QRA Examples by Industry:

Alarm/ Security company

- purchase and testing of new technology or software

- costs associated with improving internal timesheet tracking

- designing new surveillance equipment or software

Architecture

- developing unique energy-efficient features for a residential or commercial structure

- designing site orientations to take advantage of natural elements such as sun and wind

- developing new methods for configuring master construction plans

- Developing planning and elevation drawings

- Designing a functional site plan to incorporate or overcome the site plan features

- Developing construction documents

- Designing and developing building facades

- Achieving LEED certification

- Designing building systems

- Designing building shape and form

Bug Control – (new green and humane methods)

- experimenting with better, faster, easier and more cost-effective processes and procedures (i.e. spraying, trapping, baiting, etc)

- experimenting with new solutions of insecticides, new types of traps, etc.

- internal process changes (i.e. implementing new software for scheduling, sending staff out to the sites, accepting payment from customers)

Car dealerships

- internal process changes (i.e. new online system to schedule service appointments)

- implementing touchless technology for delivering cars to buyers due to Covid-19

- designing new solutions for fixing cars (i.e. old rare cars where replacement parts are no longer manufactured and service department has to find a new way to fix the car and develop an alternative part that will work)

Construction/Electricians/Plumbers

- experimenting with alternative material combinations

- foundation engineering to mitigate the effect of unstable soil or sand

- energy efficiency design or improvement

- "Green" building design and LEED certification

- HVAC system design to improve airflow and energy efficiency

- Electrical, plumbing and lighting design to increase efficiency

- Drainage or storm water management design

- structural engineering to withstand load capacity or natural disasters

- dew point analysis to determine location and type of barrier for walls, roofs and floors

- plant production system design and optimization

- high-tech equipment installation

- projects utilizing advanced modeling software to develop and test mock-up designs

- improvement of construction/plumbing/electrician processes for increased efficiency or reliability

- exploring new construction/plumbing/electric techniques used in the field

- design and development of unique temporary systems such as shoring, formwork, falsework, power and dewatering systems

- pipe design and testing

- mechanical equipment sizing, mechanical fittings and routing

- building information modeling (BIM)

Dairy Farms

- optimizing productivity and utilization of dairy pastures

- Developing / Integration of new or improved dairy production systems

- Developing technologies to measure body composition in livestock

- Developing ways to increase milk production

- Developing new gene transfer technologies

- Eliminating / controlling dairy cattle disease

- Conducting horticultural R&D activities

- Evaluating/Integrating of accelerated growth formulas

- Avoiding antibiotic residues in milk

- Making efforts to control molds and mycotoxins

- Attempting to improve milking procedures to increase milking efficiency

- Evaluating and implementing of odor control treatment methods

- Experimenting with aging techniques

- Experimenting with preservatives to increase shelf life of various dairy products

- Developing or experimenting with new feeds or feeding techniques for dairy cattle

- Developing and experimenting with new breeding techniques

- Developing automated processes

- Developing specialty products such as reduced fat, low-carbohydrate, or protein-enhanced dairy products

- Developing products with lengthened shelf lives

- Developing or modifying pasteurization processes

- Developing new or improved methods to minimize bacteria and other contaminants

- Developing or modifying bottling processes

- Shepherding products or processes through regulatory or industry approval processes (e.g., FDA, USDA, ISO-9000)

Dentists

-experimenting with alternative materials and attachment systems, sealants, adhesives, anesthesias, etc.

- experimenting with better, faster, easier and more cost-effective processes and procedures

-research leading to publications and patents

- incorporating new technology that in turn creates a new or improved process in their practice (example, implementing 3D printing technology generates new workflows and changes to the production pipeline. The costs incurred to implement 3D technology including additional software and additional costs needed to indirectly "update" the rest of the dental practice procedures to accommodate the new technology of 3D printing)

- Costs to incorporate tele-health into the practice

- internal process changes (i.e. for patient intake, instead of having them walk-in and complete all of the registration forms, process improvement would be providing them the option of pre-registering and filling out all of the questionnaires online. In this case, all IT and hardware costs, as well as time to re-train staff would qualify)

- When it comes to "custom" orders because patients have different mouth shapes etc., if the practice came up with a new procedure to streamline the custom fabrication of dentures for example, the costs associated with developing that new process would be qualifying. Let's say that they developed a curved attachment that is affixed to the dentures that allows for faster/easier fabrication of the dentures even though every patient has different curvatures...that's qualifying R&D.

- The year that a practice brings their lab in house also has QRAs because they have to revamp all of their procedures now that they will be testing in-house. They are changing the way they collect and submit samples to the lab, and the way they receive and report on the lab results. All of these initial costs are qualified.

This podcast talks about another R&D firm's process and how they structure their calls with the prospects, data collection, time involved, etc. This consulting company is a fan of custom, patient specific cases as qualifying activities. I tend to fall more in the middle but AIA can take a position on whether to interview about custom/patient specific and allow all of the time used back and forth with the client to try on the dentures or crowns until it's a perfect fit: https://www.dentalimplantpractices.com/podcast/110-dental-implant-tax-credit-with-leyton-consulting/

Excavation

- experimenting with different kinds of machinery to improve excavating techniques and efficiency
- experimenting with alternative materials and procedures to mitigate excavation site issues such as moisture, ground instability, etc.

Farms

- discovering new methods of hybridization or development of new strains of crops. plants or livestock

- development and implementation of new irrigation systems

- evaluation and implementation of new techniques to increase yields

- improvements to harvesting techniques

- development or experimentation with new feeds or feeding techniques for livestock

Home health care

- experimenting with better, faster, easier and more cost-effective processes and procedures

- incorporating new technology that in turn creates a new or improved process in their practice (e.g. scheduling, patient inquiries/intake, etc.)

- Costs to incorporate tele-health into the practice

Manufacturing

- Designing and developing first articles, samples and prototypes

- Practicing innovative product development using computer-aided design tools

- Experimenting with new machining trends

- Developing new, improved, or second-generation tools, dies, molds and other devices

- Tooling and equipment fixture design and development

- Developing unique computer numerical control programs and/or programmable logic controllers

- Developing custom alloys and manufacturing processes

- Designing innovative equipment

- Prototyping and three-dimensional solid modeling
- Testing and stress analysis and maintaining quality assurance
- Designing and developing cost-effective and innovative operational processes
- Integrating new materials to improve product performance and manufacturing processes
- Determining tooling requirements and optimal placement of equipment
- Evaluating and determining the most efficient flow of materials
- Developing processes that would meet increasing regulatory requirements
- Reducing labor costs
- Alternative material testing
- Achieving compliance with changing emissions laws and regulations
- Streamlining manufacturing processes through automation
- Increasing manufacturing capabilities and production capacities
- Developing and Implementing new / improved safety enhancements
- Developing new applications
- Improving product quality

Oil and gas

- Designing offshore structure design with respect to:
    - Generator and compressor modules
    - Process modules
    - Quarters
    - Equipment skids
    - Jackets
    - Helidecks

- Developing and testing of plug and abandonment solutions

- Developing and testing of turnaround and shutdown services

- Creating plant design with respect to:

    - Pressurization

    - Safety

    - Chemical segregation

    - Environmental and pollution control systems

- Developing wastewater treatment solutions

- Refining issues

- Designing or improving drills

- Developing containment systems

- Testing fuel combustion

- Conducting environmental testing and remediation

Optometrists

-experimenting with alternative materials, different kinds of contact lenses, eye drops, etc.

- experimenting with better, faster, easier and more cost-effective processes and procedures

-research leading to publications and patents

- incorporating new technology that in turn creates a new or improved process in their practice (example, implementing Optical Coherence Tomography technology generates new workflows and changes to their testing procedures. The costs incurred to implement this technology including additional software and additional costs needed to indirectly "update" the rest of the practice procedures to accommodate the new technology. Sometimes it creates a domino effect where the practice will find more efficient ways to diagnose and treat other eye conditions)

- Costs to incorporate tele-health into the practice

- internal process changes (i.e. for patient intake, instead of having them walk-in and complete all of the registration forms, process improvement would be providing them the option of pre-

registering and filling out all of the questionnaires online. In this case, all IT and hardware costs, as well as time to re-train staff would qualify)

Orthopaedics/ Chiropractic

- experimenting with better, faster, easier and more cost-effective processes and procedures

- research leading to publications and patents

- incorporating new technology that in turn creates a new or improved process in their practice

- Costs to incorporate tele-health into the practice

- internal process changes (i.e. for patient intake, instead of having them walk-in and complete all of the registration forms, process improvement would be providing them the option of pre-registering and filling out all of the questionnaires online. In this case, all IT and hardware costs, as well as time to re-train staff would qualify)

Recycling & Waste Management

-developing irrigation processes and sprinkler systems for composting

- improving leachate contamination controlling systems

- developing new methods for recycling, disposal or treatment of used chemicals and by-products

- designing new or improved compost turning machines

- designing wind row machines with additional aeration

- developing or modifying compost screening systems

- improving landfill cells and attempting to prolong use

-implementing and improving co-disposal techniques and communal collection

- developing and improving composite liners

- controlling and improving hydro-geological suitability

- implementing novel energy recovery techniques

- developing alternatives to flaring

- developing new methods to control pathogens

- waste-to-energy (WTE) plant conception and implementation

- developing processes to recycle produce with green waste

- experimenting with methods to increase capacity of construction and demolition facilities

- attempting reduction or control of odor

- developing or modifying hazardous waste processes (controlling, handling, detecting and disposal techniques)

- implementing an environmental management system (EMS)

- implementing better technique for removing solids from water in C/D flotation tanks

Restaurant

- exploring innovative processes that improve the nutrition, safety and preservation of food

- implementing blockchain technology to track a food product back to its source

- implementing technology and equipment in light of COVID restrictions (equipment to maintain social distancing, electronic/QR code menus, etc.)

Telecommunications

- Designing and implementing plans for both layout of the physical network and the software technologies necessary to provide required services such as:

    - Unified communication VOIP

    - Security solutions

    - Core routing and switching

    - Data centers

- Developing new and improved functional integration for mobile computing, media, and network processes

- Designing and developing for new programming models, algorithms, and parameterized data traffic

- Developing software and processes for data trafficking and data center management

- Developing custom communication networks for specific uses and layouts, including high-speed data, VOIP, and video conferencing

- Developing second generation or improved products

- Integrating new materials to improve product performance and manufacturing processes; testing of prototypes

- Implementing new production standards and quality assurance processes

- Improving product quality, durability, or safety

Trucking Logistics

- costs to improve, upgrade, or purchase new internal tracking systems or software

- costs for experimenting with new internal processes, with the goal improving or streamlining

- implementing new technology to navigate routes, mitigate damages, etc.

Veterinarians

- experimenting with better, faster, easier and more cost-effective processes and procedures

- incorporating new technology that in turn creates a new or improved process in their practice (e.g. scheduling, patient inquiries/intake, etc.)

- Costs to incorporate tele-health into the practice