

Lesson 1 - Project Lifecycle & RMAs as Professionals in the Project lifecycle

Keywords

- Project lifecycle
- RMAs' levels of action
- RMAs' knowledge areas
- Pre-award phase and competencies
- Post-award phase and competencies
- Hybrid and integrated RMAs
- PMO types

Learning Objectives

① ②

Scan for complete LOs



Go to the exercise

<https://learningapps.org/watch?v=pnt49utwk22>

Go to video

<https://www.youtube.com/watch?v=w5AjxFAPIZE&t=25s>

The Education and Research ecosystem has been in rapid evolution during the past two decades, critically influenced by 'demands of contemporary environments' such as (i) **globalisation** and **increased mobility**; (ii) **global financial crisis**; (iii) **technology advancement**; and (iv) **knowledge-based economy** (Chan et al, 2017). In response, education and research institutions (ERI) have been implementing structural changes and **enhancing the professionalisation of their managing structures** (Whitchurch, 2008), aiming at better adapting to these new challenges in an increasingly complex research ecosystem.

Moreover, R&I needs not only excellent researchers, but also **highly-skilled professionals working in research administration, research management, knowledge transfer and exploitation, science communication, research governance and research policy**, in order to release the full potential of R&I at institutional, national and international levels. Although these professionals do not perform direct research tasks, they support researchers in common working ecosystems. These professionals have a name: **Research Managers and Administrators (RMAs)**.

Research Managers and Administrators: diversity and definition

Collinson (2006) highlighted several common features between professionals working in research management in British Higher-Education Institutions (HEIs), such as i) the wide range of roles; ii) the cross-boundary interaction with academics, and iii) their 'occupational identity issues'. These thin boundaries between academics and non-academics and new identities within HEIs were also evidenced by Whitchurch (2008), who proposes the term **third space professionals** to refer to individuals who perform managing roles, with a diversified background and a non-academic contract, and who undertake activities between the professional and academic spheres.

On a similar note, the second type of space is defined by Shelly (2010) as the **shifting area**, highlighting the shared space where research management crosses into the academic domain. Santiago et al. (2006) had previously defined the increasingly specialised role of these professionals as *"being able to define missions, objectives and strategies; having capacity to manage financial and human resources and to assume strong management leadership, in contrast to traditional academic styles of negotiation and consensus building"*.

More recently, Agostinho et al. (2020) proposed the term **Professionals at the Interface of Science (PloS)** as an **umbrella identity** that encompasses all these professional roles and profiles.

Despite the different terminology and conceptual framework proposed to define these professionals, all authors acknowledge that **Research Managers and Administrators operate at different levels/ stages of research development:**

- **upstream of research** - to attract/ advocate for/define a strategy for research funding projects and partnerships (with both academia and industry);
- **during the research** - to support research activity itself (e.g. post-award management, technological platform management, ethical compliance management, intellectual property management);
- **downstream of research** - broadening the impact of research (e.g. outreach, science communication, facilitating the impact on understanding, learning & participation; creativity, culture and society; social welfare; commerce & economy; public policy, law & services; health, wellbeing & animal welfare; production; the environment; practitioners & professional services).
- **transversal areas** - RMAs also develop their work in cross-cutting issues that are transversal to upstream and downstream phases of research, such as **responsible**

research and innovation, gender, ethics and several broader areas of researcher development.



Figure 20 - Level of action where RMAs operate

This module focuses on the **project lifecycle** and on RMAs who perform project management tasks, often called **R&I project managers**.

Research & Innovation (R&I) project management

R&I projects are based on activities with a high level of complexity and interdependency and are normally time, resources, and money consuming. More frequently than not, there is a high risk and a level of uncertainty associated with these types of projects, so the management of R&I is of utmost relevance to the success of an R&I project (Mikulskienė, B. 2014; Dinsmore, P. & Cabanis-Brewin, J. 2011). Management processes allow us to deal with and control the activities of team members to successfully develop a project. An R&I manager's most relevant ability is that of being able to control the development and effectiveness of the R&I activities undertaken and to properly address uncertainties.

To understand what R&I management implies and how to employ its tools and techniques in the best way possible, we must know the meaning of R&I effectiveness (and how can we evaluate it) and consider which benefits can result from addressing R&I management. (Szakonyi, R. 1994; Mikulskienė, B. 2014).

Szakonyi (1994) identified **10 R&I activities** useful to measure **R&I effectiveness**.

1. **Selecting R&I** – recognising and identifying R&I projects that best suit your organization's perspectives and specializations is paramount; without a **careful selection**, any concerns about project management are unnecessary.
2. **Planning and managing a project** – an R&I project needs to have a quality and well-organized plan and a **suitable management** process in place; otherwise, the successful outcome of the project will be at risk.
3. **Generating new products ideas** - new product ideas, capable of having a **relevant impact on society** are important to present a strong project concept which is interesting for stakeholders.
4. **Maintaining the quality of R&I processes and methods** – in an R&I project, we must guarantee not only reaching of the objectives proposed but also that these are met with quality. Assuring the quality of R&I processes and methods will allow us to work efficiently and produce **valuable outcomes**.
5. **Motivating technical people** – to ensure they bring their **expertise** into the project.
6. **Establishing cross-disciplinary teams** – even though this paper was written more than 20 years ago, it already stressed issues that are ‘popular’ nowadays. To have a project approved, the European Commission (EC) requires a project plan that addresses the strategic challenges of our society. To address these strategic challenges, which are often **complex and cutting throughout different fields**, cross-disciplinary teams play a fundamental role.
7. **Coordinating R&I and marketing** – on top of a good R&I project plan and the production of quality research results, a successful project must also include a plan outlining how the **knowledge developed** will be used and how society will benefit from it.
8. **Transferring technology to manufacturing** - when developing an innovation project with a high **Technology Readiness Level (TRL)**, even in academia, is important to anticipate how that technology can be transferred to society. As Dr. Eugene Sweeney mentioned, during an Intellectual Property Webinar *Maximise the impact of your project*, promoted by the European IP Helpdesk on May 27th, 2020, *nowadays we*

need to present an Innovation Plan describing how we will **manage the assets** and elaborate a dissemination/exploitation plan. The **impact of research** isn't a moment's trend but an important aspect to consider in European research projects. A **project-specific dissemination and exploitation** plan is often required and evaluated at the proposal stage.

9. **Fostering collaboration between R&I and finance** - the author only mentions the need to have a good communication in place between the R&I staff and the department dealing with finances; but excellent communication should also occur with several **departments** inside the organisation, including the Human Resources department, Procurement department and Information Technology (IT) department.
10. **Linking R&I to business planning** - Mikulskienė (2014) states that *planning techniques help manage time and resources and assist the team with seeing the big picture; better understanding difficult tasks ahead and when they will happen; putting first things first by prioritising important tasks [...]; minimising efforts on unfruitful side tracks; staying focused on the objectives; making better estimates of time and resource needs; improving communication among key personnel; seeing the need to look at alternative approaches or techniques; making better decisions when dealing with trade-offs between time, performance and resource constraints.*

Project Management: 10 knowledge areas

According to the **Project Management Institute (PMI)**, the project management field is organized into **ten macro knowledge areas**, each involved in different moments of the research project lifecycle.

1. **Project Integration Management** - essentially refers to the integration and **coordination of all elements of the project**, namely project activities, resources, stakeholders, and any other project features. It is in this knowledge area that the responsibility to manage conflicts that may arise in the project development falls. Along with, the competence of make trade-offs that allow the workings of several processes, developed by different teams and/or departments work in together in a through a coordinated way. The management of project integration is considered crucial to the success of an R&I project.
2. **Project Scope Management** - involves the characterisation of the product or result, namely its **functions and features**. Scope management should also include

the activities which are instrumental to achieve the pre-defined functions and features of project results.

3. **Project Time Management** - involves six processes: 1) definition of the activities; 2) organisation of the execution sequence of the activities; 3) estimation of the activities' resources; 4) estimation of the activities' duration; 5) definition of an activities' execution schedule; 6) control and revision of the activities' execution schedule.
4. **Project Cost Management** - involves establishing the **project's budget**, ensuring that the funds available cover the extent of the project, and defining a monitoring system and relevant tools through which costs can be measured and managed.
5. **Project Quality Management** - involves the development of a plan detailing how quality assurance and control will be executed and how the achievement of **quality standards** will be monitored. Project quality plans should also detail what techniques or tools can be employed for **quality improvement**.
6. **Human Resources Project Management** - involves the establishment of a plan which identifies **roles and positions** needed for project development, including **training** requirements. It also entails a tracking system allowing for an evaluation of the **team's performance** and ensuring that activities are being executed as planned.
7. **Project Communications Management** - involves a communication plan detailing how and when communication takes place within the team, **among partners and to stakeholders**. A communication plan should also include a communication assessment strategy to ensure efficiency is frequently measured and adjusted when needed.
8. **Project Risk Management** - involves a plan defining how risks will be itemized, categorized and prioritized. It should also establish **risks response strategies**, including who will be responsible for risk identification handling, and the regularity with which the risk register should be reviewed.
9. **Project Procurement Management** - involves a plan identifying **acquisition of services and/or products** needed for the project's development, including how suppliers/contractors will engage in the project.
10. **Project Stakeholder Management** - involves listing the stakeholders, prioritizing their concerns and identifying how they could impact the project. The control of the **stakeholders' engagement** should occur throughout the whole

Module 3 - Project Integration and Management

project, namely by constantly evaluating if their needs are being addressed and which adjustments are necessary to achieve their expectations.

The **project management areas** above are **vertical**, meaning that these ten areas coincide with the different project management process groups, whereas the **project management process groups** are **horizontally oriented** and will occur sequentially following the project life cycle.

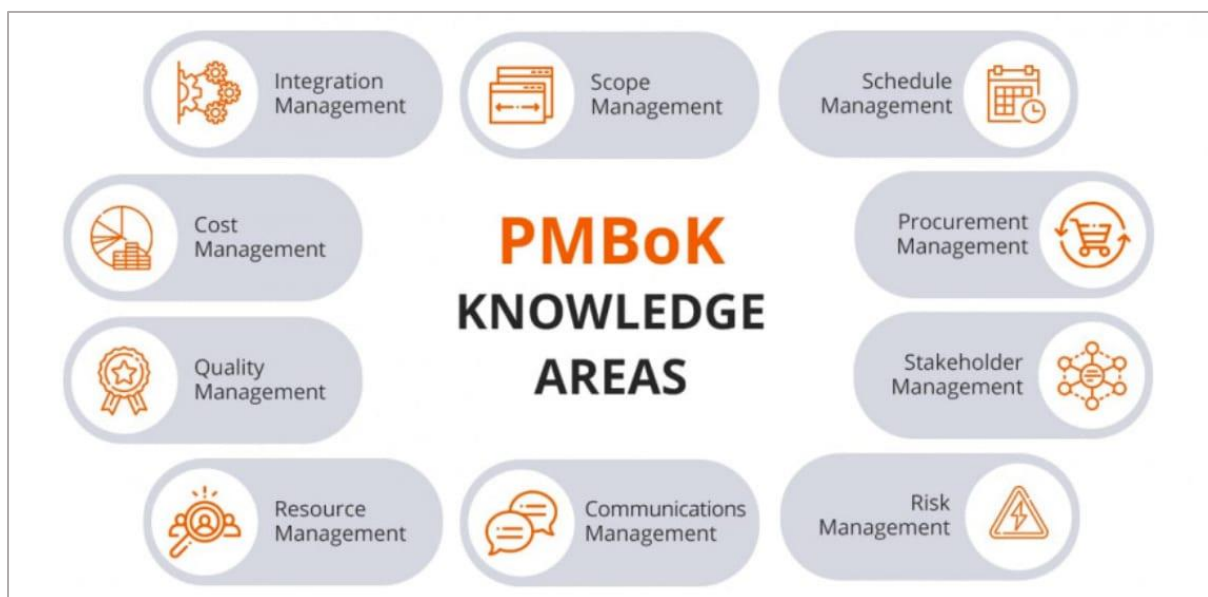


Figure 21 - PMBoK knowledge areas

(Source: <https://www.businessprocessincubator.com/content/5-key-project-management-knowledge-areas-and-why-they-matter/>)

Project Management and project life cycle

Project management accompanies a project through its lifecycle, and, in some cases, it might stretch beyond the closing of the project. Figure 22 illustrates a project lifecycle and its sequential stages (Kourounakis, N., & Maraslis, A., 2016):

- 1) project **initiation**;
- 2) project **planning**;
- 3) project **execution**;
- 4) project **monitoring and control**;
- 5) project **closing**.



Figure 12 - Project lifecycle and the main management tasks

Project initiation

The first phase of an R&I project is the **project initiation phase** during which the project purpose and objectives are defined, and some initial project planning activities take place. At a research project management level, this stage is also known as the **pre-award phase**.

It includes 1) **project planning**, where the research idea, the expected R&I project outcomes and the challenges addressed by the project are identified; and 2) **preparation of the grant proposal**, where the following aspects are defined and detailed:

- a) project **scope**;
- b) detailed **objectives and methodologies** to be implemented in the project's development;
- c) activities timeline, typically in the form of a **Gantt chart**;
- d) **milestones** and **deliverables**;
- e) **resources** already available at the organisation;
- f) **budget** and resources plan;
- g) associated **risks**, identifying the potential problems that may arise and alternative solutions available.

After these activities are carried out, the grant proposal of the R&I project is **submitted to the identified funding call** and, upon evaluation and consequent approval by the funding agency, the project enters its second phase, during which contract procedures are made initiated, both with the funding agency and with the partners, in case of collaborative grants.

Project planning

The second phase is the **project planning phase**. At this stage, the objectives of the R&I project are verified and the initial plan is revised and adjusted, if needed (e.g., dates of the planned activities and resources allocated should be adjusted to the timeframe and budget defined by the grant agreement). At research project management level, this stage is also known as the **post-award phase**.

During this phase, the project work plan and project management plan are structured and the **kick-off meeting** with all project partners is prepared (Kourounakis, N., & Maraslis, A., 2016).

Project execution/implementation

The **project implementation phase** often starts off with a kick-off meeting, promoted by the project coordinator. At this stage, all project plans begin to be implemented to carry through right to the closing phase.

Project monitoring and control

Simultaneously to the project's execution phase, the **project monitoring and control phase** occurs. During this phase, the R&I project execution activities are regularly reviewed and monitored to make sure everything is being developed according to the project work plan and to promptly address any deviations and risks. Also, this phase foresees all relevant communications with the funding agency, namely about **adjustments requests** - in case the deviations on the project cannot be handled without altering the initial plan - and concerning **interim scientific and financial reports** (Kourounakis, N., & Maraslis, A., 2016).

Project closing

The **project closing phase** represents the official end of the project, when all project documents, reports and deliverables are finalised to be sent to the funding agency. At this stage, it is important not only to acknowledge the team involved in the R&I project, but also to discuss the **overall experience** and report on the **know-how** learned and the **best practices** implemented that might be useful to keep in mind for future projects (Kourounakis, N., & Maraslis, A., 2016).

*RMA*s in Research Management

When managing R&I projects, the RMA must focus on the efficiency and quality of the R&I activities and must make sure that the planned activities and budget are being executed according to the project work plan.

The RMA deals with a multitude of situations and issues, namely **pre-award tasks** such as:

- identifying the **funding schemes**;
- supporting the **proposal writing procedure**;
- **scheduling** the R&I activities and planning the **resources** needed to develop the project.

And **post-award tasks** such as:

Module 3 - Project Integration and Management

- managing the **scientific and financial development** of the project – the RMA should keep track of the tasks being developed, the costs associated with each task and proceed with adjustments and corrections when needed;
- presenting **reports** to the funding agency;
- managing the **finalisation of the project** – the RMA aids the principal investigator in gathering all project information, for an **evaluation of project indicators** to be carried out, to assess if these were met and to prepare the **final report**.

RMA's are also involved in **science communication and promotion of broader impact tasks** such as:

- promoting the **dissemination and communication** of the project's achievements;
- **managing the knowledge produced** by the project, focusing on its possible use and potential impact on society.

Due to the wide spectrum of RMA's actions, within a Research Performance Organisation (RPO), we can observe **different types of RMA's** having diverse and specialized competencies (e.g.: pre-award managers and post-award managers, team managers, laboratory managers, communication managers, intellectual property managers).

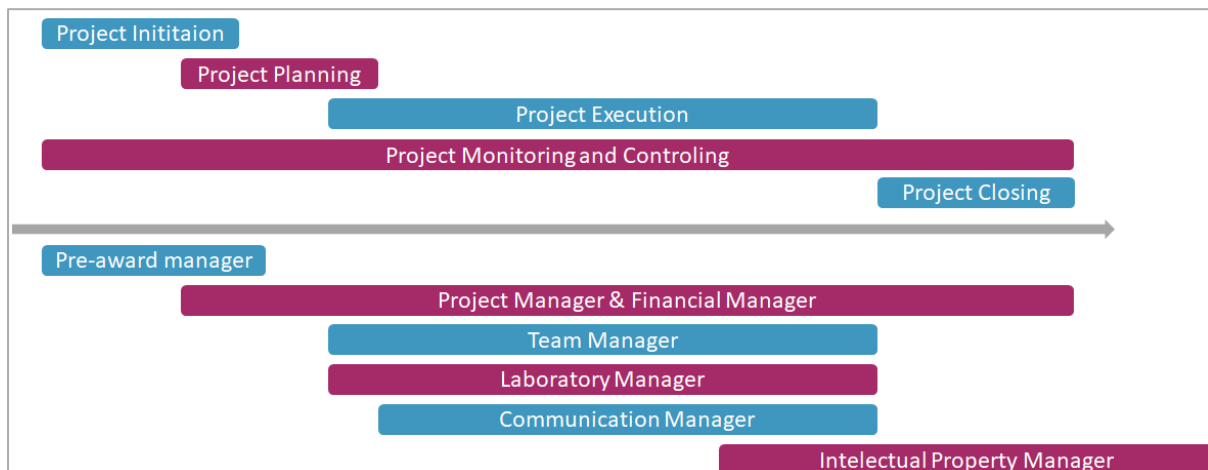


Figure 23 - RMA profiles within the research lifecycle

Pre-award manager is responsible for identifying the best funding scheme for a specific idea or research plan pursued by a researcher and supports the proposal writing procedure. The pre-award manager advises the researcher on the **specifics of the call** and must guide them in successfully addressing all topics on the application form.

Post-award manager is responsible for the **financial compliance monitoring**, verifying if the financial execution of the project occurs according to the funding agency's financial rules

and applicable national laws. The post-award manager also plays a significant role in aiding the principal investigator in dealing with the funding agency, giving support during the project modification processes, like **budget revision** due to project deviations. Throughout the project's execution, the post-award manager is responsible for the preparation and organisation of **report documents and financial reports submission**, on top of the project's closing procedure and **audit preparation**. The post-award manager may also have a tight collaboration with the pre-award manager, specifically on the establishment of the budget and resources plan for the application preparation.

Team manager, laboratory manager and even communication manager roles can be executed by the project manager. This role separation depends on the internal organisation of the institution or on specific project needs. The team manager is responsible for supervising the team of the project, **assessing the team's performance** and dealing with internal conflicts that may arise. The laboratory manager is responsible for the **maintenance of the laboratory**, certifying that the project team has all resources needed available at the laboratory, and is in charge of requesting any material necessary to carry out the project activities.

Intellectual property manager is responsible for supporting the writing of the **IP protection requests** to be submitted to IP offices, preparing and revising **the non-disclosure agreements** and for the revising the IP clauses present on the consortium agreements. The role of the IP manager may be extended beyond the closing of the project since he/she accompanies the IP concession procedure - which may take up to 2 years - and is involved in the **licensing** agreements and **technology transfer** activities.

Project Management Offices (PMO)

Often, project managers are integrated into a **wider research support team**, such as within a Research Support Office or a Research and Innovation department. Nevertheless, the composition and diversity of such teams/offices varies depending on the type of RPO institution involved (university, private research institution, technological/interface institution, etc.) and on its level of professional maturity and development (often connected to great discrepancies in R&I performance between countries, even within Europe).

Module 3 - Project Integration and Management

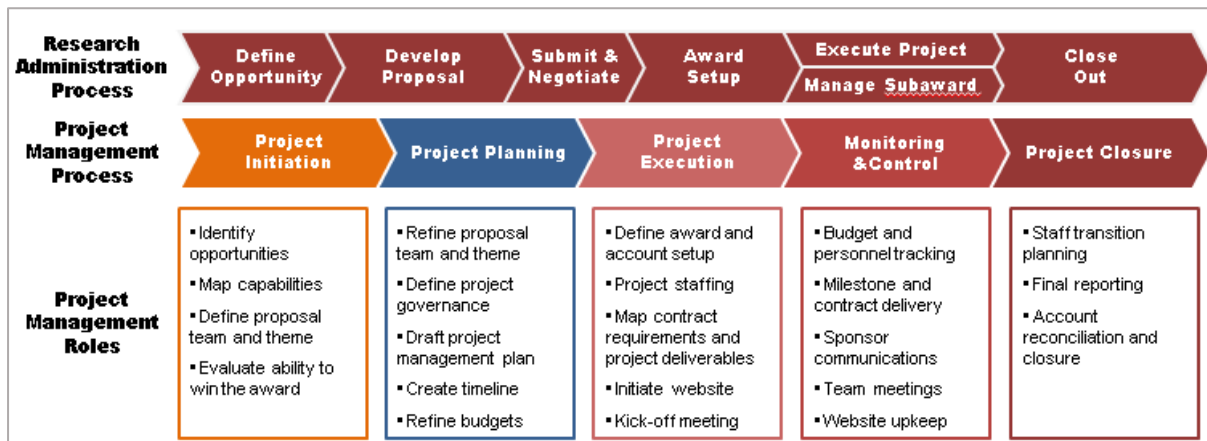


Figure 24 - Project Management Office - Example of the organization of the Arizona State University
(Source: <https://researchadmin.asu.edu/project-management-office-pmo>)

Depending on the organization and on its level of professional maturity/development, there are different possible teamwork configurations for project managers, ranging from a large and **very specialized RMA team** (supporting project management as a team effort and addressing all aspects, including financial, communication, open science, etc.) to a small and **generalized team** (where the project manager has an overview of all relevant issues).

Several authors have analyzed this issue, as we can see in the article [Project Management Office Models – a review](#) by Monteiro, A, et al. For example, the PMBOK categorizes PMOs based on their 1) **influence** and 2) **position** within the organization.

1) Based on the **level of influence**, we distinguish in:

- **Supportive PMO:** plays a consultative role in projects by supplying templates, best practices, training, access to information and lessons learned from other projects. This type of PMO serves as a project repository. Low degree of control.
- **Controlling PMO:** provides support and requires compliance through various means. Compliance may involve adopting project management frameworks or methodologies, using specific templates, forms, and tools, or adherence to governance. Moderate degree of control.
- **Directive PMO:** takes control of projects through direct management,. High degree of control.

2) Based on the **position within the organization**, PMOs may be distinguished in:

- **Individual PMO or Project Management Office:** typically provides functional support (e.g., infrastructure, document management, training, etc.) to a single complex

project or program. Sets basic standards and oversees planning and control activities for a single project.

- **Departmental PMO or Business Unit PMO:** a Departmental PMO provides support for multiple projects at a department or business unit level. Their primary challenge is to integrate different sized projects within a division (e.g., IT, Finance) from small, short-term initiatives to multi-year programs with multiple resources and a complex integration of technologies.
- **Corporate PMO or Enterprise PMO:** a Corporate PMOs creates standards, processes, and methodologies to improve project performance within an organization. They are typically responsible for allocating resources to different projects across the organization.

Advantages and disadvantages of pre-award and post-award integration

While pre- and post-award research administration procedures differ, both functions are a vital part of research administration, and there are both advantages and disadvantages in the integration of these research management areas (The Advisory Board Company, 2011).

Pre and post-award as separate RMA entities

Pre- and post-award RMAs act separately in **distinct units and offices**.

Advantages: being exclusively dedicated to pre-award research management, the RMA can develop a **high level of specialization** and become knowledgeable in very specific niche areas.

Disadvantages: a strict separation between pre- and post-award management can lead to **inefficient communication** and contribute to making it challenging for both pre- and post-award RMAs, to gain a holist perspective on the whole process of research administration

Hybrid pre- and post-award RMAs

Pre- and post-award RMAs act separately but within the **same unit or office**.

Advantages: RMAs specialize in specific niche areas while developing a **close communication** between pre and post-award management procedures, which will ultimately improve the whole project lifecycle and provide benefit for the principal investigator.

Disadvantages: this **co-presence** may lead to the **need for additional staff leaders** (e.g.: pre-award coordinator and post-award coordinator) and the RMAs must deal with the existence of different roles and responsibilities within the same office.

Integrated pre- and post-award RMAs

The RMAs work in the same office and there is **no separation** between pre- and post-award managers, since all RMAs act on the **same procedures**.

Advantages: being generalist RMAs (working as pre and post-award managers) can contribute to **flexibility** in adjusting to high workloads both on the pre or post-award procedures; also, **project monitoring is more streamlined** since the same RMA has managed the project from the beginning and has supported the development of communication with the principal investigator.

Disadvantages: the **training** of an RMA that works as both a pre- and post-award manager is extensive and implies a large volume of knowledge to master.

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Module 3 - Project Integration and Management

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