ICT Project Guidance

Definition - Principles Development

Version:

0.3

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## Description

This document provides guidance on the development of practical guiding principles suitable for the design, development and delivery of solutions comprised of an IT system.

## Synopsis

The risk of failure to solutions not meeting expectations is decreased by providing a framework of Principles developed for use by different stakeholder groups.

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## Background

The majority of Projects with an ICT component fail to meet expectations in terms of scheduling and/or budget.

Reasons can include poor decisions and slower delivery impacted by an increase in governance required to make any decision.

## Resolution

A process used to reduce this risk is the development of Guiding Principles for the whole enterprise, with specialisation as required for its departments, projects, and various service development and provision stakeholder groups.

## Purpose

The purpose of a Guiding Principle is expressed in its full name – it is meant to *guide* the thoughts and subsequent actions of a person with agency towards the highest value long term outcome[[1]](#footnote-2) without requiring monitoring, instruction, or governance from a 3rd party.

The removing of a dependency on synchronisation[[2]](#footnote-3) amongst different groups of stakeholders to compromise and arrive at decisions, in general leads stakeholders with agency to deliver higher quality uncompromised outcomes, faster, and with less expense.

## Sources

Principles should be built upon the insights of previous work in this field.

The most widely cited source of principles is possibly TOGAF’s Principles[[3]](#footnote-4).

Note:  
While TOGAF Principles are and remain relevant it is important to note that they are Enterprise Principles, and as such only reflect one of the groups defined earlier. They do not cover other aspects of delivery, including Definition, Design, Development, Delivery, etc.

Another excellent source to consider as a starting point is *Architecture Principles The Cornerstones of Enterprise Architecture by Danny Greefhorst and Erik Proper[[4]](#footnote-5)*.

Finally, consider “Enterprise Architecture Principles In Research And Practice: Insights From An Exploratory Analysis” by Mohammad Kazem Haki and Christine Legner as a valuable source of meta information on the matter.

https://core.ac.uk/download/pdf/301361106.pdf

## Grouping

Value is lost by lumping all Principles in one catalogue and then jettisoning valuable guidance because “there are too many”.

Value is gained by developing Guiding Principles into several focused groups, each aimed at guiding the thoughts and actions of specific stakeholder roles[[5]](#footnote-6).

TOGAF’s example principles are grouped as follows:

* Business
* Data
* Application
* Technology

We note that the above TOGAF categorisation omit other important aspects that require guidance:

* Privacy
* Security
* Qualities
* Design
* Delivery
* Development
* Change & Transition
* Operations

### Enterprise Groups & Projects

Beyond the above mentioned omissions, there are also valid reasons to avoid using only a single group for the whole Enterprise and all its departments and projects, but develop principles specific to each:

* Enterprise,
* Business [Group],
* Project.

### Sectors

In addition are also different logical *domains* that a business service may span, that principles may be required to capture: the Government Sector, the Business provider Sector, the Business consumer Sector(s), etc.

## Audience

On a day-to-day basis, each stakeholder is only required to memorise and adhere to their own group of small number of principles (e.g.: Development principles), while keeping in mind a general understanding of overarching project wide ones (Project) that in turn reflect sponsor perspectives (e.g. Business, Enterprise principles).

## Quantity

Outcomes are not improvable if stakeholders cannot remember the Principles, they have agreed to guide their thoughts and actions. Hence a need to keep the number of Principles manageable and memorisable.

Note:  
The number of items a person can remember is often cited in the literature on short term memory as “7, plus or minus 2”. This is nuanced by later 21th century studies that the number is influenced by whether items can be grouped, preferably in pairs. The current consensus is 6, preferably with some of them easily grouped.

In this paper, we propose keeping the number of principles applicable to a stakeholder role to 6 or less – tending towards less, where sufficient.

## Tension

Guiding Principles should be coherent but can -- in limited cases – remain in tension with other principles.

An example is such a tension is -- from a business stakeholder’s perspective -- “Data is an Asset” that may provide insight into possible future trends, while -- from a security stakeholder’s perspective -- “Data is a Liability” that requires ongoing expense and processes to remain vigilant, secure and monitor access to.

Note:   
This is another reason why we recommend not lumping principles into a single group.

Where tension in between groups will remain unreconcilable, a project wide Guiding Principle can be developed, and/or resolution can be obtained via a decision from governance on a case-by-case basis.

## Authoring

Guiding Principles should not be developed by one group for another. It is a mistake for Enterprise Architects to define Development Principles, or Security.

Guiding Principles should be developed by SMEs for a specific group, working to author them such they remain valuable for the group they are intended for, while consulting with other groups to remove Tensions that can be removed.

## Enduring versus Changing Contexts

As expressed well in TOGAF’s guidance[[6]](#footnote-7), Principles are expected to be developed to be enduring and seldom amended.

While enduring in of themselves, it is important to recognise that contexts do change over time, and new groups may or may be required over time, requiring reassessment.

For example, while Data and Enterprise principles have remained largely constant, Privacy and Climate are newer concerns, Delivery and Assessment has changed over time being supporting postproduction activities to a primary prerequisite, and system design has moved left from system development to system delivery of both developed and configuration of subscribed services.

## Commandment versus evaluated Choice

It is less valuable to develop Principles as single Obligation Commandments (e.g., “MUST”) rather then presenting the preferred route in relation to other options.

For one, Commandments may not always be adherable to, requiring costly assistance from governance to review findings and make a decision in order to proceed.

For another, single outcome statements do little to teach stakeholders how to evaluate choices on their own, in a considered and defendable manner.

For yet another, Principles developed as Commandments risk overlapping – even contradicting -- contractually agreed Requirements developed separately.

It is our recommendation that better value is delivered by development Principles expressed as *Preferences* where possible.

The following are examples of statements expressing preferences amongst choices:

* *“Prefer delivering business services using SaaS over cloud managed PaaS over IaaS over On-Prem managed services.”*
* *“Prefer rapid-cadenced, iteratively delivered Improvements throughout the business service’s lifespan”* (as opposed to an initial big bang delivery, with few widely spaced updates thereafter, for example) *[[7]](#footnote-8)*.

## Attributes

Principles are developed with several attributes, listed below:

#### Identifier

A short unique identifier of the principle.

Note:  
When principles are all grouped together – which we recommended above to not do – the format is often similar to **PRINC-01**.

We recommend the identifier give some indication of the group it belongs to. For example, **PR-ENT-03** would indicate this is the 3rd principle in the Enterprise guiding principles, and **PR-DEV-02**, would indicate it’s the 2nd principle in the Development guiding principles.

#### Title

The title of the principle is a short unique, hopefully memorable phrase.

Note:  
The title should be short so that it can be used within the tight confines (e.g.: small boxes) of enterprise and system design diagrams (e.g.: UML) later.

#### Statement

The statement of a principle is the short, focused, unambiguous, single sentence description of the preferred choice of outcomes when in a context.

While longer than a title, the Statement must remain a short statement.

Note:  
To remain succinct, it must not explain why, which is the purpose of the Rationale attribute, or go into Details or Impact/Implications if done or not done.

#### Rationale

As the Statement is short, it may be required that the *intent* and *reason* for the preferred choice requires further explanation in a short paragraph.

Note:  
It is useful to express what is positively impacted or supported by this outcome.

#### Implications

As per TOGAF’s recommendation, there is value in expressing what could be the negative impact if the stated preference within the guiding principle is not followed.

#### Details

Whereas the Statement defined the preferred Outcome, and the Rationale explains why, the details can be used to hint at how the outcome could be delivered.

## Contractual Aspects

Adherence to the Statement in of itself -- without an obligation to explain its Rationale, or implementation Details – must not be left to chance and be contractual, an Obligation expressed in either the project’s specific or enterprise’s default Transitional Requirements[[8]](#footnote-9).

## Conclusion

This paper provides background material for the development of a practical set of requirements for different stakeholder groups to choose higher value outcomes while collaborating on delivering to expectations.

Appendices

Appendix A - Document Information

### Versions

* 1. Initial Draft
  2. Restructuring
  3. Added Conclusion

### Images

### Tables

### References

* [The TOGAF Standard, Version 9.2 - Architecture Principles (opengroup.org)](https://pubs.opengroup.org/architecture/togaf9-doc/arch/chap20.html)

**There are no sources in the current document.**

### Review Distribution

The document was distributed for review as below:

|  |  |
| --- | --- |
| Identity | Notes |
| Sandy Britain, Enterprise Architect |  |
| Duncan Watson, Enterprise Architect |  |
| Rodney Snell, Business & Technical Lead |  |
| Amy Orr, Data Domain Architect |  |

### Audience

The document is technical in nature, but parts are expected to be read and/or validated by a non-technical audience.

### Structure

Where possible, the document structure is guided by either ISO-\* standards or best practice.

### Diagrams

Diagrams are developed for a wide audience. Unless specifically for a technical audience, where the use of industry standard diagram types (ArchiMate, UML, C4), is appropriate, diagrams are developed as simple “box & line” monochrome diagrams.

### Terms

Refer to the project’s Glossary.

##### IT

: acronym for Information, using Technology to automate and facilitate its management.

##### ICT

: acronym for Information & Communication Technology, the domain of defining Information elements and using technology to automate their communication between entities. IT is a subset of ICT.

##### The Open Group’s Architecture Framework

: developers of TOGAF 9.2.

##### TOGAF

: acronym for The Open Group’s Architecture Framework.

##### UML

: acronym for Unified Modelling Language

##### Unified Modelling Language (UML)

: a visual language for specifying, constructing, and documenting the artifacts of systems. XMI An XML-based specification of corresponding model interchange formats.

Appendix – TOGAF Default Principles

TOGAF provides a list of requirements that many organisations take as a starting point..

Note:  
As pointed out earlier in this document TOGAF’s principles, while enduring, do not present clearly concerns that have gained prominence since they were created. Of note the following aspects: Procurement changes, Privacy & Disclosure, Accessibility, Delivery, Change & Transition Management.   
In addition, some aspects are potentially not current: solutions are less portable to the point that chasing this outcome is a distraction, whereas interoperability of data has become more important.

These principles are grouped and listed below:

#### Business Principles[[9]](#footnote-10)

##### Principle 1: Primacy of Principles

##### Principle 2: Maximize Benefit to the Enterprise

##### Principle 3: Information Management is Everybody's Business

##### Principle 4: Business Continuity

##### Principle 5: Common Use Applications

##### Principle 6: Service Orientation

##### Principle 7: Compliance with Law

##### Principle 8: IT Responsibility

##### Principle 9: Protection of Intellectual Property

#### Data Principles[[10]](#footnote-11)

##### Principle 10: Data is an Asset

##### Principle 11: Data is Shared

##### Principle 12: Data is Accessible

##### Principle 13: Data Trustee

##### Principle 14: Common Vocabulary and Data Definitions

##### Principle 15: Data Security

#### Application Principles[[11]](#footnote-12)

##### Principle 16: Technology Independence

##### Principle 17: Ease-of-Use

#### Technology Principles[[12]](#footnote-13)

##### Principle 18: Requirements-Based Change

##### Principle 19: Responsive Change Management

##### Principle 20: Control Technical Diversity

##### Principle 21: Interoperability

Appendix – Principles

A.1 Business Units are Autonomous

A.2 Customers Have a Single Point of Contact

A.3 Stock Is Kept to a Minimum

A.4 Processes are Straight Forward

A.5 Processes are Standardized

A.6 Management Layers are Minimised

A.7 Taks are Designed Around Outcomes

A.8 Routine Tasks are Automated

A.9 Primary Business Processes are not Disturbed by Implementations of Change

A.10 Components are Centralised

A.11Front-Office Processes are Separated from Back-Office Processes

A.12 Channel Specific Is Separated from Channel Independent

A.13 The Status of Customer Requests Is Readily Available Inside and Outside the Organisation

A.14 Data Are Provided by the Source

A.15 Data Are Maintained in The Source Application

A.16 Data Are Captured Once

A.17 Data are Consistent Through All Channels

A.18 Content and Presentation are Separated

A.19 Data Area Stored and Exchanged Electronically

A.20 Data that Are Exchanged Adhere to a Canonical Data Model

A.21 Data are Exchanged in Real-Time

A.22 Bulk Data Exchanges Rely on ETL Tools

A.23 Documents Are Stored in the Document Management System

A.24 Reporting And Analytical Applications Do not Use the Operational Environment

A.25 Applications have a Common Look-and-Feel

A.26 Applications Do Not Cross Business Function Boundaries

A.27 Applications Respect Logical Units of Work

A.28 Applications are Modular

A.29 Application Functionality Is Available Through an Enterprise Portal

A.30 Applications Rely on One Technology Stack

A.31 Application Interfaces Are Explicitly Defined

A.32 Proven Solutions Are Preferred

A.33 IT Systems are Scalable

A.34 Only in Response to Business Needs are Changes to IT Systems Made

A.35 Components have a Clear Owner

A.36 IT Systems are Standardized and Reused Throughout the Organisation

A.37 IT Systems adhere to Open Standards

A.38 IT Systems are Preferably Open Source

A.39 IT Systems are Available At Any Time on Any Location

A.40 IT Systems are Sustainable

A.41 Processes are Supported by a Business Process Management System

A.42 Presentation Logic, Process Logic and Business Logic are Separated

A.43 IT Systems Communicate through Services

A.44 Reuse Is Preferable to Buy, Which is Preferable to Make

A.45 IT Systems Support 24\*7 Availability

A.46 IT Systems are Selected Base on a Best-Of-Suite Approach

A.47 Sensitive Data Are Exchanged Securely

A.48 IT Systems May Under No Circumstances Revert to Insecure Mode

A.49 Management of IT Systems is Automated as Much as Possible

A.50 End-to-End Security Must Be Provided Using Multiple Defensive Strategies

A.51 Access Rights Must be Granted at the Lowest Level Necessary for Performing the Require Operation

A.52 Authorisations are Role Based

A.53 The Identity Management Environment is Leading for All Authentications and Authorisations

A.54 Security is Defined Declaratively

A.55 Access to IT Systems is Authenticated and Authorised

A.56 Integration with External IT Systems is Localised in Dedicated IT Components

A.57 Application Development is Standardised

A.58 All Messages Are Exchanged through the Enterprise Service Bus

A.59 Rules that are Complex or Apt to Chagne are Managed in a Business Rule Engine

1. without negatively impacting others. [↑](#footnote-ref-2)
2. For example, deferring action until meetings have been organised and attended to discuss the advantages and disadvantages of various options, possibly being unable to concur and requiring yet additional decisions by project governance. [↑](#footnote-ref-3)
3. [The TOGAF Standard, Version 9.2 - Architecture Principles (opengroup.org)](https://pubs.opengroup.org/architecture/togaf9-doc/arch/chap20.html) [↑](#footnote-ref-4)
4. [Architecture Principles The Cornerstones of Enterprise Architecture ( PDFDrive ) - The Enterprise - Studocu](https://www.studocu.com/row/document/midlands-state-university/information-systems/architecture-principles-the-cornerstones-of-enterprise-architecture-pdfdrive/22822601) [↑](#footnote-ref-5)
5. There is no value gained by having Change Management stakeholders know about Development Principles, or Monitoring stakeholders know principles that guide User interface design. [↑](#footnote-ref-6)
6. [The TOGAF Standard, Version 9.2 - Architecture Principles (opengroup.org)](https://pubs.opengroup.org/architecture/togaf9-doc/arch/chap20.html) [↑](#footnote-ref-7)
7. Other the other options – especially when there is only one obvious alternative – is not always required. [↑](#footnote-ref-8)
8. The inclusion of the principles is often performed as an Obligation defined with the project’s Transitional Requirements. [↑](#footnote-ref-9)
9. [The TOGAF Standard, Version 9.2 - Architecture Principles (opengroup.org)](https://pubs.opengroup.org/architecture/togaf9-doc/arch/chap20.html) [↑](#footnote-ref-10)
10. [The TOGAF Standard, Version 9.2 - Architecture Principles (opengroup.org)](https://pubs.opengroup.org/architecture/togaf9-doc/arch/chap20.html) [↑](#footnote-ref-11)
11. [The TOGAF Standard, Version 9.2 - Architecture Principles (opengroup.org)](https://pubs.opengroup.org/architecture/togaf9-doc/arch/chap20.html) [↑](#footnote-ref-12)
12. [The TOGAF Standard, Version 9.2 - Architecture Principles (opengroup.org)](https://pubs.opengroup.org/architecture/togaf9-doc/arch/chap20.html) [↑](#footnote-ref-13)