

The Utility of Maturity Models – The ECM Maturity Model within a South African context

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ABSTRACT

Maturity models have existed as a concept for almost two decades. While they were initially made prominent through computer software engineering, they have since spread to several disciplines including: business analytics, e-government, energy management, financial management, human resources management, the health sector, information technology management, and project management. Within the records and information profession, several models have been developed that follow the principles of maturity models. These include the Information Management Capacity Check (IMCC), the Records Management Capacity Assessment System (RMCAS) and Generally Accepted Recordkeeping Principles (GARP). A more recent development is the Enterprise Content Management Maturity Model (ECM3) that was developed as an open source framework. This paper looks at the development of ECM3 within the context of the implementation of Enterprise Content Management (ECM) applications and provides an example of the model's utility for organizations in South Africa. At the time of publication, this author is not aware of any other study that has examined the utility of ECM3.

Keywords

Enterprise Content Management

Enterprise Content Management Maturity Model

Generally Accepted Recordkeeping Principles Information Management Capacity Check

Records Management Capacity Assessment System

1. INTRODUCTION

Maturity models have existed as a concept for almost two decades [7]. This paper looks at the development of the concept in general and provides an example of an ECM model that was used by organizations in South Africa.

A maturity model is a management tool designed to help organizations implement effective processes in a given management discipline [61]. It is a “structured collection of elements that describe characteristics of effective processes” and provides a place to start, the benefit of prior experience, a common language, a framework for prioritizing actions and a way to define improvement [46].

The concept started in the early 1980s under the auspices of the Total Quality Management (TQM) philosophy [4, 47, 55]. TQM is an integrative philosophy of management for continuously

improving the quality of products and processes [1]. The maturity model concept became most prominent through computer software engineering in the 1980s and 1990s [40] and has since spread to several disciplines including: business analytics [11], e-government [3, 59], energy management [49], financial management [44], human resources management [13], the health sector [24, 63], information technology management [8], and project management [36].

Maturity models are developed on the basis that organizations do not move from zero capability to optimum capability instantaneously but rather progress along a journey of maturity [46]. The number of levels for each model may vary from three to six but the most models have is either five or six levels. A cursory look at the different maturity models shows that most of them range between having five and six levels and may vary in their naming conventions. Regardless of the differences in the models they all share the common objective of the continuous improvement of aspects of an organization.

2. MATURITY MODELS IN RECORDS AND INFORMATION MANAGEMENT

Within the records and information profession, several models have been developed that mirror the principles of maturity models. One of the earliest ones is the Information Management Capacity Check (IMCC) Tool and Methodology developed by Library and Archives Canada and published in 2002. It was aimed at helping federal departments and agencies assess their information management capabilities against industry standards and best practices and develop a strategic plan to improve their information management capacity and practices [39].

Another model is Records Management Capacity Assessment System (RMCAS) which was developed by the International Records Management Trust using funding from the World Bank [26]. McLeod, Childs et al. [42] described RMCAS as a “powerful, detailed, sophisticated, comprehensive tool” that requires “investment in learning how to use it...for users to become familiar with terminology and to reap the value of its complexity and depth/breadth of coverage and analysis”. The tool was innovative at the time because it combined three standards: IMCC, ISO 15489 and MoReq. ISO 15489 is the fundamental standard for records management [28]. MoReq which stands for Model Requirements for the Management of Electronic Records is aimed at assessing functional requirements for electronic records management software applications [20]. For the last decade, RMCAS has been considered a very useful tool to the records and information management community in Turkey [37] and the UK [14]. It has also been used by government agencies in Botswana, Kenya, Ghana, India, Malawi, Singapore, South Africa, and Yap,

a state of the Federated States of Micronesia [16]. However, because of developments in ISO 15489 as well as MoReq, the tool is overdue for revision. ISO 15489 is currently being revised [6, 29], while MoReq was revised in 2008 and then again in 2011 [17, 21]. There are also additional standards that would be relevant to RMCAS such as ISO 30300 and ISO 30301 [22].

The IMCC, RMCAS and GARP differ from the ECM model discussed below because they all have been used in instances of managing records and information regardless of whether they are paper or digital. On the other hand, the ECM model was developed specifically to address the implementation of enterprise content management applications that manage records and information in digital form.

3. MATURITY MODELS FOR ENTERPRISE CONTENT MANAGEMENT

Increasingly, enterprise content management has been a subject of discussion around the world. Deliberations have had to do with clarifying terminology [5, 50] or sharing experiences around implementation challenges [58]. A recent article shared the experiences of South African institutions in ECM implementation [35]. The article described 10 South African organizations that had ECM implementation experience ranging from one to eight years [35]. However, the discussion found that the number of years an ECM application had been in place did not necessarily guarantee maturity and/or quality of implementation. The challenge would be to develop an objective way of assessing quality. The meeting participants were introduced to ECM3 as a maturity model that could address objectivity deficit and mapped their own organizations' maturity using the tool. This rest of this paper looks at the development of the Enterprise Content Management Maturity Model (ECM3) within the context of the implementation of Enterprise Content Management (ECM) applications and provides an example of the model's utility for organizations in South Africa.

3.1 Defining Enterprise Content Management

Organizations have a variety of business systems to help them manage their digital content. Depending on the institution, the digital content connected to these systems could either be managed in network drives, or through the use of specialized business applications including ECM applications or, although not desirable, leaving it unmanaged.

The term ECM has been used for more than a decade by professional service institutions such as Gartner and Forrester, as well as in research projects such as InterPARES [30]. It has often been used interchangeably with other related terms such as Electronic Document Management Systems (EDMS), Electronic Records Management Systems (ERMS), and Electronic Document and Records Management systems (EDRMS) [50]. It is the argument of this author that the terms should be seen from an evolutionary perspective where EDMS and ERMS were the first generation applications, EDRMS being second generation and ECM being the third generation [35].

This evolutionary perspective to the concept of ECM is supported by published reports from leading research organizations in document and records management such as Gartner and Forrester.

These reports have, over the last few years, evolved from using terms such as Integrated Document Management Systems (IDMS) and EDMS to ECM. Gartner published a report in 2003 IDMS [23], but from 2004 replaced that with ECM [60]. Another leading research and advisory firm, Forrester, had already used the term ECM in a report published in 2003 [45] and continued to use the term in subsequent annual reports.

AIIM [2], a professional association, defines ECM as constituting "strategies, methods and tools used to capture, manage, store, preserve and deliver content and documents related to organizational processes." ECM applications and strategies allow the organization to manage its information more effectively [53]. When these strategies, methods and tools are targeted at organizational processes, they manifest themselves in several modules. The precise number and composition of the modules remains a subject of debate. Some commentators have argued that there are 10 modules that are considered fundamental including: Document Management, Records Management, Workflow or Business Process Management, Collaboration, Portal, Knowledge Management, Imaging, Digital Asset Management, Digital Rights Management, and Web Content Management [9, 32, 33].

The implementation of ECM applications within organizations is a complex process [52] fraught with numerous challenges [51, 62]. Ideally records professionals should be able to rely on standards and best practice guidelines to provide enlightenment where necessary. However, a recent assessment of the available standards and best practice guidelines reveals that there is a gap once an ECM application has been rolled out within an organization [34]. Considering that maturity models have offered a structured way of assessment within different subject domains, it is the view of this author that an ECM maturity model could offer the same utility where existing standards and best practice guidelines have failed to do so.

3.2 ECM Maturity Model

The ECM Maturity Model (ECM3) was developed as an open source framework by individuals from a number of consulting firms and who also serve as a coordinating team for its continuing development. The first edition was published in March 2009 and a second edition in March 2010 [54].

The model is seen as providing a structured framework to organize efforts by organizations to achieve business benefits from ECM, as well as to hold the attention of programme stakeholders. [54]. The model is able to do this because it can be applied to audit, assess, and explain the current state within an organization, as well as provide a roadmap for maturing organization capabilities [54].

As with all maturity models, the ECM3 has graded levels of maturity ranging from rudimentary information collection and basic control through increasingly sophisticated levels of management and integration, finally resulting in a mature state of continuous experimentation and improvement [19]

The ECM3 is similar to many other models with five levels of maturity and they are:

- Level 1- Unmanaged
- Level 2- Incipient
- Level 3- Formative
- Level 4- Operational and
- Level 5- Pro-Active [54].

The model builds on the premise that the way to measure maturity of ECM implementation would be through 13 dimensions of maturity across three categories [54]. The idea of having the categories of analysis is not new when dealing with software applications such as process, product and people [56] nor within the ECM environment specifically [7, 43]. In the model the three categories are; human, information, and systems. The human category relates to people and all the attributes that enhance maturity, such as the expertise of different types of professionals within an organization, as well as their interactions to ensure strategic alignment with institutional goals for success. The information category relates to attributes affecting the content in application, including the ability to manage that content. Systems category relates to the application’s technical abilities. In addition to these three categories, there are 13 dimensions, as well as five levels of maturity that provide an added level of sophistication. This very comprehensive set of evaluation criteria ensures that the quality of implementation is examined exhaustively.

The diagram below provides a graphical representation of the 13 maturity dimensions across three categories [54].

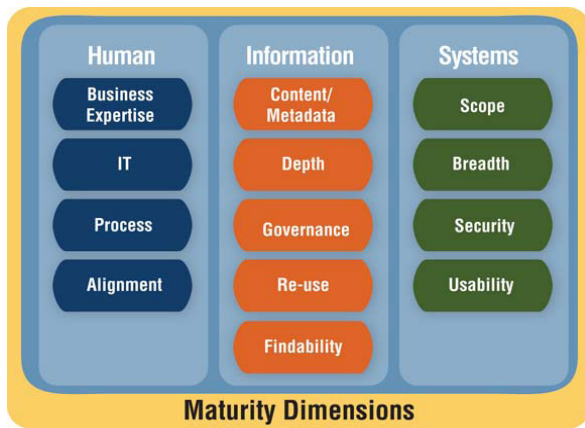


Figure 1: showing the maturity dimensions in the ECM3

As shown in Figure 1 above, the human category has four maturity dimensions: Business Expertise, IT Expertise, Process, and Alignment. Business Expertise relates to employee and executive education and understanding of core ECM precepts. IT Expertise entails the ability to properly take advantage of incumbent and new systems. Process dimension is the extent to which enterprise has analyzed its content-oriented business processes. Alignment relates to the extent of effective Business/IT collaboration, understanding and synchronization [54].

The information category has five dimensions: Content/Metadata, Depth, Governance, Re-use, and Findability. The Content or

Metadata dimension is the extent to which an enterprise has analyzed its content and metadata. Depth relates to completeness of the content lifecycle management. Governance is the extent of policies and procedures addressing information management. Re-use is the extent to which content within ECM applications can be re-used for purposes other than what they were initially intended. Findability is the ability to find the right content at the right time [54].

The final category is systems and has four dimensions: Scope, Breadth, Security, and Usability. Scope is the relevant range of ECM functional features adopted. For example, document management, business process management, digital asset management, etc. Breadth relates to the evolution from departmental to enterprise-wide management systems where necessary. Security is the extent to which actual content access reflects enterprise entitlements and Usability is the ECM application’s fitness to purpose [54].

3.3 The ECM Maturity Model in South Africa

At a meeting convened in 2010 by representatives of six South African institutions, there was discussion on the challenges they experienced when implementing ECM applications. Most of the institutions had between three and eight years of implementation experience and identified different common challenges that they faced throughout that period. However, at the core of the discussion was the lack of a framework for making standardized implementation assessments. The topic of discussions then shifted to the ECM3 and was followed by a rudimentary assessment of each of the six institutions. Each of the 13 maturity dimensions was discussed at some length and each organizational representative was asked to provide an honest opinion of the levels of maturity for their institution. The figure below provides a graphical representation of the maturity dimensions of all six organizations combined.

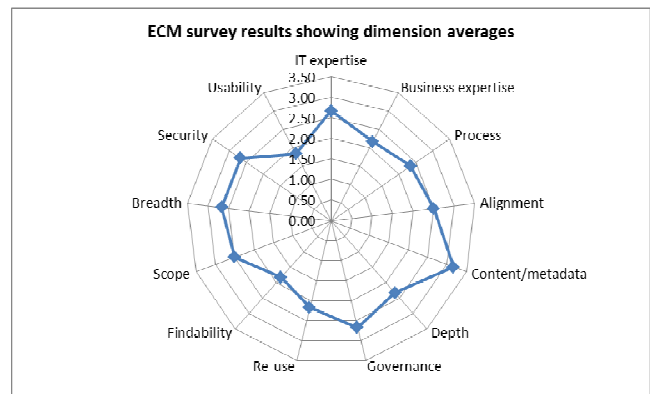


Figure 2: showing average results for maturity dimensions

According to the figure above, Content/Metadata dimension is by far the most mature within the South African organizations and two dimensions, Findability and Usability, are the weakest. However it is worth noting that all the maturity dimensions range between 1.8 and 3.2 in the scale of 1 to 5. This demonstrates a significant disparity range.

Another way of assessing the organization is the comparative levels of maturity between the South African organizations. The diagram below provides a graphical representation of comparisons between the different organizations.

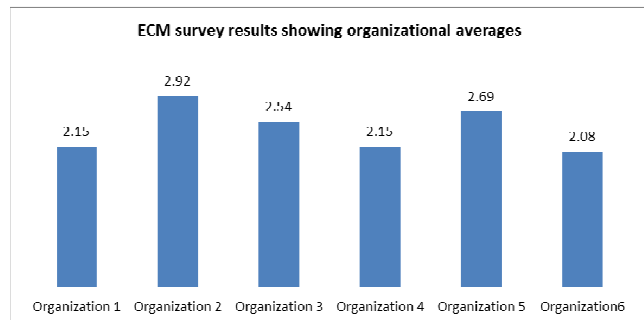


Figure 3: showing the scores for individual organizations

The figure above provides a graphic of the institutions with the order from strongest to weakest being: Organization 2, Organization 5, Organization 3, Organizations 1 and 4 in shared fourth position and finally Organization 6. The results show that all the organizations had an average that is within Level 2 of the maturity.

Once one takes the results of maturity dimensions and of individual organizations, it is clear that at an institutional level the organizations are not starkly different and are actually quite low in their maturity. However, one is reminded that this survey was conducted in an informal manner without the rigors of research protocol and without an in depth assessment of each organization. Therefore, additional research would be needed to go beyond this cursory analysis of the institutions.

4. CONCLUSION

This paper has sought to introduce the reader to maturity models in general and ECM3, in particular. It has also demonstrated an instance when ECM3 was used by a group of organizations. While more details could be provided of the study, those details would result in a rather convoluted extended discussion. The brief results above merely provide a basic essence of ECM3's utility and serves to illustrate several points. First, it is clear from the discussions of the results that while the ECM3 provides a robust framework for implementation assessment, there are several aspects that would need to be reflected. For instance, in any system implementation including those of ECM applications, organizational culture and change management are fundamental issues [57, 64]. For instance, in a study by InterPARES that surveyed institutions that had implemented ECM applications, organizational culture was critical to implementation success [25, 31]. Therefore, it is recommended that any future ECM3 version should consider including these aspects or, alternatively, having a bridge to other models that have covered those aspects.

Another missing component in the model relates to assessing the long term preservation of digital records. ECM3 was designed to assess digital records within ECM applications and, for the most part, these applications are not designed for long term preservation. This is because the digital preservation applications

and ECM applications would, in theory, adhere to different functional requirements. For ECM applications, these functional requirements have been determined primarily within national jurisdictions such as Australia [48] and the United States [15]. In addition, there are ECM guidelines by the European Union [17] and efforts for a global basic, generic set of functional requirements by the International Council on Archives [27]. On the other hand, digital preservation applications, for the most part, adhere to the OAIS reference model [38]. It is therefore prudent not to expect ECM applications to provide digital preservation functionality. However, there has to be awareness that these applications serve the purpose of ensuring digital records are managed effectively in order to ease the challenges of management of records in the long term.

Considering that ECM applications are not ideal to address long term preservation concerns, ECM3 should not be expected to serve as a digital preservation maturity model. A more appropriate model is one that has been developed by Dr. Charles Dollar and Ms Lori Ashley and is titled Digital Preservation Capability Maturity Model (DPCMM). The main aim of this tool is to "help practitioners identify at a high level the capabilities of their organization relative to optimal digital preservation capabilities" in order to chart the evolution from "disorganized and undisciplined management of digital records" to "increasingly mature stages of digital preservation capability" [18]. Unlike ECM3, the DPCMM tool has been used extensively, particularly in North America. The most extensive utility was an assessment, conducted under the auspices of the Council of State Archivists, of archival institutions in 56 states and territories[10]. The overall assessment is that only a few of the state archives "have digital repositories that have been designed to preserve long-term electronic records over successive generations of technologies"[12].

Lastly, as the discussions above have illustrated, no one maturity model could ever be considered a silver bullet since it could never single-handedly address all the possible assessment challenges in a given subject or domain. Therefore, in addition to following the mantra of continuous improvement by regular refinement of the models, these models have to resist the desire to be an all encompassing grand narrative. This is because "any discourse that claims to provide all the answers is a reductive and dangerous one" [41].

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