Practical CQRS with Windows Azure

Lokad Flavor

Time-Proven Design

CQRS architecture principles are based on DDD[2], Event Sourcing and cloud experience.

Simplified practical approach to build and maintain complex cloud solutions with small teams.

By Cloud Enthusiasts

Lokad team continuously learns and shares Azure experience via conferences and blogs.

With OSS Framework

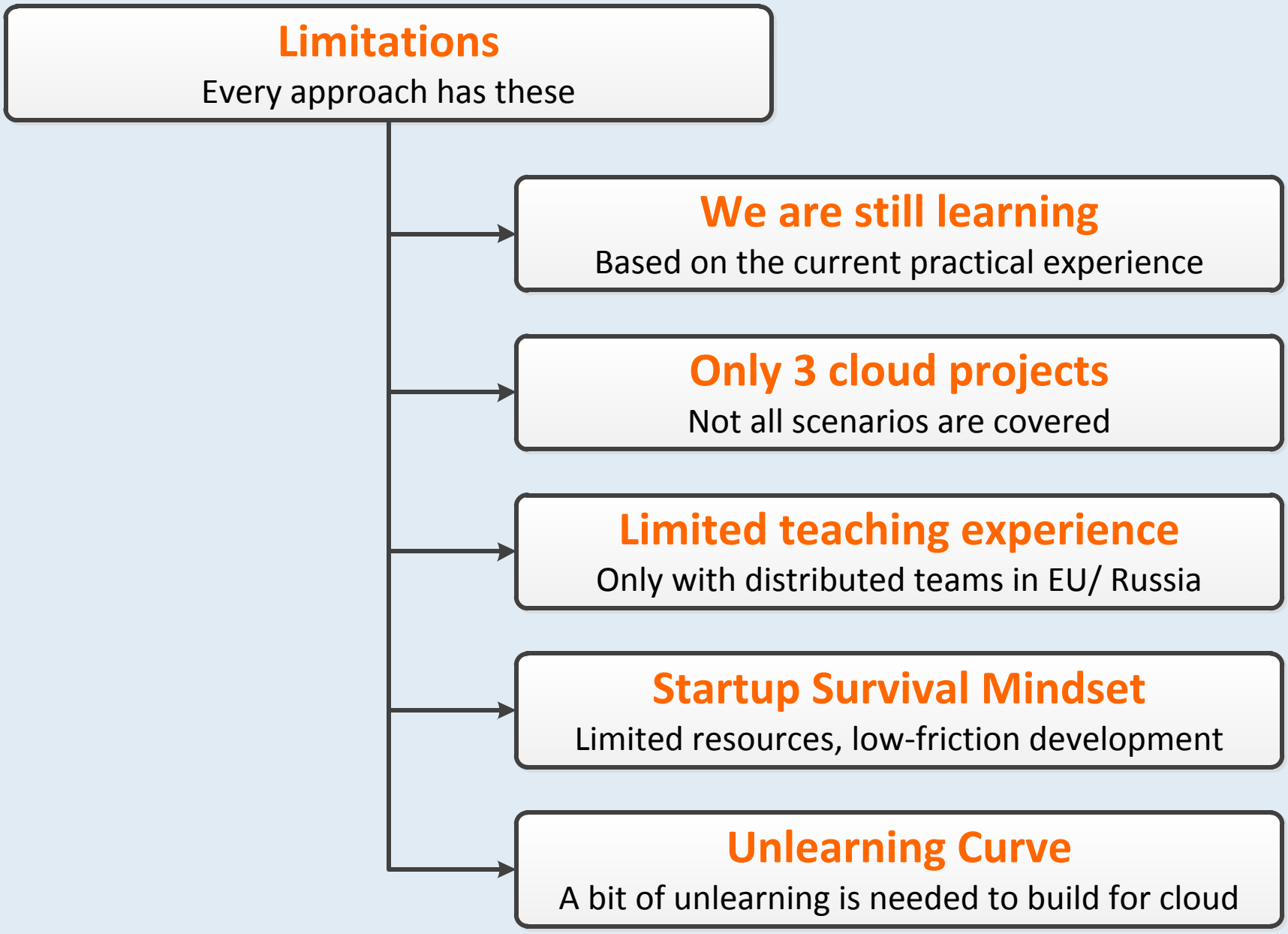
Lokad relies on Lokad.CQRS for complex integrations, high-load data processing and business workflows.

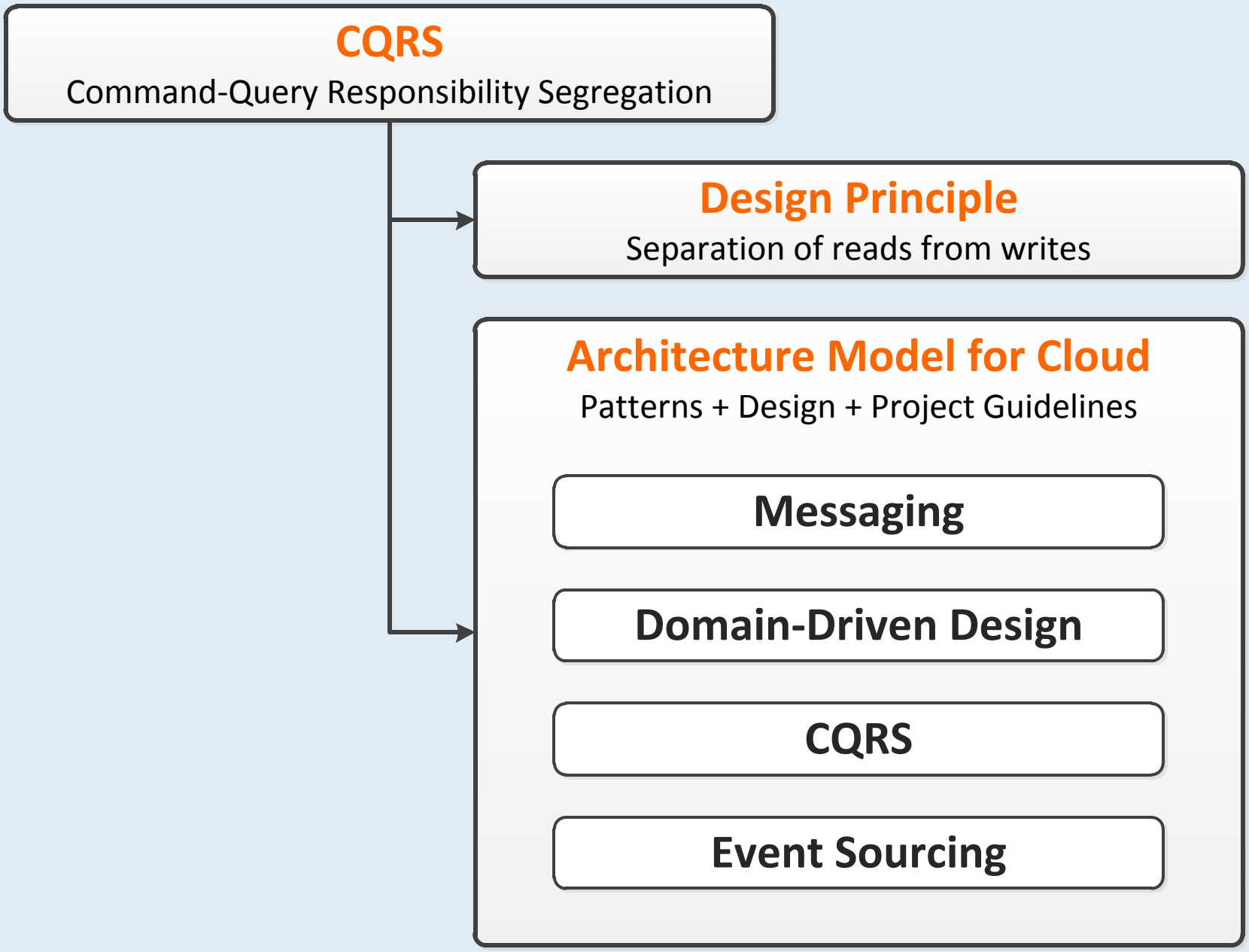
LOKAD

forecasting web services

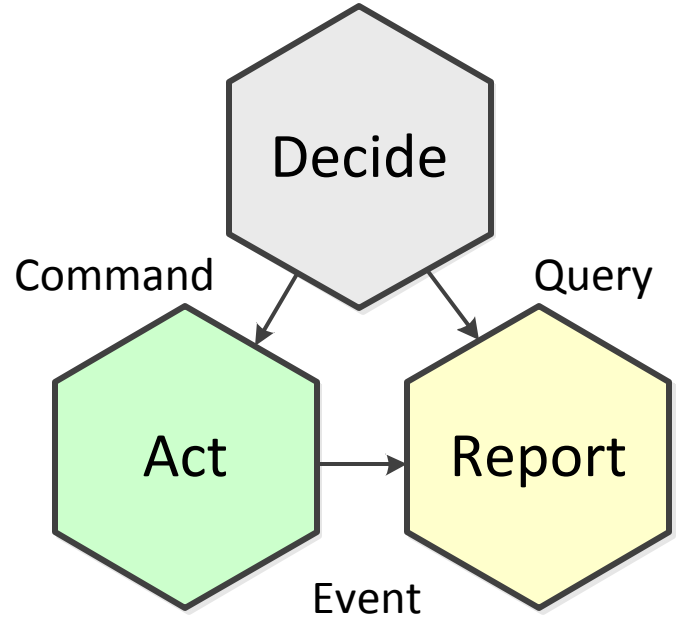
1. CQRS = Command Query Responsibility Segregation
2. DDD = Domain Driven Design

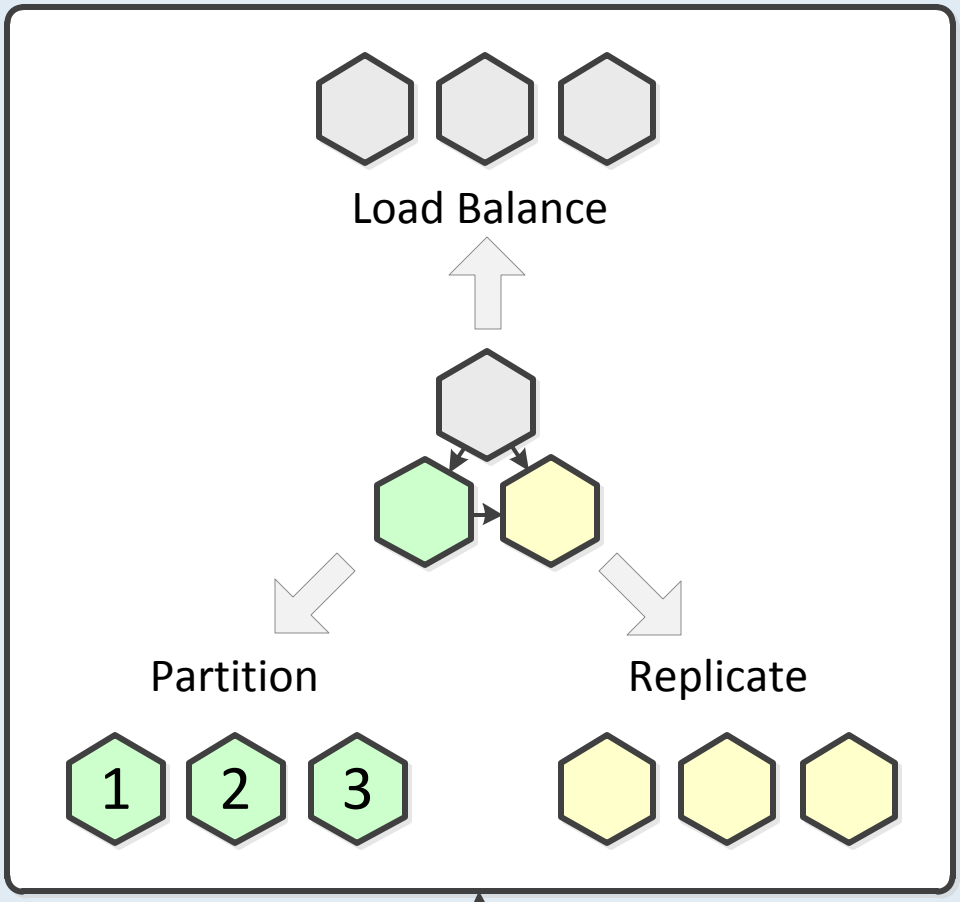
http://abdullin.com


Limitations
Every approach has these
We are still learning
Based on the current practical experience
Only 3 cloud projects
Not all scenarios are covered
Limited teaching experience
Only with distributed teams in EU/ Russia
Startup Survival Mindset
Limited resources, low-friction development
Unlearning Curve
A bit of unlearning is needed to build for cloud

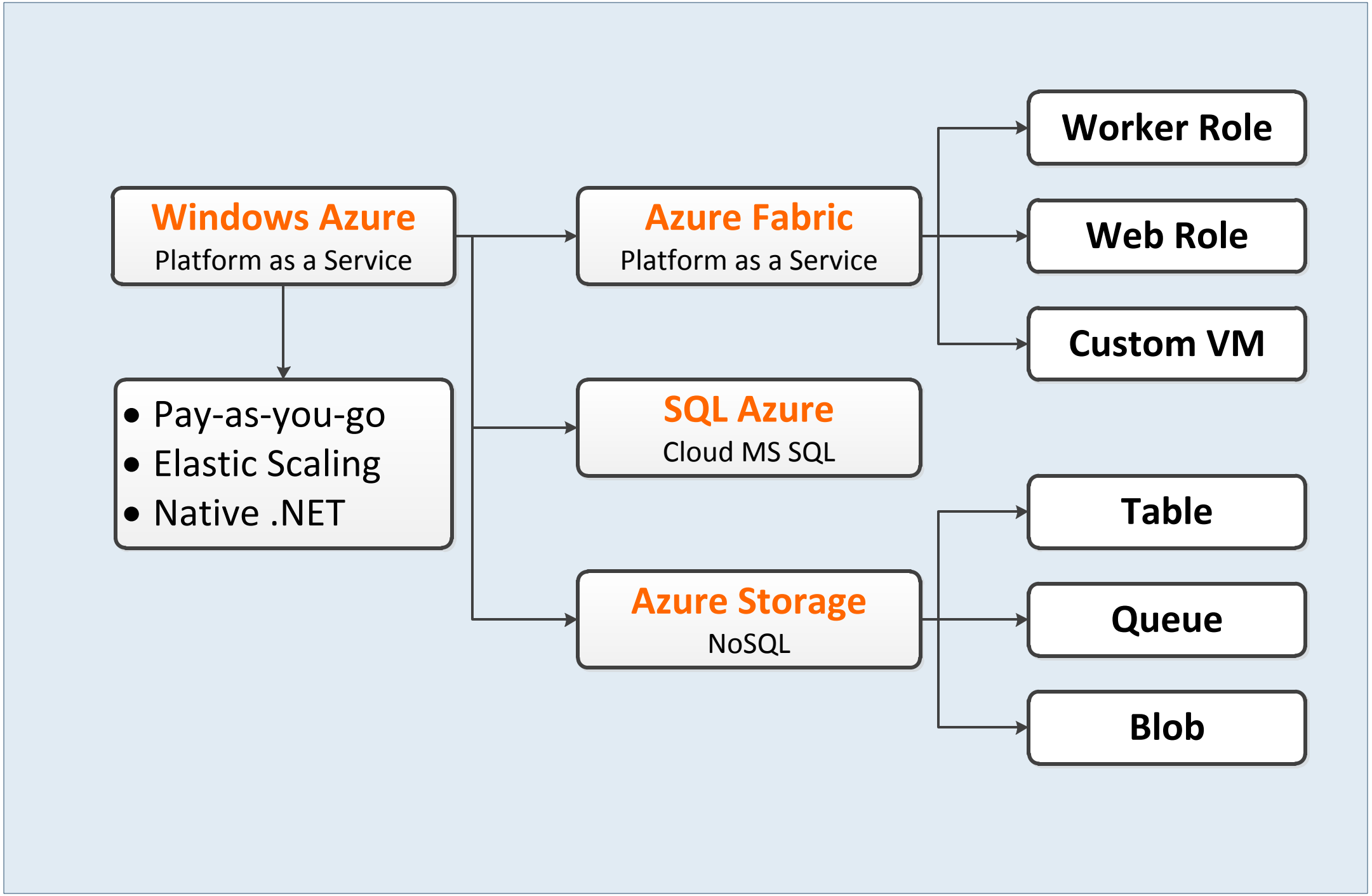

CQRS
Command-Query Responsibility Segregation
Design Principle
Separation of reads from writes
Architecture Model for Cloud
Patterns + Design + Project Guidelines
Messaging
Domain-Driven Design
CQRS
Event Sourcing

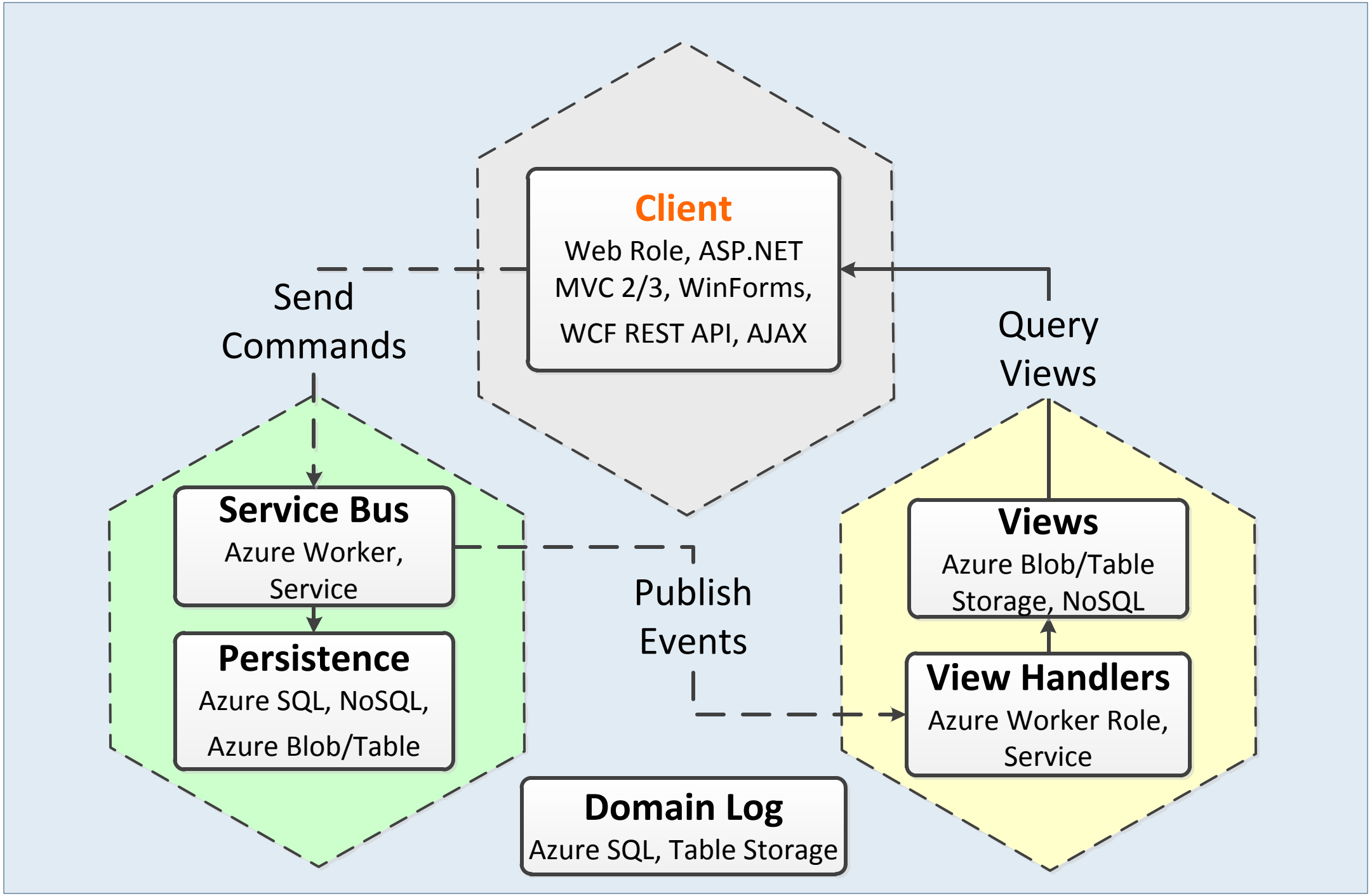
Simple Organizational Model deriving from Command-Query Responsibility Segregation

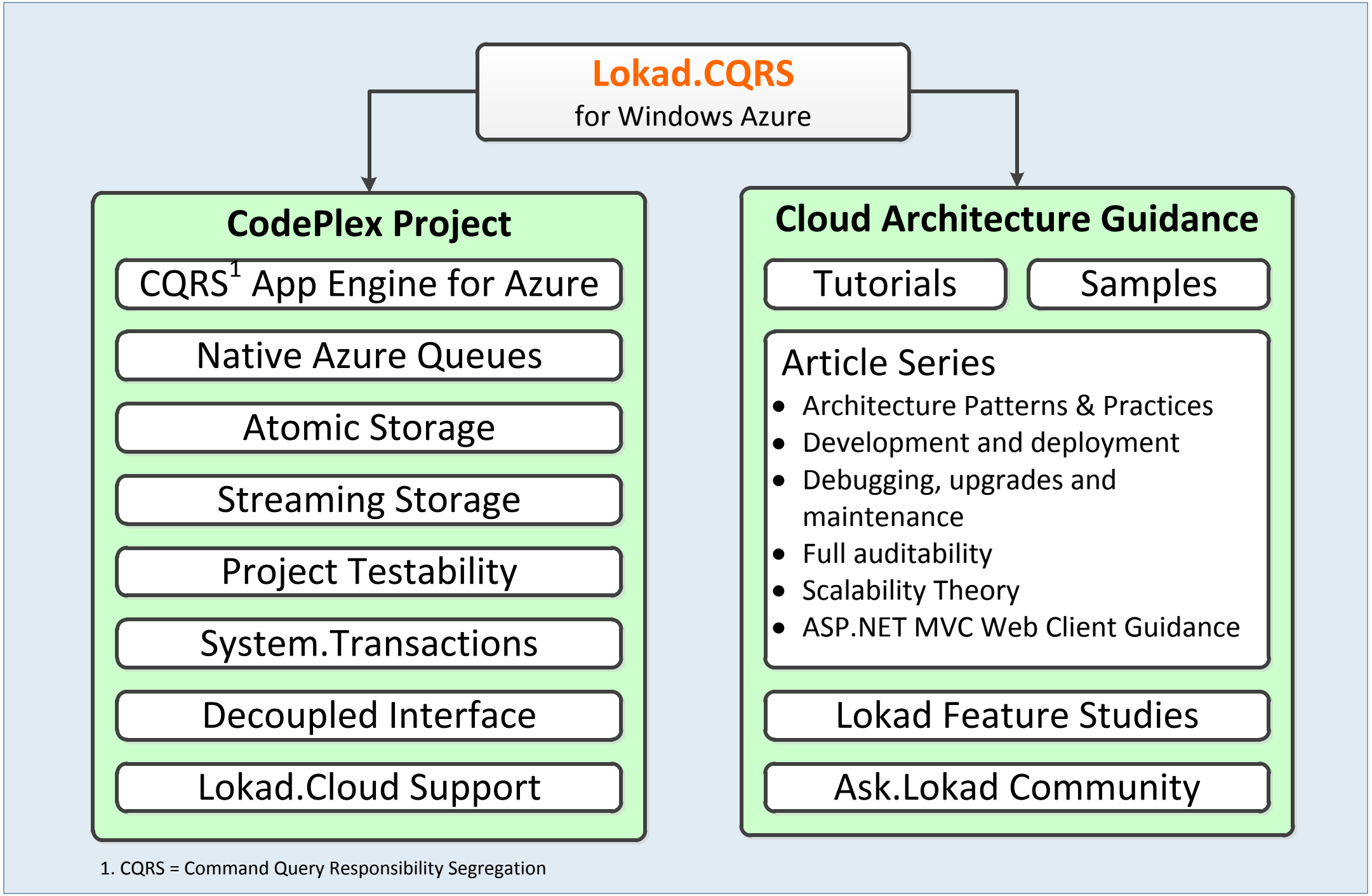




Native cloud distribution for fault-tolerance (cloud is cheap but volatile) and performance.


Windows Azure
Platform as a Service
Pay-as-you-go
Elastic Scaling
Native .NET
Azure Fabric
Platform as a Service
SQL Azure
Cloud MS SQL
Azure Storage
NoSQL
Worker Role
Web Role
Custom VM
Table
Queue
Blob


Client
Web Role, ASP.NET MVC 2/3, WinForms, WCF REST API, AJAX
Send Commands
Query Views
Service Bus
Azure Worker, Service
Persistence
Azure SQL, NoSQL, Azure Blob/Table
Publish Events
Views
Azure Blob/Table Storage, NoSQL
View Handlers
Azure Worker Role, Service
Domain Log
Azure SQL, Table Storage



1. CQRS = Command Query Responsibility Segregation

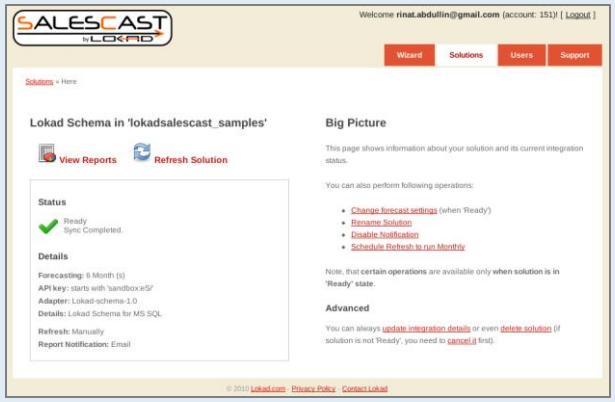
Case 1: Salescast

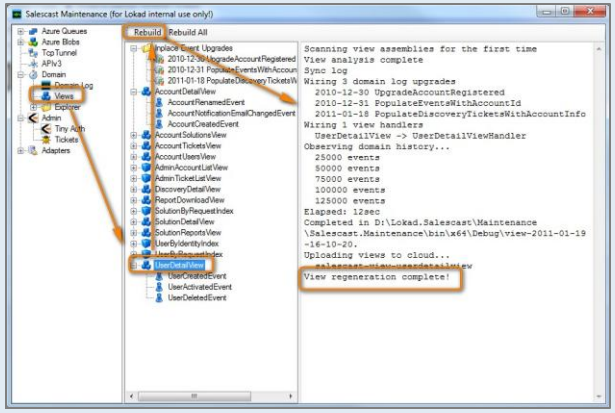
Cloud integration engine capable of processing millions of product references, tailored for large retail networks.

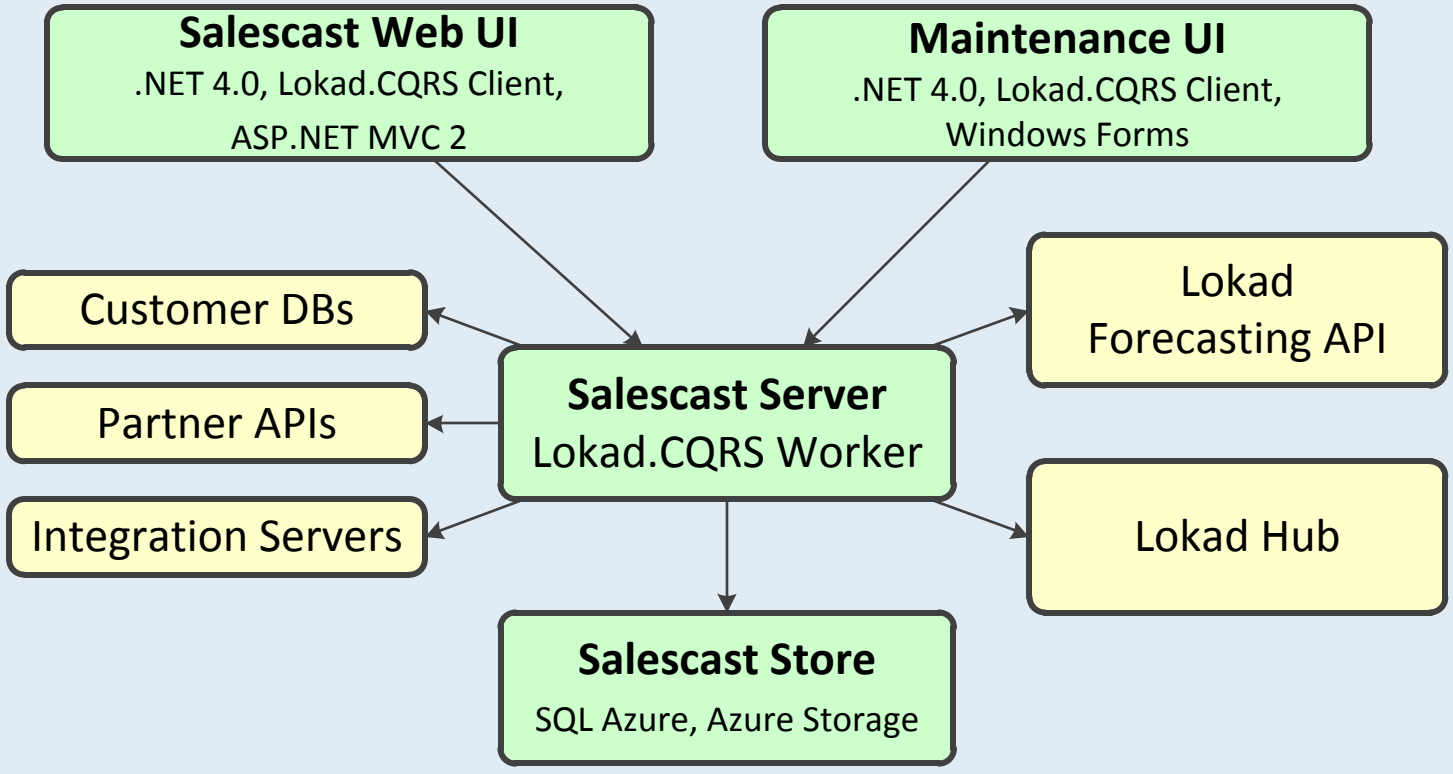
Lokad.CQRS significantly simplifies the development while preserving cloud scalability. It allows to have less than one hour interval between committing code and reliably deploying latest changes into production.

Features:

- Multi-tenant
- Tenant-specific ad-hoc integration logic.
- Full audit logs.
- Auto detection of 3rd party business apps.
- API.







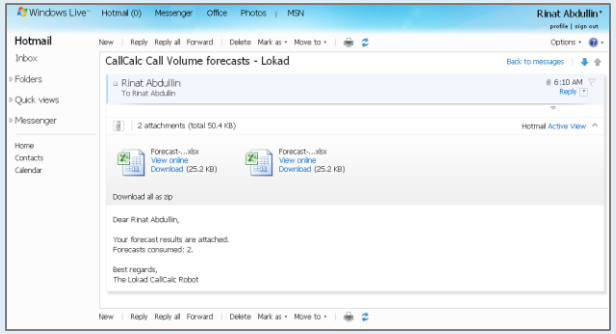
Case 2: Callcalc

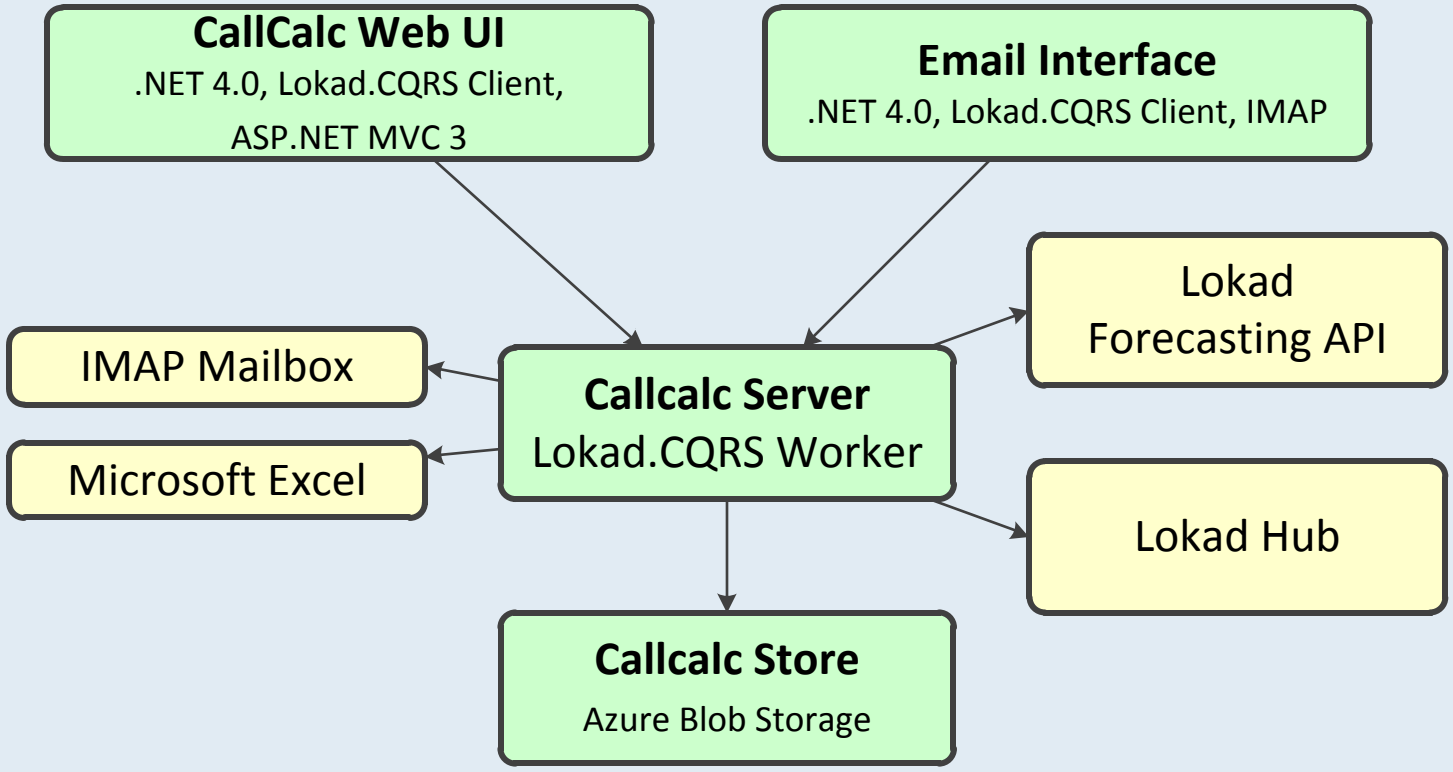
Email-based forecasting client for call centers. You send an Excel spreadsheet with call volumes and Callcalc replies with forecasts.

Lokad.CQRS provides simple and reliable foundation for a heavily verticalized solution that tailors our raw Forecasting API for the very specific needs of call centers.

Features:

- Multi-tenant
- Multiple calling queues
- Erlang-C staffing optimization
- IMAP interface





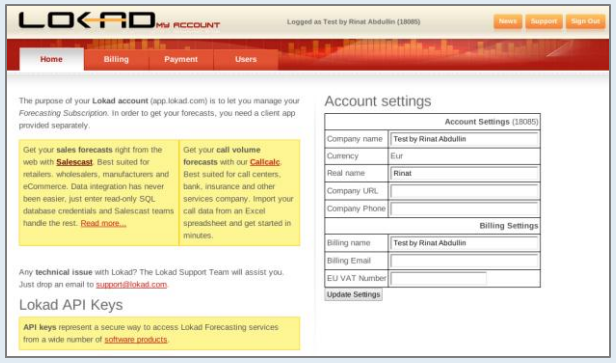
Case 3: Lokad Hub

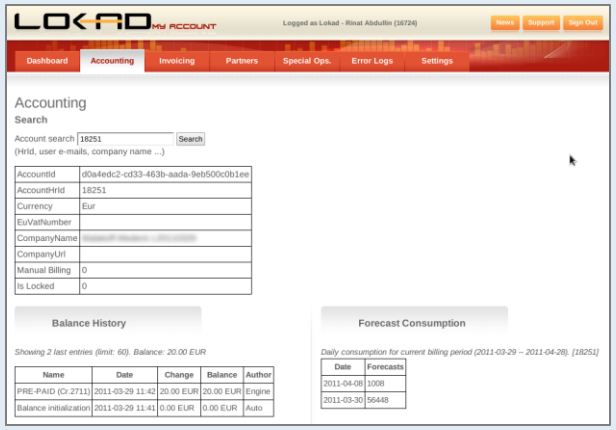
Platform unifying metered pay-as-you-go forecasting subscription offered by Lokad.

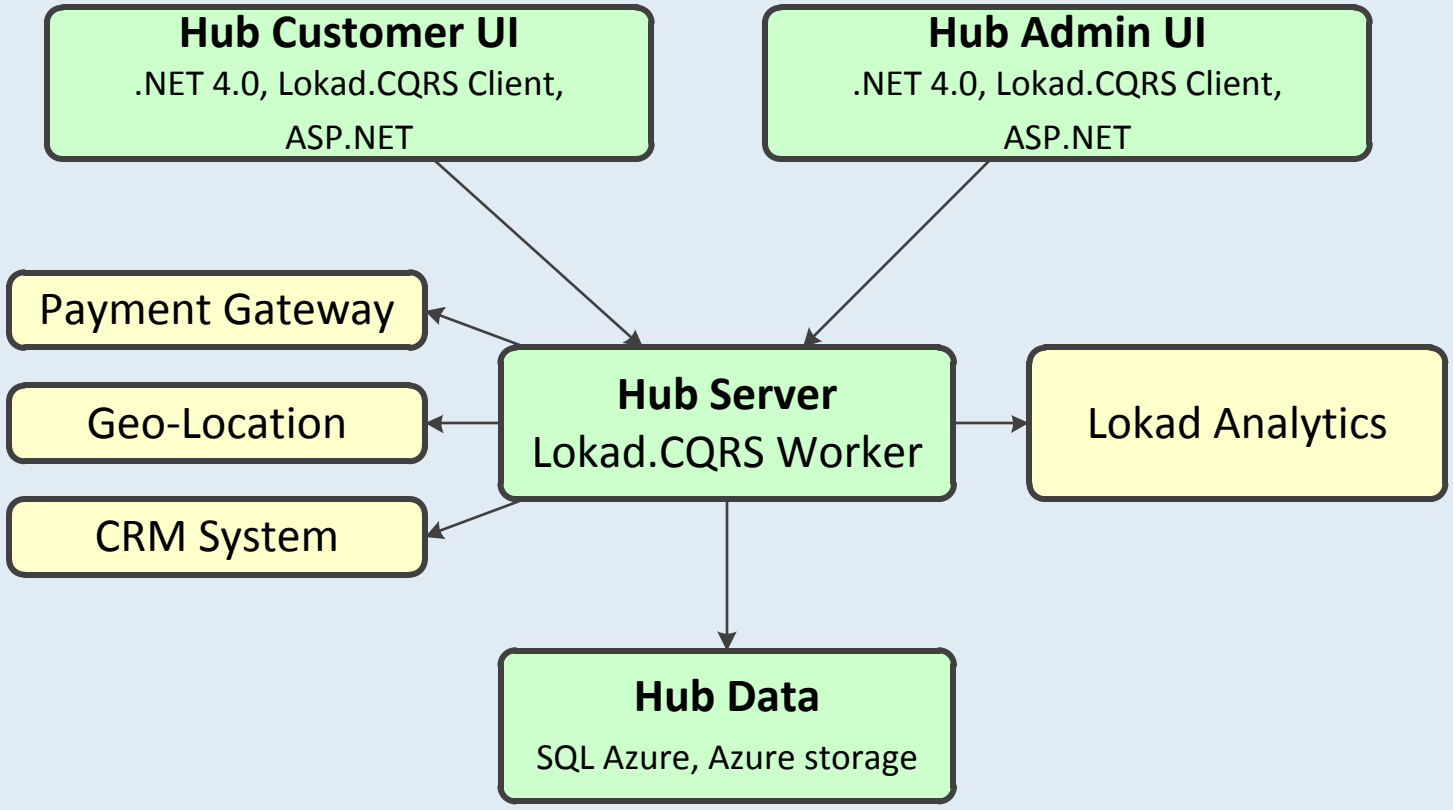
Lokad.CQRS was key to transition a pre-cloud business app toward a decoupled and efficient design. It provided additional reliability and allowed much faster iterations.

Features:

- Multi-tenant.
- Full audit logs.
- Flexible reporting, including ad-hoc reports and temporal queries.
- Reliable failure handling.
- No-downtime upgrades.
- Integration with payment, Geo-Location and CRM systems.







Conclusion: Diverse Projects leveraging CQRS + Azure

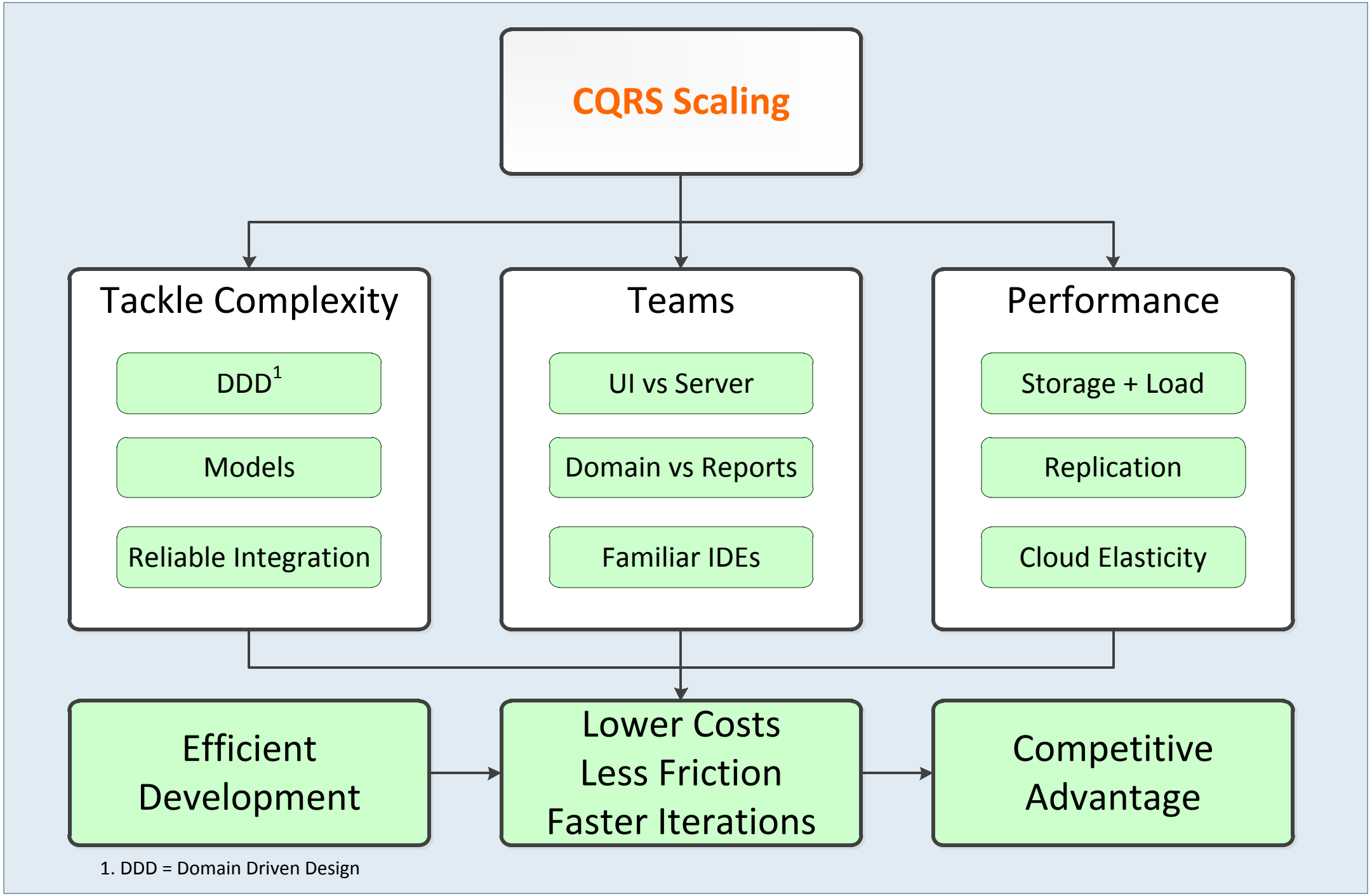
Lokad Salescast →
Targeting retailers:
- Massive Scalability – CQRS
- Complexity – DDD
- Handling integrations with unreliable legacy

Lokad Callcalc →
Targeting call centers:
- Parsing Excel spreadsheets on the cloud
- Blending automation and human support
- Azure seamlessly integrated into existing IT

Lokad Hub →
Centralized SaaS subscription management:
- Metered pay-as-you-go billing
- Kept simple and lean with DDD
- Full auditability to reduce dev & support friction

Same Resources and Experience

Same Azure Stack	Same Architecture	Same Tools
Same Teams	Same Design Principles	Same Scalability



1. DDD = Domain Driven Design

References on CQRS with Windows Azure

- CQRS Info: http://cqrsinfo.com/
- CQRS Starting Point: http://abdullin.com/cqrs/
- Lokad.CQRS for Windows Azure: http://code.google.com/p/lokad-cqrs/

Presentation

- Rinat Abdullin: http://abdullin.com
- Lokad SAS: http://lokad.com

Questions?

- **DDD/CQRS:** http://groups.google.com/group/dddcqrs
- **CQRS + Azure:** http://groups.google.com/group/lokad
- **Private:** rinat.abdullin@gmail.com