

## **GSAW 2024 Tutorial B: Full Day**

### Addressing System Complexity Development with Platform Engineering

#### **Overview:**

*Short Abstract* : Platform economy has taken over many industries. It essentially has a network effect on the way services between industries are consumed. Instead of competing, businesses often leverage each other's strengths to enhance their business. They engage each other in cooptation rather than competition.

*Modules*: Day long Platform Engineering tutorial will cover core main modules and tentative schedule as follow. Course break can be adjusted to align other tutorials.

#### *Outline:*

#### **Module 1: Introduction to Platform Concept**

- Definition of a software platform
- Characteristics of a software platform
- Types of software platforms
- Concepts in platform thinking
- Platform ecosystem
- Challenges in Software Design
- Framework vs software platform vs software application

#### **Module 2: Designing Reusable Assets using Domain Driven Design (DDD)**

- Reusable Assets in Platforms
- Ubiquitous language and Bounded Context
- Reusable Services
- Workshop: Identify the reusable services for a given platform business

#### **Coffee Break**

#### **Module 3: Designing Reusable Services using DDD – Aggregates and System**

- Principles of Reusable Frameworks
- Shared Libraries
- Decoupling Reusable Services using tactical design techniques and context mapping
- Aggregates
- Domain Events
- Orchestrating and Choreographing Reusable Services

#### **Lunch Break**

#### **Module 4: Cloud – Common services and capabilities**

- Containers & VMS
- Cloud Technology Key Terms
- Cloud Deployments
- Architectural Implications
- Security for Cloud Computing

#### **Module 5: Chaos Engineering (CE)**

- What is Chaos Engineering?
- Understanding the complex environment
- Chaos Engineering Principles

#### **Coffee Break**

## **Module 6: CE and Sociotechnical systems**

- Creating hypotheses
- Developing CE Experiments for AWS cloud space
- CE Use Cases
- Maturity and exemplary experiments

### **Q&A, Course Wrap-up, and Feedback Collection**

#### **Instructor:**

Hasan Yasar, Software Engineering Institute, Carnegie Mellon University

#### **Biography:**

**Hasan Yasar** is the Technical Director of the Continuous Deployment of Capability group at the Software Engineering Institute, CMU. Hasan leads an engineering group to enable, accelerate and assure Transformation at the speed of relevance by leveraging, DevSecOps, Agile, Lean AI/ML, and other emerging technologies to create a Smart and secure Software Platform/Pipeline. Hasan has more than 30 years of experience as a senior security engineer, software engineer, software architect, and manager in all phases of secure software development and information modeling processes. He is also an Adjunct Faculty member at CMU's Heinz Collage and Software and Societal Systems where he currently teaches "Software and Security" , "Applied Distributed Systems" and "DevOps & CI". Hasan also serves various IEEE/ISO, The Open Group and NIST standard developments. He recently co-authored IEEE 2675 DevOps standard, while working on IEEE 828 configuration management, IEEE 982.1 Software Reliability, ISO Wkg 29 Agile, and DevOps standard development."

#### **Description of Intended Audience and Recommended Prerequisites:**

*Target Audience Profile:* DevOps, DevSecOps engineers, Cloud Engineers, Program Managers, Systems Engineers, Software Engineers Security Specialist.

*Prior Knowledge:* Basic experience in developing systems using any programming language such as Python, C#, Java or C++. Basic knowledge of UML, Understanding of Agile and DevSecOps.

#### **What can Attendees Expect to Learn:**

- Learn and discover new term Platform Engineering concept.
- Understand system's platform economy and its benefits for the targeted systems.
- Learn how to develop reusable assets for software platforms using the Domain-driven-design (DDD) for the systems.
- Gain understanding for deploying and monitoring platforms via DevOps in Cloud environment.
- Understand Chaos Engineering fundamentals and ability apply experiments in platform operations.