Architecting the Future: Building Secure Systems in a Generative AI World

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January 2024

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"Trac"

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Who Am I?

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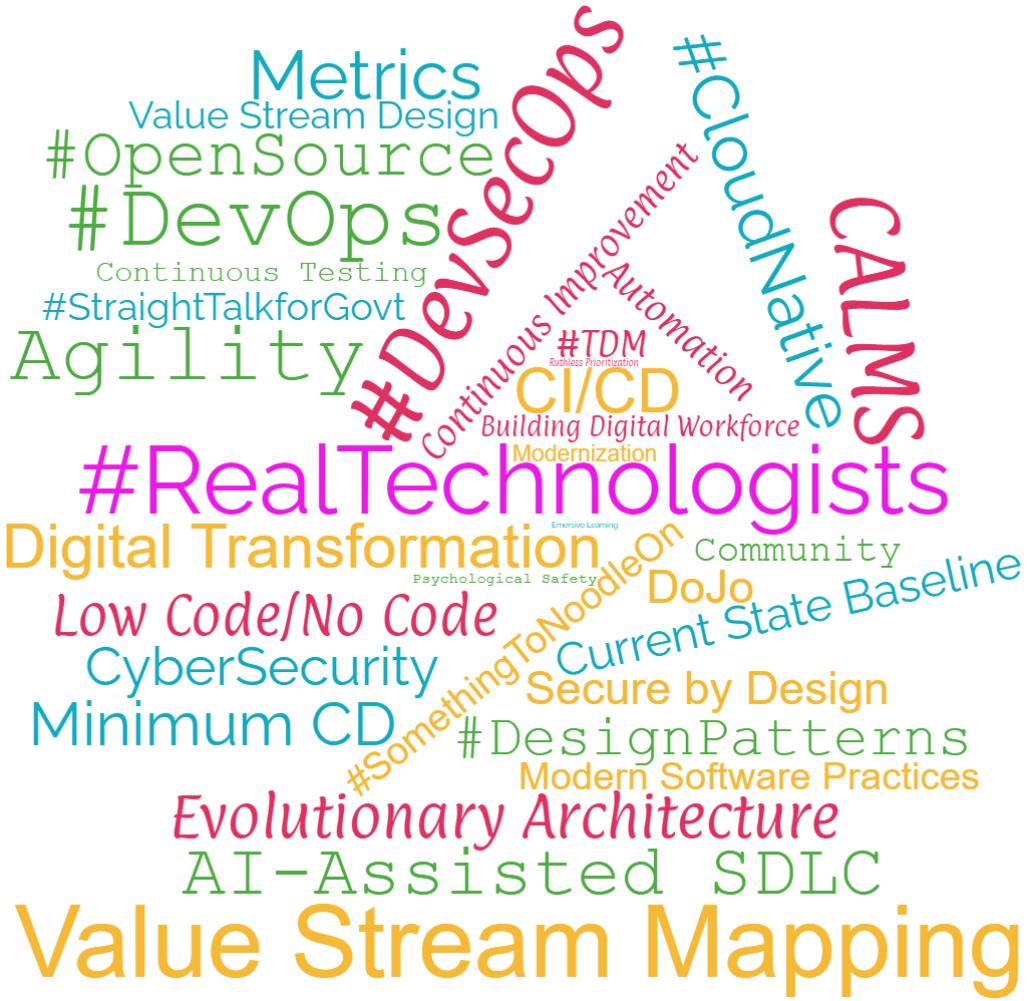

vsm consortium Influencer

AMBASSADOR DevOps Institute ADVANCING THE HUMANS OF DEVOPS

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The Rise of Generative AI

- Growing presence across sectors
- Both boon and a security challenge
- Urgency need to addressing these cybersecurity challenges

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Urgency in understanding and addressing challenges

Organizations dashing to provide guidance:

- OWASP - Open Web Application Security Project
- CISA - Cybersecurity and Infrastructure Security Agency
- NIST - National Institute of Standards and Technology

Everyone must be GAI Savvy

Stakeholder education

Everyone grasps the potential security risks

Organization wide concern; not just IT

Beyond GAI Education…

What are the architectural considerations and principles for adopting GAI ?

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Start Secure

Secure by Design - The Foundation

- Identify Key Security Objectives
- Focus on Assets Needing Protection
- Categorize and Prioritize Resources
- Align with Specific Threats

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Defense in Depth - Layered Security

- Multi-Layered Defense
- Security Controls at Various System Layers
- Increase Difficulty for Penetration
- Redundancy in Security Measures

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Automate and Verify

- Automate Security Controls
- Reduce of Human Lag in Threat Response
- Adopt of Zero Trust Architecture (ZTA)
- Apply Least Privilege Principle

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Train Smart

Training Smart for GAI

- Data is the Foundation for GAI Models
- Risks of Compromised or Mismanaged Data
- Data Classification
- Ethical Audits for Bias Detection
- Proactive Implementation for Risk Mitigation

Keep a Strong Backbone

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GAI is increasingly sophisticated

Models are engineered to understand and respond

Generative models based on neural networks

Generated content mimics human language and decision-making

Nefarious actors are leveraging GPT models as well

Continuous Supervision!

- Understanding Normal Behavior
- Comprehensive Logging for Training and Forensics
- Determining Log Storage Duration
- Behavior Analysis and Automated Alerting

Humans in the loop

Challenges and Risks

Early Use of Code Generation for Vulnerability Injection

Complexity of GAI Models Increases Risk

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Critical Role of Human Oversight

- Humans-in-the-Loop are Essential
- Static Code Analysis (SCA)
- Code Reviews as a Security Practice

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Call to Action – Your Next Steps

- **Plan** - Educate your team, understand the risks, and plan your “Secure by Design” architecture
- **Do:** Implement your security measures, layer your defenses, and launch your Generative AI projects
- **Check:** Monitor in real-time, log comprehensively, and audit periodically
- **Act:** Adjust, improve, and evolve your strategy as you learn from the checks

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What I need from you

- Share your organization's story and lessons learned
- Continue to share out new use cases and new tools

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