

15ème  
édition de la  
**Journée  
Française  
des Tests  
Logiciels**



13 juin 2023



Beffroi de  
Montrouge

# Valider une migration technique majeure à l'échelle de l'entreprise

*Se préparer à tester avant, pendant et après*



Loïc ROMUALD ROBERT



Thibaut BRUSSEAU



**amadeus**

# Agenda

**01** Challenges

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**02** Strategy

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**03** Transformation

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**01** Challenges

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# Amadeus

## Who are We?



### 646+ Million

Total bookings processed using the Amadeus distribution platform



### 1.9+ Billion

Passengers boarded with Amadeus and Navitaire solutions



### 75,000+

(>1 Mio tps at peak time)  
Transactions per second processed in our main data center



Travel agencies,  
tour operators



Hotel  
properties



Insurance  
provider groups



Airlines



Rail  
operators



Ground  
handlers



Airport  
operators



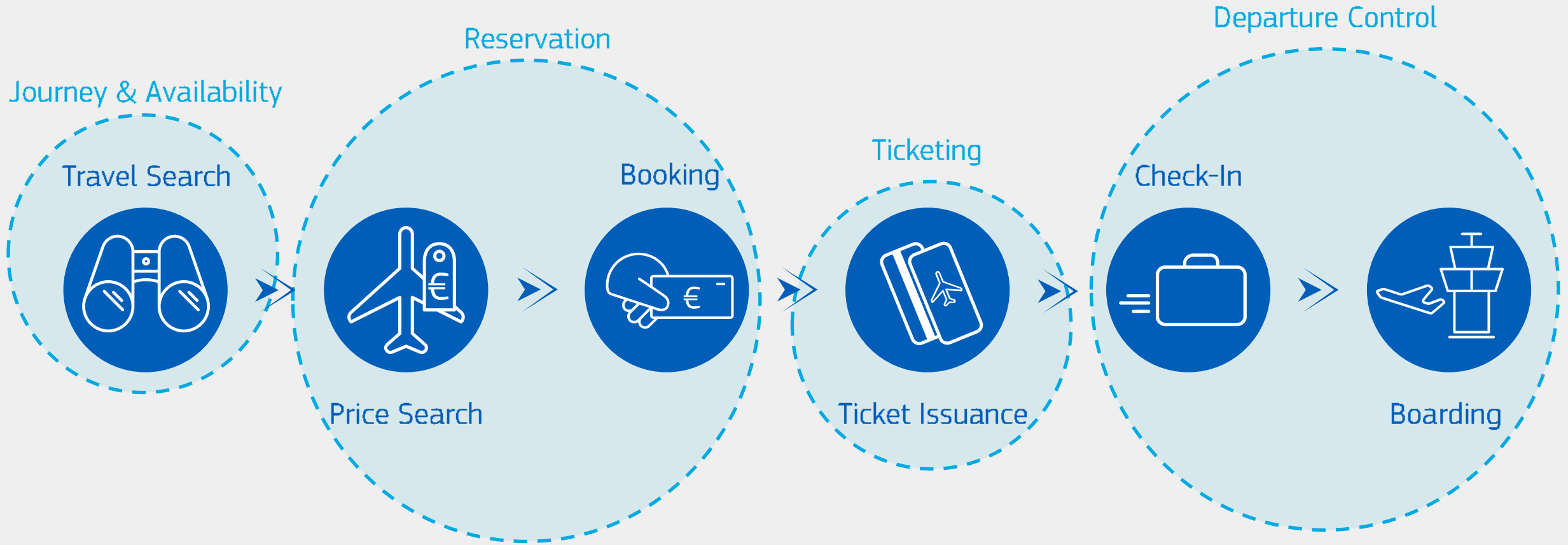
Mobility  
providers



Cruise  
and ferry lines

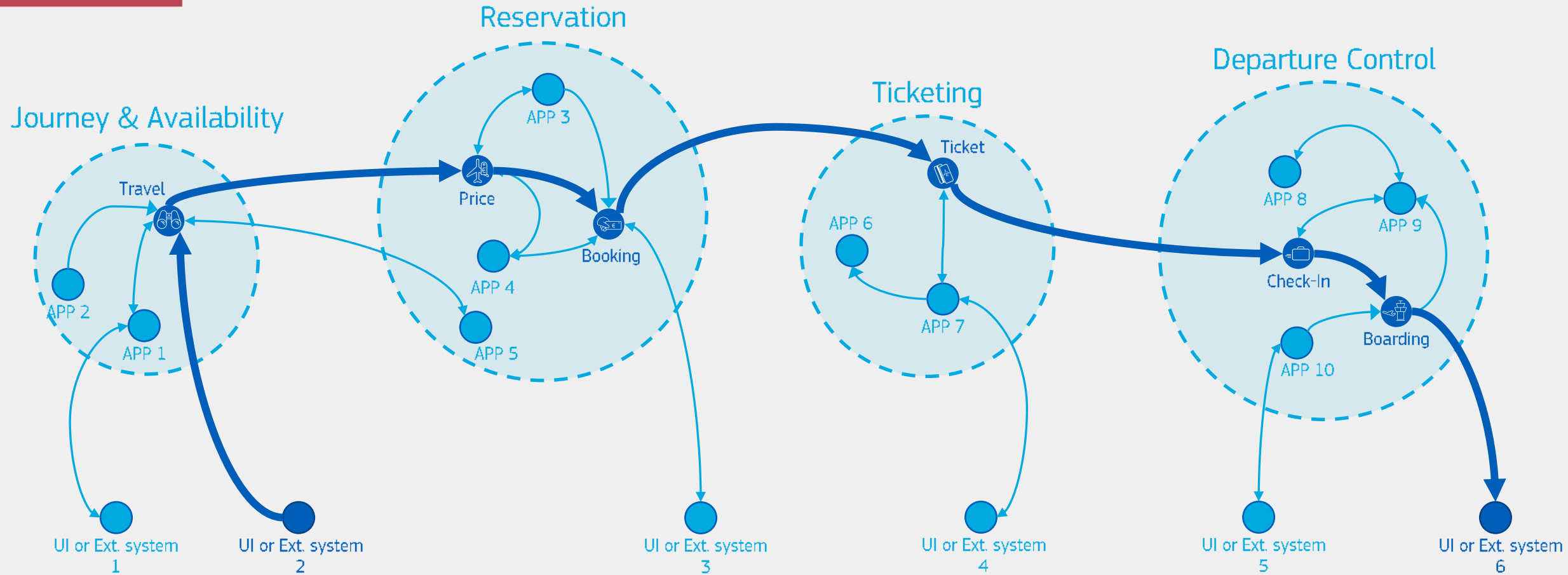
# Amadeus

## End-to-End Air Travel Example



# Amadeus

## Applicative Ecosystem



# Amadeus

## Our Technology Journey



**1990's**

IBM Mainframes  
TPF

(Transaction Processing Facility)



**2001**

First OBE  
(Open Back-End)  
Unix  
HP-UX Superdome



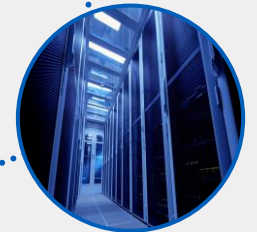
**2009**

Application Servers  
Linux  
Pizza Box Servers



**2014**

ACS  
(Amadeus Cloud Services)  
RedHat OpenShift Enterprise  
Private Clouds



**2017**

Last TPF Mainframe  
decommissioned

# Amadeus

## Why the Cloud?



### Resiliency

- Improved business continuity



### Proximity

- Data sovereignty
- Better response time
- Lower latency



### Flexibility

- Agility and flexibility
- For unplanned traffic peaks
- Energy efficiency



**Microsoft  
Azure**



### Tech Lead

- Keeping an edge
- Attract talent



### Faster time-to-market

- Respond faster
- Innovate faster



### Security

- New security standards



 **02 Strategy**

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# Applications' Migration Strategy

## Getting Organized



- Test Strategy for the platform
- Test Strategy for cloud native applications
- Test Strategy for the migration of the legacy applications

**Amadeus Data Center**

Replatforming \*

**\* Main use case**  
No applicative code change !



**Microsoft Azure**

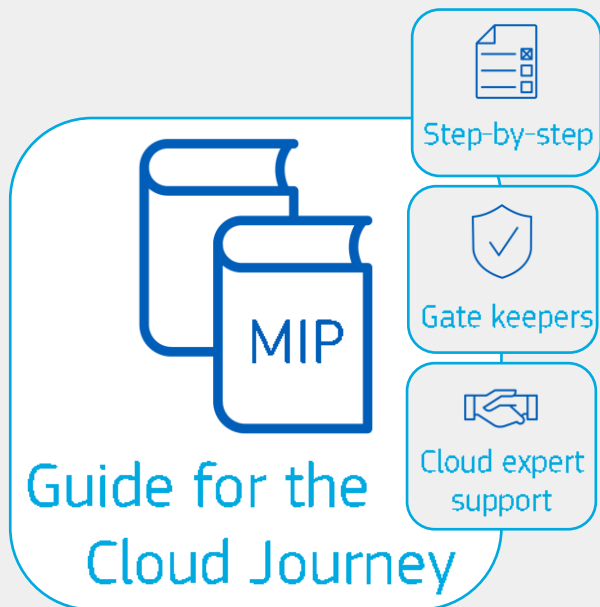


# Applications' Migration Strategy

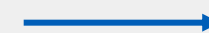
## Onboarding



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- ✓ Test Plan
- ✓ Scripts
- ✓ Automation
- ✓ Execution



- Test Strategy for the platform
- Test Strategy for cloud native applications
- Test Strategy for the migration of the legacy applications

# Apps' Migration Test Strategy

## Applicative Test Levels

### Unit & Component Testing



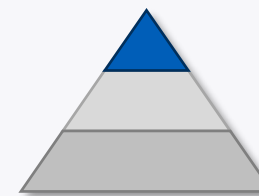
- **Limited impact on applicative code**
- Developers run unit & component tests as usual in the legacy environment

### Integration & System Testing

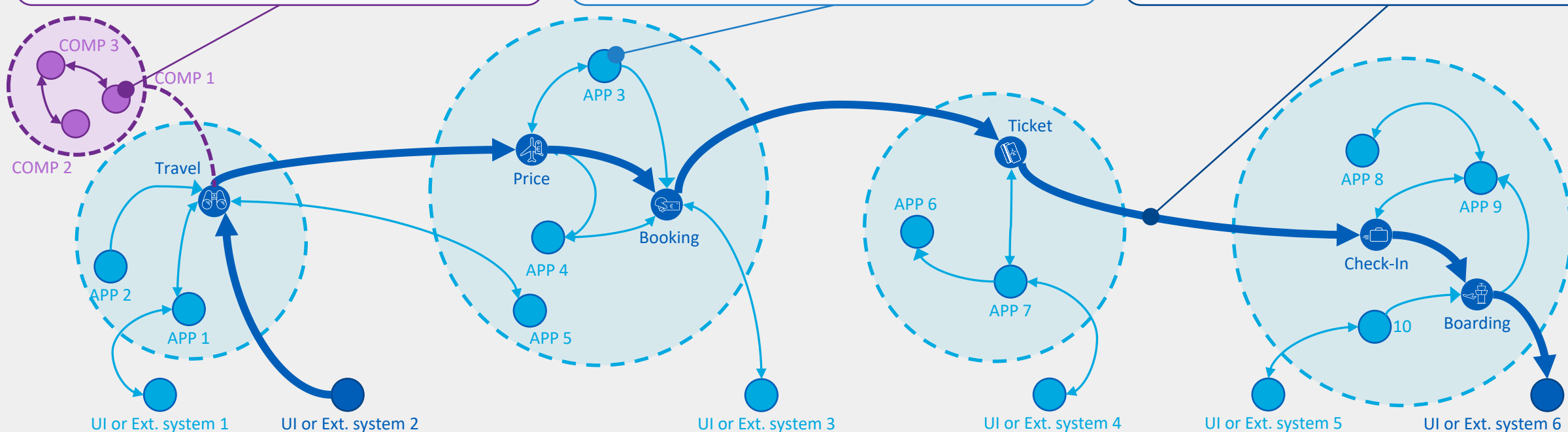


- **Risk-based targeted system testing**
- Application owners identify, assess and mitigate the risks for their own application with targeted testing

### Cross-Application System Testing

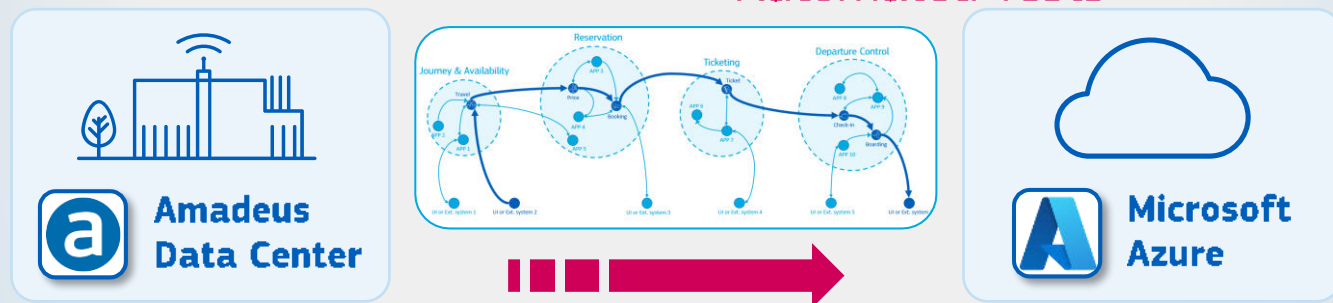
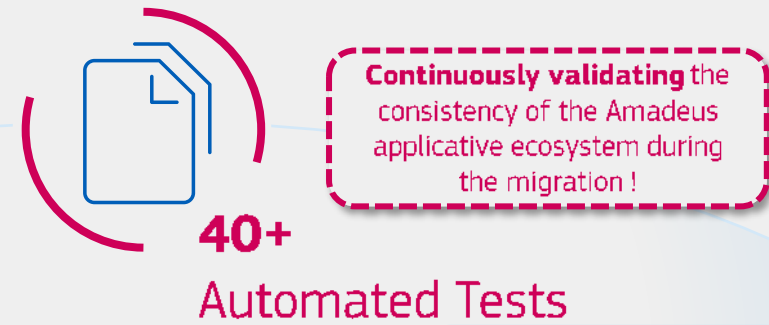
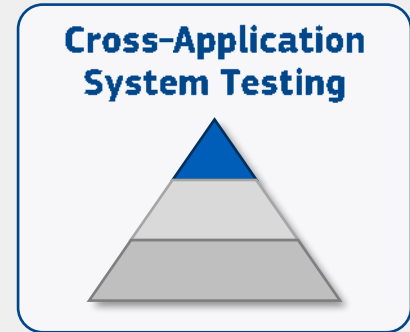
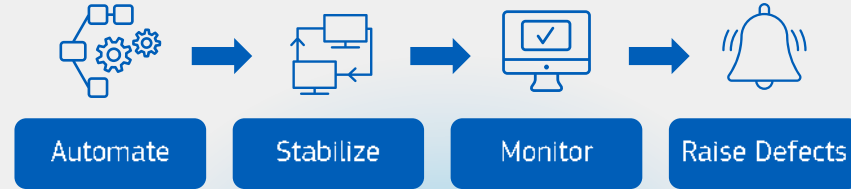


- **Amadeus applicative eco-system consistency**
- 40+ cross-application E2E tests coordinated by a dedicated QA team with co-ownership model



# Apps' Migration Test Strategy

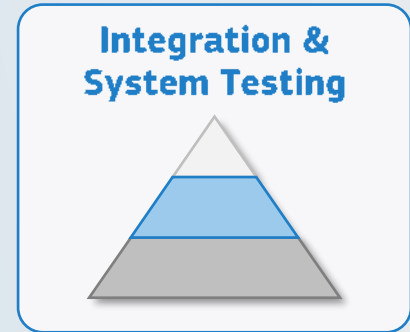
## Cross-application E2E Test Suite



# Apps' Migration Test Strategy

## Tailored Testing - Risk Based Approach

During migration



Persistent after migration

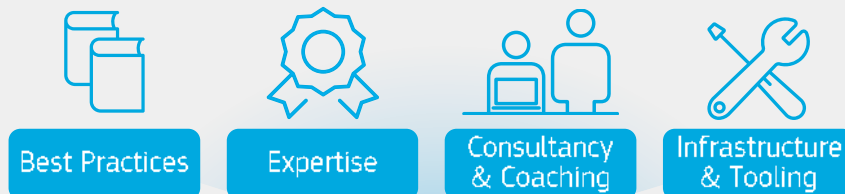
## 03 Transformation

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# Performance

## Dedicated Team and Framework



**Amadeus Data Center**

**Performance Team**

**Microsoft Azure**



- Mission Critical Apps
- Shopping Apps
- Local Initiatives/Alerts

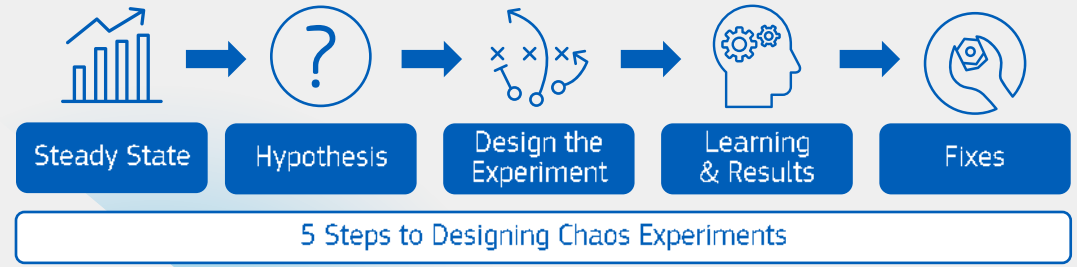
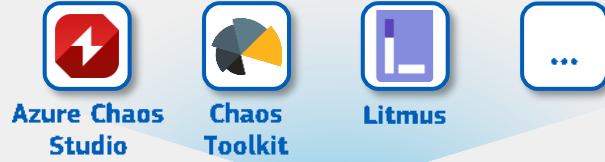
- Capacity Planning
- Impact on Response Time

- Monitoring
- FinOps
- Green IT



# Resilience

## Chaos Testing



**Resilience**  
 The capacity of a system to handle and recover from disruptions



**Amadeus Data Center**

**Chaos Engineering**

**Microsoft Azure**



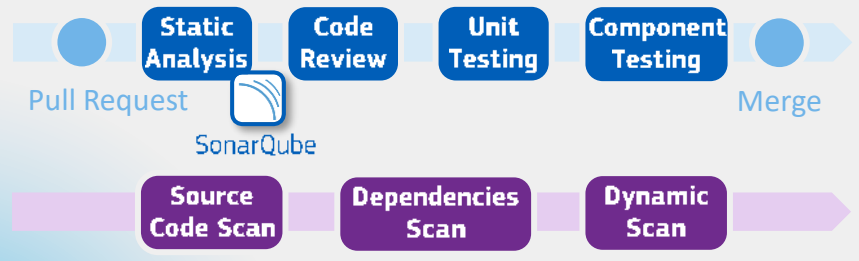
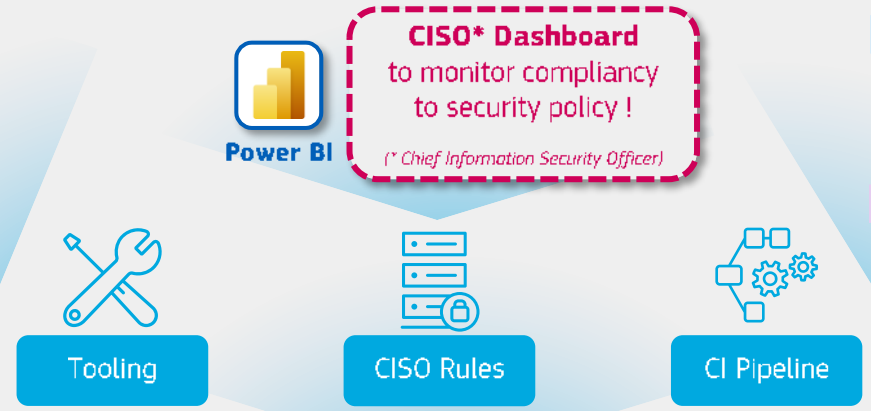
**Validating** system resiliency against failure before the production !

- Known and controlled environment
- Operated by our SRE Teams

- Dependencies can be disrupted at any time
- Design to handle failures
- Dev / QAE / Ops shared responsibility

# Security

## Secure Development Life Cycle



**Amadeus Data Center**

**Security**

**Microsoft Azure**

Testability?  
 Network Zoning

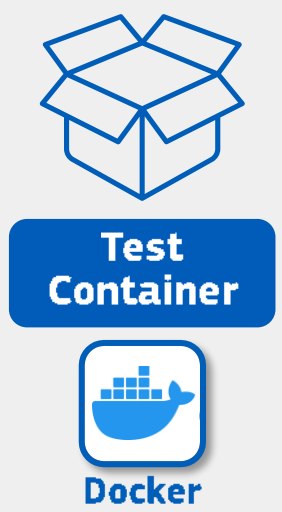
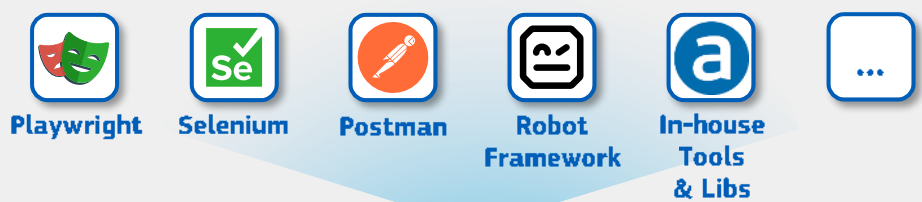
- Manual checks on physical machines
- Applicative code security scan

- Containerization
- Infrastructure as Code

- Container security scan
- Infrastructure as Code security scan
- Azure portal security scan

# Testability

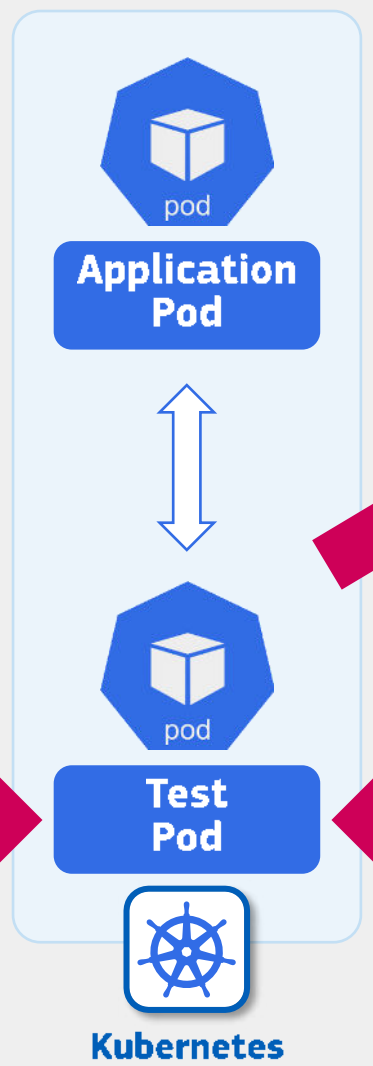
## Amadeus Cloud Testing



**Uniformization** of all the deployment environments !



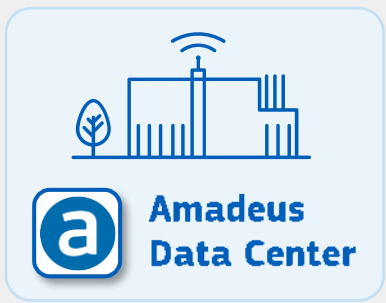
- Local Dev
- CI Pipelines
- Test Systems



**Harmonization** of the development environments !

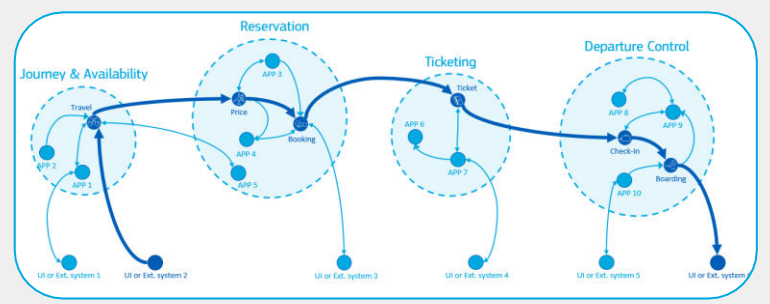


# Key Take Away



Need some advice?

- Preparation
- Targeted Testing
- Onboarding



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# Merci de votre écoute !



Comité Français  
des Tests Logiciels

**amadeus**