SoC Centric

Production-ready embedded Linux for *NVIDIA Jetson*

A custom Yocto-based platform for the NVIDIA Jetson family — validated on TX2, Xavier NX, Orin, and Thor. The full CUDA / TensorRT / DeepStream stack, on a platform you own.

Validated on **Jetson TX2** · **Xavier NX** · **Orin Nano/NX/AGX** · **Thor**

Real-time on the Cortex-R Sensor Processing Engine (SPE)

Platform Capability Brochure

Request an evaluation image →

THE PLATFORM

JetPack gets you a demo. A product needs more.

JetPack and L4T are perfect for evaluation — and hard to reproduce, audit, or maintain in a shipped product.

We replace ad-hoc JetPack/L4T images with a reproducible Yocto build: auditable, secure, and fully owned by you — with the entire accelerated compute stack intact.

Our Jetson platform is a hardened, Yocto/OpenEmbedded build (meta-tegra) for the Jetson family that keeps CUDA, TensorRT, and DeepStream while giving you a reproducible, customer-owned build system traceable to source — ideal for regulated industries that need to know exactly what ships.

VALIDATED HARDWARE

Jetson TX2 · Xavier NX · Orin Nano / NX / AGX · Thor — built on L4T/JetPack with the full CUDA, TensorRT, and DeepStream accelerated stack.

8 yrs
building production embedded Linux platforms

6
SoC platform families — ~90% of the embedded Linux market

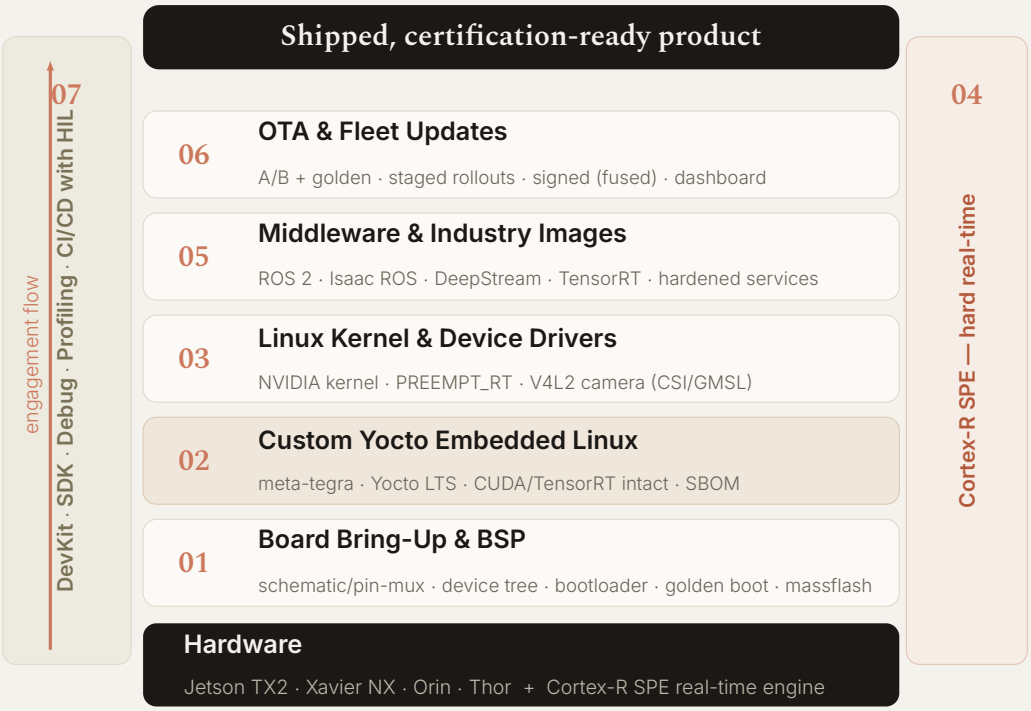
1
engineering methodology, applied across every platform

【Add your proof point here】 e.g. "Shipped a Yocto Jetson platform for a robotics customer — N devices in the field, full CUDA stack, zero failed OTA rollbacks." One concrete, anonymized outcome here will do more for credibility than any claim on the following pages. Replace this box before sending.

HOW IT FITS TOGETHER

The platform stack

Hardware comes alive at the bottom and ships as a maintainable product at the top. Developer tooling spans the whole engagement; the real-time domain runs the hard-real-time path alongside Linux.



Each layer is a capability detailed on the following pages.

Hardware & product · Owned OS foundation · Real-time domain · Spans the engagement

01 CAPABILITY

Board Bring-Up & BSP

> *Your Jetson carrier boots reliably — from power rails to a brick-proof field device.*

The foundation layer: getting custom Jetson hardware to power on, enumerate every camera and peripheral, and survive the field.

- **Schematic & pin-mux review** — boot-strap, power-sequencing, and DDR layout reviewed before PCB fab.
- **Custom BSP & device tree** — carrier board CSI cameras, PCIe, USB, GPIO, I2C/SPI.
- **Bring-up & smoke test** — power rails, clocks, memory training, peripheral enumeration.
- **Custom bootloader** — UEFI customization, CBoot (legacy TX2), boot config, splash screens.
- **Golden boot & failsafe** — known-good recovery in a protected partition, watchdog-supervised rollback.
- **Flashing & manufacturing** — massflash tooling, fuse provisioning, production scripts.

TECHNICAL DETAIL

Boot chain	**UEFI / CBoot / U-Boot**	Recovery	**Golden partition**
Flashing	**massflash + fuses**	Modules	**TX2 · Thor**

You receive: custom BSP & device tree, a bring-up report, bootloader config, golden-boot setup, and massflash production scripts.

02 CAPABILITY

Custom Yocto Embedded Linux

> *An owned, reproducible Jetson Linux — with the full accelerated stack intact.*

Replacing ad-hoc JetPack images with a reproducible platform you own — without losing CUDA, TensorRT, or DeepStream.

- **Reproducible builds** — meta-tegra on Yocto LTS; traceable to exact source revisions.
- **Accelerated stack preserved** — CUDA, TensorRT, DeepStream, and cuDNN built into your image.
- **Minimal & locked down** — read-only rootfs, no stray services, smaller attack surface.
- **You own everything** — full source, build system, recipes — no JetPack lock-in.
- **Auditable & maintainable** — SBOM-ready; CVE patching and kernel bumps for years.
- **Manufacturable** — one reproducible image flashed identically across the line.

TECHNICAL DETAIL

Build system	**Yocto / BitBake**	BSP layer	**meta-tegra**
Compute	**CUDA / TensorRT**	Supply chain	**SBOM + signed**

You receive: the full source tree & build system, a reproducible signed image with the accelerated stack, an SBOM, and documentation.

03 CAPABILITY

Linux Kernel & Device Drivers

> *A deterministic, hardened Jetson kernel with every camera and sensor driven properly.*

Shaping the NVIDIA kernel to your board, and writing the camera, sensor, and IO drivers your carrier needs.

- **Kernel customization** — NVIDIA downstream kernel (5.10/5.15/6.x per JetPack), config pruning, hardening.
- **PREEMPT_RT** — ported and validated for deterministic latency on Orin/Thor.
- **Boot streamlining** — initramfs minimization, deferred module loading, parallel init.
- **Camera & sensor drivers** — V4L2 (CSI/GMSL/FPD-Link), IIO sensors, custom PCIe/USB/SPI/I2C.
- **Power & thermal** — deep sleep, DVFS, thermal management.
- **Kernel debugging** — kgdb, crash-dump and latency diagnosis.

TECHNICAL DETAIL

Kernel	**NVIDIA 5.10–6.x**	Real-time	**PREEMPT_RT**
Camera	**V4L2 CSI/GMSL**	Power	**DVFS / thermal**

You receive: a tuned kernel config, custom camera/sensor/IO drivers, RT validation, and documented power management.

04 CAPABILITY

Real-Time Companion (Cortex-R SPE)

> *Hard real-time control alongside Linux, on the Jetson's Cortex-R engine.*

Jetson excels at accelerated compute — but perception is not deterministic. The Cortex-R Sensor Processing Engine (SPE) runs the hard-real-time work alongside Linux.

- **FreeRTOS on the SPE** — hard real-time sensor fusion, IMU sampling, and safety supervision on Cortex-R.
- **Linux↔RTOS comms** — shared-memory mailboxes and IVC channels.
- **Offload architecture** — control loops on the R-core, perception on the GPU, coordination on Linux.
- **RTOS drivers** — SPE-attached SPI/I2C/UART/GPIO/CAN, watchdog & health supervision.

TECHNICAL DETAIL

RT core	**Cortex-R SPE**	RTOS	**FreeRTOS**
Comms	**IVC / mailboxes**	Role	**fusion / safety**

You receive: SPE firmware, the Linux↔SPE comms layer, and a documented split between perception and real-time domains.

05 CAPABILITY

Middleware & Industry Images

> *Ship faster with a hardened, vision-and-robotics-tuned image instead of a blank build.*

Pre-integrated platform variants tuned per industry — the right accelerated stack, hardened and ready, on day one.

Robotics & Autonomy
ROS 2 (Humble/Jazzy), Isaac ROS, real-time executor.

Vision & Video
DeepStream, GStreamer, TensorRT multi-camera pipelines.

Edge AI
accelerated inference, CUDA / TensorRT, model deployment.

Automotive (ADAS)
SocketCAN, PREEMPT_RT, ISO 26262-aware workflow.

Medical
IEC 62304-aligned traceable builds, SBOM, audit logs.

IoT & Connected
MQTT, Azure / AWS IoT, edge telemetry.

Also available: industrial vision, smart-city, and defense ISR variants — or a variant built to your vertical.

PRODUCTION BASELINE — EVERY VARIANT

Filesystem	**Read-only + overlayfs**	Resilience	**Watchdog recovery**
Services	**Hardened daemons**	Tamper / power loss	**Survives both**

You receive: an industry image pre-integrated with the relevant accelerated stack, hardened to the production baseline.

06 CAPABILITY

OTA & Fleet Updates

> *Update a whole Jetson fleet in the field, safely, without sending a truck.*

The capability that separates a product from a project — safe over-the-air updates with a guaranteed way back.

- **A/B redundant boot** — Mender, RAUC, or SWUpdate on redundant partitions.
- **Golden recovery** — a factory partition that can never be overwritten.
- **Auto rollback** — a failed health check reverts automatically.
- **Fleet management** — hosted or on-prem server, staged rollouts, delta updates.
- **Dashboard** — upload, target a fleet, monitor, one-click rollback.
- **Signed & secure** — updates chained to secure boot on fused devices.

TECHNICAL DETAIL

Engine	**Mender / RAUC**	Scheme	**A/B + golden**
Rollout	**Staged + delta**	Trust	**Fused secure boot**

You receive: a configured OTA pipeline, the update server, the dashboard, and signed-update tooling chained to secure boot.

07 CAPABILITY

DevKit, SDK, Debug & Profiling

> *Your team owns and operates the platform — no black box, no dependency.*

Spans the whole engagement: the tooling that lets your own engineers develop on, debug, profile, and rebuild the platform.

- **Evaluation images** — pre-flashed eval image for Jetson devkits and custom hardware.
- **Application SDK & Yocto eSDK** — cross-toolchain and sysroot, plus the full build workflow for your team.
- **Profiling & debug** — Nsight Systems, perf, ftrace, gdbserver, field core dumps.
- **CI/CD with HIL** — automated builds and hardware-in-the-loop smoke tests.

TECHNICAL DETAIL

Eval	**Jetson devkits**	SDKs	**App + eSDK**
Profiling	**Nsight / perf**	Pipeline	**CI/CD + HIL**

You receive: an eval image, both SDKs, profiling/debug setup, and a CI/CD pipeline with hardware-in-the-loop tests.

WHY US

Why SoC Centric

One engineering methodology, applied with the rigor of a regulated-industry supplier.

- Replaces ad-hoc vendor images with a reproducible, owned, manufacturable platform built to ship.
- You own everything — full source, build system, and documentation. No lock-in, to us or anyone.
- Reproducible Yocto builds with SBOMs — **certification-ready** for ISO 26262, IEC 62304, IEC 61508, and DO-178C environments.
- Keeps the full CUDA / TensorRT / DeepStream accelerated stack — reproducible and owned, not locked to JetPack.
- Part of a platform family covering ~90% of the embedded Linux market, with one consistent methodology.
- A natural growth path: platform → independent verification & validation → hardware-in-the-loop testing → field data logging.

GETTING STARTED

How an engagement begins

01
Eval image
We send a working platform image for your board to evaluate — no commitment.

02
Architecture call
A 30-minute call to map your hardware, industry, and target to a plan.

03
Pilot
A scoped bring-up + Yocto build on your actual board, with deliverables.

04
Platform delivery
Full source, build system, OTA, and tooling — handed over, owned by you.

GET STARTED

Let's talk

Ready to turn your Jetson project into a product?

Jetson gets you a demo fast. We turn it into a product you can ship, validate, and support for a decade — with the accelerated stack intact.

→ Request an evaluation image for your board | → Schedule a 30-minute platform architecture call

GET IN TOUCH

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SOC CENTRIC

Production embedded Linux platforms across NVIDIA Jetson · AMD Xilinx Zynq · NXP i.MX · TI Sitara · Intel/AMD x86 · Raspberry Pi.

[Before sending] Replace the bracketed contact details with your real email, phone, and website, and add your logo to the cover. These are the only placeholders left in the document.