

# Introducing the Information Culture Framework as a Component of the Digital Curator's Toolkit

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**Abstract**—The purpose of this paper is to promote the notion of “information culture” as an integral component of the education for digital curation professionals. Understanding the context in which digital artefacts are created and used is essential for their meaning to be knowable, communicable, and preservable over time. Human beings’ attitudes towards information and the values they attach to it are an unexplored aspect of such context. The Information Culture Framework (ICF) that is presented here has been developed to help organizations assess the ‘soft’ factors that enable and constrain their information-related practices. By applying the ICF, digital curators will be able to shed light on the information culture underlying the objects under their purview, to explain how and why such objects are as they are, and to enhance understanding of what they meant to their creators and users.

**Keywords:** *information culture; human activity system; digital curation; education*

## I. INTRODUCTION

Capturing the context in which information objects are created and used, that is, understanding why those objects look as they look, what their purpose was and how they have been used in specific circumstances, is of paramount importance to information professionals. The archival and records management discipline has traditionally been concerned with identifying and maintaining trace not just of individual records but also of the relationships among them and between each recorded piece of information and the activity generating it. Today, preserving contextual information has become a top priority more than ever before, as digital objects, being “physically fragmented and only kept together by a logical boundary” [1], would simply be inaccessible and meaningless without appropriate sets of metadata attached to them.

The models, methods and strategies that have been devised by national and international bodies and research projects interested in the survival of our individual and collective memories in digital form have primarily focused on widely applicable conceptual frameworks (e.g., Open Archival Information System (OAIS) Model [2]), domain-agnostic

standards (e.g., Dublin Core Metadata Initiative (DCMI) [3]), high-level system development methodologies (e.g., Design and Implementation of Recordkeeping Systems (DIRKS) [4]), and rule-based representations of the life of information objects (e.g., the InterPARES 2 Chain of Preservation Model and Business-driven Recordkeeping Model [5]; MoReq2010 [6]). All these initiatives have enriched our understanding of the digital domain and have provided ‘solutions’ that are in turn used to define requirements for specific applications (e.g., electronic document and records management systems (EDRMS)).

However, due to their abstract and prescriptive nature, these ‘solutions’ have also contributed to remove us from the ‘problem,’ the actual situation that our optimal models only partly and distantly portray. The notably missing piece of the puzzle is the ‘human’ component of every *human activity system*, where people carry out their purposeful activities through the information they create [7]. People, processes, and structures are all part of human activity systems, and are inextricably linked one another. However, the first element is often ignored or misrepresented in the literature we have referred to, as well as in the education provided to information specialists, despite the recognition of the centrality of the human factor in recent studies [8].

Our research set out exactly to tackle the *people problem*. This paper outlines the characteristics of the Information Culture Framework (ICF), an assessment tool that enables the analysis of the main influences on the ways individuals and groups in organizations behave and the assumptions they make in relation to the information they create and manage in the course of their daily activities. Being aware of such influences and how they affect the features of information objects and systems is a crucial step towards a concrete and situated understanding of the context in which those objects and systems are embedded. Before discussing the ICF in detail and the benefits that digital curators may derive from it, we will review the background ideas and preparatory work that led to its development.

One of the most successful research projects in the area of digital preservation, the International Research on Permanent Authentic Records in Electronic Systems (InterPARES) project, identified five contexts as instrumental in establishing the meaning and properties of every record (including its reliability and authenticity). These contexts are: the juridical-administrative framework in which the record was created; the record's provenance (i.e., its origin from a specific creator); the procedure or business process involved in its creation; the documentary context the record belongs to (i.e., its relationship with any other records constituting the whole archives of a single creator, and the structure itself of such archives and of every individual aggregation within it); and the technology that was used to create the record (specifically the hardware, software and operating systems involved) [5]. This description is certainly helpful when it comes to breaking down the complexity of the environment surrounding information objects that must be preserved as evidence of activities.

However, in the light of the limitations of existing models discussed earlier, this archival representation of the context is insufficient to grasp what actually happened in any specific instantiations of record making and keeping. Was the legal framework understood and applied by the users of the records system? Can we be sure that the 'official file' contains all of the records used to carry out any given transaction? How was the available technology used (or not used) by concerned individuals? Additionally, by considering each of the contexts as a distinct factor and by keeping them separate from the actual objects, processes and human beings involved, the InterPARES model fails to account for the interactions and mutual influences existing among those elements.

As argued elsewhere [9], 'hard' approaches to information management, that is, approaches that focus on simplified notions of the 'problem situation' because their primary objective is to achieve sustainable, replicable 'solution' rather than an understanding of what the actual 'problem' is, have contributed to build an interpretive framework that excludes or idealizes the human agents that are responsible for constructing our social and organizational worlds. When socio-cultural aspects emerge in those studies, they are usually seen as a barrier to the implementation of the envisaged solution (whether it is a classification tool or a digital recordkeeping system). How to eliminate or mitigate the effects of human participation in information-related endeavours seems to be an explicit or implicit goal of much research in this area.

We believe that it is time to start delving into the messy and complex reality that shapes and is shaped by our information objects and systems. The concepts of organizational culture and information culture can assist us explore the tacit assumptions, espoused values and material artefacts and practices that reveal who we are as culturally and historically situated human beings

collectively engaged in the creation and dissemination of knowledge.

## III. ORGANIZATIONAL CULTURE AND INFORMATION CULTURE

By drawing on management and organization theory [10, 11], IS research [12, 13] knowledge management and information management [14] and genre theory [15], our study began with an investigation of the characteristics of organizational culture and its relationship with other, interrelated supra- and sub-cultures that may be found in organizations (e.g., supranational, national, professional or occupational, and group cultural layers, as identified by Karahanna and colleagues [16]). One of the most cited definitions of organizational or corporate culture is the one provided by Schein [17], that is: "A pattern of shared basic assumptions invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration, that have worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems."

Although interpretations of culture vary, most authors agree that values and practices are two critical components of it. Typically, values are acquired early on in life through the family and neighbourhood, and later through education. They provide us with fundamental assumptions about how things are. Practices are developed through acting together in social contexts (e.g., the workplace) and ideally reflect our values. Values and practices are intertwined and tend to affect each other. Both are continuously evolving, although values, especially those acquired during the formative years, are hard to change. Culture at the national and supranational level (the latter involving language, religious, ethnic, and regional factors) is mostly influenced by interiorized value systems, while organizational, occupational and group cultures appear to be primarily based on shared practices.

Ideas about cultural influences on information-related practices in organizations have been discussed and explored since the 1980s (see, for instance, 18, 19). Interpretations of information culture are at least as varied as those of organizational culture. Some authors look at it as 'culture of information' and suggest that organizations that have an information culture are more likely to achieve success in their business performance [20]. We maintain there is no organization without an information culture, whether the latter is perceived as being effective or not.

Following Oliver's [21] definition of information culture (i.e., "the manifestations of organizational culture that portray values and attitudes to information in organizations"), we embarked on a research project to identify its components. The first stages of the project, which involved an analysis of the websites of multinational organizations and the design of a global survey, are described in some detail in a recent contribution by these authors

and collaborators [22]. The ICF builds on the outcomes of such preliminary research and on observations of information and records management practices conducted by the authors in different organizations. Subsequent stages of the project will involve fieldwork studies with the aim of refining initial findings by means of qualitative, ethnographic methods.

#### IV. THE INFORMATION CULTURE FRAMEWORK

The ICF takes into consideration all possible factors that appear to affect the attitudes towards information and the values accorded to it in relation to the various cultural layers one may distinguish within an organization (i.e., from supranational and national characteristics to manifestations of culture at the corporate, occupational and group levels).

Some components of information culture are more amenable to change than others. This is an important insight, as organizations often try to (and need to) influence people's behaviour with regard to the way they share information, how they use existing systems and technologies, and other information-related practices. By applying the ICF as an assessment tool, organizations will realize what factors impinge on the achievement of their objectives, and might eventually be able to come up with more appropriate and effective policies and strategies, targeted at specific aspects of their local information culture(s).



Figure 1 Information Culture Framework

In the ICF, the factors involved in the information culture construct are categorized into three levels according to their degree of malleability:

I. Fundamental influences – It is the bottom layer of the pyramid in Fig. 1 and represents those factors which are so deeply rooted in human beings and their social institutions that they are extremely hard to change. Supranational (e.g.,

regional, ethnic, religious, linguistic), national and corporate cultural influences are especially involved. Level one factors have been identified as follows:

- Values accorded to information. In relation to organizational functions that involve public accountability, awareness of the need to manage certain information as evidence will for instance manifest in several forms of respect for the records and the recordkeeping policies and systems in place. This critical feature can be further extended as appropriate (for example, awareness of the need to actively manage research data).
- Information preferences. This factor accounts for variations in relation to preferences for explicit or implicit forms of communication (words vs. pictures), synchronous or asynchronous media, formal or informal sources of information. It also refers to information sharing behaviours and relevant levels of granularity (e.g., with colleagues in the same workgroup) and perceptions of information ownership.
- Language considerations. The terminology used by different groups to name their artefacts and to talk about their activities determines the way they see the world; and the way the world appears to them shapes their language. What happens when multiple technical languages (e.g., IT and archives) are used in the same place? What happens when one language (e.g., English) becomes dominant in some sectors of society?
- Regional technological infrastructure. This factor refers to technological constraints and enablers that are outside of the organization's control (e.g., Internet availability).

II. Information management knowledge and skills that can be acquired and/or extended in the workplace – This layer is placed in the middle of the pyramid because it builds on the fundamental influences at the bottom. Professional education and on-site training play a major role in shaping information culture at the occupational and organizational level. The skills, knowledge and expertise involved can be divided into two broad categories:

- Information-related competencies. It includes information and digital literacy as essential prerequisites for the development of a diffuse information culture in organizations.
- Awareness of environmental requirements. This factor measures how employees are familiar with, understand and apply the legal, societal, and organisational requirements that frame information management in their organization or a unit within it (e.g., laws concerning access to information, recordkeeping policies).

III. Information infrastructure and trust – At the tip of the pyramid are two organizational aspects that are highly significant to successful information management and are the most susceptible to change:

- IT governance model in place in the organization. The choice of specific information architecture, security features, and other technical options (e.g., using or not using cloud computing) are not neutral and always reflect cultural assumptions. It is critical to be aware of decision-making relating to corporate IT governance and its implications for the creation and use of digital materials, in order to understand some of their characteristics and to take appropriate measures for their preservation.
- Trust in information management systems. It is not about establishing the trustworthiness of the systems and processes adopted by an organization to manage its information, as much as it is about finding out what people think about those systems and processes.

#### V. TEACHING IMPLICATIONS

With regard to vocational education for digital curation, we believe that introducing the ICF would enhance existing teaching modules. The framework would primarily serve the purpose of raising future digital curators' awareness of the social, ethical, economic, political, technological – in one word, cultural – influences that constrain and enable the creation and use of the artefacts they are interested in, as well as their own actions as socially and culturally embedded information professionals.

The ICF should be presented as one component in the digital curator's toolkit, to be applied in conjunction with other tools such as the Community Capability Model Framework [23] and techniques (for example, data curation profiling [24]). Assessment techniques and practical guidance on how to apply the ICF in order to identify the factors affecting an organization's information culture, particularly in relation to the management of corporate records, have been developed [25]. The records management environment explored in this book is also characterised by a plethora of existing tools, including audits and maturity models. The ICF is not simply another measurement tool, but a way of providing a holistic view of the information environment. By identifying cultural characteristics that, rather than changed, have to be taken into account, it provides a means to address 'how' and 'why' questions.

The assessment techniques that are appropriate (including surveys, interviews, documentary analyses, observations) rely on ethnography as an overarching methodology (or at least attitude). In practice, we recommend the information professional who is interested in understanding what is going on in his/her organization in relation to perceived 'information problems' to become an ethnographer of his/her own 'tribe.' Thus, training in

ethnographic methods will complement or be part of learning about the ICF.

Further development work will be necessary in order to build standardised case studies and templates to be used to inform digital curation practice. One way to contribute to achieving this would be to incorporate ICF perspectives in the design of student assessment work, where relevant techniques could be applied to either scenarios or real life situations, as appropriate.

#### VI. CONCLUSION

If the human component of digital curation activities is not fully acknowledged, then we are at great risk of developing systems and solutions that are ultimately ineffective. Incorporating ICF perspectives in teaching future digital curators will contribute to enhancing understanding of the very real complexity of working environments. Introducing the ICF in conjunction with more traditional maturity model type tools will assist students in developing the range of skills needed to achieve digital curation objectives.

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