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# ICSGoat

## A Damn Vulnerable ICS Infrastructure

# About Us

## Shantanu Kale

- Infrastructure Lead @ INE
- Published Research at Black Hat US/Asia Arsenal and DEFCON 30 Demo Labs
- Co-trainer in training at Seasides Goa, Rootcon 16 & 17
- Core Contributor to AWSGoat
- Strong roots in cloud and network penetration testing, vulnerability scanning, and Open Source Intelligence Techniques

# About Us

## Divya Nain

- Software Engineer @ INE
- Published Research at Black Hat Asia Arsenal
- Core contributor to AzureGoat and GCPGoat
- Co-trainer in training at Seasides Goa
- Strong roots in cloud and network security


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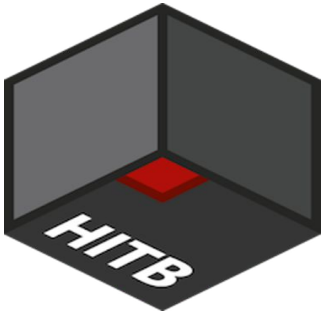
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VILLAGE


百度安全
DEF CON
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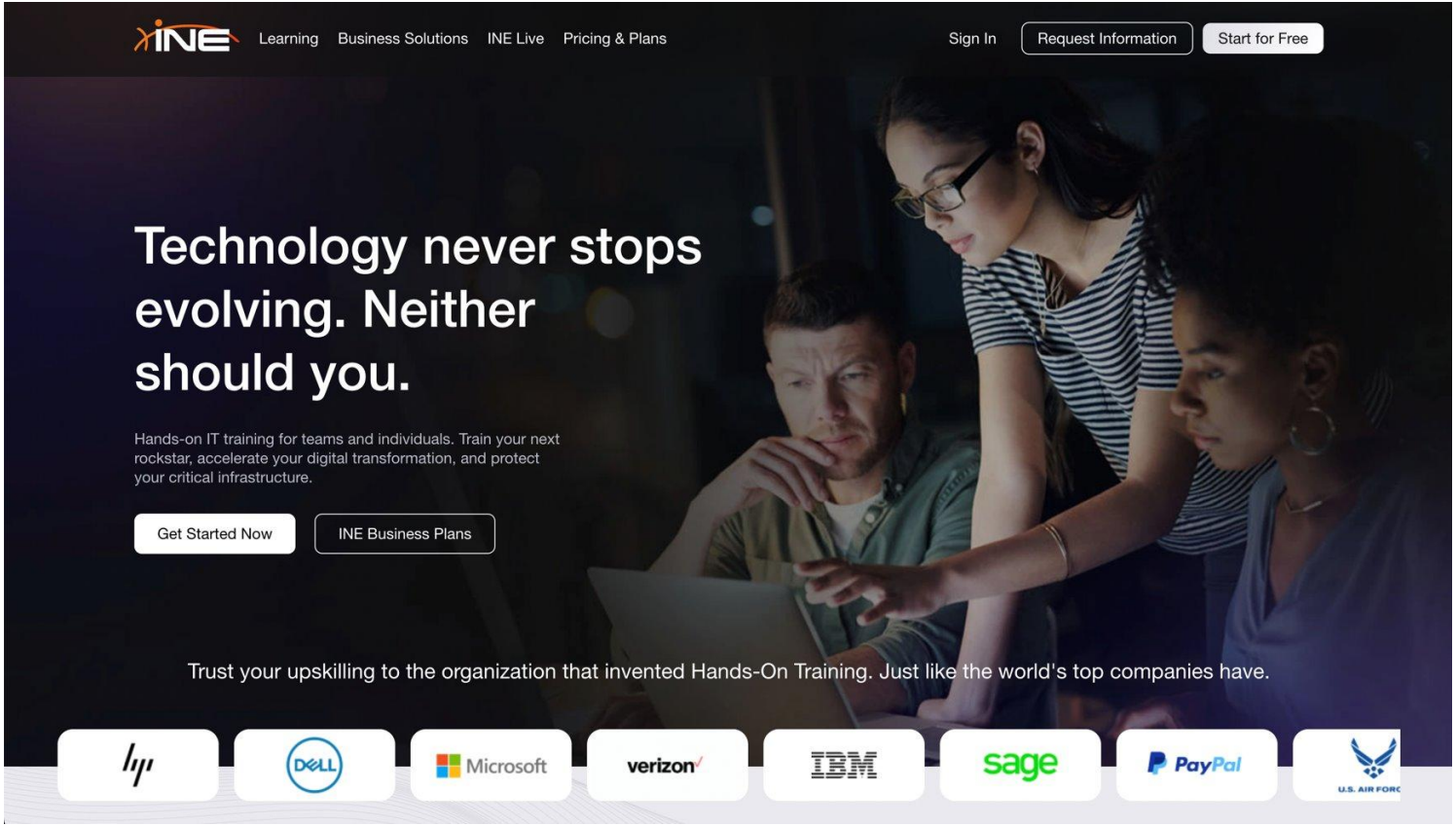
DEFCON


ROOTCON
Hacker Conference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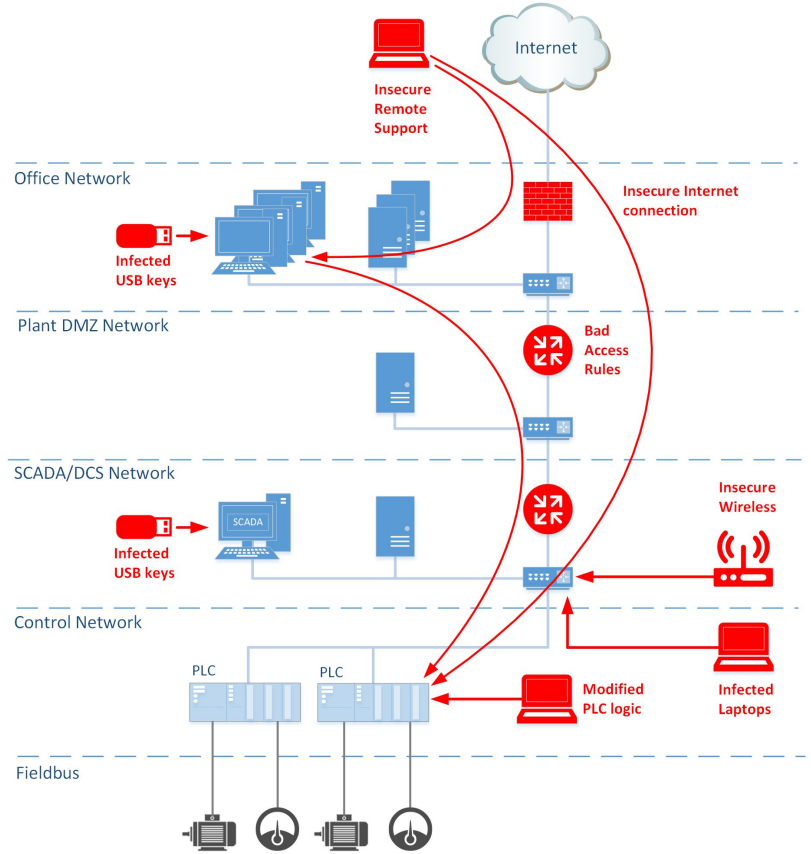
# Threatscape




Reference:
https://ics-cert.kaspersky.com/publications/reports/2017/03/28/threat-landscape-for-industrial-automation-systems-in-the-second-half-of-2016/

# The Motivation

- Training Needs
  - Basics and Fundamentals
  - Understanding ICS Protocols
  - Exploiting network misconfigurations
  - Exploiting popular ICS protocols like modbus, dnp3, mqtt, etc
  - What Next?
- Lack of expansive and realistic ICS Pentesting Environment
- Contribution from the open source community and security professionals

# Enter ICSGoat!

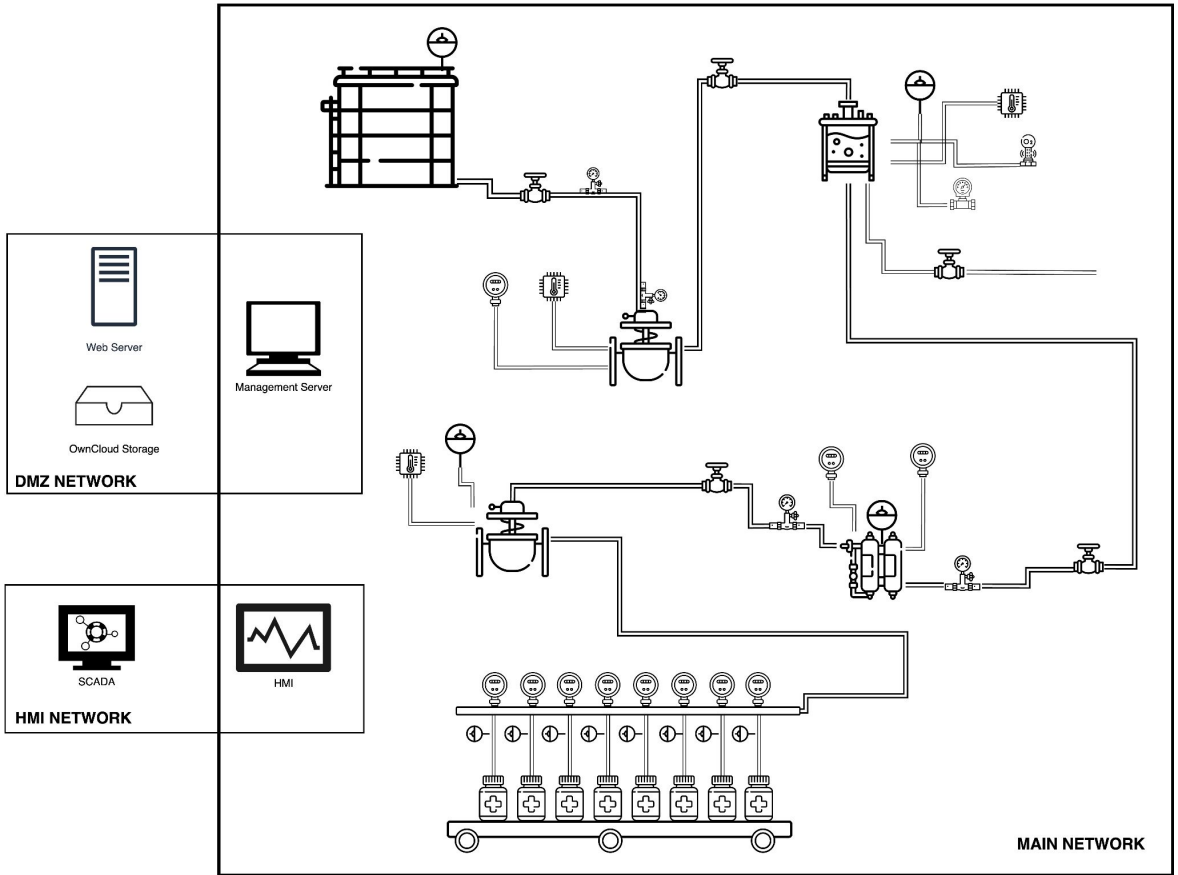
# ICSGoat: A Damn Vulnerable ICS Infrastructure

- Mimics real-world ICS infrastructure but with added vulnerabilities
- Multiple popularly used protocols are simulated
- Focused on a black box approach
- Understand possible threats to critical ICS infrastructure

# ICSGoat Protocols

- MODBUS
- DNP3
- OPCUA
- MQTT

# ICSGoat Infra Diagram



# Building Realistic ICS Scenario: Challenges

- Unavailability of publicly available resources
- Required modifications to protocol libraries
- Containerizing protocol simulations
- Incorporating multiple protocols in a single scenario
- Required custom made SCADA and HMI system

# Goat Family

AWSGoat

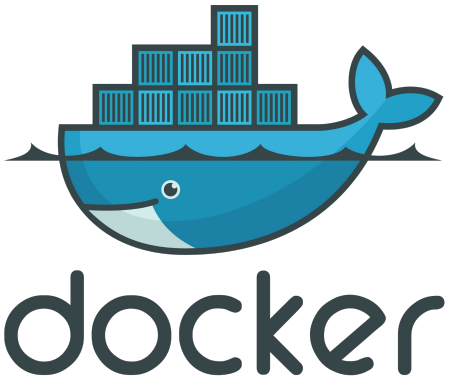
GCPGoat

AzureGoat

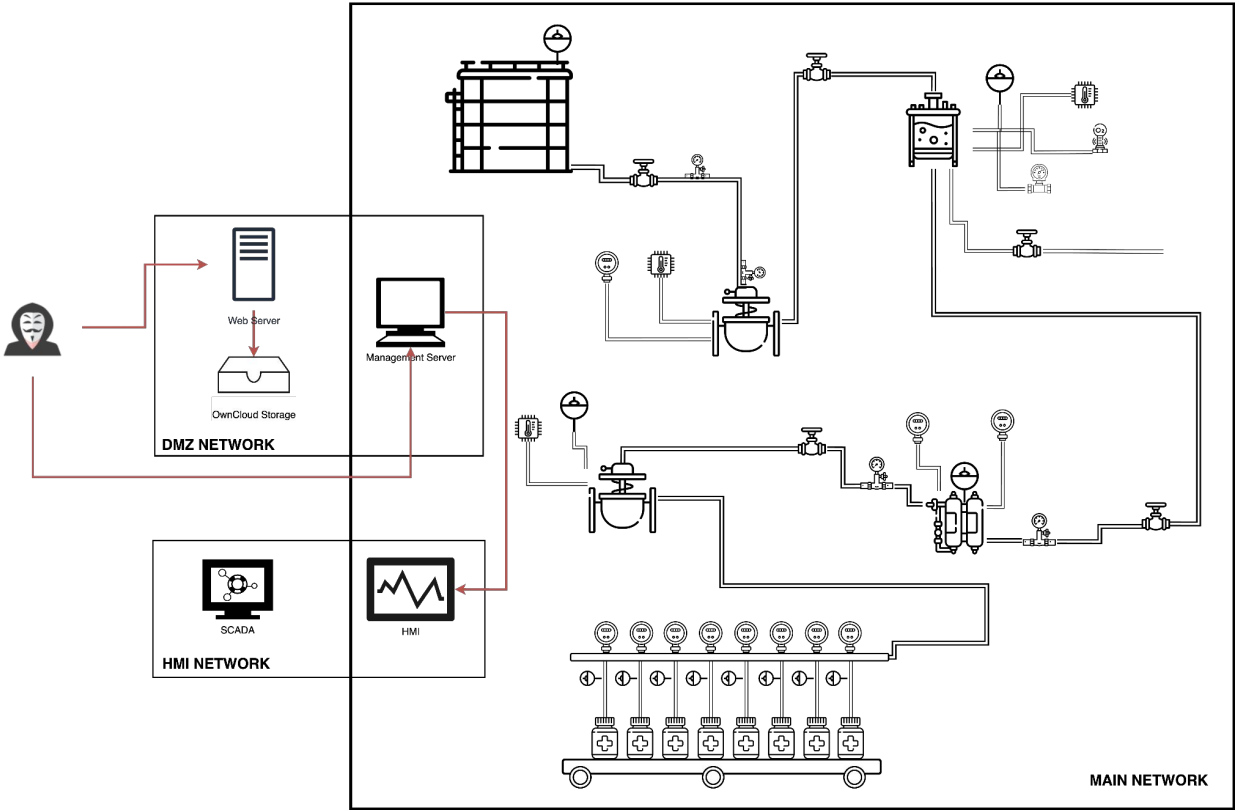
# Installation

- Repository: https://github.com/ine-labs/ICSGoat

- Manual Installation (Linux/Windows Machine)
  - Requirements
    - Docker (Docker Compose)
    - Git
  - Commands:
    - git clone https://github.com/ine-labs/ICSGoat
    - cd ICSGoat
    - docker compose up



# Initial Attack Vector



# DEMO

# Future Plans

- Work with the community to introduce more protocols to ICSGoat
- Utilize ICSGoat to create realistic scenarios with the help of industry professionals
- Co-exist with other projects

# Thanks

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