



 **PRI**SM *Qualification*



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SHAPING THE AEROSPACE WORKFORCE OF THE FUTURE

Issued: January 2020

PRI QUALIFICATION

A collaborative, global system managed by aerospace industry experts creating **aerospace manufacturing personnel qualifications**.

PRI Qualification empowers industry to work together to shape the aerospace workforce of the future, today.



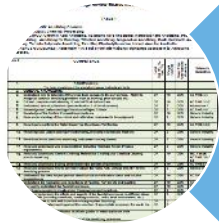
THE AEROSPACE INDUSTRY CHALLENGE

- Critical shortfall of qualified personnel due to:
 - An aging workforce
 - Falling behind in relevant academic achievement
- Globalization continues to increase variability in knowledge, skills and ability
- Pressure to shorten time for personnel to train and achieve adequate competency levels

*“A highly skilled and robust defense and aerospace workforce is essential...Yet today **the industry faces impending retirements and a shortage of trained technical graduates while work and skills requirements become increasingly advanced** – a challenging situation forecast to worsen in the next decade.”*

Source: AIA 2016

PRI QUALIFICATION PROVIDES



Bodies of Knowledge



Theory Assessments



Practical Assessments

PRI Qualification is administered by the Performance Review Institute (PRI), a not-for-profit trade association, on behalf of leaders in the Aerospace Industry.

INDUSTRY BENEFITS

- Increased personnel capability
- Validation of personnel competency
- Knowledge sharing between participating organizations



PROGRAM TIMELINE



2009

Honeywell
Aerospace

PRI administers Honeywell's Source Certifying Agent exam program

2012

Aerospace industry leaders create an industry managed personnel qualification program

2013

First Bodies of Knowledge published

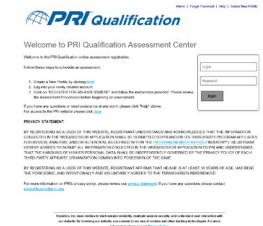
BOK ID	BOK Title	BOK Description	BOK Version	BOK Effective Date	BOK Status
...

2014

First online theory assessments released

2015

Upgrade to Webassessor online assessment software complete



PROGRAM TIMELINE

2016

First training organizations approved to teach courses to BoK content

 **PRI** Qualification
Approved Training Provider

Abaris Training
PRI Training

2017

5 Active Review Boards:
 Brazing
 Chemical Processing
 Composite Repair
 Heat Treating
 Welding


 **Collins Aerospace**

 **BOEING**

2018




Shaping the Aerospace Workforce of the Future events held in London and Pittsburgh



 **ELLISON**
Surface Technologies

2019

35+ Bodies of Knowledge published
 35+ Theory Assessments available

An Industry Managed Program: Manufacturers & Suppliers



Collins Aerospace



Raytheon



BAE SYSTEMS



METAL TECH



Rolls-Royce



TEXTRON



Bodycote



GE Aviation

Honeywell



norcross Temperature & Viscosity Control



BOMBARDIER

The Boeing Co.

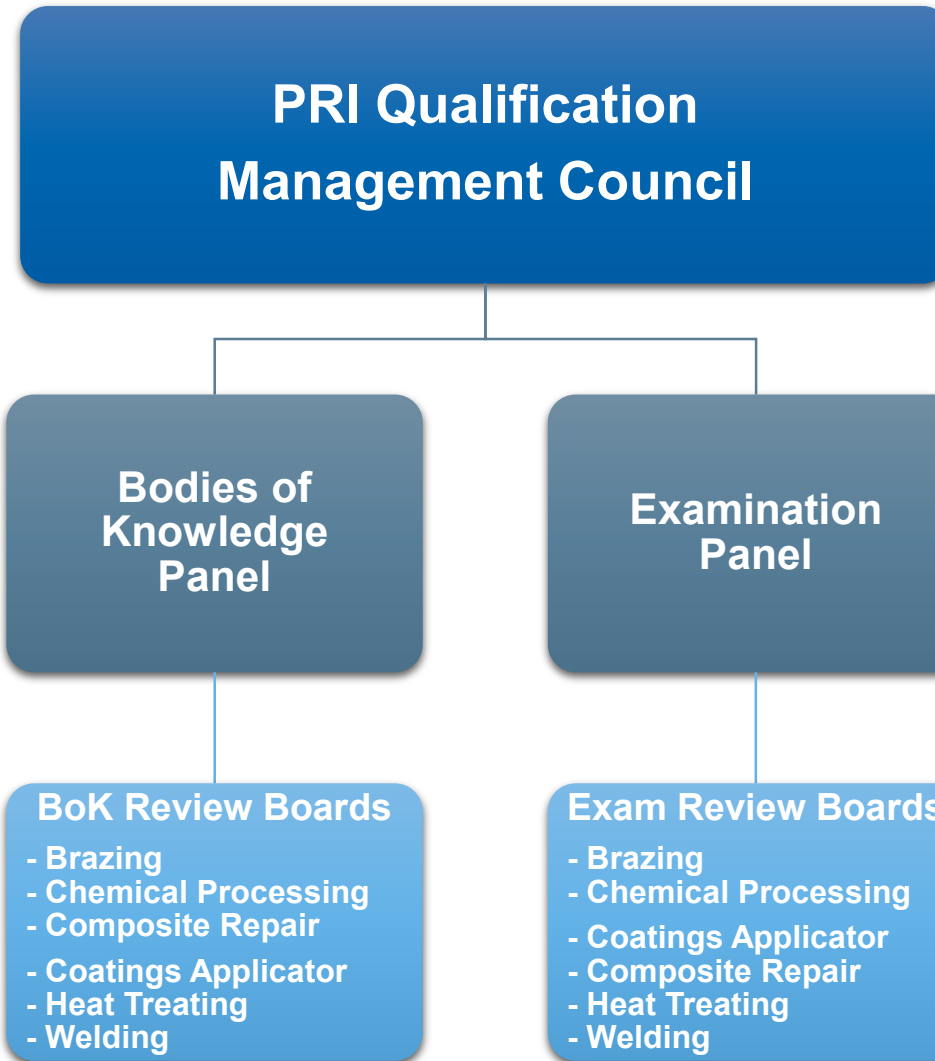
Training Providers and Maintenance, Repair & Overhaul



HOW DOES PRI QUALIFICATION WORK?



PROGRAM STRUCTURE



**Senior Executives
(Members & Non-Members)**
*Oversee operations, strategy
and scope of the program*

Members & Non-Members
*Establish baseline
requirements for Bodies of
Knowledge and their
development*

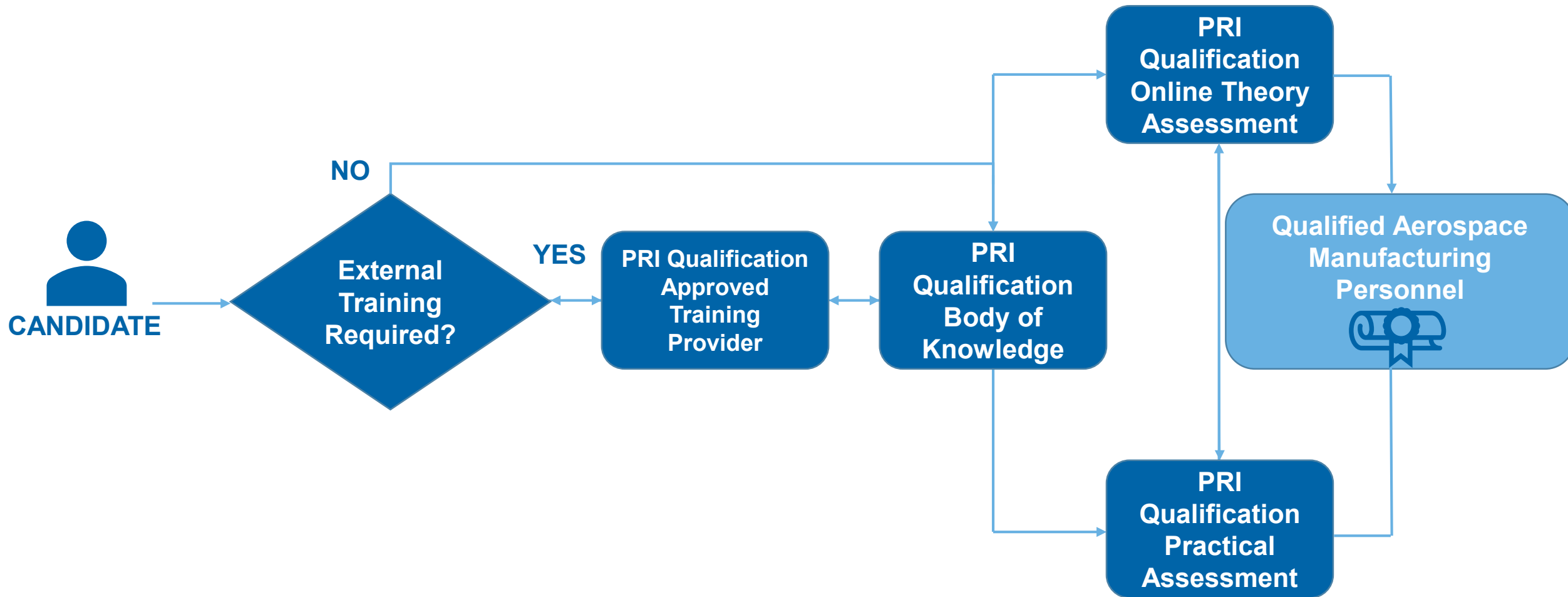
Members Only
*Provides guidance on exam
format, applicability, content
and level*

Members & Non-Members


- ▶ *Identify methods and
qualification levels and
publish Bodies of
Knowledge (BoKs)*
- ▶ *Review and approve
Training Providers*

Members Only
*Compile, validate and
establish exams based on
the Bodies of Knowledge*

PATH TO COMPETENCY



BODIES OF KNOWLEDGE

 Program Document WLBOK		PD 6103 WLBOK-002/PL-2 REV. (N/A) Issued: 25 January 2018 Revised: N/A	
6. TABLE 1 ROLE DESCRIPTION: Fusion Welding Planner SPECIAL PROCESS: Welding METHOD: Performance of Fusion Welding Requirements REFERENCE GUIDELINES: Addendum 1 is a list of the International Standards and Reference Documents applicable to fusion welding processes.			
All PRI Qualification Knowledge (B) perform the special process. All BoK's are subject to Review Board documentation current industry	Row #	COMPETENCE	Weight (1-5,7,10) Exam Type Practical Reference Guidelines
KNOWLEDGE: The basic knowledge of the special processes, methods and tools			
1	GENERAL KNOWLEDGE	10	Written AWS WHB-1.9
2	Fundamentals of fusion arc welding processes	10	Written AWS WHB-2.9, AWS C5.5
3	Knowledge of GTAW/TIG process, advantages and limitations	10	Written AWS WHB-2.9, AWS C5.1
4	Knowledge of plasma arc welding (PAW) process, advantages and limitations	10	Written AWS C5.1, AWS C5.5
5	Knowledge of basic process variables	10	Written AWS WHB-2.9, AWS C5.6
6	Knowledge of MIG welding process, advantages and limitations	10	Written AWS C5.5
7	Commonly welded materials and their properties	10	Written AWS A3.0, ISO 17533
8	Standard terms and definitions	10	Written AWS A2.4, ISO 2553
9	Welding symbols – drawing interpretation	7	Written AMS 2054
10	Drawing restrictions for weld repair of castings	10	Written AWS A3.0, AWS C5.5, AWS D17.1, ISO 2553
11	Basic joint configurations and Welding positions	7	Written AWS WHC.1.11
12	Mechanized, Semi-Automated, Automated, and Robotic Welding	10	Written AWS D17.1
13	EQUIPMENT Power sources, torches, and accessories (wire feeders, gas supply equipment, positioners, trailing shields, etc.)	10	Written AWS D18.3M/D16.2
14	Equipment for mechanized and robotic welding (wire feeders, orbital welding equipment, etc.)	10	Equipment manufacturer's manual, ISO 17962
15	Procedure for calibration of equipment	10	Equipment manufacturer's manual, AWS D17.1, AWS WHB-3.9
16	Equipment preventive maintenance	10	Written AWS D17.1, ISO 24394
17	Welder / WELDING OPERATOR QUALIFICATION Responsibility for the following documents:	10	Written ISO 24394
18	Performance qualification requirements, including visual acuity	10	Written AWS D17.1, ISO 24394
19	Welder / Welding operator qualification – test weld conditions vs. qualified scope	10	Written AWS D17.1, ISO 24394
20	Welder / Welding operator qualification – special applications, inspection requirements, other welding conditions	10	Written AWS D17.1, ISO 24394
21	Welder qualification for weld repair of castings	7	Written AWS 2054
22	Welder / Welding Operator qualification test records	10	Written AWS D17.1, ISO 24394
23	Welding operator qualification procedure - experience (OJT), training, testing, and oversight	10	Written AWS D17.1, ISO 24394
24	Re-qualification requirements	10	Written AWS D17.1, ISO 24394
25	Disqualification requirements	10	Written AWS D17.1, ISO 24394
26	PRE-WELD PREPARATION		

- Industry technical experts write manufacturing process Bodies of Knowledge
- Free industry resource available on PRI Website
 - Over 35 Bodies of Knowledge published
- Content includes:
 - Knowledge
 - Skills
 - Personal Attributes
 - Non-special process related requirements
 - Applicable international reference documents

A FREE INDUSTRY RESOURCE

All Bodies of Knowledge are available for free download on the [PRI Qualification](#) section of the PRI website



Home » eQualified » Bodies of Knowledge

eQualified Bodies of Knowledge are created in collaboration with industry experts through our **Technical Review Boards**. These detailed documents capture current industry expectations for personnel performing a range of aerospace manufacturing roles. Each Body of Knowledge breaks down a role into its key elements which include knowledge, skills, personal attributes and experience. The Bodies of Knowledge utilize international aerospace standards as a baseline for their content and are regularly updated to ensure they properly reflect current aerospace manufacturing practices.

eQualified's growing portfolio of Bodies of Knowledge provide the foundation for the development of online theory **assessments** and the



BODY OF KNOWLEDGE LEVELS

PROCESS OPERATOR/TECHNICIAN

Understands and perform the hands-on operations of the special process

PROCESS PLANNER

Capable of creating manufacturing processes and interpreting process procedures to conform to customer specification and requirements. Capable of problem solving and resolving day-to-day issues.

PROCESS OWNER

Capable of writing, reviewing and approving processes, procedures and qualifications of Process Operators and Process Planners. Capable of designing new processes and resolving issues among other levels.



CURRENT MANUFACTURING PROCESSES

CHEMICAL PROCESSING



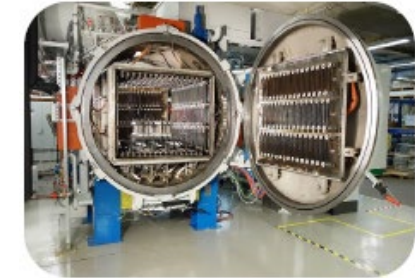
Anodizing
Cleaning
Conversion / Phosphate Coatings
Etch & Etch Inspection
Painting / Dry Film

HEAT TREATING



Aluminum Alloys
Carbon & Alloy Steel
Heat Resisting Alloys
Pyrometry (Calibration & Test)
Pyrometry (Process)
Stainless & PH Steel
Titanium Alloys

BRAZING



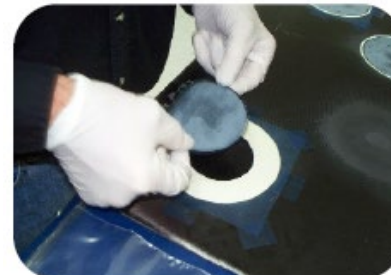
Vacuum Furnace
IN PROGRESS: Torch Brazing

WELDING



Electron Beam
Laser / Fusion
Resistance (Spot & Seam)

COMPOSITE REPAIR



General Composite Repair Technician
Aerospace Composite Bonded Repair Technician
IN PROGRESS: Metal Bond Repair

COATINGS APPLICATOR



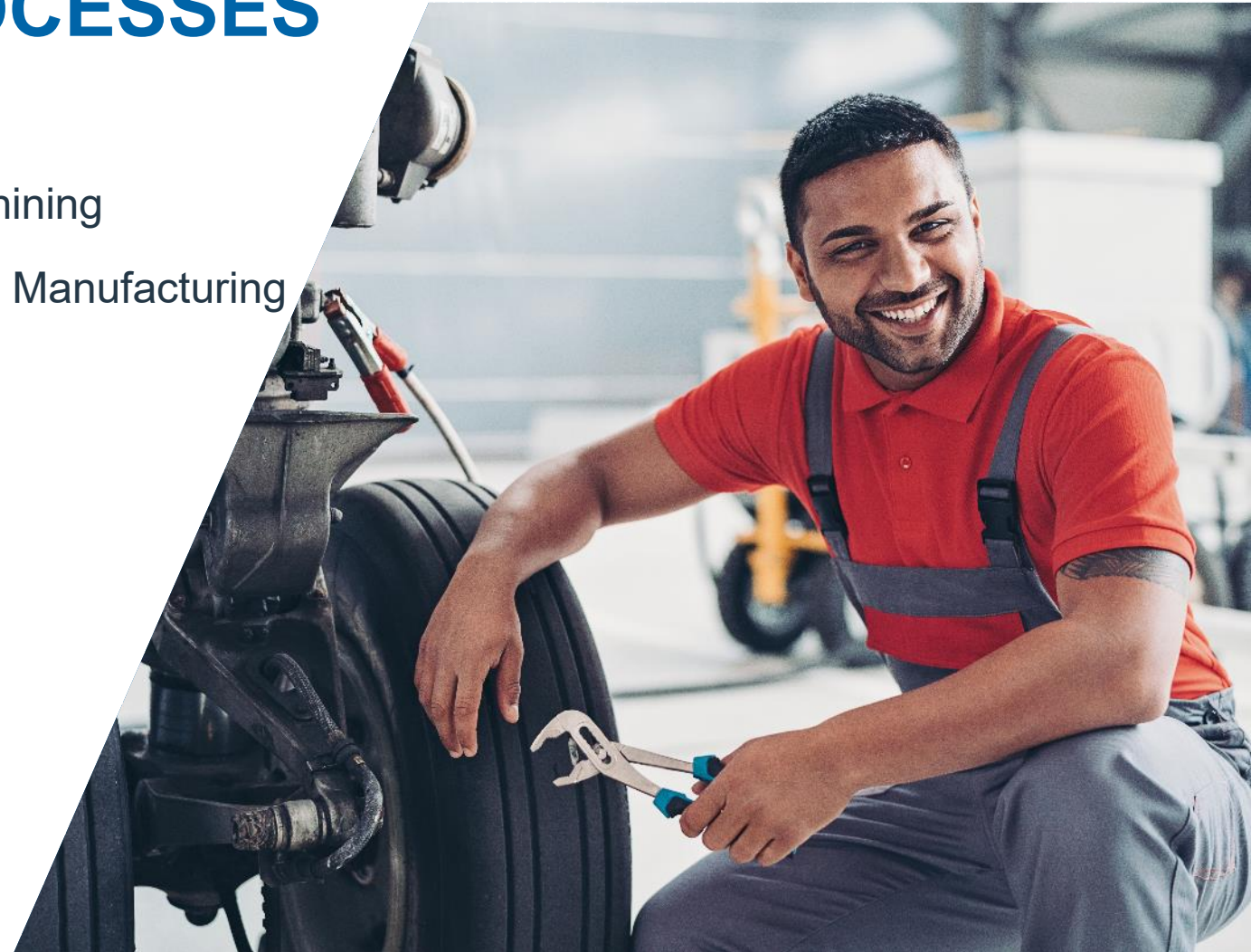
**In collaboration with SAE
G8 Organic Coatings
Committee.**

PUBLISHED BODIES OF KNOWLEDGE

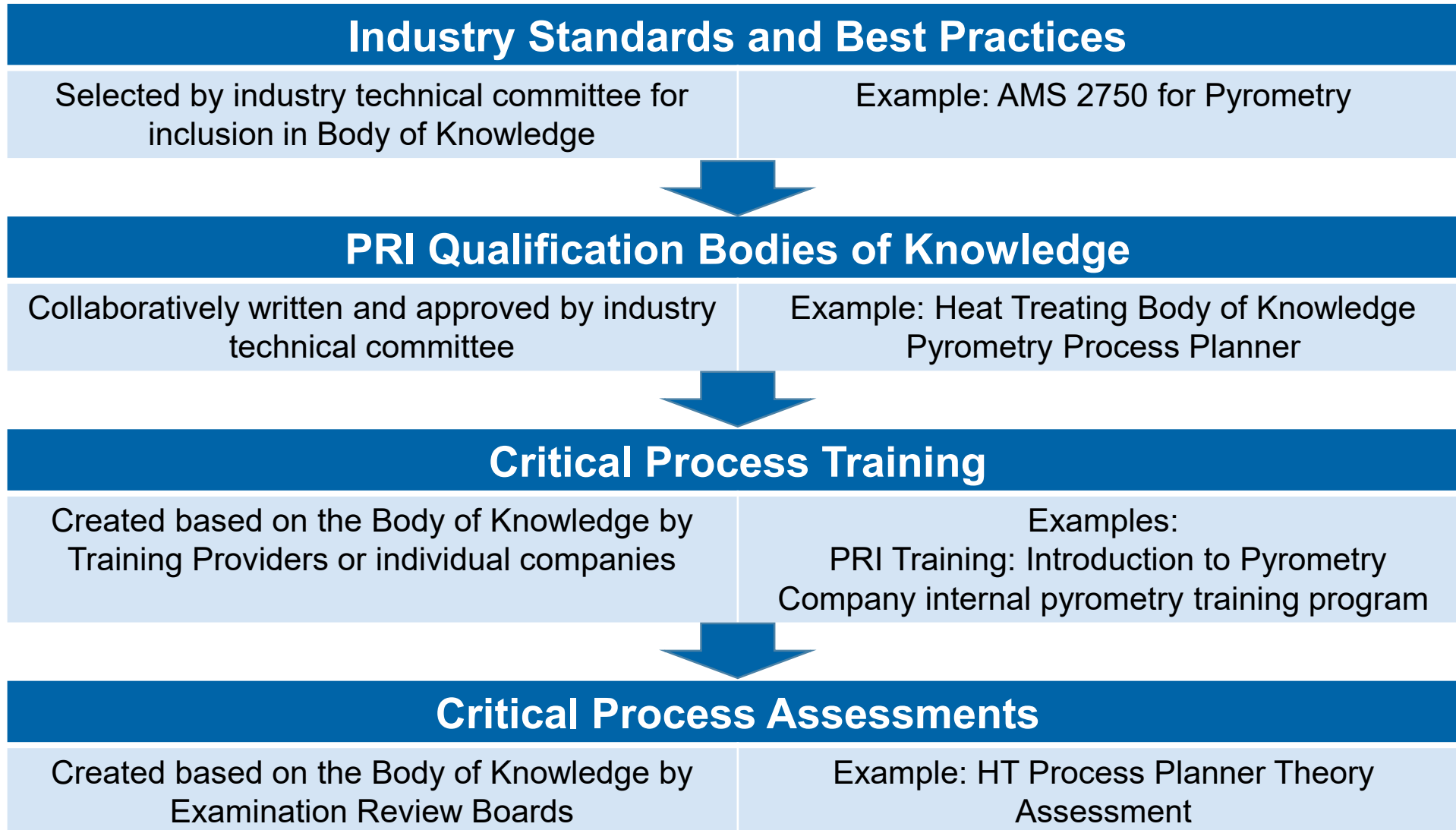
	CHEMICAL PROCESSING						HEAT TREATING						WELDING			BRAZING		COMPOSITE REPAIR	
	Anodizing	Conversion/Phosphate Coatings	Cleaning	Etch and Etch Inspection	Painting / Dry Film	Plating	Aluminum	Carbon & Alloy Steel	Heat Resisting Alloys	Pyrometry (Calibration)	Pyrometry (Process)	Stainless PH Steel	Titanium	Resistance (Spot & Seam)	Electron Beam	Fusion	Vacuum Furnace	General Repair	Aerospace Bonded Repair
OPERATOR / TECHNICIAN	X	New 2019		X	X	X	X			X	X	X	X					X	X
PLANNER	X	New 2019	X	X	X	X	X	X	X	X	X	X	X	X	New 2019	X	X		
OWNER	X			X		X	X			X	X	X	X						

FUTURE CRITICAL PROCESSES

- Additive Manufacturing
- Coatings
- Composites
 - Manufacturing
 - Bolted Repair
- Conventional Machining
- Electronics
- Materials Testing
- Measurement & Inspection
- Metallic Materials Manufacturing
- Nonconventional Machining
- Non-Metallic Materials Manufacturing
- Sealants / Elastomers
- Surface Enhancement
- Shot Peening
- Welding
 - Laser



DRIVING DEVELOPMENT OF ALIGNED TRAINING



APPROVED TRAINING PROVIDERS

Conducted by industry technical committees in a process which includes:

- Full review of written training materials to check alignment with the Body of Knowledge
- Facilities review
- Review of instructor knowledge and experience
- Feedback from past learners
- Practical training provisions

Composite Repair



Company: Abaris Training

Approved PRI Qualification BoK(s):

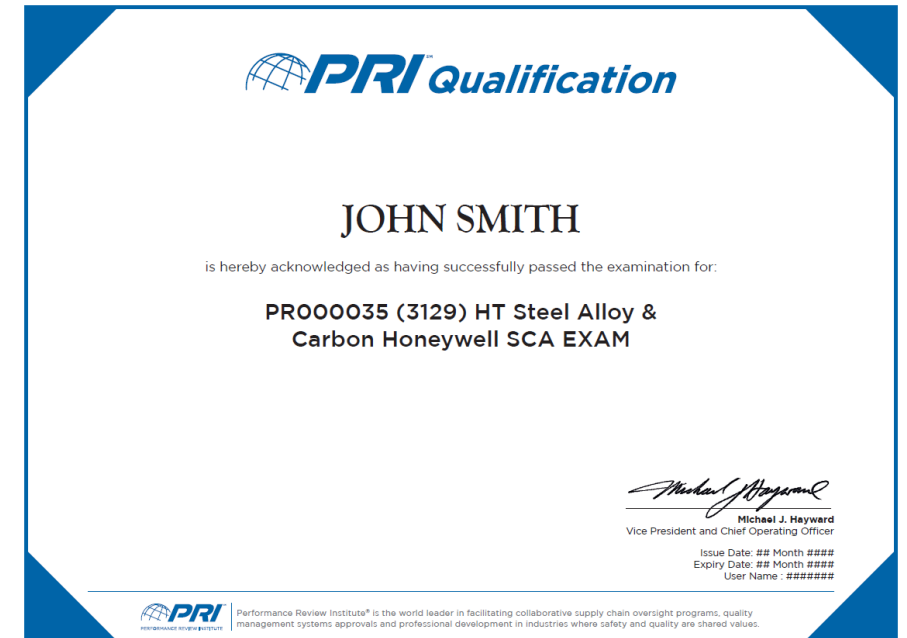
- General Composite Repair Technician
- Aerospace Composite Bonded Repair Technician

Approved Locations: Reno, NV, USA; Griffin, GA, USA; Sao Paulo, Brazil

There is no charge to become an Approved Training Provider

VERIFICATION OF KNOWLEDGE

- **Online:**
 - Multiple choice, open book theory assessments delivered via Webassessor
 - Assessments can be taken anytime, anywhere
- **Practical:**
 - Composite Repair Practical set for release in 2020
 - Plan to expand in other areas by end of 2020



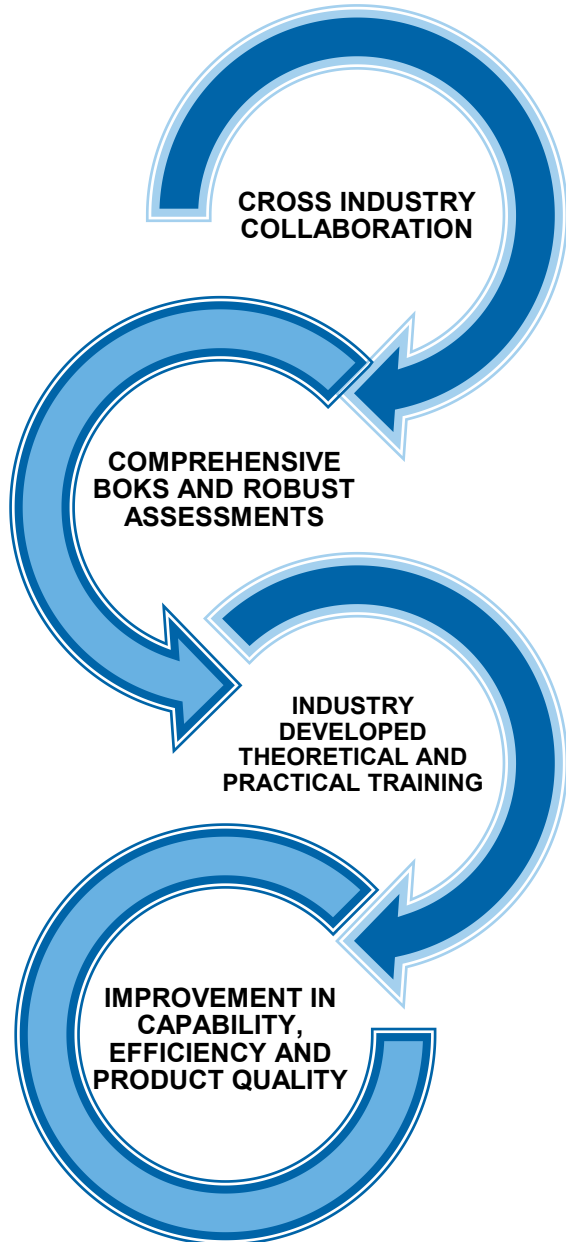
Successful candidates receive a Certificate of Qualification with 3-5 year validity.

MEMBERSHIP (PAID)

- Members have the right to influence and shape the content of assessments.
- Safeguards the integrity of assessments:
 - Enables the program to limit access to assessment content to only those organizations who have signed agreements to safeguard content

	Annual Assessment Package		
	Complimentary Assessments	Discounted Assessments (\$50 discount)	Annual Fee
Basic	4	5	\$999
Premium	20	25	\$4,999
Training Providers	N/A	N/A	\$499

Want to learn more about Membership? Email us at PRIQualification@p-r-i.org to for more information.



PARTICIPATE:

Any Organization:

- Strategic development of PRI Qualification through Management Council
- Contribute to technical content of the Bodies of Knowledge through Review Boards

Members

- Review and approve content of assessments (practical & theory)

IMPLEMENT:

- Download the Bodies of Knowledge and utilize them free of charge:
 - Align training courses and assess operator capability
 - Support documentation of job functions and responsibilities
- Achieve Approved Training Provider status (free of charge)
- Utilize assessments
 - Validate competency of personnel

MORE INFORMATION / CONTACT US

- **Bodies of Knowledge**
 - All published BoKs can be found on the PRI Qualification [webpages](#)
- **Online Assessments**
 - www.PRIQualification.org
- **Contact Us:**
 - PRIQualification@p-r-i.org

