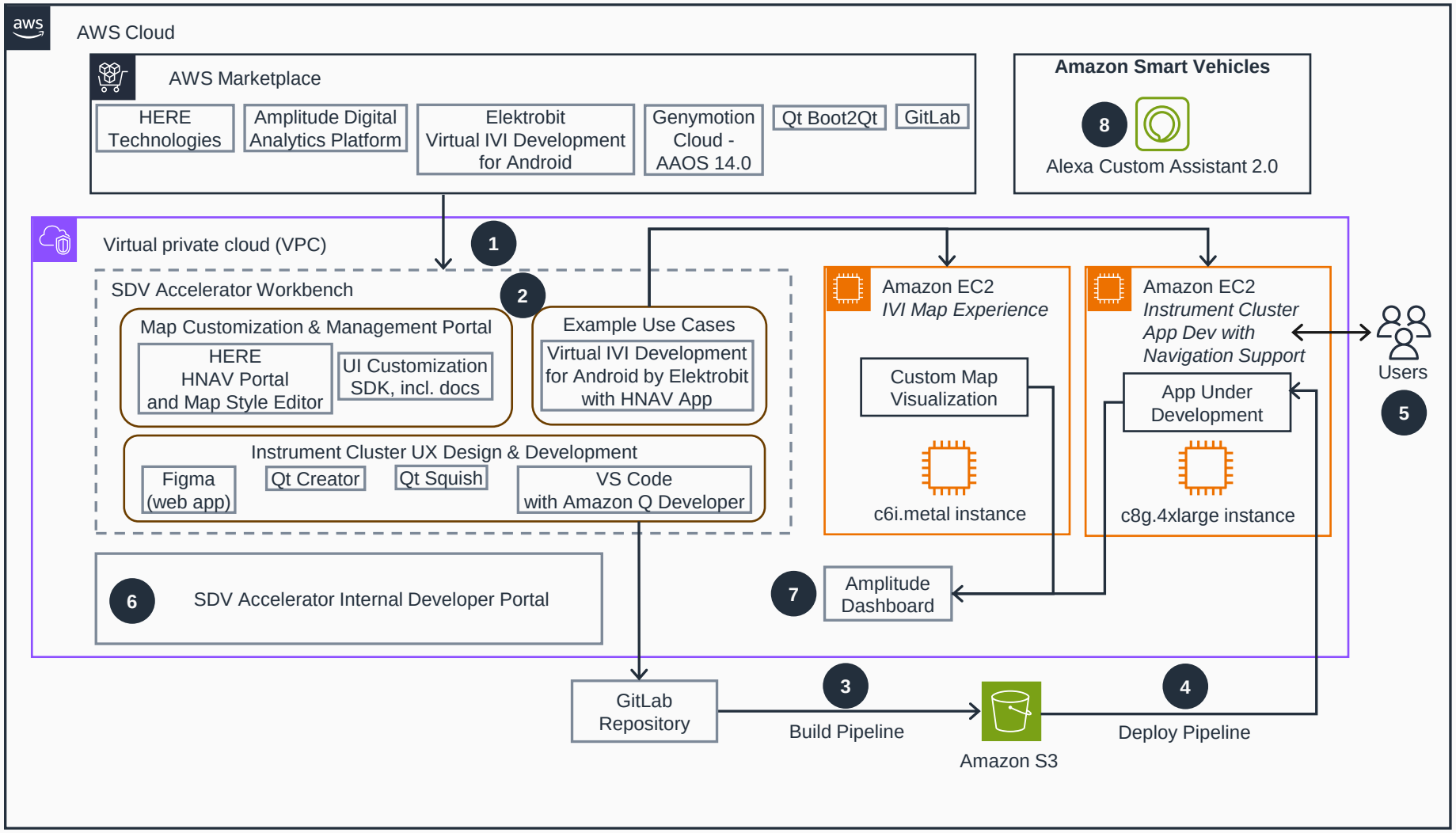
Guidance for Accelerating Automotive Software Development on AWS

SDV Accelerator Overview

This architecture diagram shows a high-level overview of the SDV Accelerator, an initiative that combines AWS Marketplace offerings with validated AWS Partner tools to help automotive OEMs accelerate their SDV development.



1. Access to AWS Partner offerings via **AWS Marketplace**, including trial and evaluation access, to these development tools and virtual targets allowing automotive OEM customers to more easily evaluate and test these offerings before customers engage in full deployment.
2. SDV Accelerator Workbench is an integrated development environment with tools and virtual targets running on **Amazon Elastic Compute Cloud (Amazon EC2)** instances designed to help support OEMs develop automotive software.
3. Continuous integration and deployment using pre-integrated build pipelines for helping OEMs accelerate their software development workflow.
4. Deploy and test software applications in virtual environments that replicate production conditions.
5. SDV Accelerator helps automotive OEM developers and testers to speed up their software development cycle, accelerating time-to-market for their vehicle solutions.
6. SDV Accelerator Internal Developer Portal based on Backstage.io, providing a single pane of glass to documentation, tools and virtual targets.
7. Amplitude tracks user behavior to guide product development decisions.
8. Customize in-car voice controls with Alexa Custom Assistant.

Reviewed for technical accuracy October 6, 2025

AWS Reference Architecture

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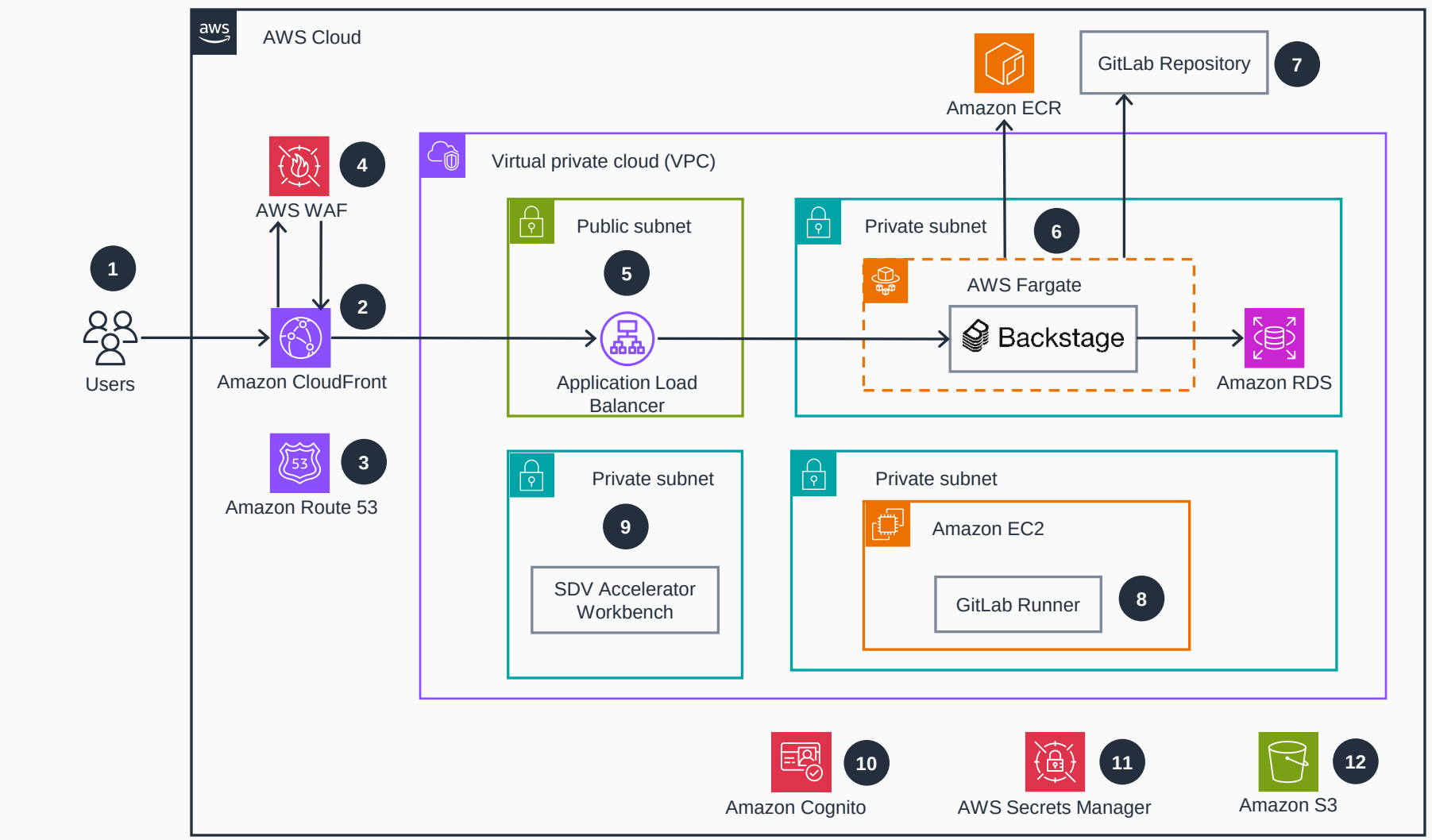
Internal Developer Portal Deployment Overview

This architecture diagram shows the deployment overview of an SDV Accelerator Internal Developer Portal (IDP) using AWS services.



1. SDV Accelerator Solution Guidance users access Backstage.io based IDP (Internal Developer Portal).
2. **Amazon CloudFront** caches IDP content globally, improving speed and reducing server load.
3. **Amazon Route 53** provides DNS services, health checks, and intelligent traffic routing.
4. **AWS Web Application Firewall (AWS WAF)** protects CloudFront-distributed content from web attacks and malicious traffic.
5. **Application Load Balancer** distributes incoming traffic across **AWS Fargate** containers to ensure high availability and scalability.
6. A Backstage-based IDP container runs on **AWS Fargate** using container images stored in **Amazon Elastic Container Registry (Amazon ECR)**. **Amazon Relational Database Service (Amazon RDS)** stores backend data.
7. Implement and maintain centralized version control, collaboration features, and CI/CD pipeline integration for software development and deployment with a GitLab repository.
8. Configure GitLab Runners to automate workflows triggered by GitLab repository events.
9. SDV Accelerator Environments deploy in private subnets.
10. **Amazon Cognito** provides secure authentication and authorization for portal access.
11. **AWS Secrets Manager** provides sensitive credentials management, such as license keys, for portal services.
12. **Amazon Simple Storage Service (Amazon S3)** provides durable data storage for Solution Guidance artifacts.

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AWS Reference Architecture