

Certificates for Information Technology Officials

CITO

Overview and Rollout Plan 2024



NGE Solutions
Building the Next Generation Enterprise

CITO Program developed by NGE Solutions Team

ICT Leadership
Education for
AI-Driven
Initiatives
and Enterprises

Online and Hands-On
Workshops

Introduction

The objective of CITO Program is to educate professionals in AI-Driven Initiatives and Enterprises in the public as well as private sectors. The focus is on exploring the role of emerging technologies (i.e., AI, Blockchains, Cloud Computing, Semantic Web, Metaverse, and others) in transforming enterprises around the globe. The highly flexible CITO courses are well-suited for mid-life career changers as well as young entrepreneurs who want to play leadership roles in the digital revolution. The UN-based CITO Program can also support capacity building initiatives in developing countries. Figure 1 displays the overall structure of the CITO Programs.

CITO consists of several Specializations (CITO1, CITO2, CITO3, etc). CITO1 provides the basic concepts and vocabulary needed for most practitioners in the digital age. CITO1 is the core requirement for all other CITO Specializations. It can be waived based on evidence.

The Intermediate Level Courses are clustered into several specializations (CITO2, CITO3, etc.), as displayed in Figure 1. A student can pursue several specializations in any order. Advanced Specializations focus on IT Projects & Directed Studies that integrate the knowledge from lower-level courses to address real life organizational and societal challenges.

Students can build your own (BYO) Specializations by selecting different courses from different topic areas represented by existing fixed specializations. BYO, displayed as CITO99 in Figure 1, allows the students to construct areas of study that fit their own needs and ambitions.

Each CITO Specialization consists of 6 courses, two months per course. For example, CITO1 offers 6 courses (CITO101, CITO102 ,,, CITO106). A full-time working individual can take two courses simultaneously and obtain a CITO Certificate in 6 Months.

Each course consists of 8 online sessions, one session per week. Three hour of study is required for each session. Home-works, projects and hands-on experiments are essential part of each course. At completion of each course, a student is awarded a Certificate of Course Completion.

All classes and synchronous instructions will be online. No on-site courses are envisioned.

FIGURE 1

CITO PROGRAM – THE BIG PICTURE

Advance Specializations (IT Projects & Directed Studies)

Large and complex projects in Smart Cities & Communities, Enterprise 4.0, B2B Integrations and others that require a mixture of directed studies and hands on problem solutions, preferably in partnership with industry organizations. Details will be specified later.

Intermediate Level Specializations and Courses (Each Specialization has 6 Courses)

- CITO99: Build Own Specialization (6 courses, one must be Capstone)
- CITO6: Data Sciences and Analytics - Foundations of AI
- CITO5: Computer Science & Engineering
- CITO4: Advanced Digital Technology Principles and Applications
- CITO3: AI-Driven Enterprise Engineering and Management
- CITO2: Cyber Security Engineering and Management

Basic Certificate

CITO1: Foundations of Digital Transformation Towards AI-Driven Enterprises

- Launch Date: April 1, 2024. We will offer few Specializations in 2024 (e.g., Digital Transformations, Cyber Security, Enterprise Engineering & Management) as displayed below.
- Each course will have a Course Lead (CL) who will be a subject matter expert. CL will prepare and manage all the course contents (lectures, homeworks, projects, exams, hands-on labs, etc.).
- The CL will attend 3 sessions of a course (Introduction, Midterm, Final). These highly interactive sessions may last for 90 minutes.
- An experienced instructor will teach a course on a weekly basis. Each week, the instructor will start the class and answer questions, etc. Each weekly synchronous sessions will be 30 minutes. The instructor will also manage weekly course activities (emails, etc).
- Typical class size will be 30 students per class in 2024.
- The courses will be initially delivered through Moodle and Zoom. The SPACE Platform will serve as the Lab and Sandbox for all CITO courses. The NGE Solutions Team will support the SPACE Platform and also serve as the initial course instructors.
- All CITO courses will have a hands-on workshop format that will be a combination of online synchronous and asynchronous deliveries. The workshops will be supported by the SPACE Platform, Detailed information and demonstrations of SPACE will be offered in January.

A Possible Schedule

Figure2 shows a possible schedule for four launches in 2024. The first three (CITO1, CITO2 and CITO3) are introduced gradually just to understand the demand. The fourth (CITO4) is launched fully due to anticipated demand (i.e., agreement with Nortal & HU@Dubai). This schedule can be adjusted based on demand.

Specializations	April	May	June	July	August	Sept	Oct	Nov	Dec
CITO1 (Foundations of Digital Transformation Towards AI-Driven Enterprises)	CITO101 (Intro to Digital Technologies)			CITO102 (Digital Enterprises and Transformations)			CITO103 (AI Overview and Applications)		
CITO2 (Cybersecurity)				CITO201 (Cybersecurity Principles)			CITO203 (Cybersecurity for Data Protection)		
CITO3 (AI-Driven Enterprise Engineering and Management)				CITO304: Digital Media			CITO305 Techpreneurship		

Figure 2: A Possible 2024 Rollout Plan

APPENDIX A: CITO Program Details

This Online Program is intended to educate IT Officials (ITOs) in the public as well as private sectors especially in the underserved segments. The Program consists of a series of short online courses that emphasize the use of emerging technologies in eGovernment and eBusiness. Comprehensive online resources will be used for hands-on experiments and investigations. The attendees will be able to lead the eGovernment and eBusiness initiatives by using the extensive resources provided by the Online Program.

- CITO1 provides the basic education needed for most practitioners in the digital age. CITO1 is the requirement for all other CITO certificates. It can be waived based student credentials.
- The courses are clustered into several specializations (CITO2, CITO3, etc). A student can pursue several specializations in any order.
- Each course consists of 8 sessions. Three hour of study is required for each session.
- HomeWorks, Projects and Quizzes/Exams are essential parts of all courses

APPENDIX A: (Cont.)

Outlines of the CITO Specializations

CITO1: Foundations of Digital Transformation Towards AI-Driven Enterprises (Basic Certificate for IT Officials)

CITO101: Introduction to Digital Technologies and Technology Platforms

CITO102: Smart Enterprises and Digital Transformations: How Digital Technologies can be used to Plan, Engineer and Manage Any Organization Anywhere in the World

CITO103: Database Technologies Overview

CITO104: Introduction to Artificial Intelligence (AI): Foundational AI concepts and innovative AI applications

CITO105: Introduction to Digital Enterprise Architectures and Cloud Computing

CITO2: Cyber Security Engineering and Management Specialization

CITO201: Cybersecurity Principles: Addressing the vital issues of protecting digital assets and infrastructure from cyber threats

CITO202: Cyber Security Planning and Management

CITO203 - CITO205: 1: Any 3 courses from any other CITO Specialization that focus on emerging technologies and enterprise models (e.g., AI, Databases, Cloud Computing, Etc), (CITO103, CITO104, CITO105). Approval of an advisor

CITO206: Capstone: A Practice Project based on any four CITO4 Courses. Examples include Cyber Security in Large and Complex Enterprises such as Smart Cities and B2B Exchanges)

CITO3: AI-Driven Enterprise Engineering and Management

CITO301: Strategic Planning for Digital Transformation

CITO302: Enterprise Architecture and Integration

CITO303: Large scale and Complex Enterprises – B2B, smart cities, Exchanges

CITO304: Digital Media: Exploring digital content creation, multimedia design, and digital marketing.

CITO305: Techpreneurship: The principles of starting and managing digital businesses

CITO306: Technology Management and Industry Analysis

CITO4: Advanced Digital Technology Principles and Applications

CITO401: Advanced Artificial Intelligence (AI): Evolution of AI and advanced AI concepts, including machine learning, deep learning & Generative AI (including Large Language Models).

CITO402: Advanced Databases – Big Data, Distributed databases, Graph Databases and Database Trends

CITO403: Blockchain Concepts & Applications: Exploring blockchain technology, its uses, and implications in sectors such as finance and supply chain management.

CITO404: Advanced Technology Platforms (Internet of Things & the Cloud): Comprehensive coverage of IoT, including IoT embedded computing systems, wireless intelligent sensors networks, and IoT protocols.

CITO405: Evolution of Web Technologies, Integrated Enterprises and B2B Exchanges

CITO5: Computer Science & Engineering Specialization

CITO501: Computer Science: Covering fundamental computer science concepts and algorithms.

CITO502: Software Engineering: Providing skills in software development, coding, and software lifecycle management.

CITO503: Computer Engineering: Focusing on the integration of hardware and software in computing systems.

CITO504: Robotics: Focusing on the principles of robotics, automation, and their applications in various industries.

CITO505: Virtual Reality (VR): Delving into VR technology and its applications in various domains, such as education and healthcare.

CITO506: Space Technology: Examining the role of technology in space exploration and satellite communications.

CITO6: Data Sciences and Analytics Specialization – Foundations of AI

CITO601: Data Science: Analyzing the processes of data collection, cleansing, and interpretation, and its utilization for informed decision-making.

CITO602: Big Data: Understanding the challenges and opportunities presented by the analysis of large datasets

CITO603+: More from Analytics

APPENDIX B: An eFactory and Lab to Support the Education

We will offer CITO (Certificates for IT Officials) by using the training and consulting platform presented in Figure1. At the core of this platform is an eFactory and a Lab that enables the beginners to launch successful digital enterprises and initiatives in any sector anywhere in the world (Business Scenario1) and then pursue other scenarios as needed. For example, additional CITO focus on Analysis and Implementations of Digital Transformations (Business Scenario2), Detailed Planning and Deployment of Large Scale Projects (Business Scenario3), and Management of the Growth through B2B Partnerships and Innovations (Business Scenario4). The students do not need to follow this methodology strictly. They may start with S4 (Scenario4) and then initiate S1 and S2 based on their background, work assignments and other needs. For a quick overview of this flexible Practice, please watch the short video clip shown in Figure1 and glance at the Sample Usage Scenarios in Exhibit1. The main characteristics of CITO courses are:

- A course may concentrate on one Usage Scenario or may utilize multiple capabilities from multiple scenarios to develop a new customized scenario.
- All CITO courses involve some hands-on experiments by using the SPACE eFactory, and/or integrate SPACE capabilities with other tools to create unique learning experiences.

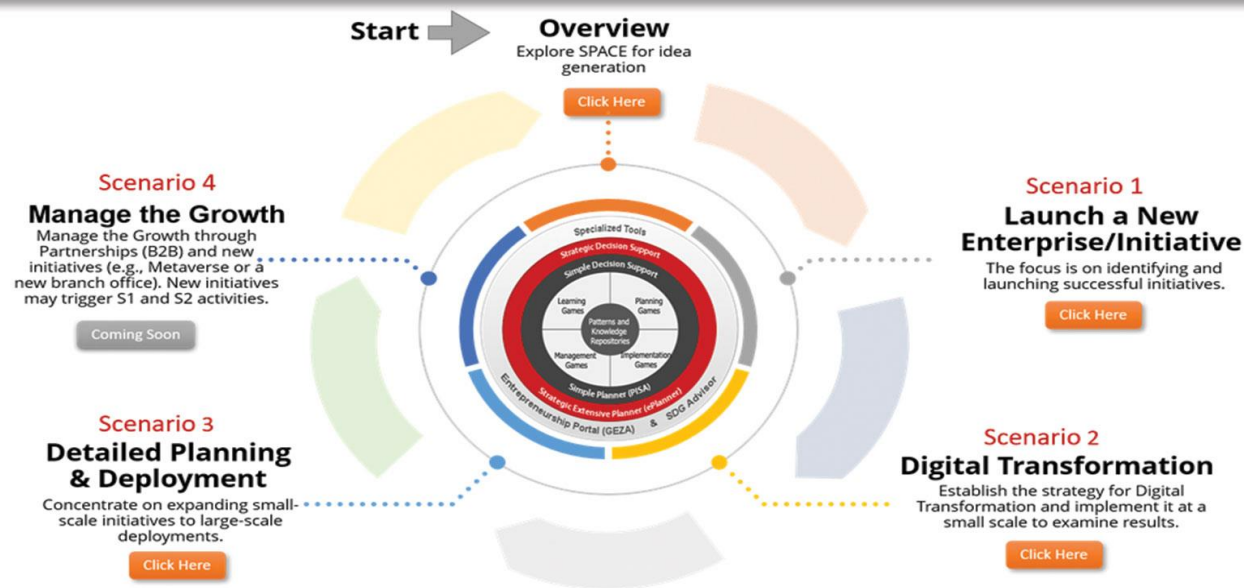


Figure1: An eFactory and Lab for Strategic Planning, Architecture and Controls of Smart Digital Enterprises (See 2.5 Minute Videoclip)

[Watch Now](#)

Exhibit 1

Sample Usage Scenarios and Experiments Supported by the eFactory and Lab

Sample Usage Scenarios

Scenario 1: Launch a New Enterprise/Initiative

1. How to launch a new small business.
2. How to evaluate if the new business will succeed.
3. How to start a new Branch office in any sector anywhere in the world.
4. Determine if the business will be able to succeed in the political and business landscape.
5. Many more.

Scenario 2: Digital Transformation

1. Which functional areas should be transformed and how.
2. What will be the main promises and pitfalls of the Transformation.
3. How will the transformation be planned and implemented.
4. What will be implementation details in terms of Applications, Computing Platforms, Networks and Cloud Services.
5. Many more.

Scenario 3: Detailed Planning & Deployment

1. How to launch a simple service from a single provider anywhere in the world.
2. How to launch an enterprise with multiple services from a single provider anywhere in the world.
3. How can I quickly generate a working Portal for all of the above.
4. How can I customize this portal and collaborate with others.

Scenario 4: Manage the Growth

1. How can the systems and services be integrated within an enterprise.
2. How to integrate our business with other businesses anywhere in the world.
3. How can the growth be managed properly.
4. Many other considerations in a Global Village.

Scenario 5: Build Your Own Scenario

1. How to combine different tools from the eFactory into your own scenarios
2. Other BYO scenarios in a Smart Global Village

Exhibit 2

How are the CITO Courses Related to SPACE Lab & NGE Publications (Course Materials)

CITO Specializations	SPACE Scenarios	NGES Publications
CITO1: Foundations of Digital Transformation Towards AI-Driven Enterprises	Scenario 1 &2	Enterprise Planning
CITO4: Digital Technology Principles and Applications Specialization	Scenario 2 & 3	E-Business Handbook Modules (Updated)
CITO3: AI-Driven Enterprise Engineering and Management Specialization	Scenario 3 & 4	Enterprise Architecture & Engg
CITO2: Cyber Security Engineering and Management Specialization	Scenario 5	Cyber Security Management Textbook
Others?		

To view SPACE Scenarios [Click here](#)