PROJECT: Analysis of iOS App Store Metadata / **STUDENT NAME**: Grant Patten

a. Document and analyse 10 metadata properties and any associated controlled vocabularies used in your project website or application. At least 5 properties should be used for browsing/search.

b. Map the identified application metadata properties to metadata standard properties. Use “mapping notes” column to explain any mapping decisions as required.

Project Website (Name and URL): iOS App Store … no direct URL. To access the App Store, you need to have either an iPhone or a Mac computer with iTunes installed.

Name of Metadata Standard for mapping: Dublin Core Metadata Standard

Introduction

1. Identify an information heavy website or application that makes use of metadata to organize, search and browse for information. Provide an introduction which describes the organizational context, users, content and business purpose of the application.

Apple's iOS App Store offers users 1,000,000+ apps to download for the iPhone and/or iPad, some free, others for a price. Apple reported $10 billion in App Store revenue for 2013 (Apple takes a 30% commission on revenues for paid apps sold through their store). With so much money at stake, app publishers must pay attention to every facet of their product. And yet, it seems, companies often put much time and money into the technical development of the app, without adequately considering the metadata that will underlie that app. Apple then rejects their application because of noncompliance with metadata policy.

Beyond the software development kit (SDK) that they undoubtedly study so thoroughly, app developers must give more concerted thought to the metadata behind their app(s). Is Apple (or whatever organization) likely to accept or reject the metadata? Will users actually be able to find the app in the App Store, so that they can buy it? These questions are surely just as important as the development of the app itself. Incidents of Apple rejecting apps based on their content have been fairly well-publicized. Lesser known are incidents of Apple rejecting apps based on metadata issues. *E.g.,* in a 2012 post on the *iphonedevsdk.com* forum, a user reported:

> *"One of my apps was rejected because it has the word "iPad" in the name. They told me to change it to "for iPad", HD, etc.. I submitted it immediately and [it] was accepted unfortunately after a week." (Sami Gh)*

If that user had studied the Apple metadata requirements before submitting their app, they would have been on the market a full week earlier – not an insignificant amount of time for someone trying to run a business. Ways in which Apple could improve the metadata architecture of their App Store will also be identified at the end of this paper.

Functional Requirements for Metadata

Organizational and Policy Requirements	The primary objective that Apple has in making its App Store metadata as robust as possible is, of course, selling apps. Although metadata is often overlooked, its importance in achieving high app sales cannot be overstated. Apple has established policy guidelines around App Store metadata in its Developer Guide; however, they could be clearer. *E.g.,* with regard to the description property, Apple says it is required, but does not offer an explanation as to why the text within it is not indexed by the App Store search.
Content Requirements	Apps must contain content for all the metadata properties described in the table below, along with some other properties. The content must be localized to the particular App Store's market,

	e.g. translated from English to Spanish if being sold in the Spanish App Store (each country has its own App Store).
User Requirements	App Store user characteristics: “According to a new Forrester Research report, among U.S. mobile device users, those who use apps tend to be younger and more affluent than those who stick just to the web. Nearly one-third of those who use mobile apps fall between the ages of 23 and 31, and another third are in the 32 to 45 category … iPhone users also tend to be the most affluent of all, with an average household income of $105,200.” (Etherington, 2012) Expertise: most users will not be aware of what metadata is or how it works; however, it is probably fair to say that they are mostly “tech savvy” users. They will likely have high expectations around interacting with other metadata-based systems. Goals: Searching and/or browsing to find useful and/or fun apps. App Store metadata could serve users better. (Issues Worksheet, final section) The Forrester report also notes that search makes up a relatively small portion of the app discovery pie, and it's not difficult to see why after analyzing the App Store metadata. (App Store metadata and App Store search simply don't work very well together, currently.)
Physical and Technological Environment	Could be browsing the App Store on their mobile device, in potentially any physical environment. Could also be browsing the App Store on their desktop/laptop computer at home. App Store can only be accessed from Apple devices.

1 Name of Metadata Property	2 Definition	3 Function, Purpose or Usage	4 Effectiveness in search / browse	5 Type of Metadata Property	6 Uncontrolled, Syntax Encoding Scheme or Controlled Vocabulary	7 Type of CV	8 Mapping to Metadata Standard (Dublin Core)	9 Mapping note
App name	The name of the app, e.g. 'The Last Hunt for iPhone'	Identifies the name of the app.	Effective in search, not browse (very specific)	Descriptive	Uncontrolled (but Apple might take issue with certain names)	N/A	Title	Dublin Core Metadata Element Set, Version 1.1
Seller	The seller of the app, e.g. 'National Film Board of Canada' (usually also the author)	Identifies the seller of the app. Enables browsing other apps published by same seller.	Effective in search and browse	Descriptive	Uncontrolled	N/A	Creator	Dublin Core Metadata Element Set, Version 1.1
App category	The category of the app, e.g. 'Books'	Identifies the category of the app (determined by Apple)... enables browsing other apps in this category.	Effective in browse (often too general for search)	Structural / Descriptive	Controlled Vocabulary	Pick list	Subject	Dublin Core Metadata Element Set, Version 1.1
App description	The description of	Provides description of	Mostly ineffective	Descriptive	Uncontrolled (but Apple might	N/A	Description	Dublin Core Metadata

	the app, usually including features.	purpose and features of app, but only for internal page use (most terms attempted in search did not return results).	(tried searching on terms, most returned no results)		take issue with certain descriptions, e.g. keyword stuffing)			Element Set, Version 1.1
Copyright	Who holds copyright on the app (usually same as Seller)	Declaration of ownership rights.	Ineffective	Administrative	Uncontrolled	N/A	rightsHolder	Qualified Dublin Core element
Updated	Last time the app was updated, e.g. 'Mar 6, 2014'	Letting the user and/or webmaster know the last time the app was updated.	Ineffective	Administrative / Descriptive	Syntax encoding scheme	N/A	Date	Dublin Core Metadata Element Set, Version 1.1
Size	The file size of the app, e.g. '45.9 MB'	Letting the user and/or webmaster know the size of the file.	Ineffective	Administrative / Descriptive	Syntax encoding scheme	N/A	Format	Dublin Core Metadata Element Set, Version 1.1
Rating	The audience rating for the app, e.g. '12+'	Letting the user know which audience age group the app is appropriate for: 4+, 9+, 12+ or 17+	Somewhat effective in search	Descriptive	Controlled Vocabulary	Taxonomy	Audience	Qualified Dublin Core element

Languages	Languages in which the app is available.	Letting the user know which languages the app is available in, e.g. English, French, German, Polish, etc.	Effective in search	Descriptive	Controlled Vocabulary	Pick list	Language	Dublin Core Metadata Element Set, Version 1.1
Related	Related apps, e.g. other apps the NFB has published.	Letting the user know about related apps that can be downloaded.	Effective in browse	Structural / Descriptive	Uncontrolled (but Apple might take issue with certain names)	N/A	Relation	Dublin Core Metadata Element Set, Version 1.1

Types of metadata property: Descriptive, Structural, Administrative

Types of controlled vocabularies: Pick list, Synonym ring, Authority file, Taxonomy, Thesaurus

Additional possible attributes: Relationships, Mandatory or optional, Repeatable, Flat list or hierarchical, Depth

Controlled Vocabulary Worksheet

Identify a taxonomy and at least one other type of controlled vocabulary (CV) used. Complete a worksheet showing sample terms from each controlled vocabulary identified.

Sample Table:

1) Identifies name of metadata property that requires a controlled vocabulary
2) Identifies the type of controlled vocabulary
3) Shows the terms / values associated to the metadata property in context.

a. If a single level, show terms in Level 1 column

b. If a taxonomic hierarchy, records up to 3 levels of the taxonomy

Metadata Property 1	App category
Type of Controlled Vocabulary	Pick list
Terms: Books Business Catalogues Education Entertainment Finance Food & Drink Games Health & Fitness Kids Lifestyle Medical	

Music
Navigation
News
Newsstand
Photo & Video
Productivity
Reference
Social Networking
Sports
Travel
Utilities
Weather

Metadata Property 2	Rating	
Type of Controlled Vocabulary	Taxonomy	
Level 1 Terms	**Level 2 Terms**	**Level 3 Terms**
4 plus		

	9 plus	
		12 plus

Metadata Property 3	Languages
Type of Controlled Vocabulary	Pick list
Terms: *(under 'The Last Hunt for iPhone')* English, Czech, Dutch, French, German, Italian, Japanese, Korean, Polish, Portuguese, Russian, Simplified Chinese, Spanish, Swedish, Traditional Chinese, Turkish	

Issues Worksheet

Issue 1

Issue associated with:	'App description' metadata property	Controlled Vocabularies (y/n)
Issue Identified: Please describe issue. Include screen shots.	The 'App description' metadata property is not very search-friendly. In fact, most searches attempted on specific text in app descriptions returned no results. *E.g.* for the app in the below screenshot – *Shifter: Interactive Graphic Novel* – I attempted a search on “hitchcockian” because, in the app's description, it has the phrase “Hitchcockian murder-mystery”. That search returned only one result – a song entitled “Hitchcockian Outtake” by '70s Canadian rock band, Goddo.	No - uncontrolled

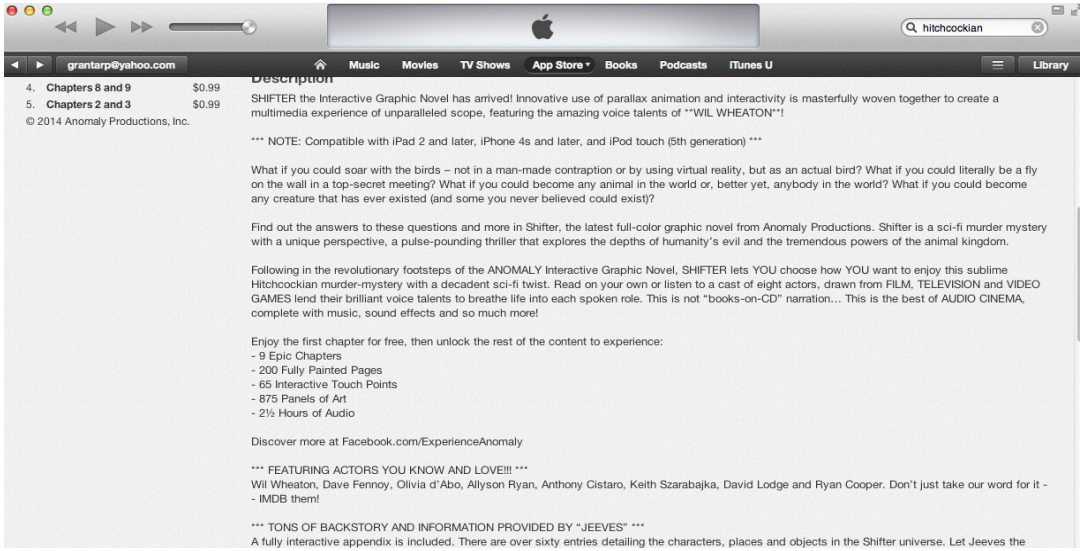

Figure 1: search on "hitchcockian" (top-right corner)... the phrase "hitchcockian murder-mystery" is visible in the *Shifter* description.

Remediations: Provide analysis and options to resolve or improve the issue.	This is clearly a missed opportunity for Apple in making their apps more discoverable. It is entirely conceivable that a user might want to find apps with elements of Hitchcock in them, and doing a search on "hitchcockian" certainly should have returned the *Shifter* app, considering the exact word is in the app description. Remediation should be a simple matter of extending the entire contents of the description attribute to be indexed by the App Store search engine. The Dublin Core *description* metadata term could be used for this purpose.

Issue 2

Issue associated with:	'Size' metadata property	Controlled Vocabularies (y/n)
Issue Identified: Please describe issue. Include screen shots.	'Size' metadata property could be placed within range that can then be browsed on, *e.g.* 45.6 MB app could be placed within 45-100 MB range. For users with limited storage space who want to search for apps only within certain size.	No – syntax encoding scheme

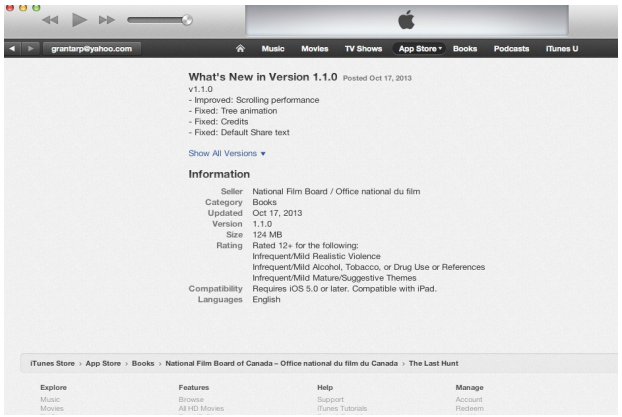

Figure 2: 'Size' metadata property is viewable under Information category.

Remediations: Provide analysis and options to resolve or improve the issue.	It also seems like a missed opportunity that Apple is capturing all this detailed metadata about the size of each app, but users can't do anything with it. Instead, size categories could be created, with each app placed in a category, *e.g.* 0-45 MB, 45-100 MB, 100-145 MB, *etc.* Users who have limited space on their device could then search within a defined size range, so they don't have to waste their time clicking into apps that are larger than their download limit. This could be accomplished, for example, by using the Dublin Core *format* metadata term as the larger 'size bucket', and then creating more specific refinements under that umbrella term.

Issue 3

Issue associated with:	'Languages' metadata property	Controlled Vocabularies (y/n)
Issue Identified: Please describe issue. Include screen shots.	The 'Languages' metadata property should be browsable. Currently, users can view which languages an app is available in by looking at the app's page. But users cannot click into each language to browse other apps available in that language. Search is also insufficient because it returns too many results. *E.g.* a search on 'Swedish' does return some apps available in the Swedish language, but also other irrelevant results such as	Yes – controlled vocabulary, pick list

	the band 'Swedish House Mafia'.	

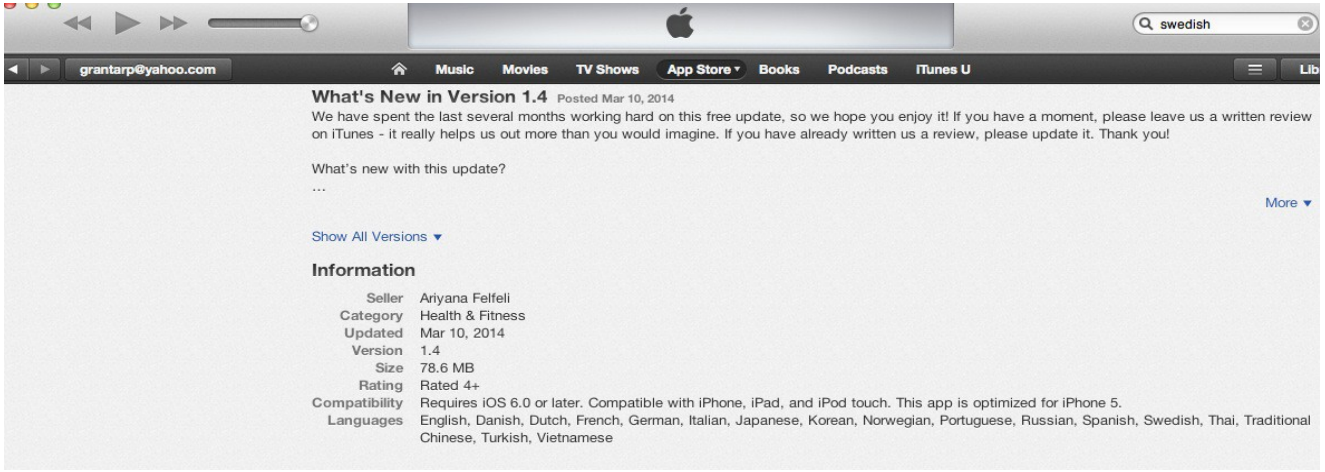

Figure 3: 'Languages' metadata property is viewable (but not browsable) under Information.

Remediations: Provide analysis and options to resolve or improve the issue.	Again, Apple is missing an opportunity to improve the user experience of their App Store by making their apps much more findable. In this case, it is entirely conceivable that a user might want to browse only for apps available in a certain language. As things stand, their only option is to perform a search on that language, which returns far too many results – often including apps not actually available in that language. Through the use of metadata, Apple could instead have all apps available in Swedish grouped under the Swedish language metadata element, and so on. The user could then click on “Swedish” on an app's page and, from there, be able to browse through all apps available in the Swedish language. The Dublin Core *language* metadata term could be used for this purpose.

Sources

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