

# DIGITAL - Institute for Information and Communication Technologies

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## Co-operation SPACE with US Partners

Gerhard Paar

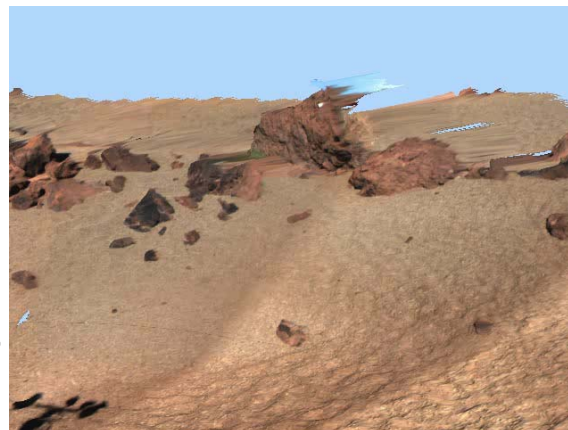
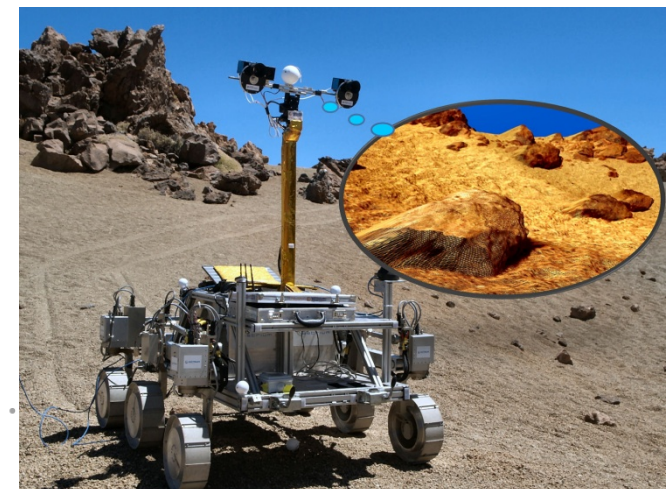
Vienna, April 23, 2012



**PRoVisG**

# Example: PRoVisG: Planetary Robotics Vision Ground Processing

- Combine expertise in Computer Vision for Planetary surfaces
- Enhance scientific exploitation
- Generate high – level tools
- Test & demonstrate & teach
- 14 Partners, 45 Months, 4.7 M€



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# Proposal Level: Eligibility

- Check specific issues of the Call
  - Already a specific pointer / commitment to US collaboration ?

**International cooperation** with third countries (ICPC) will be supported in view of expanding the use of earth observation data, and the corresponding data processing and management methods in third countries, and enhancing the relations with established space powers, with a view of facilitating wider space research alliances. Candidates for cooperation among other established or emerging space powers include the United States, Russia, Canada, Japan, the People's Republic of China, India, Brazil, South Africa, and the Ukraine. The European Neighbourhood Policy governs relations with Eastern and Southern neighbours (i.e. Black and Caspian Sea region) and countries of North Africa and the Middle East (i.e. Mediterranean region).

All projects conducted in the Theme Space are open for such participation of third countries under the normal participation rules, with the topics mentioned above being of particular interest for international participation. Participants are eligible to participate and to be funded in the context of the Space Theme calls described in this Work Programme.

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

# Proposal Level: Elegibility

- Check specific issues of the Call
  - OR a **specific justification** necessary

## 2.3.3 Other Countries

PROVISG contains two consortium members from outside the EU<sup>1</sup>:  and JPL are deeply involved in the ongoing MER missions, and their expertise has had essential influence to the MER success. It is an outstanding opportunity for European space research and in particular its vision community that we can establish a co-operation not just on formal but on operational basis: The  team has been successfully involved in the MER mission with extensive operational experiences in rover localization and mapping. JPL is NASA's primary technology platform for the rover operations including daily-duty vision processing. **It is essential that these institutions contribute to PROVISG since it is the only way to bring in real planetary robotic mission experience from the computer vision point of view<sup>2</sup>.**

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In return, there is **mutual interest particularly from**  Research and experiments with the ExoMars rover and its associated test beds would be for another rover and another site than the MER scenery and may pose great challenges for them. Particular OSU interests will include modeling of the ExoMars Pancam stereo cameras combined with the single High Resolution Camera in the middle. They would like to develop a new camera model to integration the images from these cameras for stereo vision, localization, mapping and other science and engineering analysis. The  involvement in particular is therefore an ideal basis to establish a long-term operational co-operation between EC and US in planetary robotics vision.

# Proposal Writing & Proposal Budget

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- US Partners are interested to co-operate
  - Easier in our case: Coming out of existing networks
- Straightforward technical & scientific contribution
  - Very efficient, „same language“
- US Partners seem to have lighter rules for budgeting & proving costs
  - Our cost suggestions (PM costs / travelling) were accepted straight away
  - This may lead to accounting problems at first Forms-C

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# Negotiation: The Cost Model & Budget

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- Certification of US Partner took ages [2007]
  - Universities have a different constitution than in the EU
  - „Overhead“ might have another meaning
    - Tuition Fees
- Private – funded universities don't completely fit into 75% funding scheme !
- Very hard to find the missing 25% from their own budget

# Negotiation: The Consortium Agreement

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- US Universities must not agree to Europe as applicable law
  - Constitution obstacle
  - Huge loss of time
  - Not possible to „cancel“ US contribution: Conflict with Justification Statement

### 2.3.3 Other Countries

PROVISG contains two consortium members from outside the EU<sup>1</sup>: [redacted] and JPL are deeply involved in the ongoing MER missions, and their expertise has had essential influence to the MER success. It is an outstanding opportunity for European space research and in particular its vision community that we can establish a co-operation not just on formal but on operational basis: The [redacted] team has been successfully involved in the MER mission with extensive operational experiences in rover localization and mapping. JPL is NASA's primary technology platform for the rover operations including daily-duty vision processing. **It is essential that these institutions contribute to PROVISG since it is the only way to bring in real planetary robotic mission experience from the computer vision point of view<sup>2</sup>.**

# The Grant Agreement

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- Accession – structure seems to cause less problems
- No problems at all to sign GA Annex IV Form-A



## Cooperation model with NASA / JPL

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- Travel Refunds for Steering Committee
  - 5-6 meeting contributions throughout the Project
- Well-established in 2 Projects
- Only possible when US partners see their own benefit
  - ..beside cultural prospects..
- Paid from MGT budget & agreed by REA
  - Accounting: Easiest via direct refund of cash receipts

# Implementation

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- Technical / Scientific Input runs smoothly
- Obstacle ITAR
  - No Software contributions available from US
  - Data access only to the limits of ITAR
  - → Expand other opportunities
    - Personnel Exchange
    - Remote Processing (in case of SW components)
    - Explicitly mention as risk in the Proposal / suggest mitigation
- 1st class Access to background information
  - Specifically important in Space domain with US Missions
  - Already large impact even from JPL „light“ Contribution

# Implementation: Issues

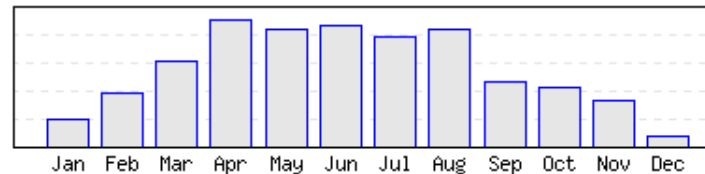
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- Time Zone Delay
  - LA: -9h
- 1st financial report caused lots of iterations
  - „Overhead“ still not clear
  - However, beside communication effort no major obstacle
- Language
  - Technical terms are the same
  - Administrative / financial terms are different

# Implementation: Issues

## Exchange rate \$-€ became an issue !!!

2011 - American Dollars to 1 EUR



## How is an Audit implemented in the US ?

7.2.3. Findings

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In period II we reclassified other direct costs in the amount of EUR 119 into subcontracting. This subcontracting is considered as minor subcontracting, as no core part of the project was subcontracted (costing).

2

In period I reclassified other direct costs in the amount of EUR 235 to subcontracting. This subcontracting is considered as minor subcontracting, as no core part of the project was subcontracted (costing).

Adjustments identified with regard to subcontracting for 2I

Financial Statement	Financial Statement period	Type of Activity	Costs claimed		Eligible costs after audit	Adjustments to costs accepted by the EC
			Euro	Euro		
1	01/09/2008 to 31/10/2009	RTD	0	0	0	0
		Democratization	0	0	0	0
		Management	0	0	0	0
		Other	0	0	0	0
Subtotal			0	0	0	0
1 (adjusted)	01/09/2008 to 31/10/2009	RTD	0	0	0	0
		Democratization	0	0	0	0
		Management	0	0	0	0
		Other	0	0	0	0
Subtotal			0	0	0	0
1 (net subtotal)	01/09/2008 to 31/10/2009	RTD	0	0	0	0
		Democratization	0	0	0	0
		Management	0	0	0	0
		Other	0	0	0	0
Subtotal			0	0	0	0
2	01/11/2009 to 31/10/2010	RTD	0	0	119	119
		Democratization	0	0	0	0
		Management	0	0	0	0
		Other	0	0	0	0
Subtotal			0	0	119	119
Total			0	0	119	119

Adjustments identified with regard to subcontracting for 2I

Financial Statement	Financial Statement period	Type of Activity	Costs claimed		Costs accepted by EC	Eligible costs after audit	Adjustments to costs accepted by the EC
			Euro	Euro			
1	01/10/2008 to 31/10/2009	RTD	0	0	0	0	0
		Democratization	0	0	0	0	
		Management	0	0	235	235	
		Other	0	0	0	0	
Subtotal			0	0	235	235	
1 (adjusted)	01/10/2008 to 31/10/2009	RTD	0	0	0	0	
		Democratization	0	0	0	0	
		Management	0	0	0	0	
		Other	0	0	0	0	
Subtotal			0	0	0	0	
1 (net subtotal)	01/10/2008 to 31/10/2009	RTD	0	0	0	0	
		Democratization	0	0	0	0	
		Management	0	0	235	235	
		Other	0	0	0	0	
Subtotal			0	0	235	235	
2	01/11/2009 to 30/11/2010	RTD	0	0	0	0	
		Democratization	0	0	0	0	
		Management	0	0	0	0	
		Other	0	0	0	0	
Subtotal			0	0	0	0	
Total			0	0	235	235	

# Yet Another Example: Project xxx (SPACE-2011)

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- 2 Universities from US (incl. [redacted] from PRoVisG)
- Sum: 3 Person – Years
- Scientific Co-ordination from US
- JPL again „just“ Advisory Board Members
- Proposal Contribution & Budgeting VERY smooth
  - More iterations with Univ. [redacted]: Now real budget already on Proposal level: different to PRoVisG
- (☹️ *Project xxx likely rejected despite 14 points: Call Budget full*)

# Still no solution: NASA et al (SPACE Specific or each national org ?)

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- EC / US – SPACE Synchronization workshop at Stanford, July 2010
- DG Enterprise present at PRoVisG meeting at JPL, Dec 2011
- Positioning paper by EU & NASA, 2012

January 17, 2012

**PRINCIPLES REGARDING THE COOPERATION OF NASA PERSONNEL WITH PROJECTS FUNDED BY THE EU'S FRAMEWORK PROGRAMS IN THE AREA OF SPACE RESEARCH**

1) Both NASA and the EU have an interest in resolving the issue of the participation by NASA personnel in research projects funded under the Space Theme of the European Union's Framework Programs, beginning with the Seventh Framework Program.

- 1) Both NASA and the EU have an interest in resolving the issue of the participation by NASA personnel in research projects funded under the Space Theme of the European Union's Framework Programs, beginning with the Seventh Framework Program.
- 2) Only NASA's Office of International and Interagency Relations (OIIR) has the capacity to negotiate and enter into internationally binding agreements on behalf of NASA, and only after proper coordination has taken place within NASA and, if applicable, within the U.S. Government's inter-agency community, in a process managed by the U.S. Department of State. Individual NASA researchers and NASA Centers do not have the capacity to bind the agency in international agreements.
- 3) NASA has the capacity to enter into agreements with non-U.S. entities either done under international law, or done under U.S. law. NASA has concluded agreements under international law with agency partners in Europe, such as the European Space Agency (ESA), the German Aerospace Center (DLR), the French National Center for Space Studies (CNES), the Italian Space Agency (ASI), etc.
- 4) When NASA enters into agreements with European entities that do not have the capacity to enter into a binding agreement on behalf of their government, those agreements are done under U.S. law.
- 5) In preparing an agreement that would allow NASA personnel to cooperate with projects funded by the EU's Framework Programs, in the area of space research, the following principles should be followed:
  - a) NASA's cooperation with EU funded projects will normally take the form of a contribution to a work package or task of a given project;
  - b) Cooperation should take place based on a "no-exchange of funds" basis;
  - c) NASA will not sign the grant or consortium agreements;
  - d) NASA will instead enter into a bilateral agreement with one of the consortium members, ideally an existing NASA partner in Europe, such as ESA, DLR, CNES, ASI, etc.;
  - e) If no existing NASA partner is participating in the consortium, NASA could enter into a bilateral agreement under international law with another entity in Europe, as long as that entity has the capacity to conclude a binding agreement on behalf of its government.

- b) Cooperation should take place based on a "no-exchange of funds" basis;
- c) NASA will not sign the grant or consortium agreements;

# Open Issues

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- In return: How to get access to US funding schemes ?
- Are there NCPs in the US to support ?
  - Certification
  - Contracting
  - Accounting

## Practical Advice

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- Start Proposal Negotiations early enough
  - Certification might take longer than expected
  - Pragmatic: Use certification as criterion to select partners
- Ask NCP which US partners already committed
- Anticipate problem areas when starting proposal
  - CA (applicable law)
  - Make the funding paradigm clear



## Practical Advice II

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- Wait for Horizon 2020
  - Enables Single entity – Contractual entry point into „GA“ – like structure ? [see current NASA model, but with all other valid technical / budget implications]
  - Enables fixed budget in national currency ? [\$]
  - Funding based on result rather than on effort ?
- **Identify / Scrutinize / Justify the benefit of US contribution**
  - Probability of failure / higher administrative effort is higher
  - Can't overcome ITAR: Hard for industrial corps

## Practical Advice III

- Views are different: Try to anticipate...

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