ON-PREM SOVEREIGN INFRASTRUCTURE FOR ACADEMIA

# One Datacentre You Own. Scale It, Never Re-Buy It.

A university builds the architecture once and keeps adding capability to the same in-house datacentre. New labs, new models, new fields of study plug into hardware the institution already owns. Nothing leaves the campus. No fresh procurement every time technology moves.

01

### Private Cloud Lab

24 labs consolidated onto one private cloud. Plug in more over time.

02

### Quantum Simulator Lab

Simulation box plus real QRNG and FPGA boards. Three layers taught.

03

### Sovereign AI Box

Private models on-prem. Prompts and documents never leave campus.

| 1 | 0 | ∞ | 3 |
|---|---|---|---|
| datacentre owned by the university | bytes leave the campus | labs can be added over time | packs per offering basic to premium |

BASIC · ADVANCE · PREMIUM ONE PLATFORM, THREE OFFERINGS, ONE OWNED FOUNDATION

BUY THE ARCHITECTURE ONCE

# Add Capability To It For Years.

Traditional labs are bought department by department. Each one is a separate purchase, separately housed, separately maintained, and idle most of the day. When a new field arrives, the university buys another expensive system from scratch. Our model removes that cycle.

THE OLD WAY · RE-BUY EVERY TIME

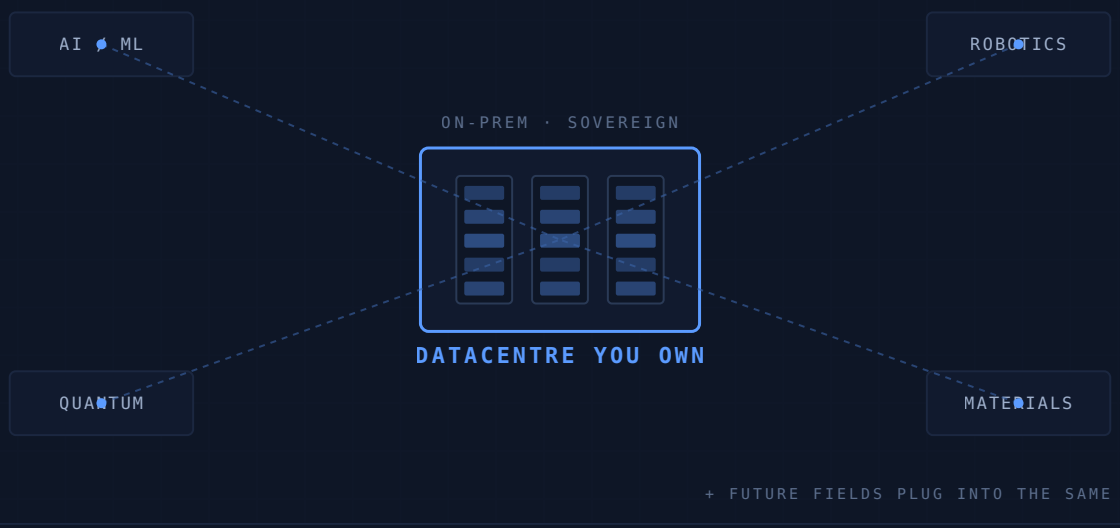
### Re-buy every time

A new subject means a new lab, new machines, new licences, new upkeep. Capital is spent again and again, and half of it sits unused between classes.

THE TECH4BIZ WAY · SCALE WHAT YOU OWN

### Scale the datacentre you own

One in-house private datacentre hosts everything. New labs, models, and fields plug in as software on the same hardware. Add compute only when you outgrow it.




**How a new field of study gets added.** A materials science lab, a robotics lab, or any future subject is added the same way. The university does not buy a new system. It adds a lab to the design it already owns.

| 01 | 02 | 03 | 04 |
|---|---|---|---|
| **New field appears** | **Lab image built** | **Plugged into cloud** | **Live to students** |
| e.g. materials science | software container | same datacentre | no new hardware |

> Why this matters for procurement. The investment is a platform, not a shopping list. It protects the university against technology churn: whatever comes next in AI, quantum, or engineering is added to the same sovereign datacentre, on the university's own terms.

EVERY LAB ON CAMPUS, ON ONE CLOUD YOU OWN

# One Private Cloud. Every Lab. Zero Egress.

Students open any lab in a browser on the desktops the campus already has. Behind the browser sits one in-house datacentre running all labs as software. The university owns the hardware, the data stays on-prem, and new labs are added to the same design whenever they are needed.

| 24 | 1,500+ | 2,200+ | 0 |
|---|---|---|---|
| labs live on day one, catalog keeps growing | concurrent students at premium scale | existing desktops become access points | data leaves the campus |

01

### Consolidation

One platform replaces scattered, underused department labs. Shared hardware, one thing to maintain.

02

### Browser access

Any campus or personal device becomes a terminal. Nothing to install on the student side.

03

### Plug-in labs

New labs, standard or custom, drop onto the same cloud. A new field is a container, not a new system.

04

### Scales in place

Add compute or GPU to the same design as demand grows. The architecture is engineered to expand.

05

### Sovereign by default

The datacentre is on-prem and owned by the university. Student and research data never egresses.

06

### Live utilisation

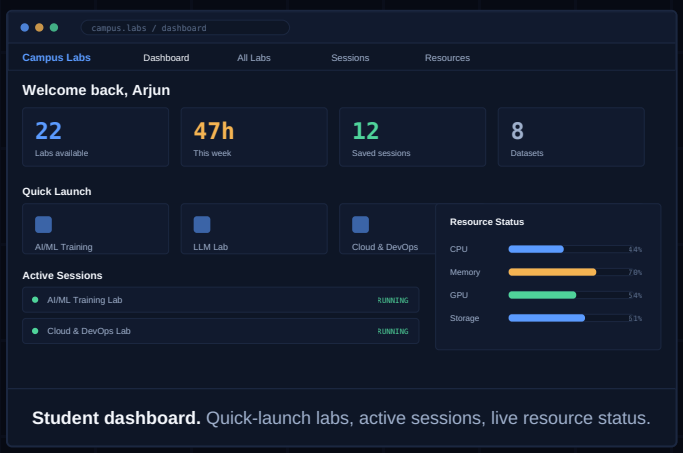
Admin dashboard shows CPU, GPU, memory, and per-lab usage in real time for capacity planning.

CONSOLIDATE NOW · PLUG IN MORE LABS OVER TIME · NEVER RE-BUY THE BASE

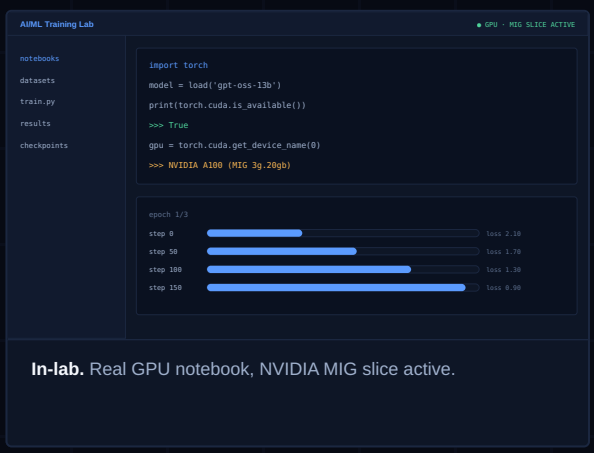
THIS IS THE PLATFORM, RUNNING

# Live Software, Not a Slide.

The Campus Labs portal is live software. Students launch environments in seconds; administrators watch the whole estate from one screen.




**Student dashboard.** Quick-launch labs, active sessions, live resource status.




**In-lab.** Real GPU notebook, NVIDIA MIG slice active.

> Adding a future lab is the same three clicks for the admin. When materials science, agentic AI, or any new subject is ready, its lab image is published to the catalog and appears alongside the others. The university adds a lab to the platform it owns. It does not procure a new lab.

AI & ML · COMPUTER VISION · DATA SCIENCE · CYBERSECURITY · CLOUD & DEVOPS · BLOCKCHAIN · IOT / EMBEDDED · XR / AR / VR · CAD / CAM · ROBOTICS · FINTECH · BIOINFORMATICS · + FUTURE FIELDS

PRIVATE CLOUD LAB

# Basic, Advance, Premium.

Every pack is the same platform. You start where your budget sits and scale the same datacentre later, without re-architecting.

BASIC

### Foundation datacentre

- Single-node private cloud, university owned and on-prem
- 8 to 12 core labs live: DevOps, AI/ML, data science, cyber, networking
- Around 300 to 500 concurrent students
- Branded portal, SSO, browser access from existing desktops
- Admin dashboard and live utilisation view
- Engineered to expand on the same design

POPULAR

ADVANCE

### Full catalog with GPU

- Everything in Basic, on a multi-node cluster
- Full 24-lab catalog including GPU labs: foundation models, CV, robotics
- GPU compute node, MIG-sliced for many students at once
- Around 1,000 concurrent students
- Windows-VM design labs: CAD/CAM, XR/VR, game development
- Headroom to keep plugging in new and custom labs

PREMIUM

### Campus-scale, research-grade

- Everything in Advance, at full scale
- 1,500+ concurrent students across all 24 labs
- Redundant storage, no single point of failure for student data
- Custom labs built to the university's own curriculum
- Extra GPU and compute headroom for research workloads
- Pre-engineered expansion path for whatever field comes next

> The through-line. Basic is the same architecture as Premium, just smaller. A university on Basic grows into Advance and Premium by adding compute and labs to the datacentre it already owns. No pack is a dead end, and no upgrade means starting over. Hardware is procured in the university's name; Tech4Biz delivers the platform, the labs, and the support around them.

A FULL QUANTUM TEACHING LAB, NO CRYOGENICS

# Every Layer of Quantum, Honestly.

Students touch every layer of quantum technology: the algorithms, the physics of randomness, and the control electronics. One box does the quantum computing in simulation. Two real boards, one of which we manufacture, cover the hardware layers. Curriculum ties it together.

| 30-40 | 1 | 3 | 0 |
|---|---|---|---|
| qubits simulated honestly on the box | board we manufacture real quantum randomness | layers taught algorithm, physics, control | qubit-fabrication claims, ever |

YOU ASSEMBLE

### Simulation appliance

A rack server pre-loaded with quantum software. It behaves like a 30 to 40 qubit computer. Students write and run real quantum programs on it. This is where all quantum computing happens, in software.

YOU MANUFACTURE

### QRNG board

A board built on your Mysuru line that produces true random numbers from a physical quantum effect. Students use that randomness in cryptography and security work. The genuine quantum-hardware piece.

YOU CONFIGURE

### FPGA control trainer

Programmable hardware that teaches the control layer of a real quantum machine. Students load pulse-timing logic onto it to learn how qubits are actually driven, gate by gate.

OPTIONAL SOFTWARE

### External QPU bridge

Lets students submit a job to a real quantum computer elsewhere over the network. Their code and data stay on the on-prem box. Only the job goes out. Entirely optional.

SIMULATION APPLIANCE · REAL QRNG BOARD · FPGA CONTROL TRAINER · CURRICULUM

ONE PROJECT, ALL THREE LAYERS

# Break Then Protect Encryption.

The boards are standalone teaching stations, not wired into one machine. A single lesson, break then protect encryption, uses all three.

THREE STANDALONE TEACHING STATIONS · ONE CURRICULUM




**SIM APPLIANCE**
30-40 QUBITS

**QRNG BOARD**
YOU MAKE

**FPGA TRAINER**
CONTROL LAYER

**Three stations, one lesson.** The box runs the algorithm, the QRNG board supplies real randomness, the FPGA shows the control layer.

STEP 01 · ON THE BOX

### Run a real algorithm

Run Shor's algorithm on the simulated 30-qubit machine and watch it factor a number: the thing that breaks today's encryption.

STEP 02 · QRNG BOARD

### Build the defence

Use the board's true quantum randomness to generate unpredictable keys, then implement a post-quantum scheme.

STEP 03 · FPGA BOARD

### See the hardware run it

Load pulse-timing logic onto the FPGA to see how a real quantum computer's control layer drives qubits, gate by gate.

### The box runs

Grover's search, quantum ML, chemistry (VQE), optimisation (QAOA), error correction, gates and circuits.

### The QRNG serves

Key generation, post-quantum security, Monte Carlo, randomised algorithms, statistics teaching.

### The FPGA covers

Pulse sequencing, timing and signal generation, real-time control, and general FPGA teaching.

> Honest by design: the offering simulates qubits and manufactures a real quantum-randomness board. It never claims to manufacture a qubit processor. Every statement survives review by a physics faculty member.

QUANTUM SIMULATOR LAB

# Basic, Advance, Premium.

Start with simulation and randomness, grow into the full three-layer lab and higher qubit counts on the same appliance.

BASIC

### Simulate and randomise

- Simulation appliance, up to ~30 qubits
- Qiskit, Cirq, PennyLane pre-loaded, ready to run
- One QRNG board: real quantum randomness
- Core curriculum: quantum fundamentals plus cryptography basics
- Faculty onboarding and lab guides
- Runs standalone or plugs into the Offering 1 cloud

POPULAR

ADVANCE

### The full three-layer lab

- Everything in Basic, higher-capacity appliance (up to ~40 qubits)
- FPGA control trainer added: the hardware control layer
- Multiple QRNG boards for lab benches
- Full curriculum: algorithms, quantum ML, post-quantum security, control
- Optional external-QPU bridge configured
- Train-the-trainer faculty programme

PREMIUM

### Research and multi-cohort

- Everything in Advance, multi-node simulation for larger circuits
- Bench sets of QRNG and FPGA boards for full class delivery
- Research modules: chemistry, optimisation, error-correction studies
- Live external-QPU access programme, data stays on-prem
- Custom modules built to the university's research direction
- Expansion path to add qubit capacity as the field advances

> Standalone or integrated. The Quantum Simulator Lab can run on its own, or plug into the Offering 1 private cloud so students reach it from the same portal. Either way, it is the university's hardware, on-prem, growing over time. The QRNG board here is an educational instrument; certified cryptographic-grade generation is a separate scope with formal entropy validation.

A PRIVATE AI SERVER THE UNIVERSITY OWNS

# The Data Never Leaves.

A dedicated on-prem server that runs AI language models on the university's own hardware. A private assistant for students and faculty, document and research question-answering over the institution's own material, and a place to build AI applications. No cloud call, no data egress.

| 100% | 0 | Campus | Open |
|---|---|---|---|
| on-prem university owned | data leaves the campus | wide: teaching, research, admin | weight models, no per-token cloud bill |

01
### Private assistant
A campus ChatGPT-style assistant for students and faculty, running on models the university hosts itself.

02
### Ask your own docs
Retrieval over the institution's own material: notes, papers, handbooks, policies. Answers grounded in campus content.

03
### Build AI apps
A place for project and research teams to build and host AI applications without renting external compute.

04
### Governed access
Per-department keys, usage tracking, and audit logs. The institution controls who runs what, on what data.

05
### Data residency
Every prompt and document stays inside the campus network. Nothing crosses a jurisdiction boundary.

06
### Grows with demand
Add models and GPU to the same box as usage rises. Same scale-in-place principle as the other offerings.

SOVEREIGN BY DESIGN · OWNED, ON-PREM, GOVERNED · SOLD ON DATA CONTROL

OWN THE AI, OWN THE DATA

# Convenient Until It Cannot Leave.

Cloud AI is convenient until the data cannot leave the building. For universities and research institutions, that is the normal case, not the exception.

THE CLOUD PROBLEM

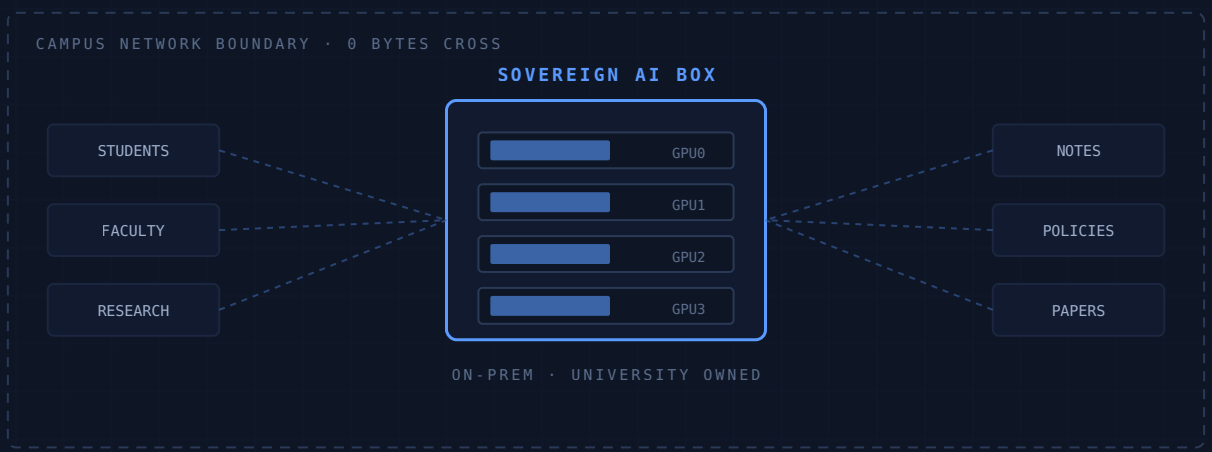
### Every question leaves the campus

Public AI services send prompts, documents, and research data to a third party in another jurisdiction. Costs recur per token. Access can change under the university's feet.

THE SOVEREIGN AI BOX

### Everything stays on-prem

Models run on the university's own server. Prompts and documents never leave. The cost is the hardware the institution owns, not a meter that runs forever.




**Where it earns its place on campus.** Teaching, research, and administration all query the same owned box. Nothing crosses the campus boundary.

### Teaching

A safe AI assistant students can use, with the institution setting the rules and seeing the usage.

### Research

Query sensitive or unpublished data with a model that keeps it inside the lab. No external exposure.

### Administration

Answer over handbooks, policies, and records without sending any of it to an outside service.

SOVEREIGN AI BOX

# Basic, Advance, Premium.

From a department assistant to campus-wide private AI, all on hardware the university owns.

BASIC

### Department assistant

- Single AI server, on-prem, university owned
- One capable open-weight model, private assistant for a department
- Document question-answering over a starter knowledge base
- Per-user access with basic usage tracking
- Hundreds of users, all data on-prem
- Room to add models and users later

POPULAR

ADVANCE

### Campus-wide private AI

- Everything in Basic, on a larger GPU server
- Multiple models, campus-wide assistant for students and staff
- Retrieval over many institutional document sets
- Per-department keys, full usage and audit logs
- A place for project teams to build and host AI apps
- Scales by adding GPU to the same box

PREMIUM

### Research-grade sovereign AI

- Everything in Advance, multi-GPU, high concurrency
- Private hosting of larger models for research workloads
- Fine-tuning on the institution's own data, kept on-prem
- Federated and multi-department governance
- Priority for sovereignty-sensitive and regulated data
- Engineered to grow with the university's AI demand

> One platform, three offerings. The Sovereign AI Box, the Quantum Simulator Lab, and the Private Cloud Lab can be bought alone or together. Bought together, they share one on-prem datacentre and one portal, and every one of them scales in place rather than being re-purchased. Hardware is procured in the university's name; Tech4Biz delivers the platform, the labs, and the support around them.

EVERYTHING IN ONE VIEW

# Own It. Scale It. Never Re-Buy It.

**OWN IT**

### Procured in your name

Hardware procured in the university's name. On-prem, sovereign, campus-controlled.

**SCALE IT**

### Grows in place

Every offering grows in place. Add labs, qubits, models, or GPU to what you already own.

**NEVER RE-BUY**

### Plug in the next field

New fields plug into the same datacentre. No fresh system purchase each time tech moves.

| OFFERING | BASIC | ADVANCE | PREMIUM |
|---|---|---|---|
| **01 · Private Cloud Lab**<br>Consolidate all labs, plug in more | **Basic**<br>8–12 labs | **Advance**<br>24 labs + GPU | **Premium**<br>campus scale |
| **02 · Quantum Simulator Lab**<br>Box + QRNG + FPGA + curriculum | **Basic**<br>simulate + QRNG | **Advance**<br>three layers | **Premium**<br>research |
| **03 · Sovereign AI Box**<br>Private models, data stays on-prem | **Basic**<br>department | **Advance**<br>campus-wide | **Premium**<br>research-grade |

> Buy one, buy all three. Each offering stands alone. Together they share one on-prem datacentre and one portal, and the university expands capability for years on a single owned foundation.

SCOPE, BUILD, DEPLOY, SUSTAIN

# One Team, From Datacentre To Lab.

One team owns the platform from the datacentre design to the labs running on it. The university owns the outcome.

01 · SCOPE

### Fix the outcome first

We set the lab catalog, student scale, sovereignty requirements, and hardware target before anything is built.

02 · BUILD

### Datacentre + platform

We stand up the on-prem private cloud, the portal, SSO, and the labs, on hardware in the university's name.

03 · DEPLOY

### Live to students

Labs go live, faculty are trained, the admin team learns the dashboard. Quantum boards and AI box installed and validated.

04 · SUSTAIN

### Support + expansion

Ongoing support, updates, and a clear path to add new labs, qubit capacity, or models onto the same design.

WHO ASKS FOR THIS

### Universities & research institutions

Institutions in India and the Gulf that want modern AI, quantum, and engineering labs on infrastructure they own and control, with a platform that keeps growing rather than a purchase that goes stale.

WHAT WE DELIVER

### The whole stack

Hardware is procured in the university's name. Tech4Biz delivers the platform, the labs, the quantum boards and appliance, the AI box, and the support around them.

SCOPE › BUILD › DEPLOY › SUSTAIN THE UNIVERSITY OWNS THE OUTCOME

TELL US THE SCALE AND THE CONSTRAINT

# We Will Tell You The Pack.

Send us the number of students, the fields you teach, and any data-residency requirement. We will map it to Basic, Advance, or Premium across the three offerings, and show how it grows on a single datacentre the university owns.

01
**Private Cloud Lab**
consolidate, plug in more

02
**Quantum Simulator Lab**
box, QRNG, FPGA

03
**Sovereign AI Box**
private models on-prem

## Tech4Biz Solutions

Bengaluru, with an in-house PCB fabrication facility in Mysuru. 80+ engineers across silicon, FPGA, embedded, cloud, and AI. We build the datacentre, the labs that run on it, and the quantum and AI hardware around it.

contact@tech4biz.io · tech4bizsolutions.com