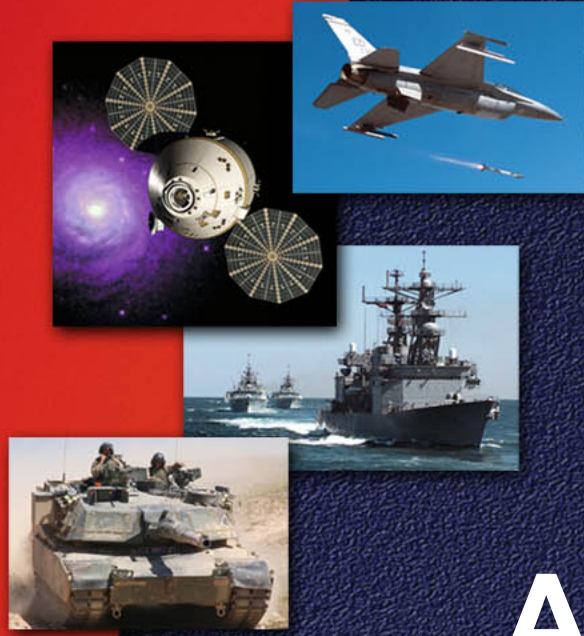




Embedded Computing *without* Compromise



AI in Defense, Industrial and Space Applications

Reinventing Image and Data Processing

Emil Kheyfets

Embedded Tech Trends January 2020

Real Time Response Applications



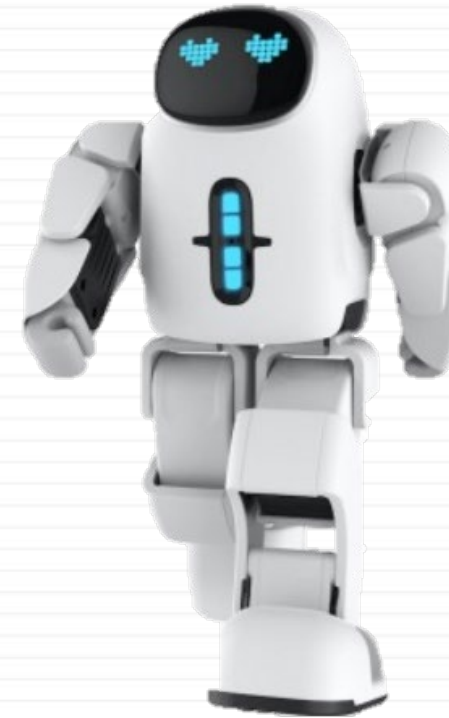
Real time response applications are requiring systems which can perform AI processing at the sensors for “AI at the Edge” and for autonomous operations.

AI Systems Types

📍 AI at the Edge

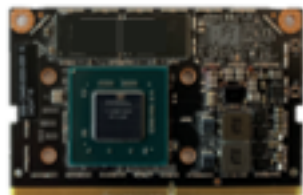


📍 Fully Autonomous Machines



NVIDIA Jetson Family

JETSON NANO
0.5 TFLOPS (FP16)



5 - 10W
45mm x 70mm

JETSON TX2 series
1.3 TFLOPS (FP16)



7.5 - 15W*
50mm x 87mm



JETSON Xavier NX
6 TFLOPS (FP16)
21 TOPS (INT8)



10 - 15W
45mm x 70mm

JETSON AGX XAVIER series
11 TFLOPS (FP16)
32 TOPS (INT8)



10 - 30W
100mm x 87mm

AI at the edge

Fully autonomous machines

Same software

Jetson Family Key Parameters / Performance

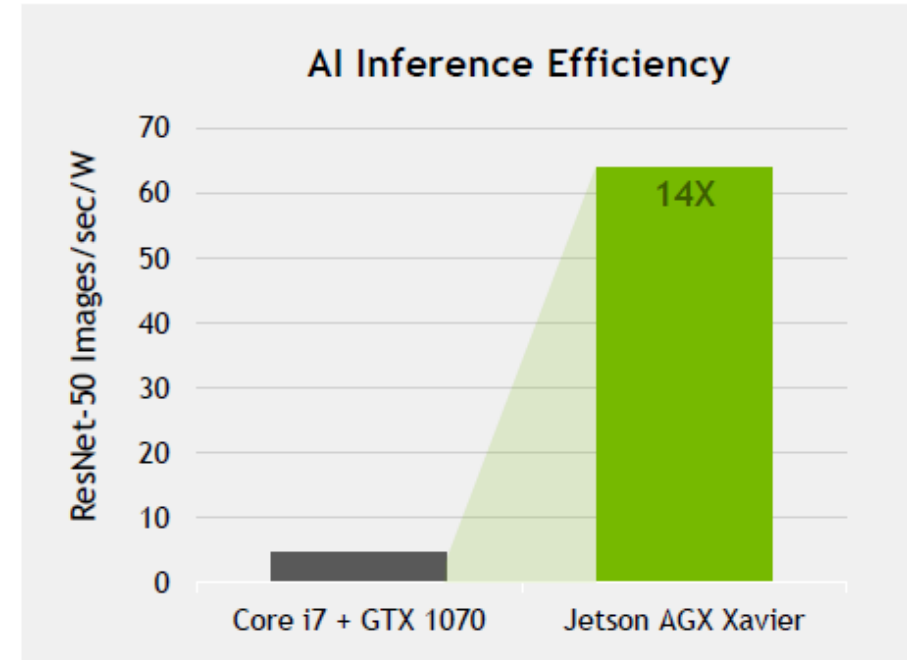
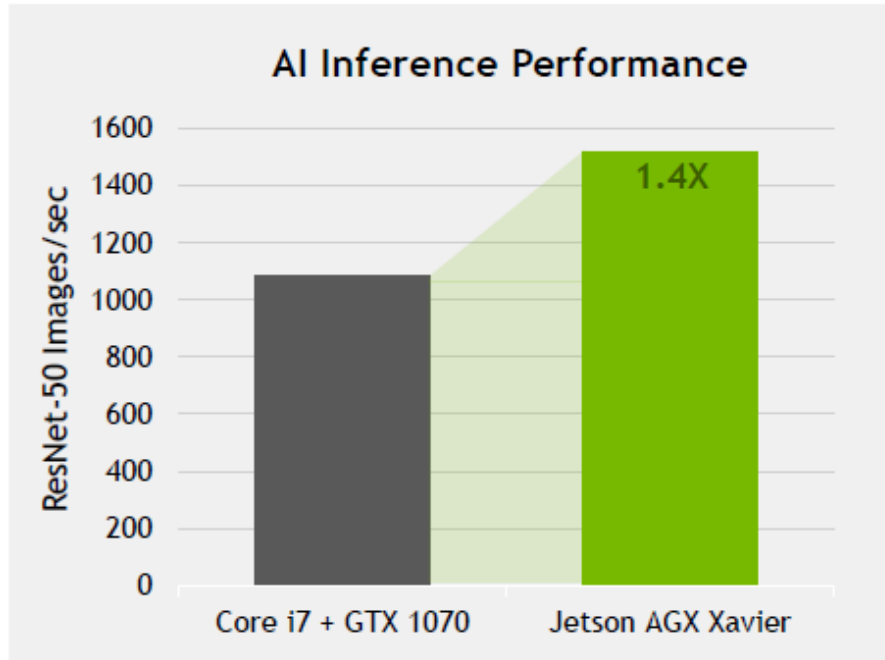
Jetson	Nano	TX2	Xavier NX	AGX Xavier
Performance (TFLOPS)	0.5	1.3	6	11
GPU Cores	128 (Maxwell)	256 (Pascal)	384 (Volta)	512 (Volta)
ARM CPU Cores	4	6	6	8
Memory (GB)	4	8	8	16

Number of 1080p/30FPS stream captured and processed with AI by Jetson based platforms

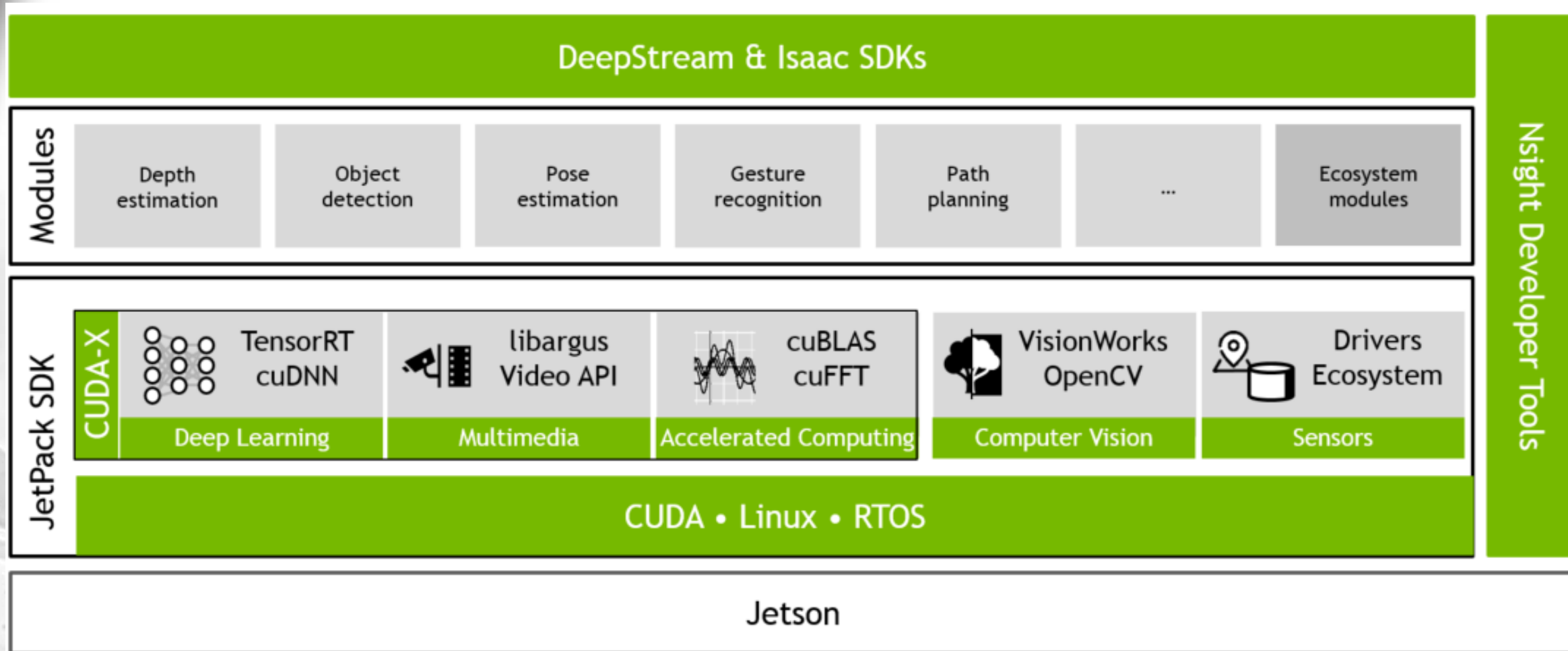
NVIDIA Products	H.264	H.265
Jetson Nano	8	8
Jetson TX1	8	8
Jetson TX2	14	14
Jetson AGX Xavier	32	49

Jetson Xavier vs Intel i7 + GTX 1070

JETSON AGX XAVIER GPU Workstation Perf • 1/10th Power

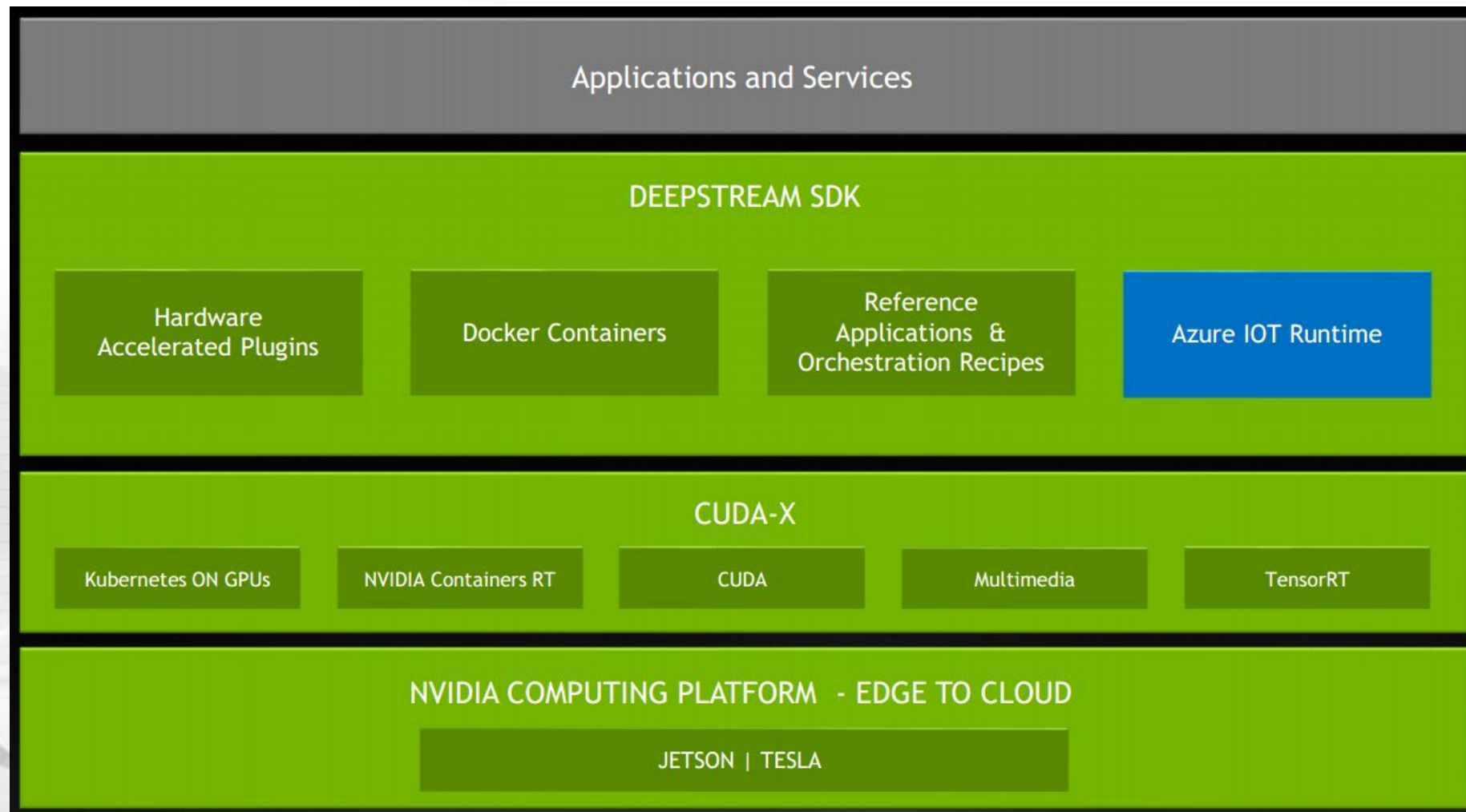


Jetson Family Software



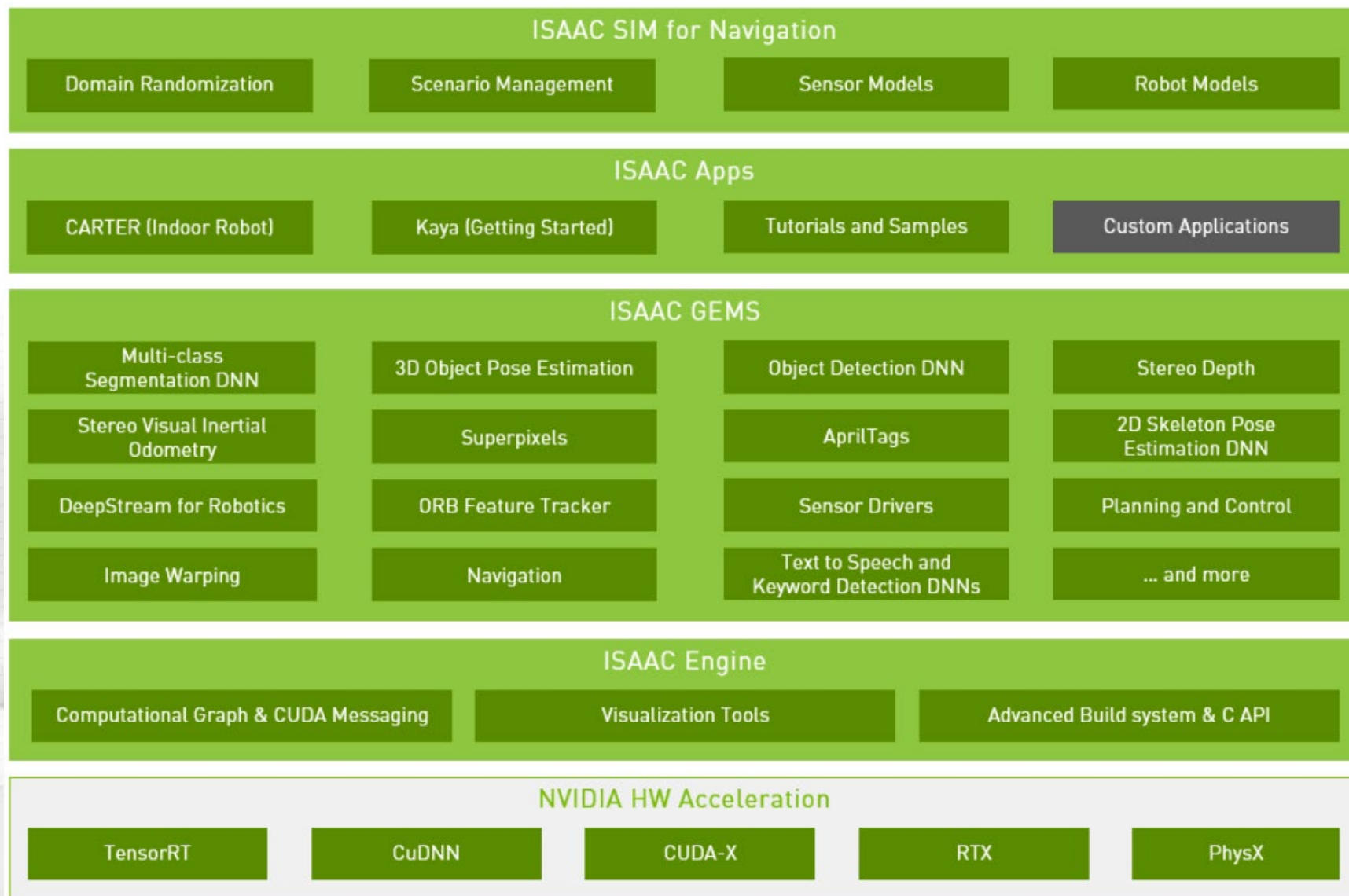
DeepStream SDK

Complete development solution for AI at the Edge applications

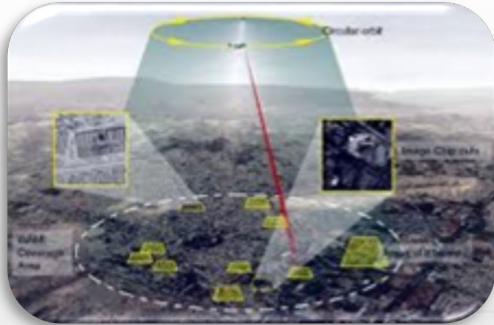


Isaac SDK

Complete development solution for autonomous applications



Defense, Industrial and Space Applications



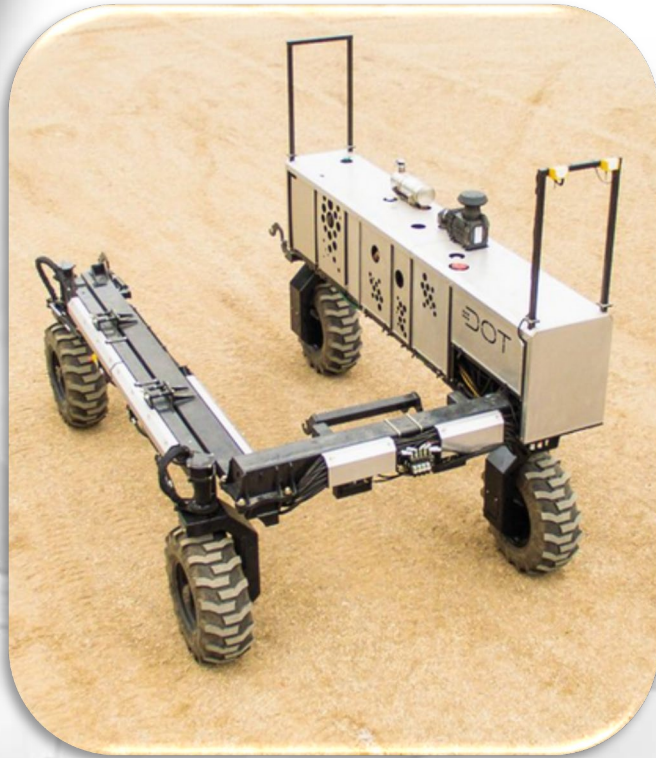
Smart Soldier Applications

Jetson TX2 Based Situation Awareness / Instant Communication Rugged System



Autonomous Agriculture Applications

Jetson TX2 Based Autonomous Industrial Rugged System for Farmers



Industrial Avionics Applications

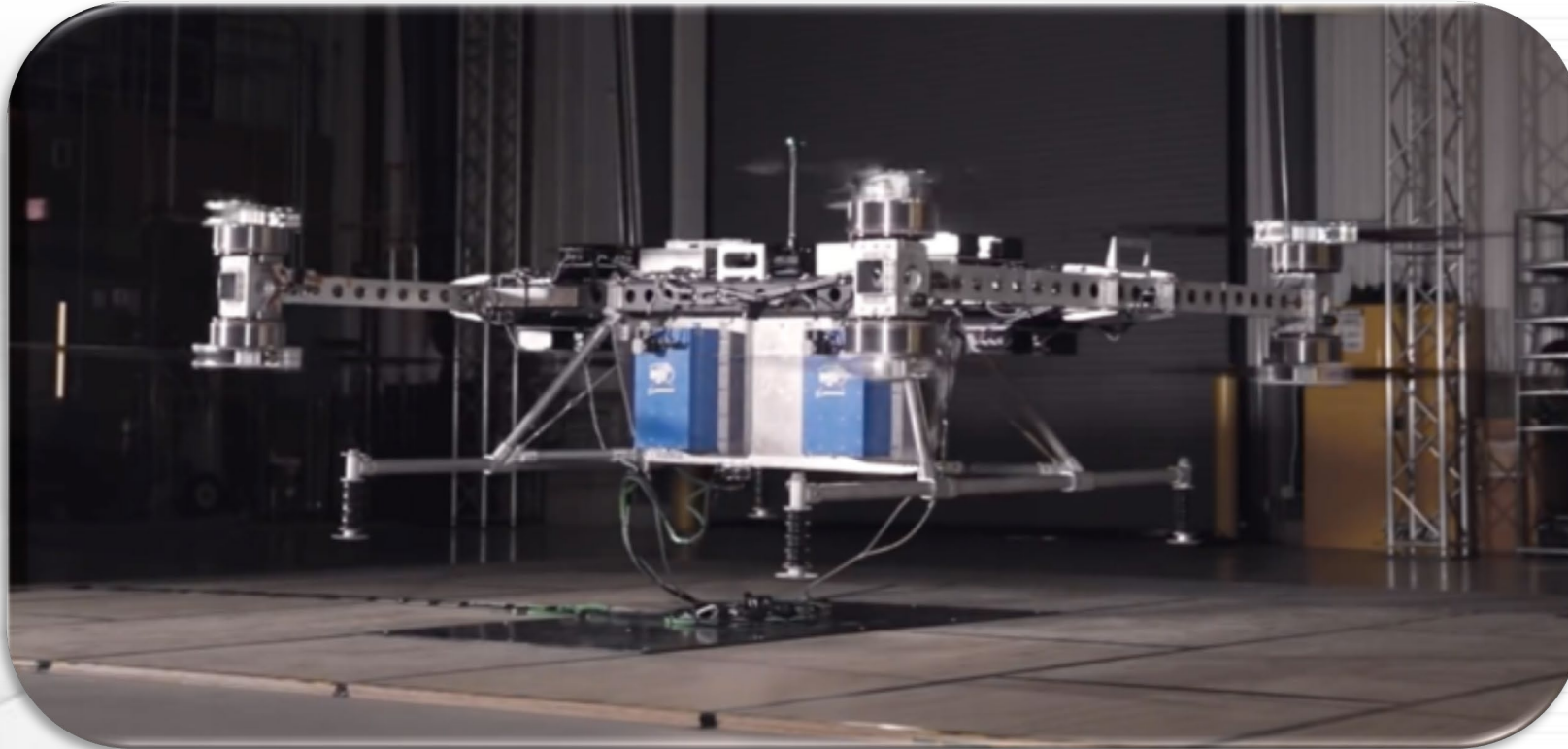
Jetson TX2 and Jetson Xavier Based Rugged Systems for Aerial Mapping



Industrial Drones Applications

Jetson TX2 Based Rugged System for Unmanned Electric Air Cargo Vehicle

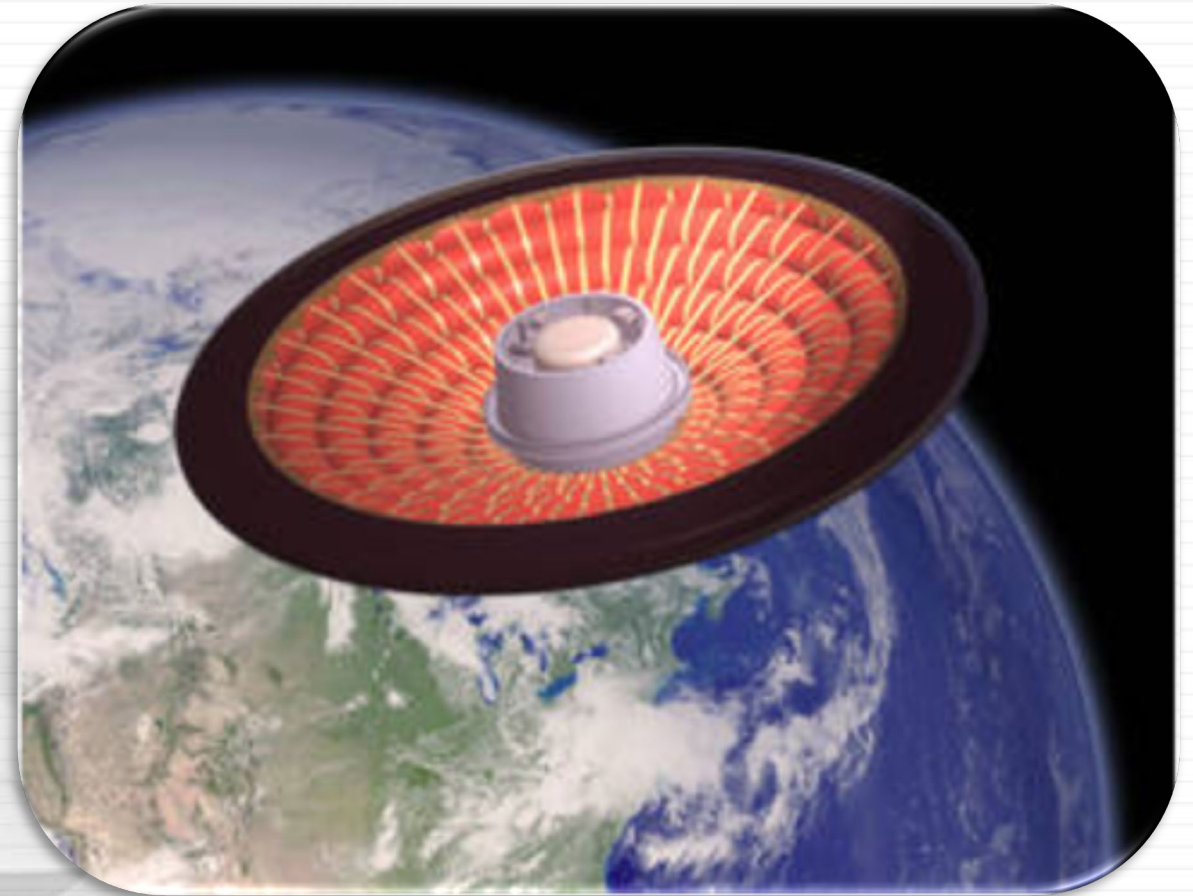
- Capable of delivering 227 kg of cargo within a 15-30 km radius



Space Applications

Jetson TX2 Based Rugged System for Low-Earth Orbit Flight Test of an Inflatable Decelerator (LOFTID)

- LOFTID acts as a giant brake by deploying a large inflatable aero shell for delivery of heavy payloads to destinations with an atmosphere



Jetson Development Systems from Aitech



System is ready for application development for the target rugged system

- JetPack software and all required drivers are pre-installed and pre-configured
- Hardware expansion cards and all associated adapters/cables
- QuickStart Guide and User's Manual with application code examples

Available AI Solutions

“AI” in Aitech stands for
“Artificial Intelligence”



GPGPU Fanless SFF
RediBuilt Supercomputer



RediBuilt GPGPU
Rugged Computer



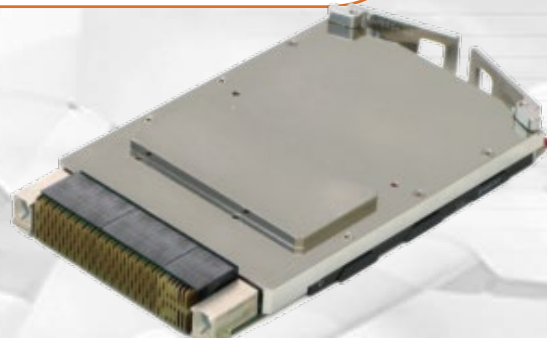
Industrial GPGPU
Fanless RediBuilt SFF
Supercomputer



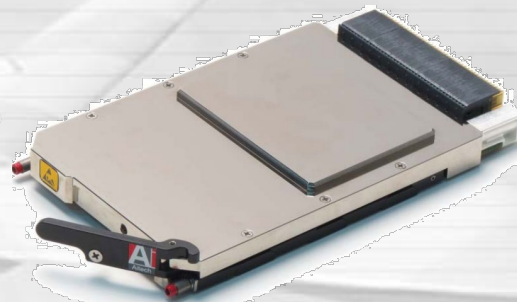
GPGPU Fanless SFF
RediBuilt AI
Supercomputer



RediBuilt GPGPU
Rugged Computer



3U VPX GPGPU Board



3U VPX GPGPU
Supercomputer Board



Rugged RediBuilt
HPEC and GPGPU

Thank You!

