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Well-Architected Framework

Reliability in the Cloud

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November 2020

In this session

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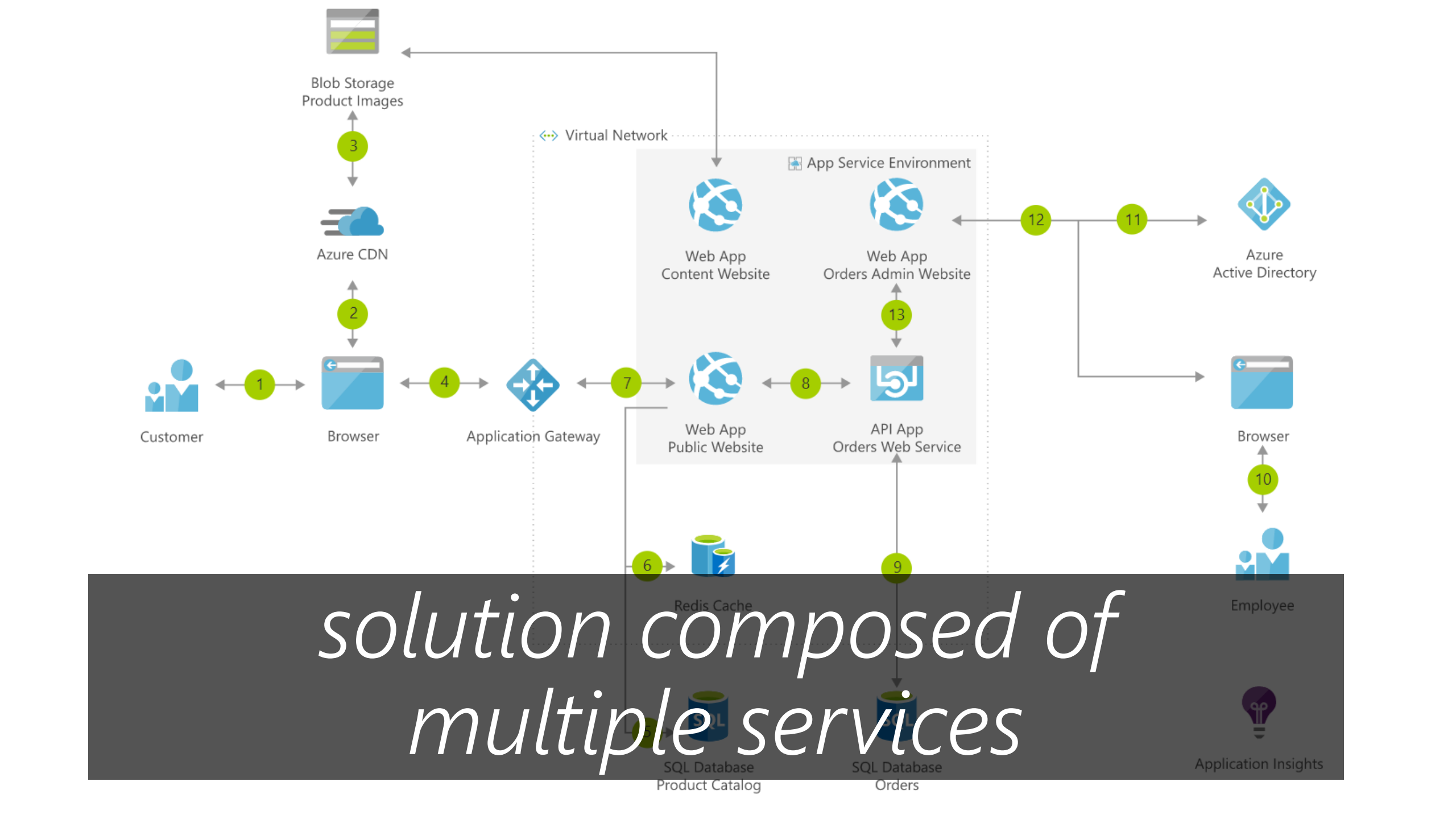


solution composed of multiple services

I. Architecture in the cloud

https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/cloud-architecture.md

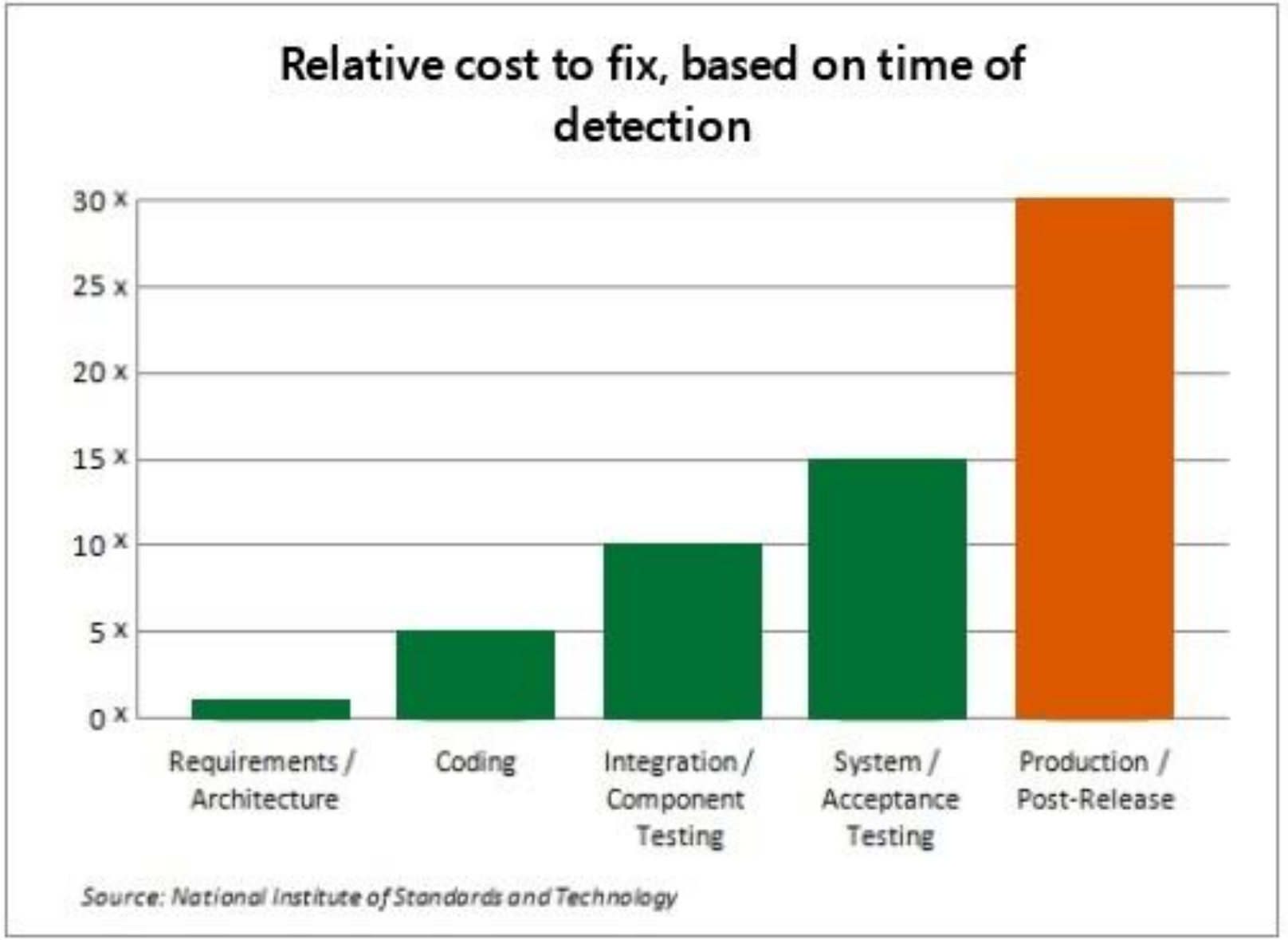
The role of the Architect

"Architect" can be a role, not just a job title

Important every engineer learns Cloud architecture patterns & practices

Do we need Architects in Agile?

https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/cloud-architecture.md



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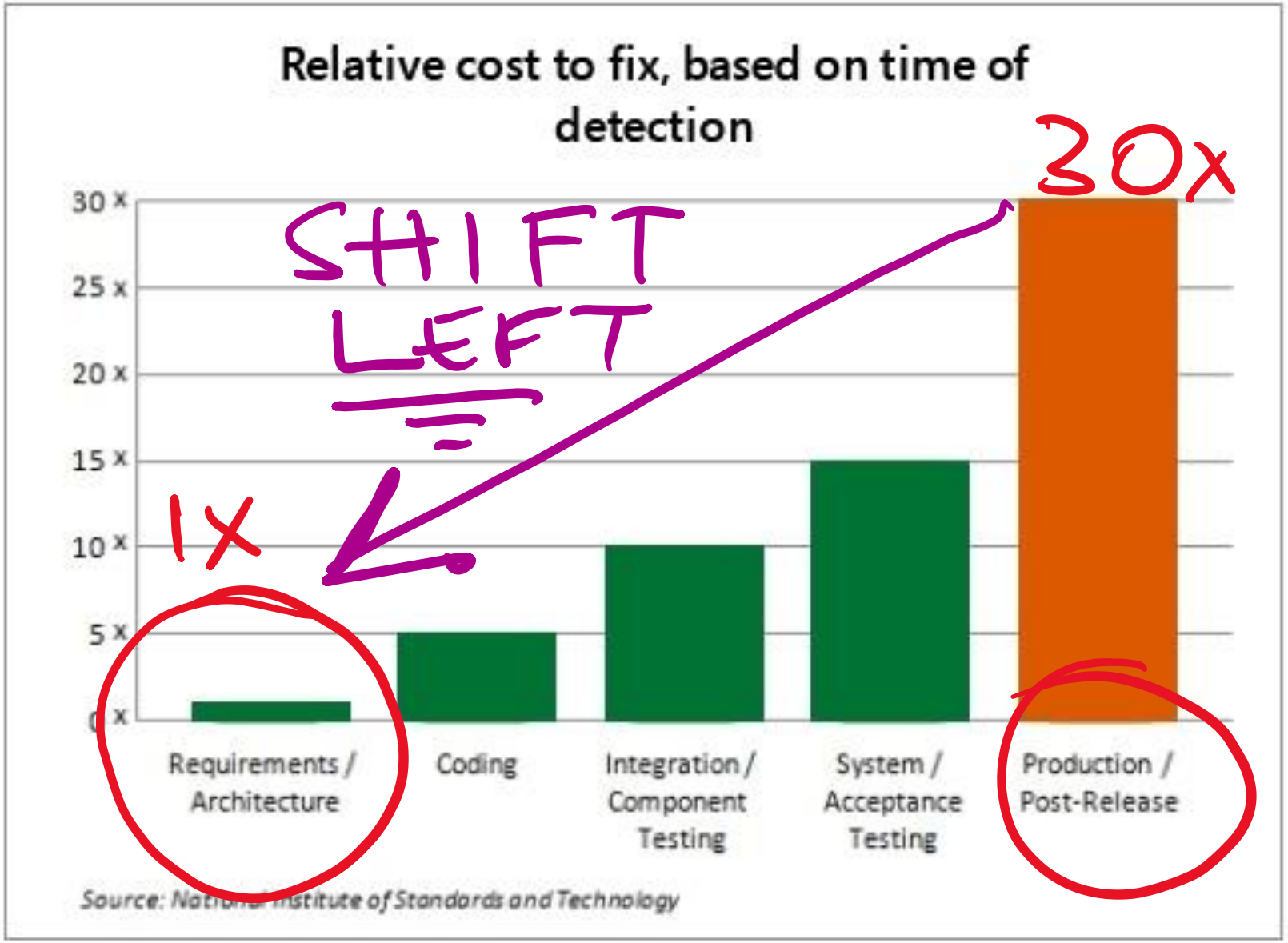


https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/cloud-architecture.md

Microsoft Azure Well-Architected Framework

Reliability

Operational excellence

Performance efficiency

Security

Cost optimization

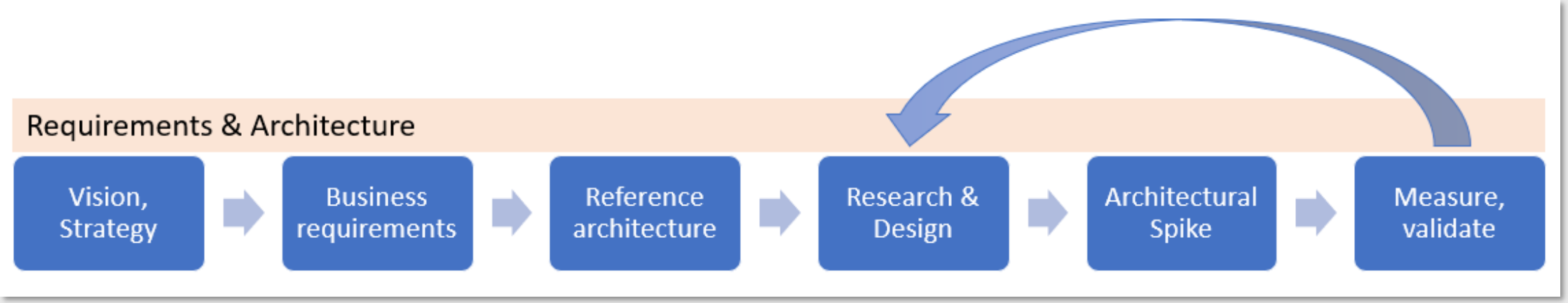
https://docs.microsoft.com/en-us/azure/architecture/framework/

II. Architecture design session

Example

Classified as Microsoft Confidential

Architecture design session



https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/cloud-architecture.md#architecture-design

Requirements, requirements, requirements

Often requirements are no longer known

Old protocols and architecture inflexible

Complex systems take time to change

"Phase 1" may simply involve substituting out components

Invest in building API facades for legacy components

https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/cloud-architecture.md#requirements-requirements-requirements

Azure Service Level Agreements

Example

https://azure.microsoft.com/en-au/support/legal/sla/sql-database/v1_4/

III. Reliability pillar

https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/reliability.md

Availability and Recovery

Architecting for reliability ensures that your application can meet the commitments you make to your customers.

This includes ensuring that your systems are *available* to end users and can *recover* from any failures.

https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/reliability.md

Uptime, RTO, RPO

Uptime:
The target uptime for a system, usually measured as a percentage

Recovery time objective (RTO):
The maximum duration of acceptable downtime

Recovery point objective (RPO):
The maximum duration of acceptable data loss

Example

IV. Architecture review

https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/reliability.md#architecture-review

Pop quiz

Q. What is the composite uptime for the solution above?
(from the point of view of an API user)

A. 99.99%?

B. 99.9%?

C. Less than 99.9%?

https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/reliability.md

Improving uptime

Enable features that offer higher availability and shorter recovery times

Deploy across multiple *Availability Zones* (AZs) or multiple Azure Regions

Write *Run books*; Standard operating procedures for *failure modes*

Embrace *Degraded mode*

Document support processes; have a clear line of sight to Azure Support with a suitable SLA for *incident response time*

https://github.com/Azure/fta-cloudarchitecture/blob/master/docs/reliability.md

```
# Runbook: Service Bus persistent failure

Failure mode: Service Bus has is not responding to repeated retries after 1 minute

1. Wake up Bob
2. Try redeploy Service Bus, new namespace, same region:

   PS> ./deploy-sb -Name 'mysaasapp2-aue-bus' -Region 'Australia East'

   If success, change connection string in Azure Configuration Service

   PS> ./failover-sb -NewPrimary 'mysaasapp2-aue-bus' -Region 'Australia East'

   If not success, Try redeploy Service Bus, new namespace, secondary Region

   PS> ./deploy-sb -Name 'mysaasapp2-ase-bus' -Region 'Australia Southeast'

   Change connection string in Azure Configuration Service

   PS> ./failover-sb -NewPrimary 'mysaasapp2-ase-bus' -Region 'Australia Southeast'

3. Monitor until primary recovers and then run failback Runbook

(etc…)
```

https://github.com/DanielLarsenNZ/talks/tree/main/servicebus-ha

Summary

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Thank you!

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http://bit.ly/dlnztalks

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