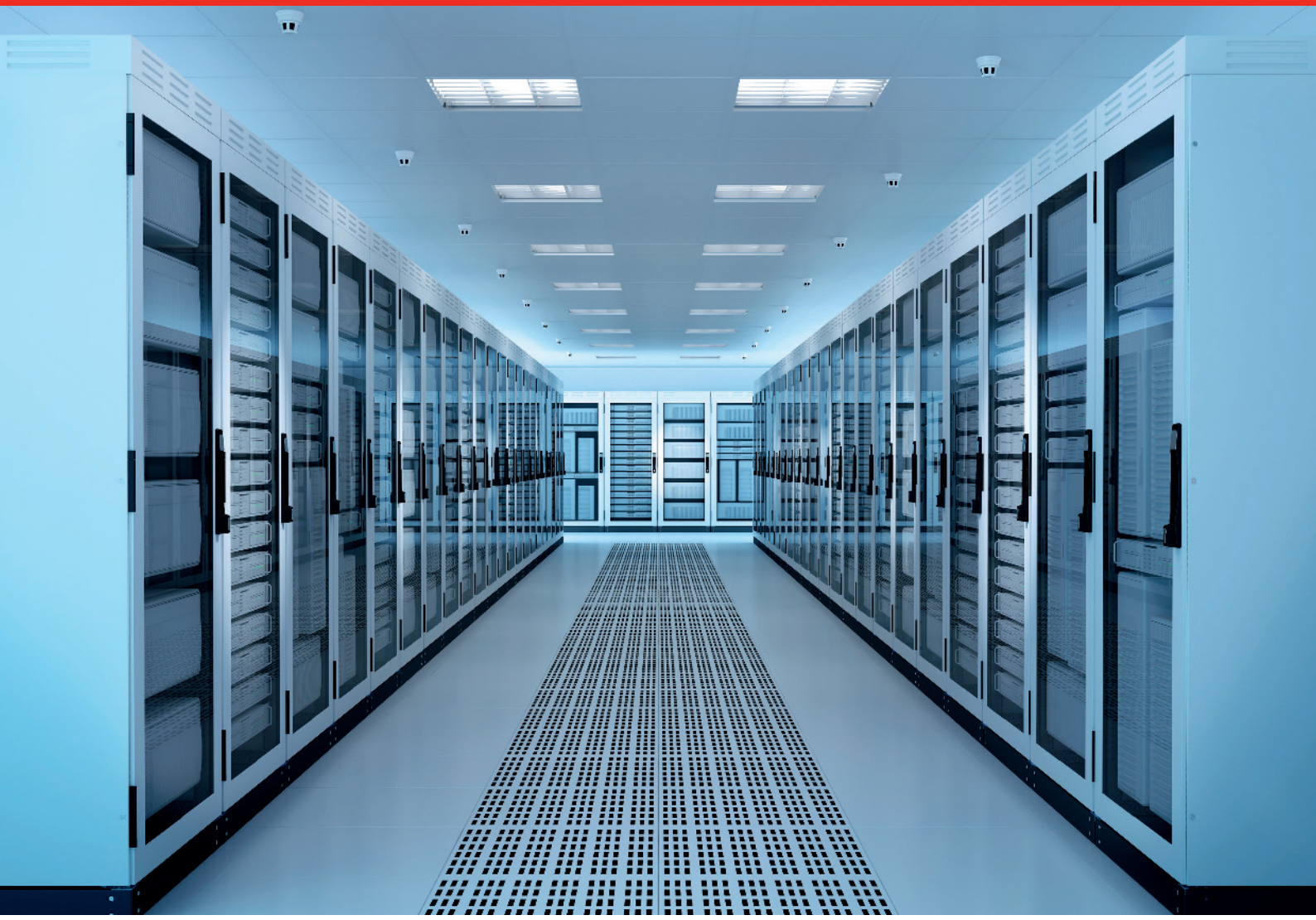
PAS 89:2012

Enterprise content management – Code of practice



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Contents

Foreword

Publishing information

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This PAS is not to be regarded as a British Standard. It will be withdrawn upon publication of its content in, or as, a British Standard.

Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

As a code of practice, this PAS takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this PAS is expected to be able to justify any course of action that deviates from its recommendations.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in italic type, and does not constitute a normative element.

Contractual and legal considerations

This PAS does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with this PAS does not of itself confer immunity from legal obligations.

[1)] www.thecontentgroup.co.uk

0 Introduction

0.1 The need for enterprise content management

Organisations are becoming increasingly aware of the value of the information that they hold, and are recognising the value of being able to use this information effectively and efficiently. Enterprise content management (ECM), being a combination of technology and practice designed to manage information across an organisation and its extended community, is thus becoming an important part of the organisational IT infrastructure.

In the same way that enterprise resource planning (ERP) works to improve the operational efficiency and competitiveness of an organisation, ECM allows the organisation to gain control over the information that it uses to achieve organisational objectives. With the right ECM infrastructure in place, information (content) can be geared around practices and around how people interact with the practices, thus providing the right information at the right time as necessary to do the job well.

Over the last few years, ECM has developed from a department level, point-based, niche solution to an enterprise-wide infrastructure. In order to achieve the maximum benefit from ECM, organisations need to have a clear initiative for its implementation and operation.

The overriding organisational objectives to be borne in mind when developing an ECM initiative include the following.

- **Achieve operational efficiency**
  Moving from the management of information being a passive, manual, error-prone practice to an active, automated, error-free practice delivers organisational value. Ready access to not only information, but the right and appropriate information can make even the largest organisation an agile one.

- **Gain competitive advantage**
  Understanding the organisational information asset and being able to exploit it can deliver an advantage in the marketplace. It removes barriers to learning and brings meaning to information ultimately bringing tangible net worth to information.

- **Demonstrate compliance and reduce risk**
  The effective management of information can be a significant part of the practice for enabling an organisation to demonstrate legal, regulatory and/or business compliance in whatever form it is required. ECM provides the means to support compliance in relation to the information that is held by the organisation as a whole. ECM can help to reduce risk of non-compliance which can incur significant penalties. It is not just the financial savings that implementing ECM can achieve that are important. The potential costs of not having good information management might be just as significant.

- **Support discovery**
  In the event of litigation, regulatory or other investigations it can become necessary to find (or "discover") evidence. Good management of information facilitates discovery; poor management impedes it, making discovery practices unreliable and more expensive than necessary. ECM can support the former and safeguard against the latter.

The overriding barriers to the effective implementation of ECM are:

- not understanding what ECM is and why it is important;
- not having an ECM initiative aligned with organisational objectives;
- not knowing how to go about this initiative and how to measure its effectiveness;
- underestimating the change management and investment required for ECM.

0.2 About this PAS

There are many existing British and International Standards which specify and/or recommend how effective document and records management can be achieved (see Bibliography).

This PAS has been created by consensus between experts with domain expertise across the ECM industry. This PAS seeks to encompass key aspects of ECM practices and technologies.

This PAS documents good practice in going about an ECM initiative and its implementation, coupled with an approach on how to measure effectiveness of the ECM implementation, to enable successful enterprise-wide deployment.

This PAS provides a definition and common understanding of ECM. It supports benchmarking and enables consistent, measurable ECM with increased accountability and transparency across all relevant information.

Using PAS 89 in its entirety can assist in helping an organisation to obtain the potential benefit from ECM, either as a new ECM initiative or as an improvement to an existing ECM implementation. Whilst it is certainly preferable that this PAS is followed in full, where there are critical time factors relating to an ECM project, which do not allow for its entire application, then this code of practice acts as a useful reference in any fast-track implementation.

1 Scope

This PAS details good practice for enterprise content management (ECM). It defines what ECM is and what to consider when embarking on an ECM initiative. It can be used to further an existing initiative or used to develop a new initiative.

It is applicable to all those involved in or considering ECM, particularly end user organisations. In particular it is intended for use by project managers, business stakeholder managers, IT managers, record managers and information managers in organisations who are engaged in seeking to establish good use of information organisation-wide.

It is not intended to be a technical specification, business case, project management methodology, information strategy or service delivery model. This PAS does not provide any particular alignment to specific industry sectors.

2 Terms, definitions and abbreviations

For the purposes of this PAS, the following terms and definitions apply.

2.1 Terms and definitions

2.1.1 enterprise content management (ECM)

framework of practices and technologies that work in an integrated fashion across the organisation to manage information

2.1.2 life cycle

stages information goes through from creation to disposition or destruction

2.1.3 metadata

set of data that describes and gives information about other data

2.1.4 practices

activities and supporting processes for ECM

2.1.5 system

collection of ECM technologies

2.1.6 taxonomy

managed set of terms

2.1.7 technologies

software products which support the application of ECM

2.2 Abbreviations

CAD – computer aided design

CMIS – content management interoperability services

ECM – enterprise content management

ECMS – enterprise content management system

EDI – electronic data interchange

HR – handprint recognition

ICR – intelligent character recognition

IT – information technology

JCR – java content repository

KPI – key performance indicator

OCR – optical character recognition

OMR – optical mark recognition

PDF – portable document format

RFI – request for information

ROI – return on investment

SQL – structured query language

XML – extensible markup language

3 Enterprise content management (ECM)

3.1 What is ECM?

ECM is a framework of practices and technologies that work in an integrated fashion across the organisation to manage information. Those responsible for ECM within the organisation should ensure that they have an understanding of what ECM is and what it is comprised of.

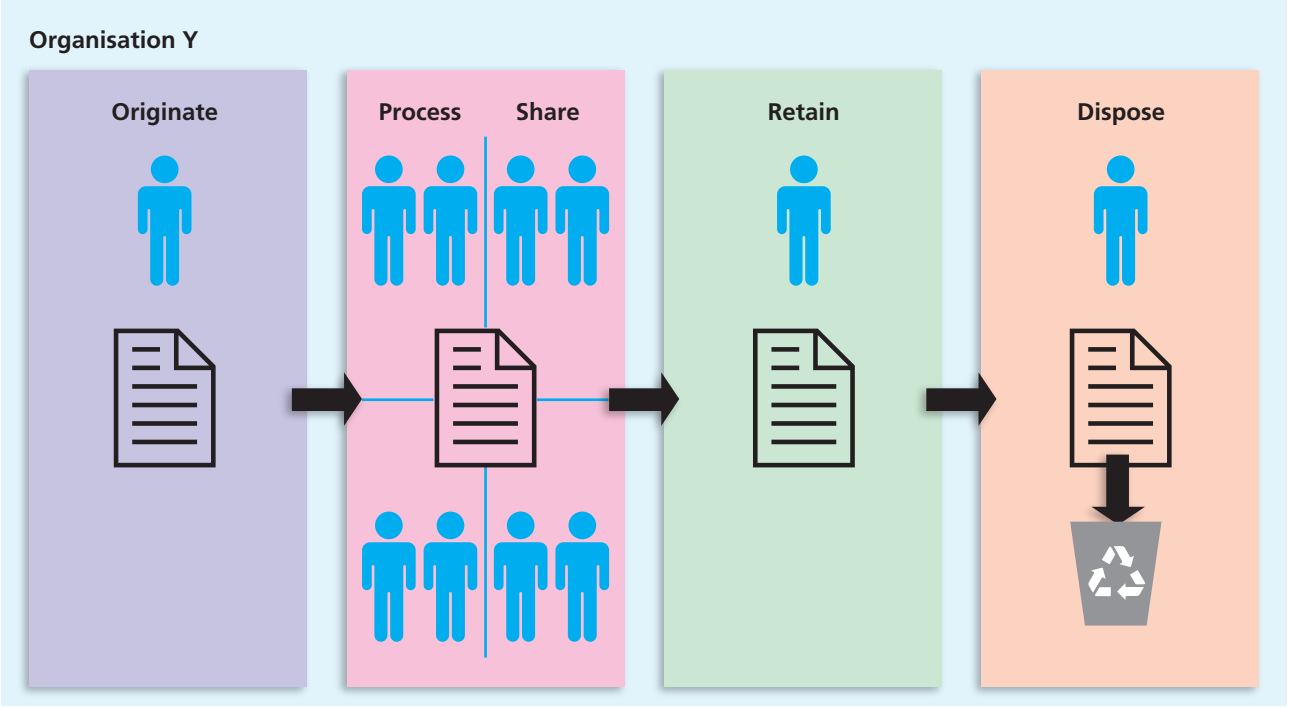
NOTE *This clause further describes the makeup of ECM and what needs to be understood in regard to ECM when embarking on an ECM initiative.*

3.2 Organisation-wide

ECM should be established organisation-wide for managing content throughout its life cycle. Figure 1 provides an example of the life cycle of content.

NOTE *Whilst ECM might be established organisation-wide this does not rule out a phased approach being adopted in achieving this goal. In fact such a phased approach can assist in reducing the risk involved in establishing ECM.*

Figure 1 – Example life cycle of content organisation-wide



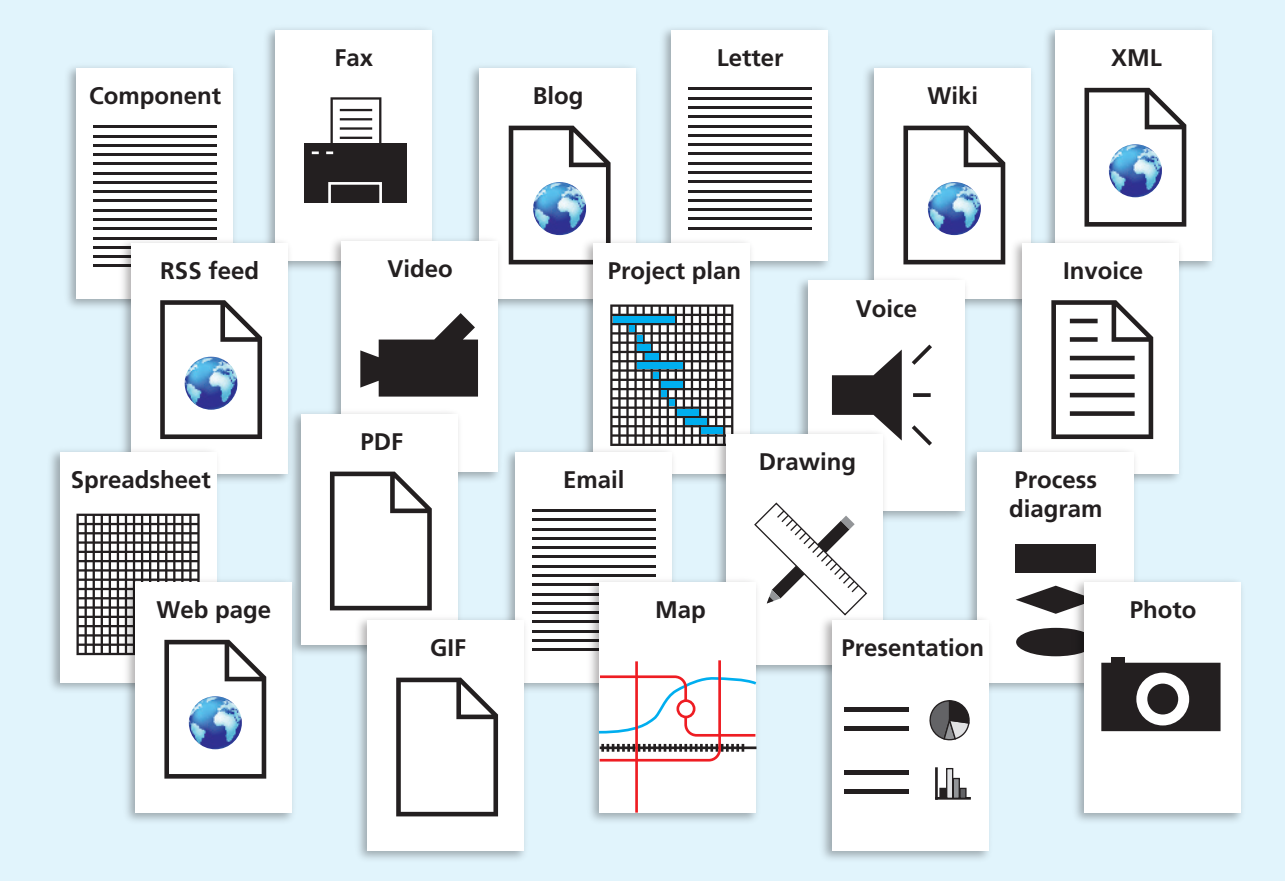
3.3 Content

The organisation should assess and document what information is applicable as content for the ECM.

NOTE 1 *Any information where an organisation would derive benefit through its management is applicable to ECM.*

NOTE 2 *Figure 2 provides an example of information that is typically applicable to ECM.*

Figure 2 – Information typically applicable to ECM

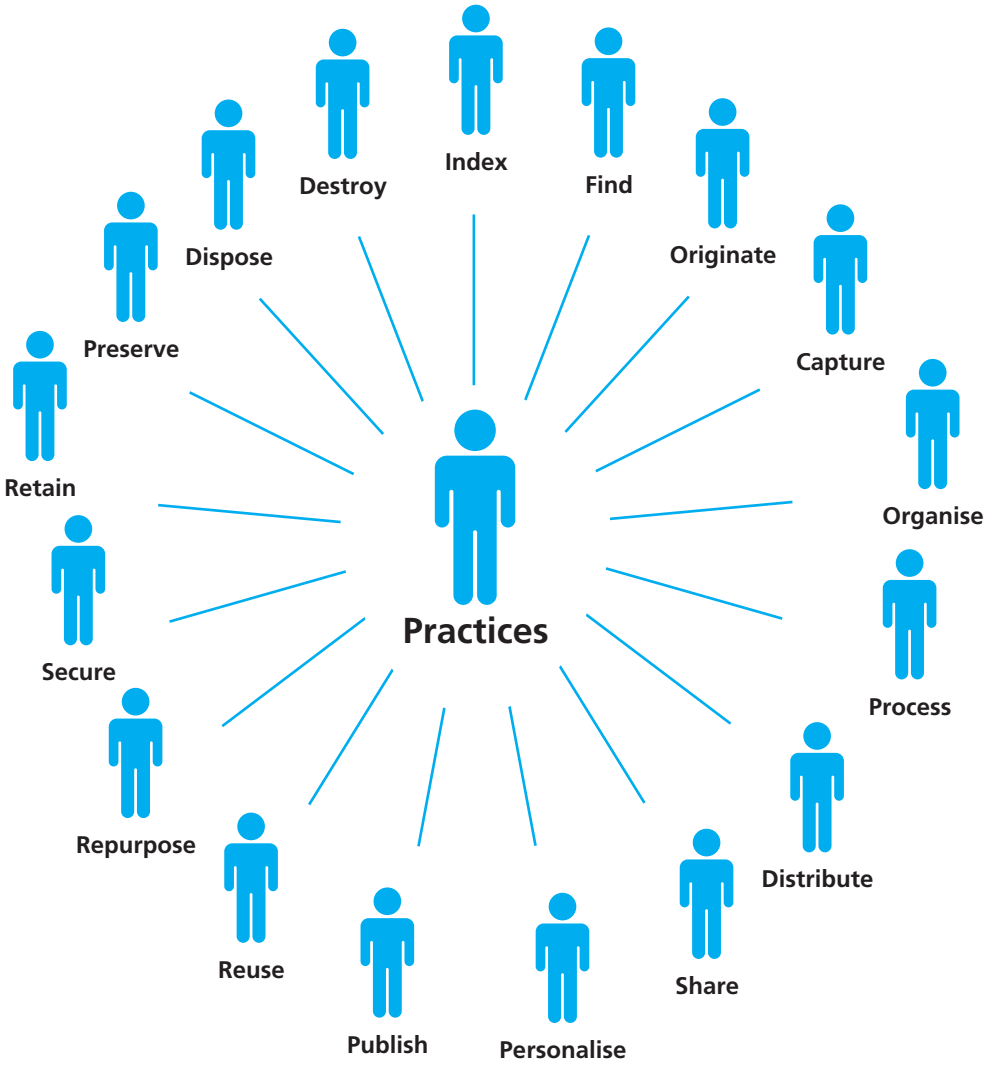


3.4 Application of practices

The organisation should assess and document which practices should be applied to content throughout its life cycle. Those responsible for ECM within the organisation should have an understanding of these practices and how they should be adopted.

NOTE *Figure 3 provides an example of practices that can be used in ECM.*

Figure 3 – ECM practices



The practices depicted in Figure 3 should be considered in the context of Table 1.

Table 1 – Recommendations in respect of practices identified in Figure 3

Practice	Purpose	Recommendations
Index	To apply metadata to content	• Requirements should be understood for each practice • Education should be sought for each practice • Technical expertise should be sought to advise on the best approach to the required practice areas • Any overlap with additional practices should be identified • The level of any functional requirement within any practice should be understood and aligned to relevant enabling technology • Policy documents should take account of requirements in each relevant practice area
Find	To search and locate content based on metadata and/or textual content	
Originate	To create new content	
Capture	To save content or a copy (or scan) of some content so it can be managed	
Organise	To provide order and apply controls to content	
Process	To take content through a workflow	
Distribute	To make available and/or "push" items of content to both human and computer users	
Share	To make content available for use and review	
Personalise	To provide content tailored to the user	
Publish	To take content and to move it (or a copy of it) to an accessible location (e.g. the web) and format whilst maintaining its structure	
Reuse	To use the whole or parts of existing content for other purposes	
Repurpose	To change the format or publishing mechanism of existing content for alternate use	
Secure	To enable controlled access to content and its protection	
Retain	To keep content for a stipulated period of time	
Preserve	To keep content in an accessible format for a stipulated period of time	
Dispose	To remove content whilst maintaining its history	
Destroy	To erase all traces of content, including copies and indexes	
NOTE *Collaboration consists of a number of practices.*		

3.5 Why consider ECM?

ECM should be considered by any organisation wishing to achieve organisational objectives that have a dependency on content.

3.6 Organisational objectives

3.6.1 General

Organisational objectives should be identified and provide the driver for ECM. The organisational objectives should be categorised in one, if not all, of the broad categories detailed in **3.6.2** to **3.6.5**.

NOTE *Whilst the objectives might, one way or another, be implicit with ECM it is not necessarily with a view to creating the "paperless office". Paper is best suited as a transient means of capturing and communicating information in an easily accessible form and as long as it is approached in this way it can be integrated into ECM and be of benefit. This correct use of paper can also help with user acceptance and change management.*

3.6.2 Operational efficiency

Consideration should be given as to where the greatest efficiency gains could be achieved through establishing ECM.

Inefficiency could come in many forms such as duplication of effort, people-intensive processes, poor use of time looking for content, avoidable errors, problems that have arisen and work that has to be done again due to poor content use.

Analysis should be undertaken and metrics developed to help understand the cost of this inefficiency and enable benefits measurement.

3.6.3 Competitive advantage

Consideration should be given as to how the organisation could be more competitive through establishing ECM.

This could be realised by dealing with customer enquiries more quickly by having access to the right content, or accelerated product development resulting in a faster time to market ahead of the competition and with improved quality control.

Analysis should be undertaken in line with the organisational go-to-market strategy to understand where the biggest competitive wins might be and enable benefits measurement.

3.6.4 Demonstration of compliance and risk reduction

Consideration should be given as to how the organisation could demonstrate compliance and reduce risk through establishing ECM. Any compliance initiative should take account of ECM and vice versa. Compliance itself can come in many forms such as adherence to quality programmes or financial or industry regulation, or compliance with environmental directives.

Analysis should be done to understand which compliance factors are of importance and how they can be complied with most effectively.

NOTE *Organisations need to be mindful of the lure of a compliance-only route. Whilst ECM can deliver a wide range of benefits, a compliance centric ECM implementation is unlikely in itself to achieve the operational efficiency or competitive advantage that ECM can deliver. Fundamentally, compliance is not the end goal. The goal is to address compliance requirements whilst working toward organisational objectives that may also improve operational efficiency and gain competitive advantage.*

3.6.5 Support for legal discovery

The organisation should consider how legal discovery could be supported through ECM. ECM should support good practice for legal discovery.

In the event of litigation, if it becomes necessary to find (or "discover") evidence, poor management of content could impede such discovery, making it unreliable and more expensive than it need be.

Analysis should be done to establish what legal discovery might be required and what ECM can support.

3.7 When and where to consider ECM?

ECM should be considered at any time and place that the management of content is implicit in meeting organisational objectives that are likely to deliver benefit to the organisation.

NOTE *Often there may be a number of projects identified which have a common thread in that they are centred around the management of content, e.g. case management, project management, customer service management. At this stage the organisation may consider if these are best served via an ECM initiative.*

3.8 Who should consider ECM?

ECM is applicable to all organisations and should be considered within the context of any relevant organisational objectives.

4 ECM planning

4.1 General

An ECM initiative should be appropriately planned and its implication to the organisation as a whole considered. ECM can be a complex area and so ECM expertise should be sought to aid planning, either within or external to the organisation, via education and consultancy.

When setting about an ECM initiative, organisations should prioritise those areas in which there is potential for "quick wins" to demonstrate the value of ECM whilst ensuring that the organisational objectives and envisaged outcomes of the ECM initiative remain. The approach should be business led with the common thread being content. Whilst benefiting the organisation it can in turn provide benefits to its customers.

NOTE 1 *Organisations need not be deterred by not having everything in place to implement ECM prior to commencement. Provided all practices and their implication have been considered (i.e. relevant questions have been identified and answered or at least considered), then the implementation can proceed in a manner that enables future alignment to other practices.*

NOTE 2 *An ECM initiative may coexist with the organisation's existing overall information initiative which addresses not only content but all information.*

NOTE 3 *Isolated content-related projects introduced independently of each other are capable of providing immediate business benefits and reducing costs. However, they might not establish ECM, and over time can be a conduit for promoting a siloed approach which could impede the benefits that ECM has to offer.*

4.2 Organisational

4.2.1 ECM initiative map

An ECM initiative map should be established that enables the organisation to identify the areas of particular importance that need to be considered when embarking on an ECM initiative.

NOTE 1 *Figure 4 identifies areas of particular importance with any ECM initiative. This is shown in a simplified linear process although in practice this is likely to be cyclical.*

NOTE 2 *Although appropriate to a smaller organisation or a departmental implementation, the sequential process indicated in Figure 4 might well be impractical for a large or distributed organisation. In this case an agile or iterative methodology might be more suitable.*

NOTE 3 *When creating a vision or gathering requirements, it is important to have some idea of the "art of the possible". Thus, familiarity with the technological options and practical solutions is needed quite early on in the process. In terms of development processes, there is often a need to repeat the cycle of definition and implementation in order to develop capability in an evolutionary manner. One of the risks to avoid is to create a set of requirements that involve excessive customisations of selected technology. There is a need to have a balance in order to optimise the business value while reducing complexity.*

4.2.2 Sponsorship

4.2.2.1 General

An ECM initiative should be sponsored by the organisation's executive and supported by stakeholder management.

NOTE 1 *This helps to ensure that full buy-in is achieved from all management groups which in turn helps in meeting one of the biggest organisational challenges brought about by ECM: cultural change.*

NOTE 2 *A successful ECM initiative requires input and sponsorship from both business and IT.*

4.2.2.2 Executive

An overall executive sponsor should be assigned to take responsibility for the ECM initiative preferably at board level, given its strategic nature. This sponsor should be responsible for ensuring that the ECM initiative aligns with the organisational objectives.

NOTE 1 *See objective plan (**4.3.6**).*

NOTE 2 *ECM is organisation-wide and therefore by its nature is strategic so it is essential that, relative to the size of any organisation, comprehensive levels of resource and investment are provided.*

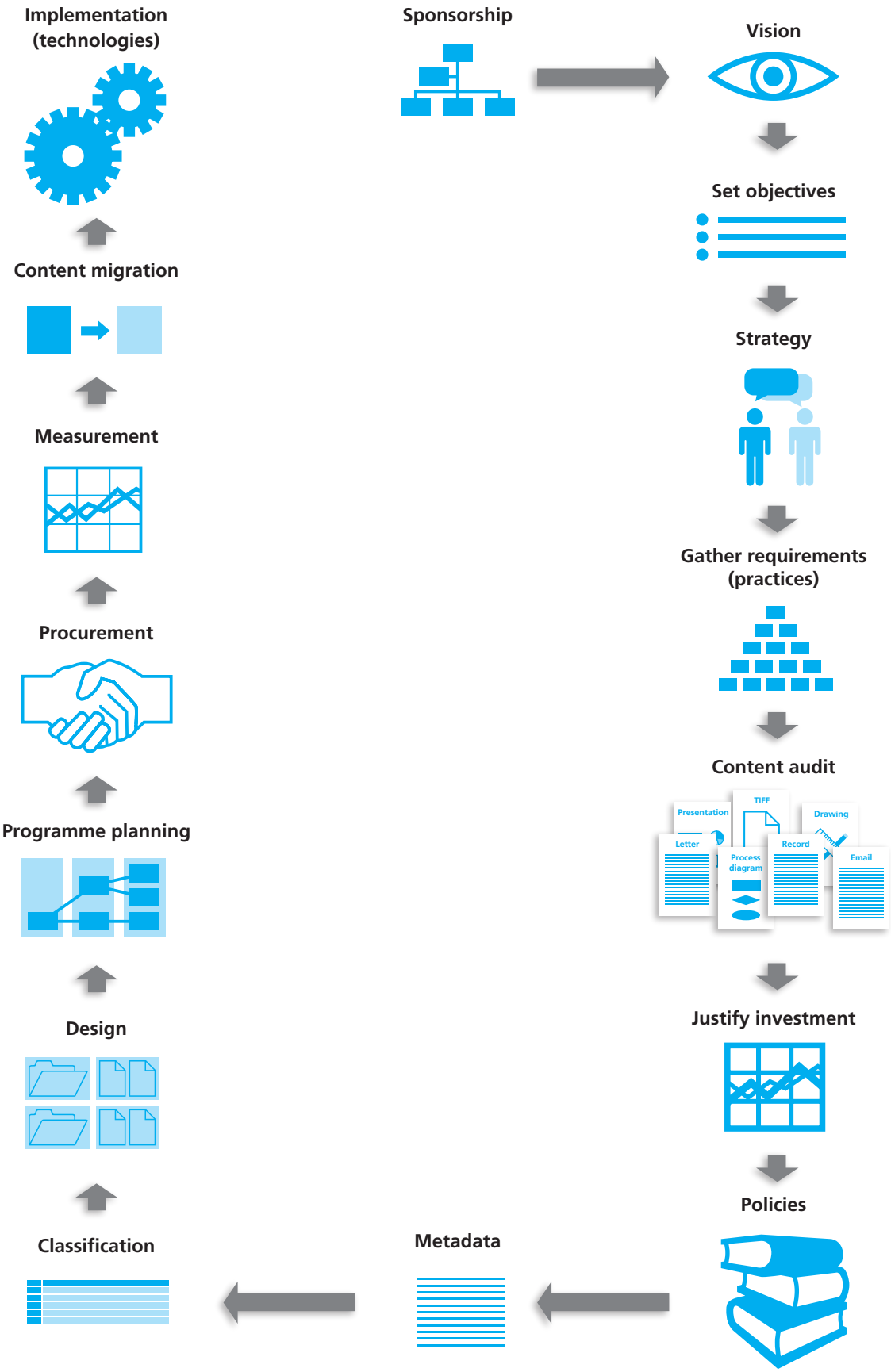
4.2.2.3 Business level

Stakeholder management who have been involved in the objective setting should in turn be responsible for defining their functional requirements in line with those objectives.

4.2.2.4 User community

Buy-in should be gained at the management level and also from within the user community, creating lead users. Whether individuals or teams of people, lead users should be the conduits to gaining broad acceptance in their respective user community. These lead users should become the role models for other users within their respective community.

Figure 4 – ECM initiative map



4.2.2.5 Content champions

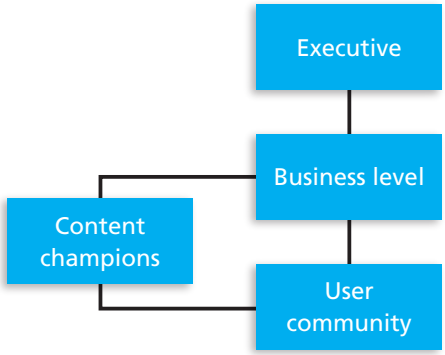
A working party of content champions, which is the representative group of people who have a vested interest in the success of ECM across their area of the organisation, typically the stakeholder management, should be established, i.e. a content steering group. These "content champions" should have regular review sessions to ensure the ECM initiative is on track, to maintain buy-in and momentum and provide governance.

4.2.2.6 Sponsorship hierarchy

A hierarchy should be formed to reflect the levels of sponsorship that exist with clear lines of communication and understanding of responsibilities.

***NOTE** Figure 5 illustrates a typical sponsorship hierarchy.*

Figure 5 – Typical sponsorship hierarchy



4.3 ECM vision

4.3.1 General

An organisation should have a clear vision of what the organisation might look like with ECM in place.

This vision should be documented and should then be aligned to an ECM maturity model (see **4.9.3**). This alignment to the maturity model should identify key performance indicators (KPIs) to enable an assessment of where the organisation is in terms of ECM maturity and what needs to be achieved in order to realise the vision and the steps required to do so.

***NOTE** A strategic, executive-level approach in establishing an ECM vision is necessary to provide the required drive for cultural change.*

Example ECM vision

- To have access to the right content at the right time from any location.
- To facilitate decision-making through content provision so that effective, timely decisions can be made.
- To ensure the ready availability of content, in any given situation.
- To leverage content for business advantage and excel in customer service.

4.3.2 Set objectives

4.3.2.1 General

Objectives should be identified, understood and documented.

4.3.2.2 Organisational objectives

Organisational objectives should be set by the executive with input from the stakeholder management, ensuring that they are of a strategic nature, prioritised and communicated to all involved.

4.3.3 Requirements relating to objectives

Requirements relating to objectives should be defined.

Whilst requirements can be tactical in nature they are implicit in achieving the broader organisational objectives. When developing an ECM initiative, requirements across all business functions should be considered.

The stakeholder management should be responsible for identifying these requirements in line with the organisational objectives. These requirements should be documented and communicated clearly.

***NOTE** Lead users need to have an input to the requirements via their stakeholder management which also helps acceptance of ECM into the organisation (see user acceptance, **4.7.6**).*

4.3.4 Alignment of objectives

All of the organisational objectives should be aligned to each relevant objective category (see **3.6.2** to **3.6.5**). They should then be prioritised and agreed with all stakeholder management. The requirements are then gathered within the context of these agreed organisational objectives and prioritised accordingly.

4.3.5 Requirements gathering

Requirements gathering should include functional and non-functional requirements and be undertaken in the context of the relevant ECM practices.

Once all requirements have been identified in line with the relevant ECM practices, documented and agreed, then these should be formalised into a requirements specification and weighted in terms of criticality for use during the procurement and implementation stages.

NOTE 1 *When considering requirements, weighting may be applied to depict the level of criticality a particular requirement has in terms of the organisational objectives. This can then be factored against the complexity of achieving it, in order to then ascertain if it is desirable. Differing weighting methods exist, one which might be considered is MoSCoW (Must haves, Should haves, Could haves, Won't haves).*

NOTE 2 *Standards could also be used when formulating requirements such as MoReq2:2010 [1] for records management or BS 1192 for collaboration.*

The requirements should be written in a way that avoids being prescriptive about the mechanisms used, and therefore provides flexibility in how these requirements might be implemented. They should be business requirements rather than a system's functional specification.

4.3.6 ECM objective plan

NOTE *Aligning the areas of functional requirement to the organisational objectives should give a concise record of what the ECM initiative is to realise in terms of success factors. This can be seen as the objective plan.*

The objective plan should record the priority agreed for any organisational objectives and this should be factored into any planning.

In some instances, depending on the objective category and priority, there is likely to be a set date in which the objective is to be achieved.

The programme planning (see **4.7**) should then determine whether such objectives are achievable and identify any dependencies in meeting the dates set.

4.3.7 Content audit

When establishing an ECM initiative an audit of target content should be undertaken. Such content should be identified as relevant during the requirements gathering stage.

NOTE *The content audit serves two primary purposes; the first is to enable the organisation to establish what content it has and to remove any duplication or dated content; and the second is to help the consideration of what content is to be migrated to the ECM and if that content needs to be cleansed or reformatted before doing so.*

4.3.8 Justify investment

NOTE 1 *In creating an objective plan there would have already been some investment justification made to get to that point, i.e. an acknowledgement from the organisation that an ECM initiative is relevant.*

Once all areas of requirement have been gathered, a justification for investment should then be undertaken ensuring that the true cost in establishing ECM is known. This should then be used to determine the likely benefits, both tangible and intangible, to be realised by the organisation from the ECM initiative.

The quantification of each benefit should be used to help validate the organisational objectives and in turn their priority. The investment justification should be demonstrable and all stakeholder management should be in agreement with the criteria and measurement metrics.

The organisation should assess the benefit of establishing ECM against the costs involved.

The organisation should consider using a continuing ROI model which shows the desired level of return over a specific period of time, coupled with a reinvestment programme to depict future and ongoing levels of investment versus return with a view to achieving the optimum investment levels.

The investment justification should then be used to help determine the appropriate level of budget that can be justified for investment into the ECM initiative.

NOTE 2 *ECM is often implemented to solve particular business problems. However, when analysed these business problems typically fit into one of the broad organisational objectives' categories described (see **3.6**).*

NOTE 3 *An effective way to demonstrate return on investment (ROI) in particular areas can be to run the profit and loss from a content perspective. This can be achieved by an analysis of content, and then segmentation of the prevalence and role it has in the organisation to deem value. The organisational go-to-market strategy could be considered to see how dependent it is on timely information flows or how it could be advanced by improving this information flow. Improvement in those flows can yield visible strategic benefits, like faster time to market or more responsive customer service.*

NOTE 4 *The true cost of ECM is not only the immediate software, services and ongoing maintenance cost but also those future costs over the life of the programme. The biggest cost can often be that of change management and the time investment required to implement.*

4.4 Policies

Policies (and standards) for content are fundamental in establishing ECM.

Overall governance should be established by the development of an organisational ECM policy whilst incorporating any associated policies, such as a records policy. These policies should provide the procedural controls and disciplines that decide how content is moved through its life cycle together with the rules to be applied to content and at what stage. Standards should be adopted and complied with to ensure the right approach and governance and enable individual projects to be in alignment with the organisation's ECM initiative.

ECM is a large and complex subject. Often organisations don't have time to consider or follow all good practice as ECM might be brought about via a need to solve a particular business problem. Where this is the case, establishing policies and standards to provide the required governance framework are of paramount importance.

NOTE 1 *See Annex B for a sample policy.*

NOTE 2 *Policies need to be considered when gathering requirements and incorporated into any specification. If policies are left to manual control they are much less likely to be adhered to.*

4.5 Metadata

4.5.1 General

To ensure consistency around the management of content, an organisational metadata structure should be formalised and agreed by all stakeholder management and those involved in the requirements gathering process.

NOTE 1 *Table 2 shows the different types of metadata.*

Once agreed, it should be documented and incorporated into the requirements for ECM and implemented into any system.

The metadata structure should support future additions and revisions with processes put in place that enables requests for such additions and revisions.

NOTE 2 *It is important that for areas such as metadata structure, domain expertise is sought to ensure the correct approach.*

NOTE 3 *To support differences in organisational terminology and customer terminology, taxonomies may be adopted and mapped to the organisational metadata structure. These taxonomies might follow public or industry standards or might solely be defined in the context of the organisation.*

Metadata is at the core of any ECM implementation and not only defines the structure of the content but how users interact with that content.

NOTE 4 *Each element of metadata might have values that are controlled or uncontrolled. When they are controlled, the values are provided by a controlled vocabulary. The sourcing or management of controlled vocabularies is a significant topic within the area of metadata management. A taxonomy is one form of controlled vocabulary for which a number of standards exist (see BS ISO 25964-1).*

Table 2 – Different types of metadata

Metadata type	Method	Typical quality
Attribute	Automatic extraction from properties and/or content	High
Transactional	Direct extraction from transactional applications/middleware	High
Recognition	Optical character recognition (OCR), intelligent character recognition (ICR), optical mark recognition (OMR), barcode, semantic analysis, etc.	Mid – high
User controlled	List select	Mid
User definable	Free type	Low

NOTE *This table is only to be used for indicative purposes.*

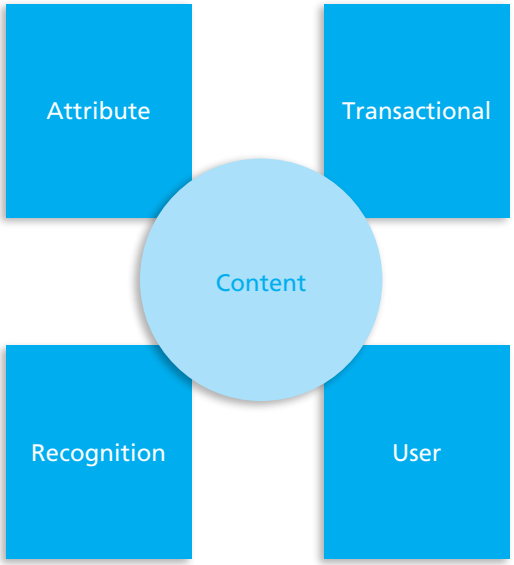
Metadata should be applied with the objective of achieving the maximum level of quality, i.e. application metadata providing a great deal more consistency and accuracy in structure than user generated metadata.

NOTE 5 *Quality levels have a significant impact on the ECM implementation and its success.*

Wherever possible, the capture of metadata should be automated, with minimal or even no user intervention required. In all instances where existing metadata can be used, or logic based on existing metadata generates the correct metadata, then this should be the preferred approach.

NOTE 6 *Figure 6 shows the four main types of metadata relating to content, and how they can coexist.*

Figure 6 – Differing types of metadata applied to content



NOTE 7 *Metadata is the critical element to ECM and it is advised to consult experts and consider further reading in this area. In addition, industry standard metadata templates can be called upon wherever relevant.*

4.5.2 Attribute metadata

Attribute metadata is taken from the content properties directly and provides a systemised means of applying metadata to content. This typically has a high quality level and is the preferred approach.

4.5.3 Transactional metadata

Transactional metadata is taken from existing applications and provides a systemised means of applying metadata to content. This typically has a high quality level and is a preferred approach.

4.5.4 Recognition metadata

Recognising data from content is another important means of applying metadata.

If capturing metadata in this way, wherever possible, this should be verified with existing metadata. Where this is not available, rules should be set to enable a system level of tolerance, with exceptions being manually adjudicated.

4.5.5 User definable metadata

User definable metadata should be used to supplement and enrich existing metadata but not be in place of it.

The addition of user definable metadata should be applied in a controlled fashion where the likes of date format, numbering, terms, have clear parameters. Caution should be given to user definable metadata and error control should be invoked in all possible instances.

Metadata should support a full and consistent audit trail. There should be one central metadata structure which applies metadata across all content in a consistent fashion. Unique referencing for each metadata item should be established to enable its effective management.

4.6 Classification

4.6.1 General

Classification is the systematic identification and arrangement of business activities and/or records into categories according to logically structured conventions, methods and procedural rules.

Content classification should focus on the intended use and purpose of content within the organisation.

Classifying content in this way promotes the following principles:

a) single source of content, ensuring that any content originates from one source;

b) single instance of content, ensuring that any content has only non-duplicate instances in existence.

4.6.2 Content types

Content types represent differing types of content, for example contracts and orders. Content types should be grouped according to use, to provide a higher level classification. Content types should reflect the type of content the organisation is primarily concerned with.

NOTE *Content types are often referred to as document types. Example content types could be invoices, statements, credit notes (financial documents) or could be HR documents such as application forms, CVs or annual reviews.*

4.6.3 Content groups

Content groups represent the content types that have been grouped in line with the business function/s they support, for example, legal.

Content groups should be created to help organisation of content and policy enforcement.

4.6.4 Content instances

Content instances represent different formats of a particular content type that are different to its original source format, for example an order in PDF for archive and HTML for the web whilst the source is in a spreadsheet format.

Content instances should be created when needing to deliver content across different channels, such as to mobile, or to provide more compliant formats of content.

4.6.5 User mapping

Users should be defined in appropriate groups of one or more users per group and then mapped to the appropriate content type or group.

NOTE *This can determine which content is prevalent to which user group, which in turn determines how that content is best delivered to that group based on their profile and also determines security access, i.e. a content-oriented approach.*

Users should be grouped to suit the organisational structure and its use of content.

Some examples of such groups are:

a) knowledge worker: heavy user of all content, working in many differing environments and working in and out of many differing content types;

b) specialist worker: has particular expertise in one area and is a regular user of content associated with that area;

c) application worker: spends most of their time working through a particular line of business application and is only interested in content that supports work done within that line of business application.

4.7 Programme planning

4.7.1 General

Strong programme planning underpins successful ECM initiatives. Programme planning should follow an established process.

The phasing of ECM should reflect the prioritisation of the objective plan.

NOTE *The phasing of any ECM initiative is critical.*

Given the cultural change associated with an ECM initiative, incremental phases should be planned for to ensure that the initiative is meeting the targeted user adoption levels and achieving the envisaged incremental benefits. Some of the important planning areas should include those identified in **4.7.2** to **4.7.7**.

4.7.2 Programme terminology

A programme name should be established from the outset, for example "Company XYZ ECM Programme" as this provides the context in which all projects sit. Programme terminology should be defined to enable a consistent understanding of all areas of the programme.

4.7.3 Risk assessment

An assessment of all risks should be factored into the programme planning.

NOTE 1 *ECM initiatives are not without risk which balances their potential to deliver significant benefits. The more time critical, the higher the risk; the longer the duration of the programme in achieving the organisational objectives, the more drawn out the associated risks are so the right balance needs to be struck.*

NOTE 2 *Table 3 demonstrates some of the typical risks pertinent to ECM.*

NOTE 3 *There is also a risk, beyond the programme itself, in terms of focus of the organisation once ECM is in use in ensuring its continued development and governance.*

Table 3 – Example ECM risk matrix

Risk	Impact	Mitigation
Low user adoption	Programme failure	Establish an ECM initiative
Poor return	Lack of further investment	Ensure clear initial return analysis and measurement metrics
Not meeting set objectives	ECM seen in a bad light and organisation disengages	Agree an objective plan
Lack of system control	Does not establish management of content	Implement ECM policy
Migration costs	Costs of migration are excessive and disproportionate to the programme	Initial analysis of the full costs of migration, of content and systems, and prioritisation of migration, in order to contain migration costs

4.7.4 Existing infrastructure

Consideration should be given to the existing infrastructure when developing an ECM initiative. Organisations should ensure that ECM becomes an intrinsic part of all other infrastructure in terms of security integration, data integration and delivery via the various infrastructure channels, i.e. the web.

Given that there is likely to be an increase in traffic and related storage as a result of introducing ECM, an increase in the load on existing infrastructure is be expected. There should be consideration as to whether the existing infrastructure is able to cope with such an additional load.

The use of content might increase across the organisation. The availability of, and access to, presentation devices employed to view this content should be considered, e.g. numbers/types of available screens and mobile devices.

Recognised deployment models in terms of development, staging, testing, training and production should be factored in and sized according to the envisaged load.

ECM could, by its nature, become mission critical so this should be aligned to the organisation's disaster recovery and redundancy policies.

***NOTE** In some instances the network load might be reduced given more effective management of email but generally the increase in flow of rich digital information puts further pressure on the network, particularly for a distributed environment.*

4.7.5 Training

Training should be tailored, based on the audience and what is appropriate to the user. Through the user grouping, a training plan should be devised which takes account of what each user's interaction with ECM is going to be and the cultural change that might occur.

The content material used in any end user training environment should be relevant to that user group. Lead users should be content experts in their area so they can help in conveying the value of ECM to the user group.

***NOTE** There is particular value in training from expert organisations such as professional associations and consultants around ECM best practice.*

4.7.6 User acceptance

***NOTE 1** If the ECM initiative and its implementation have been reviewed properly, the challenge of user acceptance is likely to be in overcoming initial resistance to cultural change. For example, those who are used to working with paper documents and manual processes rather than the digital equivalent.*

To promote user acceptance of ECM the approach should be to regard ECM as part of what the user does in their everyday work activities and not as a separate function. The organisation should ensure that the user benefits from ECM as part of what they do and not have the perception that they need to perform additional tasks in order to derive the benefit.

***NOTE 2** Underpinning the success of an ECM deployment is cultural buy-in. If there is no demonstrable value to an individual, ECM is unlikely to be adopted and the organisation could struggle in reaching its ECM vision. Particular consideration needs to be given to change management.*

4.7.7 Service delivery

A strong service delivery methodology should be in place to support the ECM initiative and its implementation. The organisation should adhere to a proven service methodology whether it is a private or publicly recognised methodology.

To maintain user adoption, any implementation issues, whether they are of a technical nature or that of education, should be addressed quickly and in accordance with an agreed level of service.

***NOTE** As content is worked with every day, ECM can have a major impact on business processes and therefore, any methodology used should address business processes and organisational change management.*

4.8 Procurement

An ECM initiative leads to the procurement of some if not all ECM technologies (see **5.2**). Market evaluation should be performed to evaluate likely vendors in line with the initial stages of the ECM initiative. A request for information (RFI) should be used to enable qualification of suitability and a number of suppliers should then be engaged for more detailed discussions. The format to follow in an evaluation should be:

a) alignment to ECM initiative;

b) functional and non-functional requirements evaluation;

c) solution fit and commercial standing;

d) experience within industry sector;

e) implementation and support capability.

***NOTE 1** A rushed procurement, or one size fits all approach, could often end with technology that is not well-aligned to achieving the ECM initiative.*

***NOTE 2** The final bid process might involve a select number of suppliers chosen from the RFI responses above. Only at this stage can a detailed function-by-function response be required, along with a committed project costing, which can form the basis of final negotiations with the preferred supplier.*

***NOTE 3** Undue reliance on initial cost as a key weighting factor might not result in the best fit. Compromise in features and functionality might be needed in order to make the best choice for the long term.*

***NOTE 4** The right approach from a technological perspective comes down to which requirements are important to the organisation. ECM might serve many differing scenarios in any organisation and so the technology that works for one organisation might not work for another.*

4.9 Measurement

4.9.1 General

Measurement metrics should be:

a) established and agreed at the outset;

b) implicit in any of the programme planning;

c) seen as part of the evolution of the programme;

d) aligned to the objective plan.

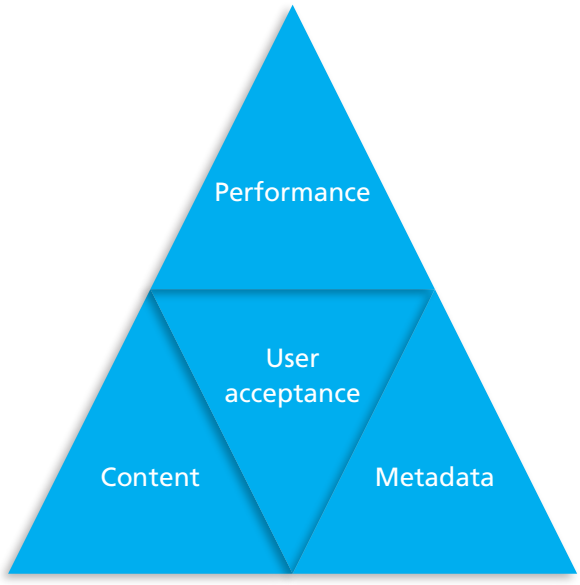
4.9.2 Establishing ECM quality

A quality matrix should be established that measures the critical quality factors of ECM. Performance indicators, both tangible and intangible, should be set around each area to reflect agreed success factors.

***NOTE 1** This can be tracked on an ECM maturity model (see **4.9.3**) to understand how close the organisation is to achieving the ECM vision.*

***NOTE 2** Figure 7 illustrates the ECM critical quality factors.*

Figure 7 – ECM critical quality factors



***NOTE 3** Preventing users from accessing content via other means outside of the ECM helps further propagate the use of ECM. This also takes away the risk that users might fall back to the original means of managing content. However, to do this high quality ECM needs to be established.*

4.9.3 ECM maturity model

An organisation can reach differing levels of maturity of ECM. The maturity model should be used to articulate the ECM vision established at the outset of the ECM initiative encompassing what the organisation looks like with ECM established. Different organisations might seek differing levels of ECM maturity, subject to the value to be derived from ECM within the organisation and the dependency there is around content in achieving the organisational objectives.

There are many levels of ECM maturity but at an introductory level consideration may be given to the publicly available ECM3 maturity model [2].

4.10 Content migration

Content migration should be given consideration as this can be an element of an ECM initiative. Some pertinent questions that should be considered are as follows.

- Is it understood what content needs to be migrated (if any)?
- Is the correct single source of all target content known and its location?
- Is it known what versions relate to what original content and which are applicable?
- Is the content able to be migrated in its current format or does it need to be converted into a different format?
- Is the content in a migration-ready state or does it need to be updated or reworked?
- Does the metadata exist already for the content or does that need to be created? If so what method will be used?
- How much of the content migration can be automated and how much will depend on manual processes?

Stakeholder management and lead users should be engaged in any content migration in order to review the target content prior to and following any migration.

NOTE 1 *Content migration might be resource intensive; there is a dependency on knowledge from the organisation around the target content in order to do this effectively.*

NOTE 2 *Content migration might not imply that all content needs to be physically relocated. If multiple repositories are being used with advanced search capabilities then content migration is in that instance more concerned with the format and quality of the content rather than its location.*

5 Implementation

5.1 General

Prior to any implementation the organisation should be satisfied that appropriate planning for the ECM initiative has been undertaken and each stage on the ECM initiative map has been addressed.

5.2 ECM technologies

Implementation requires one or more of a number of ECM technologies that enable the desired ECM practices.

The organisation should assess and document which technologies should be applied to content through its life cycle or to ECM.

NOTE 1 *Figure 8 provides an example of technologies that can be used in ECM.*

Those responsible for ECM within the organisation should have an understanding of the ECM technologies and their alignment to ECM practices.

NOTE 2 *ECM technologies have in some instances overlapping capabilities.*

NOTE 3 *The technologies depicted in Figure 8 should be considered in the context of Table 4.*

Figure 8 – ECM technologies

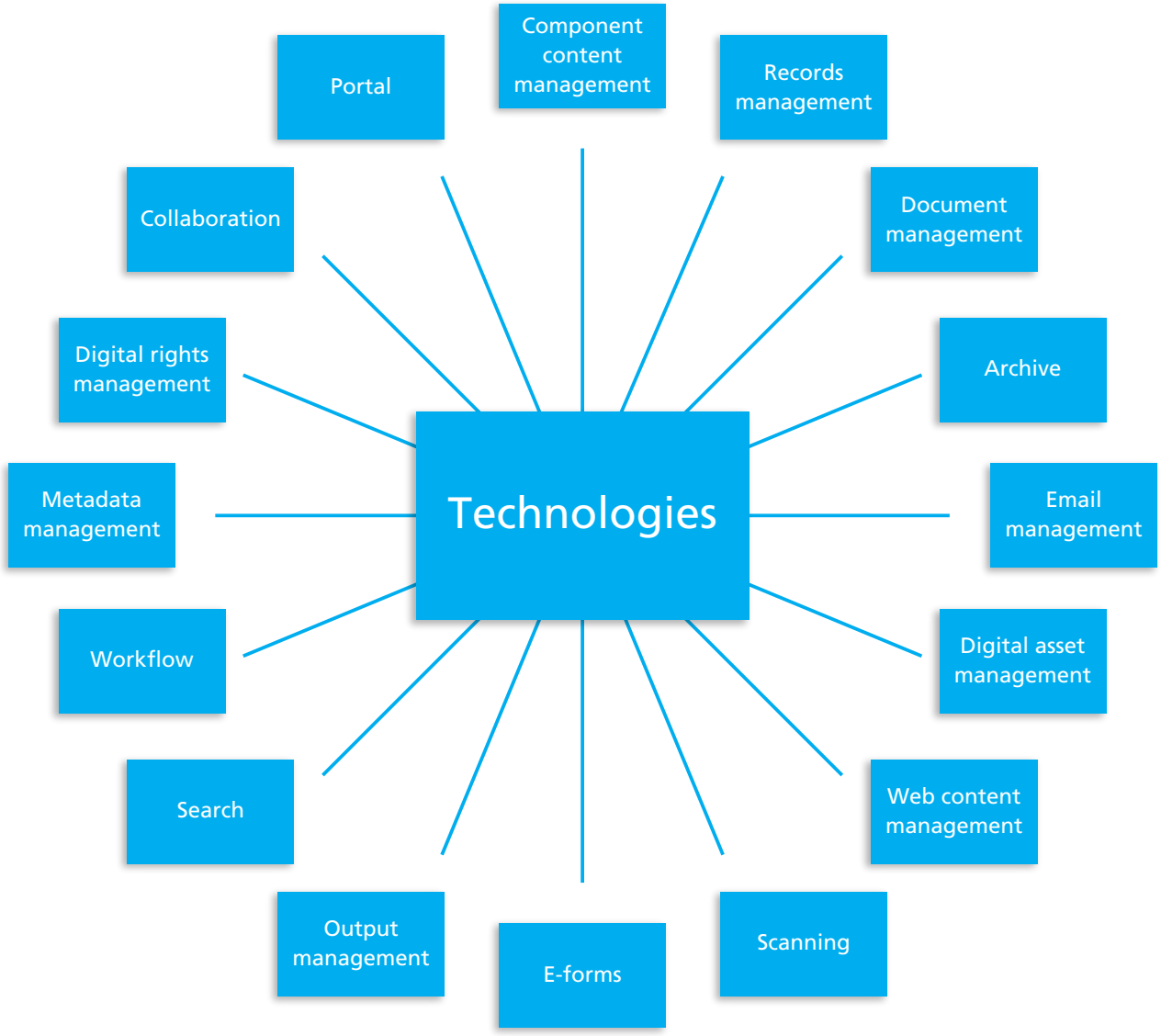


Table 4 – Recommendations in respect of technologies identified in Figure 8

Technologies	Descriptions	Recommendations
Component content management	Management of all documents at a section or paragraph or sentence level	• Each technology should be understood • Education should be sought for any technologies that might not be understood • Technical expertise should be sought to advise on the best approach to the required technology • Any overlap with additional technologies should be identified • Consideration should to be given as to whether an individual or multiple technologies are required • Technologies should support the policies and standards adopted
Records management	Management of any document that has been formally classified as a record	
Document management	Management of all documents at a file level	
Archive	Long term storage of content in an efficient and compliant format	
Email management	Management of all emails at an email/attachment level	
Digital asset management	Management of rich media such as artwork, video and imagery	
Web content management	Management of websites and/or their content	
Scanning	Capture of paper documents for conversion into digital form	
E-forms	Means of collecting user and system generated information in digital form	
Output management	Transformation of information from one format and/or location to another	
Search	Finding of content either centrally or federated	
Workflow	Processing of content in a controlled and automated fashion	
Metadata management	Management of all metadata associated with content	
Digital rights management	Securing of content within or outside of the firewall	
Collaboration	Sharing of content and knowledge	
Portal	Dedicated environment where users view or interact with content and applications	

NOTE 1 *Annex A provides use cases for some of these technologies and shows a typical application of each.*

NOTE 2 *ECM is pervasive. It needs to exist within the environments to which the content is relevant. It needs to enable users to work in the fashion they are accustomed to whilst managing content effectively so integration of these technologies to those environments is paramount.*

NOTE 3 *Email has its unique management requirements given that it is almost of a transactional nature in its use, and by design is rich in metadata. Emails also act as the vehicle to transport large numbers of other files to multiple recipients.*

NOTE 4 *An extension to search is knowledge management; this is the effective classification and management of all content to enable a consistent understanding of that content in order to leverage maximum value from it. Knowledge management enables users to easily understand the content they work with, its relevance to their own function and to support them in their decision-making process.*

NOTE 5 *The fundamental of search is that you know what you are looking for; knowledge management is the converse in that it automates the provision not just of knowledge but the appropriate knowledge for the task being performed. An example of this would be the likes of best practice recommendations at the start of a new project which has been derived from the content of other project work and is automatically provided when a new project is initiated.*

NOTE 6 *Having a sophisticated search capability is unlikely to make best use of content without metadata structure. Users are unable to apply proper versioning, retention policies, compound document management, workflow etc., without having a sound metadata structure. On the converse, without a capable search, then content cannot be found in the appropriate fashion, hence an integrated approach is required.*

NOTE 7 *The available capabilities of ECM technologies are evolving, as is the lexicon of terms used to describe it. This table is therefore indicative of the capabilities that fall within the orbit of ECM.*

5.3 ECM system (ECMS)

***NOTE** The technologies described in Figure 8 are all constituents of an ECMS. An ECMS provides the required ECM technology to enable the ECM practices and the varying degrees of maturity required for each.*

The ECMS spans a number of ECM services that help depict the type of services content can use when moving through its life cycle. These services are shown in Table 5.

Table 5 – Recommendations in respect of services identified in Figure 9

Services	Descriptions	Recommendations
Delivery services	Provide the aggregation and delivery of content	• Full consideration should be given as to how each service area will interact both at a practice and technology level • Education should be sought for any services that might not be understood • Technical expertise should be sought to advise on the best approach to implementing these services • When involving a number of technologies consideration should be given to their technical integration across these services • Existing infrastructure should be considered in terms of how these services will be supported • Consideration should be given as to what applications these services will need to leverage in terms of metadata
Data services	Provide access to the source metadata	
Integration services	Provide integration with existing applications	
Security services	Provide security for all content	
Enabling services	Provide the discovery, processing and indexing of all content	
Production services	Provide the capture and digitisation of all content and its transformation into the desired content type	
Repository services	Provide the management of content	
***NOTE** The available capabilities of ECM technologies are evolving, as is the lexicon of terms used to describe it. Table 5 is indicative of the capabilities that fall within the orbit of ECM.*		

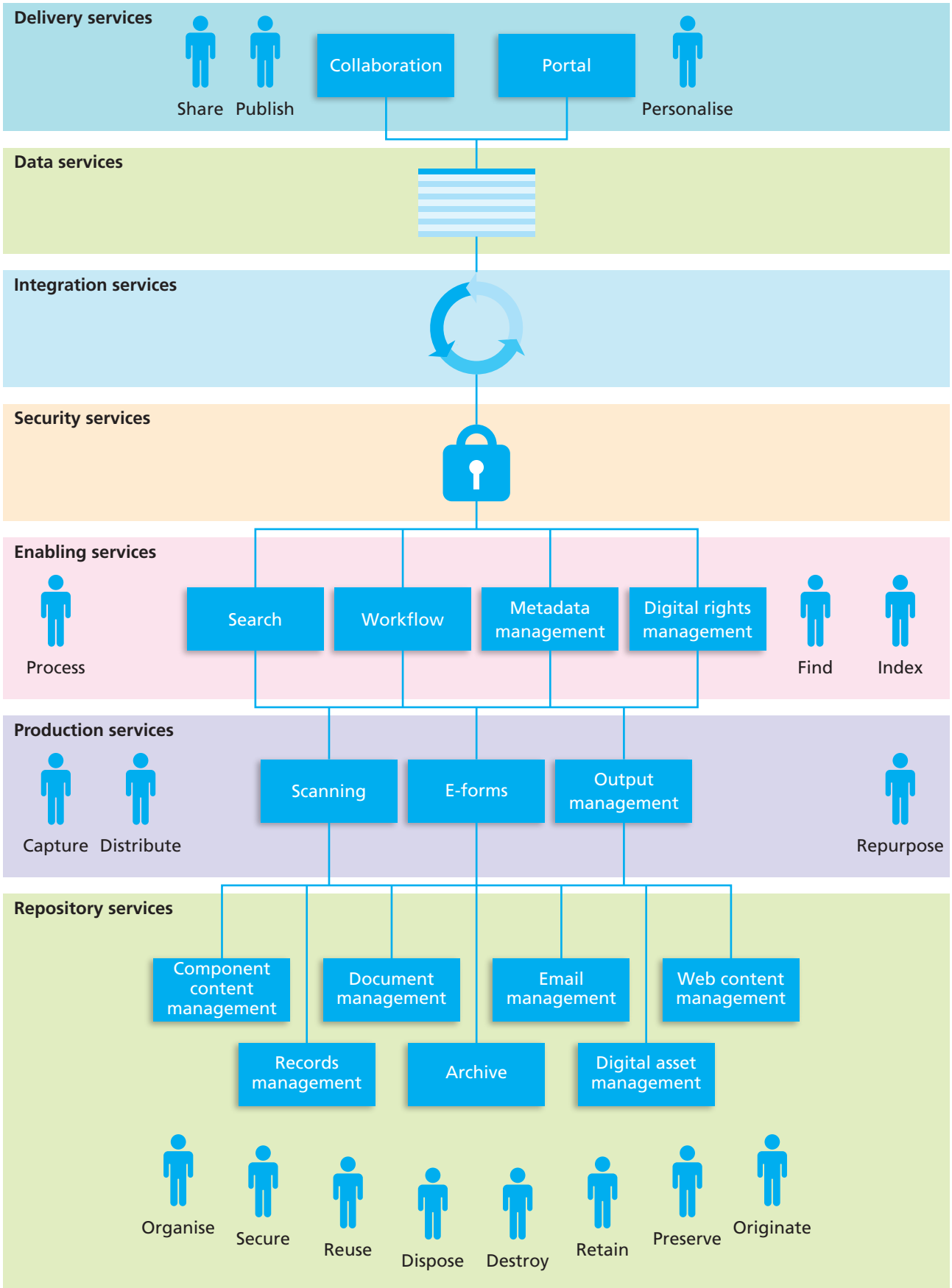
5.4 ECM architecture

The practices, technologies and services should define the organisation's ECM architecture.

***NOTE 1** The ECM architecture provides the infrastructure for an organisation to manage its content throughout its life cycle and demonstrates maturity in an ECM initiative.*

***NOTE 2** Figure 9 provides an illustration of what an ECM architecture might look like for the organisation, incorporating the ECM practices, technologies and services described.*

Figure 9 – Illustrative ECM architecture



Annex A (informative)
Technology use cases

This annex provides a set of common use cases that illustrate how ECM technologies might be applied.

Table A.1 – Technology use cases – Delivery services

Feature	Function	Best use	Suited application	Collaboration	Portal
Case management	Allow end users to easily access and associate documents relating to a specific case file	Managing the relationships and workflows between numerous disparate documents that relate to a specific "case"	Case-centric organisations such as legal firms, healthcare (patient records and billing), law enforcement, social services or similar	✓	
Community	Allow end users to interact with each other or content owners via communication mechanisms such as forums, blogs and wikis	User interaction in forums for real-time and ad-hoc collaboration	Internal communities for knowledge management or external communities for self support	✓	
Collaboration	Workspace which allows a defined group of individuals to share and collaborate around a set of assets or documents	Globally dispersed teams working cooperatively on projects or initiatives requiring access to shared content	Supporting key business initiatives such as product and marketing launches, product development, IT and research projects	✓	
Static reporting	Ad-hoc reports that are predefined and are run on request or a timed basis typically from one limited data sources	Set reports that are needed to review retrospective data sets from limited sources	Quality assurance or health and safety statistics	✓	✓
Dynamic reporting/ digital dash boarding	Predefined reports that are updated in real time and distributed in an automated fashion primarily via digital dashboards	Changing reports that need to have a true and consistent representation of data in a highly visual context	Sales and production type reporting charted for ease of reference	✓	✓

Table A.1 – Technology use cases – Delivery services *(continued)*

Feature	Function	Best use	Suited application	Collaboration	Portal
Intranet/extranet	An aggregation for all content, data and applications in an integrated fashion	To provide one interface to deliver all user content requirements	Standardisation across the enterprise on interfacing to promote user acceptance and ease of management	✓	
Enterprise 2.0/social workplace	Provide advanced web capabilities such as blogs, wikis, communities, calendar	For providing a rich interface with enhanced capabilities	To provide enhancement to standard portal capabilities	✓	

Table A.2 – Technology use cases – Enabling services

Feature	Function	Best use	Suited application	Search	Workflow	Metadata
Repository search	To enter a known search criteria to find a document with variations to include the likes of fuzzy, stemming and Boolean	For searching on the likes of a document name for a document in the appropriate repository	Document search and discovery	✓	✓	✓
Process search	To enter search criteria to find a process with variations such as fuzzy, stemming and Boolean options	For searching the likes of a process name for a process running in an application repository	Process search and discovery	✓		
Federated search	To be able to search across all data contained within transactional systems and content that sits beyond the ECM environment	To be able to extend the information repositories that are being searched	For being able to search on all content and data in an integrated manner	✓		
Knowledge search	To be able to search across all content and data in transactional systems with advanced knowledge management capabilities	For providing advanced search capabilities, concept based search patterns and being able to search across the entire information life cycle spectrum	Knowledge extraction across complete information life cycle views	✓		

Table A.2 – Technology use cases – Enabling services *(continued)*

Feature	Function	Best use	Suited application	Search	Workflow	Metadata
Document routing	To send content to some other user(s) in a serial process	To enable other user(s) to review, amend or approve a document in a controlled manner	Individual or batch expense claim and invoice approval	✓	✓	✓
Document workflow	To select several users to send a digital document to, in a serial or parallel process	To enable a number of users to review, amend, or digitally approve a document in a controlled manner either in turn or simultaneously	Multi-department contract approval	✓	✓	✓
Process optimisation	To select several users to send a digital document to in a serial or parallel process with automated escalations and notifications	To enable a number of users to review, amend, or digitally approve a document in a controlled manner either in turn or simultaneously with timed escalation management, logical routing and process reporting	Capital expenditure requisition that touches a number of disparate approvers based on value and expenditure type		✓	
Business process management	To select several users to send a digital document to in a serial or parallel process with escalations, notifications, in process reporting with logic driven processes and the ability to contain nested/sub processes being instigated across other content, data and systems	To enable a number of users to review, amend, or digitally approve a document in a controlled manner either in turn or simultaneously with timed escalation management, logical routing, reporting of process and the ability to interact and instigate other processes across differing environments with full event notification	Sales order processing that has several approvers/ in-putters to the process, that requires different levels of routing based on the content, and needs to instigate and interact with other processes in parallel such as credit approvals		✓	

Table A.2 – Technology use cases – Enabling services *(continued)*

Feature	Function	Best use	Suited application	Search	Workflow	Metadata
Process intelligence	To enable a full understanding of any process at every level of interaction, be able to model various simulations of processes, and then execute the preferred process	To map current processes against set service levels and ascertain how to improve those service levels through emulation with differing load scenarios	Wherever there is a complex strategic level process that needs to be simulated and improved		✓	
Taxonomy management	To enable the creation, import and management of taxonomies	To enrich a central metadata index with meanings and definitions bringing full structure to metadata	To provide full classification to content in a structured and consistent fashion			✓
File plan generation	To generate a file plan from metadata structures	To enable the storage and navigation of documents in a logical fashion	Visual representation of document libraries to promote document order and user acceptance			✓
Metadata validation and replication	To provide validation and replication across metadata repositories	To ensure consistency and structure to other content repositories metadata	To enable a central management of all metadata across all content types			✓

Table A.3 – Technology use cases – Production services

Feature	Function	Best use	Suited application	Scanning	E-forms	Output
Desktop	Ad hoc scanning from a PC	Capture of individual pages or small documents	Capture of general correspondence	✓		
Volume	Batch scanning of large volumes of individual or multi-page documents	Rapid capture of large volumes of documents	Batch processing of documents such as invoices or legal file	✓		
Distributed	Scanning documents from multiple locations with central control and processing	Remote offices scanning documents locally for processing via a central office	Proof of delivery document capture from site or purchase invoice capture for processing by a shared service centre	✓		

Table A.3 – Technology use cases – Production services *(continued)*

Feature	Function	Best use	Suited application	Scanning	E-forms	Output
Multi-function device	On demand scanning from multi-function devices	Quick accessible digitisation or printing of documents	Immediate digitisation of a letter or signature page of a contract from a convenient location	✓		
Centralised	High quality, fault tolerant scanning environment	High volume capture for digital mailroom environments	Processing large volumes of post or other documents in one location	✓		
Barcode recognition	Identification of barcode data to translate into character sets	To capture metadata for upload into a central repository	The capture of supplier documents which have an agreed barcode format for automated indexing	✓		
Optical character recognition	Identification of printed text by predetermined zones to transcribe into character sets	To capture metadata	Documents of a fixed consistent format to enable fast and efficient capture	✓		
Intelligent character recognition	Identification of free text based on rules for recognition	To capture metadata for validation against external lookups to enable fast processing	Purchase invoice processing to negate the need to manually key the data into a finance system	✓		
Hand print recognition	Identification of handwriting	To convert to metadata to support processing and indexing	Site inspection documents that are structured	✓		
Optical mark recognition	Identification of optical marks	To enable classification of documents and to support batching	For batching large documents together such as statements for processing	✓		
Form recognition	Capture of text and markings from forms	To provide fast and effective capture for forms	Survey forms that have been completed with set answer categories to promote accurate recognition	✓		
Fax capture	Capture of fax traffic	To enable the recognition of faxes for management and processing	Claim forms sent via fax that need to be processed by differing departments based on the type of claim	✓		

Table A.3 – Technology use cases – Production services *(continued)*

Feature	Function	Best use	Suited application	Scanning	E-forms	Output
Web form	To provide a rich electronic form environment for online completion	Managing electronic forms across via the web	Online claims and application processing		✓	
Data lookup	To be able to validate in real time data entered into the electronics form via lookup to other systems	To ensure structure in the completion of electronic forms and error control	When entering address and finance details into an electronic form for validation		✓	
Dynamic form creation	Based on the data entered into the form will dynamically build the form as it's being completed	To enable personalisation and relevance of forms being completed	Questionnaires and evaluation forms that have many answers and subsequent questions		✓	
Print stream management	To capture any print stream and produce high impact documents to any channel	For managing multiple print streams to provide an automated and unified output	To produce finance documents in the required format from legacy finance applications			✓
Data exchange	Capture of data such as EDI and XML to apply logic and processing for other systems	To enable the seamless exchange of data regardless of form	Capture of XML purchase invoices to enable the upload into a finance application with a high quality digital representation to be produced for archive			✓
Transformation	To convert one document information type to another in an automated fashion	For converting information types in a consistent and logical fashion	Converting low quality documents to high quality print documents			✓

Table A.4 – Technology use cases – Repository services

Feature	Function	Best use	Suited application	Document management	Records management	Digital asset management	Web content management	Component content	Email management
De-duplication	To manage any duplicate documents so that only one copy of the original exists at any one time	When several users are storing emails into a central repository	Email management when multiple copies of the same email/attachment are being stored	✓	✓	✓	✓	✓	✓
Metadata management	To provide structure to documents for storage and retrieval	Is necessitated by the storing of any form of digital document	For all digital document management	✓	✓	✓	✓	✓	✓
Versioning	To automate the correct versioning of documents	When multiple users are editing the same document in a step process	Revising a word document, for example a contract, multiple times	✓	✓	✓	✓	✓	✓
Virtual document management	To virtually link and form a relationship between documents	To provide association between documents that are situated in different areas of the repository without needing to move the document	Documents that are made up of a number of parts which could also link to other documents	✓	✓	✓	✓	✓	
Document integration services	Integration with desktop application	When users spend a lot of time working through their desktop applications	Managing general office documents without needing to learn a separate application	✓	✓	✓	✓	✓	✓
Compound document management	To reference documents within a document	When needing to include multiple sub documents in reference to a master document	Complex regulatory documents that have many differing forms of documents to reference	✓	✓	✓	✓	✓	

Table A.4 – Technology use cases – Repository services *(continued)*

Feature	Function	Best use	Suited application	Document management	Records management	Digital asset management	Web content management	Component content	Email management
Offline to online synchronisation	To enable work to be done on a document offline and then have it synchronised back to the main repository	When needing to work on a document without any connectivity to the central repository	A client file that needs to be reviewed offline at the client site, edited and then synchronised back to the central repository	✓	✓	✓	✓	✓	✓
Email handling	To enable real time management of emails and rules based processing	When managing and sharing emails in real time efficiently	Collaboration of mails for projects or contracts	✓					✓
Xref management	To manage external references to other content elements	For documents that have many small components which need consistent version management	Managing drawings in a CAD format and their associated references	✓					
Remote ECM services	Local access over distributed WAN architecture	In a multi-office environment when wanting to improve performance but still maintain a central repository	Users managing digital documents in a geographically dispersed area	✓					✓
Information life cycle management	Managing records throughout their life cycle based on the record classification	When managing differing forms of information with differing requirements	Claims processing to follow the information trail from cradle to grave, including record classification	✓	✓	✓	✓	✓	✓
Archiving content	Writing records off to another media environment	When holding records for long periods of time to cut down on storage overhead	High volume record archive requirements for compliance		✓				✓

Table A.4 – Technology use cases – Repository services *(continued)*

Feature	Function	Best use	Suited application	Document management	Records management	Digital asset management	Web content management	Component content	Email management
Retention policies	Applying automated business rules to records on how and when to dispose them	When needing to manage volumes of records in a controlled manner	Automated disposition of financial documents		✓				
Email archive	To categorise and index emails based on a given criteria with the view to long term archive of mails	When wanting to archive volumes of emails to reduce online storage overhead or for specific compliance requirements	At the end of the life cycle of a project or contract		✓				
Ingest	Importing a batch of digital assets into the repository	Reducing manual effort and ensuring consistent validation is enforced	Import digital assets from users, stock partners and agencies			✓			
Media manipulation	Modifying the digital asset to make it suitable for presentation and reuse	Create modified versions of assets to meet the requirements of the target channel	Cropping and resizing print images for the web			✓			
Metadata extraction	Extracting embedded metadata from digital assets for categorisation and metadata management	Reducing manual input of categorisation and metadata	Managing internal or stock photography, illustrations and media			✓			
Transcoding	Converting digital assets from a source format to a format suitable for the required channel	Converting video assets from a source encoding to a multiple encoded formats suitable for delivery across channels	Management of video libraries			✓			

Table A.4 – Technology use cases – Repository services *(continued)*

Feature	Function	Best use	Suited application	Document management	Records management	Digital asset management	Web content management	Component content	Email management
Rights management	Applying usage rights directly to digital assets both within and external to the system	For ensuring proper use of high value digital assets	To guard against the non-permitted use of images and videos			✓			
Media enhancement	Improving media quality and optimising for the delivery channel	When taking media in one format and then needing to optimise for delivery in an alternate format	Taking print quality images and optimising for the web			✓			
Renditions	Taking snapshots of large files and providing a thumbnail view	To provide thumbnail capability of images in a large media library	Image management for publications where specific images are not known and need to be browsed for			✓			
Content modelling	Defining the template, metadata and structure of content	Defining required attributes, classification approaches, validation and content entry forms	Defining an information architecture for content to adhere to				✓		
Content entry	Ability to enter content directly into the system via web-based forms or document import	All environments that require creation of web-specific content, generally via browser	Content entry from employees, partners or agencies				✓		
Library services	Management capabilities for content such as approval, versioning and audit trails	Facilitating groups to work on shared content with controls for management	Multiple editors working on the same set of shared content to publish a website				✓		

Table A.4 – Technology use cases – Repository services *(continued)*

Feature	Function	Best use	Suited application	Document management	Records management	Digital asset management	Web content management	Component content	Email management
Multi-site management	Manage multiple websites for brands, country operations or departments sharing content between them	Manage the site map and reuse content and assets between websites	Multinational corporations managing regional or department sites				✓		
Presentation management	Define the manner in which content is displayed on a website and the presentation across browsers	Facilitating business users to have flexibility in how the content is presented and interacts with users	Organisations delivering content to multiple stakeholders, looking to deliver an appropriate experience to each segment				✓		
Publishing content	Taking all forms of content and publishing to web	When volumes of content are required to be published to web in an automated fashion	Building a presence on the web and consistent brand management				✓		
Content caching	Caching of content to optimise performance over the web	In high volume web environments when performance is at a premium	E-commerce environments that require a lot of interaction that necessitates optimisation of performance				✓		
Regional management	Providing dynamic regional management, such as languages from a single source	When needing to deliver content across the globe	Providing a consistent marketing message to many countries in many languages				✓		

Table A.4 – Technology use cases – Repository services *(continued)*

Feature	Function	Best use	Suited application	Document management	Records management	Digital asset management	Web content management	Component content	Email management
XML store	To provide structured and granular levels of content store to promote reuse at the component level	When managing complex documents at a granular level	High value complex documents with multiple authoring streams					✓	
Topic, paragraph and sentence management	To enable documents to be managed at a text level	When wanting to reuse text within a document in multiple instances	Terms and conditions, technical specifications that are repeated across many documents					✓	
Standard support	To be able to control how a document is created and to a particular standard, such as XML	When needing to ensure a great deal of structure in the text of a document	When wanting to automate the publishing of a document to the web and have them correctly presented on the web					✓	

Table A.5 – Technology use cases – Security, integration and data services

Feature	Function	Best use	Suited application	Document management	Web content management	Collaboration
Role-based access control	Provision access to content based on user roles (whereby roles have defined privileges to access specific types of content)	To provide granular access control over content	General control of access to content within an organisation	✓	✓	✓

Table A.5 – Technology use cases – Security, integration and data services *(continued)*

Feature	Function	Best use	Suited application	Document management	Web content management	Collaboration
Information rights management	Embeds digital rights into documents offering an additional means of safeguarding documents from unauthorised access and usage, especially when those documents are distributed outside of the organisation For example, it is possible to define who is allowed access to the document, where they are allowed to access it, for how long they may access it, and what they are allowed to do with it (such as open, modify, print, copy and paste)	To provide greater level of control of documents distributed to external organisations (such as partners, suppliers, subcontractors)	Sharing of documents across organisations For example, in a merger and acquisition scenario, access to documents can be revoked if the deal falls through	✓		✓
Enterprise business application integration	To integrate enterprise business applications with ECM such that content utilised by the business applications is actually stored and managed within the ECM	Wider strategic use of ECM within an organisation	Enterprise line of business applications replaces their native content management functionality and/or repositories with best-in-class ECM systems	✓		
Content management interoperability services (CMIS)	Open up access to content in different ECM systems in the same way that SQL opened up the relational database	Unified access to content stored in multiple repositories	Developing a business solution that requires an underlying ECM. Using CMIS, this can be developed once, but deployed against multiple ECM systems	✓	✓	
Automatic population of metadata	Automatic population of metadata for a document by extracting and mapping metadata from native document format	Where an organisation makes use of templates for documents	General document management	✓		

Annex B (informative) Sample policy

B.1 Sample policy document – XYZ Limited

***NOTE** This policy is based on a sample policy taken from BIP 0008-1:2008, Evidential weight and legal admissibility of information stored electronically [3].*

B.2 General

This annex covers the ECM policy implemented by XYZ Limited. Retention and destruction policies are in accordance with the XYZ Limited Content Lifecycle Management Policy.

Content life cycles covered by this policy document are as follows:

a) creation – original documents are either received from customers, or created within XYZ Limited;

b) content life cycle management (retention policy);

c) access – content access is restricted to appropriate employees of XYZ Limited, in compliance with the Information Security Policy;

d) revisions – stored content is not revised and where new versions of content are produced, they are managed by a version control system;

e) destruction – content is destroyed in accordance with the Content Lifecycle Management Policy.

B.3 Content covered

Content covered by this policy document is defined as follows:

- content type 1;
- content type 2;
- content type 3;
- content type 4;
- content type 5.

***NOTE** This list may be customised as appropriate and could include such items as invoices, statements or credit notes (financial documents) or items such as application forms or CVs (HR documents).*

XYZ Limited does not operate a security classification system, as all content is regarded as having the same security level.

B.4 Content management

Content as defined in content type 2 should be managed in accordance with the following.

- Wherever possible, content should be created within the ECM System (ECMS).
- All content not created within the ECMS should be captured into the ECMS as soon as is practical.
- All documents received in paper form, with the exception of those marked or regarded as "private and confidential", should be captured by the ECMS and distributed electronically for action.
- Content should be managed in accordance with the Information Security Policy.
- Content should be disposed of at the end of its agreed retention period, in accordance with the Content Life Cycle Management Policy.
- Detailed procedures should be developed and agreed prior to their implementation.
- All staff should be trained in these procedures prior to being granted access to content.
- Audit trails which demonstrate the proper working of the ECMS should be created and retained in accordance with the Content Lifecycle Management Policy.

B.5 Storage media and file formats

All content as defined in content type 2 should be held in a format and on media as described in the Content Lifecycle Management Policy.

B.6 Destruction policy

The procedure for the destruction of content in accordance with the Lifecycle Management Policy should be documented.

No paper documents should be destroyed after scanning until the electronic version has been quality checked.

Electronic content should only be destroyed in accordance with approved procedures.

A certificate of destruction should be produced to record the reason for the destruction of content, to meet statutory and regulatory requirements.

Content should not be destroyed if it is relevant to litigation that is pending or in progress.

NOTE *Where data protection legislation is applicable, auditable procedures for access and destruction of personal information within content should be documented.*

B.7 Legal advice sought

XYZ Limited should obtain and document agreement for the Content Lifecycle Management Policy. Appropriate legal and regulatory advice should be obtained where necessary.

B.8 Responsibilities

This Policy Document should be reviewed annually under the control of the Company Secretary. Where changes are agreed, they are implemented using company change control procedures.

This Policy Document and any revisions should be approved by the Board of Directors of XYZ Limited prior to its implementation.

NOTE *The maintenance of compliance with PAS 89 is the responsibility of the Head of Internal Audit.*

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 1192, *Collaborative production of architectural, engineering and construction information – Code of practice*

BS ISO 25964-1, *Information and documentation – Thesauri and interoperability with other vocabularies – Part 1: Thesauri for information retrieval*

Other publications

[1] MoReq2:2010, *Model requirements specification for the management of electronic records.* Available from www.moreq2.eu

[2] *ECM3 maturity model.* Available from http://.ecm3.org

[3] BIP 0008-1:2008, *Evidential weight and legal admissibility of information stored electronically – Code of practice for the implementation of BS 10008*

Further reading

BS 10008, *Evidential weight and legal admissibility of electronic information – Specification*

BS ISO 12651, *Electronic document management – Vocabulary – Electronic document imaging*

BS ISO 12653-1, *Electronic imaging – Test target for the black-and-white scanning of office documents – Part 1: Characteristics*

BS ISO 12653-2, *Electronic imaging – Test target for the black-and-white scanning of office documents – Part 2: Method of use*

BS ISO 15489-1, *Information and documentation – Records management – Part 1: General*

BS ISO 19005-1, *Document management – Electronic document file format for long-term preservation – Part 1: Use of PDF 1.4 (PDF/A-1)*

BS ISO 23081-1, *Information and documentation – Records management processes – Metadata for records – Part 1: Principles*

ISO/TR 12033, *Document management – Electronic imaging – Guidance for the selection of document image compression methods*

ISO/TR 12654, *Electronic imaging – Recommendations for the management of electronic recording systems for the recording of documents that may be required as evidence, on WORM optical disk*

ISO/TR 15801, *Document management – Information stored electronically – Recommendations for trustworthiness and reliability*

PD ISO/TR 18492, *Long-term preservation of electronic document-based information*

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