Week of Science and Technology in D. R. Congo

African School of Physics, ASP2022, Nelson Mandela University, Gqeberha, South Africa

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- Physicist by training
- Author
- International education consultant - Curriculum reform in science and mathematics
- Director of Investing In People
- Honorary Member of the Presidential Panel that accompanied the mandate of President Félix Tshisekedi at the head of the African Union (2021-2022)

The Democratic Republic of Congo

Surface area of

2,345,410 km²

(Four times larger than France)

9 neighboring countries

Population

92 million

54% are under the age of 18

- 60k Primary schools
- 18,8 million Pupils in primary school

446k Primary school teachers

33k Secondary schools

6,8 million Students in high school

474k Secondary school teachers

699 Higher technical and pedagogical institutes

272 Universities

564k students: 81% of students are in the first 3 years, 0.1% are at the PhD level

4% in Natural Sciences, Mathematics and Statistics ; 8% in Engineering

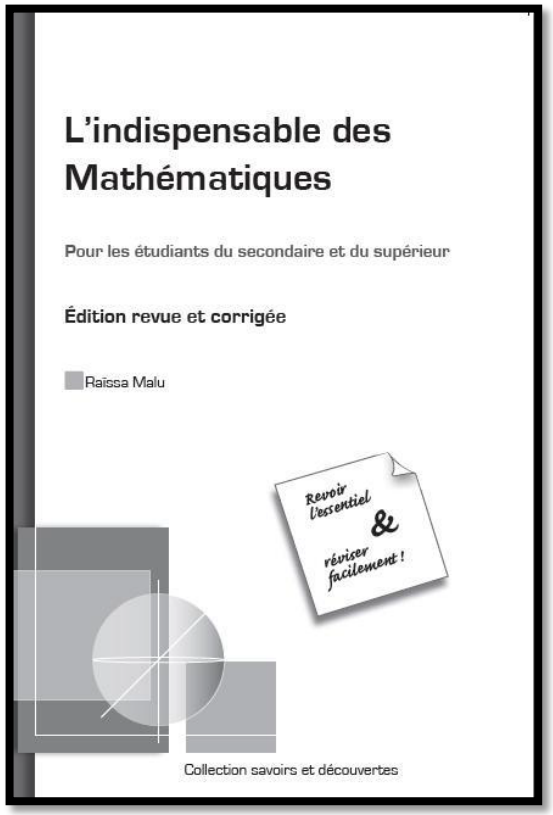
Economic priority sectors: agriculture, mining, construction and public works and related services

Congolese Non-profit association (2013)

- Promotion of STEM ;
- Training and teachers support ;
- Ministry of Primary, Secondary and Technical Education ;
- Ministry of Higher and University Education;
- Ministry of Scientific Research and Technological Innovation;
- UNESCO.

Investing In People

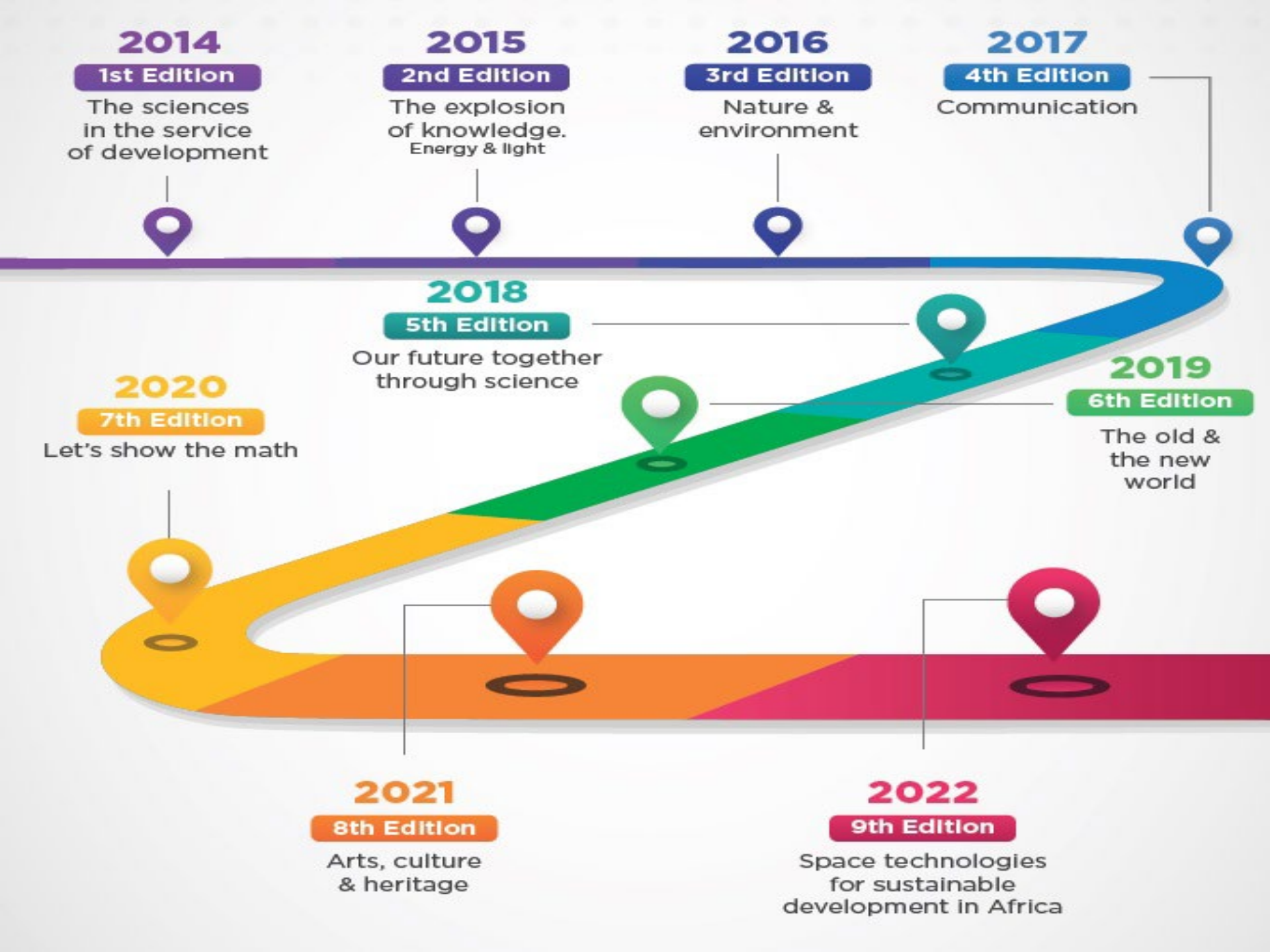
From Belgium to D. R. Congo



The essentials

Science and Technology Week

Science and Technology Week - Our history


2014
1st Edition
The sciences in the service of development
2015
2nd Edition
The explosion of knowledge.
Energy & light
2016
3rd Edition
Nature & environment
2017
4th Edition
Communication
2018
5th Edition
Our future together through science
2019
6th Edition
The old & the new world
2020
7th Edition
Let's show the math
2021
8th Edition
Arts, culture & heritage
2022
9th Edition
Space technologies for sustainable development in Africa

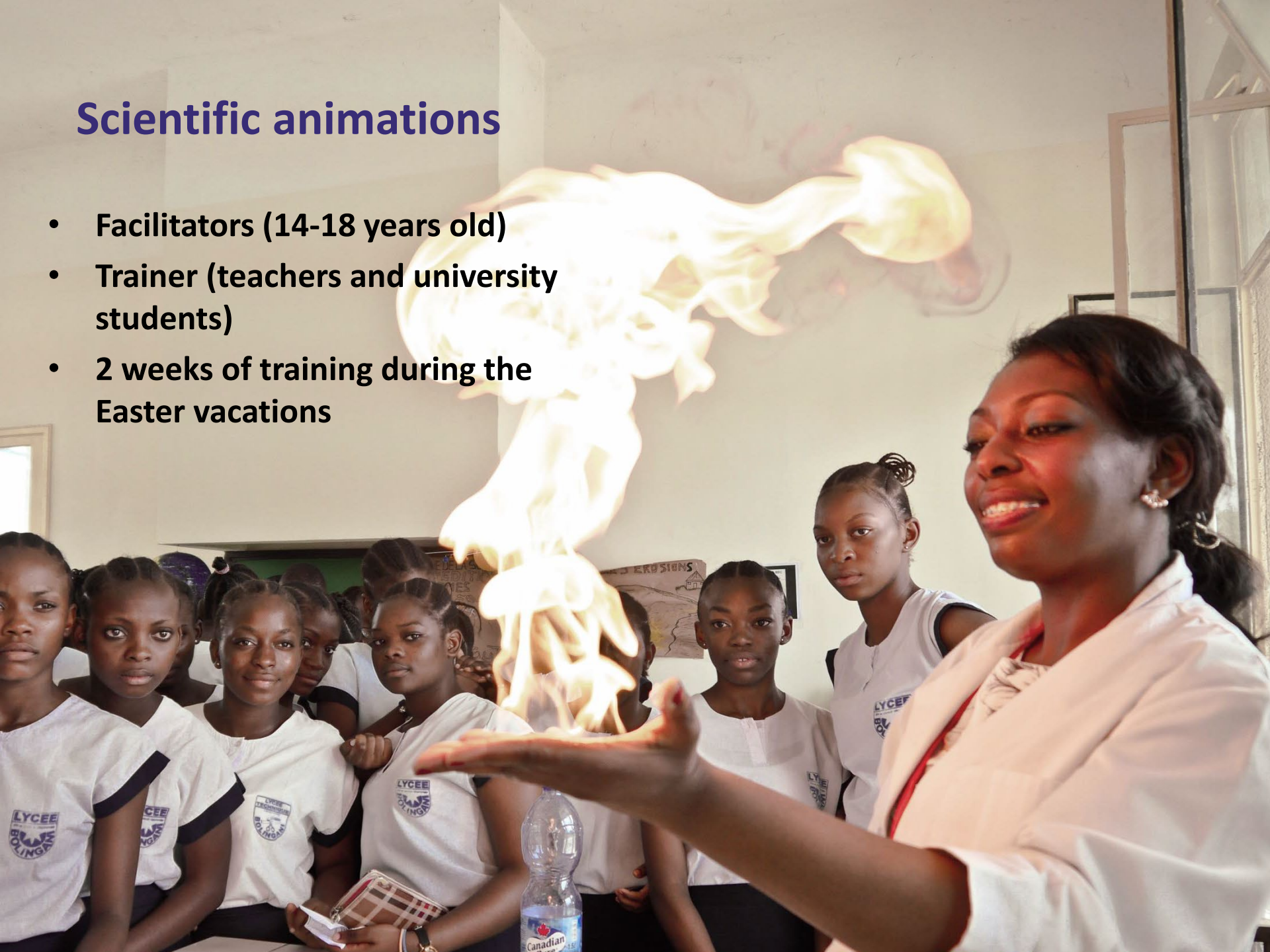
Science and Technology Week

- **3 objectives:**
  1) Develop a scientific and technological culture
  2) Promote African scientists
  3) Encourage vocations

- **4 activities:**
  1) Scientific animations
  2) exhibitions
  3) conferences
  4) national competition

Scientific animations

- Facilitators (14-18 years old)
- Trainer (teachers and university students)
- 2 weeks of training during the Easter vacations



Exhibitions

Conferences

MARAM KAIRE

YOUSSOUF MULUMBU

AND WHAT RESULTS!

- White Paper on December 21, 2021 : “**Informal Science Education and Career Advancement**”

- Michael S. Smith, Claudia Fracchiolla, Sean Fleming, Arturo Dominguez, Alexandra Lau, Shannon Greco, Don Lincoln, Eleni Katifori, William Ratcliff, Maria Longobardi, Maajida Murdock, and Mustapha Ishak

- This document supports a proposed APS statement that **encourages academic, research, and other institutions to add the participation in informal science education activities to the criteria they use for hiring and career advancement decisions**.

Draft American Physical Society (APS) statement

- *"Systematic, ongoing, respectful, lively, two-way conversations with the public – that is, public engagement on science – is critical to the field of physics, including the public image of institutions hosting physics research and education, the recruitment and diversity of new generations of physicists, the scientific interest and literacy of the general public and in turn their support of physics and science more generally, and the success of physics-based applied research and development undertaken in response to specific practical societal needs…*

- *APS strongly supports participation in informal education activities, and supports that such participation should be considered in recruiting and promotion decisions, including tenure decisions at universities and other forms of career advancement at non-academic institutions as appropriate."*

Definition of terms

1) **Non-formal education activities** are those that have an established framework but take place outside formal learning structures (courses for senior, sport, etc.)
2) **Outreach** : a one-way interaction wherein a knowledgeable scientist provides information to the recipient audience who may otherwise not know, be aware of, or have access to this information
3) **Informal science education activities** : two-way interaction model, a mutual interaction between the different stakeholders.

- The **Science and Technology Week** is an **Informal science education activity – ISEA**

- **ISEA :**
  - Takes place outside of formal learning structures
  - Often lacks a framework and defined objectives
  - Includes a broad range of activities
  - Sparks interest
  - supports student learning
  - discover the joy and relevance of science in everyday life
  - Identify science as a possible career path
  - A mutual interaction between the different stakeholders : The Audiences, The Researchers/The Facilitators, The Institutions, The Field of Physics

Value of ISEA for stakeholders

- **The Audiences:**
  - Bring science “alive”
  - stimulate curiosity in a way that is hard to replicate in classroom curricula
  - Discussions on critical public policy issues: direct person-to-person engagement between a researcher and the public in an open and accessible forum can change hearts and minds

- **The Facilitators:**
  - Improving communication skills : ability to place detailed research work into a much broader context and show its relevance to everyday life
  - Advancing Research: reflective thinking, news ideas, etc
  - Improving Mentoring, Teaching, and Training
  - Societal Impact oriented in next proposal

- **The Institutions**:
  - Successful ISEAs can be invaluable recruiting tools – increasing the number of junior researchers and the number of students studying science

- **The Field of Physics**:
  - Recruiting and Equity/ Diversity/ Inclusion
  - General Public Support for Science
  - Direction of R&D : changes of the direction of research by individual physicists based on their reflective thinking or on suggestions by (or inspiration from) non-experts.

The evaluation criteria of an ISEA

- ISEA have the potential to bring about profound changes in lives, institutions, and in physics.

1. *Initiative*
2. *Creativity*
3. *Audience*
4. *Duration*
5. *Longevity*
6. *Interactivity*
7. *Impact*
8. *Funding*
9. *Publicity*

- *Initiative*: As a physicist, I wanted to share my passion for science and reconcile the public with this discipline.

- *Creativity*: Each year a different theme, different animations, a different competition

- *Audience*: Elementary and secondary school students, teachers, students, Mr. and Mrs. Everyone

- *Longevity*: 9 consecutive editions from 2014 to 2022, The only French-speaking country in sub-Saharan Africa with this record

- *Interactivity*: Visitors and facilitators learn together, it's about learning by doing;

- *Impact*: Schools ask for capacity building for their teachers; strong demand for student facilitators ; A network of trainers and facilitators in the provinces

- *Funding*: We started with 6 sponsors and partners in the first edition, up to 40 for the 9th (81,3k USD Budget)

- *Publicity*: 28 articles and reports were published in different Congolese, African and international media on the 9th edition.

Other results of the Science and Technology Week

- 1 Database of Women in Science, Technology, Engineering and Mathematics (STEM) in the DRC;
- 18 scholarships awarded to Women in STEM in Congo Kinshasa and Brazzaville for a total amount of 60.000 USD;
- 10.000 3D visors produced;
- 1 prototype emergency respirator developed.

We are revealing the next generation of African scientists who will support the development of the DRC and Africa


THANK YOU