Introducing Cultural Prompts in a Semantic Data Browser

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Abstract. Cultural awareness is considered a key skill in various settings. The existing mainstream computer systems for training learners on cultural awareness use immersive simulations environments. Such simulation environments offer high fidelity but usually have pre-defined learning path variations with related content. Informal learning environments can offer alternative solution where learning could be exploratory and content dynamic. In our previous work[1], we presented a semantic data browser as an informal learning environment where the navigation paths are laid out by exploiting relationships in ontologies and content from social spaces in the form of semantically augmented digital traces. In this paper, we propose introduction of cultural prompts in this semantic data browser to raise the cultural awareness of learners. Although presented in the context of our semantic data browser, the prompt mechanism can be adapted in other semantic data browsers that consume ontologies and semantically augmented content.

1 Introduction

Awareness of the culture aspects, such as similarities and differences is considered an important skill in increasingly diverse organisational environments[2]. Development of computer based learning environments has received much attention from industry and research community for promoting cultural awareness. The predominant work carried out is using immersive learning environments, such as simulators, to teach cultural knowledge and provide experiential learning opportunities for intercultural communication [3]. Such environments offer high fidelity but usually have pre-defined learning path variations with related content. Hence, even though they have been very successful [3] in variety of applications ranging from military training to corporate settings, there is scope for other classes of informal learning environments where the learning is exploratory and the content in the environment is dynamic.

In this paper we propose to build an informal learning environment by introducing cultural prompts in a semantic data browser. Semantic data browsers[4] are the new breed of applications, which are the collective outcome of the research efforts in the semantic community. Such applications offer browsing of semantically augmented data (e.g. tagged content) by laying out browsing trajectories using relationships in the ontologies. In our earlier work[1], we have presented such a semantic data

browser that allows browsing digital traces (DTs)[1] from social spaces. Our work is in line with the trends and predictions [5] that point out that social media will have a strong impact on learning in workplace.

The social media content can be potent resources for informal learning in cultural awareness as the content on social spaces is often culture-rich, i.e., the contributions are from the perspective of contributors with diverse demography and cultural profiles. In this paper we present the extension of our work on semantic data browsers by proposing a prompt mechanism for introducing cultural awareness. Prompts in semantic data browser provide non-invasive suggestions; for example, while reading a comment in semantic data browser, a prompt on cultural awareness may suggest stereotypical cultural aspects (such as greetings, gestures etc.) for the country mentioned in the comment.

The proposed prompt mechanism utilises semantically augmented social media content, well-known cultural models and user modelling technology. Although, such prompts are only applied and presented in our semantic data browser, the mechanism and its formalisation can be adapted for any semantic data browser that offers semantically augmented content and utilises user profiles.

The rest of the paper is organised as follows. Section 2 positions the work in the relevant literature and highlights the key contributions. The semantic data browser and its main components are described in Section 3. A proposal for introducing cultural prompts in a semantic data browser is described in Section 4. Finally, Section 5 outlines the current and future work.

2 Related Work.

The work presented in this paper is positioned in the strand of intercultural training environments, semantic tools for cultural data access and semantic data browsers.

Intercultural training simulated environments. There is a stream of work on using computer based learning environments to help the user learn to adapt to a new culture. These approaches address the problem of how immersive learning environments can be used to teach cultural knowledge and provide experiential learning opportunities for intercultural communication (see [3] for a review of intercultural systems). Although highly successful, these simulated environments have limited content, which are generally scripted with little flexibility. The semantic data browsers have potential to offer informal environments with the possibility of automation and a great deal of flexibility with the use of ontologies and semantic augmentation of content. The surveying authors [3] note with surprise, that very little of this work leverages state of the art computing technology. We contribute to this state of the art by proposing a mechanism for cultural training in a semantic tool.

Semantic tools for cultural data access. A great deal of work is carried out building semantic tools for accessing cultural data, where the cultural artifacts (i.e. their descriptions and metadata) is semantically augmented (described) for better search and browsing (see [6] for a recent survey). There are similarities in terms of our work

[1] The term "digital traces" is confined to traces of real world experiences from social media.

and such efforts in terms of use of ontologies, linked open data, user involvement and user generated content albeit for different purposes where the reported efforts concentrate on improving accessibility of cultural artefacts while we concentrate on raising culture awareness using prompt mechanism in semantic data browsers.

One aspect of the existing work in semantic technologies in cultural domain that deserves special mention here is the efforts to build ontologies to describe culture [7]. These ontologies have important applications in the cultural heritage domain and our work.

Semantic data browsers. Semantic data browsers that combine semantically augmented data and ontological knowledge bases, are being utilised in various domains, such as sensemaking or statistical data analysis (see review in [8]). Semantic browsers can offer opportunities to build learning environments in which exploration of data is governed by ontologies that capture contextual aspects. State of the art semantic browsers assume that the users are in charge of what they do when using the browser. This puts the cognitive onus on the user, and is particularly acute in the case of a user being a learner, i.e. not familiar with the conceptual space in the domain and may be unable to decide what is the best course of action for him/her. Hence, directly adopting semantic web browsers in learning contexts would not be sufficient for effective learning environments – new intelligent techniques are needed to extend these browsers with features that facilitate informal learning. In our earlier work, we have presented a novel approach [1] to extend semantic browsers with nudges in order to influence the choices users can make and benefit their learning. Our technical implementation followed the pedagogical framework proposed in [9]. However, there is still lack of approaches in the semantic web arena where semantic data browsers are utilised for introducing learners to the cultural aspects. In this paper, we introduce the concept of cultural prompts by extending this semantic data browser and show formalisation of cultural prompts and mechanism of prompt generation that has even wider applicability in applications that consume semantic web technologies.

3 I-CAW: Semantic Data Browser with Intelligent Prompts

I-CAW is a semantic data browser for learning which combines key semantic technologies - semantic augmentation, semantic query, relatedness, similarity, entity summarisation, and ontology summarisation. Fig. 1 gives the main components.

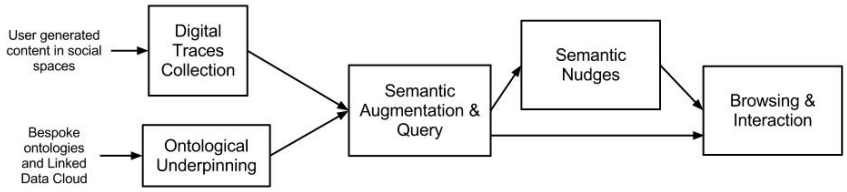

Figure 1. The main components of the I-CAW.

Digital Traces Collection. I-CAW supports users to browse user generated content including videos and comments from YouTube (linked within I-CAW) and per-

sonal stories. The digital traces are collected from the open social spaces (e.g. YouTube) and the closed social spaces (such as blog-like story telling environment).

Ontological Underpinning. An Activity Model Ontology (AMOn)[2] is developed by a multi-disciplinary team of computer scientists and social scientists[10]. The ontological underpinning for aggregation of DTs in I-CAW utilises AMOn, DBPedia and public ontologies. The ontologies are used by intelligent services for semantic augmentation, query and for designing semantic nudges as described below.

Semantic Augmentation and Query[3]. Unstructured or semi-structured user generated content is semantically tagged with ontology concepts, which is implemented using the General Architecture for Text Engineering (GATE[4]). Semantic indexing is developed using semantic repositories converting the annotation sets to RDF triples. The mechanism for querying and browsing the semantically augmented content takes a focus concept (C_f) and outputs other concepts and content using a relatedness algorithm (deriving concepts linked via properties with C_f).

In our previous work [1] on building informal learning environments for learning, we have introduced the idea of semantic nudges in the semantic data browser (exemplified in I-CAW). I-CAW proactively suggests areas of exploration to learners in the form of *nudges* based on Sunstein and Thaler's choice architecture [11]. A nudge is any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options, and tries to influence choices in a way that will make choosers better off. In our analysis for mapping the choice architecture to semantic technologies, we narrowed down to two elements of the choice architectures that are possible to be implemented using semantic technologies. These two elements are mapped to *signposting* and *prompts* and are the 'semantically-driven nudges' in I-CAW. Signposting are related to "default options" which usually most users will end up with. More details on Signposting are provided in [1]. This paper focuses on Prompts. Prompts provide non-invasive suggestions (which are so far limited to suggestion based on similar and/or contradictory learning objects).

The format of prompt in I-CAW is: **P <G,g, C, I, T>**

Where, **G** = the overall goal of the prompt; **g** = the specific (sub-) goal of the prompt; **C** = the condition that has to be satisfied in order to invoke prompt; **I** = input to the condition **C**; and **T** = the template depicting what message to be conveyed to the user.

Evaluation. An experimental study was conducted with 10 users who used I-CAW to browse through digital traces related to job interview examples (focusing on body language and emotion). The study, presented in [1], highlighted the importance of digital traces (social content) as authentic examples and stimuli where the digital traces were perceived as helpful for engaging deeper with the learning resources and for further reflection on their experiences. The study also confirmed that the use of

[2] http://imash.leeds.ac.uk/ontology/amon/
[3] Details on services : http://imash.leeds.ac.uk/imreal/wp3/#services
[4] http://gate.ac.uk/

nudges is a step in the right direction for turning a semantic browsing experience into an informal learning experience. Overall, the signposting *nudges* were considered a fruitful way to provide a quick summary for understanding a concept and for exploration which leads to something new to learn. The prompts were seen as task setting for the learners to browse further to understand the bigger picture.

Key Challenge & Opportunity. One of the feedbacks we received from the evaluation was related to the aspects of culture interwoven in social content. Social web platforms are unique in the sense that they offer an open platform for people from global audience to communicate on a digital object by commenting, liking or disliking any aspects of contributions. While doing so people often compare and contrast against their own culture. For example, one of the participants in our study commented on a contribution that reviewed shyness and nervousness in a video to be negative by commenting that *shyness and nervousness in their culture is seen as respect, and should not be marked as negative emotions*. Any application that serves learners from diverse cultures and do so by utilising social content for learning can benefit from awareness that, like this example, more often content in social platforms is culture-inherent.

To address the key challenge of taking into users' cultural profiles into account and exploiting the inherent cultural diversity present in social content; we propose a mechanism for cultural prompts generation. Prompts are designed to inform users about cultural differences, similarities and to encourage reflections.

This mechanism takes advantage of: I) the user model of learner's cultural exposure, II) the culture-inherent social web content and III) the cultural models that are prominent in the intercultural domain literature, to prepare cultural prompts for informing users about cultural differences, similarities and to encourage reflections.

4 Adding Cultural Prompts to a Semantic Data Browser

In order to interpret user's cultural exposure and to aid the prompt generation, we build on well-known cultural models from literature. In the preparation for outlining selected cultural models for our work, here we give the definitions of culture, culture awareness and exposure from literature which are closer to our interpretations. For culture, we use the definition by Hofstede: "[culture is] the collective programming of the human mind that distinguishes the members of one human group from those of another. Culture in this sense is a system of collectively held values." [12]. According to Hofstede, "national culture" is fundamental for distinguishing the people of one country from other people from other countries.

The Cambridge dictionary defines awareness as "knowledge that something exists, or understanding of a situation or subject at the present time based on information or experience[5]". According to this definition, we define cultural awareness as follows: "being aware of a culture means understanding some key facts about a particular culture". Cultural awareness can also be based information or experience. We define cultural exposure as "experience of culture by visit/origin/residence".

[5] http://dictionary.cambridge.org/dictionary/british/awareness

4.1 Cultural Models

There are existing theoretical models of culture which provide information on different cultures and cultural aspects. We have narrowed our selection to two models that allow cultural analysis based on countries by comparing and contrasting different countries. We also utilise cultural clusters (e.g. countries grouped in clusters) from these theoretical models for calculating users' cultural exposure on more abstract level of cultural groups.

Hofstede cultural model. In the domain of business, Hofstede[12] demonstrated that any given culture could be defined by its position on five indices. The Values Survey Module (VSM) questionnaire[13] allows a person to be stereotyped within these indices and cultural 'zones'. The VSM Indices[6] are: PDI (Power Distance Index); IDV (Individualism); MAS (Masculinity); UAI (Uncertainty Avoidance Index) and LTO (Long term Orientation). In addition to values for these dimensions, the Hofstede cultural model contains stereotypical country information[7] (referred as country profiles).

For measuring user's exposure to a culture group, we require clustering of national cultures. Hofstede himself proposed 8 clusters of countries [12], however these clusters are not up to date.(e.g. cluster contains non-existent countries such as Yugoslavia and has no coverage of any African countries). Hence, we have derived Hofstede clusters using data mining technique of k-means and made it available here[8]. We experimented with k values and settled for k=10 when one of the clusters matched the Arab countries cluster (only cluster made available by Hofstede in their latest work[9]). We refer to such generated Hofstede clusters as $\mathbf{ClusterHof_i} = \mathbf{C_j}$; where $\mathbf{j} = \mathbf{1}$ to $\mathbf{n}$ countries in a cluster.

Globe Project cultural model. GLOBE (Global Leadership and Organizational Behavior Effectiveness) is the name of a research program focusing on culture and leadership in 61 nations[14]. Even though, they had similar dimensions with Hofstede, GLOBE researchers used 7 step rating scale dimensions, unlike the numeric scaling that Hofstede used in his model. As an output of GLOBE Research, "societal cultures" were created. They covered 62 instances (countries and sub-cultures) and came up with 10 clusters[10]. We refer to these Globe clusters as $\mathbf{ClusterGlo_i} = \mathbf{C_j}$; where $\mathbf{j} = \mathbf{1}$ to $\mathbf{n}$ countries in the cluster.

4.2 Prompt Generation Mechanism

Fig. 2 shows main components of the prompt generation mechanism. User model component requires raw user data (e.g. cultural exposure of the user) and the cultural models and clusters (described in section 4.1) as input and generates user model de-

[6]Hofstede cultural dimensions available at: http://geert-hofstede.com/dimensions.html
[7] Stereotypical information on United Kingdom http://geert-hofstede.com/united-kingdom.html
[8]http://imash.leeds.ac.uk/publications/support/culturalprompts/
[9] http://geert-hofstede.com/arab-world-egiqkwlblysa.html
[10] Globe societal clusters are available at: http://www.grovewell.com/pub-GLOBE-intro.html

picting user's exposure to GLOBE and Hofstede clusters. The prompt model takes the user model, interaction focus and content from semantic data browser and the country profiles from the cultural models as input to generate a prompt. These components are explained in more detail below.

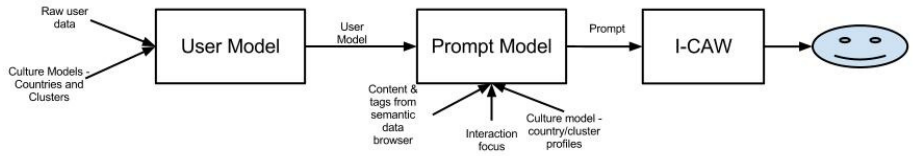

Fig. 2. Prompt Generation mechanism for extending I-CAW with cultural prompts

4.3 User Model

User Model (U) is the representative of the user's exposure mapped to the cultural clusters, $U = < C_{origin}, C_{residence}, C_{visited}, E_{hof}, E_{globe} >$

Where,

C_{origin} = country of user's origin; $C_{residence}$ = country of user's residence; $C_{visited}$ = countries user visited. We refer to these three parameters to give user's exposure by origin, residence or travel as E_{orv}

E_{hof} is the exposure of the user to the individual Hofstede cluster, $E_{hof}<ClusterHof_i, Val>$, where the exposure values, Val are calculated using the algorithm shown in Table 1.

Table 1. Calculating Hofsted cluster Exposure value

```
Input: C_j ∈ E_orv // countries part of country exposure
For each C_j
 Set count_i = 0;
 If C_j ∈ ClusterHof_i
    Then
 Increment count_i  by 1;
Val= count_i / n ; where
   n_i = total number of countries in ClusterHof_i
Output: <ClusterHof_i, Val>
```

E_{globe} is the exposure of the user to the individual Globe cluster, $E_{globe}<ClusterGlo_i, Val>$, where the exposure values, Val are similarly calculated (as in Table 1).

4.4 Prompt Model

The prompt model is designed to take advantage of the user model of culture exposure, culture models and culture-rich social media content with goals (G) of:

G1. Create awareness of cultural aspects. In the cases when the evidence (from user model) suggests that no exposure to a particular cultural cluster exist, i.e. $E_{hof}<ClusterHof_i, Val) \wedge Val = \phi \vee E_{globe}<ClusterGlo_i, Val) \wedge Val = \phi$.

G2. Expand awareness on certain cultural aspects. In the cases when the evidence (from user model) suggests that there is a limited exposure to a particular culture cluster, where the limit is some threshold θ (where θ could be set by experimentation). i.e. $E_{hof}<ClusterHof_i, Val) \wedge Val < \theta \vee E_{globe}<ClusterGlo_i, Val) \wedge Val < \theta$.

G3. Reflect on cultural awareness. In the cases when the evidence (from user model) suggests that there is good exposure to a particular culture cluster, i.e. $E_{hof}<ClusterHof_i, Val) \wedge Val > \theta \vee E_{globe}<ClusterGlo_i, Val) \wedge Val > \theta$.

To fulfil these goals, depending on the input to the prompt model, three categories of prompts (**P**) are possible:

P1. Prompts modelled only using user model as input hence only considering the user's culture exposure in prompt mechanism

P2. Prompts modelled only using interaction focus as input hence only considering what the user is currently interacting with (e.g. entity user is reading in a semantic data browser).

P3. Prompts modelled using both user model and interaction focus as input.

The possibilities of prompts that satisfy goals **G** and categories **P** are presented as taxonomy in the figure 3 below.

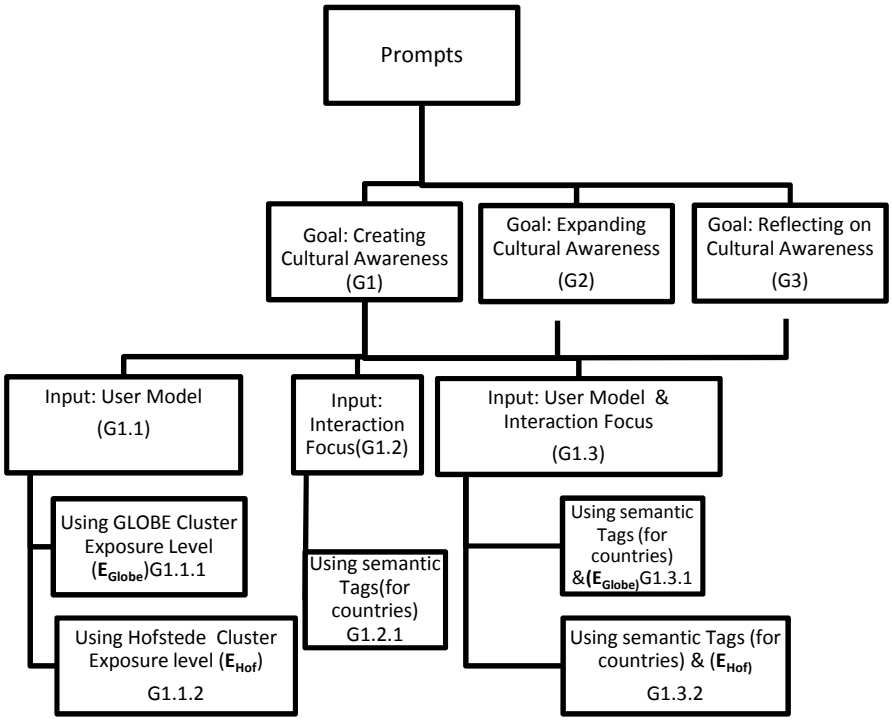

Fig. 3. Prompt Model categories

The prompt model follows the I-CAW prompt structure presented in the section 3, **P<G,g, C, I, T>.** Following table demonstrates possible prompts using the mechanism presented in this section. Specifically, prompt examples demonstrate how the user model, cultural models and social content can be utilised in prompt creation.

Table 2. Prompt examples in semantic data browser

Ref. to Fig 3	Prompt example
G1.1.2	**Generic Goal:** Create awareness of cultural aspects (G1). **Input:** User Model. **Condition:** No exposure to a Hofstede cultural cluster. $\exists\ E_{hof}$ (Cluster-$Hof_{i,}$ Val) $\wedge$ Val = ϕ **Specific-goal:** Inform the user about ClusterHof$_i$. **Template:** You have not been to countries from ClusterHof$_i$ group. These countries have some common characteristics; you can read about these characteristics here<link>; where link points to the information about each country ($C_j \in$ ClusterHof$_i$) as provided by http://geert-hofstede.com/countries.html
G1.1.1	**Generic Goal:** Create awareness of cultural aspects (G1). **Input:** User Model. **Condition:** No exposure to a GLOBE cultural cluster. $\exists\ E_{globe}$ (Cluster-$Glo_{i,}$ Val) $\wedge$ Val = ϕ **Specific-goal:** Inform the user about ClusterGlo$_i$. **Template:** You have not been to countries from ClusterGlo$_i$ group. These countries have some common characteristics; you can read about these characteristics here<link>; where link points to the information about each country ($C_j \in$ ClusterGlo$_i$) as provided by http://www.grovewell.com/pub-GLOBE-intro.html **Template(alternative):** You have not been to countries from ClusterGlo$_i$ group. This system has some content related to these countries which you can retrieve using <link>; where link invokes a service that returns social content (e.g. comments on a video) when supplied with a country name.
G1.1.2	**Generic Goal:** Create awareness of cultural aspects (G1). **Input:** User Model. **Condition:** The user has exposure to all except some countries from a Hofstede Cluster. (Set S1 = $C_i \in E_{orv}$) $\wedge$ (S2 = $C_j \in$ ClusterHof$_i$) $\wedge$ S1 $\cap$ S2 $\neq \phi$ $\wedge$ S1 $\not\subset$ S2 : C_k = S2 – S1 $\wedge$ C_l = S1 $\cap$ S2 **Specific-goal:** Inform the user about countries C_k user is not exposed to from the ClusterHof$_i$. **Template:** You are not exposed to countries C_k form ClusterHof$_i$ group. These countries are related to countries C_l you have (visited/live in/are from) as they have some common characteristics; you can read about these characteristics here<link>; where link points to the information about country from C_k as provided by http://geert-hofstede.com/countries.html
G1.1.1	**Generic Goal:** Create awareness of cultural aspects (G1).

	Input: User Model. **Condition:** The user has exposure to all except some countries from a GLOBE Cluster. (Set S1 = $C_i \in E_{orv}$) ∧ (S2 = $C_j \in ClusterGlo_i$) ∧ S1 ∩ S2 ≠ ϕ ∧ S1 ⊄ S2 : C_k = S2 – S1 ∧ C_l = S1 ∩ S2 **Specific-goal:** Inform the user about countries C_k user is not exposed to from the $ClusterGlo_i$. **Template:** You have not been exposed to countries C_k form $ClusterHof_i$ group. These countries are related to countries C_l you have (visited/live in/are from) as they have some common characteristics and form a social group; you can read about these characteristics here<link>; where link points to the information about country from C_k as provided by http://www.grovewell.com/pub-GLOBE-intro.html
G1.1.2	**Generic Goal:** Create awareness of cultural aspects (G1). **Input:** User Model. **Condition:** The user has exposure to countries with contrasting VSM as defined by Hofstede. PDI/IDV/MAS/UAI value for C_{origin} = VSM_{origin} ∧ corresponding $C_{residence}$ = $VSM_{residence}$ ∧ corresponding $C_{visited}$ = $VSM_{visited}$ ∧ {VSM_{origin} > **θ** ∧ $VSM_{residence}$< **θ** } ∨ {$VSM_{residence}$> **θ** ∧ VSM_{origin} < **θ** } ∨ {$VSM_{residence}$> **θ** ∧ $VSM_{visited}$< **θ** } ∨ {VSM_{origin} > **θ** ∧ $VSM_{visited}$< **θ** } ∨ { $VSM_{visited}$> **θ** ∧ $VSM_{residence}$< **θ** } ∨ { $VSM_{visited}$> **θ and** VSM_{origin} < **θ** } **Specific-goal:** Inform the user about contrasting VSM (PDI - Power Distance Index, IDV- Individualism, MAS- Masculinity, UAI- Uncertainty Avoidance Index and LTO - Long term Orientation) indices between C_{origin} and $C_{residence}$ OR C_{origin} and $C_{visited}$ and $C_{residence}$ and $C_{visited}$. **Template:** (C_{origin}/ $C_{residence}$ / $C_{visited}$) has some contrasting features from (C_{origin}/ $C_{residence}$ / $C_{visited}$); you can read about these characteristics here<link>; where link points to the information about country C_{origin}/ $C_{residence}$ / $C_{visited}$ from http://geert-hofstede.com/countries.html
G1.2.1	**Generic Goal:** Create awareness of cultural aspects (G1). **Input:** Interaction. **Condition:** Interaction focus contains tags of country type on content (e.g. comment) that are within a cluster (∃ Set of Tags T1 ∈ I) ∧ (∃ Set of Tags T2 ∧ T2 ⊂ T1; T2 type Country) ∧ (S2 = $C_j \in ClusterHof_i$ ∧ T2 ∩ S2 ≠ ϕ ∧ T2 ⊄ S2) **Specific-goal:** Inform the user about countries T2, belonging to a type of cluster, mentioned in the social content **Template:** You are viewing content related to countries T2. The countries T2 happen to be form ($ClusterHof_i$ / $ClusterGlo_i$) group. These countries have some common characteristics and form a social group; you can read about these characteristics here<link>; where link points to the information about country from T2 as provided by http://www.grovewell.com/pub-GLOBE-intro.html OR http://geert-hofstede.com/countries.html
G1.2.1	A variation of prompt depicted in G1.2.1 can be developed if tags mention contrasting countries
G2.1	For increasing awareness where the condition will check for the exposure

	levels – prompts similar to demonstrated so far can be developed.
G3.1	**Generic Goal:** Reflect on cultural aspects (G3). **Input:** User Model. **Condition:** The user has sufficient exposure ($>\theta$) to countries from a Globe Cluster. (Set $S1 = C_i \in E_{orv}) \wedge (S2 = C_j \in ClusterGlo_i) \wedge S1 \cap S2 \neq \phi \wedge S1 \not\subset S2 : C_k = S2 - S1 \wedge C_l = S1 \cap S2$ **Specific-goal:** Prompt user for reflection on characteristics of Cluster-Glo_i. **Template:** You are well exposed to countries C_k form $ClusterGlo_i$ group. They have some common characteristics defined here <link>; where link points to the information about country from C_k as provided by Hofstede. Have you noticed any of these characteristics during your exposure to these countries? Write down your comments here. _____. **Template (alternative):** You are well exposed to C_k countries. This system has some content related to these countries which you can retrieve using <link>; where link invokes a service that returns content when supplied with a country name. Have you observed any of these aspects mentioned in the content during your exposure to these cultures? Write down your comments here.

5 Current & Future Work

The paper presents work in progress to introduce cultural prompts in a semantic data browser. The technical infrastructure has been built and exists in the form of I-CAW.

We plan to extend the cultural models utilised in the prompt mechanism and user modeling and shall consider other models that bring the dimensions from the perspective of interpersonal communication. A separate strand of work carried out also includes building ontology of culture from the perspective of interpersonal communication, e.g. an ontology that states what are the key elements in terms of similarities and differences in cultures (e.g. greetings, first contact, handshake, disengagement etc). This ontology can be used as addition resource for the template of the prompts, for example, prompting user to make them aware about various types of handshakes in a particular culture.

The implementation of the prompt mechanism reported in the paper is in the progress and we plan to conduct an experimental study with users to gauge potential benefits of our approach and effect on learning. Special consideration shall be given to varying the parameters during the evaluation to distinguish the feedback on variations possible in the prompt mechanism.

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