Job Description: Chief Operating Officer (COO)

Position Title: Chief Operating Officer (COO)
Organization: IITM CDOT Samgnya Technologies Foundation
Location: IIT Madras Research Park (IITMRP), Kanagam Road, Taramani, Chennai, Tamil Nadu 600113, India

Reports To: Chief Executive Officer (CEO)
Employment Type: Full-Time, Senior Leadership Role (Contractual, renewable based on performance and project needs)

About the Organization:

IITM CDOT Samgnya Technologies Foundation, also known as Samgnya (Quantum T-Hub), is a nonprofit entity established as the designated Thematic Hub (T-Hub) for Quantum Communication under the National Quantum Mission (NQM), a flagship initiative of the Department of Science and Technology (DST), Government of India. Launched in 2023 with a total mission funding of Rs. 6,003.65 crore over eight years (2023-24 to 2030-31), the NQM aims to position India as a global leader in quantum technologies by fostering innovation, scaling R&D, and building ecosystems for quantum applications. Samgnya specializes in leveraging quantum mechanics—such as quantum entanglement and superposition—to develop ultra-secure communication protocols, quantum key distribution (QKD) systems, and quantum networks that protect India's digital infrastructure from emerging threats like quantum computing-based attacks.

Headquartered at IIT Madras Research Park, the Foundation collaborates closely with IIT Madras, the Centre for Development of Telematics (C-DoT), DST, and other stakeholders including academia, industry, startups, and international partners. Our core activities include R&D in quantum communication technologies (e.g., satellite-based quantum links, inter-city QKD over 2000 km, and multi-node quantum networks), startup incubation through programs like the "Call for Startup Innovation in Q-Comm," capacity building via workshops and training, technology transfer, and policy advocacy. With a small but growing team of 2-10 employees, we operate in a dynamic, interdisciplinary environment that bridges fundamental research with practical deployment, contributing to national goals like secure communications for defense, finance, and critical infrastructure. Our website is https://www.samgnya.in.

Role Summary:

As the COO of IITM CDOT Samgnya Technologies Foundation, you will be the strategic operational leader responsible for translating the Foundation's vision into actionable outcomes. Reporting directly to the CEO, you will oversee all internal operations, ensure regulatory compliance, optimize resource utilization, and drive efficiency in a high-stakes quantum technology ecosystem. This role demands a seasoned executive with expertise in managing government-funded research organizations, scaling tech innovations, and navigating multi-stakeholder collaborations. You will play a critical part in advancing India's quantum sovereignty by operationalizing projects that integrate quantum communication with existing telecom infrastructures, fostering startups, and measuring impact against NQM milestones. The position requires hands-on leadership in a fast-paced, resource-constrained environment, with a focus on sustainability, risk mitigation, and long-term ecosystem building.

Key Responsibilities:

• **Operational Strategy and Execution:** Develop and implement comprehensive operational plans aligned with NQM objectives, including timelines for quantum network pilots, R&D milestones, and ecosystem development; conduct regular reviews to adapt strategies based on progress and external factors like technological advancements or policy changes.

• **Financial Management and Budgeting:** Oversee annual and multi-year budgets (potentially exceeding Rs. 50 crore for hub activities), including allocation of DST grants, tracking expenditures, budgeting and ensuring cost-effective use of resources; prepare detailed financial reports for DST audits and board reviews, incorporating forecasting models for R&D investments.

• **Compliance and Governance:** Ensure full adherence to DST guidelines, NQM protocols, and relevant laws (e.g., Companies Act for nonprofits (Section 8), data protection regulations under DPDP Act); manage risk assessments for quantum projects, including ethical considerations in technology deployment and IP protection.

• **Human Resources and Team Leadership:** Recruit, mentor, and lead a multidisciplinary team of scientists, engineers, administrators, and support staff; foster a collaborative culture emphasizing diversity, inclusion, and professional development through training in quantum technologies and project management.

•**Partnerships and Stakeholder Engagement:** Build and maintain strategic alliances with IIT Madras, C-DoT, DST, telecom operators (e.g., BSNL, Reliance Jio), international quantum consortia (e.g., EU Quantum Flagship), and startups; negotiate MoUs, joint ventures, and funding agreements to expand the quantum communication ecosystem.

•**Project Management and Monitoring:** Supervise end-to-end project lifecycle for initiatives like QKD network deployments and quantum-secure satellite communications; utilize tools like KPIs, Gantt charts, and agile methodologies to track progress, mitigate delays, and report outcomes to the CEO and DST.

•**Fundraising and Resource Mobilization:** Lead efforts to secure additional funding beyond DST allocations, including grants from international bodies (e.g., Horizon Europe), corporate sponsorships, and philanthropic sources; develop proposals highlighting impact metrics such as patents filed or startups incubated.

•**Infrastructure and Facilities Oversight:** Manage operations at IITMRP facilities, including quantum labs, cleanrooms, and computational resources; coordinate procurement of specialized equipment (e.g., photon detectors, cryogenic systems) while ensuring safety protocols and sustainability practices.

•**Capacity Building and Outreach:** Organize workshops, seminars, and certification programs on quantum cryptography for students, professionals, and policymakers; promote knowledge dissemination through publications, conferences, and public awareness campaigns.

•**Performance Evaluation and Reporting:** Establish metrics for operational efficiency (e.g., project completion rates, budget variance); prepare quarterly and annual reports for the CEO, board, and DST, incorporating data analytics for evidence-based decision-making.

Qualifications and Experience:

•**Educational Background:** Master's degree in Business Administration, Public Administration, Engineering, or a related field; a PhD in a STEM discipline (e.g., Physics, Computer Science) or MBA from a premier institution (e.g., IIM) is highly preferred.

•**Professional Experience:** Minimum 10-15 years in senior operational roles, with at least 5 years in leadership positions at research institutions, tech nonprofits, government-funded hubs, or similar entities; proven experience managing large-scale R&D projects in emerging technologies like quantum, AI, or cybersecurity.

•**Technical Familiarity:** Working knowledge of quantum communication concepts (e.g., QKD protocols like BB84, quantum repeaters) and their applications in secure networks; experience in government-funded programs (e.g., DST, SERB) is essential.

•**Leadership Track Record:** Demonstrated success in scaling operations, leading teams of 20+

members, and achieving measurable outcomes in resource-limited settings; experience with nonprofit governance and DST compliance is advantageous.

Skills and Competencies:

•Strategic thinking with strong analytical and problem-solving abilities; proficiency in project management tools (e.g., MS Project, Asana) and financial software (e.g., ERP systems).

•Excellent interpersonal and communication skills for stakeholder engagement; ability to negotiate complex agreements and present to high-level audiences.

•High ethical standards, adaptability to evolving tech landscapes, and a passion for national missions in science and technology.

•Proficiency in English and Hindi; knowledge of Tamil is a plus for local collaborations.

What We Offer:

•Opportunity to contribute to India's quantum revolution in a pivotal national role, with exposure to cutting-edge technologies and global networks.

•Salary structure as decided by DST guidelines for senior leadership positions in NQM T-Hubs (typically aligned with 7th Pay Commission scales for equivalent roles, including basic pay, dearness allowance, HRA, and other benefits; exact compensation determined during selection based on experience and DST norms).

•Additional perks including performance-linked incentives, health insurance, provident fund.

•Professional development opportunities such as conferences, sabbaticals, and collaborations with IIT faculty.

Application Process:

Interested candidates should submit a detailed resume (including professional achievements and references), a cover letter outlining suitability for the role, and copies of relevant certifications to careers@samgnya.in with the subject "Application for COO - IITM CDOT Samgnya Technologies Foundation." Applications will be reviewed on a rolling basis;

shortlisted candidates will undergo interviews, including presentations on operational strategies for quantum hubs. The Foundation is an equal opportunity employer and encourages applications from women, underrepresented groups, and persons with disabilities.

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Employment Type: Full-Time, Senior Leadership Role (Contractual, renewable based on performance and project needs)

Apply by: Oct 20, 2025

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https://www.samgnya.in.

Role Summary:

As the CTO of IITM CDOT Samgnya Technologies Foundation, you will spearhead the technological roadmap and innovation strategy, driving R&D breakthroughs in quantum communication. Reporting directly to the CEO, you will lead a team of quantum experts to develop and deploy secure quantum systems, integrate them with classical networks, and ensure alignment with NQM deliverables. This role requires a visionary technologist with deep quantum expertise, capable of bridging theoretical research with real-world applications, while mentoring startups and influencing policy. You will be instrumental in achieving milestones like long-distance QKD and quantum-secure satellite communications, positioning the Foundation as a hub for global quantum advancements.

Key Responsibilities:

•**Technology Roadmap Development:** Define and update a multi-year tech strategy for quantum communication, incorporating NQM targets like 2000 km QKD networks, quantum repeaters, and entangled photon sources; conduct horizon scanning for emerging trends (e.g., post-quantum cryptography hybrids).

•**R&D Leadership:** Oversee experimental and theoretical research in quantum protocols (e.g., BB84, E91, MDI-QKD), hardware development (e.g., single-photon detectors, fiber-optic quantum channels), and software simulations; lead prototype testing in IITMRP labs and field trials.

•**Team Management and Mentorship:** Build and guide a high-caliber R&D team, including physicists, engineers, and postdocs; provide technical mentorship to startups via incubation programs, evaluating proposals and facilitating tech transfer.

•**Collaboration and Integration:** Partner with IIT Madras researchers, C-DoT engineers, DST officials, and industry (e.g., photonics firms) to co-develop integrated systems; facilitate joint projects with other NQM hubs (e.g., quantum computing at IISc).

•**Innovation and IP Management:** Drive patent filings, publications in top journals (e.g., Nature Photonics), and open-source contributions; manage IP portfolios for quantum technologies, ensuring commercialization pathways.

•**Ethical and Standards Oversight:** Address security, privacy, and ethical issues in quantum deployments (e.g., quantum-resistant encryption standards); contribute to national and international quantum standards bodies (e.g., ITU, ETSI).

•**Resource and Infrastructure Optimization:** Allocate R&D budgets for equipment procurement (e.g., laser systems, cryogenic coolers); oversee lab safety, data management, and

computational resources for quantum simulations.

•**Monitoring and Reporting:** Track project KPIs (e.g., fidelity rates in quantum transmissions, error correction efficiencies); prepare technical reports for the CEO, DST, and peer reviews, incorporating data from experiments.

•**Outreach and Capacity Building:** Lead technical workshops, hackathons, and academic collaborations; represent the Foundation at global conferences (e.g., Quantum World Congress) to foster knowledge exchange.

•**Risk and Future-Proofing:** Identify technical risks (e.g., decoherence challenges) and mitigation strategies; explore integrations with AI/ML for enhanced quantum error correction.

Qualifications and Experience:

•**Educational Background:** PhD in Quantum Physics, Quantum Information Science, Electrical Engineering, or a related field, with specialization in quantum optics or communication.

•**Professional Experience:** 12-20 years in quantum R&D, including 5+ years in leadership roles at academic labs, quantum startups, or industry (e.g., IBM Quantum, Google Quantum AI equivalents); experience leading government-funded projects (e.g., DST, EU Quantum programs).

•**Technical Expertise:** Hands-on proficiency in quantum hardware (e.g., photonics, superconductors) and software (e.g., Qiskit, Cirq); strong publication record (h-index
>20 preferred) and grant-winning history.