

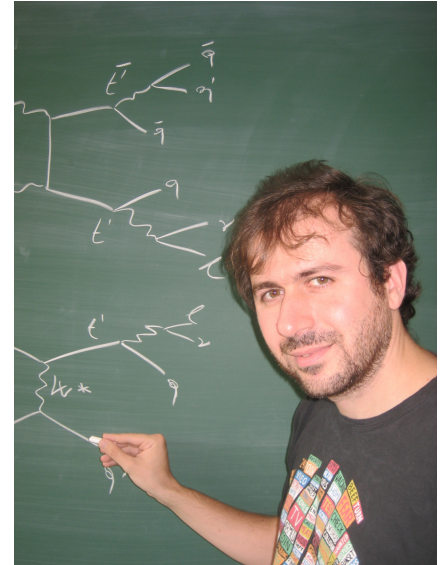
# Success and failure in H2020-MSCA applications: RISE "INTENSE" and ITN "EMN"

Andrea Giammanco

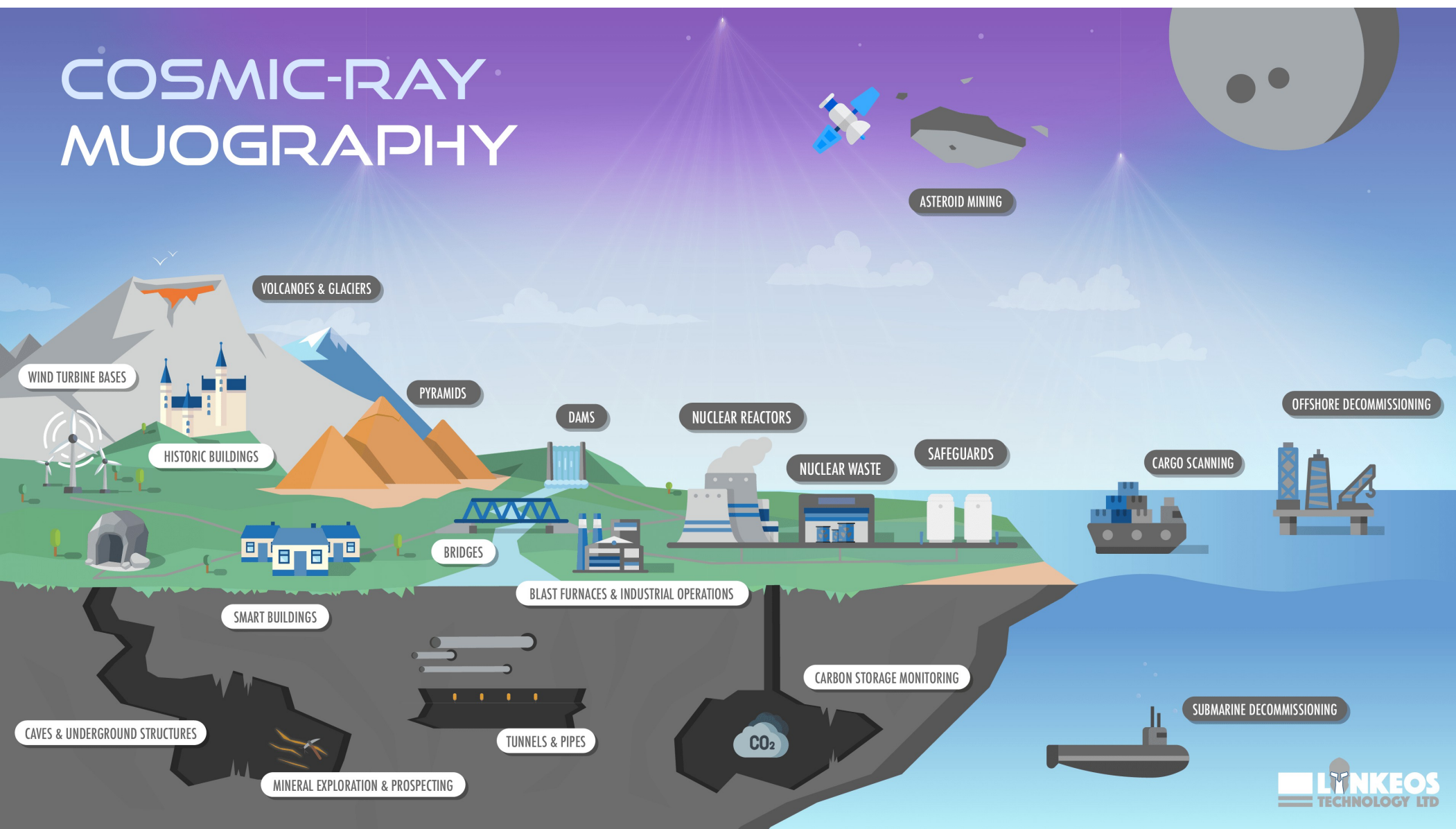
Centre for Cosmology, Particle Physics and Phenomenology  
UCL, Louvain-la-Neuve, Belgium

# Who am I

- Chercheur Qualifié FNRS at UCL
- Experimental physicist
- Specialized in elementary particles
- Most of my research so far (100% until 2016) has been in the context of "Big Science" experiments at CERN (mostly LHC)
- In 2016, I decided to spend ~50% of my time on a new (for Belgium) research direction, which is the one for which I wrote my H2020 projects



# COSMIC-RAY MUOGRAPHY



# A wide range of applications

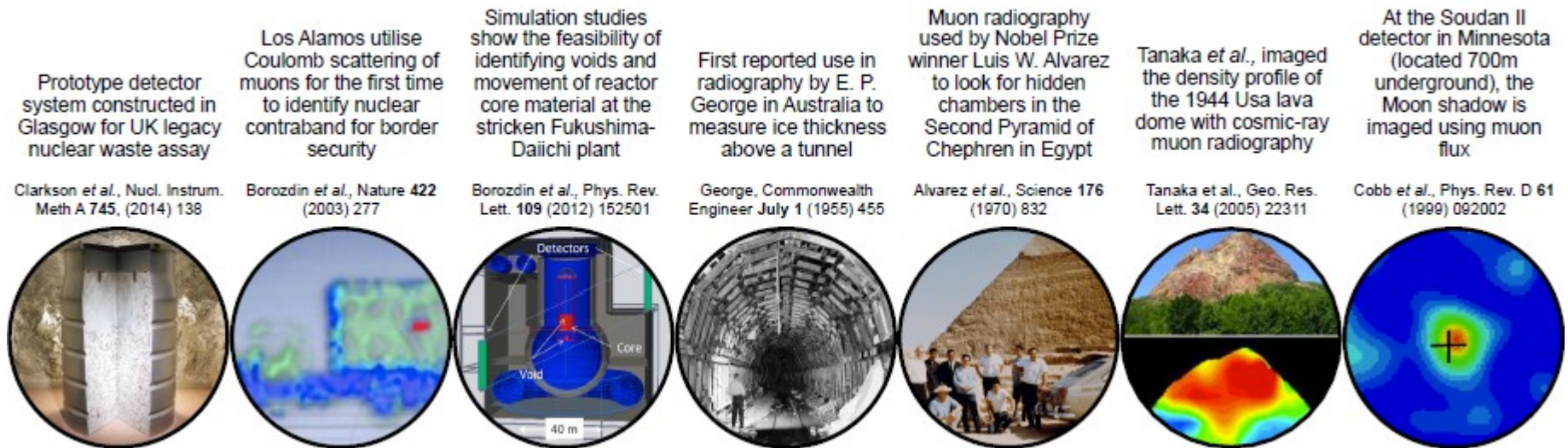


Image composition by D. Mahon

Applications of interest for volcanology (including civil protection), archaeology, nuclear waste monitoring, homeland security, civil engineering → **intrinsically multidisciplinary research + close contact with non-academic sector**

Instruments and methods from elementary particle physics, developed for Big Science projects (e.g. LHC @ CERN) → **a return of publicly funded fundamental research to society that happens now, not in a speculative future**

# Antecedents

- First large-scale EU-funding bid for a muography consortium in EU (+ Japan): G-ENDEAVOR, coordinated by Salerno University
  - INFRAIA call in 2016, meant for funding of research infrastructures, including budget for personnel (post-docs)
  - Below the threshold for "step 2", but encouraging score
- October 2016: discussion on EU funding opportunities during topical muography workshop in Tokyo
- I suggested that muography is intrinsically fit for H2020-MSCA, and we could build upon the G-ENDEAVOR experience
  - General rule: if you propose extra work, you do it yourself :)
  - Already familiar with ITNs as member of AMVA4NewPhysics (coopted after funding in 2015, deputy coordinator since 2017)

# MSCA networks and muography make a good match

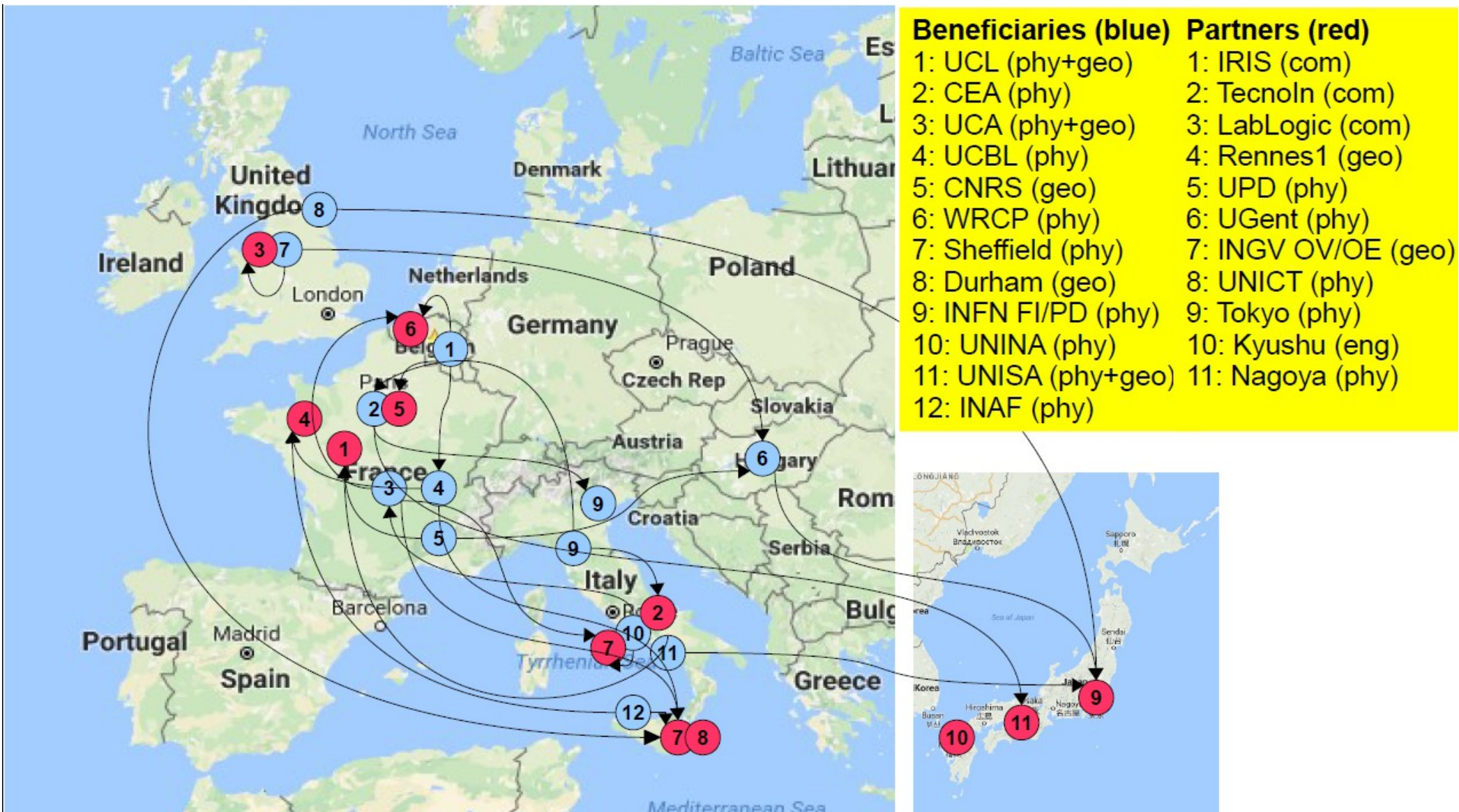
- "Making bridges" is valued in H2020-MSCA, e.g.:
  - Multidisciplinary
  - Connection between academia and private sector
  - Collaborative tools, shared data, etc. → ongoing trend anyway
- Training (in a broad sense) is the key (especially for ITN)
  - Schools, workshops, invited lectures → for a multidisciplinary activity we need anyway to learn about our collaborator's fields
  - ITN: emphasis on *training through research*
    - Not mandatory that Early Stage Researchers (ESRs) get PhD titles, but it seems to be encouraged → most of us are academic, so it fits well
  - Both ITN & RISE: emphasis on *dissemination*
    - Outreach to society, open data, citizen science → natural for muography



# My ITN and RISE bids

- Call 2017:
  - ITN: *European Muography Network* (EMN), entirely devoted to muography, as main coordinator
    - Failed with score 94.6% (threshold: ~96%)
- Call 2018:
  - ITN: EMN, again, as main coordinator
    - Failed with score 94.0% (!!!)
  - RISE: *INTENSE: particle physics experiments at the high intensity frontier, from new physics to spinoffs*, as coordinator of work package devoted to muography
    - Succeeded, with score 89.0%

# "European Muography Network", ITN 2017





# 2017: Referee report

## Evaluation Result

**Total score: 94.60% (Threshold: 70/100.00)**

## Criterion 1 - Excellence

Score: 4.80 (Threshold: 0/5.00 , Weight: 50.00%)

## Criterion 2 - Impact

Score: 4.70 (Threshold: 0/5.00 , Weight: 30.00%)

## Criterion 3 - Quality and Efficiency of the Implementation

Score: 4.60 (Threshold: 0/5.00 , Weight: 20.00%)

### Interpretation of the score:

- 0– The **proposal fails to address the criterion** or cannot be assessed due to missing or incomplete information.
- 1– **Poor**. The criterion is inadequately addressed, or there are serious inherent weaknesses.
- 2– **Fair**. The proposal broadly addresses the criterion, but there are significant weaknesses.
- 3– **Good**. The proposal addresses the criterion well, but a number of shortcomings are present.
- 4– **Very good**. The proposal addresses the criterion very well, but a small number of shortcomings are present.
- 5– **Excellent**. The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

Not bad for a first attempt!

In the past, some ITNs were funded with lower scores; but now the bar is higher: more applicants, and many previous applicants have learnt by trial and error

# 2017: Referee report

(here I am showing only the weaknesses)

## Criterion 1 - Excellence

Score: **4.80** (Threshold: 0/5.00 , Weight: 50.00%)

Quality, innovative aspects and credibility of the research programme (including inter/multidisciplinary, intersectoral and, where appropriate, gender aspects)

Quality and innovative aspects of the training programme (including transferable skills, inter/multidisciplinary, intersectoral and, where appropriate, gender aspects)

Quality of the supervision (including mandatory joint supervision for EID and EJD projects)

Quality of the proposed interaction between the participating organisations

*Weakness:*

*- The simultaneous occurrence of the first joint academic training and the ESRs recruitment (M4) may reduce the effectiveness of both events.*

We had explicitly indicated that those dates were indicative and that we are fully flexible, but apparently you have to make a realistic agenda already at the submission stage.

Did that error alone cost 0.2 points out of 5.0? (i.e. 2% on final score!)

# 2017: Referee report

(here I am showing only the weaknesses)

## Criterion 2 - Impact

Score: **4.70** (Threshold: 0/5.00 , Weight: 30.00%)

**Enhancing the career perspectives and employability of researchers and contribution to their skills development**  
**Contribution to structuring doctoral / early-stage research training at the European level and to strengthening European innovation capacity, including the potential for:**

**a) meaningful contribution of the non-academic sector to the doctoral/research training, as appropriate to the implementation mode and research field**

**b) developing sustainable joint doctoral degree structures (for EJD projects only)**

**Quality of the proposed measures to exploit and disseminate the project results**

**Quality of the proposed measures to communicate the project activities to different target audiences**

### *Weaknesses:*

- The plurality of skills gained is an obvious benefit for some disciplines, but depth of knowledge required in others is greatly reduced: this aspect has not been addressed in detail in the proposal.*
- Only 5 out of the 12 ESRs will have secondments at non-academic partners, which limits the industrial exposure for the ESRs.*
- The details of the outreach events and the specific commitments of the ESRs to communicate results to different target audiences are not clearly described.*
- The potential of non-academic partners to further contribute to training and dissemination is not clearly explained.*

The second and the last points demanded, for the next attempt:

- A greater commitments by our non-academic partners (only 3 at that time): one of them accepted to **become beneficiary and coordinate a WP**
- The cooptation of **3 new non-academic partners**

# 2017: Referee report

(here I am showing only the weaknesses)

## Criterion 3 - Quality and Efficiency of the Implementation

Score: **4.60** (Threshold: 0/5.00 , Weight: 20.00%)

**Coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources (including awarding of the doctoral degrees for EID and EJD projects)**

**Appropriateness of the management structures and procedures, including quality management and risk management (with a mandatory joint governing structure for EID and EJD projects)**

**Appropriateness of the infrastructure of the participating organisations**

**Competences, experience and complementarity of the participating organisations and their commitment to the programme**

### *Weaknesses:*

- *The function provided by a separate Executive Board is unclear.*
- *No technical risks to the work have been identified.*

We needed, for the next attempt:

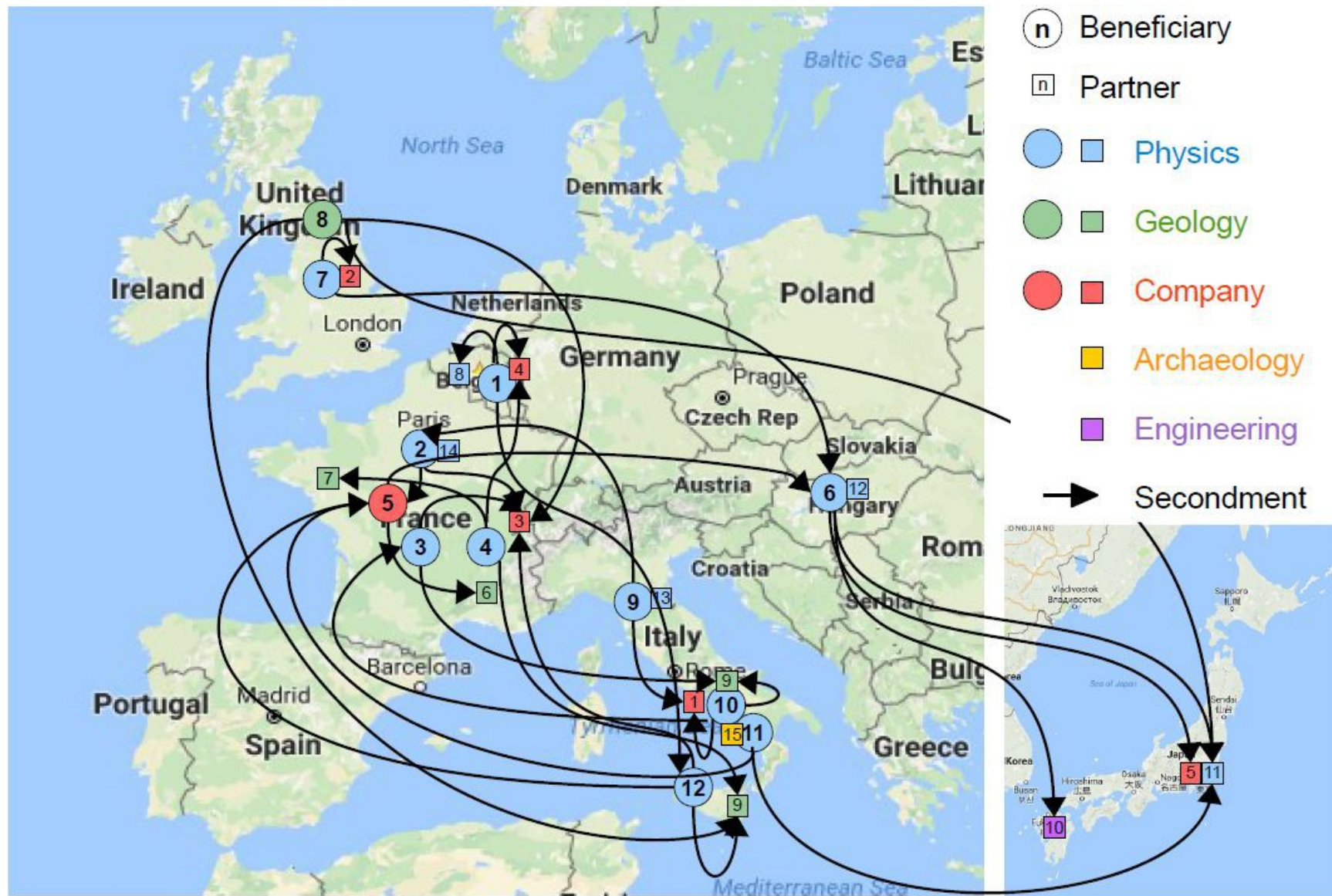
- More discussion among us about what role we wish the EB to have
- A better description of the EB and a longer list of risks (and how we would deal with them)

# Secondments in ITN

- ESR's interest (the main consideration in an ITN):
  - ✓ Experience in a variety of work environments
  - ✓ Non-academic partners provide complementary skills
  - × Possible risk: incoherence in supervision
- Non-academic partner's point of view:
  - × Burden of supervision (but it pays off if secondment is long)
  - ✓ ESRs help transfer of knowledge from academia
  - ✓ Access to brilliant young graduates (prospective hires)
- Academic beneficiary's point of view:
  - × Loss of precious months of personpower
  - ✓ ESRs help transfer of knowledge from the private sector



# "European Muography Network", ITN 2018



# FNRS "aide au montage"

- Call 2017: I only used it for a meeting with one of the crucial partners (~100 euros)
- Call 2018: consultancy by a specialised firm
  - It was very helpful! Our score did not improve, but I attribute that to bad luck in 2018 or/and good luck in 2017
  - Only used for my ITN project; but what I learned was then also helpful when co-writing the RISE proposal
- Note: I needed the support of my institute anyway, because FNRS does not reimburse you directly, it refills your research budget
- My general feedback: "aide au montage" is very helpful

# Referee reports: 2017 vs 2018

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Quality of the supervision (including mandatory joint supervision for EID and EJD projects)

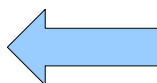
Quality of the proposed interaction between the participating organisations

### Strengths

- + *The quality and credibility of the research programme is very good, including world experts in the respective fields of competence with a strong track record, furthermore, the study of muography, not being yet an established field, implies clear innovation.*
- + *The proposal is highly inter/multidisciplinary, bringing together experts from different communities (HEP, geophysics and archaeology), and establishing credible synergies centered around instrumentation, simulation and data analysis.*
- + *The ESR academic training is comprehensive, of high quality and inter/multidisciplinary.*
- + *The organisation of network-wide events (including invited external experts) will facilitate knowledge transfer to and amongst ESRs.*
- + *Joint intersectoral supervisory arrangements for the ESRs are well described and designed to broaden their training experience.*
- + *Supervisor competences and track records are evident.*
- + *The proposed interactions between the partners are of very good quality, with several instruments (secondments, joint supervision, workshops, etc.) planned in order to foster cooperation, including tangible initiatives (Virtual Muography Institute and Global Muography Network).*
- + *Beneficiaries and partners have a track record of joint research projects, networks and student exchanges, so the high level of cooperation planned is credible.*
- + *The fact that each of the 12 beneficiaries gets only 1 ESR promotes network-wide activities and synergies amongst all participants.*

### Weaknesses

- *No major weaknesses were identified.*



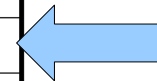
### What I learn from that:

- Even with no weakness, you can lose!
- You also have to excite the referees about what is positive; we did to some extent (see long list above), but not enough...

# "INTENSE", RISE 2018

- 5 scientific work packages (WP); 4 on fundamental physics, and 1 on technological spin-off in Muography applications
- The latter is the one that I coordinate
- Most institutes in the Muography WP are also active in another WP; but some are not (including UCL)


Work Package No	Work Package Title	Activity	Number of person-months	Beneficiary leading	Start Month	End month
1	Neutrino detectors	Research, Training	109	UNIBE	1	48
2	Neutrino physics: event reconstruction tools	Research, Training	59	UCAM	1	48
3	Neutrino physics: data analysis	Research, Training	98	INFN	1	48
4	CLFV experiments	Research, Training	128	UNIMAN	1	48
5	Muography	Research, Training	26	UCL	1	48
6	Dissemination and Outreach	Dissemination, Communication	3	INFN	1	48
7	Transfer of Knowledge	Training, Dissemination	36	INFN	1	48
8	Management	Management, Communication	1	UNIFI	1	48






# Work Package Muography

Work Package Number	5				Start/End Month		1/48		
Work Package Title	Muography (Research, Training)								
Lead Beneficiary	UCL								
Participating organisation Short Name**	UCL	INFN	UNIBE	INGV	B12	TECNOIN	UGHENT	UTOKYO	UNAGOYA
Total Person Months per Participating organisation:	10	1	5	2		2	6		



Private companies



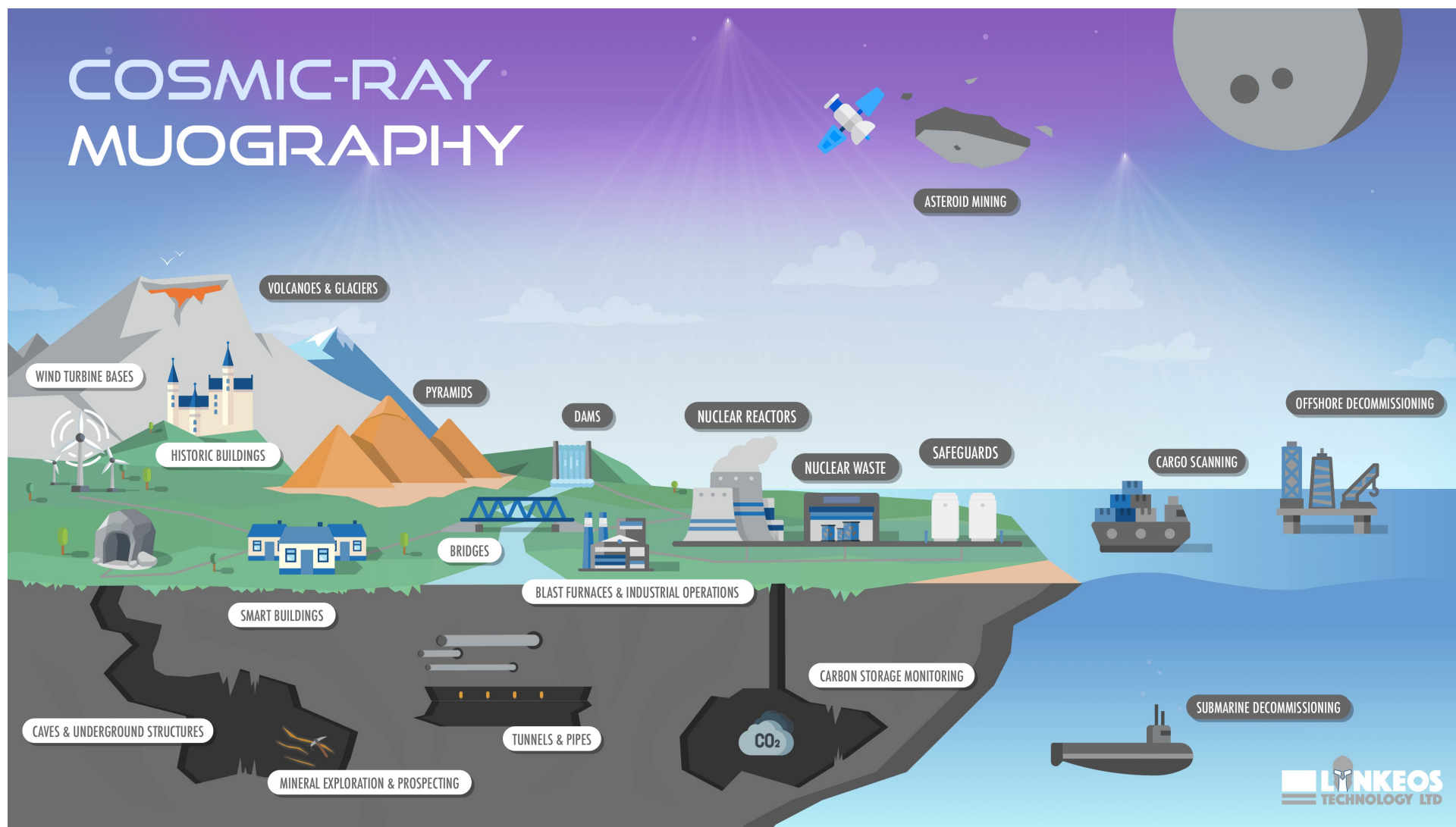
extra-EU

- Secondments:
  - In the EU zone: inter-sectorial (i.e., academic → non-academic or viceversa)
  - EU → non-EU can be intrasectorial (e.g., academic → academic)
  - Both use cases are of interest for Muography people in EU
  - In some other WP, most secondments are of EU researchers to a lab in the US

# Lessons learned

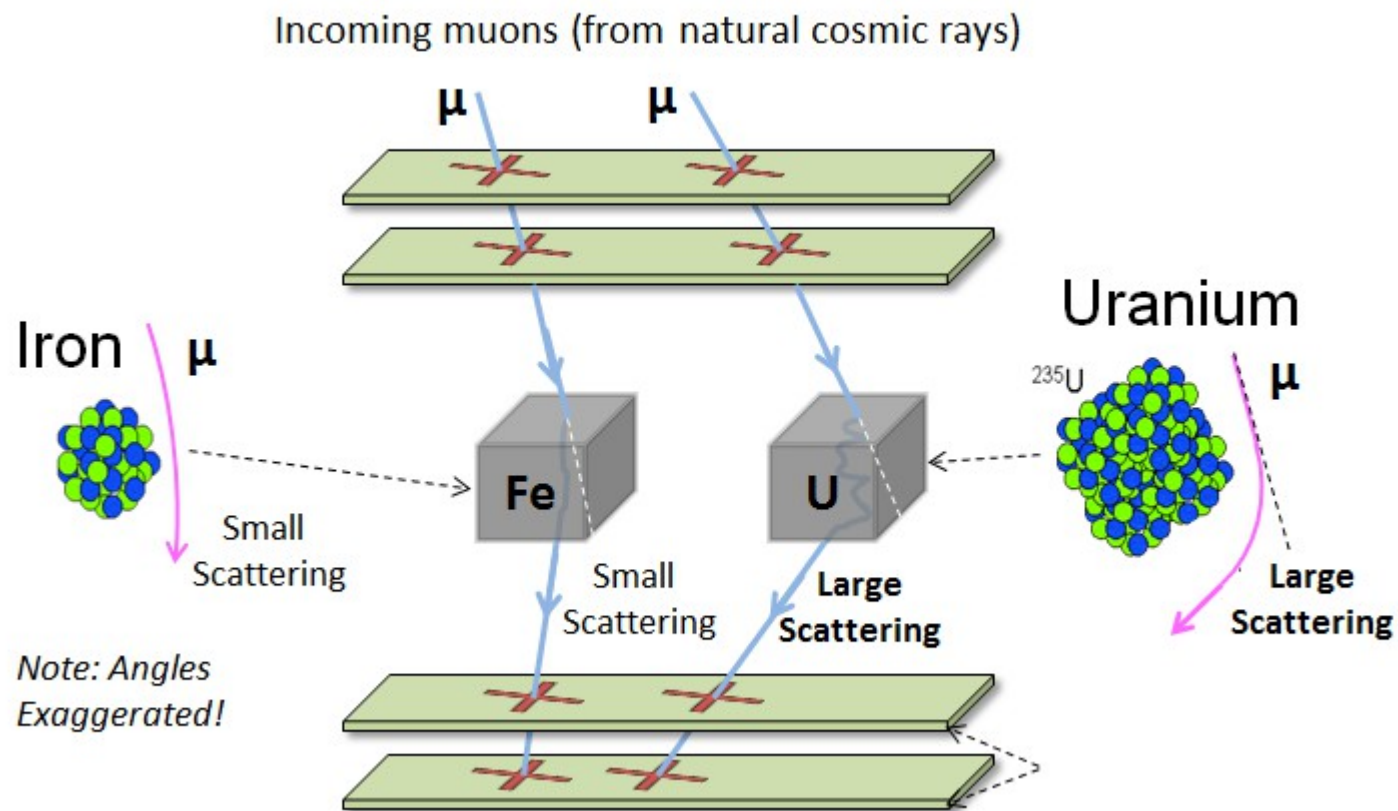
- ITN and RISE networks are excellent opportunities, if you have the right kind of collaborators
- Applying for large networks is a lot of work but can be useful even in case of failure: increase of visibility in the relevant scientific community, useful contacts with the private sector
- FNRS "aide au montage" is a very helpful scheme
- ITN are so competitive that, close to the threshold, luck plays an oversized role; maybe the EC should consider more referees per ITN applications, to reduce "statistical noise"

# Thanks for your attention!



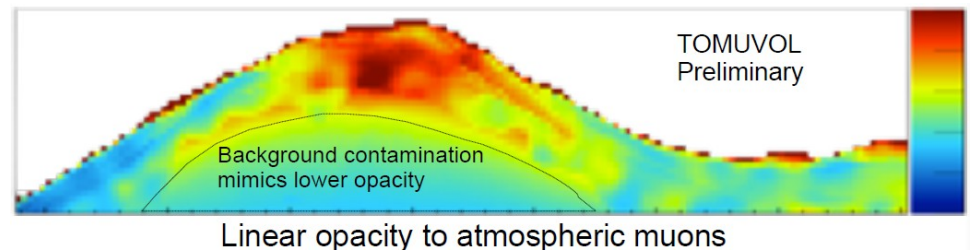
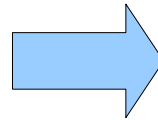
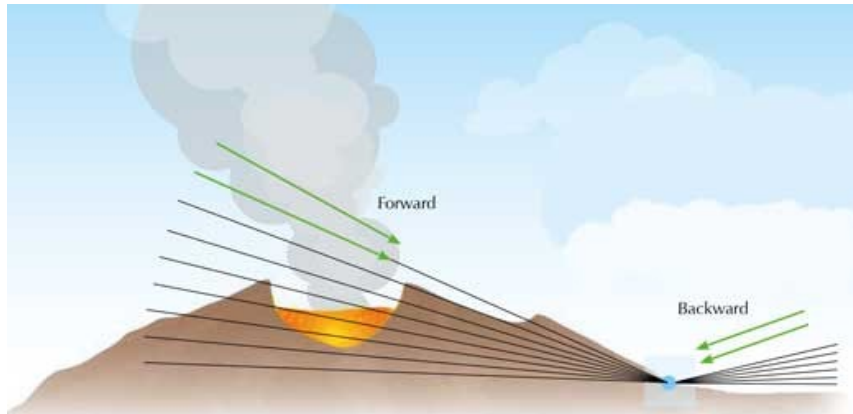
# Backup slides

# "Muography"

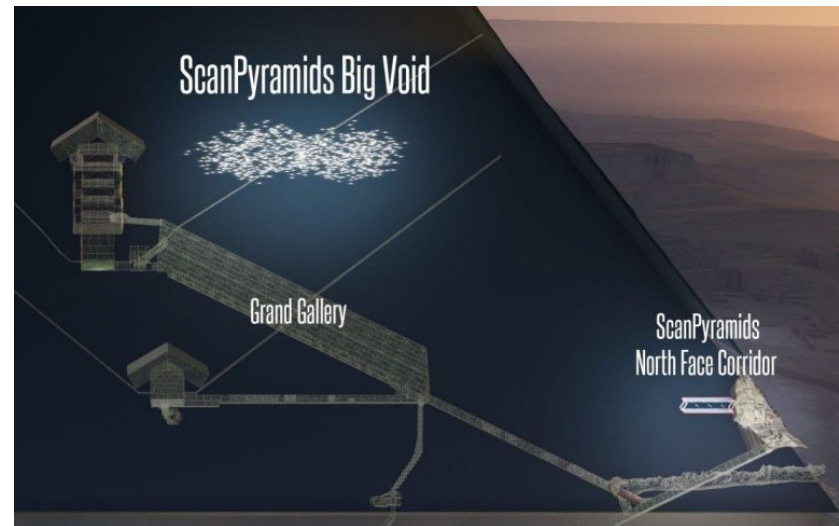
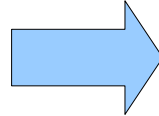
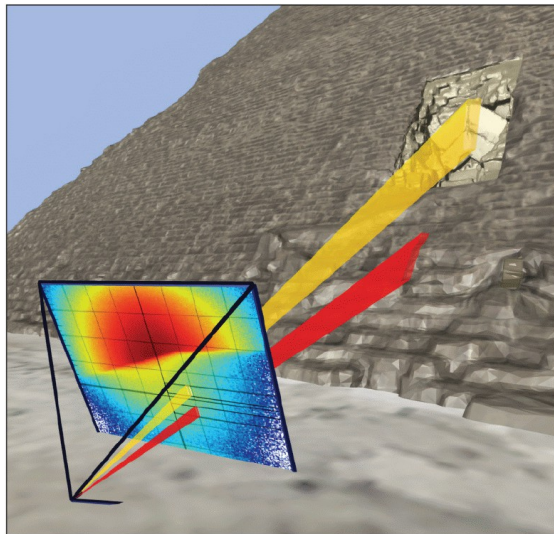




# Volcanology



# Archaeology



# Homeland security

