



NSSA

الهيئة الوطنية لعلوم الفضاء
National Space Science Agency

NSSA Aman Payload

1st Access to Space for All Expert Meeting

Presented by:

Aysha Alharam

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National Space Science Agency



The National Space Science Agency (**NSSA**) was established by Royal Decree No (**11**) for the year **2014**.

To Establish the Framework for creating a **National Space Sector**

National Space Science Agency



National Space Policy was approved by
the Cabinet in 2018



NSSA strategic plan
2019-2023 announced in 2019

NSSA Strategic Goals 2019 - 2023



1st Round Payload Hosting Initiative "PHI"

In cooperation with the UNOOSA and MBRSC



NSSA participated with Aman payload which will be the first Bahraini payload



This initiative aims to develop a payload to be on-board MBRSC 12U satellite



Aman Payload Team



Eng. Aysha Alharam

Space Engineering Specialist



Eng. Muneera Almalki

Senior Space Engineer



Eng. Reem Senan

Senior Space Engineer



Eng. Yaqoob Alqassab

Senior Space Engineer

We were selected as one of the first round awardee teams in October 2022

Aman Payload Objectives



Design and implement an optimized encryption payload



Test optimized Advanced Encryption System (AES) algorithm on FPGA



Gain experience in designing, developing, integrating, and testing payloads

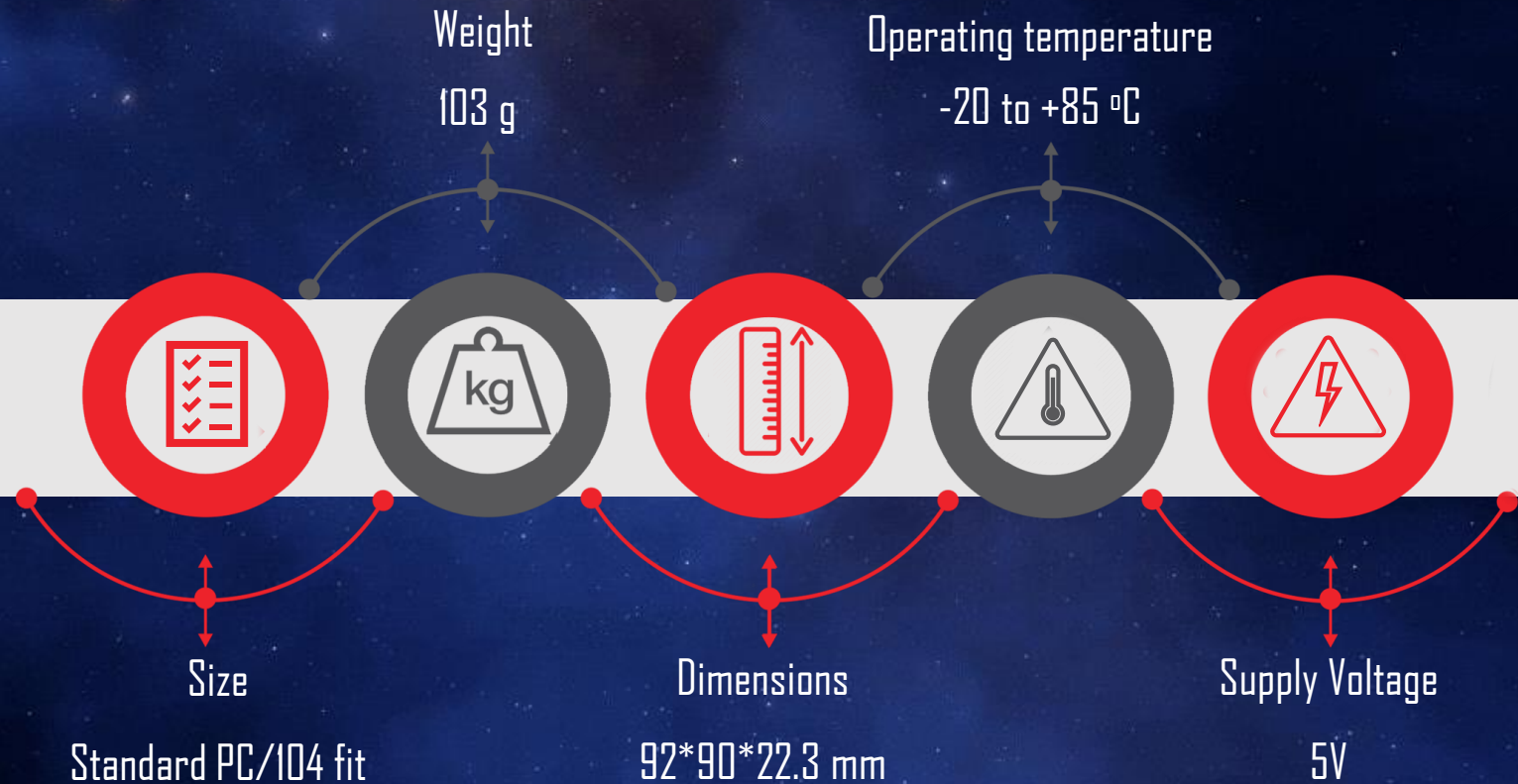


Publish research papers

Aman Overview

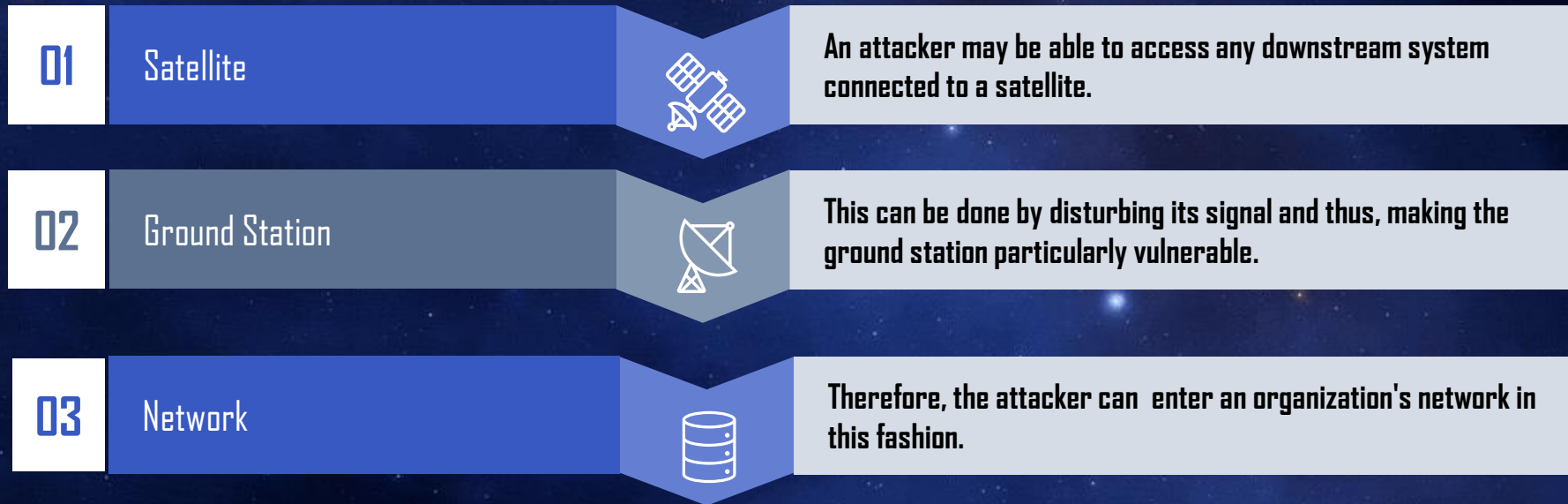


Aman is the first **Bahraini** payload; its main objective is to secure the satellite data. Aman is an Arabic word, and it means **"Security"**



Importance of Satellite Cybersecurity

- Security attackers can access an organization's database through disturbing the satellite signal.
- Aman payload will positively contribute to securing satellites data.



Aman will solve this issue by implementing an optimized (modified) AES algorithm on FPGA board to increase system efficiency, reduce design complexity and reduce the power consumption.

How This Initiative Contributes to the Capacity Building?



Building National Capabilities

One of the main fundamentals of the national space policy of Bahrain is capacity-building and it is one of the main goals included in the current strategic plan of the NSSA.

Along with this, the objective of the project is to generally gain practical hands-on experience for designing, developing, testing, and integrating a payload for future satellite missions. Obtaining this key technology and experience is a core focus of NSSA and we also plan to publish research papers and studies out of what we gain.

Impact on SDGs

6 of the 17 SDGs are positively impacted by the Aman payload project

4 QUALITY EDUCATION



By participating in this project, quality technical, vocational, and tertiary education will be gained.

5 GENDER EQUALITY



Participating in building this payload will provide opportunities in STEM fields for women. Women represent 75% of the team.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



This project will enhance the research and development in Bahrain. It will contribute to enhancing the skills of the team.

10 REDUCED INEQUALITIES



The Aman payload will ensure providing equal opportunities by reducing inequalities in project participation.

11 SUSTAINABLE CITIES AND COMMUNITIES



By securing satellites, economic losses and damage to critical infrastructure will be reduced.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Having secure satellite data will reduce hijacking and security breaches through safeguarding critical information.

Benefits of Access to Space for All Initiatives

Access to Space for All
has supported our
organization greatly by
providing:

1

Opportunity to enhance our technology and increase its TRL level.

2

Enhance our technical skills and experience.

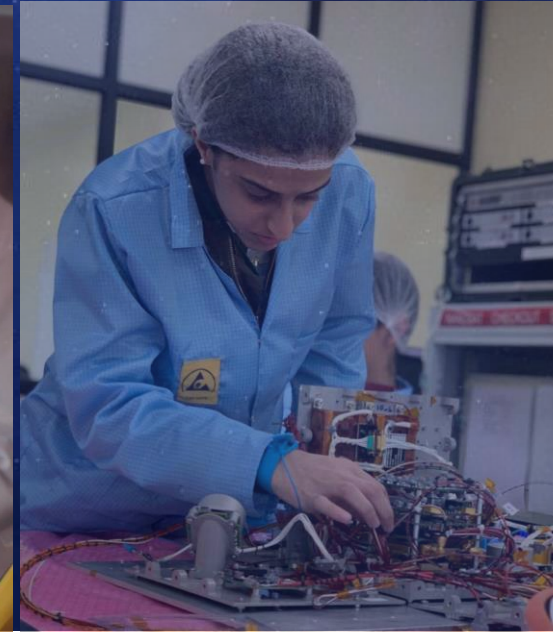
3

Extend our relationship with various experts, regionally and internationally.

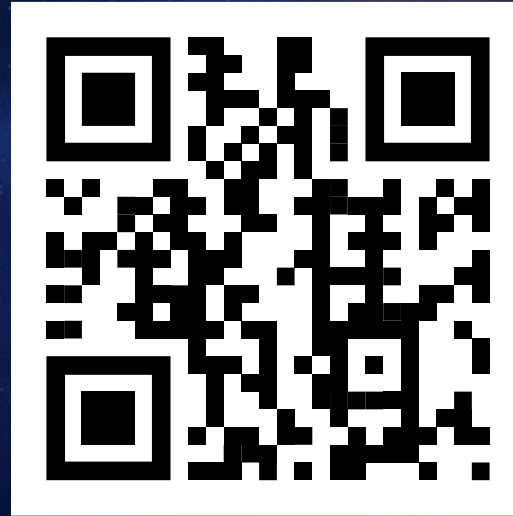
Outreach Activities to Promote the Access to Space for All Initiatives

Outreach activities attract more interest in STEM education and the space sector.

NSSA promotes and attend access to space for all webinars.



For Further Information



Please visit our website www.nssa.gov.bh



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