Theo Hatzis, MSc

Senior Electronics Design & Semiconductor Test Specialist
"Der Fuchs" (The Fox)

⭐ **Senior Electronics Architect & Semiconductor V&V Specialist**

Delivering clarity in complex silicon through measurement-driven engineering, deep system insight, and two decades of cross-domain hardware expertise.

Engagement Model: Specialist Surge Capacity (primarily Outside IR35). Open to Fixed-Term Contracts as a flexible, cost-effective senior option, and to 6-month+ permanent roles for programmes where appropriate.

I provide a technical grid aligned to your SOW, FTC structure, and stated requirements to ensure clarity and alignment.

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🎯 Profile Summary

The Bridge Between Design, Production, and the Customer.
A driven problem-solver specialising in Silicon Triage, rapidly identifying elusive system-level stressors, power-delivery failures, and PVT (Process, Voltage, Temperature) corner exceptions (TT, FF, FS, etc.). I resolve root causes of instability in complex mixed-signal ICs through advanced measurement techniques and by defining robust datasheet features and limits. This prevents costly design or metal revisions, accelerates time-to-market, and delivers lasting impact before moving on to the next challenge.

My expertise spans the full hardware lifecycle: from leading M25 infrastructure projects for the Highways Agency, to validating 3G/4G/LTE mobile SoCs, to developing concepts for high-efficiency GaN/SiC power topologies and bidirectional DC-DC converters for low-power (<500 W) applications such as e-bikes, drones, and tethered aerial platforms. I am a hardware-first engineer who uses advanced automation (Python/PyVISA) and embedded insights to ensure silicon reliability in demanding environments — experience built over a twenty-year career in precision semiconductor testing with leading clients in the Munich region.

Alongside my electronics foundation, I bring a strong background in Chemical Sciences (electrochemistry and spectroscopy). This multidisciplinary grounding enhances my diagnostic intuition across MedTech, scientific instrumentation, battery systems and BMS, advanced sensors, photonics, and emerging quantum-adjacent hardware, where physical-layer behaviour and materials interactions are critical.

🛠️ Specialist Pillars

- **Silicon Validation:** Expert Post-Silicon bring-up and characterization of complex PMIC/PMU chipsets. Proficient in PVT-corner validation, silicon-to-model correlation, and advanced MEMS sensor testing using wafer probers.
- **Mixed-Signal & Power:** Specialist in DCDC (Buck/Boost), SiC/IGBT gate-driver stability, and multiphase power-converter architectures. Experienced in high-speed 200 ns controlled trapezoidal loads and dynamic validation of high-performance power stages.
- **System Architecture:** Design Authority across medical devices (ISO 13485), scientific instrumentation, UK highways infrastructure (TRG 1068), and mobile platforms. Influenced SoC ball-out and interface definitions for

major silicon providers such as ST and Motorola, bridging hardware, firmware, and system-level integration.

- **V&V Automation:** Extensive use of Python (Pandas, NumPy, PyVISA, Plotly) for 24/7 automated lab characterization and statistical analysis. Familiar with Pytest, CMAKE, Dockerised Jenkins Agents, and ARM toolchains within the **MeasX** methodology (Measurement Experiments).

⏳ Professional Expertise: Semiconductor Hub (Munich Großraum — Freising, Germering, Nürnberg)

Client	Core Focus & Impact	Period
Logiicdev GmbH (Remote, Graz)	Chief Adviser / CTO: Led Horizon EU bids; Battery/Energy Systems, Post-basic BMS, AI/ML & UAV HW. Mentored interns on AI/ML in battery projects. Supported product design with India-based teams and guided students on early-stage university projects.	2020–2025
Texas Instruments (Freising)	**ISFET Characterisation:** Setup of custom microfluidics MEMS wafer-prober stations.	2023–2023
Renesas (ex-Dialog), Germering	**Contractor Mixed-Signal:** Validation & triage for high-efficiency BOOST converters.	2022–2023
Infineon AG (Am Campeon)	**Post-Si Component Verification:** Automotive-grade SiC/IGBT gate driver & FMEDA.	2021–2022
Infineon AG (Am Campeon)	**Embedded T&V:** FMCW radar embedded validation in an Agile/Bare-Metal environment.	2020–2021
Texas Instruments (Freising)	**Validation Expert:** Low-noise, dynamic validation for high-performance DCDC stages.	2018–2020
Dialog Semiconductor (Germering)	**Evaluation/Validation Engineer:** Mixed-Signal PMIC (Buck DCDC) evaluation on key milestones.	2018–2019
Texas Instruments (Freising)	**Validation Engineer:** Managed DCDC and PMIC validation cycles for production release.	2014–2017
Intel Mobile Communications (Nürnberg)	**Senior Baseband Digital Design Engineer:** 2G/3G/4G platform design verification & FAE support.	2010–2014
Ericsson/ST (Nürnberg)	**Consultant HW:** Power systems on FPGA-based 3GPP development platforms; 3-phase core supplies and ideal-diode OR-ing. Contributed to the early Ericsson 150 Mbit/s LTE phone demonstrator showcased at the 3GSM Congress.	2006–2009
Texas Instruments (Aalborg, Denmark)	**Baseband Engineer:** WTBU 2G and 3G platform validation.	2004–2005

🏭 UK Engineering Foundation (1992–2003)

- **Highways Agency (M25 MIDAS):** Acting Design Authority for Outstations. Implemented 4 kV galvanically isolated RS485 for high common-mode rejection and resolved 30 m OATS EMI issues under TRG 1068.
- **Medical & Scientific Technology:** Developed safety-critical electronics for ISO 13485 diagnostics, neonatal infusion pumps, Gamma Camera organ-recovery monitoring systems, FIA/FPIA diagnostic platforms, and MRI/NMR and XRF benchtop instrumentation.
- **Traffic & Pollution Monitoring:** Designed high-fidelity analog front-ends for electrochemical sensors and developed Weigh-In-Motion (WIM) and vehicle-detection systems for roadside infrastructure.
- **Mobile Platform Architecture (Psion/Sendo):** Design Lead for ARM-based handhelds, covering 2G/WLAN integration, SAR compliance, and network approvals. Co-authored early requirements for the MIPI Alliance

membership ambitions.

💼 Engineering Toolkit

- **Hardware Design:** Mixed-Signal System Design, CPU/FPGA Integration, Gate Drivers (GaN/SiC), PDN, LISN/OATS, 2-quadrant loads.
- **Automation & Data:** Python (Pandas, NumPy, Pytest, PyVISA), MATLAB, LabVIEW & TestStand™, PXI via Python.
- **Embedded & Debug:** ARM Toolchains, Bare-Metal C, Trace32 (Lauterbach), JTAG, I2C/SPI.
- **CAD/Sim:** Altium Designer, OrCAD, Mentor Graphics, LTSPICE, SIMetrix, PLECS.
- **Compliance:** ISO 26262 (Automotive), TRG 1068 (UK Highways), ISO 13485 (Medical), EN60950 (IT Hardware).

🎓 Technical Credentials

- MSc, Real-Time Systems – London South Bank University
- BSc, Chemical Sciences – University of East Anglia
- Foundational expertise: Physical Chemistry & Spectroscopy — the source of my physical-layer diagnostic intuition for sensor-to-silicon triage.
- Advanced Training: Electrode Kinetics (Southampton); RF Systems (Surrey); LabVIEW.

🛰️ Advisory Insights & Emerging Frontiers

Focused expertise gained through direct R&D, CTO-level advisory, and Horizon EU collaborative bids in New Dawn Tech.

- **Semiconductors & Power:** 🕯️ Power ICs & WBG (GaN/SiC) | 🌈 Photonics / PAM4 | 📡 Connected Sensors
- **Energy & Transport:** 🔋 BMS & Storage (Solid-State, Li-ion, Na-ion) | ⚡ 📈 EIS (Electrochemical Impedance Spectroscopy) | H₂ 💧 Fuel Cells | ☀️ Photovoltaics | ✈️ Aerospace
- **MedTech & Life Sciences:** 🩺 Point-of-Care Diagnostics | 🧪 ISFET & Lab-on-a-Chip | 💧 Microfluidics | ⚡ 📷 EIS Imaging
- **Infrastructure & Lab:** 🚦 Intelligent Transportation | 🗓️ Metrology | 🔗 Autonomous Test Labs | 🏭 Industry 5.0 | ⏸️ Digital Twins | ⚛️ Quantum Computing | 📐 Critical/Environmental Infrastructure Monitoring | 🔥 Forest-Fire Technologies
- **Industrial Materials Analysers:** 🧲 NMR | 🔬 XRF | 💡 Raman | 🌈 Hyperspectral Cameras
- **Collaboration Frameworks:** 🖥️ Horizon EU RIA (Cluster 4/5/5G Vertical Experiments) | Grant Portfolio Strategy | Consortium Funding Bids & WP Leadership

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🌍 Endnote

The moniker **"Der Fuchs" originated from my time contracting at Ericsson in Germany. It reflects the idiom "Der Fuchs findet den Fehler, den keiner sieht" — the fox finds the flaw no one else sees [our clever fox], a recognition of my ability to resolve elusive issues in high-pressure environments. I was retained for four years, with additional budget pulled to keep me on the programme — a rare commitment in a contractor environment and a reflection of the value I delivered.

Having lived and worked extensively in Denmark and Germany, I remain particularly open to opportunities across the EU, DACH, EMEA region, and the warmer Mediterranean countries.