OPERATING ENVIRONMENT								
	ESRI ArcCatalog v9.2	GeoNetwork v2.2.0	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0	
URL	http://www.esri.com/news/arcuser/0405/files/arcatalog9.pdf	http://sourceforge.net/projects/geonetwork	http://www.crepad.rcanaria.es/metadata/en/index_en.htm	http://www.intelec.ca/html/en/technologies/m3cat.html	http://www.geoportal-idec.net/geoportal/	http://www.gigateway.org.uk/metadata/metagenie.html	http://www.fgdc.gov/participation/working-groups-subcommittees/mwg/isoreview/Metadata_Setup.zip	
Supported Standards	The editing environment includes elements from the following ISO standards:							
ISO 19115 Geospatial Metadata	partial	complete	complete	complete	partial	partial	partial	
ISO 19110 Feature Catalog					■		■	
ISO 19119 Services		complete						
Other Edit Environment Standards		CSDGM, Dublin Core		CSDGM, CSDGM_NBII, GILS, user imported XSD		UK GEMINI	CSDGM, CSDGM_NBII	
Interface	The following interface environments are available for editing:							
GUI	■	■	■	■	■	■	■	
XML		■			■		■	
Other Interface Environments								
Application Environment	The application runs as:							
Desktop - Stand Alone	■	with embedded web server and dbase	■	■	■	■	■	
Desktop - Network	■	■		■	■		■	
Online		■			planned	■		
Other Application Environments		gvSig, Talend, ArcCatalog extension					ArcCatalog extension	
Operating System	The editor operates in the following operating systems:							
Windows	■	■	■	■	■	■	■	
Linux		■	■			■		
Web-based		■		■	■	■	■	
Java-based		■	■			■		
Other Operating Systems		MAC, NIX		IIS		Solaris		
Data Storage	Metadata is stored in the editor as:							
Internal Database (no add't software/license required)	■	■		Access				
External Dbase (add't software/license required)		any JDBC - tested with MySQL, Postgresql, Oracle		Oracle, PostGres	Access	any ODBC/ JDBC		
Document	■	■	■			■	■	

	ESRI ArcCatalog v9.2	GeoNetwork v2.2.0	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0		
Other Data Storage Formats:	ArcSDE	MEF (Metadata Exchange Format) file bundles the data, preview images, and other information with the metadata							
Programming Languages The source programming languages are:									
JAVA		■	■			■			
Javascript		■							
XSL	■	■	to translate XML to HTML				■		
Open Source		■		■			■		
Proprietary	■		■			■			
Other Programming Languages	C++			ASP	Visual Basic				

METADATA DEVELOPMENT

	ESRI ArcCatalog v9.2	GeoNetwork v2.2.0	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0
Support Features	The following support features are provided:						
Drop-down Lists	■	■	■	■	■	■	■
Direct Access to Metadata Element Definitions		■	■	■	■	limited	■
Thesauri		■		upload thesauri, ability to query ontology service	■		■
Spell Check							
Interactive Content Guidance		popup messages with definitions, full online help guide integrated	element definition, domain, data type and normative reference viewable in edit interface	tour, FAQ and help	element definitions, faq	online guidelines for producing UK-GEMINI compliant records	
Operating Instruction Manual	■	■	■	■	■	■	■
Auto-capture Properties from Data Set	■						
Other Support Features		user manual available as PDF	FAQ available via website; search standard for elements	color coding indicates conditionality; calendar function	downloadable tutorial/user guide		
Edit Operations	The following edit operations can be performed:						
Create 'library' of Contacts, Sources, or Other Content	■			■	■		■
Edit Languages	EN	EN, FR, ES, CN (others available but not in web interface)	ES, EN, PL	FR, EN	CA, EN, ES, IT, EL	EN	FR, EN
Save Incomplete Record	■	■		■		■	■
Batch Edits	■	planned for web interface in future versions		■	■		
Auto-populate Some Content (e.g. default values, inherit from other records)	■	■	■	■			■
Embed Attachments	■	■					

	ESRI ArcCatalog v9.2	GeoNetwork v2.2.0	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0
Other Edit Operations		upload and resize preview images, save template metadata records, duplicate metadata records; add, move and delete nodes	duplicate, delete & copy nodes; save profile as Template Text File	identify "parent" metadata record and copy content			
Validation Operations	The following validation operations can be performed:						
Compliance Check	ESRI-ISO	ISO 19115 with 19139 & 19119	ISO 19115 with 19139	ISO 19115	ISO 19115 w/ 19139	UK-GEMINI	Parcs Canada Core
Batch Validate		upon import			■		
Validate Incomplete Record	■	■	■	■	■	■	mandatory elements only
Other Validation Features		CSDGM, DC & Schematron validation system	user-defined schemas	validation checks for completeness			
Customization	The user can add and/or create:						
Custom Elements	■	with XSD	with configuration file	with XSD		■	Parks Canada Core Section, users can modify XSD
Custom Domains/Picklists	■	with XSD	with codelists configuration file	■			Parks Canada picklist and user specified
Custom Thesaurus		■		■	■		
Custom Templates (add/select elements; standard values)	■	■	with IME template format	■			■
Custom Interface	■	with XSLT and CSS		■			■
Other Customizations			fonts, warnings, add or modify attributes of xml element with the configuration file	user defined profile, import XSD of other standards			

METADATA MANAGEMENT

	ESRI ArcCatalog v9.2	GeoNetwork v2.2.0	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0
Management Operations	The following mangement operations can be performed:						
Search	all fields	all fields		all fields	title, keywords		all fields
Find/Replace		only available through Java call					
Indicates Workflow Status (draft, validated, etc.)				■	■		
Delete Record	■	with automatic backup to MEF		■	■	■	
Batch Delete	■				■		
Other Management Operations		user roles, transfer of metadata ownership, data download email notification, delete incomplete and unpublished records		admin user can 'approve' records			
Import Operations	The following import operations can be performed:						
Import records Formatted to Other Standards	CSDGM	ESRI ISO, user defined XSLT			CSDGM	NGDF	
Batch Import	■	from local machine and through WebDAV		■	■	■	■
Other Import Operations		import from MEF		zip XML of any supported standards		via user-specified xsl	multiple xml
Export Operations	The following export operations can be performed:						
Export Records to Other Standards	CSDGM	ESRI ISO, user defined XSLT				CSDGM	
Batch Export	■	■		■	■	database function	
Other Export Operations		export to MEF					
Output Format	Records can be output as:						
ISO 19139 XML	■	■	■		■		
XML (non-19139)	■	■		■		■	■
With User-designated XSLT	■	■	■			■	
HTML	■	■	■			■	

	ESRI ArcCatalog v9.2	GeoNetwork v2.2.0	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0
Other Output Format		text, RSS, GeoRSS, OpenSearch DC interface	PDF, Template Text File, user-defined profiles	ASCII Text			
Metadata Publication	Metadata can be published from the editor via:						
Z39.50		■		■		■	
Web Accessible Folder (WAF)							
Open Archive Initiative (OAI) Metadata Service		OAI-PMH server & client					
Catalog Service for the Web (CSW)		■			■		
Other Publication Service/Protocol	companion application - ArcIMS Metadata Service	RSS, GeoRSS, GEO Opensearch		companion application - MetaManager		companion application www.gigateway.org.uk	

USER COMMENTS							
	ESRI ArcCatalog v9.2	GeoNetwork v2.1	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0
	Note: *Each editor was reviewed by individual teams of users. Therefore, if a feature or issue is listed for one editor but absent for another editor it cannot be assumed that the same observation does not apply, only that it was not noted by both User Review teams.*						
OPERATING ENVIRONMENT							
Standards Supported	Missing ISO 19115 Core elements: *Dataset Character Set* and *Metadata File Identifier*		Elements with normative references are color-coded		Easy to use with clear element status and current edit window indicators	Based on UK profile of ISO 19115 aka 'UK GEMINI'	Based on Parcs Canada profile 'core' set of elements
					Includes ISO 19110 elements		Includes ISO 19110 elements
Software Interface	Editor 'Wizard' guides metadata development		Well organized with good functionality	Interface not intuitive for first-time users		Interface is exceptionally clear, and logically organized	Well-designed GUI. Informative and easy to navigate
						Metadata can be viewed in XML, HTML, and FGDC formats	
Operating System		Cross platform set up is supportive of multiple communities		Windows only installation, but browser based client		Operates in Windows and Linux	Windows 2000 and XP
Application Environment				A web-enabled application on desktop, requiring MS server software/environment for installation			Requires download installation of .NET Framework v2.0.50727
Data Storage			No internal data storage, must save to desktop and re-import to edit			Challenges implementing dbase storage option (desktop vers)	XML-based file storage
METADATA DEVELOPMENT							

	ESRI ArcCatalog v9.2	GeoNetwork v2.1	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0
Support Features							
	Element conditionality is not persistently indicated	Template duplication enables easier metadata creation	Instruction Manual is thorough but not intuitive	Effective use of color-coding to indicate element conditionality	Enables creation of Contact and Citation libraries for reuse of existing information and global edits	Manual is easy to use and comprehend, installs locally and web version is accessible from within application	Supports import of custom pick lists and edits
	Uses ESRI vernacular that sometimes varies from ISO terminology	Supports import of custom thesaurus	Metadata 'tree' with element definitions is useful, but can be complex	Embedded calendar feature supports date selection	Geographic reference system assignment is simple and flexible	Some elements have limited help text	Supports import of custom thesaurus
			A "getting started" section in the manual would be useful	Supports import of custom thesaurus	Simple to use thesaurus with referential integrity that does not permit delete of keywords that occur in existing metadata records	Map interface features (bounding box map, etc) limited to Great Britain but Lat/Lon values can be entered manually	
				Help is not searchable	Simple to use coordinate converter provided		
				Use of templates and scope codes supports documentation of spatial and nonspatial data in the same database	Thesaurus import requires input for all 3 languages when creating new thesauri		
					Useful on-screen help features		
Edit Operations	Enables creation of Contact library during metadata edit	Unique value is autogenerated for 'fileIdentifier' and is not editable	Cannot save incomplete record in edit environment	Ability to review/edit metadata record after creation was not intuitive	Cannot save incomplete or non-validated record		Must change editor views to access/edit all elements
			Shaded fields in editor supports edit process	"Standard parameters" is a unique function that enables user defined library of content for any set of elements			

	ESRI ArcCatalog v9.2	GeoNetwork v2.1	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0
			Option to input XML, e.g. GML, within an element could be useful for extending the standard	Attempt to translate from EN to FR resulted in error message			
			Date/time format not specified in definition				
Validation Operations		Unable to validate record	Enables validation of individual sections of record			Validation is limited to UK Gemini Metadata Standard	Validation with user-specified XSD
		Error messages were not helpful	Validation functions take full advantage of ISO 19139			Validation within editor is convenient and enables direct edit	
			Validation messages are meaningful and useful			Error messages are easy to understand	
			Validation allows for any combination of 10 digits in date field				
Adaptability			Enables creation of custom 'profiles'			Enables addition of user defined domain values	Enables creation of custom 'profiles' with XSD
METADATA MANAGEMENT							
Import Operations				Enables import of compressed (.zip) xml	CSDGM import does not reflect the FGDC crosswalk		Import limited to Parcs Canada profile
					Batch import limited to ISO 19115 formatted records		
					Does not enable import of ISO 19139 xml, only other records created in MetaD		
Management Operations		Advanced search results are thorough					Batch import option was not apparent
		Could not apply remote search function					

	ESRI ArcCatalog v9.2	GeoNetwork v2.1	IME v4.1	M3CAT v1.6	MetaD v3.0.4	MetaGenie v2.0	Parcs Canada Metadata Editor v1.0
Export Operations			No export functionality	Export function works well as both individual and batch process		Successfully exported CSDGM xml and imported into in-house metadata catalog	
Output Format	ISO 19139 output supports interoperability	ISO 19139 output supports interoperability	Ability to output a user-defined profile	Exports as both text and XML	ISO 19139 output supports interoperability		XML output is CSDGM not ISO 19115
			No text output option				
			19139 XML implementation is thorough				
Metadata Publication		Multiple publication options are beneficial for sharing metadata	No publication options				
OTHER							
		Needed IT help to install desktop software on Windows	Easy download and installation	Application did freeze on occasion			
				Needed IT help for installation			

METADATA EDITORS

ISO Metadata Editor	Website
GeoNetwork v2.2.0 (beta 1)	http://sourceforge.net/projects/geonetwork
IME v4.1	http://www.crepad.rcanaria.es/metadata/en/index_en.htm
M3CAT v1.6	http://www.intelec.ca/html/en/technologies/m3cat.html
MetaGenie v2.0	http://www.gigateway.org.uk/metadata/metagenie.html
Parcs Canada Metadata Editor v1.0	subcommittees/mwg/isoreview/Metadata_Setup.zip
MetaD v3.0.4	http://www.geoportal-idec.net/geoportal/
ESRI ArcCatalog v9.2	http://www.esri.com/news/arcuser/0405/files/arcatalog9.pdf
terraCatalog v 2.2	http://www.sdi-suite.de/en/terra-catalog.shtm
CATMDEdit v 4.0.1	http://catmdedit.sourceforge.net/