

International Particle Physics Outreach Group

WG on Applications for Society
2nd HACKATON 27-28 November 2023

<https://indico.cern.ch/event/1342503/>

Barbora Bruant Gulejova & Yiota Foka
(Conveners)

2nd HACKATON PROGRAM

Monday 27th November 2023

Room 5/R-026

<https://indico.cern.ch/event/1342503/>

MONDAY, 27 NOVEMBER			
14:00	→ 14:15	Introduction by conveners Possibility of remote contributions via zoom social-writting	
14:15	→ 14:30	Medipix detectors for education demonstration Convener: Pinelopi Christodoulou (Czech Technical University in Prague (CZ))	
14:30	→ 16:00	Stories writing	
16:00	→ 16:30	Coffee Break	🕒 30m
16:30	→ 18:30	Stories writing	
18:30	→ 20:00	Aperitif offered by WG conveners	🕒 1h 30m

2nd HACKATON PROGRAM

Tuesday 28th November 2023

Room 4/S-030

<https://indico.cern.ch/event/1342503/>

TUESDAY, NOVEMBER 28

9:00 AM	→ 10:00 AM	Stories working	🕒 1h
10:00 AM	→ 10:30 AM	Discussion about preliminary results	🕒 30m
10:30 AM	→ 11:00 AM	Coffee Break	🕒 30m
11:00 AM	→ 12:30 PM	Stories writing	🕒 1h 30m
12:30 PM	→ 1:30 PM	Lunch	🕒 1h
1:30 PM	→ 2:30 PM	Stories writing	🕒 1h
2:30 PM	→ 2:45 PM	Wrap-up and big picture	🕒 15m
3:00 PM	→ 5:00 PM	Science gateway visit We will be joining the IPPOG Working Group: Exhibits and Public Events for a visit to the CERN Science Gateway	
5:00 PM	→ 6:00 PM	Stories writing	🕒 1h
7:00 PM	→ 9:00 PM	Dinner at La Meyrinoise https://business.google.com/website/restaurant-la-meyrinoise	🕒 2h

Also during IPPOG meeting Wednesday

Maybe we could work 😊

AIM of WG

- Create platform offering collection of **stories** and other **materials** (e.g. from exhibitions) **about benefits of (particle) physics for society**
- **Collect** and **write** these materials

IPPOG's contribution to UN International Year & Decade of (Basic) Science for Sustainable Development

Status of WG's deliverables

- 1) Categorised collection of success stories from particle physics and related sciences, beyond CERN, including other Big Science Labs...

<https://ippog.org/particle-physics-and-society>



Benefits of fundamental research for society
Collection of success stories

Medical		CERN scientists develop a ventilator	CHRP	LHCb, CERN	HOSPITAL LA TOULOUSE - MEDICAL CENTER FROM THE LAUSANNE AND GENEVA UNIVERSITY HOSPITALS
Medical		Drugs from the particle physics research lab	CHRP	CERN MEDICIS	
Medical		3D colour X-ray scanner using CERN technology	CERN	CERN MEDIXA	CHUV, MARS BRUNNEN, NEW ZEALAND
Environment		Solar cells for heating	SYMMETRY	CERN	
Environment		Superconductivity for energy transmission	PHYSICS NEWS		
Environment		CLOUD experiment for climate modelling	SWISSINF	CERN	
Engineering		Touchscreen	CERN BULLETIN	CERN	
Citizen Science		Particle Physics for everyone	CHRP	CERN, LHCb, ATLAS, CMS, ALICE	
Science for peace		Research as a peace project	CHRP	SEAME, PSI	

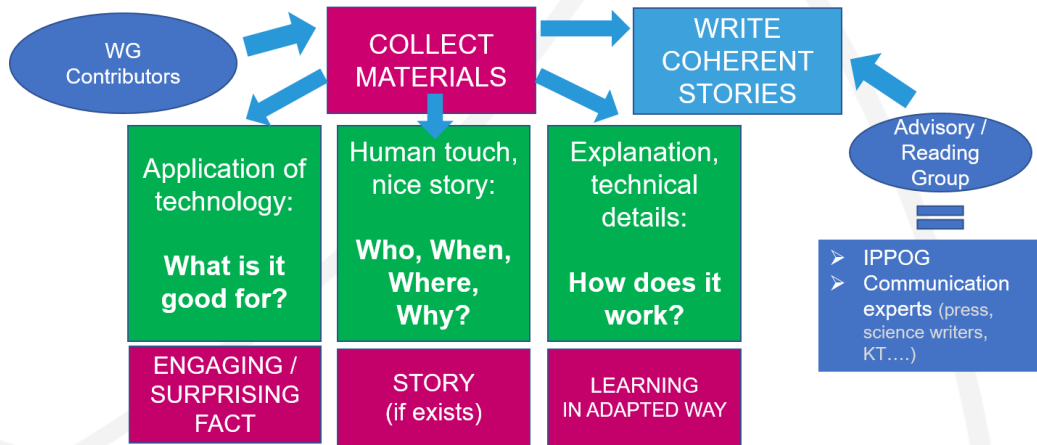
Materials here on google drive

TO DO:

Update!

Status of WG's deliverables

2) Write short publishable stories on most pertinent success stories



Resources:

- collection of links to existing materials and ideas

[General resources – Google doc](#)

- collection of concrete stories ideas

[Stories working plan – Google doc](#)

Format: 2 pages + Addendum with more details and links

Stories ideas and materials working document

https://docs.google.com/document/d/10Klu9nDx_Cliz16QYE7LqgtncfrwWWzB31ZRT7vDLR0/edit

IPPOG Application Stories

- Sign up for the topic where you want to contribute
- Propose new topics

TOPIC	RESOURCES	COMMENT	PERSON	STATUS
All applications	General resources			
Medical applications	General medical applications resources			
PET	Material from Martin Wensveen (CERN) here -Interview to be done later; -Maybe include CAEN PET scanner kit -Presentation by Despina 29 Nov 2019 here	PET using new type of dense scintillating crystals; CERN has pioneer contribution to forerunner of PET	Yiota Despina Andrej	Draft
RMI		PET and MRI imaging combined in single device thanks to new generation of CERN detectors		
Hadron therapy	Material from Hans Specht (GSI) here + interview to be done later More materials here	Treating tumours with beams of protons and light ions reducing the radiation exposure of healthy tissue (3 HT centres in Europe built in collaboration with CERN. CERN supports development of miniature linear accelerators for proton therapy). Kraft (presentation)	Katharina Bulatovic	HT story
Precise dose calculations based on particles simulations		Software for simulating particles interactions in detectors - used to calculate precise radiation dose for cancer treatment - space applications		
MEDIPIX	Info here	medical diagnostics, industrial processes, X-ray based material analysis, X-rays by detectors invented by Charpak in 1968 need fraction of dose required by photographic methods, International Space Station	Yiota	

MEDICIS (Radioisotopes treatment and diagnosis)			Barbora	
Other applications	General resources			
WWW	Text for article for slovak newspaper in Slovak language, Barbora Bruant Gulejova here	Invention at CERN (1993) driven by need of better communication of scientist worldwide, had a huge impact # of internet users from 14 millions to 3.2 billions from 1993 till 2015- contribution to 2.9% of world global GDP - 1672 billion US\$ (in 2011)	Barbora Teddy	
Touchscreen	Article here	CERN was pioneer in breakthrough technologies, such as touchscreen for SPS in 1973	Thomas	
Solar cells technology	Article in symmetry here	Benvenuti working at CERN, inspiration for solar cells technology based on ultra high vacuum - GVA airport, KT case, cautious as it went bankrupt	Barbora	
TERABEE		sensor technology used in drones to explore places with difficult access	Teddy	
INVENIO		digital library and document repository used by providing cloud based digital library system for UN		
CLOUD	Link 1 Link 2 Link 3 Link 4 Link 5 Link 6	exploring the influence of cosmic rays on cloud formation in the Earth's atmosphere giving important input to global climate models	Katharina	
Radiation protection		Dosimeters and other applications		
UNOSAT	Notes from BBG here	In cooperation with UN, CERN provides the IT infrastructure to UNOSAT programme of UN/TAR hosted at CERN, to be at the forefront of satellite analysis technology -15 years of humanitarian mapping: disaster risk reduction, regional capacity development, - damage assessment, climate services, water and food security	Barbora	
Superconductivity	Link 1 Link 2 Link 3 Link 4 Link 5 Renewable and sustainable Volume 55, March 2016, Pages 59-72	Potential use for energy transport	Katharina	
Rolex antimagnetic watch	See link		Barbora Teddy	
Cultural heritage	Muon tomography,....		Despina Katia	
Accelerators for society	Medication, Sterilisation, Water purification... "Accelerators on ships" from "ARIES Accelerating News" See here		Yiota	
Detectors in industry			Jonivar	
WIFI	See here	Search for Hawking radiation	Lorenzo	GPS story
GPS and Einstein Theories			Lorenzo	GPS story
GPS	GNSS Masterclass GNSS links	Example of simple GPS based masterclass for EEE high school students	Marina Trimarchi for EEE collaboration	

Hyperloop	link	Possible traveling of future	Lorenzo	
CAEN	Interview with Gianni (CAEN), more materials will be sent	Examples of their technologies used in industrial applications	Barbora	
CERN against COVID	Presentation from James Gillies at IPPOG here CERN against COVID19 seminar here Website CERN against COVID TF here			
LIP and COVID	Ricardo's presentation at IPPOG here			
Science response to COVID	Presentation from Savannah at IPPOG here Initiative "science responds" here			
Physics in the service of archeology	https://indico.cern.ch/event/942612/contributions/962145/attachments/2082233/3497568/Alfaro.pdf		Jose Ruben Alfaro Molina	
Tesla	https://indico.cern.ch/event/942612/contributions/960794/attachments/2082036/3497226/YF-TESLA-IPPOG-WG-29jul2020.pdf		Yiota	
ATTRACT highlights	https://attract-eu.com/news-and-events/		Barbora	

1st WG Hackaton January 2023, CERN

Katharina, Despina, Yiota and Barbora, Pinelopi (*after Hackathon*)

Created stories on google drive: <https://drive.switch.ch/index.php/s/fXBx4zL1cPhagbT>



General Relativity and GPS.doc



How crystals used by CERN experiments save lives.docx



MuonTomography.doc



PET_story_BBG_v2.docx



success story_Medipix in Education_pinelopi.docx



Superconductivity.doc

TO DO:

- Review & edit
- Approve for publishing

Other TO DOs

➤ Establish reading /editorial committee or expert ?

e.g. Malcolm Love (science communication specialist from film making industry, trainer at CERN)

➤ Referencing

➤ Re-confirmation of WG active members - contributors

- Official co-authors of stories
- Survey will be sent for engagement confirmations

2nd HACKATON GUIDELINES

- ❑ Go through the list of collected materials (links accessible through indico page!)
- ❑ Pick the subject(s) you want to write story about during this Hackaton
- ❑ Communicate your choice to the WG (tandems working together on subject are welcome!)
- ❑ AIM: 1 story (first draft) per participant...
- ❑ You might also read / edit the existing stories