

Production-ready embedded Linux for *NXP i.MX*

A custom Yocto-based platform for i.MX 8M (Mini/Nano/Plus), i.MX 93, and i.MX 95 — secure, power-efficient, and industrial-grade, with EdgeLock and HAB/AHAB secure boot.

Validated on **i.MX 8M family** · **i.MX 93 (FRDM)** · **scalable to i.MX 95**
Cortex-M real-time domain (FreeRTOS / Zephyr, RPMsg)

THE PLATFORM

Secure, power-efficient i.MX — built to ship and certify.

NXP's BSPs get you running — but a shipped product needs reproducible builds, a hardened security chain, and a maintainable lifecycle.

A reproducible Yocto build with HAB/AHAB secure boot and EdgeLock device identity — owned by you, ready for regulated industries.

Our i.MX platform is a Yocto-built platform spanning the 8M family to i.MX 93 and 95. It pairs a reproducible, customer-owned build with NXP's security stack — HAB/AHAB secure boot and EdgeLock identity — for power-efficient, certifiable industrial and automotive products.

VALIDATED HARDWARE

i.MX 8M Mini / Nano / Plus · i.MX 93 (FRDM) · scalable to i.MX 95 — with HAB/AHAB secure boot and EdgeLock device identity.

8 yrs

building production
embedded Linux platforms

6

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

1

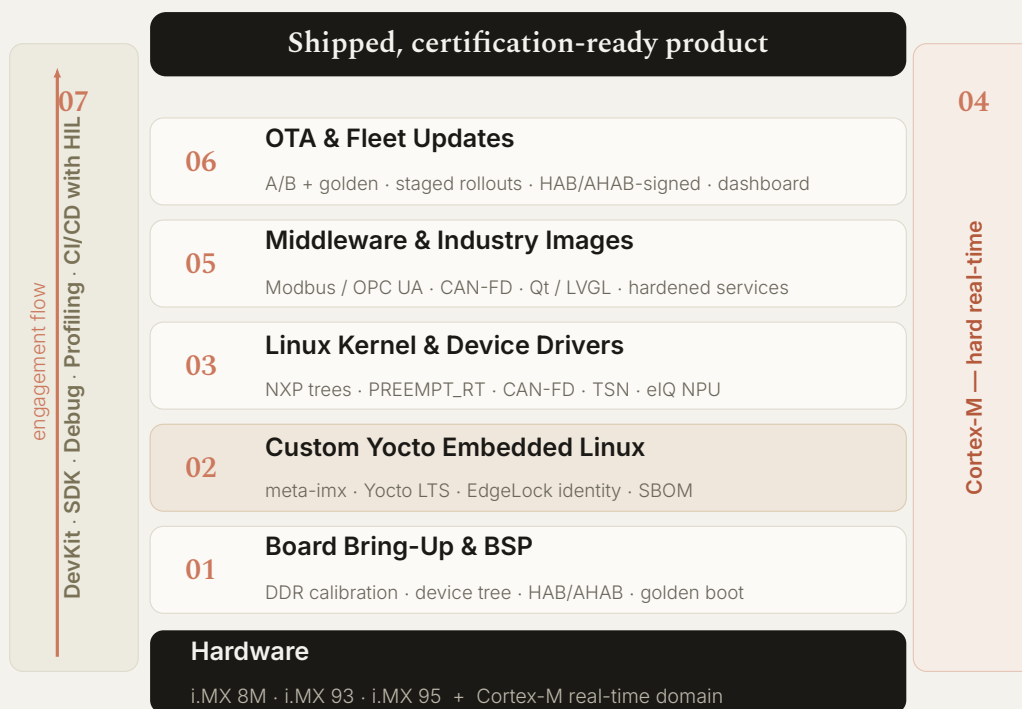
engineering methodology,
applied across every platform

[Add your proof point here] e.g. "Built a HAB-secured i.MX platform for a medical-adjacent customer — IEC 62304-aligned traceability, SBOM-complete." 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

Board Bring-Up & BSP

Your i.MX board boots reliably and securely — from DDR calibration to a provisioned root of trust.

The foundation layer: a clean, secure boot chain, with DDR calibration (critical on i.MX) and HAB/AHAB provisioning done right.

- **Schematic review** — DDR config & calibration (critical on i.MX), power tree, boot straps.
- **Custom BSP** — device tree, pinmux config, peripheral integration.
- **Bring-up & smoke test** — rails, clocks, memory, and peripherals.
- **Custom bootloader** — U-Boot SPL port, DDR init, boot media (eMMC/SD/QSPI).
- **Golden & redundant boot** — fallback and partitioning, watchdog rollback.
- **HAB/AHAB provisioning** — secure-boot key management.

TECHNICAL DETAIL			
Boot chain	ROM→SPL→U-Boot→OP-TEE	Secure boot	HAB / AHAB
Storage	eMMC / SD / QSPI	Recovery	Golden + redundant

You receive: a custom BSP & device tree, secure-boot provisioning, bootloader, golden-boot setup, and a bring-up report.

Custom Yocto Embedded Linux

A secure, owned, reproducible i.MX Linux with device identity built in.

Replacing vendor BSP images with a reproducible build that bakes in HAB/AHAB and EdgeLock identity.

- **Reproducible builds** — meta-imx / meta-freescale, Yocto LTS.
- **Secure by default** — HAB/AHAB chain and EdgeLock device identity.
- **Minimal & locked down** — read-only rootfs, hardened services.
- **You own everything** — source, build system, recipes.
- **Auditable & maintainable** — SBOM, CVE patching, mainline migration paths.
- **Manufacturable** — reproducible image, provisioned identically.

TECHNICAL DETAIL			
Build system	Yocto / BitBake	BSP layer	meta-imx
Security	EdgeLock	Supply chain	SBOM + signed

You receive: the full source & build system, a secure reproducible image, EdgeLock provisioning, an SBOM, and docs.

Linux Kernel & Device Drivers

A power-efficient, hardened i.MX kernel with industrial and display peripherals driven properly.

Shaping the NXP kernel to your board, with fast HMI boot, the NPU enabled, and your display and bus drivers in place.

- **Kernel customization** — NXP trees, mainline migration paths.
- **PREEMPT_RT** — porting and validation.
- **Boot streamlining** — SPL-to-app, sub-2-second HMI boot targets.
- **Drivers** — V4L2 (MIPI CSI, ISP on 8M Plus), audio (SAI), display (LVDS/MIPI DSI/HDMI), CAN-FD, Ethernet+TSN.
- **NPU & power** — eIQ on 8M Plus / i.MX 93 Ethos-U65; battery power management.

TECHNICAL DETAIL			
Kernel	NXP trees	Real-time	PREEMPT_RT
Display	LVDS / DSI / HDMI	NPU	eIQ / Ethos-U65

You receive: a tuned kernel config, display/camera/CAN-FD/TSN drivers, NPU enablement, and power management.

Real-Time Domain (Cortex-M)

Deterministic control and low-power supervision alongside Linux, on the i.MX M-core.

The i.MX Cortex-M domain (M7 on 8M Plus, M33 on i.MX 93) runs deterministic control and low-power supervision alongside Linux.

- **FreeRTOS / Zephyr on Cortex-M** — M7 (8M Plus) or M33 (i.MX 93).
- **RPMsg / Messaging Unit** — comms with Linux.
- **Real-time control** — sensor acquisition and low-power supervision on the M-core.
- **Heterogeneous design** — RTOS drivers & middleware, domain partitioning.

TECHNICAL DETAIL			
RT core	Cortex-M7 / M33	RTOS	FreeRTOS / Zephyr
Comms	RPMsg / MU	Role	control / low-power

You receive: M-core firmware, the RPMsg link, and a documented heterogeneous partition between Linux and the real-time domain.

Middleware & Industry Images

Ship faster with a hardened, industry-tuned image instead of a blank build.

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

Industrial
Modbus, OPC UA, TSN, real-time I/O.

Automotive
CAN-FD stacks, RT patch, instrument-cluster fast-boot.

IoT & Connected
MQTT, cloud agents, EdgeLock device identity.

HMI & Display
Qt, LVGL, Flutter embedded, Wayland / Weston.

Edge AI
eIQ runtime — 8M Plus NPU, i.MX 93 Ethos-U65.

Medical
IEC 62304-aligned traceable builds, SBOM.

Also available: metering, access-control, and building-automation 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 stack, hardened to the production baseline.

OTA & Fleet Updates

Update a whole i.MX fleet in the field, safely, with security chained to the root of trust.

Safe over-the-air updates with a guaranteed way back — signed and chained to HAB/AHAB secure boot.

- **A/B updates** — Mender / RAUC / SWUpdate with golden recovery.
- **Auto rollback** — a failed health check reverts automatically.
- **Fleet management** — cloud or on-prem, staged rollouts, delta updates.
- **Dashboard** — upload, target a fleet, monitor, one-click rollback.
- **Signed & secure** — updates chained to the HAB/AHAB root of trust.

TECHNICAL DETAIL			
Engine	Mender / RAUC	Scheme	A/B + golden
Rollout	Staged + delta	Trust	HAB / AHAB

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

DevKit, SDK, Debug & Profiling

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

Spans the whole engagement: the tooling for your own team to develop, debug, profile, and rebuild the platform.

- **Evaluation images** — for NXP EVKs (incl. FRDM i.MX 93) and custom hardware.
- **Application SDK & Yocto eSDK** — cross-toolchain plus the full build workflow.
- **Debug** — JTAG (Lauterbach / Segger), kgdb, gdbserver, core dumps.
- **Profiling & CI/CD** — perf, LTTng, boot & power profiling; HIL.

TECHNICAL DETAIL			
Eval	NXP EVKs / FRDM	SDKs	App + eSDK
Debug	JTAG / kgdb	Pipeline	CI/CD + HIL

You receive: eval images, both SDKs, JTAG 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.
- NXP-grade security baked in — HAB/AHAB secure boot and EdgeLock device identity, reproducible and owned.
- 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 i.MX project into a product?

NXP's BSP gets you running. We turn i.MX into a secure, power-efficient product you can ship, certify, and support for a decade.

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

GET IN TOUCH

[*name@soccentric.com*]

[*+1 (000) 000-0000*]

[*soccentric.com*]

SOC CENTRIC

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

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