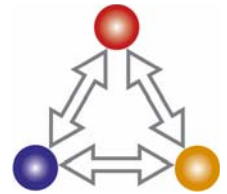


4th SineQuaNet Workshop

Marco Freire (TEC-SHS)

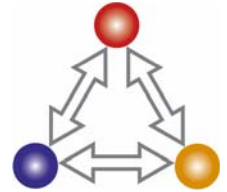


- 1. Introduction to ITI**
 - ◆ ITI Objectives
 - ◆ ITI Overview
- 2. Theoretical Principles of ITI**
 - ◆ The Innovation Triangle Concept
 - ◆ Disruptive vs. Sustainable Innovation
 - ◆ The Stage-Gate Process
- 3. Implementation: the ITI Web Application**
- 4. The Results Achieved in the Past**
- 5. Lessons Learned and the Way Forward**
- 6. Current Status**
- 7. Selection Criteria plus some advice**
- 8. Conclusions**



ESA Innovation Triangle Initiative (ITI)

1) Introduction to ITI: Objectives



ESA role:

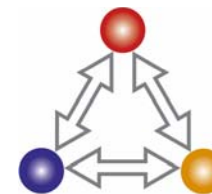
Support the introduction of technology innovation in Space.

ITI specific goal:

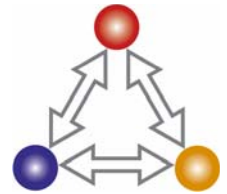
Explore technologies or services for space applications *that are not currently being used or exploited in the context of space* and have therefore the potential of being the seed for significant innovation.

ITI final objective:

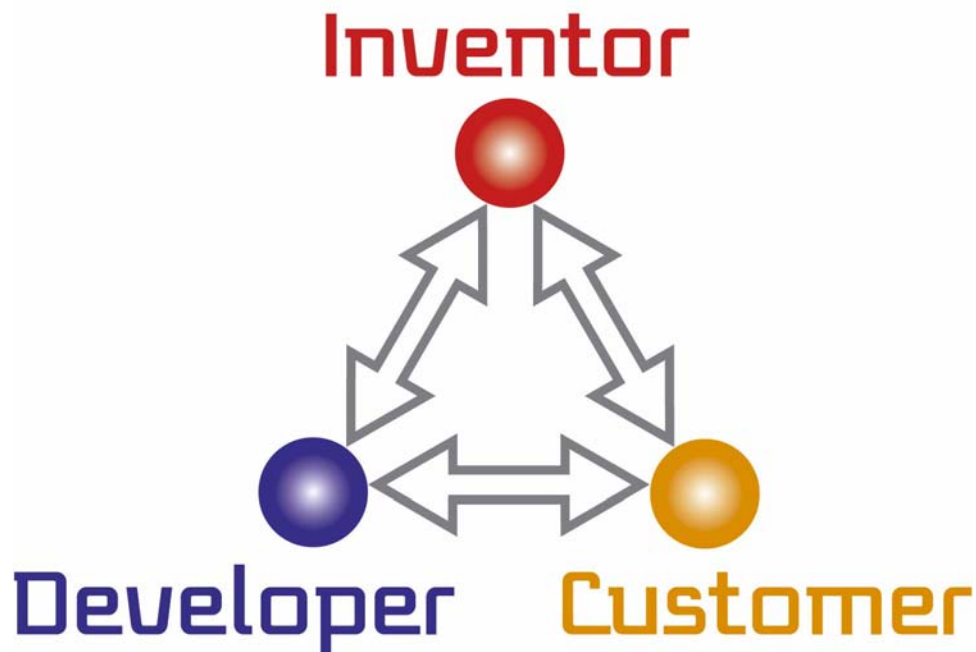
Create a dynamic environment where disruptive innovations can be easily validated, developed and put to use in industry, thus contributing to a more competitive European Space Industry.



- **Objective: Fast validation / demonstration of innovative technologies for “space”**
- **Aim specifically at “disruptive technology innovations”:**
 - ◆ Absolute novelty
 - ◆ Novelty in space
- **Based on a continuous call for ideas with a standing TEB meeting periodically**
- **Short “time to contract”**
 - ◆ simple templates for the proposal submission
 - ◆ standard, predefined contract (Fast Track procedure)



ITI is based on the “Innovation Triangle” concept stating that a rapid and successful introduction of disruptive innovations in Industry requires the collaboration of three different entities: an INVENTOR, a DEVELOPER and a CUSTOMER.



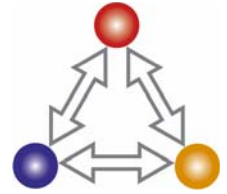
Inventor: an R&D entity that is not necessarily involved in space already

Developer: An entity that has the know-how to develop the idea to “space” standards

Customer: an entity that can actually use the idea in “space products”



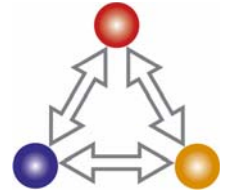
ESA Innovation Triangle Initiative (ITI) **2) Theoretical Principles of ITI: Disruptive vs. Sustainable Innovation**



- **Disruptive innovations ...**
 - ◆ ... often are not absolute innovations but clever repackaging of old technology
 - ◆ ... allow companies to offer simpler, less expensive products or services than have not been offered before in a given environment.
- **In the space sector, the difficulties to introduce “disruptive innovations” are quite high!**
- **ITI supports the introduction of technologies or services for space applications not currently being used or exploited in the space context**



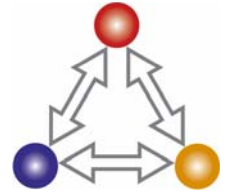
ESA Innovation Triangle Initiative (ITI) 2) Theoretical Principles of ITI: Disruptive vs. Sustainable Innovation



The **Inventor** has direct access to the CUSTOMER needs and, since is not directly constrained by the reality of the industrial environment, can therefore freely pursue disruptive innovative concepts.

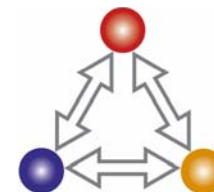
The **Developer** gains new businesses while ensuring that the general requirements of industry are satisfied so that a reduced time-to-market is achieved.

The **Customer** can focus on the short-term market needs (sustaining innovation) while at the same time having access to several state-of-the-art innovative concepts (disruptive innovation) with a minimum effort and cost.



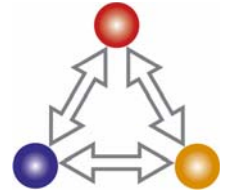
The ITI contains three basic types of activities aimed at the different elements of the triangle:

- **(A) Proof of Concept** (for INVENTORS): fast validation of new ideas and demonstration of its advantages (<= 50 KEURO)
- **(B) Demonstration of Feasibility and Use** (for DEVELOPERS): component and/or breadboard development up to validation in the laboratory or in a relevant environment (<= 150KEURO)
- **OLD (C) Internal Critical Process Review** (for CUSTOMERS): internal review to identify existing products, processes or services candidates for technology innovation (<= 100 KEURO)



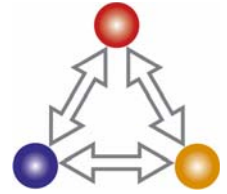
From a practical point of view, the main features of ITI are:

- accepts unsolicited proposals
- is not constrained to any specific technical domain
- is open during a large period of the year
- takes a funding decision in a relatively short time
- has a submission procedure which implies very low costs to industry in order to prepare/submit/manage R&D proposals.



The ITI Web-Site <http://iti.esa.int/> ...

- Provides information to participate in the ITI
- Describes concepts and objectives of the ITI
- Supports the submission of proposals according to templates
- Displays summary information of past activities supported by ITI
- Allows searching for proposals (by keyword, status, TD, etc)
- Supports the technical evaluation of the proposals
- Supports the management of on-going activities



Advantages of the submission of proposals according to **templates:**

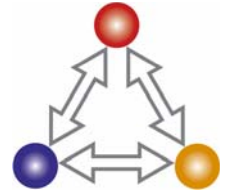
- **For Submitters**
 - ◆ Help focusing on providing the essential information
 - ◆ Give clear guidelines (particularly useful for less experience companies in dealing with ESA)

- **For Evaluators**
 - ◆ Guarantee that the proposals are, at the same time, concise and uniform
 - ◆ **Contribute to a high efficient management of ITI**

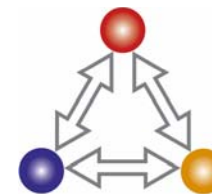


ESA Innovation Triangle Initiative (ITI)

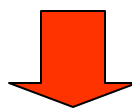
4) The Results Achieved in the Past



- The original idea for ITI comes from the observation that, in many cases, substantial effort was needed to secure funding for small and innovative R&D activities
- A first pilot phase of ITI was implemented in 2002 with 300K€ to confirm the possibility of awarding contracts in a short time (2m)
- The first 2 Announcements of Opportunity for ITI (2004 and 2005) resulted in 235 proposals submitted, out of which 57 were retained for negotiation, amounting to 5.1M€ of committed contracts (~24% acceptance rate)
- In 2006, there was only 1 evaluation round, which has been recently concluded: 13 proposals were retained for negotiation out of the 72 proposals received (~18% acceptance rate).
- By end 2006, 23 contracts were concluded, the results were presented in ESTEC (ITI Final Presentations' Day on 21-Nov-05 & 25/26-Oct-06).



- An external evaluation of the ITI Programme (conducted in Q2 2006) although very positive, suggested the following improvements:
 - ◆ To increase the budget for the type A proposals
 - ◆ To improve the clarity of the ITI approach (A before B before C)
 - ◆ To improve the communication and the exploitation of the outcome of the ITI activities, including the continuation of the developments at the end of the ITI funding.

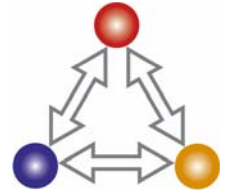


- **A New Type (C) Activity: Technology Adoption** (for CUSTOMERS): component and/or breadboard development up to validation in a relevant environment, with the final objective of including the technology developed in the Customer's services, products or processes
- **Roadmaps** for the technologies will be requested as a **Final Deliverable** to actively support the continuation of successful ITI R&D activities

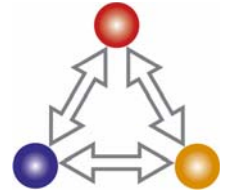


ESA Innovation Triangle Initiative (ITI)

6) Current Status

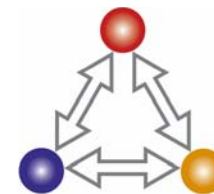


- The 2007 ITI AO will be published soon in EMITS (already approved, only pending the ITT documentation), covering only Type A and B proposals
- **The New Type C will be implemented in a separate AO**

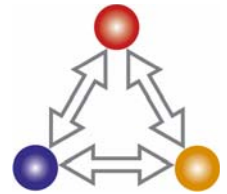


1. the innovation content,
2. the quality and completeness of the technical content,
3. the background, experience and complementarity of the entities involved (the Innovation Triangle concept),
4. the relevance and the potential benefits of the proposed activity (for both the submitter and the European Space Industry, as a whole),
5. the risk level and suitability of the work plan.

Criterion 2 is very important, however many proposals are rejected based on Criterion 1 and/or 4.

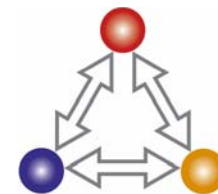


- Verify the compliance to the ITI scope
- Contact ESA technical experts, for guidance essentially on novelty and relevance
- Propose a concrete solution to be implemented (no trade-offs)
- Raise interest from potential Space Customers, preferably linked to a concrete future application



- **The results achieved in the first years of ITI are above all initial expectations (number and diversity of the received proposals).**
- **The limited resources employed in the successful management of ITI have fully validated the basic principles of the initiative**
- **ITI is particularly interesting for entities with less experience in leading with the agency, because it gives them an opportunity to approach the companies already implemented in the space market.**

In conclusion we think that ITI is a valid support to the existing ESA R&D programmes and we are constantly working to further strengthen this initiative.



Thank you for your attention!

Any further questions on



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