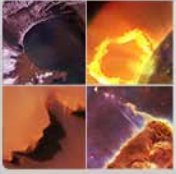




NASA APPEL PI Team Forum 3

Collaborating successfully in a globalized world

James V. Zimmerman

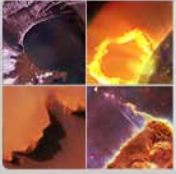


BACKGROUND

Over the past 50 years the US has developed the world's leading space science program.

And the American space science program has always been heavily international in character.

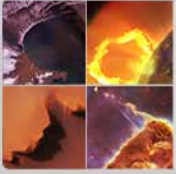
- Our universities have also helped train many of the space scientists and engineers from countries throughout the world.
- NASA has for many years welcomed contributions from scientists and space agencies in other countries.
- Our experiences in pursuing these cooperative space science programs have in general been very positive. There have been some difficult moments, but in looking back on the past five decades there have been many amazing successes.



A CHANGING ENVIRONMENT

In the past two decades the US has slowly begun to lose the status of “THE DEFAULT PARTNER” for space science. This is due to several factors:

- One reason involves the growth of strong space science programs in other countries.
- The decision to extend the US Government’s arms control regulations from launch vehicles and other weapons related systems to cover almost all civil and commercial space activities also contributed to this situation.
- A third and very recent factor involves growing uncertainty over funding for future US space programs, including, very unfortunately, missions in the science program.



ENHANCING THE LIKELIHOOD OF SUCCESSFUL INTERNATIONAL COOPERATION

MUTUAL INTEREST

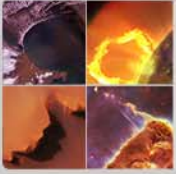
LANGUAGE

TERMINOLOGY

RELATIONSHIPS

TRANSPARENCY

DECISION-MAKING



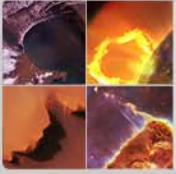
MUTUAL INTEREST

When a cooperative project is being developed – no matter how big or small – it is important to ensure ‘the deal’ is considered fair and involves clear and realistic long-term benefits for all the partners.

This can be crucial to the success of the project since when changes occur and difficult decisions need to be taken, you want a partner who fully shares your desire to complete the mission.

Some may be tempted to say that it is up to the other partner(s) to ensure there is sufficient interest to go ahead with a project, but unfortunately this doesn't always happen during the negotiations. Example: The NASA-ESA Spacelab Project:

- ESA's long term interest in the project involved industrial return – selling multiple Spacelab units to NASA for flights on the Space Shuttle.
- NASA met its basic agreement commitments by launching the first Spacelab and buying a second, but plans to purchase additional units were cancelled in the wake of the Challenger accident.



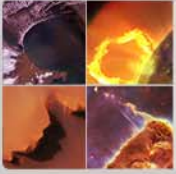
LANGUAGE

Fortunately for most of us English is the dominant language of space. It has become the working language of ESA and is often used as the informal negotiating language of non-English speaking countries planning joint projects.

But be careful! English spoken by an American science team member may not be fully understood by a colleague in another country.

Speak slowly and clearly and on critical points follow up by reiterating what you said in writing.

When meetings with international partners involve significant developments and decisions it can be useful to briefly summarize first orally and then in writing what was discussed and what actions, decisions or recommendations resulted.

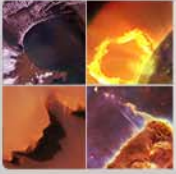


TERMINOLOGY

In science and engineering most terms and working procedures are standard and understood internationally. There are, however, times when this is not the case. **So it is very important to ensure all participants understand the meaning of the terms being used.**

Phase A in ESA, JAXA or CNES may not encompass the same scope as it does at NASA. Project teams in Europe are often much smaller with greater reliance on industry which generally conducts projects on firm fixed price contracts.

This care must also apply to units of measure. Remember the Mars Climate Orbiter mission that failed because an engineering team in Denver entered data in English units while their counterparts in Pasadena were working in metric units. If such things can occur between teams who regularly work together in the US, consider how easy it might be for a misunderstanding to arise when team members from several countries are involved.



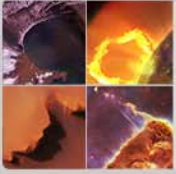
RELATIONSHIPS

How we approach and deal with our partners can often be crucial to building strong, effective relationships. Here are some thoughts you may wish to keep in mind:

Titles and first names: Unless you have known a colleague for years it is prudent to address your international counterparts by Dr., Ms. or Mr. and not use their first names.

Here in the states we tend to go to a first name basis shortly after meeting one another. In other countries that decision is often determined by the relative seniority and age of the two individuals.

A good rule of thumb is to let the other (non-US) partner determine when to start using first names.



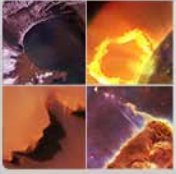
RELATIONSHIPS (2)

Communications and trust: In conducting missions with international partners frequent, effective communications can be critical. Here in the States when a team member changes we can frequently begin working with the new person electronically without ever meeting them.

Though our international colleagues are gradually moving toward the practices we follow, many of them prefer to know and trust their contacts before they deal closely with each other.

Face to face – ideally one on one – discussions are particularly important when issues arise that need sorting out. Some international participants, however, may hesitate to express their views – particularly on sensitive matters – in a large meeting setting.

If you have issues that impact a partner to discuss, consider raising them first in private with your key counterpart.



TRANSPARENCY

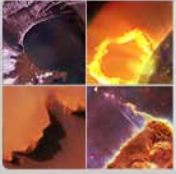
When working internationally it is important to share openly information about each other's organization – its structure, decision-making process, budgets, etc. – to facilitate a close and effective working relationship.

A clearer understanding of the partner's processes and challenges being faced can also be helpful in identifying early-on potential risks to the mission and considering mitigation steps.

Our American civil space program is very transparent with most information placed in the public domain except when proprietary or national security considerations dictate otherwise. Canada functions in a similar fashion.

ESA and JAXA also operate their space programs in a relatively transparent fashion.

Some national space agencies in Europe and Asia, however, are far less open.

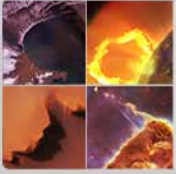


DECISION-MAKING

Decisions – sometimes difficult and painful ones – frequently have to be made during the course of any project. When international partners are involved – with differing budget situations, contractual constraints, and approval processes – taking decisions that are mutually acceptable can be difficult.

Even in cases where the decision has to be taken regardless of the view of the partner it is very important to give the partner a private heads up, allow them an opportunity to comment and to reflect on the impact and perhaps suggest ways to mitigate the consequences.

When mission and team leaders do find it necessary to make a difficult decision unilaterally – one that impacts various junior partners – domestic and international -- they also are well advised to seek a solution that ‘shares the pain’ in a fair way even though it may be very tempting – given budget and schedule pressures – to let the other partners take a disproportionate hit.



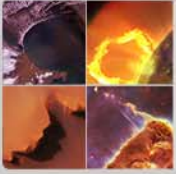
DECISION-MAKING (2)

In many cases the decision is not pre-ordained and instead can be taken after discussion with the partner or after a study with recommendations has been completed. **When foreign partners have a major role in the project and/or the outcome, it is important to involve them as much as possible in the decision discussion or study team.**

Our JAXA partners – speaking at an APPEL International Project Management Course held in Florida last week -- made this joint study point very nicely:

- When both sides seek and study options to resolve issues or problems in a collaborative fashion, a mutually satisfactory result is usually achieved.
- Studies that are, on the other hand, conducted by one side independently often seem to go badly.

Please keep in mind that the decision processes that NASA and your US PI team leadership use may be completely different from the processes used by your international partners.



CONCLUDING OBSERVATION

The ability to work effectively with international partners on complex space missions is an acquired skill.

The longer you practice it the better you become... hopefully!

I wish you much success on your planned missions and on the cooperative relationships you forge in pursuing them.