



# 7 Challenges & Big Questions

## for Effective Software Development and Devops

### - Enabling Teams, Managers, and Organizations

#### 1. *Ad-Hoc Testing/Debugging vs. Integration Testing*

**Challenge:** How to guarantee and maintain the quality of your software, while keeping high development velocity, developer creative freedom, and satisfying the real needs of end-users ?

**Recommendations:** Rely on unit, integration, and end-to-ends tests for key components of your architecture. Automate test-suite execution and application building at commit time.

#### 2. *Ad-Hoc Delivery vs. Continuous Delivery*

**Challenge:** When should applications be packaged and be ready for delivery ?

**Recommendations:** Application should be packaged frequently, and be ready to be deployed at all times. Keep multiple versions of your applications, snapshots and major releases, as separate bundles or images. Be ready to fire any version, in any environment, at any time.

#### 3. *Monolith vs Micro-Services Architecture*

**Challenge:** How to refactor a monolithic application to a cloud-native micro-services based distributed architecture ? How to create a flexible architecture that can scale to load, and optimizes productivity and available manpower ? How to be prepared to accommodate changes in business needs, and be capable of exploring new opportunities with rapid time-to-market ?

**Recommendations:** Identify semi-independent business areas and component parts with limited interaction. Segregate functionality in separate applications (*micro-services*), each with its own code base and GIT repository, that can be tested, packaged, deployed, and scaled independently. Define clear boundaries between micro-services, using distributed REST-APIs and message-based communication. Consider using reusable micro-services for non business specific functionality (middleware), for faster evolution and lowering the cost of refactoring.

#### 4. *Ad-Hoc Packaging vs. Containers*

**Challenge:** How to package applications for continuous delivery and to be cloud-native ?

**Recommendations:** Package application as (docker) images, versioned and stored in a registry. Deploy to one or more **Kubernetes** clusters on demand. Scale automatically as load requires.





## 5. On-Premises vs. in the Cloud

**Challenge:** How to create an integrated strategy to deploy workloads both on premises and on the cloud ? How to migrate from on-premises to the cloud, and vice-versa ?

**Recommendations:** Use same type of infrastructure, configuration, and deployment model, on-premises and in the cloud. Setup one or more **Kubernetes** clusters on-premises and in the cloud. Use tools that support the same approach to deploy in dev-test environment and in production, on-premises and in the cloud.

## 6. Single-Cloud vs Multi-Cloud

**Challenge:** How to avoid cloud and vendor lock-in ? How to deploy to multiple clouds from multiple provider in a uniform way ? How to migrate from one cloud to another ?

**Recommendations:** Use uniform deployment procedures and similar cluster runtimes. Avoid provider specific operations and APIs, and abstract provider services. Use tools that provide a uniform experience across multiple cloud-providers. Use reusable micro-services that can be deployed in the same cluster as business apps, and avoid or isolate cloud-provider specific services.

## 7. Custom Devops vs. PaaS Platform Support

**Challenge:** How to best and more consistently perform devops operations ? How to avoid wasting too much time and resources in setting up infrastructure, rather than building and managing business functionality ? How to make a seemly transition from development to production.

**Recommendations:** Avoid custom ad-hoc solutions for your devops operations and development pipelines. Use an integrated PaaS platform that offers a consist, simple, and well-supported approach to devops, application configuration, and CI/CD pipelines.

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## About Elnnovator

**Elnnovator.org** builds tools and provides consulting/professional services to enable organizations to build effective teams and software products. We help companies to make their cloud evolution, startups to build their dream products, and teams to increase the velocity of software development pipelines, from business idea to delivery.

Our expertise areas include: **cloud computing, micro-services architectures, missing-critical application development, CI/CD Pipelines, system integration, polyglot development, full-stack web development, and Java/Spring ecosystem.**

You should talk with us, if one or more of the following applies to you, your team, or your organization:

- I want to increase the velocity of my software development pipelines and the productivity of my team
- I want to build a culture of continuous integration&delivery in my team
- I want to transition from a monolithic architecture to a modern cloud-native micro-services based architecture
- I'm getting started with cloud technologies, including **Kubernetes** and containers, and I need expert advise and guidance for the journey
- I'm already using **Kubernetes**, and want to take the most benefit from it to perform devops and development effectively
- I want to make my organization multi-cloud ready, and avoid cloud-provider / vendor lock-in
- I'm pursuing an hybrid strategy on-premises → cloud
- I'm evaluating and looking for tools that can help my team to streamline development and transition fast from local dev-test environment, to production and the cloud
- I'm aware of some of the tools that **Elnnovator** promotes, such as **Kubernetes Cloud Manager PaaS**, and I will like to request a quick demo without commitment
- I have a business idea, and need an affordable technology to make it a reality with a fast time-to-market
- I want to train my team and increase the capabilities of our developers and devops staff
- I'm still not sure how **Elnnovator** can help, but I would like to have a quick chat to talk about the challenges I'm facing and my perceived needs for software development and effective team management

