

This hybrid tutorial gives participants a practical, end-to-end view of next-generation wireless IoT — from real-world LoRaWAN deployments to private 5G and O-RAN experimentation. It runs in three linked parts: a 45-minute online session from Germany introduces private 5G and O-RAN with live demos; ICFOSS, Trivandrum team will then leads a 90-minute hands-on module on LoRaWAN — from edge devices to Grafana dashboards — drawing on their Kerala-wide deployments; and the IICT GmbH India team closes with up to two hours of hands-on private 5G experimentation via IICT GmbH's Virtual Labs platform, plus a live hardware demo, so participants leave having worked across LoRaWAN, private 5G and O-RAN in a single session.

TOPICS & FORMAT

What participants will cover

- Private 5G & O-RAN fundamentals — architecture, QoS, slicing, disaggregation & the RIC
- Real-world LoRaWAN — from LoRa/LoRaWAN architecture to edge devices, gateways & ChirpStack
- End-to-end LoRaWAN data pipeline — sensor → gateway → server → Grafana dashboards (live demo)
- ICFOSS's Kerala-wide LoRaWAN deployments — agriculture, disaster management & smart-city use cases
- Hands-on private 5G experimentation via IICT's Virtual Labs platform + a live hardware demo
- Unifying LPWAN, SRWN and private 5G — towards 6G-ready heterogeneous IoT platforms

Format & delivery team — 3 parts, ~4h 15m

Part 1 · Online from Germany (45 min)

Dr.-Ing. Jubin Sebastian E & Fabian Sowieja — Co-Founders & Managing Directors, IICT GmbH (Offenburg, Germany)

Part 2 · Onsite, Kannur (90 min)

TBD: ICFOSS, Trivandrum team — LoRaWAN hands-on modules & live demos on their own gateway/ChirpStack/Grafana stack

Part 3 · Onsite, Kannur (up to 120 min)

IICT GmbH India team — private 5G hands-on via the Virtual Labs platform

TENTATIVE SCHEDULE

Time	Part	Topic / Activity	Mode
00:00–00:10	1 · IICT GmbH	Welcome & the case for heterogeneous, 6G-ready IoT testbeds	Online
00:10–00:25	1 · IICT GmbH	Private 5G — architecture, QoS & slicing; live monitoring demo	Online, Live Demo
00:25–00:35	1 · IICT GmbH	Open RAN — disaggregation & the RIC; deployment walkthrough	Online, Live Demo
00:35–00:45	1 · IICT GmbH	Reliable Low Power Low Throughput Networks with MIOTY	Online, Live Demo
00:45–01:10	2 · ICFOSS	IoT & LoRaWAN fundamentals — concepts, LoRa vs. LoRaWAN, architecture & data flow	Onsite
01:10–01:20	2 · ICFOSS	LoRaWAN applications & case studies — agriculture, flood/water-level, energy, smart city	Onsite
01:20–01:40	2 · ICFOSS	Edge device integration — sensor → gateway → ChirpStack → application	Live demo
01:40–01:55	2 · ICFOSS	IoT data visualization with Grafana — real-time dashboards & sensor graphs	Live demo
01:55–02:15	2 · ICFOSS	ICFOSS's Kerala-wide deployments & end-to-end demo — sensor → gateway → server → dashboard	Showcase + live demo
02:15–02:25	3 · IICT GmbH, India	Bridging the Gap: Cellular IoT, RedCap & LPWAN	Onsite
02:25–03:10	3 · IICT GmbH, India	Private 5G: Virtual Network Setup, Provisioning & Core Config	Onsite hands-on
03:10–03:40	3 · IICT GmbH, India	Private 5G Usecases: Video Streaming Hands-On	Onsite hands-on
03:40–03:50	3 · IICT GmbH, India	Heterogeneous platforms — unifying LPWAN, SRWN, private 5G; multi-tech data evaluation	Onsite
03:50–04:00	3 · IICT GmbH, India	Heterogeneous platforms hands-on — executing multi-tech testcases	Onsite hands-on
04:00–04:15	4 All	Wrap-up & Q&A	Hybrid

AUDIENCE & LOGISTICS

Target audience	Faculty, researchers & postgraduate students interested in next-generation wireless communications and IoT
Batch size	Maximum 30–40 participants, organised in groups of ~3 for effective hands-on execution
Participant requirements	Organizer, together with the IICT GmbH India team, sets up the required lab PCs in advance — Part 3 hands-on runs entirely on IICT GmbH's Virtual Labs platform (no physical hardware needed); Part 2 demos run on ICFOSS's own LoRaWAN equipment; onsite attendees also see a live hardware demo