GLEC2019

GLOBAL CONFERENCE ON SPACE FOR EMERGING COUNTRIES

HIGHLIGHTS

ASTRONAUTICA AD PACEM HOMINUMQUE PROGRESSUM

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WELCOME MESSAGE

The Global Conference on Space for Emerging Countries, GLEC 2019, was held in Marrakech on 24 - 26 April 2019 and was organized by the **International Astronautical Federation (IAF)** in partnership with the **Royal Centre for Remote Sensing (CRTS)** and with the support of the **Centre National d'Études Spatiales (CNES)**. GLEC 2019 was a great success with more than 400 delegates attending from 45 different countries!

GLEC 2019 brought together space developing nations and space faring nations alike to discuss and closely examine the key aspects for resourcing, operationalizing and establishing successful national space programmes in emerging and developing space countries.

It is with pleasure that we provide you with this booklet documenting the highlights of GLEC 2019. Once again, we would like to thank everyone who contributed to this outstanding event and thanks to all the participants who gathered in Marrakech.

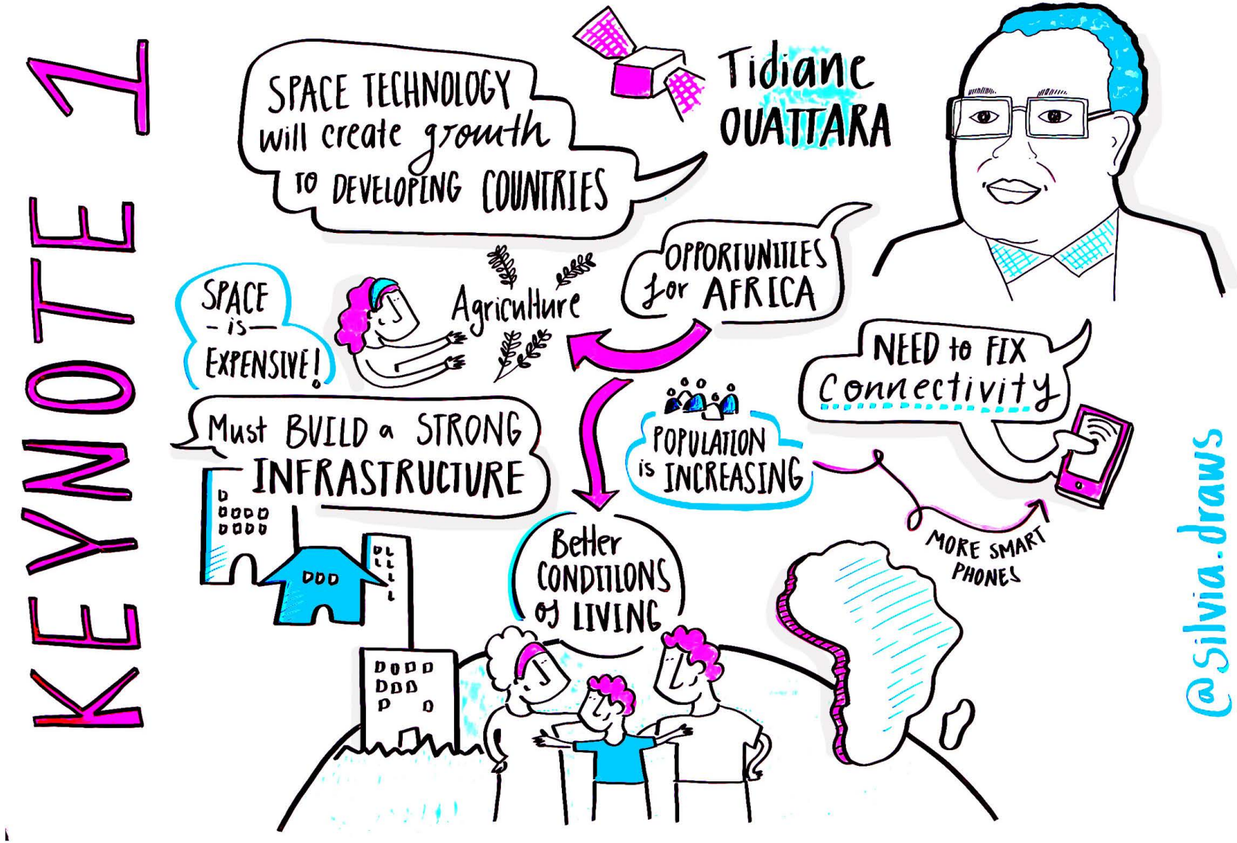
This is just the beginning of the quest for bridging the space divide in emerging countries and we look forward to continuing this important discussion with all of you!

Jean-Yves Le Gall
President,
International Astronautical Federation

Pascale Ehrenfreund
Incoming President & VP Communications,
Publications and Global Conferences,
International Astronautical Federation

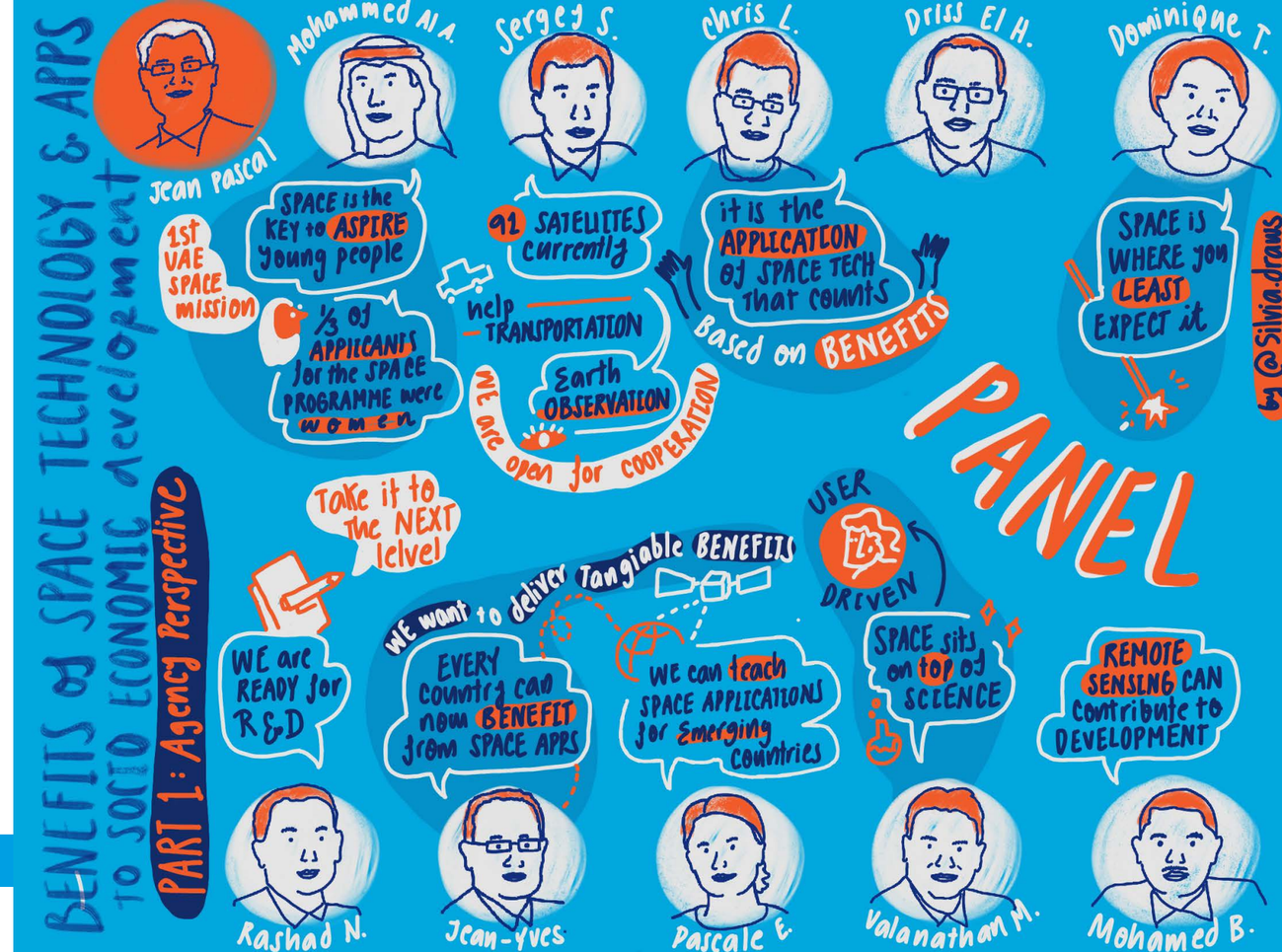
OPENING CEREMONY


H-LEVEL KEYNOTE
Tidiane Ouattara
Space Science Expert and
African Union Commission


KEYNOTE 1
SPACE TECHNOLOGY will create growth TO DEVELOPING COUNTRIES
Tidiane OUATTARA
OPPORTUNITIES for AFRICA
AgricuHure
SPACE - is - EXPENSIVE!
NEED to FIX Connectivity
Must BUILD a STRONG INFRASTRUCTURE
POPULATION is INCREASING
MORE SMART PHONES
Better CONDITIONS of LIVING
@silvia.draws

SESSION 1

Benefits of Space Technology and Applications to Socio-Economic Development



Part 1: Agency Perspective - Engage in a dialogue with government to make sure that the Agency's policy is in line with what government really wants by providing a full range of products and services, taking full benefit of a comprehensive space programme in all fields (including human spaceflights) and taking advantage of multidisciplinary approaches. Ensure that national prestige considerations do not divert the national investment which should, on the contrary, present a high value for money. When promoting active international cooperation amongst space actors from different spheres it is important to ensure a win/win approach that shares the benefits of space. In this respect, make sure to maximize the benefits of cooperation, be it regional, international, inter agencies or with the industry to increase the efficiency and effectiveness of national policies. We should also be giving hope to the youth by investing in inspiring missions and encouraging the young generation to embrace a career in STEM so that we prepare and encourage the young generation to take over from the many space engineers and scientists that will retire in the years to come.

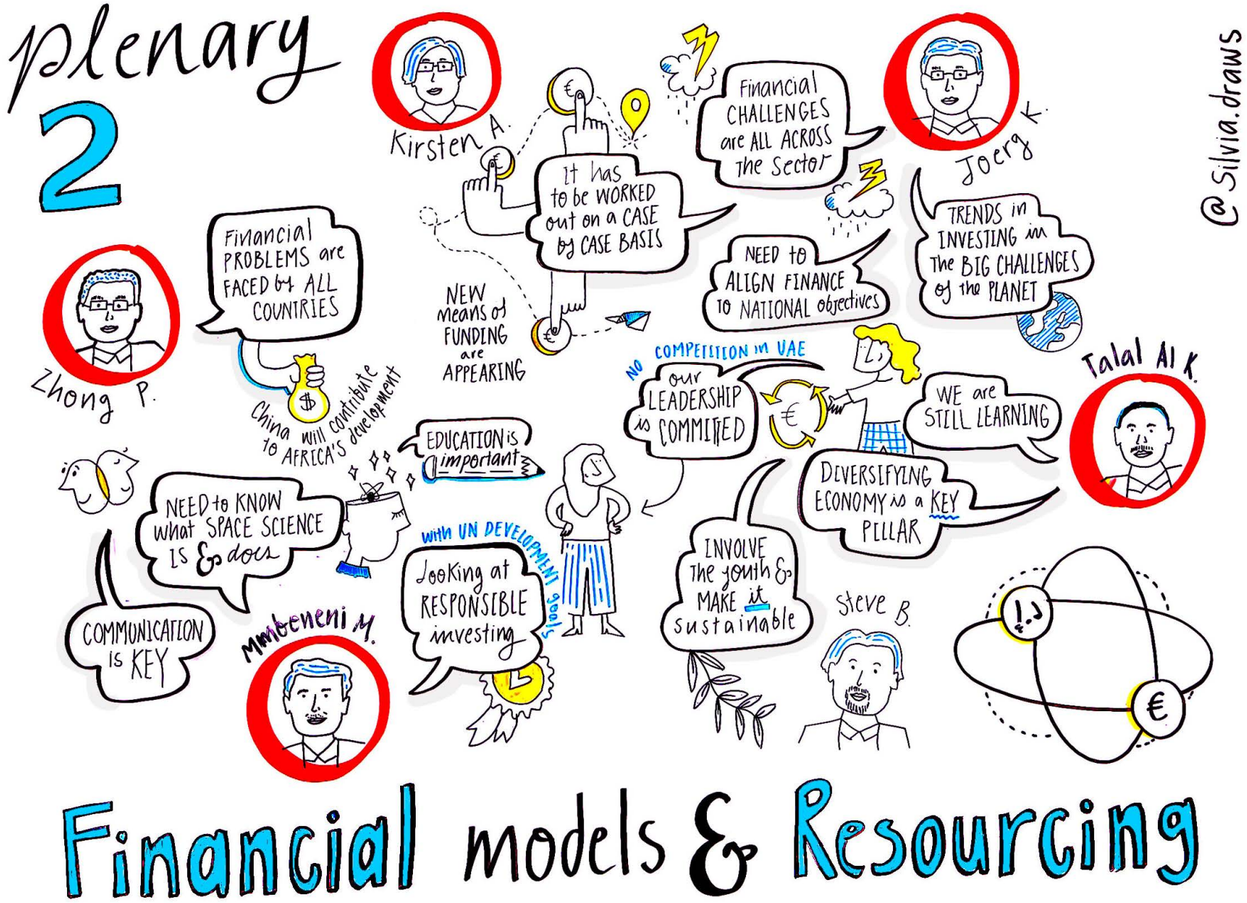
Part 2: Industry perspective The rationale for the commercial space industry using public private partnerships in the USA was (i) to provide services for the International Space Station (ISS), (ii) to transport astronauts to the ISS using commercial launch vehicles, and (iii) promote broader international partnerships on the ISS. Emerging countries should focus on downstream space applications. The SDGs is a call to arms for the space sector to assist in tacking global challenges. Developed countries actually need developing countries, as there is a barrier to entry of new technologies in developed countries, which is not the case in developing countries. Stress was also placed on telecommunications and the use of public funds to invest on critical space infrastructure.

Telecommunications allows for penetration in remote areas and businesses working from remote areas. Earth observation and navigation are the other areas of importance for space applications. Governments should focus on enabling the local ecosystems to respond to these opportunities. Assessments of the economic impact of investments in the space sector and how to focus investments in the sector to maximize the returns on investment have helped to motivate the case of investments in the space sector.

EXHIBITION OPENING

SESSION 2

Financial Models & Resourcing

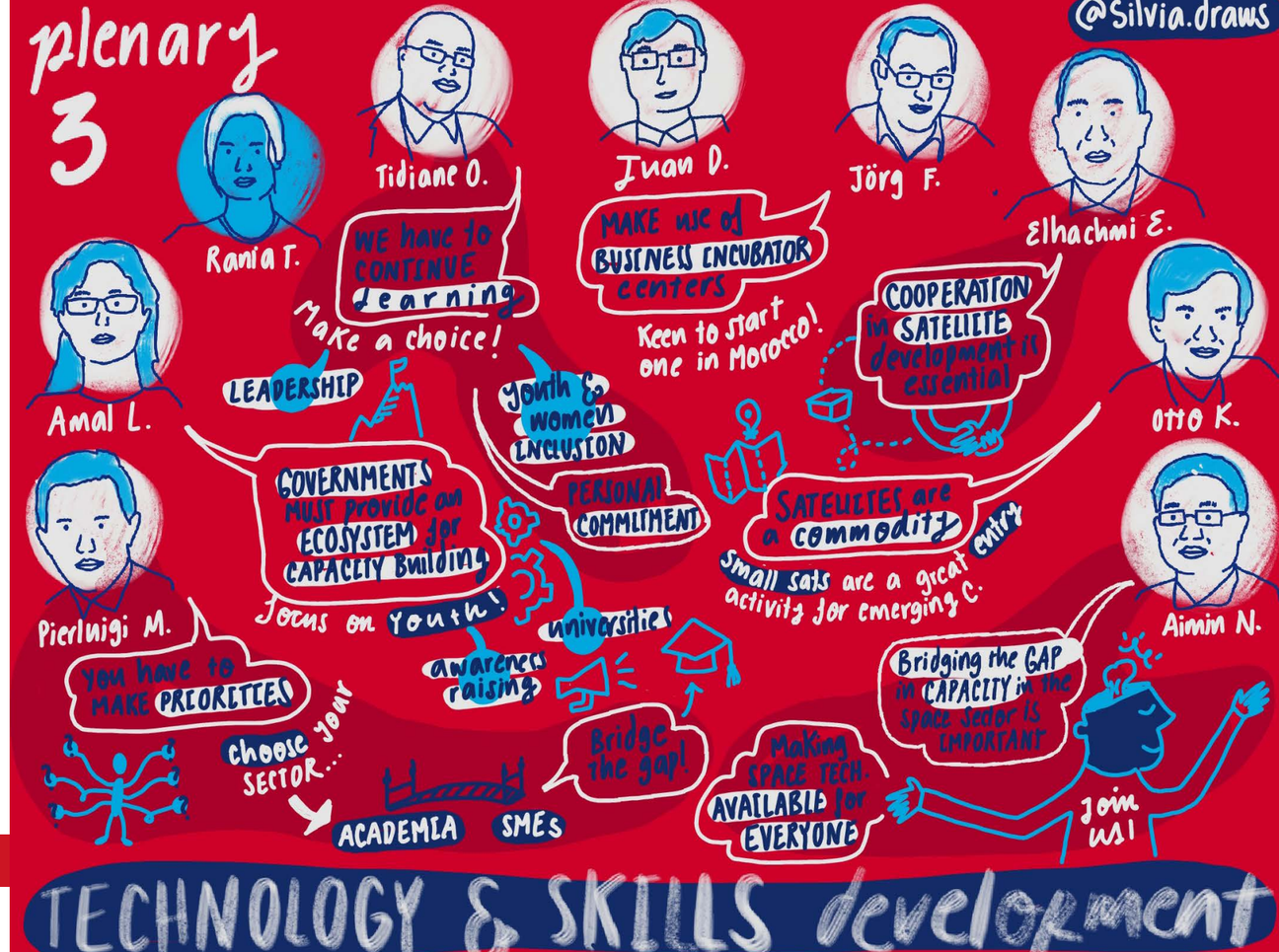


Session 2: Financial Models and Resourcing – If we examine every nation's spend on space-based innovation and technology, we would be surprised that we are already spending what we are scared of spending as direct investment. It is necessary to reflect on our daily consumptions that are enabled by space to understand the benefits, so we can be able to communicate these benefits in terms of the economy and improvements of quality of lives of citizens to policy makers in order to get the necessary investment. It is important to understand "the why" before "the how." And space science needs to be incorporated into a country's economic growth plan and goals, and needs a smart investment strategy to have a positive return—build the ecosystem and unlock the potential. There is funding out there through excess liquidity. Beyond the technology, other aspects are driving the investment such as risk profiles and lead times. It is important to understand who the stakeholders are and the purpose the project will serve. Each country should evaluate for itself how activities leverages the Sustainable Development Goals, the financial mega trends, and the required space capabilities. If a country has good governance and appropriate capacities in place, financing should not be a problem because there is money available through a blended mix of models using terrestrial financing schemes. One such model is government-to-government partnership, with projects funded by the government. For example, small satellites are an approach that is suitable for government cooperation, particularly for solving challenges like climate change.

WELCOME RECEPTION

SESSION 3

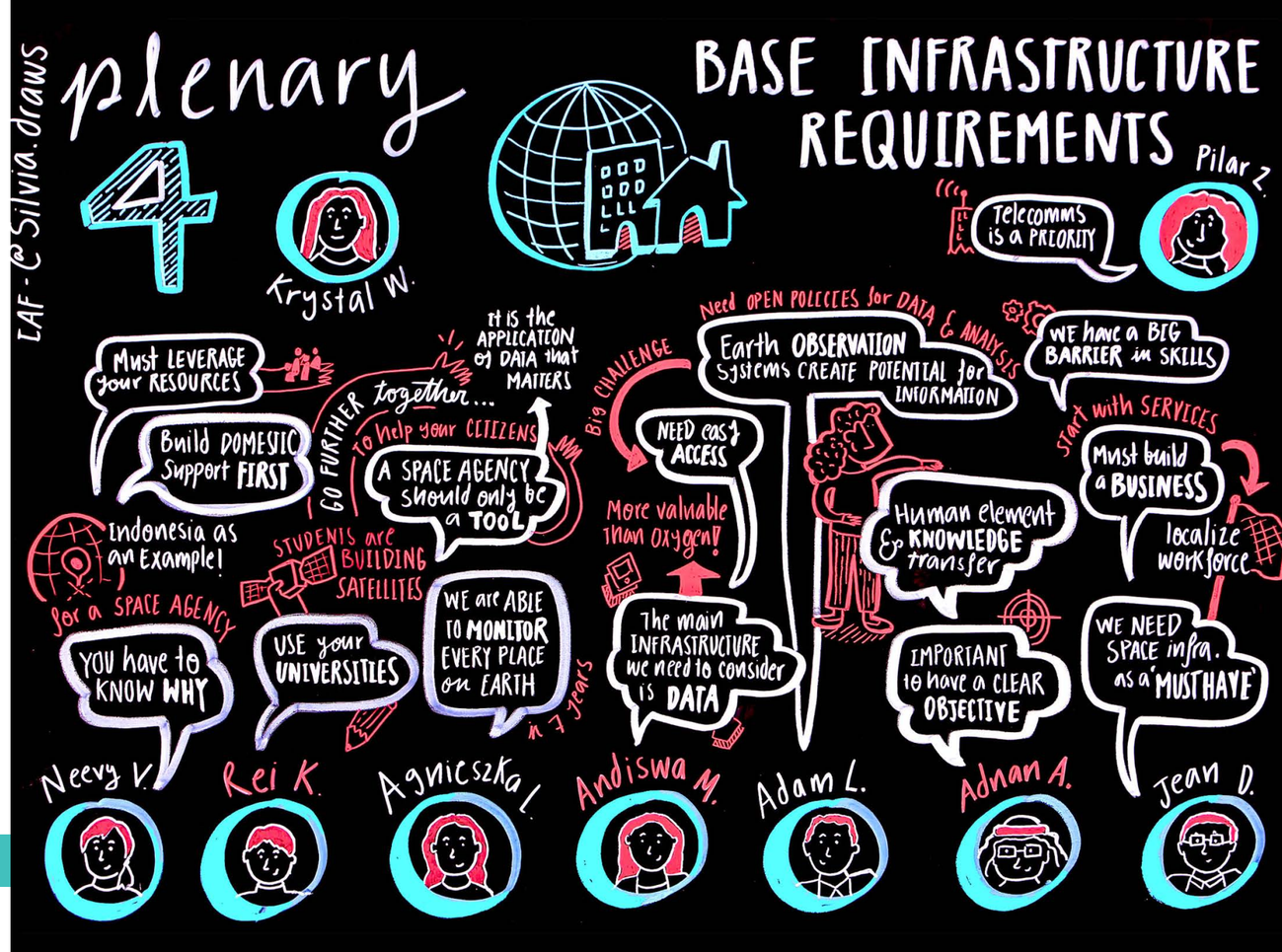
Technology and Skills Development



Session 3: Technology and Skills Development – We should emphasize the important role of academia in educating, training and helping the researchers to improve their capabilities and build their knowledge, as well as supervising their work by the experts and space leaders and ensure the continuing learning process since space is a very dynamic field. The space application should be used for the education and involvement of the young engineers that are coming from different fields into the space domain. We should encourage local universities from developing countries to participate in international projects and events. Government should play a big role in establishing national plans to address the needs of the country in terms of applications and the utilization of data; effectively bringing space down to earth. Companies should support the space programme by training the skilled resources and investing more in the space market and facilitating international collaboration. Space faring countries should support the emerging countries by enhancing the cooperation and sharing the know-how and show the successful models of well-established business and cooperation. UNOOSA, space agencies and organizations have to support the emerging countries by offering fellowship programmes to students in order to learn and have experience. Partnerships with private entities should be enhanced in a way to encourage the investors to enlarge the space market.

SESSION 4

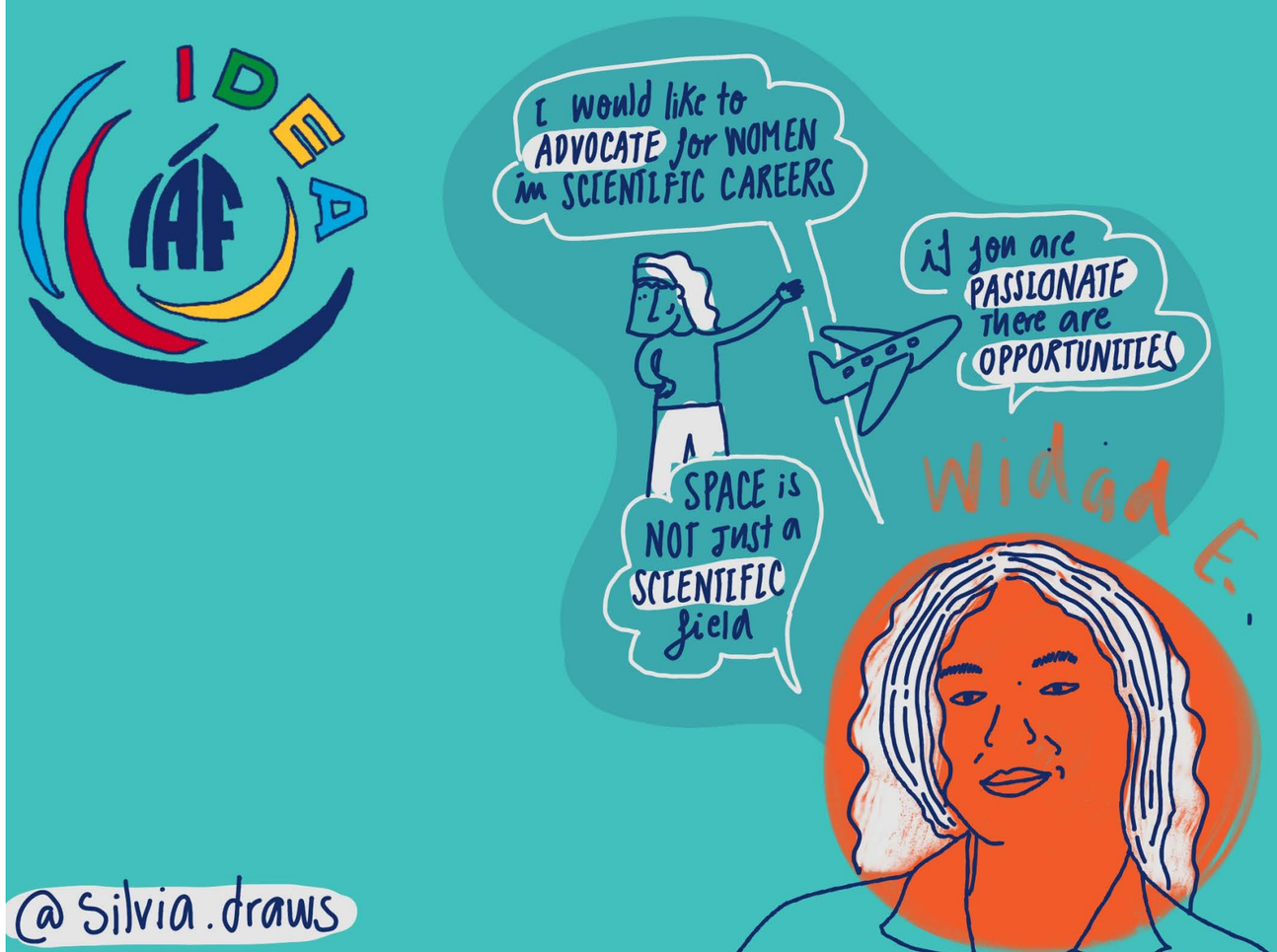
Base Infrastructure Requirements



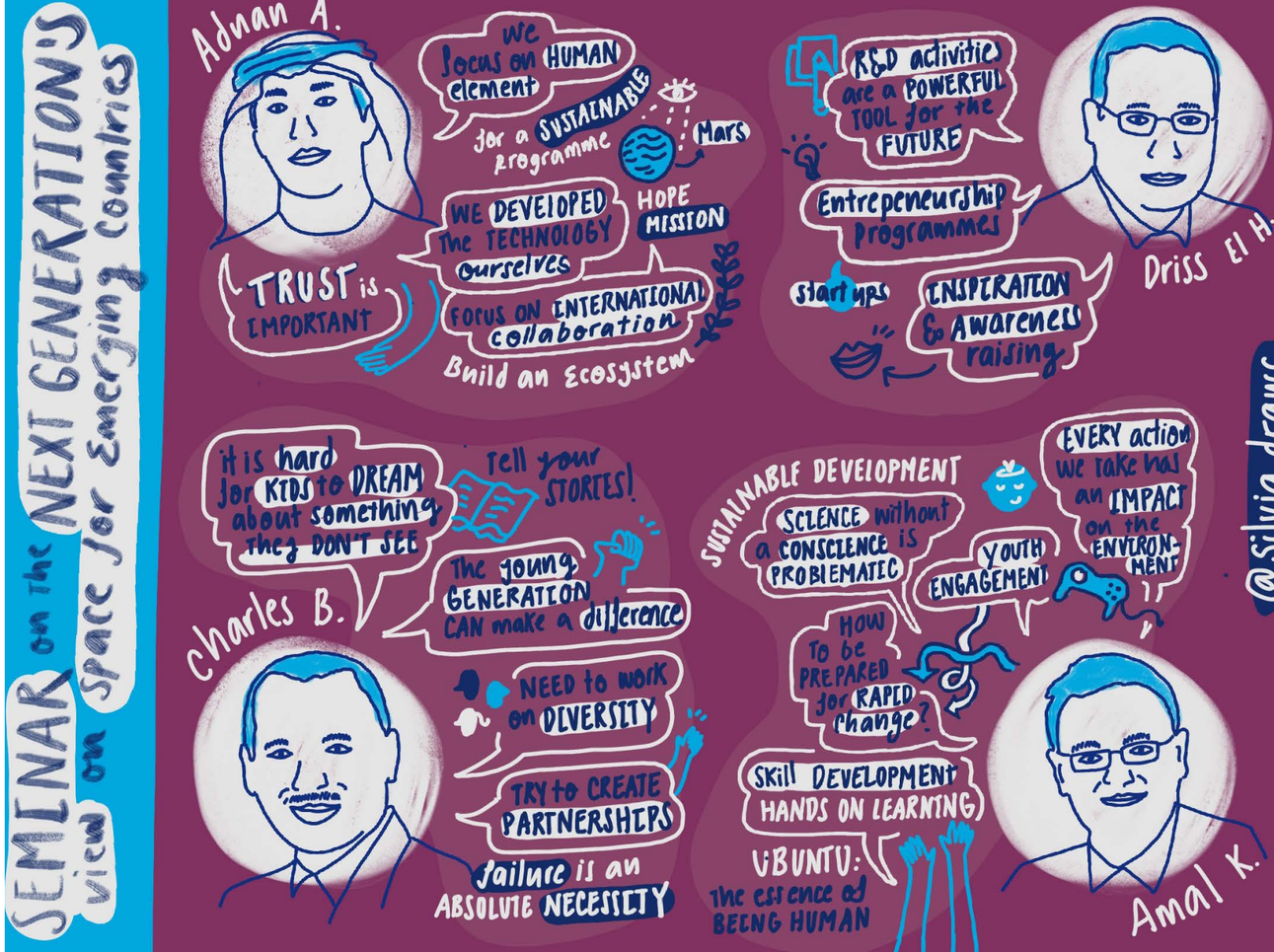
Session 4: Base Infrastructure Requirements – Focus should be on 1) identifying the base infrastructure required for operationalising efficient and effective national space programmes and 2) appreciating how to develop the appropriate skills and expertise required for the efficient operations of space infrastructure. We should recognise the importance of international cooperation and partnerships to support those activities. A new space agency should be seen as a vehicle that focuses on the application of data that contributes to better life on Earth and should therefore have a clear objective, which recognises the importance of human capital and knowledge transfer. In this regard emerging space nations need to build domestic support first before looking internationally so that universities can contribute to such national space efforts. Data should be viewed as the main infrastructure consideration and the need for easier access, and space infrastructure should be viewed as critical rather than optional and the importance of building a well-trained workforce should be viewed in the context of operating such critical infrastructure. Earth observations creates a potential for information and better decision-making, but requires the need for open processes for data and analysis.

IDEA "3G" DIVERSITY

The IDEA "3G" Diversity Lunch featured a keynote speech by 18 year-old Moroccan, space camp alumni, Widad Elkachradi. She gave a keynote on the importance of women's right and how each one uf us can contribute to a brighter future for women from emerging countries.



NEXT GENERATION SEMINAR



Next Generation Seminar: The seminar aimed at engaging emerging countries' youth providing them the opportunity to discuss and give their views on space applications. Quoting Mr. El Hadani, the Director General of the Centre for Remote Sensing (CRTS) "the youth is the future of every nation and the future inheritors of the earth tomorrow", that is the reason why we should enhance their contribution and implication following 3 key elements:

1. Research and development
2. Entrepreneurship and its impact on social as well as cultural and economic progress and the fact that the government should support the young entrepreneurs
3. Inspiring young students: by outreach programmes.

According to Mr. Khatri, Executive Director - Space Programme of the South African National Space Agency (SANSA), these points constitute the basis for the development of the ecosystem of space. They bridge the ethnic and gender gaps, spark the interest in pursuing STEM education and careers as well as allow for a healthy competition in the global space economy.

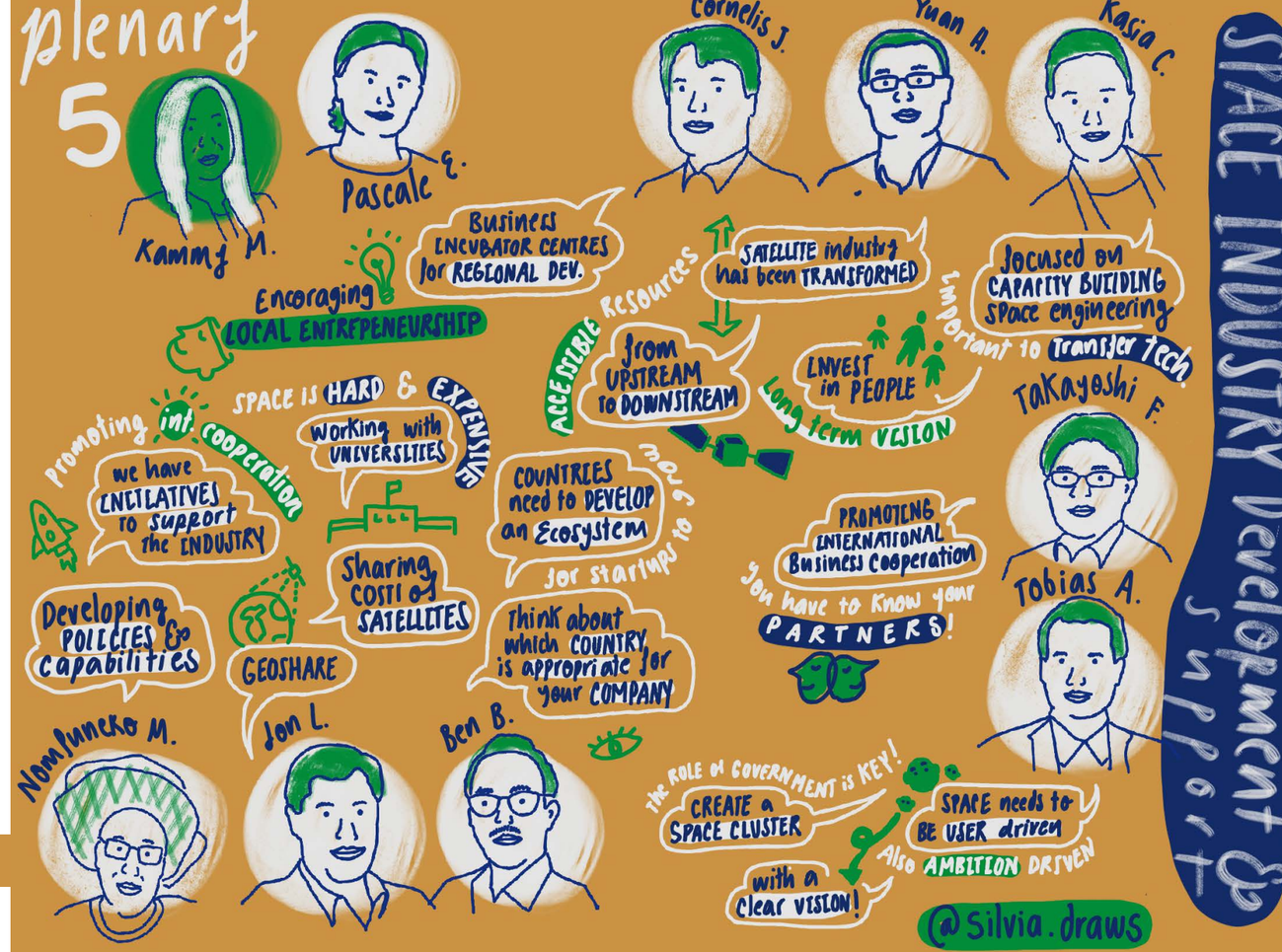
Inspiring young students is particularly important for emerging space nations. Dr. Mohamed Nasser Al Ahbabi, Director General of the UAE Space Agency, said: "Many young people in our region are confused, they are hopeless about the future. So, we have to inspire them. Our space programme is largely driven by this wish to inspire". Nations need to have space programme that inspire the next generation. Mr. Al Rais, Manager, Business Development and External Relations, Deputy Project Manager of UAE Mars Mission, Mohammed Bin Rashid Space Centre (MBRSC) spoke about how the United Arab Emirates is proceeding for sustaining their space programme. According to him, focusing on and trusting the human element is very important, as well as developing technologies and focusing on international collaborations.

The Special guest of the Seminar was the former Administrator of NASA Charles F. Bolden Jr., with whom the Keynote Speech Moderator, Ms. Imane El Khantouti, had a very invigorating discussion about how to get students and young professionals from emerging countries to persist in their goals of reshaping the space industry and promoting space applications in emerging countries, overcoming the challenges and difficulties, as well as aiming towards international cooperation in the field. He emphasized that it is important to direct our efforts to have diversity in the space sector and try to create partnerships. He concluded by saying that

"failure is an absolute necessity".

SESSION 5

Space Industry Development and Support



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GALA DINNER

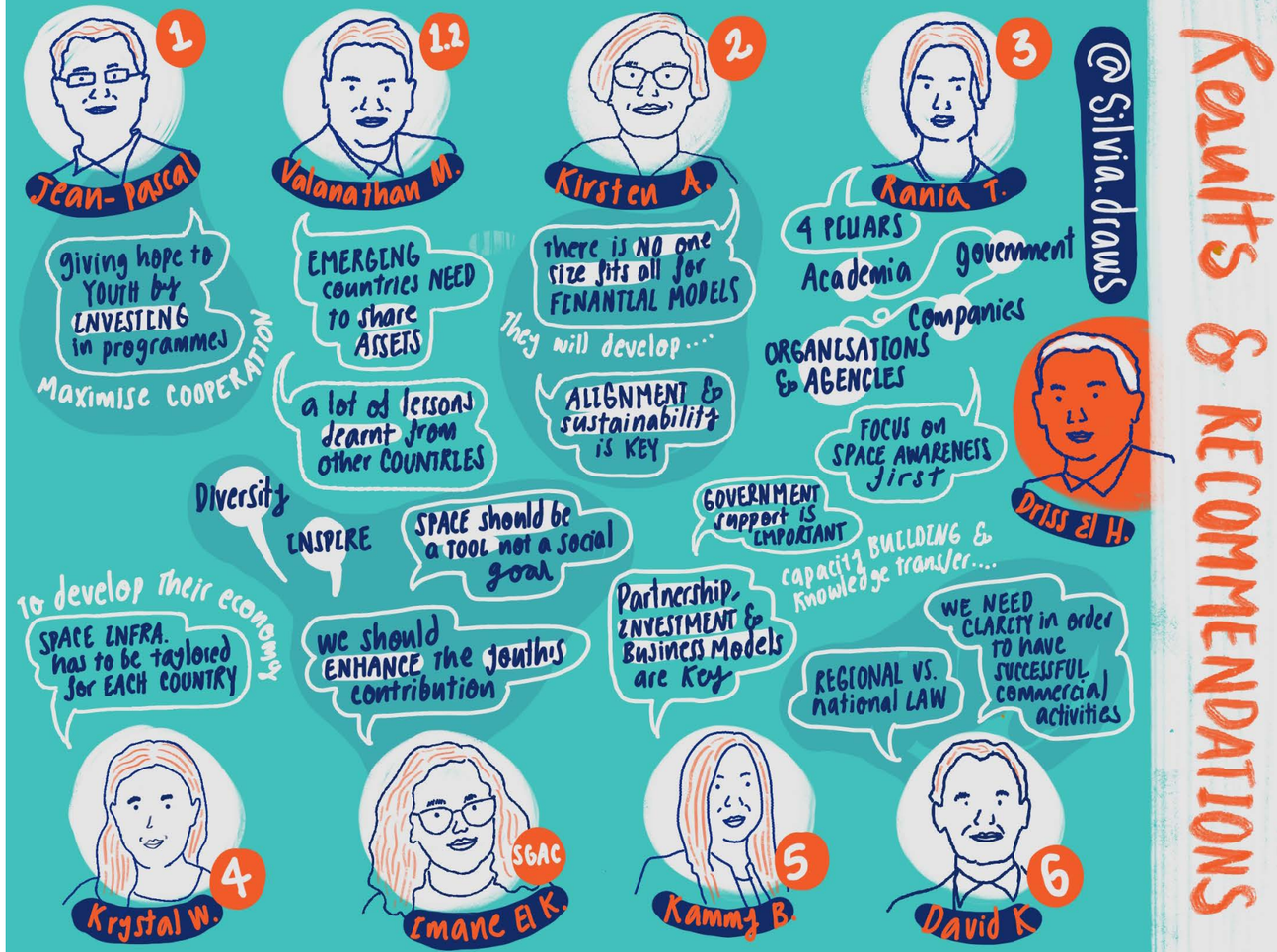
The Gala Dinner was held on Thursday 25 April 2019 at La Maison Arabe Hotel.

SESSION 6

Legal and Policy

Session 6: Legal and Policy – Given the sensitive nature of spaceactivities, especially with respect to (i) dual use technologies, (ii) the United Nations treaties and conventions, and (iii) national space law that is needed to govern the peaceful use of outer space, legal and policy considerations must be given to these important factors. Emerging countries are not necessarily familiar with this domain and these can easily be ignored in the establishment phase of national space programmes. The current United Nations Treaties, and Principles that govern global space activities need to be considered by emerging space nations as they develop national space policies and legislation, and the current challenges relating to their national interpretation. There is a need to ensure space law is integrated into the university curriculum so that we ensure the sustainability of space activities as the national programme is further developed. There is also a need to ensure consistency with respect to space law on a national basis and a common understanding of both legal and policy considerations across the States associated with a regional agency which could be a challenge. It is essential for any nation developing a new space programmme to identify its main objectives and to differentiate that country's situation from others and to build awareness within the country in relation to the benefits of a space programme, to develop a whole-of-government approach, and to ensure that the programme reaches out to the population as a whole. We are currently in a time of change with respect to space activities with new actors, new activities, new concerns and new tensions; including space sustainability, debris mitigation and space traffic management. There is a need for strong, clear, top-down leadership from the government and to learn from the successes and challenges that have arisen in the development of other nation's space frameworks.

RESULTS & RECOMMENDA-TIONS

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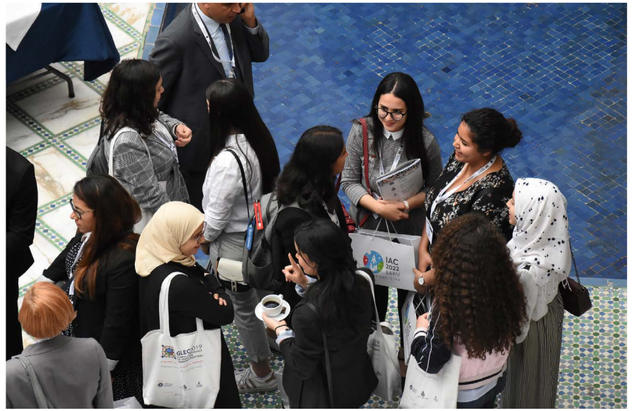


Thank you!
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