CLOUD ADOPTION:
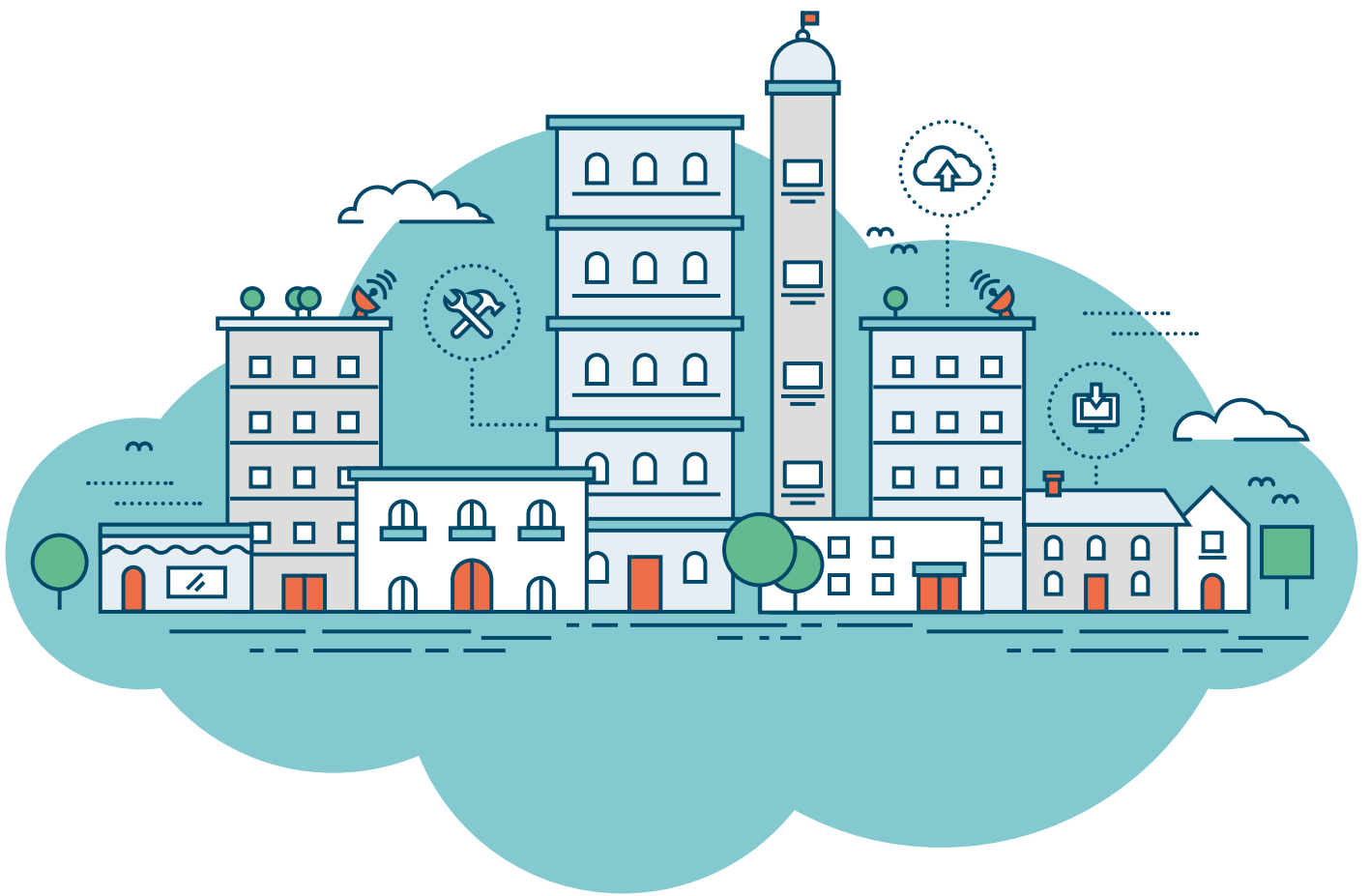
The Essential Quality Guide

Are you ready to migrate to a new cloud service?

Migrating to a new cloud service requires two things: evaluating potential cloud partners to find one that meets your needs, and readying-up your infrastructure and processes to integrate with the new service.

A hasty or ill-prepared launch into a new cloud service could negatively impact your existing processes, never mind absorb a lot of time, effort and cost to remediate if things don't go well first time. The following **Essential Quality Guide** will assist you through this journey and help ensure that you quickly gain the benefits from the new service as intended.

The principles that underpin the guide are designed to support the effective implementation of your cloud service. This guide will tell you how to embrace the change and make it work effectively and efficiently for your business.

Is it right for me?

The Essential Quality Guide can be used by any company, large or small, irrespective of the cloud service to be adopted. The guide is to be used by multiple people within your organisation who all contribute to the successful implementation of the cloud service.

Successful Adoption

1. REQUIREMENTS

2. ENGAGEMENT OPTIONS

3. ACCEPTANCE CRITERIA

4. CONTRACTS

5. ACCEPTANCE TEST DESIGN

6. MIGRATION TEST EXECUTION

7. POST IMPLEMENTATION REVIEW

Navigating your way through a cloud implementation

As with all IT implementations, a cloud migration needs to meet established business goals, and the best way to measure this is to have a clear quality assurance delivery programme. The focus of this guide is to ensure the delivery is fit for purpose and works for your organisation.

To ensure the best results there needs to be a continual and iterative review of each stage to ensure that feedback is captured, analysed and the appropriate actions are taken. The best way to deliver this is to build a quality assurance team to coordinate and communicate the approach, acceptance success criteria and status to the wider organisation, clearly communicating the target goals and how it is being measured. This operation model follows the standard ISO management cycle of Plan-Do-Check-Act (PDCA):

PLAN
Define the measurable acceptance criteria that will be used to demonstrate the success of the implementation.

DO
Perform and execute each adoption step.

CHECK
Each stage will be checked back against the defined acceptance criteria.

ACT
Review each stage and capture lessons learnt. Identify necessary actions and update the plan to ensure the successful delivery of the project. The continual improvement iterates with each stage.

As previously stated the success of adopting a cloud service will be dependent upon a variety of people/ roles across your organisation. These are some of the principal roles.

STAKEHOLDERS

The stakeholders (Business & IT) are responsible for defining the business objectives and goals for adopting the new cloud service. They also will be responsible for committing the budget and resources to the programme. This includes the quality assurance team.

CLOUD VENDOR MANAGER

The cloud vendor manager is responsible for directing the implementation and migration actions to ensure the success of the cloud service. They will be responsible for demonstrating that the cloud service can meet the requirements acceptance criteria defined by the Quality Assurance team.

PROGRAMME MANAGER

The programme manager will be responsible for managing and coordinating the cloud adoption programme. They will ensure that the people, infrastructure and work environment are in place. They will create the project plan and engage both the internal and external delivery teams.

PROCUREMENT MANAGER

The procurement manager will be responsible for ensuring that the SLA contracts are defined as part of the cloud contract and that they meet the business service levels. In addition, the procurement manager will ensure that the data security and exit strategy are clearly documented.

QUALITY ASSURANCE MANAGER

The quality assurance manager will lead the quality team and ensure that the quality steps and actions are followed. The manager will report status and findings to both the programme manager and the stakeholders.

1. Cloud Requirements

Action 1.1: Project start-up. Review project objectives

Quality Assurance (QA) Manager mobilised at the start of project initiation. QA manger to review the project brief:

- Clarify the scope of the project
- Clarify the delivery timeframe of the project
- Understand project goals and expected benefits
- Investigate lessons from previous similar projects

Action 1.2: Review and verify business case

Review the business case:

- Are the expected project benefits defined?
- Is the Return on Investment (ROI) defined?
- Investigate benefit realisation lessons from previous similar projects

Are the business benefits and ROI viable and achievable?

- **Business focused** – Is the project defined in terms of business capabilities and impact?
- **Strategic** – Are the benefits aligned to the company's corporate objectives?
- **Comprehensive** – Are the business expectations comprehensive? Are all factors considered?
- **Understandable** – Are the expectations clearly defined and logical?
- **Measurable** – Are the expectations quantifiable and can they be measured?

- **Transparent** – Can the expected benefits be clearly traced and monitored?
- **Accountable** – Are the responsibilities identified for measuring the benefits and costs?
- **Realistic** – Are the business expectations realistic (e.g. volume or revenue growth, process simplification, efficiency improvement)?
- **Risk Aware** – Are the threats and opportunities linked to benefits, timescales and costs?

Action 1.3: Review business requirements

Are the high level business requirements defined and complete? If not, then create them

- **Correctness** – Do the requirements cover the full business & technical scope?
- **Ambiguity** – Are the requirements unambiguous?
- **Completeness** – Is there sufficient information per requirement?
- **Verifiable** – Can each requirement be testable?
- **Modifiable** – Is the requirement written in a way that enables it to be changed?
- **Traceable** – Are the requirements distinguishable and referenceable?

Quality Assurance Outputs ✔

1. Cloud business and technical requirements

2. Requirements to business case traceability matrix

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2. Cloud Engagement Options

Action 2.1: Base understanding of cloud delivery models

Investigate and compare the different cloud delivery & operational models:

- **Types** – Private cloud, managed private cloud, hosted private cloud, shared cloud, public cloud, hybrid cloud
- **Layer** – Infrastructure (IaaS), platform (PaaS) and application (SaaS)
- **Payment** – Fixed price, time & materials and pay as you
- **Network** – Internal network, VPN access, Public internet

Review the types and maturity of cloud vendor service management:

- Service reporting
- Service level management
- Capacity management
- Security access and data management
- Continuity & availability management
- Financial management
- Change management & deployment
- Incident management

What service do I need?

IaaS	PaaS	SaaS
Infrastructure as a Service	Platform as a Service	Software as a Service
Host	Build	Consume

Action 2.2: Identify target cloud services

Identify existing and/or new systems that are being considered for cloud migration:

- Categorise the systems by business criticality and importance in terms of systems of record, systems of differentiation and systems of innovation
- Identify those systems where customer or employee personal data is stored and processed. Confirm data controllers and data processors (European data protection regulations)

Quality Assurance Outputs ✔

3. Target cloud business systems matrix, detailing:

a. Business importance

b. Personal data importance

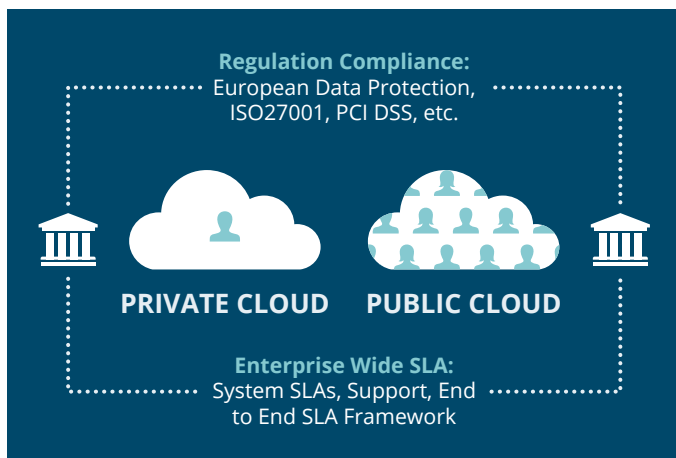|	Business Importance	Personal Data
CRM	High	Low (Business data)
Finance	High	Medium (Employee Salary)
Client Database	High	High (Client Data)
HR	Medium	High (Employee Data)

3. Cloud Acceptance Criteria

Action 3.1: Review current service operational procedures & define acceptance criteria

- Review current operation procedure documents and identify points of integration with target cloud services

- Review the current operational service targets associated with the target cloud services and interfaces (availability, resilience, performance, disaster recovery, operability, maintainability & security). Identify any service gaps and define new targets

- Define the non-functional acceptance criteria for the target cloud services, including interface services

- Update or define the enterprise wide SLA framework that will meet the minimum operational requirements. All systems within the enterprise solution must be able to meet the overarching SLA

Regulation Compliance:
European Data Protection, ISO27001, PCI DSS, etc.

PRIVATE CLOUD **PUBLIC CLOUD**

Enterprise Wide SLA:
System SLAs, Support, End to End SLA Framework

Action 3.2: Review current business process procedures & define acceptance criteria

- Review current business process documents and identify the points of overlay or integration with the target cloud business processes

- Define the business acceptance criteria for the new or amended business processes supported by the target cloud services

Action 3.3: Update cloud vendor on the acceptance criteria

- Inform the cloud vendor of the business and IT acceptance criteria that will be used to measure the success of the implementation

- Confirm if the cloud vendor has a defined quality management system and test procedures

- Confirm how the cloud vendor will be engaged in the acceptance testing and what test assets they can share

- Under EU law confirm that the cloud vendor can meet their European data security requirements as either data controllers or data processors where personal data is being stored or maintained (if applicable)

- Review the shape and skill set of the existing testing team. Identify any knowledge gaps that will be required to support the cloud service alongside the existing business services

Quality Assurance Outputs ✔

4. Cloud service non-functional and business acceptance criteria

5. Updated operational procedure guides (Draft version, pre implementation)

6. Updated business process documents (Draft version, pre implementation)

7. Updated enterprise SLA framework

8. European personal data security contract between the business & cloud vendor (if applicable)

9. Updated test team organisation and responsibility matrix, including training requirements

4. Cloud Contracts

Action 4.1: Review cloud contract detail

Availability. What is the cloud uptime? What is in the cloud SLA?

- Confirm availability profile (i.e. hours per day per week)
- Confirm guaranteed uptime (i.e. 99.5%)
- Confirm allowed unplanned downtime per month (i.e. regular maintenance)

SLA Penalty. What is the consequence for downtime?

- Confirm level of penalty pay-outs if cloud service falls under the availability target mark (loss of service) for a given month or quarter
- What is the impact on your business through loss of service at your most critical business period? How does this compare to the penalty payment?

Performance. What performance load can be supported?

- Review the cloud vendor's documented performance guarantees
- How will this performance be guaranteed with integrated applications and 3rd parties?

Data Security. How secure is your data?

- Review cloud vendor security statement and how they protect your data against accidental or unlawful loss, access, or disclosure
- What level of data encryption is implemented? Do they encrypt data in motion? Do they meet HIPAA or PCI DSS standards? Are they ISO27001 certified?
- What level of security testing is performed? How frequent is penetration testing conducted?
- Does the cloud contract include provisions allowing a third-party auditor to audit the service provider annually to ensure that the security measures are actually being provided?

Cloud service usage. How are you charged for the cloud service?

- Are you charged by what you actually use or for each month?
- Ensure that you only start paying for the cloud service when you have actually gone live and not during the implementation phase
- What is the scaling of the fees if you go above planned usage or number of users?

Cloud termination. How do you get your data back out and how long will it take?

- Review the cloud vendor's documented process for extracting data back out
- What will be the format of the extracted data? Can all the data and structures be extracted?
- Will there be a cost charged (per megabytes) for extracting your data?
- What will be the data extract speed provided?

Service amendments. Can the vendor change their service post signed contract?

- Review the contract wording that limits the vendor from changing the service they provide "commercially reasonable modifications" or "prohibiting materially detrimental modifications"

Quality Assurance Outputs ✔

10. Updated non-functional acceptance criteria to verify vendor contract clauses

5. Cloud Acceptance Test Design

Action 5.1: Migration planning

- Identify the implementation stages to the migration

Action 5.2: Review current development and test infrastructure

- Identify changes to the existing development and test infrastructure and potential new environments required to support the interfaces to the target cloud environment
- Confirm whether the cloud vendor provides access to a test environment. Confirm whether performance load can be used against this environment or if the vendor has a load test harness
- Identify whether any additional development is required to build test harnesses or injectors to enable the cloud services to be verified in isolation

Action 5.3: Design the test scenarios to meet acceptance criteria

- Review the current business regression tests associated with the points of process overlay with the target cloud services. Create new regression test scenarios to meet acceptance criteria
- Review existing non-functional regression tests supporting existing SLAs. Create new non-functional regression test scenarios to meet acceptance criteria
- Review the data security requirements, including European data protection regulations and ISO compliance, e.g. ISO27001, PCI DSS. Create additional security test scenarios
- Define a set of data migration checks per migration stage
- Define a set of post operational checks that will measure the success of the cloud implementation. The business case may have process improvements identified that need to be measured (operations and maintenance)

- Define a set of cloud service termination and exit tests. Identify the process to extract business data and processes from the cloud vendor
- Create a migration stage test plan, prioritising the test scenarios by business criticality and risk (using the business system matrix defined in stage 1)

STAKEHOLDERS		ACCEPTANCE CRITERIA
Customer	❯ ❯ ❯	Business results achieved?
Business User	❯ ❯ ❯	Business processes Work?
Operations	❯ ❯ ❯	Can it be supported?
IT System Team / Vendor	❯ ❯ ❯	Does it integrate?

Quality Assurance Outputs ✔

11. Migration test plan detailing the acceptance requirements for each stage

12. Updated test environment infrastructure with access details of vendor test environment

13. Updated functional and non-functional regression tests including data security tests

14. Data migration stage checks

15. Cloud services termination tests

16. Post implementation check list

6. Cloud Migration Test Execution & Deployment

7. Cloud Post Implementation Review

Action 6.1: Migration test execution and defect resolution

- Execute data migration tests
- Execute the functional and non-functional test cases as per the migration stage test plan
- Execute cloud service termination tests as part of the standard disaster recovery test suite
- Maintain test incident log by severity and priority. Update Programme Manager and Stakeholders of test execution status

QA & TESTING FRAMEWORK

- Recovery & Termination Testing
- Data Security Testing
- Operations Testing
- Data Migration Testing
- Business Process Testing
- Performance & Latency Testing
- Availability Testing
- Integration & Sync Testing

Action 6.2: Post-test execution

- Perform post implementation checks
- Update regression test pack with any changes identified
- Feedback any changes to the business process documents & service operational guides
- Feedback any changes to the enterprise SLA framework

Quality Assurance Outputs ✔

17. Migration acceptance test results

18. Operational procedure guides (Final version)

19. Business process documents (Final version)

20. Enterprise SLA framework (Final version)

Action 7.1: Closing the project

- Acceptance of the project signed off by the business
- Verify the production performance is remaining stable and is meeting baselines
- Assessment of the benefits already realised against business case
- Review all open issues and risks. Ensure mitigating actions or provisions have been made and are being monitored

Action 7.2: Review check points

- Update the quality assurance plan to define the post project implementation check points that will verify benefits realised
- Identify and confirm responsibilities to own and coordinate check point reviews

Quality Assurance Outputs ✔

21. Updated Quality Assurance plan with benefits realisation plan and activities

SUMMARY

Critical Success Criteria

- Senior management are committed to the delivery of the cloud service. They are involved throughout the implementation
- Enterprise service levels and service operation manuals are updated to incorporate the new cloud service. These are reissued to the appropriate help desk and service support teams with training
- Business process guides are updated to clearly define responsibilities and handoffs between the organisation and the cloud service provider
- Business and IT regression test suites are continually maintained with each change or cloud service update
- Cloud exit tests are performed as part of the enterprise business continuity plan to ensure the company is mitigated against potential risks

ABOUT

ChallengeCurve

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ChallengeCurve is a specialist QA & Testing consultancy.

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FURTHER READING

Do you Have Full Confidence in Your Next Cloud Software Release (July 2015 - Cloud Industry Forum & ChallengeCurve)

More than 130 cloud white papers and resources can be found in the Cloud Industry Forum Knowledge hub