



International Aeronautical Federation (IAF)
International Project/Programme Management Committee (IPMC)

2020 Young Professional Workshop Statement of Work

Sunday October 11th, 2020

Virtual forum



Foreword

As the Statement of Work (SOW) for this year's IPMC Young Professionals Workshop was being finalized, the world was engulfed in the COVID-19 pandemic. The ensuing lockdown did not spare IAF activities, which have been heavily affected with cancellation of all major events for 2020, including IAC in Dubai, which has been replaced by a CyberSpace meetup.

In this context, the IPMC YP Workshop Organizing Committee (WOC) evaluated the possibility to still pursue the 2020 edition. The motivation came from the awareness that a core strength of the workshop is the fact that it is almost entirely held online, through virtual collaboration sessions which bring together delegates from all over the world. Only the final event would need to be reinvented in this new global framework.

It is the WOC's opinion that the workshop can be even more meaningful in this worldwide crisis, by proving how younger generations and their smart work approach are intrinsically resilient to disruptive events such as the present lockdown.

For the above reasons, the WOC is inviting the Young Professionals to the 2020 IPMC YP WS and is proposing a tailored SOW to reflect on the peculiarities of current times and their effects on Project/Program management.

2020 will mark the 10th anniversary for IPMC and the 9th occurrence of the YP WS: the call is on Young Professionals to transform the challenge into an opportunity.

Table of Content

- 1 Introduction
 - 1.1 Scope
 - 1.2 Background for the Workshop
 - 1.3 Reference Documents
 - 1.4 WOC Organization
 - 1.5 Acronyms and Abbreviations
- 2 Objectives of the Workshop
 - 2.1 Peculiarities of the 2020 edition
- 3 Topic Description
- 4 Recommendations and guidelines
- 5 Requirements for Management, Meetings, Deliverables and Reporting
 - 5.1 Online collaboration
 - 5.2 Management
 - 5.3 Mentor
 - 5.5 Deliverables
 - 5.6 Reporting
 - 5.7 Evaluation by IPMC

1 Introduction

1.1 Scope

This Statement of Work (SOW) describes the workshop activities to be executed and the deliverables required by the IAF's International Project/Programme Management Committee (IPMC) with respect to a set of recommendations that shall be derived to support ongoing development of young professionals in the international space industry and the development of the next generation workforce.

1.2 Background for the Workshop

Young professionals throughout the space industry face daily challenges when it comes to making the transition from their student careers to their professional careers and from starters to experienced professionals and leaders. These challenges arise from either their perceived, or demonstrated, lack of professional work experience as students and continue into the first five to ten years of their careers. Early career professionals are not only faced with the steep learning curves associated with obtaining real-world skills but are also faced with the need to earn the respect of their more experienced colleagues.

In recognition of these challenges, the IPMC member organizations welcome the active participation of early career employees in identifying challenges, opportunities, and new approaches to nurturing a highly motivated and experienced aerospace workforce. These efforts are being pursued through workshops involving selected young professionals and overseen by an appointed organizing committee. The expected output of these workshops are observations, conclusions and recommendations that can be employed by (aero)space organizations to ease the transition of young professionals into their careers and to facilitate transfer of know how to new generations of workforce. The workshop observations and recommendations can also benefit early career employees by helping them to navigate and advance in the early stages of their careers.

1.3 Reference Documents

The following documents can be consulted by the workshop participants as they contain relevant background information. These documents can be consulted on the 2020 IPMC YP Workshop Delegates Folder.

Reference Documents			
No.	Title	Author	Date
RD1 to RD8	IAF-IPMC Young Professionals Workshop – Delegate Handbook (issues from 2012 to 2019)	WOC	2012 - 2019
RD9 to RD16	IAF-IPMC Young Professionals Workshop – Workshop Results Report (issues from 2012 to 2019)	Workshop Delegates	2012 - 2019
RD 17	Five Years of IAF IPMC Young Professionals Workshop	Birgit Hartman and Maarten Adriaensen	2016
RD 18	The Future Workforce on Learning From and With Peers While Navigating Through The Era of Space 4.0	Birgit Hartman and Marie Botha	2018

1.4 WOC Organization

The WOC is a team of IPMC YP WS alumni who agreed to serve as the workshop implementation body on behalf of the IPMC.

WOC focal points are:

Eleonora Zeminiani	WOC Project Manager
Birgit Hartman	Strategy and Implementation Manager
Peter Batenburg	WOC Representative
Linn Boldt-Christmas	WOC Representative
Mark Fittock	WOC Representative
Andreas Lyder Pedersen	WOC Representative

The WOC team can be reached via ipmc.yp.workshop@gmail.com

1.5 Acronyms and Abbreviations

IAC	International Astronautical Congress
IAF	International Astronautical Federation
IPMC	International Project/Programme Management Committee
SOW	Statement of Work
WOC	Workshop Organising Committee
YP	Young Professional (participants - delegates)

2 Objectives of the Workshop

The goal of the IPMC YP Workshop is to gather inputs from young professionals in the international space community to gain the knowledge they need to better develop and empower the next generation workforce. For that purpose, the conducted research by the working groups is intended to produce thoughtful and well-rounded observations and recommendations on the assigned topics.

The observations and recommendations will be gathered in the IPMC YP Workshop report and delivered to the IPMC participants, their member organizations and the other member organizations of the IAF. The YP Workshop report will also be made publicly available on the IAF website (www.iafastro.org).

2.1 Peculiarities of the 2020 edition

The upcoming edition of the IPMC YP WS has been tailored to the exceptional circumstances of year 2020.

To recognize and respect the worldwide crisis, the WOC is proposing a customized statement of work to reflect on the peculiarities of current times and their effects on Project/Program management.

Instead of the usual collection of five topics to be investigated, this SOW is focused on the singular experience of working in the space industry during a global lockdown.

Young Professionals are encouraged to use their first-hand experience, their informed opinions and their fresh ideas to provide an insightful analysis of the research themes.

The final results will be compiled and distributed as usually done, with the confidence they will contribute to foster the strength and ability of the space workforce and of space organizations to cope with such exceptional times.

3 Topic Description

For the purposes of the 2020 workshop, delegates are allocated to one single Topic. Separate subgroups can be formed to better investigate specific themes within the overarching subject. The organization of splinter teams will be part of the kick-off activities.

The key assignment to be addressed by delegates in this edition is:

Space Project Management in the world of global lockdown, remote work and mobile technology

The need to maintain industrial, academic and institutional activities going during the global 2020 lockdown is affecting the space community in specific ways. Space entities have been deemed strategic by most of the Nations worldwide, and therefore allowed and encouraged to maintain some degree of operational readiness and capability. Facing the obligation to respect social isolation while at the same time carrying out highly demanding professional pursuits is changing the way we live and work. Delocalized teams are facing a baptism by fire as they are required to quickly adapt to unusual routines, processes, technologies and interactions. Work-from-home arrangements and mobile technology are put to the test as well. Smartphones, tracking devices, virtual assistants, mobile electronic devices, the Internet of Things and many other similar innovations are now more than ever impacting our daily lives as well as our professional activities. In spite of its alleged cautious approach to disruption, the space sector has been forced to embrace and experiment all of this and will for sure be affected in the long run.

Four main themes can be identified in the overall Topic.

Theme 1 - How do fragmented, remote, delocalized and virtual teams affect the way space projects are managed?

A key success factor for this research theme is to link unconventional team distribution, work-from-home arrangements and mobile technologies with their impacts on different tiers of project organization: from personal individual level to industrial or institutional global level.

The following elements could be considered in the research:

- What it means for space players, PMs and project teams to navigate through remote work, new tools, new habits
- What are the infrastructural issues that may arise with a large percentage of teleworkers
- How does a diverse workforce react to the request to work in fragmented and delocalized teams
- How does a diverse workforce cope with both the possibility and the request to work remotely, which implies a blurring of the work-life boundaries and a widespread use of mobile technology
- What is the approach of Young Space Professionals to work-from-home and how does their mindset differ from that of seasoned professionals

- How does a remote work arrangement redefine interpersonal boundaries, the traditionally expected level of professionalism in an office environment and the formality of communication
- How mobile devices are or will be used in project management and which are their benefits and drawbacks (e.g. smartphones, tablets, remote desktops, virtual or augmented reality... both in office environment and on the workshop floor or in clean room environment)
- Which of the upcoming mobile technologies are applicable to project management and project management tools in the space sector
- Which are the security concerns of remote work and mobile technologies when applied in Space Projects or Space Organizations, and how do we manage the associated risk
- Which project management methodologies are best suited to cope with the rise of virtual teams and mobile technologies and how is the role of project manager affected
- How do work-from-home and mobile technology impact the space workforce (e.g., “always connected syndrome”, modifications of work patterns, attention span and efficiency...)
- Which are the benefits and drawbacks stemming from the use of mobile technology and digital communication in place of more traditional in-person interaction and office co-location
- How do Young Professionals perceive, use and evaluate mobile technologies and remote work in their job
- What traditional PM techniques are worth preserving in the new mobile world of technologies and why
- What PM techniques are best suited for delocalized teams performing remote work and why
- Which new PM skillset is needed to effectively lead delocalized teams performing remote work through usage of mobile technologies
- What could senior PMs learn from an adapted PM style to navigate in the new era of mobile device technology

Young Professionals have a privileged point of view on virtual social interaction and mobile technology: Millennials have been identified as the first “always connected” generation, and Gen Z (also called iGen) have used digital technology since a young age and rely heavily on internet and social media. Delegates are therefore invited to use their insight when discussing how social distancing, virtual collaboration and new communication devices can impact the way we work in the space field and when making recommendations on best practices.

Specifically, participants should focus on how remote work and mobile communication are affecting the way we arrange project teams and manage space projects.

Theme 2 - Which are the key leadership and planning aspects of PM in a time of crisis?

A key success factor for this research theme is to identify and discuss specific knowledge, skills, tools and methodologies which can support a Project/Program Manager is successfully leading a team and achieving goals during a crisis.

The following elements could be considered in the research:

- How can PMs plan for uncertainty and threat
- Which are the key traits of leadership during crises and turbulence
- How do Young Professionals look at managers and leaders in times of emergency
- How can organizational culture and knowledge be managed, maintained and disseminated through difficult times
- What fundamental tangible and intangible resources do staff expect from PMs in order to fulfil their duties through a crisis
- What happens or should happen to standard processes and methodologies under exceptional circumstances
- Which elements of pre-existing structures and processes are proven essential and how to discriminate them
- Which new skills are surfaced by a global uncertainty and struggle

Young Professionals are less rooted into the space field and into a specific organization; they are also more used to navigating a volatile and uncertain job market. At the same time, being novices, they have less judgement parameters to benchmark complex situations. Delegates are encouraged to reflect on how they perceive leadership and program management in this global crisis and how it measures against their expectations and previous experiences.

Theme 3 - What is the role of space programs and the space community at large in shaping the societal impacts of forced social isolation and economic lockdown?

A key success factor for this research theme is to highlight how the space field interacts with and affects society during and after an international/global crisis.

The following elements could be considered in the research:

- Climate change vs confinement: how can the space industry make a case for encouraging intermittent confinement periods in light of its positive impact on the environment
- Essential workers and spaceports: how justifiable it is to continue keeping spaceports and other space-related facilities open during global emergencies
- Space law: what is the level of preparedness to manage the legal implications of space activities in case of a global emergency
- Sustainability of working from home: how could upper managements go about designing a structure to rotate work-from-home duties across their employees in the long-term and how would this affect local communities
- Contingency plans and prioritization: how prepared is the space sector to deal with a worldwide crisis such as the current lockdown, how are legacy space players coping w.r.t. new space players, how will the evaluation of productivity and priorities change in the aftermath of a similar spell
- Protecting diversity: which are the differences in impacts of the lockdown on our diverse workforce (e.g. from a generational standpoint) and how can we safeguard and leverage diversity when dealing with crises and social distancing
- Recession and space economy: which financial and productive consequences are or will be felt in the space sector, how they can be managed and how does this affect the space workforce and society

- Push for innovation: what technologies would have to be improved or developed to facilitate the continuation of space programs during global crisis, either due to delocalization of the workforce or to manage facility operations remotely

Delegates are urged to assess if and how the space community has served society in this period of distancing and isolation, which programs are having an impact in spite of (or even thanks to) the global lockdown, and what lasting change will survive in the long run.

Theme 4 - What is the impact of the current international crisis for the future of space projects, and how can PMs shape this impact into successful progress, ensuring acceptable risk and pioneering a new way forward?

A key success factor for this research theme is to determine the changes induced by the crisis and how the PM can calculate and mitigate the associated risk, while still ensuring timely and qualitative continuation of the project.

The following elements could be considered in the research:

- How is the PM managing the impact of the crisis, when the productivity is negatively affected while costs are increasing and work is delayed or discontinued
- Which new cost items are incurred in space projects due to the global lockdown and social isolation measures and how they differ from other more “conventional” inefficiency costs
- What possible cost savings have arisen in the new arrangements of working from home, off-site or remotely, which are other costs not incurred, and how can these cost savings be invested in the project (e.g. redirecting the funds to establish home offices, covering project delays, promoting investments in hardware etc.)
- How can the PM best absorb additional cost incurred due the international crisis
- What existing PM methodologies are best suited to revise large scale space projects, taken new uncertain elements of risk and cost into account with the irreversible changes the space industry has undergone
- How (if at all) will contingency planning change in the future
- Which differences in coping with the crisis can be identified between projects whose costs are ultimately borne by taxpayers (think agency- or government-initiated projects) and projects whose costs are ultimately borne by private shareholders and investors (think industrial ventures)
- What is the role of global international crises in sharpening or mitigating sunk cost fallacy for unprofitable or mismanaged projects

Delegates are prompted to investigate this theme not only by elaborating on the suggestions above, but also by

- 1) performing a Cost Benefit Analysis to determine the impact of changes and mitigation actions, and analyzing the outcome;
- 2) defining quantifiable direct and indirect implications of the crisis for space projects and illustrating how to identify them without the existence of suitable lessons learned or pertinent previous experience.

4 Recommendations and guidelines

The depth, detail and thoroughness of research can be adjusted based on team size and compositions. Delegates are free to decide whether all four Themes will be investigated or if a subset will be selected. Ideally, the same level of attention should be devoted to each one of the selected themes.

Delegates are invited to tap into their experience and understanding of the space sector and to unreservedly express their ideas when making recommendations on best practices. Therefore, delegates can also propose new areas for investigation which are currently not included in the above Themes, provided that they fit into the overall Topic for Year 2020.

The final presentation should make the case for assessing the present and future impacts of global lockdown, remote work and mobile technology on space project management and cost sustainability of space projects.

This is a new Topic and has never been explored in previous Workshops. However, please consult the findings in the previous workshop reports as a reference for how your research and reporting should be conducted.

Pending the outcome, a continuation of the above topics / themes can be considered for the 2021 IPMC YP Workshop.

5 Requirements for Management, Meetings, Deliverables and Reporting

5.1 Online collaboration

The Young Professionals Workshop is carried out through extensive use of online communication and collaboration tools.

Having regular virtual meetings is key to:

- establish good relationships among the delegates, based on understanding and synergy
- underpin and nurture group conversations around the chosen discussion topics
- progress with the coordination and preparation of project deliverables.

Experience from previous Workshops shows that, as a tool for collaboration among the participants from diverse and globally distributed locations, the virtual sessions work well as a mean to bring the delegates together and facilitate the research.

The WOC therefore encourages use of online virtual, social and collaborative tools, such as Skype, Google Hangouts, Slack, Google Docs, Doodle and any other option which works best for the teams.

The Young Professionals Workshop culminates in a one-day event where delegates present their results to the IPMC and a wider audience. Such final meeting is usually held in connection with the IAC, so that delegates can meet face-to-face and get to interact in person with senior professionals and field experts.

In view of the exceptional events of 2020, cancellation of IAC and subsequent possible perduring limitations to travel and large gatherings, the WOC will ensure that a final plenary event can still be held even if in a virtual session.

5.2 Management

The topic group (and any subtopic group) shall have an appointed group leader who will be responsible for overseeing the timely execution of the tasks assigned to that group. The group leader will represent his or her group at all relevant meetings with the WOC. At such a time where the group leader cannot attend a meeting, the group leader should appoint an ad hoc representative. The group leader shall be the main point of contact between the group and the WOC.

Duties of the group leader include:

- Establishment of a project schedule including major milestones and deliverables
- Scheduling and execution of regular group meetings
- Representation of group at all relevant meetings of the WOC
- Accountability for all group deliverables and their quality

Each group shall have an appointed rapporteur who will be responsible for the compilation and distribution of group minutes of meeting and reports.

The group leader will be in charge of organising the team as they wish, provided the various tasks will be shared between the team members and all deliverables will be submitted timely.

5.3 Mentor

A mentor is the experienced senior professional the WOC refers to in the SOW. The mentor in question has years of valuable experience, built profound knowledge on the topic and should be considered as the voice of reason and the groups “reality check”.

The mentor is requested to share his/her insightful knowledge with the young professionals, guide them through the topic, highlighting important aspects to be researched, suggest literature reviews, the right questions to ask when interviewing peers, etc.

Depending on the group's requirements, the mentor can be present at each meeting, or regularly attend meetings. This will be up to the mentor and the group to decide.

5.4 Meetings

Each topic group is required to hold regular meetings (advised is at least weekly during the first few weeks, twice per month during the summer and again weekly the weeks leading up to the workshop) to ensure project tasks are on schedule and in line with WOC expectations. One member of the WOC is to be in attendance regularly during these meetings to offer guidance and insight as requested by the group members. However, it is the task of the group leader to define a meeting agenda and moderate the meeting.

A Kick-off Meeting will be held in June to officially begin the pre-workshop activities. All delegates and members of the WOC are expected to be in attendance. Those who cannot attend must inform their group leaders. Group leaders who are not able to attend must inform the WOC and appoint a representative in their place.

The workload of the workshop is estimated at 4 hours per week, with peaks just prior to the workshop to ensure timely finalization of the report and presentation.

Group leaders are expected to submit their final input to the IPMC YP Workshop 2020 report one week before the final event. On the day of the final event, minor details can be corrected and/or added.

5.5 Deliverables

Each group shall provide a detailed analysis of their group's topic/subtopic which will be used for the 2020 report.

The following list of deliverables shall apply:

1. Group meeting minutes of meeting (living google document is sufficient) including work distribution, planning and execution of research and writing/editing
2. Draft presentation
3. Draft report
4. Final presentation
5. Final report
6. Executive summary of the final report (no more than 10 pages)

As much detail as possible should be provided in all major deliverables. As a rule, enough detail should be provided in each document such that a reader who was not involved in the research can clearly follow the steps taken in the research in order to reproduce the results.

Due dates for each deliverable will be provided during the Kick-off Meeting.

5.6 Reporting

As the individual reports of the different groups will be inserted into 1 final report to IPMC, a unified structure, format and referencing style has to be adopted.

For your preliminary and final report submission, the use of **APA style referencing** is mandatory. APA referencing system uses the author-date citation system in text. All sources are cited in the references.

Structure for the Group Reports is:

1. Introduction
2. Methodology
3. Research/Investigation/Discussion
4. Recommendations
5. Concluding remarks
6. Annexes

The discussion groups should keep the executive summaries they prepare as concise and to the point as possible. Each topic's summary shall be a maximum of 10 pages (25 pages including references and appendices).

Manuscripts format:

- US English
- Times New Roman for text, font 12
- Arial for graph/picture/table labels
- 1 line spacing for entire document
- Justified alignment for text
- Centered alignment for graphs/pictures/tables and their labels
- No break pages nor blank pages
- Number all headings
- References and footnotes should include and show the full link to any online sources
- All drafts shall be kept in Google doc format
- Submission of documents as deliverables in the execution plan shall be done in Excel or Word format and pdf format

A link to a quick APA citation guide can be found here:

<https://guides.libraries.psu.edu/apaquickguide>

Link to a FAQ on APA:

<https://apastyle.apa.org/learn/quick-guide-on-references>

5.7 Evaluation by IPMC

The final report will be edited by the WOC before the end of 2020. Once finalised, the report will be distributed to the IPMC members. The final report will also be distributed to all IAF member organizations and published on the IAF website.