PROFESSOR: AARON JACKSON
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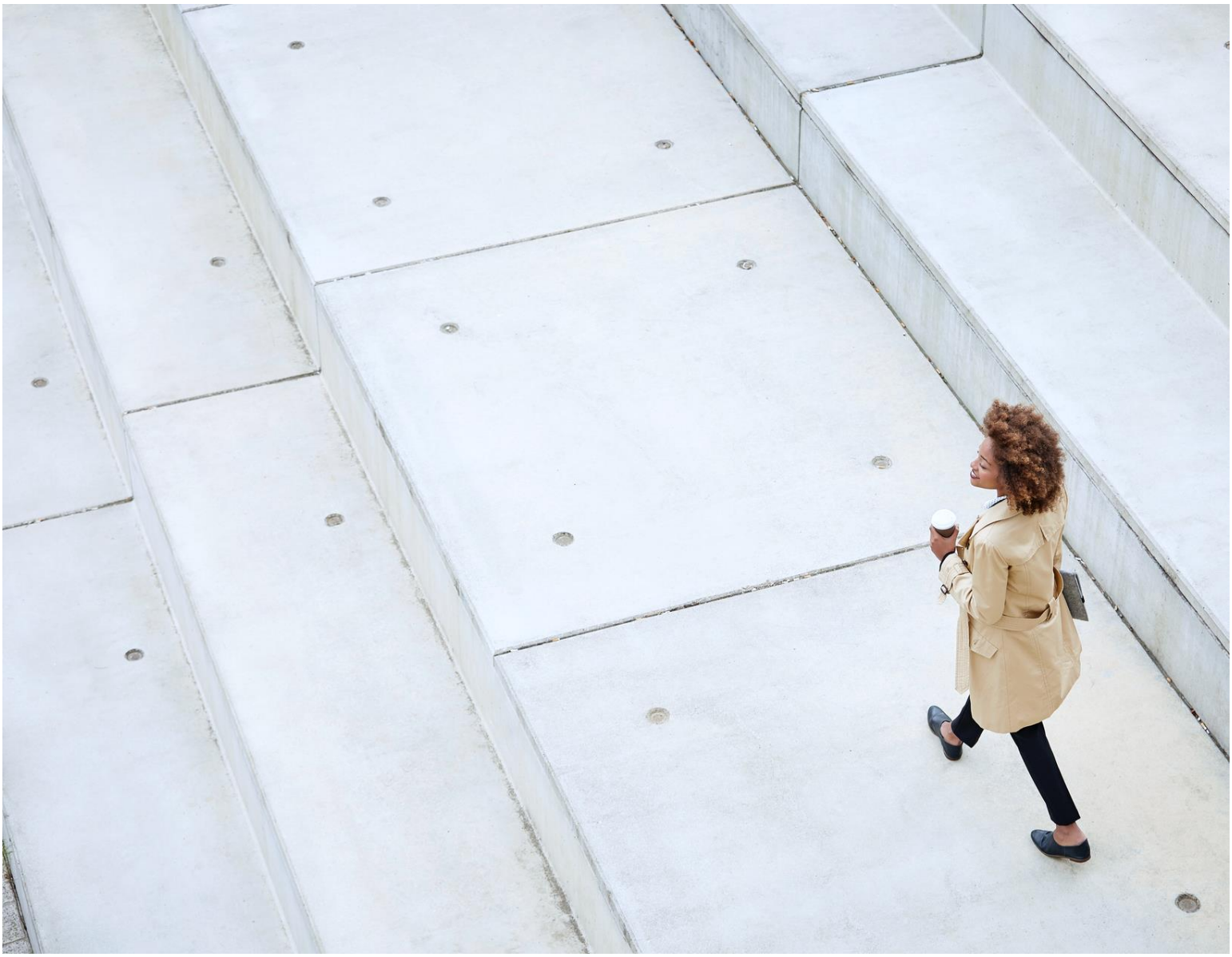
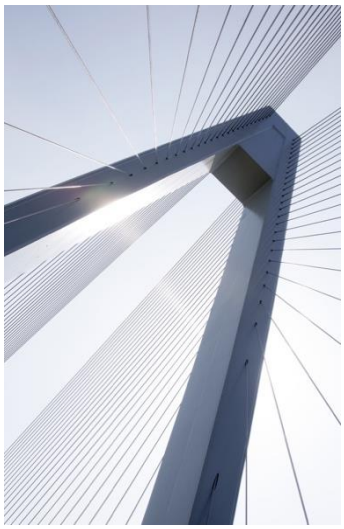
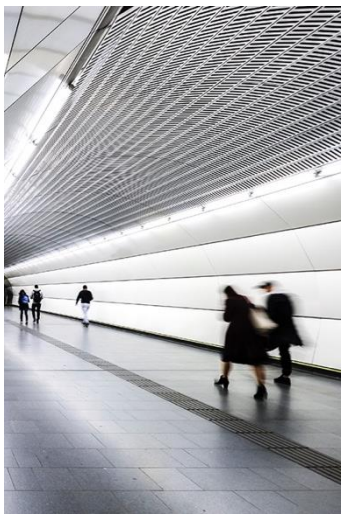
# HUNTER KIRK
# ITT-221







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# 1. ANSIBLE

Ansible is an open-source Python-based tool that uses command-line automation for IT solutions. It allows administrators to define system settings once and apply them across all machines in the network, making it useful for server configuration, software installation, managing updates, and coordinating deployment workflows (Redhat, 2024).

Proviso 1: To allow Ansible to access a remote system, administrators must ensure it is configured correctly. If the SSH is not configured in the appropriate manner or certain credentials are missing, then running a command with Ansible will result in failure (Redhat, 2024).

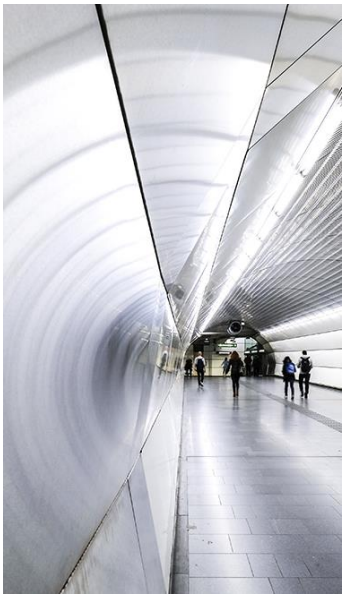
Proviso 2: However, if there is a logic issue in the playbook or the YAML syntax is incorrect, and the administrator attempts to run the Ansible command, it may fail to run and could push incorrect changes to multiple systems on the network (Amoany, 2023).

# 2. TERRAFORM

Terraform is an automation tool that allows administrators the ability to define infrastructure in code and have it built automatically. Instead of manually configuring servers, networks, databases, or storage, administrators can specify the desired setup in the configuration files, and Terraform creates it (GeeksforGeeks, 2023).

Proviso 1: Terraform relies on its state file to track infrastructure configuration. If the state file becomes corrupted or is tempered by an unauthorized user, it can cause deployment failures and expose sensitive materials and information. Due to the high risk of this automation application, administrators must ensure it is properly backed up and runs on a secure network (SquareOps, 2024).

Proviso 2: Terraform, when configured correctly, can rapidly deploy infrastructure across multiple environments, but if the configuration code is incorrect or contains logic errors, it can rapidly deploy incorrect changes and cause major network configuration issues or the loss of critical applications. The administrator must verify that the configuration file is tested in a controlled environment before rolling it out to a live network (HashiCorp, 2024).



# 3. JENKINS

Jenkins is open-source software that automates key steps in the software development cycle. It can automatically build, test, and deploy applications, making it a widely utilized asset in CI/CD pipelines. Jenkins continues running tasks as code changes, supporting fast and reliable development workflows (GeeksforGeeks, 2021).

Proviso 1: Jenkins relies on preexisting plugins and pipeline scripts to function correctly. However, if an incompatible or outdated plugin is used, automation steps may fail or even result in the release of broken applications. To prevent this, administrators should verify that all plugins are up to date and compatible before running any Jenkins operations on their network (Jenkins Project, 2025).

Proviso 2: Jenkins requires a secure configuration to work properly on a live network. If user authentication, permissions, or plugins are not properly verified and maintained, Jenkins will become vulnerable to unauthorized users and cybersecurity attacks.  To prevent this action, administrators must implement permissions and authentication practices to ensure that only qualified employees and professionals can access and use Jenkins (Jenkins Project, 2025).

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