HEX20

AUSTRALIA

YOUR PARTNER TO SPACE

COMPANY PROFILE

FULL STREAM TECHNOLOGY

1 Spacecraft Design

Custom small satellite design by experienced mission designers.

2 Custom Platforms

Scalable spacecraft sub-systems. Rad hardened components. State of the art attitude determination & control systems

3 Integration & Testing

Satellite build, integration and test capability. One stop shop for design/build/integrate and test your LEO MEO platforms

4 Ground Services

Flexible ground system design. Full UHF/VHF/S/X band ground station solution. System integration and data acquisition

5 Mission Operation

Mission operation back-end services

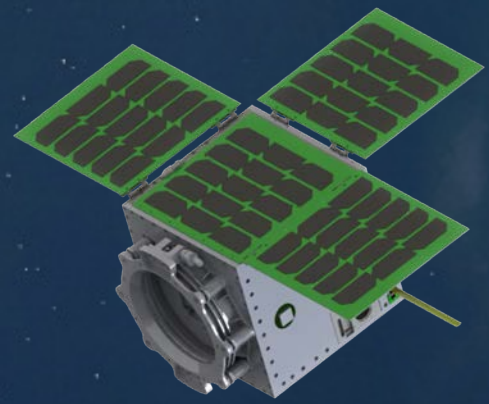
6 Data Services

Data provider, aggregator and provider of analytics platform

HEX20 CURRENT PRODUCT CANVAS – PLATFORM

Merging OldSpace & *NewSpace*

- Conventional small satellite platforms made scalable and modular from 1U to 27U
- **Modern ML/AI based star tracker platform with ADCS (custom IP)**

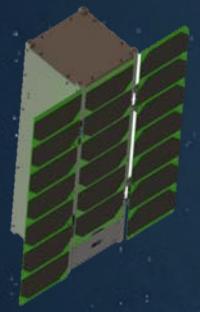


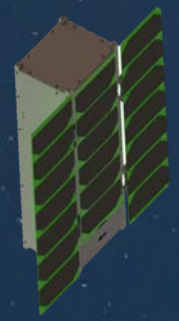
	1U	3U	6U	27U
S/C Dimensions (approximate)	10x10x10 – (1U)	30x10x10 – (3U)	30x20x10 – (6U)	30x30x30 – (27U)
Mass (structure)	0.6 Kg	1.25 Kg	4 Kg	15 Kg
Power	2.5 W (Pk), 1.5 W (Avg) 4 WH battery	25 W (Pk), 20 W (Avg) 20 WH battery Optional extra battery pack	45 W (Pk), 30 W (Avg) 40 WH battery Optional extra battery pack	85 W (Pk), 70 W (Avg) 100 WH battery Optional extra battery pack
Communication	UHF (19200 Kbps), CCSDS compliant	UHF, S-Band Tx/Rx, CCSDS compliant	UHF, X-Band CCSDS compliant Optional: S-Band Tx/Rx	UHF, X-Band CCSDS compliant Optional: S-Band Tx/Rx
OBC & Interfaces	**Cortex M3** - I²C, UART, RS 232, RS 422, SPI, LVDS, CAN Custom fpga interfaces*	**Cortex M3** - I²C, UART, RS 232, RS 422, SPI, LVDS, CAN Custom fpga interfaces*	**Cortex M3** or **Dual A9 based OBC** - I²C, UART, RS 232, RS 422, SPI, LVDS, CAN Custom fpga interfaces*	**Cortex M3** or **Dual A9 based OBC** - I²C, UART, RS 232, RS 422, SPI, LVDS, CAN Custom fpga interfaces*
Buses (V)	7.4V (Battery), 5V, 3.3V Custom for payloads*	8.4V (Battery), 12V, 6V, 3.3V Custom for payloads*	8.4V (Battery), 15V, 12V, 6V, 3.3V Custom for payloads*	8.4V (Battery), 15V, 12V, 6V, 3.3V Custom for payloads*
Pointing Accuracy	±8º in 2 axis	±0.003º (12”) in 2 axis ±0.007º (26”) in 3rd axis	±0.003º (12”) in 2 axis ±0.007º (26”) in 3rd axis	±0.003º (12”) in 2 axis ±0.007º (26”) in 3rd axis
Payload Space	up to 0.5U, 0.4 kg	~ 3U, ~ 3 kg	~ 6U, ~ 5 kg	~ 15U, ~ 12kg

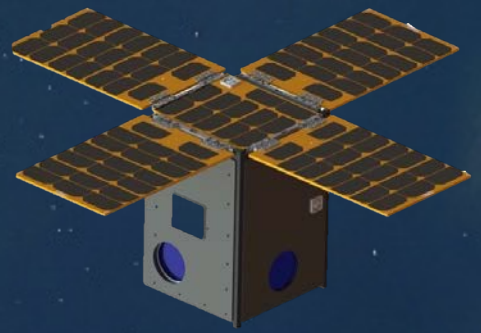
National Central University Taiwan

HEX20 3U/6U/12U PLATFORMS

- Conventional small satellite platforms made scalable and modular





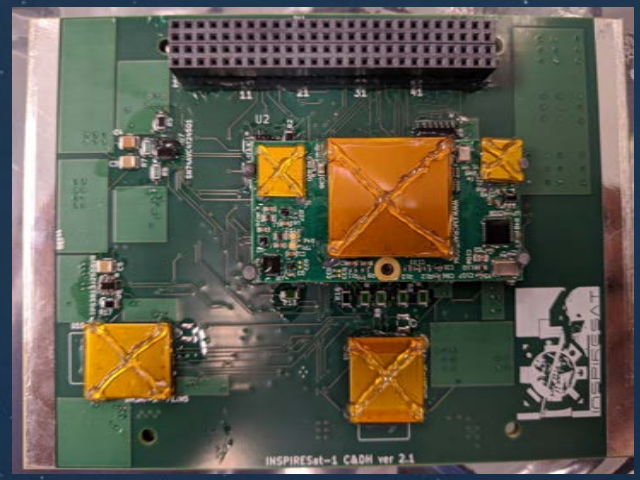


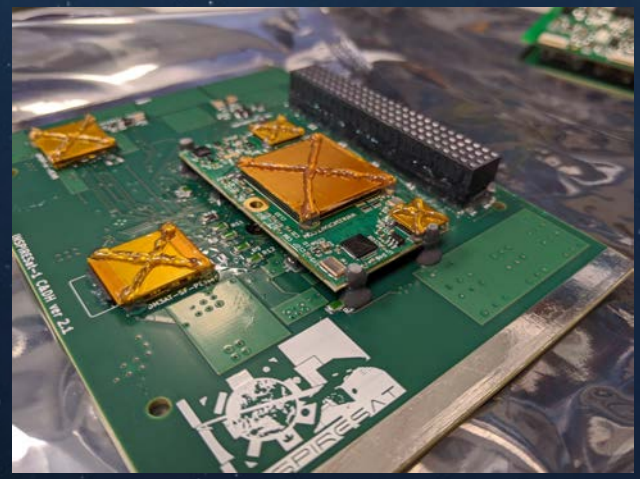
	NX03B	NX03I	NX03H	NX12A
S/C Dimensions (approximate)	10x10x10 – (1U)	30x10x10 – (3U)	30x20x10 – (6U)	30x20x20 – (12U)
Mass (structure)	1.2 Kg	1.5 Kg	1.75 Kg	20 Kg
Power	9 W 12 WH battery	25 W (Pk), 20 W (Avg) 20 WH battery	45 W (Pk), 30 W (Avg) 40 WH battery Optional extra battery pack	110 W (Peak), 67W (Average), 198 WH battery (2 packs)
Communication	UHF (19200 Kbps), CCSDS compliant	UHF, S-Band Tx/Rx, CCSDS compliant	UHF, X-Band CCSDS compliant Optional: S-Band Tx, X-Band Tx	UHF (9600 bps), X-Band (15mbps)
OBC & Interfaces	**Cortex M3** - I²C, UART, RS 232, RS 422, SPI, LVDS, CAN Custom fpga interfaces*	**Cortex M3** - I²C, UART, RS 232, RS 422, SPI, LVDS, CAN Custom fpga interfaces*	**Xilinx Dual A9 based OBC** - I²C, UART, RS 232, RS 422, SPI, LVDS, CAN Custom fpga interfaces*	**Cortex M3** or **Dual A9 based OBC** - I²C, UART, RS 232, RS 422, SPI, LVDS, CAN Custom fpga interfaces*
Buses (V)	7.4V (Battery), 5V, 3.3V Custom for payloads*	8.4V (Battery), 12V, 6V, 3.3V Custom for payloads*	8.4V (Battery), 15V, 12V, 6V, 3.3V Custom for payloads*	8.4V (Battery), 15V, 12V, 6V, 3.3V Custom for payloads*
Pointing Accuracy	±8º in 2 axis	±3º in 3 axis	±0.003º (12”) in 2 axis ±0.007º (26”) in 3rd axis	±0.003º (12”) in 2 axis ±0.007º (26”) in 3rd axis
Payload Space	1.5U, ~ 1.5 kg	1.5U, ~ 1.5 kg	1.5U, ~ 1.5 kg	~ 15U, ~ 12kg
		NCU Mission	Hex20 Tech Demonstrator	Q2b Moon to Mars

HEX20 PLATFORMS - ON-BOARD PROCESSORS

Smartfusion 2 SOC with Cortex M3 Processor

- Heritage from INSPIRESat series of missions
- SEU immune NVM and SRAM
- SEU immune 8 GB NAND Flash memory
- FPGA based reconfigurable architecture
- 128 GB redundant industrial grade SD card memory storage
- User configurable GPIO's at 3.3V and 5V
- Max Operating Frequency of 166 Mhz
- Low power consumption of 0.3W
- UART, I2C, SPI, RS-422, LVDS, CAN interfaces
- RTC, watchdog timer for hardware reset.
- Suitable for most nano-satellite applications

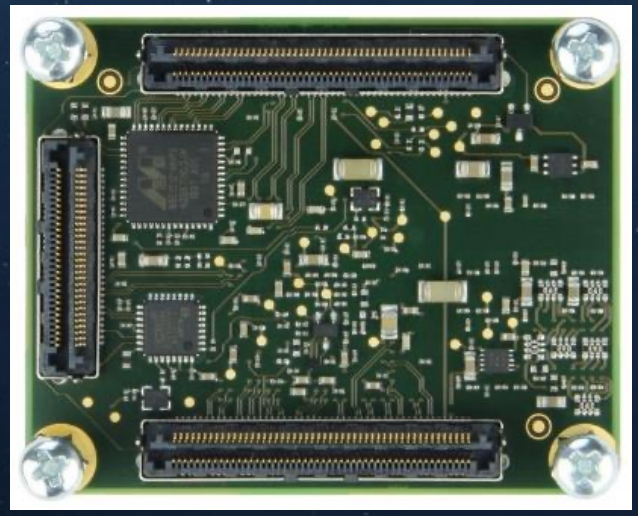




HEX20 PLATFORMS - ON-BOARD PROCESSORS

Dual-Core ARM Cortex-A9 MPCore Processor

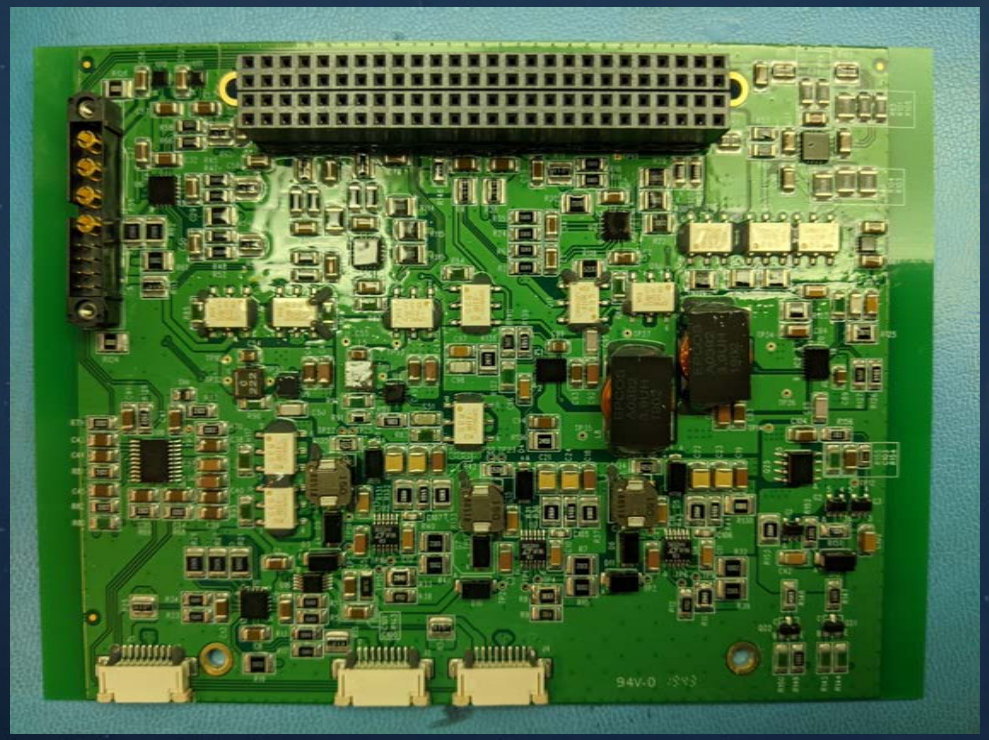
- Xilinx Zynq 7 series SOC
- Heritage from INSPIRESat-4 (ARCADE) mission
- FPGA based reconfigurable architecture
- UART, I2C, SPI, RS422, RS485, LVDS, CAN interfaces
- User configurable GPIO’s at 3.3V and 5V
- SEU immune NVM and SRAM
- SEU immune 8 GB eMMC NAND Flash memory
- 1 GB DDR3 RAM
- Max Operating Frequency of upto 1 GHz
- Suitable for nano-satellite applications requiring heavier processing capacity



HEX20 PLATFORMS - POWER

Electrical Power Systems

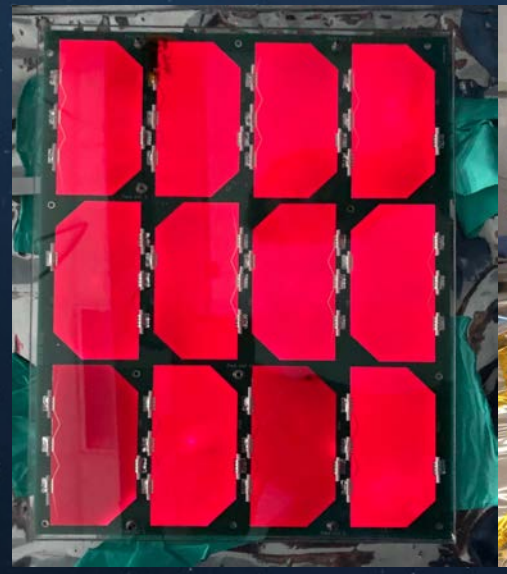
- Regulated 3.3V, 5V, 6V, 12V lines
- Customizable Battery Voltage
- Max Peak Power Tracking
- Flight heritage from INSPIRESat series
- 3 input channels, up to 36V input voltage, 1.8 A input Current
- 20 Wh to 100Wh customizable battery pack
- Fuel Gauge
- Multiple low power opto-electric and MOSFET switches for control over voltage lines.
- UART, I2C interfaces

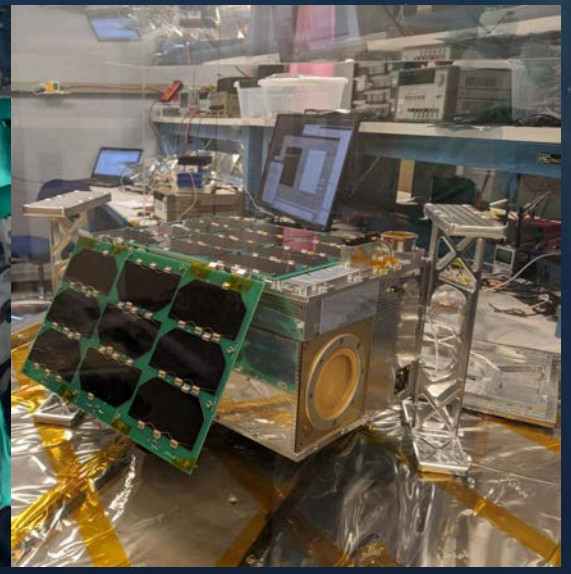


HEX20 PLATFORMS - POWER

Solar Panels

- Customizable Solar Panels of 1U, 3U, 6U and 27U sizes
- Max Peak Power Tracking
- Up to 36V input voltage, 1.8 A input Current
- High heritage from INSPIRE, MinXSS series of satellites
- Single and Double deployable 3U, 6U and 27U panels
- Custom 3D printed hinge design and wire burn mechanism
- Industry best pricing

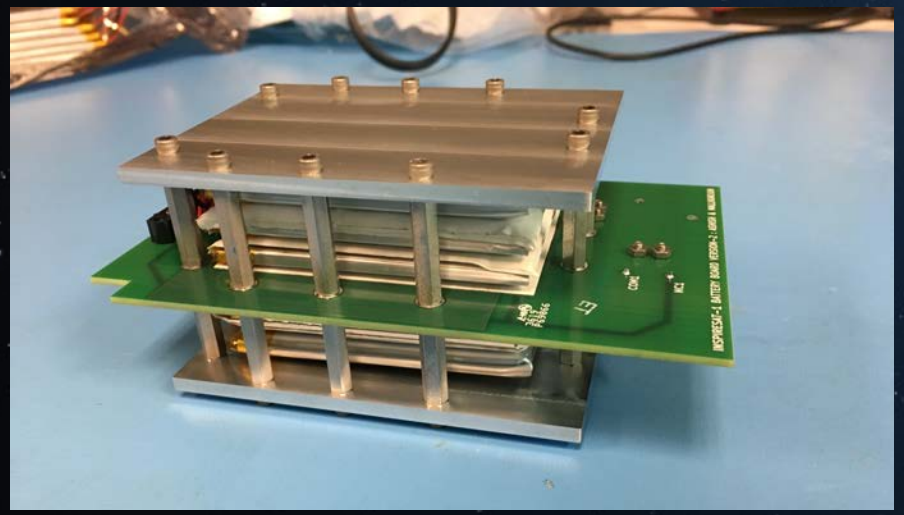


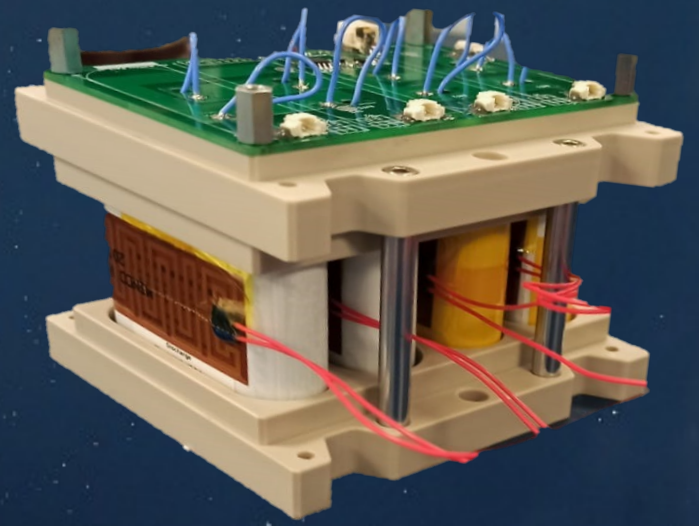


HEX20 PLATFORMS - POWER

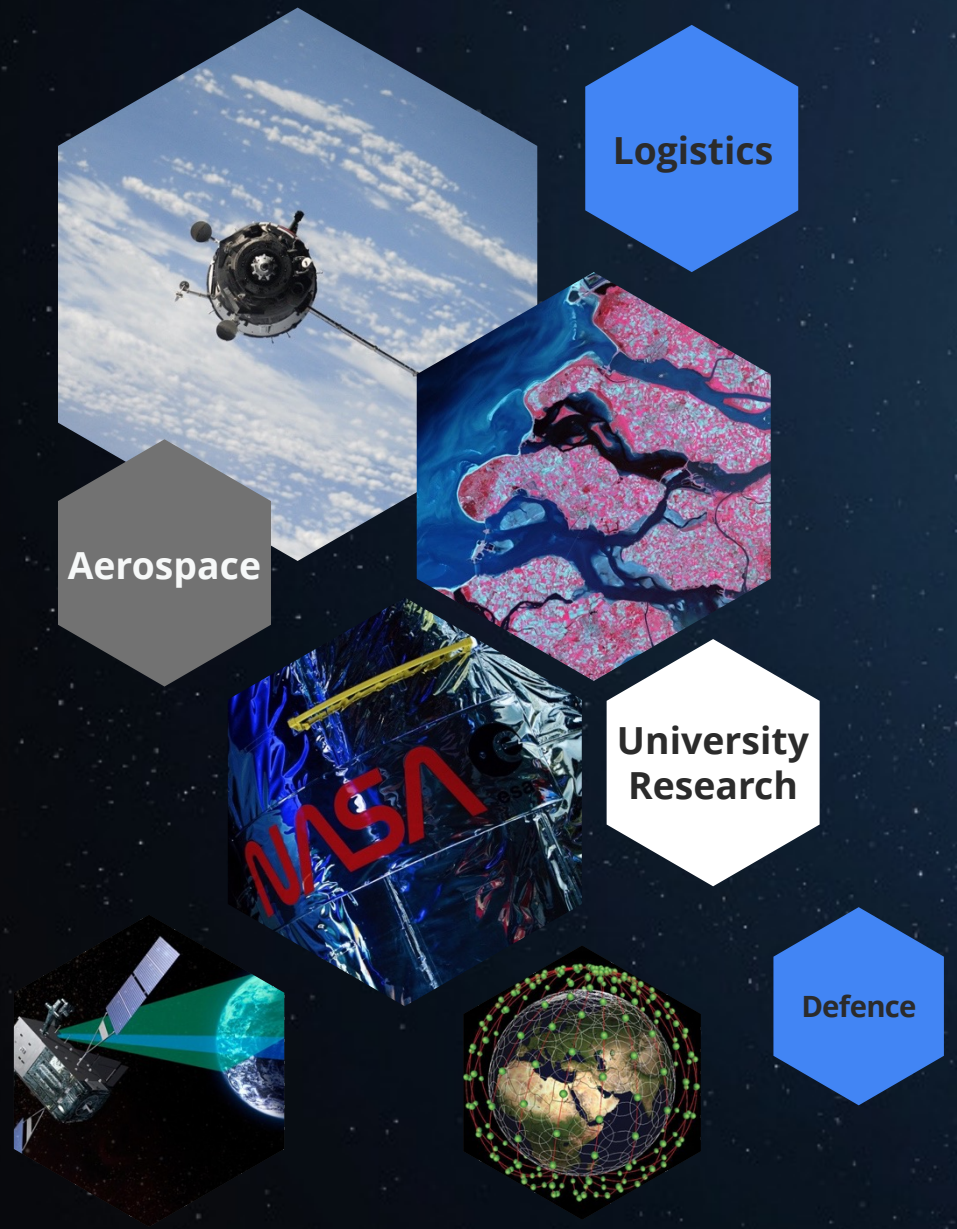
Battery Packs

- Unionfortune 585460 Polymer Lithium-Ion battery pack for 20 Wh.
- Heritage from MinXSS 1 &2 Satellites & INSPIRESat-1





- SAFT MP176065xlr based battery pack for 100 Wh.
- Heritage from VELOX series of Satellites & INSPIRESat-4



ONGOING CUSTOMER ENGAGEMENTS

Exciting path forward:

- **3U Mission for NCU Taiwan – Delivery Q2 2023**
- **Flight Software development for Satellite Research Center, NTU For ARCADE and SCOOB-II Missions.**
- **Awarded M2M grant with University of Adelaide, CSIRO, NASA JPL**
- **Hex 20 3U and 6U Tech Demonstrator missions. 3U to launch with Skyroot in 2023**
- Advanced Manufacturing discussion with CSIRO
- Mission support for DSTG's STAR Shots Program

BUSINESS MODEL TIMELINE

Company Established

2020 Q4: Establish presence (Singapore & Australia)

Platform Development

2021 Q4: Start technology platform development: Onboard Computer, Power modules, solar panels, Radio modules. Satellite design services commercially available

Establish partnerships for ADCS development

Commercial Lower Tier Platform

2022 Q4: Commercial Availability of 3U and 6U platform. Establish Launch service partnerships

Commercial Mid Tier Platform

2023 Q3: Commercial Availability of complete nano and 25-50 kg mid-tier platforms

Commercial ground system

Commercial High-End Platform

2024 Q3: Commercial Availability of high-end nano and micro satellite platforms and integrated ML ADCS solutions.

Launch testing to follow

Full Stream Operation

2025 Q4: Establish a full-stream operation all the way from design of spacecraft to data analytics services.

HEX20 TEAM

Dr. Amal Chandran

- **Leads the INSPIRE** program with 12 Universities.
- **Principal Investigator** on 4 small satellite missions.
- **Director**, Satellite Research Centre, NTU, Singapore
- **INSPIRE Program Manager** - Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, USA

Lloyd Jacob Lopez

- **Serial Entrepreneur & Digital Operation Specialist** with 20+ years of experience.
- Delivered projects for large scale global organizations to early-stage startups.
- **E**xperienced in Corporate Innovation, Digital Transformation, AI/ML, Customer Experience, Business Development and Operations.

Ashwin Chandran

- **E**xperienced technology execution executive in the **Oil & Gas Industry**.
- Product development and research execution in **Harsh Environment Sensor Technologies** spanning 20+ years.
- Track record of successfully commercializing low TRL, high risk concepts.

OUR PARTNERS

HEX20
CONTACT

Let’s Discuss Space

We are keen to talk to potential collaborators and investors.

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