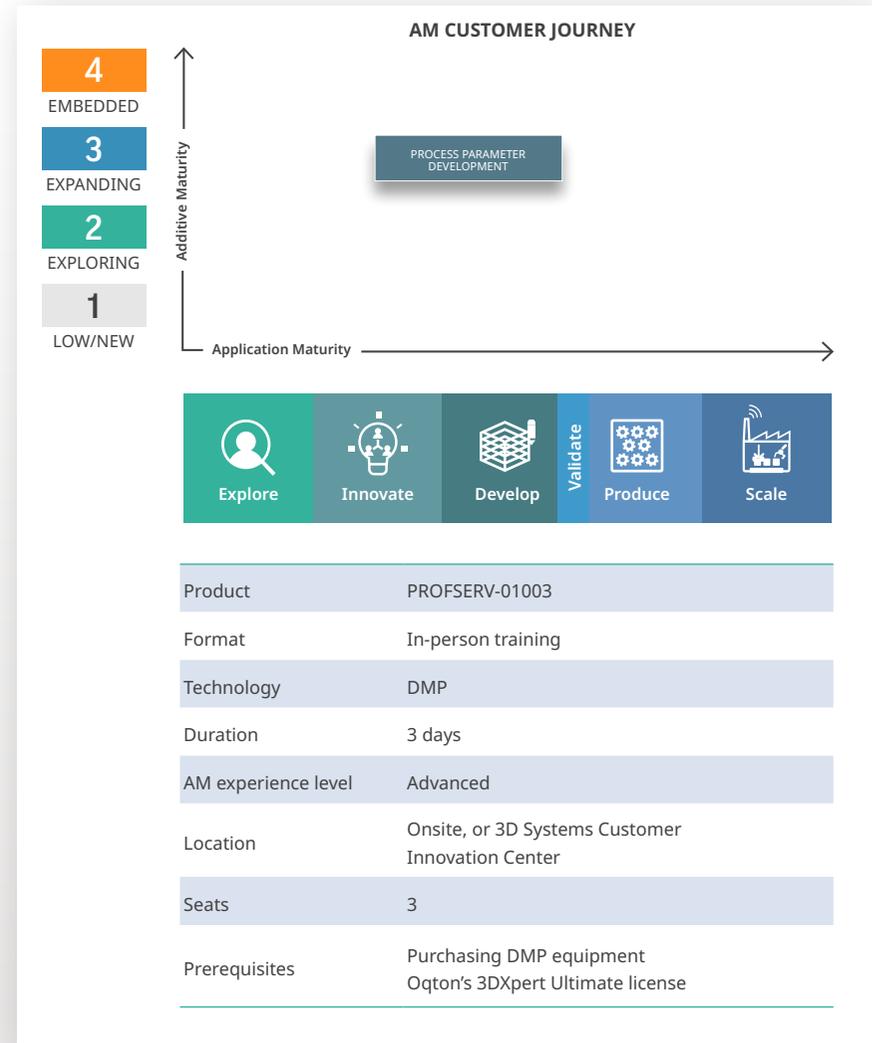
Learn how to develop your own DMP process parameters for your alloy or application of interest. Explore the DMP parameter development strategy based on a design-of-experiments (DoE) approach. Deploy the material development workflow, including setting up DoEs, parameter modification in Oqton's 3DXpert, and assessing the print quality during development.

LEARNING OBJECTIVES

- Understand how DMP parameters affect the DMP process stability and printed part quality
- Learn about the parameter development plan and workflow
- Learn how to create a DMP parameter database and modify parameters in Oqton's 3DXpert
- Define and prepare your test job and evaluate the part quality after printing

LEARNING PATH

- 1 Talk to an expert** - Identify and share your needs to get tailored training content.
- 2 Classroom training** - Understand how DMP parameters affect the process stability and printed part quality. Learn about the parameter development plan and workflow.
- 3 Design workshop** - Learn through hands-on experience on how to define, prepare, and print your test job. Evaluate the part quality after printing.
- 4 Promote your AM journey** - Discuss the next steps in your AM journey with an application expert.



[TALK TO AN EXPERT](#)

Process Parameter Development

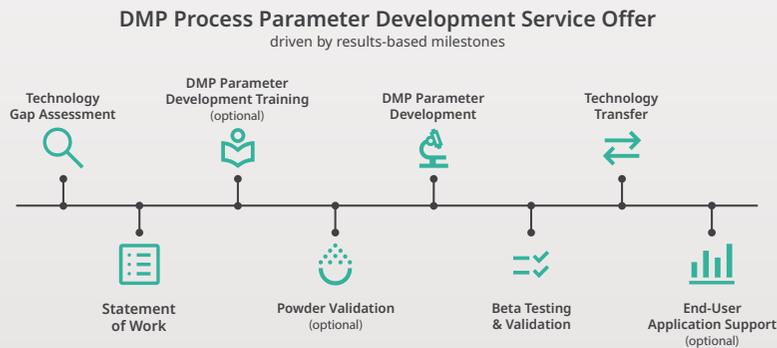
DESCRIPTION

This service supports customers who seek to develop their own DMP process parameters tailored for their specific application or alloy of interest, using 3D Systems' DMP equipment and Oqton's software. The execution of the DMP parameter development plan can either be led by you or by a DMP Process Engineer at 3D Systems.

LEARNING OBJECTIVES

- Material screening and risk assessment on DMP processability
- Develop and optimize DMP parameters tailored for your specific application or alloy of interest
- Deploy the DMP parameter development workflow
- Develop a customized DMP parameter set in Oqton's 3DXpert
- Access to world-class DMP Process Experts

SERVICE TRAJECTORY



AM CUSTOMER JOURNEY



4 EMBEDDED
3 EXPANDING
2 EXPLORING
1 LOW/NEW

Application Maturity →

Explore Innovate Develop Validate Produce Scale

Product	PROFSERV-01004
Format	Consulting
Technology	DMP
Duration	1-12 months
AM experience level	All
Location	Onsite, or 3D Systems Customer Innovation Center
Prerequisites	Optional: DMP process parameter development training (PROFSERV-01003)



TALK TO AN EXPERT



Validation & Qualification

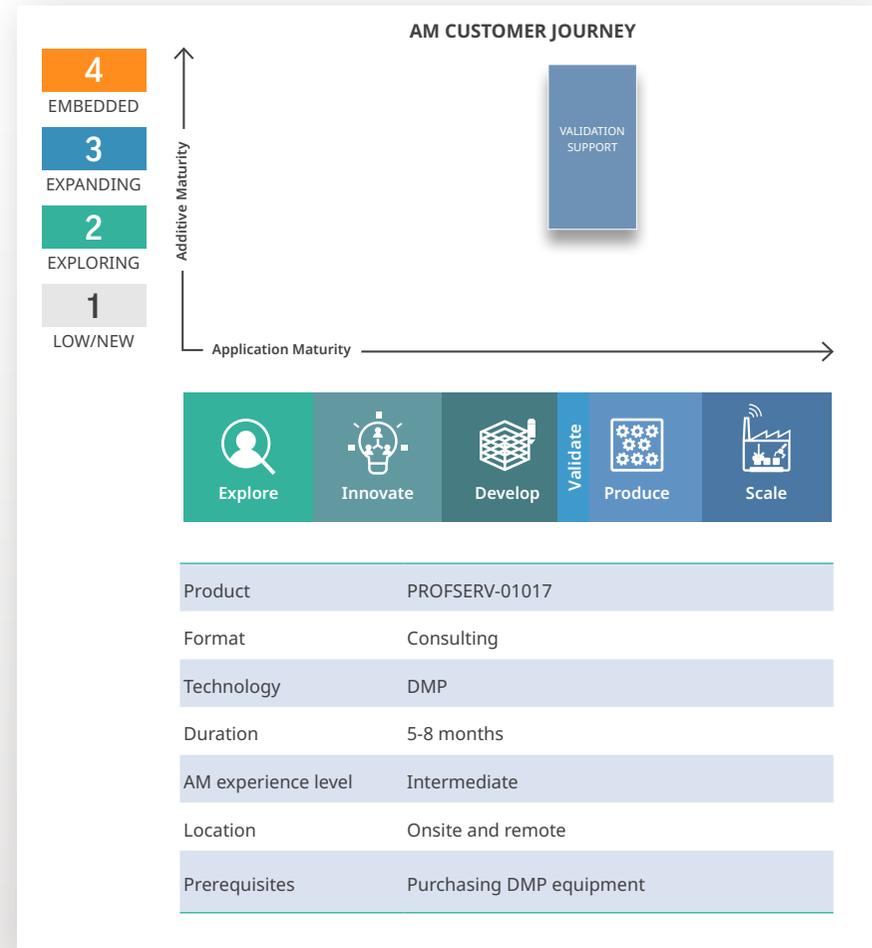
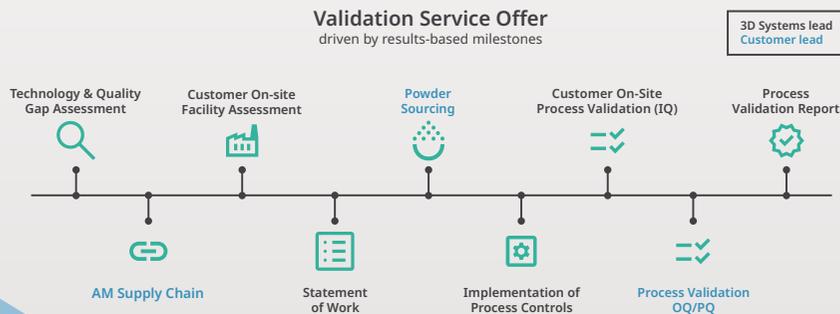
DESCRIPTION

Minimize the time to market of your next high criticality applications in regulated markets such as Healthcare and Aerospace. With 15 years of experience in DMP production, 3D Systems offers support in validation and qualification for DMP technology, complying with ISO/ASTM 52930. Our proven validation strategy, including equipment, process and software, delivers a regulations-compliant production process and fits well within ISO 13485 or AS 9100.

DELIVERABLES AND BENEFITS

- Validation service compliant with ISO/ASTM 52930
- Risk assessment and process characterization
- Implementation of process controls
- Documentation and procedures on powder management, maintenance and test methods
- Validation protocols and reports related to equipment, process and software
- Optional: Certification support for critical regulated applications

SERVICE TRAJECTORY



TALK TO AN EXPERT



Scalmalloy® Certification

DESCRIPTION

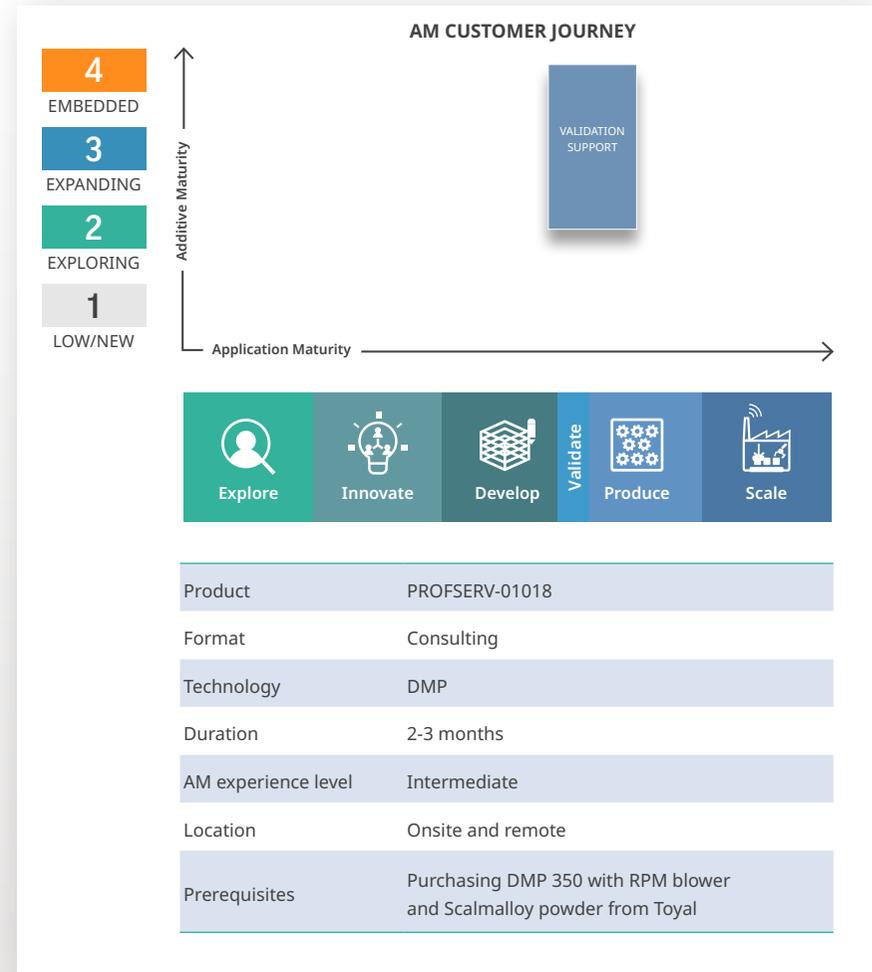
3D Systems partners with APWorks for delivering a cost-effective certification service for Certified Scalmalloy (A), after which you are certified as an Approved Scalmalloy Manufacturer. This service is a risk-free, outcome-based certification service for customers. The certification is tied to the serial number of the validated DMP Flex 350 or DMP Factory 350 and is valid for 1 year. Optional: Yearly recurring validation service.

DELIVERABLES AND BENEFITS

- Execution of APWORKS qualification procedure
- Validation report
- APWORKS Certification of Approved Scalmalloy Manufacturer for the validated DMP 350 (serial number-specific)

SERVICE TRAJECTORY

- 1 DMP machine calibration** – 3D Systems Field Service Engineer comes onsite for a DMP machine calibration.
- 2 Job launch & shipment** – 3D Systems Field Service Engineer launches the certification job. Customer ships the certification build to the 3DS facility for testing.
- 3 Validation testing** – 3D Systems Validation Engineer coordinates heat treatment and validation testing according to the APWORKS qualification procedure.
- 4 Certification** – 3D Systems delivers the Certification of Approved Scalmalloy Manufacturer for the validated DMP Flex 350 or DMP Factory 350 (serial number-specific).



[TALK TO AN EXPERT](#)



Customer-Specific Acceptance Testing

DESCRIPTION

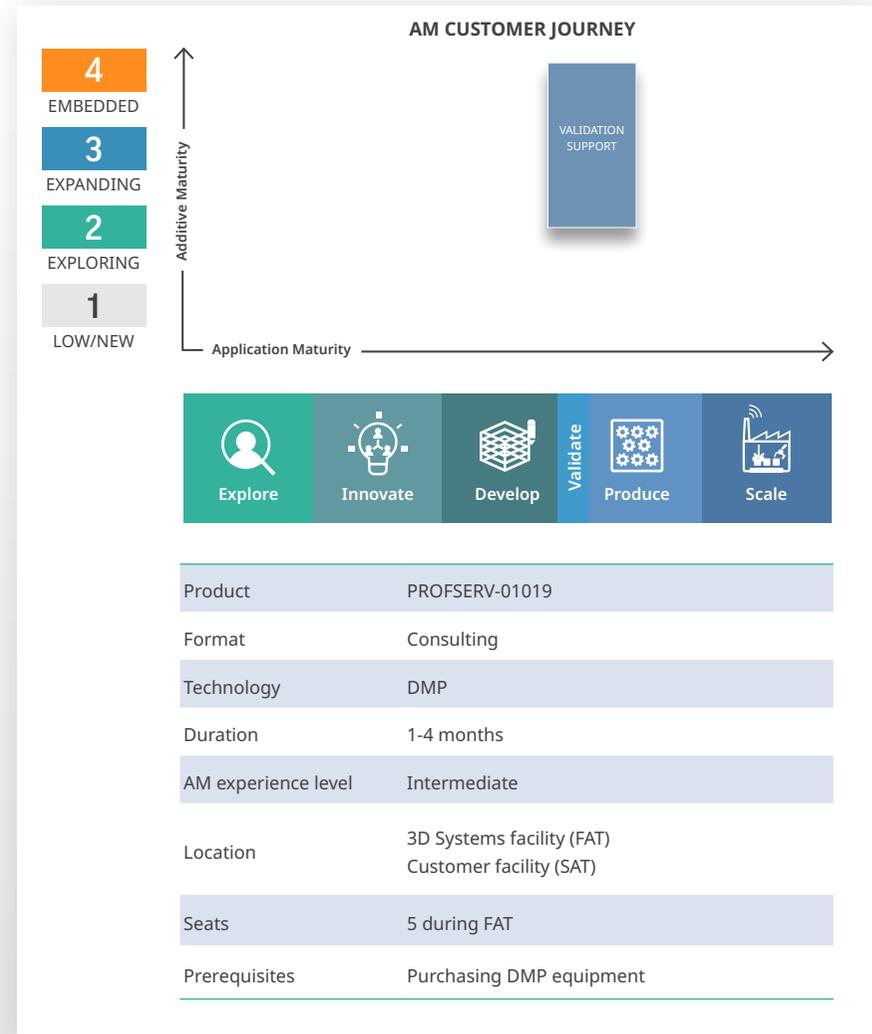
Extend the qualification of the DMP technology beyond 3D Systems' standard Factory or Site Acceptance Testing (FAT/SAT) protocols by ensuring that the selected DMP printer, material and process parameter set are compliant with specific customer or market requirements.

DELIVERABLES AND BENEFITS

- De-risk acceptance testing early in the process
- Customize your acceptance criteria for DMP equipment based on your application and market requirements
- Factory and Site Acceptance Test reports and certificates

SERVICE TRAJECTORY

- 1 Statement of work** – Jointly define acceptance criteria for factory and site acceptance testing and mutually agree upon the testing protocol.
- 2 Factory Acceptance Testing (FAT)** – Execute the factory acceptance testing protocol at 3D Systems' facility. Optional: Hosting customer attendees during FAT.
- 3 Site Acceptance Testing (SAT)** – Execute the site acceptance testing protocol at the customer facility.
- 4 Certification** – Issue the Factory and Site Acceptance Test reports and certificates.



TALK TO AN EXPERT



Pilot Production

DESCRIPTION

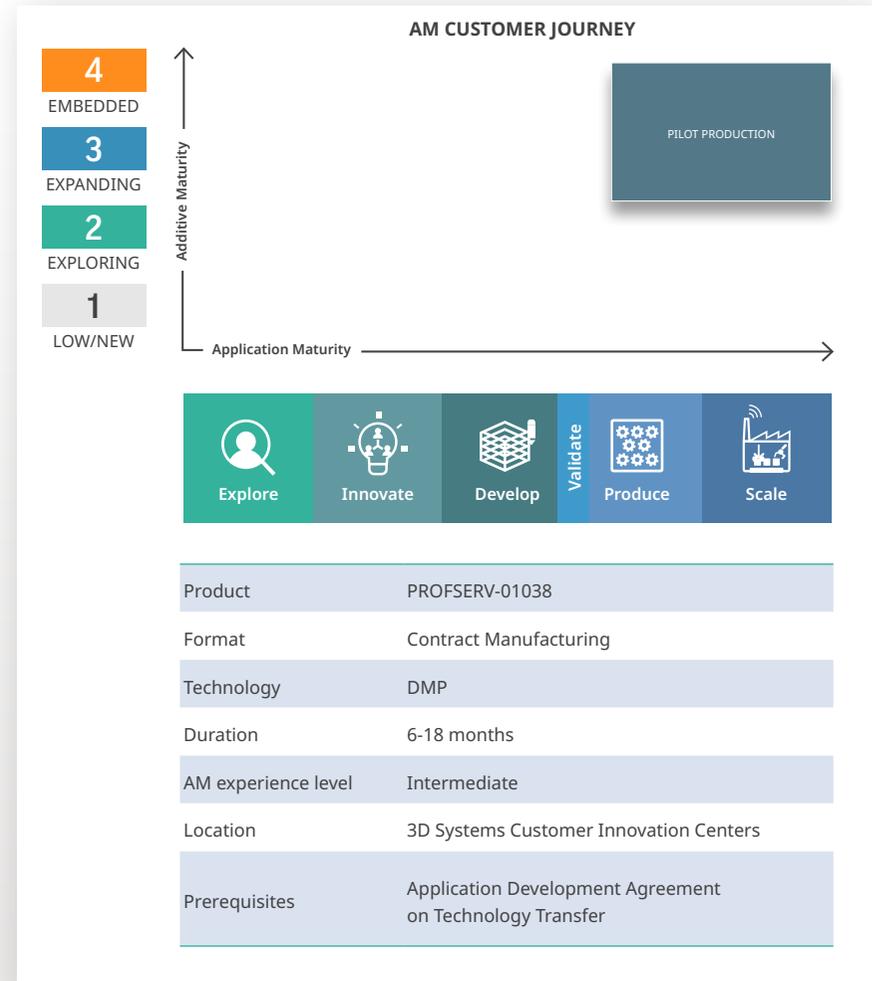
Providing an end-to-end manufacturing solution for DMP applications. Focused on the customer's speed to market and DMP technology adoption with a greatly reduced risk profile for critical applications. Allows an effective ramp up of DMP production and bridges the manufacturing gap toward in-house production.

DELIVERABLES AND BENEFITS

- Accelerated and de-risked path to market
- Bridging DMP production capacity in preparation for DMP technology transfer
- Compliant manufacturing process setup in regulatory certified production environment (ISO 9001, ISO 13485, FDA, AS 9100)
- Streamlining AM manufacturing process flow through continuous improvement
- Develop process experience and know-how throughout the full manufacturing workflow

SERVICE TRAJECTORY

- 1 Statement of work** – Jointly define the agreement on contract manufacturing for pilot production, including product line and operations, production capacity, and timeline.
- 2 Ramp up DMP pilot production at 3D Systems** – Effectively ramp up production at 3D Systems' manufacturing site to bridge the manufacturing gap in preparation for customer's adoption.
- 3 Technology transfer** – Transfer technology with progressive transfer of DMP production to customer's manufacturing site or third-party manufacturing partner.
- 4 Ramp down DMP pilot production at 3D Systems** – Fully transfer DMP production from 3D Systems to the customer or third-party partner. Optional: Backup production capability or longer-term production at 3D Systems' manufacturing site is negotiable.



[TALK TO AN EXPERT](#)



Technology Transfer

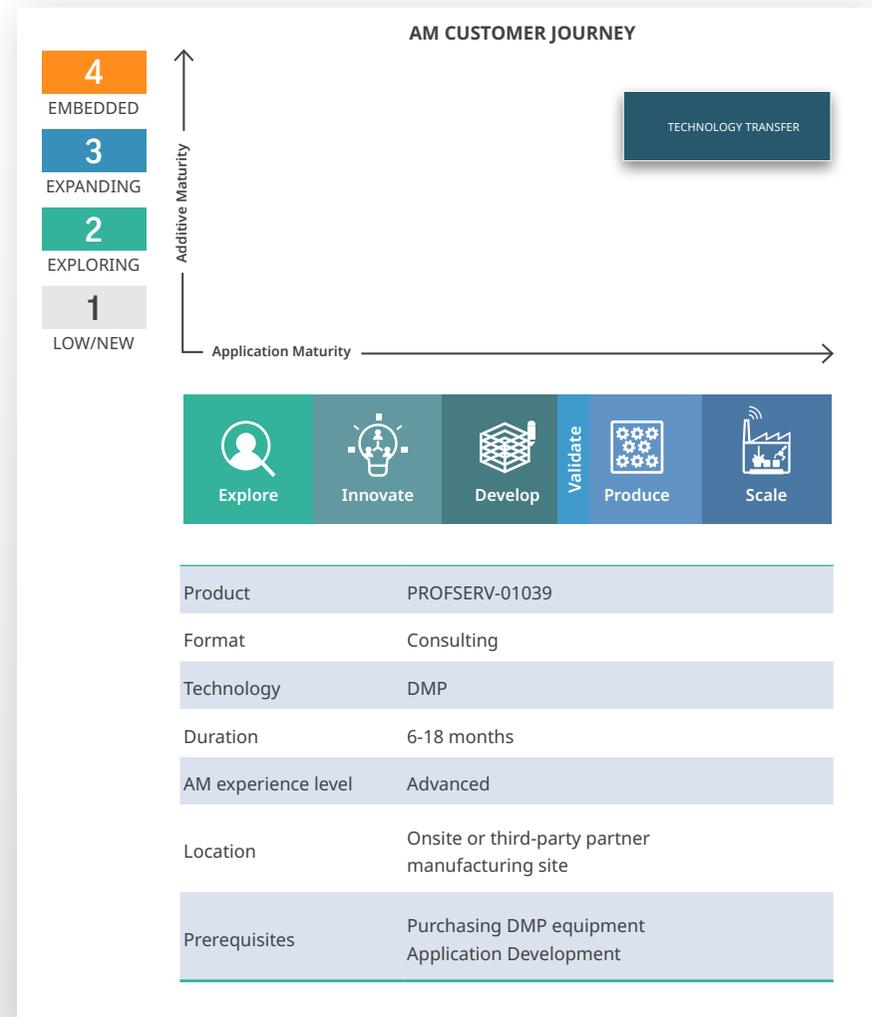
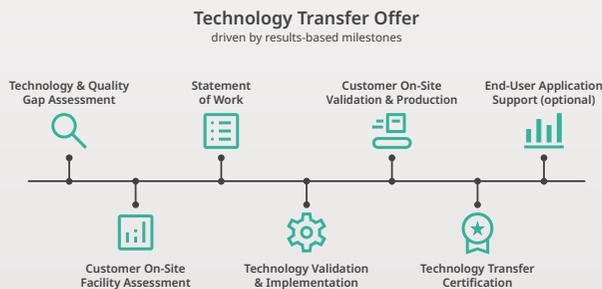
DESCRIPTION

Looking to expedite your application for in-house or third-party additive manufacturing at lower risk? This service ensures a seamless and cost-effective transition to in-house additive manufacturing. With our transfer of competencies, you can acquire the know-how and expertise on 3D Systems' technology, covering the entire additive manufacturing workflow from powder handling and printing to the finished product.

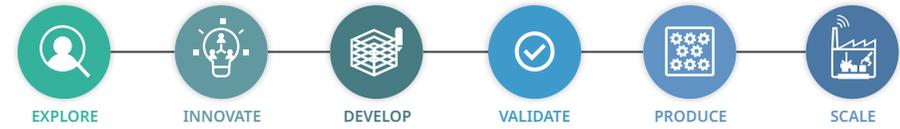
DELIVERABLES AND BENEFITS

- Successful technology transfer to in-house or third-party manufacturing
- Gap assessment reports on technology, QMS and facility
- Validation documentation and process controls
- Technology transfer of product-specific manufacturing workflow, know-how and documentation
- Access to world-class AM application experts

SERVICE TRAJECTORY



[TALK TO AN EXPERT](#)



Application Support

DESCRIPTION

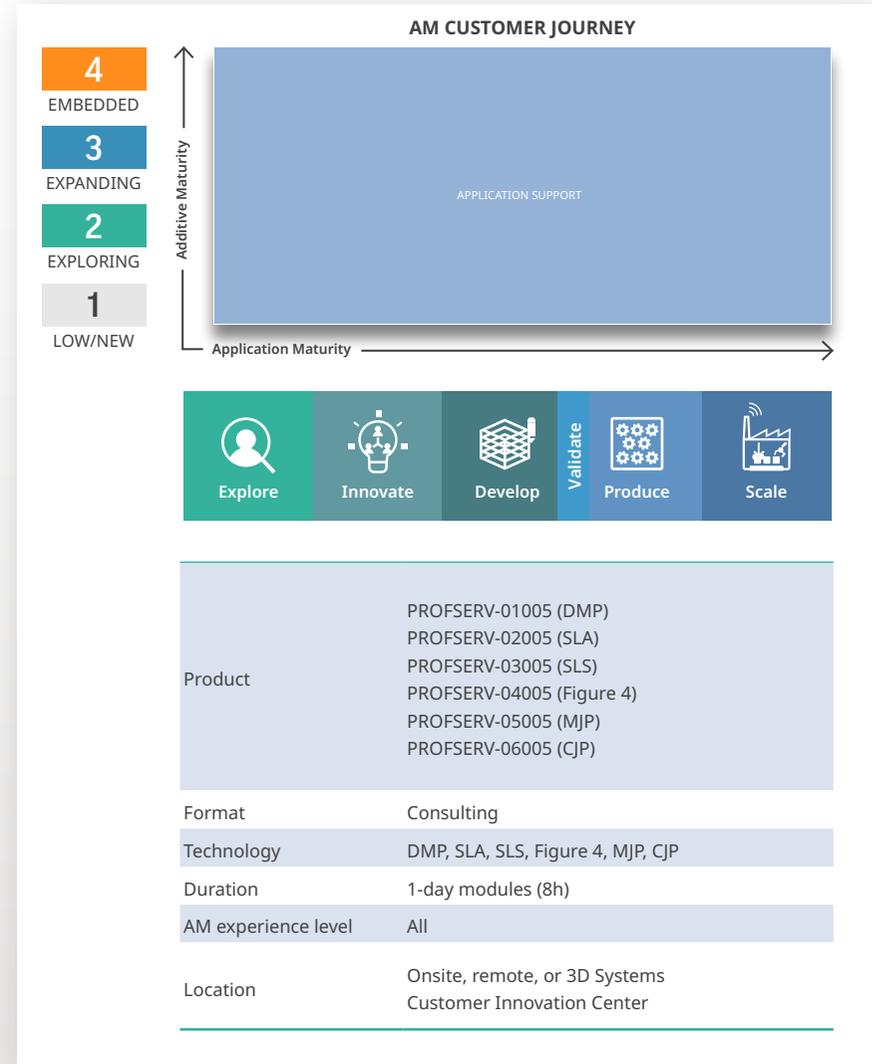
Support in developing high-quality metals or plastics AM applications faster, cheaper and at a lower risk. Helping you overcome hurdles related to your application, AM workflow, process yield or technology adoption. Involvement of our application engineers allows resolving user challenges by leveraging decades of joint technology and application experience.

DELIVERABLES AND BENEFITS

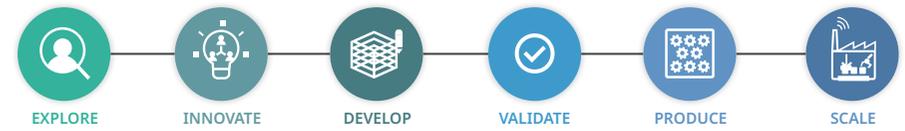
- Design optimization
- Process troubleshooting
- Transferring process knowledge on AM workflow
- Speed up technology adoption
- Improved process yield (e.g., part quality, productivity and throughput, material saving)
- Access to world-class AM application experts

SERVICE TRAJECTORY

- 1 Talk to an expert** – Identify and discuss your hurdles and needs on your application, AM workflow, process yield, or technology adoption with an application expert.
- 2 Application support** – Closely collaborate with our application experts for problem mapping and solving, delivering a tailored solution that fits your requirements.
- 3 Knowledge transfer** – All relevant application and process knowledge and best practices of the tailored solution gets transferred to the customer.
- 4 Promote your AM journey** – Discuss the next steps in your AM journey with an application expert.



[TALK TO AN EXPERT](#)



Customized Training Program

DESCRIPTION

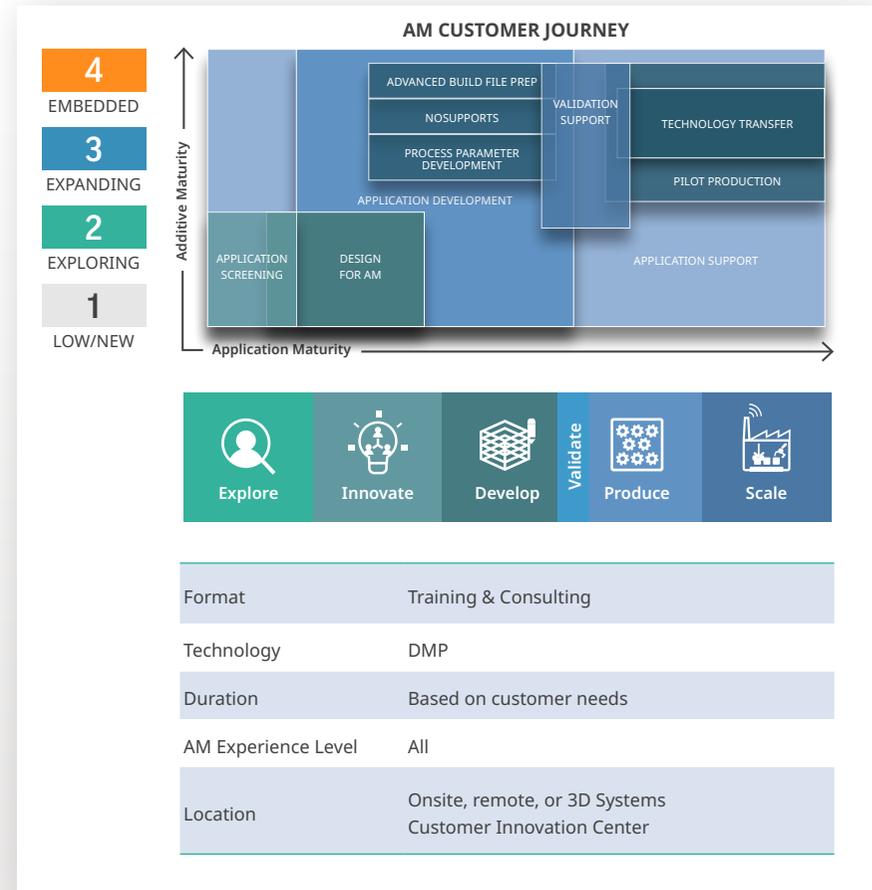
Expedite your AM journey and advance your AM know-how. De-risk and speed up AM application development or AM technology adoption through a customized training program. Or boost the AM expertise and know-how of your team with our customized AM personnel training programs for operators and engineers. Get a tailored training program with relevant content and the perfect mix of classroom trainings and hands-on practice that fit your needs.

LEARNING OBJECTIVES

- Application development training programs
- AM personnel training programs for operators and engineers
- Tailored training content to your needs
- Customized training format for the best learning experience: in person, online, or hybrid
- Perfect mix of classroom training, workshops, and hands-on practice projects
- Access to world-class AM application experts

LEARNING PATH

- 1 Talk to an expert** – Identify and discuss your hurdles and needs on your AM applications or AM technology adoption. Discuss your goals for the AM journey.
- 2 Statement of work** – Jointly define the training scope and learning objectives that fit your needs and goals.
- 3 Deploy training program** – Customized training program with tailored content and a perfect mix of classroom trainings, workshops and hands-on practice projects that fit your needs.
- 4 Assessment and certification** – Evaluate your learnings through a training assessment and obtain your training certification.

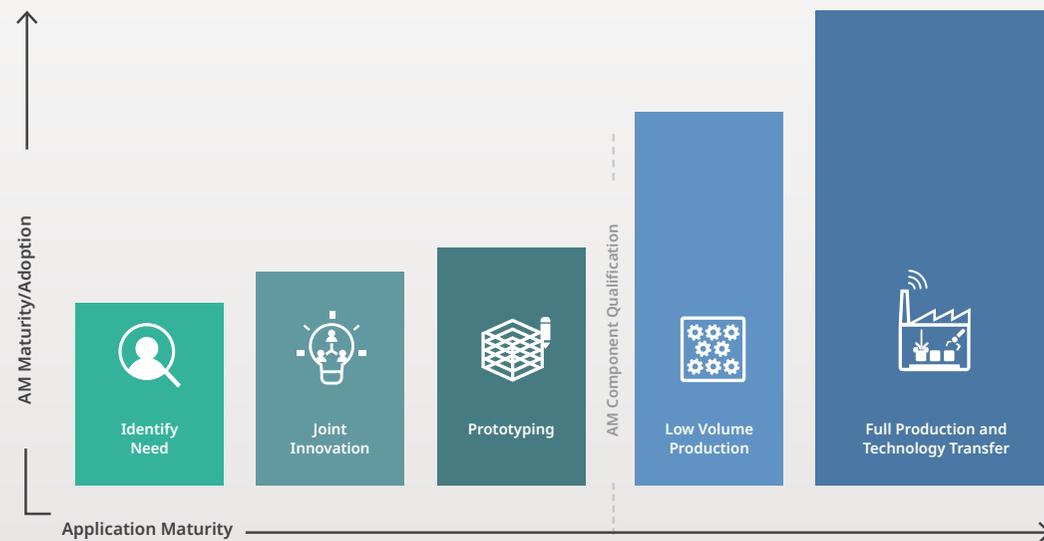


Professional Service Modules

1	Applications Screening	1 day
2	Design for Metal Additive Manufacturing	1 day
3	Application Development	6–18 months typically
4	Application Support	1-day modules
5	Validation and Qualification	5–8 months typically
6	Contract Manufacturing for Pilot Production	6–18 months typically
7	Technology Transfer	6–18 months typically

Discover our customer success stories on the [AIG webpage](#)

- Healthcare
- Aerospace & Defense
- Semiconductor
- High-Tech
- Energy & Turbomachinery
- Transportation & Motorsports
- Consumer Technology





Industrial Case Study

Metal AM for Semiconductor Capital Equipment

Wilting worked with 3D Systems to accelerate the adoption of metal additive manufacturing to support complex metal parts production for semiconductor capital equipment.

[Learn more about the Customer Success Story](#)

Image courtesy: Wilting

Customer Success Stories



CUSTOMER CHALLENGE

- Wilting, a precision machining company, needed to accelerate the adoption of additive to support complex metal parts for a large manufacturer of semiconductor capital equipment.



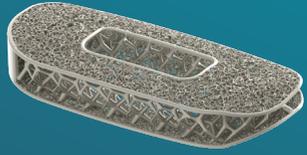
3D SYSTEMS SOLUTION

- Consulting with 3D Systems Application Innovation Group, Wilting has been able to rapidly iterate and test complex semiconductor components with a proven path to production.
- Solution comprised of DMP Flex 350, Oqton's 3DXpert software, LaserForm materials and technology transfer.



OUTCOME

- Proven workflow to produce optimized components designed for higher performance in semiconductor capital equipment.
- Streamlined adoption of metal additive manufacturing through technology transfer, including best practices on machine operation, optimal build strategies, build file preparation, as well as post-processing.



Healthcare Case Study

Metal AM for Medical Implants

NuVasive worked with 3D Systems on application development and FDA submission for medical implants.

The human body is not traditionally manufactured, so why should medical devices be? AM enables complex geometry and porous regions that promote bone in-growth to maximize porosity and performance of interbody fusion devices in a robust and scalable manufacturing process.

Image courtesy: NuVasive

Customer Success Stories



CUSTOMER CHALLENGE

- Assist customers in navigating the complex regulatory process required for FDA Class I, II, and III clearance. This includes developing robust, product-specific process flows in a QMS environment.
- Bridging the manufacturing gap to volume production.



3D SYSTEMS SOLUTION

- 3D Systems leverages its extensive DfAM experience in the medical device field into a phase-gated application development process. This approach, combined with validated DMP system and 3D Systems Masterfile Letter of Authorization access, has a proven track record of successful submissions.
- Contract manufacturing for pilot production to bridge the manufacturing gap in preparation for customer's adoption.



OUTCOME

- With a successful submission, the culmination of the application development process ensures steady-state, production-ready products that conform to customer, FDA and ASTM requirements in a readily scalable environment based on customer needs.

[Learn more about the Customer Success Story](#)

Questions?

Accelerate and de-risk the development of your next application

PIERRE VAN CAUWENBERGH

Sr. Application Engineer, AIG – EMEA & APAC

pierre.vancauwenbergh@3dsystems.com

AARON SCHMITZ

Process Engineering Manager, AIG – AMERICAS

aaron.schmitz@3dsystems.com

Schedule a free consultation today

