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# **Common Metadata Repository (CMR) System Requirements Specification**



**Goddard Space Flight Center**  
**Greenbelt, Maryland**

National Aeronautics and  
Space Administration

# CMR System Requirements Specification

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## Preface

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## **Abstract**

This document provides the Common Metadata Repository (CMR) system requirements presented as a set of user stories following the Agile development approach.

***Keywords:*** *CMR, UMM, MMT, GCMD, Metadata*



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## 1 INTRODUCTION

The NASA-developed Earth Observing System (EOS) Common Metadata Repository (CMR) is a spatial and temporal metadata registry that enables the science community to more easily use and exchange NASA's data and services. The CMR's main objective is to enable broader use of NASA's EOS data. It allows users to more efficiently search and access data and services and increases the potential for interoperability with new tools and services. The value of these resources increases as the potential to exchange and inter-operate increases. The CMR has been working with other organizations to provide their Earth science metadata alongside NASA's for users to search and access. The CMR stores metadata from a variety of science disciplines and domains, including Climate Variability and Change, Carbon Cycle and Ecosystems, Earth Surface and Interior, Atmospheric Composition, Weather, and Water and Energy Cycle.

The CMR was designed to increase access to NASA Earth science data and services by providing a system with a machine-to-machine interface, that is, an Application Programming Interface (API). This API facilitates the discovery, online access, and delivery for a Data Partner's data holdings. The CMR Data Partners retain complete control over what metadata are represented in the CMR by means of inserting new metadata, modifying existing metadata, removing old metadata, and controlling access to their metadata. The CMR Client Partners develop client applications that access the CMR API and take advantage of the services made available. These clients, such as Earthdata Search (<https://search.earthdata.nasa.gov/>), CMR open search (<https://api.echo.nasa.gov/opensearch/>), etc. allow end users to discover data which has been registered in the CMR's holdings and can be custom made to meet the needs of a general user audience, or a specific science application.

NASA's Earth Science Data and Information System (ESDIS) has built the CMR based on Extensible Markup Language (XML) and Web Service technologies. The CMR interfaces with different clients and users through its series of APIs. The CMR is an open system with published APIs available to the CMR Development and User community.

### 1.1 Purpose

The purpose of this document is to capture the system requirements for the CMR.

### 1.2 Scope

This document covers requirements and user stories for CMR. This document does not contain release notes or any version reporting. This document does not cover test criteria for any requirements or user stories.

### 1.3 Related Documentation

The latest versions of all documents below should be used. The latest ESDIS Project documents can be obtained from Uniform Resource Locator (URL): <https://ops1-cm.ems.eosdis.nasa.gov>. ESDIS documents have a document number starting with either 423 or 505. Other documents are available for reference in the ESDIS project library website at: [http://esdisfmp01.gsfc.nasa.gov/esdis\\_lib/default.php](http://esdisfmp01.gsfc.nasa.gov/esdis_lib/default.php) unless indicated otherwise.

#### 1.3.1 Applicable Documents

The following document contains policies or other directive matters that are binding upon the content of this document.

Document Number	Document Title
OGC 07-006r1	OpenGIS Catalogue Services Specification
N/A	Earth Observing System Data and Information System (EOSDIS) Evolution and Development 2 (EED2) Statement of Work for Providing Development, Sustaining Engineering, and Continuous Evolution of the Common Metadata Repository, 7/24/17
423-RQMT-005	ECHO System Requirements (Superseded October 2018; For Informational Purposes ONLY)
423-46-01	Functional and Performance Requirements Specification for the ECS Science Data Processing System

#### 1.3.2 Reference Documents

The following documents are not binding on the content but referenced herein and, amplify or clarify the information presented in this document.

Document Number	Document Title
NPR 2810.1A	Security of Information Technology document

### 1.4 Agile Programming and Requirements Analysis

The EOSDIS Evolution and Development 2 (EED2) teams are using Agile Programming methodologies throughout the software development lifecycle-including the requirements analysis phase. The process of developing requirements has not changed much from other software programming management methods such as waterfall or iterative methods. The two major differences between Agile and other methods are:

- a. A greater emphasis on stakeholder participation

- b. Requirements are allowed to evolve throughout the Agile development process to account for changing priorities, new requirements that were left out initially, or changes due to issues encountered during development and testing

These two differences may not seem all that different from other methods; however, requirements managed by Agile processes provide for a much more flexible framework from which to develop software.

In this document, requirements are captured as a set of User Stories written in the form:

"As a <role> I want to <action> so that I can <explanation>".

The requirement is told from the perspective from a user role instead of the generic "The system shall...". Requirements written in this form helps to refine the system requirement by identifying the user or consumer of the required functionality, the function that the user needs, and why this function is needed. The concept of providing value to the system user is reflected in the explanation of the user story form. This provides the rationale or the benefit of the requirement.

Requirements that begin "As the CMR, ...", do not refer to the older style of "The system shall..." statements. In the context of User Stories, "the CMR" takes an active role by ensuring that those processes in the workflow that are to be automated will be managed by the system itself. The action describes what needs to be done, not how it needs to be implemented. This allows the developer to choose from "Best Practices" techniques on how to best implement a requirement. The first principle of the Agile Manifesto is: *Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.* (<http://agilemanifesto.org/principles.html>)

The EDSC requirements and user stories will be tracked and maintained using Atlassian's Jama Requirements Management tool. The user stories presented in this document are written to a Systems Requirements level and will be kept in sync with the user stories maintained in Jama. **Of note is that the stories in this document have all been approved, but not all have been prioritized for implementation as of the date of this document.**

## 1.5 User Roles

The following roles will be used to clarify CMR User Stories by defining system boundaries and those that are responsible for completing the tasks associated with these requirements.

### 1.5.1 CMR System

The CMR System is responsible for starting, executing, and completing all automated processes for the CMR Production System. These processes include but are not limited to the following:

- Acquiring data from Distributed Active Archive Centers (DAAC) Data Provider
- Ingesting the data from DAAC Data Provider
- Staging the data for DAAC users to retrieve

#### 1.5.2 CMR Operator

The CMR Operator is responsible for the day to day maintenance and monitoring of the system.

The CMR Operator may be referred to in requirements as "CMR Operations" or "CMR Operations Lead."

#### 1.5.3 CMR System Administrator

The CMR System Administrator is responsible for managing the system capacity, configuring hardware, configuring software, adding or removing users including the user's roles. The CMR System Administrator also works with the CMR Operator to ensure the system is functioning optimally and troubleshoot issues when they occur. The CMR System Administrator will also serve as the CMR Database Administrator to keep these high level roles to a minimum.

#### 1.5.4 Ingest User

A CMR Ingest user is defined as a user who wishes to write to the CMR repository. This user may be responsible for adding new metadata, editing/updating existing metadata, curating metadata, or deleting metadata records. Ingest users may perform these actions programmatically using the CMR API suite, or they may make use of a user interface such as the Metadata Management Tool (MMT).

Ingest users may be referred to in requirements generally or specifically. These references may include the terms "programmatic user," "browser user," "DAAC user," "a user of the CMR who needs to ingest metadata," and other such phrases.

#### 1.5.5 Search User

A CMR Search User is defined as a user who reads metadata that exists within the CMR. By definition, Search Users interact with the CMR in a read-only fashion.

Search users may be referred to generically or specifically. These references may include the terms "client user," "client," "public user," or other such phrases.

#### 1.5.6 Provider

A Provider is defined as an entity or organization who owns and manages data contained within the CMR. Examples may include science teams and DAACs.

### 1.5.7 CMR Developer

A CMR Developer is defined as a user who is responsible for working with the CMR codebase to add features and functionality, troubleshoot bugs, and deploy products to the Operations environment.

## 2 REQUIREMENTS

### 2.1 Ingest

The CMR will be able to ingest metadata supplied by data providers.

Story ID	User Story
<a href="#">CMR-STORY-2115</a>	As a client user, I want to be able to retrieve UMM JSON with additional attributes
<a href="#">CMR-STORY-2116</a>	As an Ingest Client, I want collection deletions to cascade to granules asynchronously so that I can receive a response in a reasonable amount of time.
<a href="#">CMR-STORY-2117</a>	As an Ingest User, I want the CMR to validate that a collection update does not modify a field referred to by existing granules
<a href="#">CMR-STORY-2118</a>	As an Ingest User, I want to change a Collection's entry title, entry id, short name or version even if it has granules
<a href="#">CMR-STORY-2129</a>	As a Client User, I want the CMR to reject a collection update if it removes a tiling coordinate system referred to by an existing granule.
<a href="#">CMR-STORY-2130</a>	As a Client User, I want the CMR to reject a collection update that removes a platform referenced to by an existing granule
<a href="#">CMR-STORY-2131</a>	As a Client User, I want the CMR to reject a collection update that removes an instrument referenced to by an existing granule
<a href="#">CMR-STORY-2132</a>	As a Client User, I want the CMR to reject a collection update that removes a sensor referenced to by an existing granule
<a href="#">CMR-STORY-2149</a>	As a Client User, I want Ingest to reject my collection if a version is not specified
<a href="#">CMR-STORY-2189</a>	As a Client User, I would like to be able to change a concept's native id
<a href="#">CMR-STORY-2192</a>	As a client, I would like to understand when a collection has changed content (including granules).
<a href="#">CMR-STORY-2209</a>	As a Client User, I want Ingest to reject granules with spatial areas that fall outside of the collection spatial area so that I may accurate collection spatial areas.
<a href="#">CMR-STORY-2210</a>	As a Client User, I want Ingest to reject collection spatial updates which would exclude a granule's spatial area.
<a href="#">CMR-STORY-2268</a>	As a Client User, I want to receive error messages which reference fields in my input format.

Story ID	User Story
<a href="#">CMR-STORY-2355</a>	As a Client User, I want the CMR to validate that a collection is not changing its short name when it has granules referencing it through that short name.
<a href="#">CMR-STORY-2408</a>	As a provider, I do not want CMR to allow ingest of zero size granules.
<a href="#">CMR-STORY-2413</a>	As a Client User, I would like to enable UMM JSON schema validation for an individual ingest request
<a href="#">CMR-STORY-2549</a>	As a Client User, I want to translate metadata into other standards and skip umm validation
<a href="#">CMR-STORY-2550</a>	As a Client User, I should be able to update a collection identifier if none of its granules use that identifier
<a href="#">CMR-STORY-2551</a>	As a client user, I want to conditionally exclude default values during umm-c ingest validation
<a href="#">CMR-STORY-2552</a>	As an Ops user, I should have a way of determining via Splunk if an ingest request is new or updating an existing granule
<a href="#">CMR-STORY-2553</a>	As a Client User, I can translate metadata into UMM-C without adding defaults
<a href="#">CMR-STORY-2554</a>	As a CMR Administrator, I can reindex UMM Vars
<a href="#">CMR-STORY-2555</a>	As a Client User, I want the CMR to reject my ingest if my request has encoding issues
<a href="#">CMR-STORY-2556</a>	As a Client User, I can ingest a granule referring to a platform alias defined in humanizers so that I can correct my collection metadata without invalidating granules.
<a href="#">CMR-STORY-2557</a>	As a Client User, I can ingest a granule referring to an instrument alias defined in humanizers so that I can correct my collection metadata without invalidating granules.
<a href="#">CMR-STORY-2558</a>	As a Client User, I can ingest a granule referring to a sensor alias defined in humanizers so that I can correct my collection metadata without invalidating granules.
<a href="#">CMR-STORY-2559</a>	As a Client User, I can ingest a granule referring to a tile system alias defined in humanizers so that I can correct my collection metadata without invalidating granules.
<a href="#">CMR-STORY-2560</a>	As a CMR Operator, I want to change a provider from a small provider to a regular provider
<a href="#">CMR-STORY-2561</a>	As an operator, I need to be able to enable ingest to reject collection and granule ingest requests so that I can safely transition an environment to NGAP.

Story ID	User Story
<a href="#">CMR-STORY-2562</a>	As a bulk update user, I would like old bulk update results to be cleaned up
<a href="#">CMR-STORY-2563</a>	As a Client Developer, I would like to view CMR Ingest Documentation in a consistent Earthdata styling
<a href="#">CMR-STORY-2564</a>	As a Client User, I want to ingest UMM-Var concepts
<a href="#">CMR-STORY-2565</a>	As a Client User, I want to ingest new UMM-Services concepts
<a href="#">CMR-STORY-2566</a>	As a Client User, I want to update existing UMM-Services concepts
<a href="#">CMR-STORY-2567</a>	As a Client User, I want to delete UMM-Services concepts
<a href="#">CMR-STORY-2568</a>	As a Metadata Provider, I want to enter find values for Bulk Update in a case-insensitive way
<a href="#">CMR-STORY-2569</a>	As a client, I would like to know the date and time of my bulk updates.
<a href="#">CMR-STORY-2570</a>	As a Metadata Provider, I want my Bulk Updates to be successful even if other fields in my updated records don't pass ingest validation
<a href="#">CMR-STORY-2571</a>	As a Metadata Provider, I want the Data Center URL to be updated when I perform Bulk Update Find and Update for Data Centers.
<a href="#">CMR-STORY-2572</a>	As a bulk update user, I want the field I am bulk updating to be validated against the UMM schema, but no other fields should be validated against the schema.
<a href="#">CMR-STORY-2573</a>	As a Provider, I want my collection revision table to indicate who performed bulk update revisions
<a href="#">CMR-STORY-2575</a>	As an operator, I should not be able to delete a CMR provider if it contains one or more collections
<a href="#">CMR-STORY-2663</a>	As an operator, I need to be able to delete individual concepts from the Elasticsearch index
<a href="#">CMR-STORY-2668</a>	As a daac provider, We would like collections to publish at a given time
<a href="#">CMR-STORY-2669</a>	As a Provider, I want the CMR to reject an ingest request for a collection that contains a DeleteTime in the past
<a href="#">CMR-STORY-2670</a>	As a Provider, I want the CMR to reject an ingest request for a granule that contains a DeleteTime in the past
<a href="#">CMR-STORY-2777</a>	As a Client User, I want to parse and generate FeatureIDs in SWOT granule metadata format
<a href="#">CMR-STORY-2778</a>	As a Client User, I want to parse and generate CRID IDs in SWOT granule metadata format

Story ID	User Story
<a href="#">CMR-STORY-2932</a>	As an Ingest User, I want granules with temporal to be rejected if the parent collection has no temporal.
<a href="#">CMR-STORY-2944</a>	As a Client User, I want to be able to retrieve the id of the user that updated the metadata as part of the UMM JSON response.
<a href="#">CMR-STORY-2945</a>	As a Client User, I should receive an error message if the metadata I'm attempting to translate is invalid.

### 2.1.1 Ingest - Collection Formats

The CMR will be able to ingest collections in a variety of supported formats.

Story ID	User Story
<a href="#">CMR-STORY-747</a>	As a Provider, I want to ingest collections in the ECHO10 format.
<a href="#">CMR-STORY-748</a>	As a Provider, I want to ingest collections in the DIF 9 XML format.
<a href="#">CMR-STORY-749</a>	As a Provider, I want to ingest collections in the SMAP ISO 19115 format.
<a href="#">CMR-STORY-949</a>	As a Provider, I want to ingest collections in the NASA ISO 19115 Best Practices format.
<a href="#">CMR-STORY-1777</a>	As a Provider, I want to ingest collections in the DIF 10.1 XML format
<a href="#">CMR-STORY-1778</a>	As a Provider, I want to ingest collections in the ISO 19115-1 XML format

### 2.1.2 Ingest - Granule Formats

The CMR will be able to ingest granules in a variety of supported formats.

Story ID	User Story
<a href="#">CMR-STORY-751</a>	As a Provider, I want to ingest granules in the ECHO10 format.
<a href="#">CMR-STORY-752</a>	As a Provider, I want to be able to ingest a granule in any supported format, regardless of the format of its collection.
<a href="#">CMR-STORY-753</a>	As a Provider, I want to ingest granules in the SMAP ISO 19115 format.
<a href="#">CMR-STORY-950</a>	As a Provider, I want to ingest granules in the NASA ISO 19115 Best Practices format.
<a href="#">CMR-STORY-1779</a>	As a Provider, I want to ingest granules in the ISO 19115-1 XML format

### 2.1.3 Ingest - Collection Spatial Representation

The CMR will be able to ingest collections with spatial metadata defined using a variety of methods.

Story ID	User Story
<a href="#">CMR-STORY-755</a>	As a Provider, I want to ingest collections with spatial metadata defined by a point.
<a href="#">CMR-STORY-756</a>	As a Provider, I want to ingest collections with spatial metadata defined by a bounding rectangle.
<a href="#">CMR-STORY-757</a>	As a Provider, I want to ingest collections with spatial metadata defined by geodetic polygons which may have holes.
<a href="#">CMR-STORY-758</a>	As a Provider, I want to ingest collections with spatial metadata defined by cartesian polygons which may have holes.
<a href="#">CMR-STORY-759</a>	As a Provider, I want to ingest collections with spatial metadata defined by geodetic lines.
<a href="#">CMR-STORY-760</a>	As a Provider, I want to ingest collections with spatial metadata defined by cartesian lines.

### 2.1.4 Ingest - Granule Spatial Representation

The CMR will be able to ingest granules with spatial metadata defined using a variety of methods.

Story ID	User Story
<a href="#">CMR-STORY-761</a>	As a Provider, I want to ingest granules with spatial metadata defined by a point.
<a href="#">CMR-STORY-762</a>	As a Provider, I want to ingest granules with spatial metadata defined by a bounding rectangle.
<a href="#">CMR-STORY-763</a>	As a Provider, I want to ingest granules with spatial metadata defined by geodetic polygons which may have holes.
<a href="#">CMR-STORY-764</a>	As a Provider, I want to ingest granules with spatial metadata defined by cartesian polygons which may have holes.
<a href="#">CMR-STORY-765</a>	As a Provider, I want to ingest granules with spatial metadata defined by geodetic lines.
<a href="#">CMR-STORY-766</a>	As a Provider, I want to ingest granules with spatial metadata defined by cartesian lines.

### 2.1.5 Ingest - ACL Enforcement

The CMR will enforce permissions on ingest according to access control Levels (ACL).

Story ID	User Story
<a href="#">CMR-STORY-767</a>	As a Provider, I want the CMR to reject a collection ingest request if the user attempting to ingest does not have permission to ingest data for my provider.
<a href="#">CMR-STORY-768</a>	As a Provider, I want the CMR to reject a granule ingest request if the user attempting to ingest does not have permission to ingest data for my provider.
<a href="#">CMR-STORY-769</a>	As a Provider, I want the CMR to reject a collection deletion request if the user attempting to delete does not have permission to delete data for my provider.
<a href="#">CMR-STORY-770</a>	As a Provider, I want the CMR to reject a granule deletion request if the user attempting to delete does not have permission to delete data for my provider.
<a href="#">CMR-STORY-1789</a>	As a Provider, I want to the CMR to permit creation of a service metadata record if the user attempting to create the record has permission from a catalog item ACL.
<a href="#">CMR-STORY-1790</a>	As a Provider, I want to the CMR to permit deletion of a service metadata record if the user attempting to delete the record has permission from a catalog item ACL.
<a href="#">CMR-STORY-2022</a>	As a Provider, I want to the CMR to permit creation of a collection metadata record if the user attempting to create the record has permission from a catalog item ACL.
<a href="#">CMR-STORY-2023</a>	As a Provider, I want to the CMR to permit creation of a granule metadata record if the user attempting to create the record has permission from a catalog item ACL.
<a href="#">CMR-STORY-2039</a>	As a Provider, I want to the CMR to permit update of a collection metadata record if the user attempting to update the record has permission from a catalog item ACL.
<a href="#">CMR-STORY-2040</a>	As a Provider, I want to the CMR to permit deletion of a collection metadata record if the user attempting to delete the record has permission from a catalog item ACL.
<a href="#">CMR-STORY-2041</a>	As a Provider, I want to the CMR to permit update of a granule metadata record if the user attempting to update the record has permission from a catalog item ACL.

Story ID	User Story
<a href="#">CMR-STORY-2042</a>	As a Provider, I want to the CMR to permit deletion of a granule metadata record if the user attempting to delete the record has permission from a catalog item ACL.
<a href="#">CMR-STORY-2043</a>	As a Provider, I want to the CMR to permit update of a service metadata record if the user attempting to update the record has permission from a catalog item ACL.

### 2.1.6 Ingest - Service Formats

The CMR will be able to ingest services in a variety of supported formats.

Story ID	User Story
<a href="#">CMR-STORY-1787</a>	As a Provider, I want to ingest services in the ISO 19115-1 XML format
<a href="#">CMR-STORY-1788</a>	As a Provider, I want to ingest services in the SERF 9 XML format

### 2.1.7 Ingest - Services

The CMR will be able to ingest service metadata.

Story ID	User Story
<a href="#">CMR-STORY-1904</a>	As an Ingest Client User, I want to be able to delete service metadata.
<a href="#">CMR-STORY-1905</a>	As an Ingest Client User, I want to be able to validate service metadata.
<a href="#">CMR-STORY-1906</a>	As an Ingest Client User, I want to be able to validate SERF XML against a schema.

### 2.1.8 Ingest - Concept Revision Retrieval

The CMR will be able to ingest and store concept revisions.

Story ID	User Story
<a href="#">CMR-STORY-1941</a>	As an Ingest Client User, I want to be able to search for collection concept revisions and retrieve a list of collection concept revision information.
<a href="#">CMR-STORY-1942</a>	As an Ingest Client User, I want to be able to search for concept revisions by concept type.
<a href="#">CMR-STORY-1943</a>	As an Ingest Client User, I want to be able to search for collection concept revisions by provider.

Story ID	User Story
<a href="#">CMR-STORY-1944</a>	As an Ingest Client User, I want to be able to search for collection concept revisions by concept id.
<a href="#">CMR-STORY-1945</a>	As an Ingest Client User, I want to be able to search for the latest collection concept revisions.
<a href="#">CMR-STORY-1946</a>	As a Client User, I want to be able to search for collection concept revisions that are tombstones.
<a href="#">CMR-STORY-1947</a>	As an Ingest Client User, I want to be able to search for collection concept revisions by revision date.
<a href="#">CMR-STORY-1948</a>	As an Ingest Client User, I want to be able to retrieve concept metadata by concept id and revision id.
<a href="#">CMR-STORY-1949</a>	As an Ingest Client, I want my user id to be associated with the new collection concept revision when I create or update a collection metadata record.
<a href="#">CMR-STORY-1950</a>	As an Ingest Client, I want to be able to comment on a new collection concept revision, so that I can indicate why the revision was created.
<a href="#">CMR-STORY-2879</a>	As a client user, I should only find concept revision results for which I have read permission.
<a href="#">CMR-STORY-2880</a>	As an Ingest Client, I want to be able to specify revision id on granule update and delete operations
<a href="#">CMR-STORY-2881</a>	As an Ingest Client User, I want to be able to search for collection concept revisions by entry title.
<a href="#">CMR-STORY-2882</a>	As a Client User, I want to be able to sort collection concept revision search results by Entry Id
<a href="#">CMR-STORY-2883</a>	As an Ingest Client User, I want to be able to sort collection concept revision search results by Entry Title
<a href="#">CMR-STORY-2884</a>	As an Ingest Client User, I want to be able to sort collection concept revision search results by revision date
<a href="#">CMR-STORY-2885</a>	As a client user, I want to receive the number of hits a concept revision search matched.
<a href="#">CMR-STORY-2942</a>	As a client user, I want to retrieve concept revision search results in concept map format.
<a href="#">CMR-STORY-2946</a>	As a client user I want to be able to retrieve concepts by concept-id/revision-id in the Atom and JSON formats.

### 2.1.9 Ingest - Controlled Vocabulary

The CMR will validate science keywords, platforms, and instruments against the Global Change Master Directory (GCMD) KMS controlled vocabulary.

Story ID	User Story
<a href="#">CMR-STORY-1951</a>	As an Ingest Client User, I want to validate my science keywords against the GCMD KMS controlled vocabulary.
<a href="#">CMR-STORY-1952</a>	As an Ingest Client User, I want to validate my platforms against a controlled vocabulary.
<a href="#">CMR-STORY-1953</a>	As an Ingest Client User, I want to validate my instruments against a controlled vocabulary.
<a href="#">CMR-STORY-1954</a>	As an Ingest Client User, I want to validate my projects against a controlled vocabulary.
<a href="#">CMR-STORY-2954</a>	As a client, I want to retrieve a list of valid keywords for all controlled vocabulary fields.
<a href="#">CMR-STORY-2963</a>	As a client, I want to retrieve a list of the valid temporal keywords
<a href="#">CMR-STORY-2964</a>	As a client, I want to retrieve a list of the valid spatial keywords

## 2.2 Search

The CMR will offer users the ability to search for metadata that exists within the repository.

Story ID	User Story
<a href="#">CMR-STORY-2108</a>	As a Client User, I should be able to find the latest revision of a collection that was deleted.
<a href="#">CMR-STORY-2114</a>	As a user, I want to exclude collections with a given tag from my search results so I may filter results to only the most relevant values
<a href="#">CMR-STORY-2120</a>	As a Client User, I want to be able to use phrase searches when searching collection keywords.
<a href="#">CMR-STORY-2121</a>	As a Client User, I want to be able to search for collections that were ingested in UMM JSON
<a href="#">CMR-STORY-2122</a>	As a Client User, I want to be able to retrieve metadata search results for collections ingested as UMM JSON.
<a href="#">CMR-STORY-2123</a>	As a Client User, I want to be able to retrieve a single collection in a specified metadata format that was ingested as UMM JSON
<a href="#">CMR-STORY-2143</a>	As a client, I want the facet response format to be documented with processing rules clearly defined.
<a href="#">CMR-STORY-2147</a>	As a user, I want CMR to return collections with later version ids before collections with earlier version IDs so I can more easily find the most up-to-date collection
<a href="#">CMR-STORY-2150</a>	As a CMR API user, I should receive responses that contain a unique request ID

Story ID	User Story
<a href="#">CMR-STORY-2151</a>	As a Client User, I want to be able to search for and retrieve a single item's metadata
<a href="#">CMR-STORY-2154</a>	Add the capability to return through search a full granule record using the csv format
<a href="#">CMR-STORY-2155</a>	As a client, I want to be able to search by data_center short_name using query parameters
<a href="#">CMR-STORY-2157</a>	As a Client User, I want to be able to search with polygon points in either order
<a href="#">CMR-STORY-2166</a>	As a client, I want the JSON response format for collections to include all of the organizations.
<a href="#">CMR-STORY-2183</a>	Provider 'include_tags' support in the Atom format
<a href="#">CMR-STORY-2185</a>	As a Client User, I want the CMR to return an HTML representation of a collection
<a href="#">CMR-STORY-2188</a>	As a Client User, I would like to be able to retrieve the native id in metadata result and references format.
<a href="#">CMR-STORY-2190</a>	Allow users to constrain collection results to collections that have granules
<a href="#">CMR-STORY-2191</a>	As a client, I want to be able to retrieve any concept formatted as UMM-JSON
<a href="#">CMR-STORY-2207</a>	As a user I want to be able to query what services are available for granules of a given collection
<a href="#">CMR-STORY-2211</a>	As a client, I want to be able to retrieve the Data Center URL as part of the data provider's keyword endpoint
<a href="#">CMR-STORY-2263</a>	As an API user I want to be able to have tags returned in the UMM-JSON output.
<a href="#">CMR-STORY-2264</a>	As a user of tags I want to be able to search for records with tags that contain a partial value (wild cards).
<a href="#">CMR-STORY-2265</a>	As a client user, I want to sort collection results by the presence/absence of a tag
<a href="#">CMR-STORY-2266</a>	As a client user, I want to retrieve facets based on the presence or absence of tags, filtered by namespace
<a href="#">CMR-STORY-2267</a>	As a Client User, I want to see the page size and number used in search results so that it is obvious the results were limited.
<a href="#">CMR-STORY-2269</a>	As a portal author I want to define JSON post queries utilizing tags.
<a href="#">CMR-STORY-2315</a>	As a Client User, I want my collection spatial searches with included granule counts to return in a reasonable amount of time even if it means receiving less accurate counts

Story ID	User Story
<a href="#">CMR-STORY-2316</a>	As a Client User, I want the CMR to reject a search if I use an invalid concept id
<a href="#">CMR-STORY-2317</a>	As a Client User, I should be able to search for collection which have granules through the JSON query API
<a href="#">CMR-STORY-2319</a>	As a metadata curator I want to be able to investigate the types of searches end users are doing in the CMR.
<a href="#">CMR-STORY-2320</a>	As an API user I want to be able to do JSON post queries for all indexed UMM-C fields.
<a href="#">CMR-STORY-2321</a>	Support result set navigation by index
<a href="#">CMR-STORY-2323</a>	As a client user, I want to associate tag data with collections identified by JSON query so I may avoid making multiple calls and transformations to express the data I want to tag
<a href="#">CMR-STORY-2324</a>	As a Client User, I would like to be able to sort by Data Center
<a href="#">CMR-STORY-2325</a>	As a Client User, I would like to search for values explicitly in granules and not inherited.
<a href="#">CMR-STORY-2326</a>	As a user I would like keyword (free text) searches to include the Personnel field.
<a href="#">CMR-STORY-2327</a>	As a user I would like 'keyword' (free text) searches to include the Ancillary Keyword field.
<a href="#">CMR-STORY-2328</a>	As a user I would like keyword (free text) searches to include the Detailed Variable field.
<a href="#">CMR-STORY-2329</a>	As a user I would like keyword (free text) searches to include the 'IDN Node' field.
<a href="#">CMR-STORY-2330</a>	As a user I would like keyword (free text) searches of Services to include the 'GCMD Service Keyword' field.
<a href="#">CMR-STORY-2331</a>	As a user I would like keyword (free text) searches to include the 'Extended Metadata' field.
<a href="#">CMR-STORY-2332</a>	As a user I would like keyword (free text) searches to include the 'Related URL' field.
<a href="#">CMR-STORY-2334</a>	As a user I would like keyword (free text) searches to include the 'ISO Topic Category' field.
<a href="#">CMR-STORY-2347</a>	As a user I want to be able to search for version id without the leading 0s
<a href="#">CMR-STORY-2351</a>	As a Client User, I want the CMR to trim whitespace from collection entry titles for collection search results and sorting
<a href="#">CMR-STORY-2352</a>	As a client user, I want to obtain counts for near real time collections among my facet results

Story ID	User Story
<a href="#">CMR-STORY-2354</a>	As a client user, I want the atom and atom+json response formats for collections and granules to include links to next and previous pages when appropriate
<a href="#">CMR-STORY-2356</a>	As a client, I want to be able to search collections based on Detailed Locations within Location Keywords
<a href="#">CMR-STORY-2363</a>	As a Client User, I can search for collections matching a value within a humanized field using a parameter search.
<a href="#">CMR-STORY-2410</a>	As a Provider, I want collections and granules which do not define a spatial area to be discoverable via spatial search
<a href="#">CMR-STORY-2414</a>	As a Client User, I want to view collection parameter search documentation that allows me to try it in the documentation.
<a href="#">CMR-STORY-2415</a>	As a CMR client I want to be able to issue a WCS 2.0 GetCapabilities and DescribeCoverage for a given collection
<a href="#">CMR-STORY-2416</a>	As ESDIS, I would like to get metrics on how many terms required "humanizing" for each DAAC
<a href="#">CMR-STORY-2417</a>	As a Client User, I want to search for a collection by its Entry ID in a keyword free text search.
<a href="#">CMR-STORY-2422</a>	As a Client User, I want to be able to retrieve CMR API markdown so that I may render it in the Earthdata developer portal
<a href="#">CMR-STORY-2594</a>	As a CMR Administrator, I want to have a special ACL to allow updates to humanizers
<a href="#">CMR-STORY-2603</a>	As a Client User, I want to receive humanized terms within the Facets V2 response so that I can provide more relevant facets to the end user.
<a href="#">CMR-STORY-2604</a>	As a CMR user I want collections whose spatial boundaries have a higher percentage overlap with my spatial query constraints to score higher than those with a low percentage overlap.
<a href="#">CMR-STORY-2605</a>	As a Client User, I can search for collections by native format
<a href="#">CMR-STORY-2606</a>	As a Client User, I can retrieve CMR search results in an HTML format.
<a href="#">CMR-STORY-2607</a>	Search Facets should be OR'ed instead of ANDed (CMR Service Desk)
<a href="#">CMR-STORY-2608</a>	Request to query for records based on the specification type (DIF9/10, ECHO10, ISO 19115-2 MENDS/SMAP, UMM)

Story ID	User Story
<a href="#">CMR-STORY-2609</a>	As a Client User, I can retrieve both counts of collections with granules and without granules during a collection search
<a href="#">CMR-STORY-2610</a>	Add ability to AND tag_key parameters in search
<a href="#">CMR-STORY-2611</a>	As a CMR user I would like collections that have higher community usage to appear earlier in search results than collections with lower community usage, all other things being the same.
<a href="#">CMR-STORY-2612</a>	As an operator, I need to be able to enable search to reject tag and tag association creation requests so that I can safely transition an environment to NGAP.
<a href="#">CMR-STORY-2613</a>	As a CMR user I would like to be able to determine how the relevance for a given search result was computed and how the overall result order was determined.
<a href="#">CMR-STORY-2614</a>	As a Client User, I can get a listing of links to all CMR collection landing pages so that a crawler can index them.
<a href="#">CMR-STORY-2615</a>	As a harvesting client, I want to retrieve only the collection metadata which was newly added to the CMR after a given date
<a href="#">CMR-STORY-2616</a>	As a harvesting client, I want to find collections which have added granules since the last time I harvested
<a href="#">CMR-STORY-2617</a>	As a Google crawler, I can get a master sitemap and sub-sitemaps for CMR collection landing pages
<a href="#">CMR-STORY-2618</a>	As a Client User, I want to search for measurements by measurement name to narrow it down to a smaller list.
<a href="#">CMR-STORY-2619</a>	As a Client User, I want to be able to request the number of facet values returned for any facet field.
<a href="#">CMR-STORY-2620</a>	As a Client User, I want to search for variables by variable name to narrow it down to a smaller list.
<a href="#">CMR-STORY-2621</a>	As a client, I want to search for collections based on a list of measurement names
<a href="#">CMR-STORY-2622</a>	As a Client User, I want to search for collections based on a list of variable names
<a href="#">CMR-STORY-2623</a>	As a Client User, I want to search for granules based on a list of measurement names
<a href="#">CMR-STORY-2624</a>	As a Client User, I want to search for granules based on a list of variable names
<a href="#">CMR-STORY-2625</a>	As I Client User, I want to retrieve a list of services options
<a href="#">CMR-STORY-2626</a>	As a Client User, I want to search for collections based on a list of service options

Story ID	User Story
<a href="#">CMR-STORY-2627</a>	As a client, I want to be able to associate a variable by name with a list of collections by their concept-ids
<a href="#">CMR-STORY-2628</a>	As a client, I want to search for all collections based on the author in the citation field.
<a href="#">CMR-STORY-2629</a>	As a CMR Operator, I want to be able to force regeneration of the humanizer report
<a href="#">CMR-STORY-2630</a>	Allow collection search by native-id
<a href="#">CMR-STORY-2631</a>	As a user, I should be able to search for granules within multiple areas of interest
<a href="#">CMR-STORY-2632</a>	As a client, I would like collection features to be included in the facet response
<a href="#">CMR-STORY-2633</a>	As a user, I want to query CMR for fields that are empty
<a href="#">CMR-STORY-2634</a>	Add schema.org identifier property to collection markup using DOI
<a href="#">CMR-STORY-2635</a>	Leverage schema.org/citation property in collection markup
<a href="#">CMR-STORY-2637</a>	As a Client User, I want collection JSON search response to include variable and service associations
<a href="#">CMR-STORY-2638</a>	End-to-End services: CMR provides `has_spatial_subsetting` field in /collections.json
<a href="#">CMR-STORY-2639</a>	As a client, I want a 403 Forbidden response to be returned when searching for an unaccessible concept.
<a href="#">CMR-STORY-2640</a>	As a Client User, I want to be able to search services in specified sort order
<a href="#">CMR-STORY-2641</a>	As a Client User, I want OMI products to appear above TOMS products when searching for Ozone
<a href="#">CMR-STORY-2647</a>	As a Client User, I would like to be able to constrain collection results to collections that have granules or that have been tagged as a CWIC collection
<a href="#">CMR-STORY-2664</a>	As a client, I want to retrieve location facets in a hierarchical fashion.
<a href="#">CMR-STORY-2667</a>	As a search engine for Search.gov, I want the sitemap.xml URLs to not contain port number
<a href="#">CMR-STORY-2779</a>	As a Client User, I can search granules by FeatureIDs
<a href="#">CMR-STORY-2780</a>	As a Client User, I can search granules by CRID IDs
<a href="#">CMR-STORY-2892</a>	As a client, I want to be able to specify natural language search options for keyword searches

Story ID	User Story
<a href="#">CMR-STORY-2933</a>	As a Client User, I want to receive an error if I try to include highlights with unsupported search response formats.
<a href="#">CMR-STORY-2934</a>	As a client, I want to be able to search using terms from each level within the provider hierarchy using the JSON Query API
<a href="#">CMR-STORY-2935</a>	As a client, I want to be able to search using terms from each level within the provider hierarchy using query parameters
<a href="#">CMR-STORY-2938</a>	As a client, I want to be able to specify parameters to customize the way highlighted summaries are returned when searching using a JSON Query.
<a href="#">CMR-STORY-2939</a>	As a client, I want to be able to specify parameters to customize the way highlighted summaries are returned when searching using query parameters.
<a href="#">CMR-STORY-2943</a>	As a client user, I want search to reject all revision searches in unsupported formats.
<a href="#">CMR-STORY-2947</a>	As a client, I want to be able to search using terms from each level within the platform hierarchy using the JSON Query API
<a href="#">CMR-STORY-2948</a>	As a client, I want to be able to search using terms from each level within the instrument hierarchy using the JSON Query API
<a href="#">CMR-STORY-2949</a>	As a client, I want to be able to search using terms from each level within the platform hierarchy using query parameters
<a href="#">CMR-STORY-2950</a>	As a client, I want to be able to search using terms from each level within the instrument hierarchy using query parameters
<a href="#">CMR-STORY-2952</a>	As a Client User, I want to be able to retrieve search results in UMM JSON format
<a href="#">CMR-STORY-2953</a>	As a client, I want to be able to query CMR and receive the list of approved keywords.
<a href="#">CMR-STORY-2956</a>	As a client, I want to be able to search using the JSON Query API for collections using a science keyword UUID
<a href="#">CMR-STORY-2957</a>	As a client, I can retrieve provider holdings for a specific provider ignoring the case of the provider id.
<a href="#">CMR-STORY-2959</a>	As a client, I want controlled keywords to be treated as case insensitive.
<a href="#">CMR-STORY-2971</a>	As a Client User, I want science keywords to be returned in alphabetical order

Story ID	User Story
<a href="#">CMR-STORY-2982</a>	As a Client User, I would like the CMR to parse DIF temporal end dates without a time as inclusive of that whole day.
<a href="#">CMR-STORY-2992</a>	As a user I want to be able to update my email address in URS and not break MRT requests
<a href="#">CMR-STORY-3006</a>	As an Operations User, I want SOAP Services GetCurrentSids to function for ECHO created tokens when URS is down
<a href="#">CMR-STORY-3007</a>	As an ECHO metadata provider, I want my <Contacts> information to be translated to UMM-C Data Contact if appropriate
<a href="#">CMR-STORY-3012</a>	As a metadata-db user, I want cascade operations to insert the user-id of the user associated to the cascaded operations into the DB
<a href="#">CMR-STORY-3014</a>	As a CMR user, I want to be able to search by a blank parameter
<a href="#">CMR-STORY-3016</a>	As a provider of sinusoidal granules I would like my user to specify a bounding box on a sinusoidal grid
<a href="#">CMR-STORY-3021</a>	As an EDSC user, I want to select how my search results are sorted
<a href="#">CMR-STORY-3023</a>	As a Client User, I want to get order details for a list of order ids through ECHO REST
<a href="#">CMR-STORY-3026</a>	As a CMR User, I Want to See an HTML Representation of a Service Record
<a href="#">CMR-STORY-3036</a>	As a web developer external to CMR, I want to offer my users the ability to page through CMR search results, so I can provide a fully-featured CMR search function on my website
<a href="#">CMR-STORY-3041</a>	As a client user, I want to find similar results based on a science keyword, so I can find the exact product I want.
<a href="#">CMR-STORY-3042</a>	As a CMR user, I want Related URLs on the collection web page to be sorted by type, so that all the elements of the same type are grouped together
<a href="#">CMR-STORY-3043</a>	As a CMR user I don't want to see the "SEARCH FOR GRANULES FROM THIS COLLECTION" in the Web View if a collection does not have associated granules.
<a href="#">CMR-STORY-3062</a>	As a MMT user, I want to be able to search for and see all services associated with a collection
<a href="#">CMR-STORY-3063</a>	As a MMT user, I want to be able to search for and see all variables associated with a collection
<a href="#">CMR-STORY-3128</a>	As a Client User, I would like the revision_date field included in the JSON response

### 2.2.1 Application Management

The CMR will manage browser cache to prevent caching problems.

Story ID	User Story
<a href="#">CMR-STORY-5</a>	As a CMR Operator, I want to retrieve items from the cache so that I can debug caching issues.
<a href="#">CMR-STORY-6</a>	As a CMR Operator, I want to force the cache to clear.

### 2.2.2 Catalogue Service for the Web

The CMR will provide compatibility with Catalogue Services for the Web (CSW), version 2.0.2. The specification is at:

[http://portal.opengeospatial.org/files/?artifact\\_id=20555](http://portal.opengeospatial.org/files/?artifact_id=20555)

The entire specification is not currently needed by the CMR users and therefore the CMR supports the following subset of CSW capabilities:

- GetCapabilities: allows clients to retrieve service metadata describing Catalogue Service instance
- GetRecords: allows clients to query the catalog
- GetRecordById: allows clients to retrieve the default catalog record representation based on the record identifier

Story ID	User Story
<a href="#">CMR-STORY-1060</a>	As a CMR CSW Services consumer I would like to perform a GetCapabilities request
<a href="#">CMR-STORY-2194</a>	As a CMR CSW Services consumer I would like to query the CMR via a GetRecords call so that I can discovery data of interest to me
<a href="#">CMR-STORY-2196</a>	As a CMR CSW Services consumer I would like to perform a DescribeRecord request
<a href="#">CMR-STORY-2980</a>	As a CMR CSW Services consumer I would like to perform a GetRecordById request
<a href="#">CMR-STORY-2981</a>	As a CMR CSW Services consumer I would like to perform a GetDomain request
<a href="#">CMR-STORY-2994</a>	As a CMR CSW Services consumer, I need to detect whether a collection has inventory within CWIC
<a href="#">CMR-STORY-2995</a>	As a CMR CSW Services consumer, I need to navigate through a result set using GetRecords requests
<a href="#">CMR-STORY-3000</a>	As a CMR CSW Services consumer I would like to perform a post DescribeRecord request

### 2.2.3 Collection ACLs

Data providers will be able to establish permissions on collections they ingest through the use of access control lists.

Story ID	User Story
<a href="#">CMR-STORY-7</a>	As a Provider, I want the CMR to enforce Catalog Item ACLs for collections I have created so that only data I permit is visible to users.
<a href="#">CMR-STORY-8</a>	As a Client User, I can find collections which I have been granted access to identified by dataset id.
<a href="#">CMR-STORY-9</a>	As a Client User, I can find collections which I have been granted access to identified by restriction flag.
<a href="#">CMR-STORY-1766</a>	As a Client User, I can find collections which I have been granted access to identified by Entry ID.
<a href="#">CMR-STORY-1767</a>	As a Client User, I can find collections which I have been granted access to identified by Entry Title
<a href="#">CMR-STORY-1768</a>	As a Client User, I can find collections which I have been granted access to identified by Access Constraints

### 2.2.4 Collection Additional Attribute Search

The CMR will allow users to search for collections using Additional Attributes.

Story ID	User Story
<a href="#">CMR-STORY-254</a>	As a Client User, I can search for collections by additional attribute value.
<a href="#">CMR-STORY-255</a>	As a Client User, I can search for collections by string additional attributes with an exact value.
<a href="#">CMR-STORY-256</a>	As a Client User, I can search for collections by string additional attributes with a range.
<a href="#">CMR-STORY-257</a>	As a Client User, I can search for collections by int additional attributes with an exact value.
<a href="#">CMR-STORY-258</a>	As a Client User, I can search for collections by int additional attributes with a range.
<a href="#">CMR-STORY-259</a>	As a Client User, I can search for collections by float additional attributes with an exact value.
<a href="#">CMR-STORY-260</a>	As a Client User, I can search for collections by float additional attributes with a range.
<a href="#">CMR-STORY-261</a>	As a Client User, I can search for collections by time additional attributes with an exact value.
<a href="#">CMR-STORY-262</a>	As a Client User, I can search for collections by time additional attributes with a range.
<a href="#">CMR-STORY-263</a>	As a Client User, I can search for collections by date time additional attributes with an exact value.

Story ID	User Story
<a href="#">CMR-STORY-264</a>	As a Client User, I can search for collections by date time additional attributes with a range.
<a href="#">CMR-STORY-265</a>	As a Client User, I can search for collections by date additional attributes with an exact value.
<a href="#">CMR-STORY-266</a>	As a Client User, I can search for collections by date additional attributes with a range.
<a href="#">CMR-STORY-267</a>	As a Client User, I can search for collections by date string additional attributes with an exact value.
<a href="#">CMR-STORY-268</a>	As a Client User, I can search for collections by date string additional attributes with a range.
<a href="#">CMR-STORY-269</a>	As a Client User, I can search for collections by time string additional attributes with an exact value.
<a href="#">CMR-STORY-270</a>	As a Client User, I can search for collections by time string additional attributes with a range.
<a href="#">CMR-STORY-271</a>	As a Client User, I can search for collections by date time string additional attributes with an exact value.
<a href="#">CMR-STORY-272</a>	As a Client User, I can search for collections by date time string additional attributes with a range.
<a href="#">CMR-STORY-273</a>	As a Client User, I can search for collections by boolean additional attributes with an exact value.
<a href="#">CMR-STORY-274</a>	As a Client User, I can search for collections with multiple additional attributes and specify AND/OR operator.

### 2.2.5 Collection General Search

The CMR will allow users to search for collections contained within the repository.

Story ID	User Story
<a href="#">CMR-STORY-11</a>	As a Client User, I can search for collections by provider id.
<a href="#">CMR-STORY-12</a>	As a Client User, I can search for collections by day night flag.
<a href="#">CMR-STORY-13</a>	As a Client User, I can search for collections with one or more dataset ids.
<a href="#">CMR-STORY-14</a>	As a Client User, I can search for collections with one or more DIF Entry Ids.
<a href="#">CMR-STORY-15</a>	As a Client User, I can search for collections with one or more CMR Collection Ids.
<a href="#">CMR-STORY-16</a>	As a Client User, I can search for collections with one or more collection short names.
<a href="#">CMR-STORY-17</a>	As a Client User, I can search for collections with one or more collection version ids

Story ID	User Story
<a href="#">CMR-STORY-18</a>	As a Client User, I can search for collections with one or more campaigns.
<a href="#">CMR-STORY-19</a>	As a Client User, I can search for collections with one or more platform short names.
<a href="#">CMR-STORY-20</a>	As a Client User, I can search for collections with one or more instrument short names.
<a href="#">CMR-STORY-21</a>	As a Client User, I can search for collections with one or more sensor short names.
<a href="#">CMR-STORY-22</a>	As a Client User, I can search for collections with one or more 2d coordinate system names.
<a href="#">CMR-STORY-23</a>	As a Client User, I can search for collections with one or more processing levels.
<a href="#">CMR-STORY-24</a>	As a Client User, I can search for collections with one or more spatial keywords.
<a href="#">CMR-STORY-25</a>	As a Client User, I can search for collections with one or more archive centers.
<a href="#">CMR-STORY-26</a>	As a Client User, I can search for collections with one or more keywords.
<a href="#">CMR-STORY-27</a>	As a Client User, I can search for collections that were updated in the CMR since a specified date.
<a href="#">CMR-STORY-28</a>	As a Client User, I can search for collections with one or more collection data types.
<a href="#">CMR-STORY-29</a>	As a Client User, I can search for collections with a science keyword.
<a href="#">CMR-STORY-30</a>	As a Client User, I can search for collections with multiple science keywords.
<a href="#">CMR-STORY-31</a>	As a Client User, I can search for collections that have browse images.
<a href="#">CMR-STORY-32</a>	As a Client User, I can search for collections that have online data.
<a href="#">CMR-STORY-1750</a>	As a Client User, I can search for collections with one or more Entry IDs with or without the version entry.
<a href="#">CMR-STORY-1751</a>	As a Client User, I can search for collections with one or more Entry Titles.
<a href="#">CMR-STORY-1752</a>	As a Client User, I can search for collections with one or more Project Short Names
<a href="#">CMR-STORY-1753</a>	As a Client User, I can search for collections with one or more Project Campaign Names
<a href="#">CMR-STORY-1754</a>	As a Client User, I can search for collections with Data Center distinguishing them by their roles.
<a href="#">CMR-STORY-1755</a>	As a Client User, I can search for collections with one or more Ancillary Keywords

Story ID	User Story
<a href="#">CMR-STORY-1756</a>	As a Client User, I can search for collections that were updated in the CMR using a date range.
<a href="#">CMR-STORY-1757</a>	As a Client User, I can search for collections by Related URLs/URL with (Type and/or Subtype)
<a href="#">CMR-STORY-1758</a>	As a Client User, I can search on Resource Citation/RelatedURLs/URL with (Type and/or Subtype)
<a href="#">CMR-STORY-1759</a>	As a Client User, I can search for collections by ANDing, ORing, and excluding (NOT) different searchable elements and to be able to group these elements if necessary in one query
<a href="#">CMR-STORY-1824</a>	As a Client User, I can search for collections with Responsible Personnel distinguishing them by their roles.
<a href="#">CMR-STORY-2887</a>	As a Search Client User, I should be able to search for collections by provider short name
<a href="#">CMR-STORY-2889</a>	As a Search Client User, I should be able to search for collections by provider long name
<a href="#">CMR-STORY-2940</a>	As a client user, I would like to search collections by native-id

### 2.2.6 Collection Results Formatting

The CMR will return the results of collection searches in a variety of user-friendly formats.

Story ID	User Story
<a href="#">CMR-STORY-34</a>	As a Client User, I want collection search results to include a “has granules” flag that indicates if a collection has any granules.
<a href="#">CMR-STORY-35</a>	As a Client User, I want to optionally receive Collection facets with the search results so that I can indicate to my users the terms available for searching.
<a href="#">CMR-STORY-36</a>	As a Client User, I want collection facet counts to be correct for the number of collections I have permission to view so that I can provide accurate counts of visible items.
<a href="#">CMR-STORY-37</a>	As a Client User, I can retrieve collection search results in XML formatted collection references which contain CMR Collection ID, URL to download native metadata, Entry Title, and Revision Number.
<a href="#">CMR-STORY-38</a>	As a Client User, I can retrieve collection search results in ECHO10 XML format.
<a href="#">CMR-STORY-39</a>	As a Client User, I can retrieve collection search results in MENDS ISO19115 XML format.

Story ID	User Story
<a href="#">CMR-STORY-41</a>	As a Client User, I can retrieve collection search results in DIF 9 XML format.
<a href="#">CMR-STORY-42</a>	As a Client User, I can retrieve collection search results in Atom XML format.
<a href="#">CMR-STORY-43</a>	As a Client User, I can retrieve collection search results in Atom JSON format.
<a href="#">CMR-STORY-1762</a>	As a Client User, I can retrieve collection search results in ISO19115- 1 XML format.
<a href="#">CMR-STORY-1763</a>	As a Client User, I can retrieve collection search results in DIF 10.1 XML format.
<a href="#">CMR-STORY-1764</a>	As a Client User, I can retrieve collection search results in JSON format with highlighted summary snippets
<a href="#">CMR-STORY-1896</a>	As a Client User, I want to be able to see facets that are controlled by specific controlled vocabulary

### 2.2.7 Collection Results Sorting

The CMR will sort the results of collection searches in a manner useful to the user.

Story ID	User Story
<a href="#">CMR-STORY-44</a>	As a Client User, I can sort collection results by dataset id.
<a href="#">CMR-STORY-45</a>	As a Client User, I can sort collection results by temporal start date.
<a href="#">CMR-STORY-46</a>	As a Client User, I can sort collection results by temporal end date.
<a href="#">CMR-STORY-47</a>	As a Client User, I can sort collection results by platform short name.
<a href="#">CMR-STORY-48</a>	As a Client User, I can sort collection results by instrument short name.
<a href="#">CMR-STORY-49</a>	As a Client User, I can sort collection results by sensor short name.
<a href="#">CMR-STORY-50</a>	As a Client User, I can sort collection results by keyword relevance.
<a href="#">CMR-STORY-51</a>	As a Client User, I can sort collection results with multiple sort keys.
<a href="#">CMR-STORY-1760</a>	As a Client User, I can sort collection results by Entry Title
<a href="#">CMR-STORY-1761</a>	As a Client User, I can sort collection results by Project short name.
<a href="#">CMR-STORY-2965</a>	As a client user, I want to be able to sort collections based on update- date.

Story ID	User Story
<a href="#">CMR-STORY-2966</a>	As a client user, I want to be able to sort collections based on short-name.

### 2.2.8 Collection Search by JSON Query

The CMR will allow users to search collections via JSON query.

Story ID	User Story
<a href="#">CMR-STORY-2865</a>	As a client, I want to search for collections containing specified science keywords using a JSON Query.
<a href="#">CMR-STORY-2866</a>	As a client, I want to search for collections using a JSON Query by specifying values for the same string fields supported by the query parameter API.
<a href="#">CMR-STORY-2867</a>	As a client, I want to search for collections by downloadable and browsable using a JSON Query.
<a href="#">CMR-STORY-2868</a>	As a client, I want to search for collections by additional attribute using a JSON Query.
<a href="#">CMR-STORY-2869</a>	As a client, I want to search for collections by temporal conditions using a JSON Query.
<a href="#">CMR-STORY-2870</a>	As a client, I want to search for collections by tiling system using a JSON Query.
<a href="#">CMR-STORY-2871</a>	As a client, I want to search for collections by bounding box using a JSON Query.
<a href="#">CMR-STORY-2872</a>	As a client, I want to search for collections by polygon using a JSON Query.
<a href="#">CMR-STORY-2873</a>	As a client, I want to search for collections by point using a JSON Query.
<a href="#">CMR-STORY-2874</a>	As a client, I want to search for collections by line using a JSON Query.
<a href="#">CMR-STORY-2875</a>	As a client, I want to be able to specify case sensitivity and use wild cards when searching using a JSON Query.
<a href="#">CMR-STORY-2876</a>	As a client, I need documentation for searching using a JSON Query.
<a href="#">CMR-STORY-2877</a>	As a client, I want to receive useful validation error messages when I submit an invalid search using a JSON Query.
<a href="#">CMR-STORY-2878</a>	As a client, I want to search for collections by keyword using a JSON Query
<a href="#">CMR-STORY-2895</a>	As a client, I want to search for collections by updated-since using a JSON Query
<a href="#">CMR-STORY-2896</a>	As a client, I want to search for collections by revision-date using a JSON Query

Story ID	User Story
<a href="#">CMR-STORY-2897</a>	As a client, I want to search for collections by date ranges using ISO 8601 time intervals within JSON Query.

### 2.2.9 Collection Spatial Search

The CMR will allow users to search for collections using spatial coordinates.

Story ID	User Story
<a href="#">CMR-STORY-52</a>	As a Client User, I can spatially search for collections represented by a geodetic polygon without holes.
<a href="#">CMR-STORY-53</a>	As a Client User, I can spatially search for collections represented by a geodetic polygon with holes.
<a href="#">CMR-STORY-54</a>	As a Client User, I can spatially search for collections represented by a geodetic line.
<a href="#">CMR-STORY-55</a>	As a Client User, I can spatially search for collections represented by a bounding rectangle
<a href="#">CMR-STORY-56</a>	As a Client User, I can spatially search for collections represented by a cartesian polygon without holes.
<a href="#">CMR-STORY-57</a>	As a Client User, I can spatially search for collections represented by a cartesian polygon with holes.
<a href="#">CMR-STORY-58</a>	As a Client User, I can spatially search for collections represented by a cartesian line.
<a href="#">CMR-STORY-59</a>	As a Client User, I can spatially search for collections represented by a point.
<a href="#">CMR-STORY-60</a>	As a Client User, I can spatially search for collections represented by multiple spatial areas.
<a href="#">CMR-STORY-61</a>	As a Client User, I can search for collections by bounding box.
<a href="#">CMR-STORY-62</a>	As a Client User, I can search for collections by point.
<a href="#">CMR-STORY-63</a>	As a Client User, I can search for collections by polygon without holes.
<a href="#">CMR-STORY-64</a>	As a Client User, I can search for collections by polygon with holes.
<a href="#">CMR-STORY-65</a>	As a Client User, I can search for collections by line.

### 2.2.10 Collection Temporal Search

The CMR will allow users to search for collections with temporal bounds.

Story ID	User Story
<a href="#">CMR-STORY-67</a>	As a Client User, I can search for collections with a temporal range specifying exact start and end dates.
<a href="#">CMR-STORY-68</a>	As a Client User, I can search for collections with a temporal range specifying only an end date.
<a href="#">CMR-STORY-69</a>	As a Client User, I can search for collections with a temporal range specifying only a start date.
<a href="#">CMR-STORY-70</a>	As a Client User, I can search for collections with a recurring temporal range specifying start and end days of the year.
<a href="#">CMR-STORY-71</a>	As a Client User, I can search for collections with a recurring temporal range specifying only the start day of the year.
<a href="#">CMR-STORY-72</a>	As a Client User, I can search for collections with a recurring temporal range specifying only the end day of the year.
<a href="#">CMR-STORY-73</a>	As a Client User, I can search for collections with one or more temporal ranges specifying AND/OR/NOT operator.
<a href="#">CMR-STORY-1825</a>	As a Client User, I can find collections by a Temporal Resolution Range search

### 2.2.11 Data Retrieval

The CMR will return data that has been searched and requested by the user.

Story ID	User Story
<a href="#">CMR-STORY-74</a>	As a Client User, I can retrieve a granule by CMR Granule Id.
<a href="#">CMR-STORY-75</a>	As a Client User, I can retrieve a collection by CMR Collection Id.
<a href="#">CMR-STORY-76</a>	As a Client User, I should receive an error notification when retrieving a granule that does not exist or I do not have permission to view.
<a href="#">CMR-STORY-78</a>	As a Client User, I should receive an error notification when retrieving a collection that does not exist or I do not have permission to view.
<a href="#">CMR-STORY-80</a>	As a Client User, I should not find catalog items after they've been deleted so that I can avoid finding illegitimate data.
<a href="#">CMR-STORY-2044</a>	As a Client User, I can retrieve a service by CMR Concept Id
<a href="#">CMR-STORY-2045</a>	As a Client User, I should receive an error notification when retrieving a service that does not exist or I do not have permission to view.

### 2.2.12 Database Management

The CMR will maintain an accurate Metadata Database.

Story ID	User Story
<a href="#">CMR-STORY-82</a>	As a CMR Operator, I want the metadata database, pre-generated dialects, and the search index to remain in sync.
<a href="#">CMR-STORY-83</a>	As a CMR Operator, I want the old revisions of metadata to be removed so that the database takes a minimum amount of space.
<a href="#">CMR-STORY-278</a>	As a CMR Operator, I can create a Provider in the Metadata DB so that I can setup Ingest for a new Provider.
<a href="#">CMR-STORY-279</a>	As a CMR Operator, I can retrieve a configured Provider from the Metadata DB.
<a href="#">CMR-STORY-280</a>	As a CMR Operator, I can list the configured Providers in the Metadata DB.
<a href="#">CMR-STORY-281</a>	As a CMR Operator, I can remove a Provider from the Metadata DB.
<a href="#">CMR-STORY-282</a>	As a CMR Operator, I want the Metadata DB to capture metrics of creation, updates, and deletions so that I can understand usage patterns.

### 2.2.13 Documentation

The CMR will provide release notes for new releases.

Story ID	User Story
<a href="#">CMR-STORY-86</a>	As a Client User, I want a list of user facing changes with each release of the CMR software so that I can be aware of changes that may impact my client.
<a href="#">CMR-STORY-2894</a>	As a Client Developer, I would like to view CMR Search Documentation in a consistent Earthdata styling
<a href="#">CMR-STORY-2968</a>	As a client, I want the search documentation to include a Table of Contents to facilitate better navigation.

### 2.2.14 General API Support

The CMR will provide access to search functionality through an accessible API.

Story ID	User Story
<a href="#">CMR-STORY-89</a>	As a Client User, I can specify search query parameters through GET parameters so that I can easily interact with the API.
<a href="#">CMR-STORY-90</a>	As a Client User, I can specify search query parameters form encoded in the body of a post request so that I can specify many query parameters and avoid URL length limits.
<a href="#">CMR-STORY-91</a>	As a Client User, I can specify the number of results to return in a search.
<a href="#">CMR-STORY-92</a>	As a Client User, I can specify the result offset within my query results so that I can skip results I have already retrieved.
<a href="#">CMR-STORY-93</a>	As a Client User, I can receive an error notification when specifying an unsupported parameter.
<a href="#">CMR-STORY-94</a>	As a Client User, I can receive error notifications for invalid parameters in proper English indicating the invalid parameter name so that I can display the requirement
<a href="#">CMR-STORY-95</a>	As a Client User, I want to receive the number of hits my query matched.
<a href="#">CMR-STORY-96</a>	As a Client User, I can receive an error notification when specifying an invalid retrieval format.
<a href="#">CMR-STORY-308</a>	As a Provider, I want items with a delete date to be removed from the search index after the delete date has passed.

### 2.2.15 General Format Support

The CMR will be compatible with metadata provided in a variety of useful formats.

Story ID	User Story
<a href="#">CMR-STORY-97</a>	As a Client User, I can search for Catalog Items containing any properly encoded unicode characters using any conditions with properly encoded unicode characters.
<a href="#">CMR-STORY-98</a>	As a Client User, I can search for collections ingested in DIF 9 XML format.
<a href="#">CMR-STORY-99</a>	As a Client User, I can search for collections ingested in ECHO10 format.
<a href="#">CMR-STORY-100</a>	As a Client User, I can search for collections ingested in MENDS ISO19115 format.
<a href="#">CMR-STORY-101</a>	As a Client User, I can search for collections ingested in SMAP ISO19115 format.

Story ID	User Story
<a href="#">CMR-STORY-102</a>	As a Client User, I can search for granules ingested in ECHO10 format.
<a href="#">CMR-STORY-103</a>	As a Client User, I can search for granules ingested in MENDS ISO19115 format.
<a href="#">CMR-STORY-104</a>	As a Client User, I can search for granules ingested in SMAP ISO19115 format.
<a href="#">CMR-STORY-1769</a>	As a Client User, I can search for collections ingested in DIF 10.1 XML format
<a href="#">CMR-STORY-1770</a>	As a Client User, I can search for collections ingested in ISO 19115- 1 XML format
<a href="#">CMR-STORY-1771</a>	As a Client User, I can search for granules ingested in ISO 19115- 1 XML format
<a href="#">CMR-STORY-1894</a>	As a Client User, I can search for services ingested in SERF 9 XML format
<a href="#">CMR-STORY-1895</a>	As a Client User, I can search for services ingested in ISO 19115- 1 XML format

### 2.2.16 Granule ACLs

Data providers will be able to establish permissions on granules they ingest through the use of access control lists.

Story ID	User Story
<a href="#">CMR-STORY-105</a>	As a Provider, I want the CMR to enforce Catalog Item ACLs for granules so that only data I permit is visible to users.
<a href="#">CMR-STORY-106</a>	As a Client User, I can find granules which I have been granted access to identified by collection dataset id.
<a href="#">CMR-STORY-107</a>	As a Client User, I can find granules which I have been granted access to identified by collection restriction flag.
<a href="#">CMR-STORY-108</a>	As a Client User, I can find granules which I have been granted access to identified by granule restriction flag.
<a href="#">CMR-STORY-1772</a>	As a Client User, I can find granules which I have been granted access to identified by collection Entry Title.
<a href="#">CMR-STORY-1773</a>	As a Client User, I can find granules which I have been granted access to identified by collection Entry ID.
<a href="#">CMR-STORY-1774</a>	As a Client User, I can find granules which I have been granted access to identified by collection Access Constraints.
<a href="#">CMR-STORY-1775</a>	As a Client User, I can find granules which I have been granted access to identified by granule Access Constraints.

2.2.17 Granule Additional Attribute Search

The CMR will allow users to search for granules using Additional Attributes.

Story ID	User Story
<a href="#">CMR-STORY-109</a>	As a Client User, I can search for granules by additional attribute value and find granules based on a value set in the collection.
<a href="#">CMR-STORY-110</a>	As a Client User, I can search for granules by additional attribute value and exclude parent collection values.
<a href="#">CMR-STORY-111</a>	As a Client User, I can search for granules by string additional attributes with an exact value.
<a href="#">CMR-STORY-112</a>	As a Client User, I can search for granules by string additional attributes with a range.
<a href="#">CMR-STORY-113</a>	As a Client User, I can search for granules by int additional attributes with an exact value.
<a href="#">CMR-STORY-114</a>	As a Client User, I can search for granules by int additional attributes with a range.
<a href="#">CMR-STORY-115</a>	As a Client User, I can search for granules by float additional attributes with an exact value.
<a href="#">CMR-STORY-116</a>	As a Client User, I can search for granules by float additional attributes with a range.
<a href="#">CMR-STORY-117</a>	As a Client User, I can search for granules by time additional attributes with an exact value.
<a href="#">CMR-STORY-118</a>	As a Client User, I can search for granules by time additional attributes with a range.
<a href="#">CMR-STORY-119</a>	As a Client User, I can search for granules by date time additional attributes with an exact value.
<a href="#">CMR-STORY-120</a>	As a Client User, I can search for granules by date time additional attributes with a range.
<a href="#">CMR-STORY-121</a>	As a Client User, I can search for granules by date additional attributes with an exact value.
<a href="#">CMR-STORY-122</a>	As a Client User, I can search for granules by date additional attributes with a range.
<a href="#">CMR-STORY-123</a>	As a Client User, I can search for granules by date string additional attributes with an exact value.
<a href="#">CMR-STORY-124</a>	As a Client User, I can search for granules by date string additional attributes with a range.
<a href="#">CMR-STORY-125</a>	As a Client User, I can search for granules by time string additional attributes with an exact value.
<a href="#">CMR-STORY-126</a>	As a Client User, I can search for granules by time string additional attributes with a range.
<a href="#">CMR-STORY-127</a>	As a Client User, I can search for granules by date time string additional attributes with an exact value.

Story ID	User Story
<a href="#">CMR-STORY-128</a>	As a Client User, I can search for granules by date time string additional attributes with a range.
<a href="#">CMR-STORY-129</a>	As a Client User, I can search for granules by boolean additional attributes with an exact value.
<a href="#">CMR-STORY-130</a>	As a Client User, I can receive an error notification when searching additional attributes with an invalid time.
<a href="#">CMR-STORY-131</a>	As a Client User, I can receive an error notification when searching additional attributes with an invalid datetime.
<a href="#">CMR-STORY-132</a>	As a Client User, I can receive an error notification when searching additional attributes with an invalid date.
<a href="#">CMR-STORY-133</a>	As a Client User, I can search for granules with multiple additional attributes specifying AND/OR operator.

### 2.2.18 Granule General Search

The CMR will allow users to search for granules.

Story ID	User Story
<a href="#">CMR-STORY-134</a>	As a Client User, I can find granules within a single collection in less than 1 second so that users of client software can effectively find Earth Science data.
<a href="#">CMR-STORY-135</a>	As a Client User, I can search for granules by provider id.
<a href="#">CMR-STORY-136</a>	As a Client User, I can search for granules by collection short name.
<a href="#">CMR-STORY-137</a>	As a Client User, I can search for granules by collection version.
<a href="#">CMR-STORY-138</a>	As a Client User, I can search for granules by day night flag.
<a href="#">CMR-STORY-139</a>	As a Client User, I can search for granules with one or more dataset ids.
<a href="#">CMR-STORY-140</a>	As a Client User, I can search for granules with one or more CMR Collection Ids.
<a href="#">CMR-STORY-141</a>	As a Client User, I can search for granules with one or more CMR Granule Ids.
<a href="#">CMR-STORY-142</a>	As a Client User, I can search for granules excluding one or more CMR Granule Ids so that a client can easily skip granules a user is not interested in.
<a href="#">CMR-STORY-143</a>	As a Client User, I can search for granules with one or more granule URs.

Story ID	User Story
<a href="#">CMR-STORY-144</a>	As a Client User, I can search for granules with one or more Producer Granule IDs.
<a href="#">CMR-STORY-145</a>	As a Client User, I can search for granules with one or more campaigns.
<a href="#">CMR-STORY-146</a>	As a Client User, I can search for granules with one or more platform short names.
<a href="#">CMR-STORY-147</a>	As a Client User, I can search for granules with one or more instrument short names.
<a href="#">CMR-STORY-148</a>	As a Client User, I can search for granules with one or more sensor short names.
<a href="#">CMR-STORY-149</a>	As a Client User, I can search for granules by cloud cover within a range.
<a href="#">CMR-STORY-150</a>	As a Client User, I can search for granules that were updated in the CMR since a specified date.
<a href="#">CMR-STORY-151</a>	As a Client User, I can receive an error notification when searching a numeric field with an invalid numeric range.
<a href="#">CMR-STORY-152</a>	As a Client User, I can search for granules that have browse images.
<a href="#">CMR-STORY-153</a>	As a Client User, I can search for granules that have online data.
<a href="#">CMR-STORY-154</a>	As a Client User, I can search for granules with an orbit number matching an exact value.
<a href="#">CMR-STORY-155</a>	As a Client User, I can search for granules with an orbit number within a range.
<a href="#">CMR-STORY-156</a>	As a Client User, I can search for granules by orbit equator crossing longitude within a range.
<a href="#">CMR-STORY-157</a>	As a Client User, I can search for granules by orbit equator crossing start date.
<a href="#">CMR-STORY-158</a>	As a Client User, I can search for granules by orbit equator crossing end date.
<a href="#">CMR-STORY-253</a>	As a Client User, I can search for granules with one or more values matching granule UR or producer granule id using a single parameter name.
<a href="#">CMR-STORY-1780</a>	As a Client User, I can search for granules with one or more Entry IDs with or without the version entry.
<a href="#">CMR-STORY-1781</a>	As a Client User, I can search for granules with one or more Entry Titles.
<a href="#">CMR-STORY-1782</a>	As a Client User, I can search for granules with one or more Project Short Names
<a href="#">CMR-STORY-1783</a>	As a Client User, I can search for granules with one or more Project Campaign Names

Story ID	User Story
<a href="#">CMR-STORY-2888</a>	As a Search Client User, I should be able to search for granules by provider short name
<a href="#">CMR-STORY-2890</a>	As a Search Client User, I should be able to search for granules by provider long name
<a href="#">CMR-STORY-2941</a>	As a client user, I would like to search granules by native-id

### 2.2.19 Granule Results Formatting

The CMR will return the results of granule searches in a variety of user-friendly formats.

Story ID	User Story
<a href="#">CMR-STORY-177</a>	As a Client User, I can retrieve granule search results in XML formatted granule references which contain CMR Granule ID, URL to download native metadata, and Granule UR.
<a href="#">CMR-STORY-178</a>	As a Client User, I can retrieve granule search results in Atom XML format.
<a href="#">CMR-STORY-179</a>	As a Client User, I can retrieve granule search results in ECHO10 XML format.
<a href="#">CMR-STORY-180</a>	As a Client User, I can retrieve granule search results in MENDS ISO19115 XML format.
<a href="#">CMR-STORY-182</a>	As a Client User, I can retrieve granule search results in Atom JSON format.
<a href="#">CMR-STORY-183</a>	As a Client User, I can retrieve granule search results in KML format.
<a href="#">CMR-STORY-184</a>	As a Client User, I can retrieve granule search results in CSV format.
<a href="#">CMR-STORY-185</a>	As a Client User, I can retrieve granule search results with a timeline including counts at specified intervals.
<a href="#">CMR-STORY-1776</a>	As a Client User, I can retrieve granule search results in ISO 19115-1 XML format
<a href="#">CMR-STORY-2979</a>	As a user, I want to restrict my granules results to only those which significantly overlap my spatial search so I may avoid retrieving extraneous data

### 2.2.20 Granule Result Sorting

The CMR will sort the results of granule searches in a manner useful to the user.

Story ID	User Story
<a href="#">CMR-STORY-159</a>	As a Client User, I can sort granule results by browse only.
<a href="#">CMR-STORY-160</a>	As a Client User, I can sort granule results by campaign
<a href="#">CMR-STORY-161</a>	As a Client User, I can sort granule results by cloud cover.
<a href="#">CMR-STORY-162</a>	As a Client User, I can sort granule results by data size.
<a href="#">CMR-STORY-163</a>	As a Client User, I can sort granule results by dataset id.
<a href="#">CMR-STORY-164</a>	As a Client User, I can sort granule results by day night flag.
<a href="#">CMR-STORY-165</a>	As a Client User, I can sort granule results by end date.
<a href="#">CMR-STORY-166</a>	As a Client User, I can sort granule results by granule UR.
<a href="#">CMR-STORY-167</a>	As a Client User, I can sort granule results by instrument
<a href="#">CMR-STORY-168</a>	As a Client User, I can sort granule results by online only.
<a href="#">CMR-STORY-169</a>	As a Client User, I can sort granule results by platform
<a href="#">CMR-STORY-170</a>	As a Client User, I can sort granule results by producer granule id.
<a href="#">CMR-STORY-171</a>	As a Client User, I can sort granule results by a combination of producer granule id and granule ur.
<a href="#">CMR-STORY-172</a>	As a Client User, I can sort granule results by sensor
<a href="#">CMR-STORY-173</a>	As a Client User, I can sort granule results by short name.
<a href="#">CMR-STORY-174</a>	As a Client User, I can sort granule results by start date.
<a href="#">CMR-STORY-175</a>	As a Client User, I can sort granule results by version
<a href="#">CMR-STORY-176</a>	As a Client User, I can sort granule results with multiple sort keys.

### 2.2.21 Granule Spatial Search

The CMR will allow users to search for granules using spatial coordinates.

Story ID	User Story
<a href="#">CMR-STORY-191</a>	As a Client User, I can spatially search for granules represented by a geodetic polygon without holes.

### 2.2.22 Granule Temporal Search

The CMR will allow users to search for granules using temporal bounds.

Story ID	User Story
<a href="#">CMR-STORY-216</a>	As a Client User, I can search for granules with a temporal range specifying exact start and end dates.
<a href="#">CMR-STORY-217</a>	As a Client User, I can search for granules with a temporal range specifying only an end date.
<a href="#">CMR-STORY-218</a>	As a Client User, I can search for granules with a temporal range specifying only a start date.
<a href="#">CMR-STORY-219</a>	As a Client User, I can search for granules with a recurring temporal range specifying start and end days of the year.
<a href="#">CMR-STORY-220</a>	As a Client User, I can search for granules with a recurring temporal range specifying only the start day of the year.
<a href="#">CMR-STORY-221</a>	As a Client User, I can search for granules with a recurring temporal range specifying only the end day of the year.
<a href="#">CMR-STORY-222</a>	As a Client User, I can search for granules with one or more temporal ranges.
<a href="#">CMR-STORY-223</a>	As a Client User, I can receive an error notification when searching with an invalid date time format.
<a href="#">CMR-STORY-224</a>	As a Client User, I can receive an error notification when searching with an invalid temporal range.

### 2.2.23 Index Management

The CMR will index data using Search Index Sets.

Story ID	User Story
<a href="#">CMR-STORY-225</a>	As a CMR Operator, I can create new Search Index Sets so that I can create a target for reindexing data.
<a href="#">CMR-STORY-226</a>	As a CMR Operator, I can list the current Search Index Sets.
<a href="#">CMR-STORY-227</a>	As a CMR Operator, I can delete a Search Index Set so that I can remove unnecessary index sets and save disk space.
<a href="#">CMR-STORY-228</a>	As a CMR Operator, I can retrieve a Search Index Set so that I can see it's details.
<a href="#">CMR-STORY-275</a>	As a CMR Operator, I want ACLs to restrict access to manipulating or retrieving search index sets.

### 2.2.24 Legacy Support

The CMR will be backwards-compatible with legacy services already in place.

Story ID	User Story
<a href="#">CMR-STORY-237</a>	As a Client User, I want the CMR Search API to maintain backwards compatibility with the existing Catalog REST API so that I can continue to use my existing Catalog REST client.
<a href="#">CMR-STORY-238</a>	As a Client User, I can search using IIMSAQL so that I don't have to modify my legacy client.
<a href="#">CMR-STORY-239</a>	As a Client User, I can receive an error notification when searching with invalid IIMSAQL.
<a href="#">CMR-STORY-276</a>	As a Client User, I can search for legacy ECHO data in the CMR.
<a href="#">CMR-STORY-277</a>	As a Client User, I can search CMR data through the ECHO search API.

### 2.2.25 Search Performance

Stories which dictate the accepted search performance levels for the CMR.

Story ID	User Story
<a href="#">CMR-STORY-243</a>	As a Client User, I want the CMR Search implementation to maintain or improve its performance over time.
<a href="#">CMR-STORY-244</a>	As a Developer, I want to test performance with real operational data.
<a href="#">CMR-STORY-250</a>	As a data provider, I want ACL changes to take effect within 60 minutes of the change.
<a href="#">CMR-STORY-251</a>	As a near real-time data provider, I want newly ingested granules and datasets visible for search within 60 minutes.

### 2.2.26 Provider Holdings

The CMR will allow for searches by provider or for all providers.

Story ID	User Story
<a href="#">CMR-STORY-245</a>	As a CMR Operator, I can retrieve counts of granules in each collection for every provider.
<a href="#">CMR-STORY-246</a>	As a CMR Operator, I can retrieve counts of granules in each collection for a single provider.

### 2.2.27 Token Management

The CMR will grant access using a user token.

Story ID	User Story
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Story ID	User Story
<a href="#">CMR-STORY-248</a>	As a Client User, I can search without a security token so that I can search as a guest.
<a href="#">CMR-STORY-249</a>	As a Client User, I should receive a notification when my security token is invalid.

### 2.2.28 Search - Phase 3 Enhancements

#### Improvements to the CMR search functionality

Story ID	User Story
<a href="#">CMR-STORY-771</a>	As a Client Developer, I want to receive search results back in a JSON format which does not require parsing string values for complex objects such as polygons.
<a href="#">CMR-STORY-772</a>	As a Client Developer, I want to specify which fields to return in search results when requesting JSON as my response format.
<a href="#">CMR-STORY-773</a>	As a Client Developer, I can optionally retrieve collection search results with granule hits counts so I can show users how many granules were found in each collection.
<a href="#">CMR-STORY-774</a>	As a Client User, I want to be able to use a URS token to identify myself in order to access ACL restricted metadata.
<a href="#">CMR-STORY-775</a>	As a Client User, I want to retrieve collection search results in a format that is interoperable with CKAN.
<a href="#">CMR-STORY-776</a>	As a Client Developer, I want to be able to perform spatial searches by providing 2D coordinate system values in place of spatial coordinates regardless of whether the collections or granules I am searching for support that 2D coordinate system.
<a href="#">CMR-STORY-777</a>	As a Client Developer, I want to use CORS headers when performing searches so that I can directly access the CMR search API without involving an intermediate server.
<a href="#">CMR-STORY-779</a>	As a Client User, I want to search for collections based on whether or not I can order them.
<a href="#">CMR-STORY-780</a>	As a Client User, I want to search for granules based on whether or not I can order them.
<a href="#">CMR-STORY-781</a>	As a Client User, I want collection search results to include an indication of whether the collection has granules.

### 2.2.29 Service ACLs

Data providers will be able to establish permissions on services they ingest through the use of access control lists.

Story ID	User Story
<a href="#">CMR-STORY-1891</a>	As a Client User, I can find services which I have been granted access to identified by Entry ID.
<a href="#">CMR-STORY-1892</a>	As a Client User, I can find services which I have been granted access to identified by Entry Title
<a href="#">CMR-STORY-1893</a>	As a Client User, I can find services which I have been granted access to identified by Access Constraints

### 2.2.30 Service Additional Attribute Search

The CMR will allow users to search for services using Additional Attributes.

Story ID	User Story
<a href="#">CMR-STORY-1870</a>	As a Client User, I can search for services by additional attribute value.
<a href="#">CMR-STORY-1871</a>	As a Client User, I can search for services by string additional attributes with an exact value.
<a href="#">CMR-STORY-1872</a>	As a Client User, I can search for services by string additional attributes with a range.
<a href="#">CMR-STORY-1873</a>	As a Client User, I can search for services by int additional attributes with an exact value.
<a href="#">CMR-STORY-1874</a>	As a Client User, I can search for services by int additional attributes with a range.
<a href="#">CMR-STORY-1875</a>	As a Client User, I can search for services by float additional attributes with an exact value.
<a href="#">CMR-STORY-1876</a>	As a Client User, I can search for services by float additional attributes with a range.
<a href="#">CMR-STORY-1877</a>	As a Client User, I can search for services by time additional attributes with an exact value.
<a href="#">CMR-STORY-1878</a>	As a Client User, I can search for services by time additional attributes with a range.
<a href="#">CMR-STORY-1879</a>	As a Client User, I can search for services by date time additional attributes with an exact value
<a href="#">CMR-STORY-1880</a>	As a Client User, I can search for services by date time additional attributes with a range.
<a href="#">CMR-STORY-1881</a>	As a Client User, I can search for services by date additional attributes with an exact value.
<a href="#">CMR-STORY-1882</a>	As a Client User, I can search for services by date additional attributes with a range.

Story ID	User Story
<a href="#">CMR-STORY-1883</a>	As a Client User, I can search for services by date string additional attributes with an exact value.
<a href="#">CMR-STORY-1884</a>	As a Client User, I can search for services by date string additional attributes with a range.
<a href="#">CMR-STORY-1885</a>	As a Client User, I can search for services by time string additional attributes with an exact value.
<a href="#">CMR-STORY-1886</a>	As a Client User, I can search for services by time string additional attributes with a range.
<a href="#">CMR-STORY-1887</a>	As a Client User, I can search for services by date time string additional attributes with an exact value.
<a href="#">CMR-STORY-1888</a>	As a Client User, I can search for services by date time string additional attributes with a range.
<a href="#">CMR-STORY-1889</a>	As a Client User, I can search for services by boolean additional attributes with an exact value.
<a href="#">CMR-STORY-1890</a>	As a Client User, I can search for services with multiple additional attributes and specify AND/OR/NOT operator.

### 2.2.31 Service General Search

The CMR will allow users to search for services.

Story ID	User Story
<a href="#">CMR-STORY-1838</a>	As a Client User, I can search for services by provider id.
<a href="#">CMR-STORY-1839</a>	As a Client User, I can search for services with one or more Entry IDs
<a href="#">CMR-STORY-1840</a>	As a Client User, I can search for services with one or more Entry Titles.
<a href="#">CMR-STORY-1841</a>	As a Client User, I can search for services with one or more project short names
<a href="#">CMR-STORY-1842</a>	As a Client User, I can search for services with one or more project campaign names
<a href="#">CMR-STORY-1843</a>	As a Client User, I can search for services with one or more platform short names.
<a href="#">CMR-STORY-1844</a>	As a Client User, I can search for services with one or more instrument short names.
<a href="#">CMR-STORY-1845</a>	As a Client User, I can search for services with one or more sensor short names.
<a href="#">CMR-STORY-1846</a>	As a Client User, I can search for services with Responsibility distinguishing them by their roles.
<a href="#">CMR-STORY-1847</a>	As a Client User, I can search for services with one or more keywords.

Story ID	User Story
<a href="#">CMR-STORY-1848</a>	As a Client User, I can search for services with one or more Ancillary Keywords
<a href="#">CMR-STORY-1849</a>	As a Client User, I can search for services that were updated in the CMR using a date range.
<a href="#">CMR-STORY-1850</a>	As a Client User, I can search for services with a science keyword.
<a href="#">CMR-STORY-1851</a>	As a Client User, I can search for services with multiple science keywords.
<a href="#">CMR-STORY-1852</a>	As a Client User, I can search for services with a service keyword.
<a href="#">CMR-STORY-1853</a>	As a Client User, I can search for services with multiple service keywords.
<a href="#">CMR-STORY-1854</a>	As a Client User, I can search for services by Related URLs/URL with (Type and/or Subtype)
<a href="#">CMR-STORY-1855</a>	As a Client User, I can search for services on Resource Citation/RelatedURLs/URL with (Type and/or Subtype)
<a href="#">CMR-STORY-1856</a>	As a Client User, I can search for services by ANDing, ORing, and excluding (NOT) different searchable elements and to be able to group these elements if necessary in one query
<a href="#">CMR-STORY-1899</a>	As a Search Client User, I want to be able to search for Collection by associated service entry id.
<a href="#">CMR-STORY-1900</a>	As a Search Client User, I want to be able to search for services by concept id.
<a href="#">CMR-STORY-1901</a>	As a Search Client User, I want to be able to search for services by associated collection entry id.
<a href="#">CMR-STORY-1903</a>	As a Search Client User, I want to be able to exclude service search results by concept id.

### 2.2.32 Service Results Formatting

The CMR will return the results of service searches in a variety of user-friendly formats.

Story ID	User Story
<a href="#">CMR-STORY-1857</a>	As a Client User, I want to optionally receive service facets with the search results so that I can indicate to my users the terms available for searching.
<a href="#">CMR-STORY-1858</a>	As a Client User, I want service facet counts to be correct for the number of services I have permission to view so that I can provide accurate counts of visible items.

Story ID	User Story
<a href="#">CMR-STORY-1859</a>	As a Client User, I can retrieve service search results in XML formatted service references which contain CMR Service ID, URL to download native metadata, and Entry ID, reference
<a href="#">CMR-STORY-1860</a>	As a Client User, I want to be able to see facets that are controlled by specific controlled vocabulary
<a href="#">CMR-STORY-1861</a>	As a Client User, I can retrieve service search results in ISO19115-1 XML format.
<a href="#">CMR-STORY-1862</a>	As a Client User, I can retrieve service search results in SERF 9 XML format.
<a href="#">CMR-STORY-1863</a>	As a Client User, I can retrieve service search results in JSON format with highlighted summary snippets

### 2.2.33 Service Results Sorting

The CMR will sort the results of service searches in a manner useful to the user.

Story ID	User Story
<a href="#">CMR-STORY-1864</a>	As a Client User, I can sort service results by platform short name.
<a href="#">CMR-STORY-1865</a>	As a Client User, I can sort service results by instrument short name.
<a href="#">CMR-STORY-1866</a>	As a Client User, I can sort service results by keyword relevance.
<a href="#">CMR-STORY-1867</a>	As a Client User, I can sort service results with multiple sort keys.
<a href="#">CMR-STORY-1868</a>	As a Client User, I can sort service results by Entry Title
<a href="#">CMR-STORY-1869</a>	As a Client User, I can sort service results by Project short name.
<a href="#">CMR-STORY-1902</a>	As a Search Client User, I want to be able to sort service search results by provider.

### 2.2.34 Curation Search

Curators will be able to search by UMM-C fields.

Story ID	User Story
<a href="#">CMR-STORY-1897</a>	As a Curator, I want to be able to query collections by each UMM-C field so that I can assess the quality for each record

### 2.2.35 GCMD Top 10

Stories relating to features important to the GCMD team.

Story ID	User Story
<a href="#">CMR-STORY-1966</a>	As a client user, I want to search by free-form keyword over all fields indexed in the CMR.
<a href="#">CMR-STORY-1969</a>	As a client user, I want to choose from GCMD keyword suggestions based on my query in a dynamic pick list below the search box.
<a href="#">CMR-STORY-1970</a>	As a client user, I want to search for data where the temporal coverage is projected into the future.
<a href="#">CMR-STORY-2030</a>	As a client user, I want to be able to search for metadata in a specific portal using Keyword Search.
<a href="#">CMR-STORY-2031</a>	As a client user, I want to be able to search for metadata in a specific portal using Free Text Search.
<a href="#">CMR-STORY-2032</a>	As a client user, I want to be able to specify content from at least the following fields to create a portal [See Description]

#### 2.2.35.1 Search by “tags”

The CMR will allow users to search for metadata by tag.

##### 2.2.35.1.1 New Tag

The CMR will allow users to create new tags for metadata.

Story ID	User Story
<a href="#">CMR-STORY-1971</a>	As a tagging table user, I want to add a specific tag value to a metadata record.
<a href="#">CMR-STORY-1973</a>	As a tagging table user, I want to add tags that only I can update and remove.
<a href="#">CMR-STORY-1974</a>	As a tagging table user, I want to bulk add tags to records based on a query. (see rms:15.1.33.12)
<a href="#">CMR-STORY-1975</a>	As a tagging table user, I want to my tags to persist for a reasonable amount of time if metadata has been removed or hidden.
<a href="#">CMR-STORY-1976</a>	As a metadata author, I do not want the original metadata provided to be modified by actions of metadata taggers.
<a href="#">CMR-STORY-1978</a>	As a metadata author, I do not want tags to change the default display of metadata.
<a href="#">CMR-STORY-2003</a>	As a curator I want to build a virtual collection of metadata related to a specific event in the news to share.

Story ID	User Story
<a href="#">CMR-STORY-2006</a>	As a tagging table user I want to add a specific categorized tag value to a metadata record.

#### 2.2.35.1.2 Update Tag

The CMR will allow users to update existing metadata tags.

Story ID	User Story
<a href="#">CMR-STORY-1979</a>	As a tagging table user, I want to update the value of a tag which was previously added by me to a group of records. (currently not in GCMD)
<a href="#">CMR-STORY-1980</a>	As a tagging table user, I want to view a log of tagging table changes for active metadata which persist for a reasonable amount of time if metadata has been removed or hidden.
<a href="#">CMR-STORY-1981</a>	As a tagging table user, I want to update the name but not the value of a tag which was previously added by me. (not in GCMD; see RMS:15.1.33.3)
<a href="#">CMR-STORY-2007</a>	As a tagging table user I want to update the value of a tag which was previously added by me.

#### 2.2.35.1.3 Delete Tag

The CMR will allow users to delete metadata tags.

Story ID	User Story
<a href="#">CMR-STORY-1982</a>	As a tagging table user, I want to delete a tag which was previously added by me. (see rms:15.1.33.2)
<a href="#">CMR-STORY-1983</a>	As a tagging table user, I don't want to keep logs for tags which have been deleted by me.

#### 2.2.35.1.4 View Tag

The CMR will allow users to view tags on metadata within the repository.

Story ID	User Story
<a href="#">CMR-STORY-1984</a>	As a tagging table user I want to list all tags added by me for all records. (not in gcmd; see rms:15.1.33.4, rms:15.1.33.8?)
<a href="#">CMR-STORY-1985</a>	As a tagging table user I want to list all tags added by me for a specific group.
<a href="#">CMR-STORY-1986</a>	As a tagging table user I want to list tags added by me for a specific group-name pair.

Story ID	User Story
<a href="#">CMR-STORY-1987</a>	As a tagging table user I want to list tags added by me for a specific group-name-value.
<a href="#">CMR-STORY-1988</a>	As a tagging table user I want to list tags added by me for a specific group and entry id.
<a href="#">CMR-STORY-1989</a>	As a tagging table user I want to list tags added by me for a specific group-name pair and entry_id.
<a href="#">CMR-STORY-1990</a>	As a tagging table user I want to list tags added by me for a specific group-name-value and entry id.
<a href="#">CMR-STORY-1991</a>	As a tagging table user I want to list all tags added by me for a specific group and record ID. (not in gcmd; see rms:15.1.33.4)
<a href="#">CMR-STORY-1992</a>	As a tagging table user I want to list tags added by me for a specific group-name pair and record ID.
<a href="#">CMR-STORY-1993</a>	As a tagging table user I want to list tags added by me for a specific group-name-value and record ID.
<a href="#">CMR-STORY-1994</a>	As a tagging table user I want to list tags added by me for a specific group and entry id and record ID.
<a href="#">CMR-STORY-1995</a>	As a tagging table user I want to list tags added by me for a specific group-name pair and entry_id and record ID.
<a href="#">CMR-STORY-1996</a>	As a tagging table user I want to list tags added by me for a specific group-name-value and entry_id and record ID.

#### 2.2.35.1.5 Record Searching

The CMR will allow users to search for records by tag groups.

Story ID	User Story
<a href="#">CMR-STORY-1997</a>	As a Client User I can search for records by tag group(s).
<a href="#">CMR-STORY-1998</a>	As a Client User I can search for records by tag group and name set(s).
<a href="#">CMR-STORY-1999</a>	As a Client User I can search for records by tag group, name, and value set(s).
<a href="#">CMR-STORY-2000</a>	As a Portal User I can search for records by tag user and group(s).
<a href="#">CMR-STORY-2001</a>	As a Portal User I can search for records by tag user, group and name set(s).
<a href="#">CMR-STORY-2002</a>	As a Portal User I can search for records by tag user, group, name, and value set(s).

2.2.36 Humanized Facets

The CMR will allow facets to be humanized. See <https://wiki.earthdata.nasa.gov/display/CMR/Humanizing+Facets+Design>

Story ID	User Story
<a href="#">CMR-STORY-2357</a>	As a Client User, I can create a humanizer.
<a href="#">CMR-STORY-2358</a>	As a Client User, I can update a humanizer.
<a href="#">CMR-STORY-2359</a>	As a Client User, I can retrieve a humanizer by concept id.
<a href="#">CMR-STORY-2360</a>	As a Client User, I can retrieve all humanizers
<a href="#">CMR-STORY-2361</a>	As a Client User, I can delete a humanizer by concept id.
<a href="#">CMR-STORY-2362</a>	As a Client User, I want collections to be automatically reindexed when a humanizer change occurs that would impact how this collection is indexed.
<a href="#">CMR-STORY-2364</a>	As a Client User, I can search for collections matching a value within a humanized platform using a JSON Query.
<a href="#">CMR-STORY-2365</a>	As a Client User, I would like facets sorted by priority specified via humanizers.
<a href="#">CMR-STORY-2395</a>	As a Client User, I can search for collections by matching a value within a humanized platform using a parameter search.
<a href="#">CMR-STORY-2396</a>	As a Client User, I can search for collections by matching a value within a humanized instrument using a parameter search.
<a href="#">CMR-STORY-2397</a>	As a Client User, I can search for collections by matching a value within a humanized science keywords using a parameter search.
<a href="#">CMR-STORY-2398</a>	As a Client User, I can search for collections by matching a value within a humanized project using a parameter search.
<a href="#">CMR-STORY-2399</a>	As a Client User, I can search for collections matching a value within a humanized instrument using a JSON Query.
<a href="#">CMR-STORY-2400</a>	As a Client User, I can search for collections by matching a value within a humanized processing level using a parameter search.
<a href="#">CMR-STORY-2401</a>	As a Client User, I can search for collections matching a value within a humanized science keyword using a JSON Query.

Story ID	User Story
<a href="#">CMR-STORY-2402</a>	As a Client User, I can search for collections by matching a value within a humanized data center using a parameter search.
<a href="#">CMR-STORY-2403</a>	As a Client User, I can search for collections matching a value within a humanized project using a JSON Query.
<a href="#">CMR-STORY-2404</a>	As a Client User, I can search for collections matching a value within a humanized processing level using a JSON Query.
<a href="#">CMR-STORY-2405</a>	As a Client User, I can search for collections matching a value within a humanized data center using a JSON Query.
<a href="#">CMR-STORY-2409</a>	As a Client User, I should receive an error if creating an invalid humanizer
<a href="#">CMR-STORY-2891</a>	As a client, I want facet results to treat values as case insensitive.
<a href="#">CMR-STORY-2893</a>	As a client, I want to retrieve archive center facets in a hierarchical fashion.
<a href="#">CMR-STORY-2936</a>	As a client, I want to retrieve platform facets in a hierarchical fashion.
<a href="#">CMR-STORY-2937</a>	As a client, I want to retrieve instrument facets in a hierarchical fashion.
<a href="#">CMR-STORY-2951</a>	As a client user, I want all platforms to be returned in hierarchical facets even when the short-name does not exist in KMS
<a href="#">CMR-STORY-2961</a>	As a client, I want to be able to specify which fields to return hierarchically when requesting facets.
<a href="#">CMR-STORY-3022</a>	As an EDSC user, I want the ability to find facets not in the Top 50

### 2.2.37 Facets V2

The CMR will contain the concept of granule facets.

Story ID	User Story
<a href="#">CMR-STORY-2119</a>	As a Client User, I would like facets to be ordered by utility and generality
<a href="#">CMR-STORY-2133</a>	As a client, I want to retrieve facets in a simple to parse tree format with group and filter nodes.
<a href="#">CMR-STORY-2134</a>	As a client, I want facet responses to indicate whether a given node has been applied by considering the search parameters supplied.

Story ID	User Story
<a href="#">CMR-STORY-2135</a>	As a client, I want facet responses to include a link at each filter node that provides the search to apply to select that filter node when my search used the query parameter API.
<a href="#">CMR-STORY-2136</a>	As a client, I want facet responses to provide links to remove any applied filter when my search used the query parameter API.
<a href="#">CMR-STORY-2137</a>	As a client, I want to facets to include an id for every node in the tree.
<a href="#">CMR-STORY-2138</a>	As a client, I want facets by default to include no more than 2 levels of children nodes rather than the full hierarchy.
<a href="#">CMR-STORY-2139</a>	As a client, I want to be able to specify the number of levels of children nodes to be returned in facets.
<a href="#">CMR-STORY-2140</a>	As a client, I want facet responses to indicate whether a given filter node has been applied by considering the JSON Query supplied.
<a href="#">CMR-STORY-2141</a>	As a client, I want facet responses to include a query at each filter node that provides the JSON query to apply to select that filter node when my search used the JSON Query API.
<a href="#">CMR-STORY-2142</a>	As a client, I want facet responses to provide queries to remove any applied filter when my search used the JSON Query API.
<a href="#">CMR-STORY-2144</a>	As a client, I want facet responses to allow for removing filters that have been applied, but resulted in 0 results found.
<a href="#">CMR-STORY-2182</a>	As a client user, I want facet field values to ignore filters applied to their field so I may select multiple values for a single field
<a href="#">CMR-STORY-2420</a>	As a Client User, I want v2 facets to use the case specified in KMS for a given term unless overridden by a humanizer.
<a href="#">CMR-STORY-2864</a>	As a client, I should be able to retrieve a hierarchical list of platforms, instruments, sensors facets

### 2.2.38 Search Relevancy

Improvements made to the algorithm CMR uses to determine the order of search results.

Story ID	User Story
<a href="#">CMR-STORY-2216</a>	As a client user, I want to sort collection results so that collections with granules appear before those without granules
<a href="#">CMR-STORY-2217</a>	Return and allow filtering off of the start date of a collection's first granule and the end date of its last granule
<a href="#">CMR-STORY-2318</a>	As a Client User, I want to be able to perform "fuzzy" searches where multi word terms are ranked higher based on their closeness to each other.
<a href="#">CMR-STORY-2322</a>	As a client user, I want my facet search results to be sorted by relevance
<a href="#">CMR-STORY-2411</a>	As a Client User, I would like my CMR search terms to match regardless of plurality
<a href="#">CMR-STORY-2419</a>	Search relevancy rankings need improvement (Earthdata Search Service Desk)

### 2.3 Access Control Service

The CMR will control user permissions through an access control service.

Story ID	User Story
<a href="#">CMR-STORY-2353</a>	As an Access Control ACL API user I should be able to retrieve a JSON schema for ACLs
<a href="#">CMR-STORY-2407</a>	As a client user, I want to be able to update the unique identifiers of an ACL
<a href="#">CMR-STORY-2412</a>	As a Client User, I want to find ACLs that grant a permitted group a specific permission.
<a href="#">CMR-STORY-2418</a>	As a Client User, I can retrieve a user's permissions for a list of specified granules
<a href="#">CMR-STORY-2423</a>	As an Operations User, I would like all ACL transactions to be logged via Splunk
<a href="#">CMR-STORY-2574</a>	Allow MMT users to authenticate in the CMR with a Launchpad token
<a href="#">CMR-STORY-2576</a>	As a Client User, I want deletion of a provider to cascade to delete all of the access control groups owned by that provider.
<a href="#">CMR-STORY-2577</a>	As a Client User, I want the CMR to reject a group creation if the name matches an existing group's name case insensitively
<a href="#">CMR-STORY-2578</a>	As a Client User, I can search for ACLs by permitted collection concept id granted through provider
<a href="#">CMR-STORY-2579</a>	As a Client User, I can search for ACLs by permitted collection concept id granted through entry title

Story ID	User Story
<a href="#">CMR-STORY-2580</a>	As a Client User, I can search for ACLs by permitted collection concept id granted through access value
<a href="#">CMR-STORY-2581</a>	As a Client User, I can search for ACLs by permitted collection concept id granted through temporal
<a href="#">CMR-STORY-2582</a>	As a Client User, I can search for ACLs by permitted granule concept id granted through provider
<a href="#">CMR-STORY-2583</a>	As a Client User, I can search for ACLs by permitted granule concept id granted through parent collection
<a href="#">CMR-STORY-2584</a>	As a Client User, I can search for ACLs by permitted granule concept id granted through access value
<a href="#">CMR-STORY-2585</a>	As a Client User, I can search for ACLs by permitted granule concept id granted through temporal
<a href="#">CMR-STORY-2586</a>	As a Client User, I receive an error if searching for ACLs with an invalid permitted concept id.
<a href="#">CMR-STORY-2587</a>	As a Client User, I can only retrieve provider level ACLs through search that I have permission to read.
<a href="#">CMR-STORY-2588</a>	As a Client User, I would like to be able to change the name of a group
<a href="#">CMR-STORY-2589</a>	As a Client User, I can retrieve group search results with members
<a href="#">CMR-STORY-2590</a>	As a Client User, I can read provider level groups if I have permission to read system level groups.
<a href="#">CMR-STORY-2591</a>	As a Client User, I do not want to have to specify legacy guid when updating a group
<a href="#">CMR-STORY-2592</a>	As a Client User, I can ingest an ACL synchronously
<a href="#">CMR-STORY-2593</a>	As a Client User, I can ingest a Group synchronously
<a href="#">CMR-STORY-2595</a>	As a Client User, I can update an ACL without specifying the old legacy guid
<a href="#">CMR-STORY-2596</a>	As a CMR Administrator, I can reindex ACLs
<a href="#">CMR-STORY-2597</a>	As a Client User, I can request ACLs with group legacy GUIDs in place of concept IDs
<a href="#">CMR-STORY-2598</a>	As a Client User, I can search for ACLs by permitted collection concept id granted through a combination of entry title, temporal and access value filters
<a href="#">CMR-STORY-2599</a>	As a client user, I want to be able to sort groups alphabetically.
<a href="#">CMR-STORY-2600</a>	As an operator, I need to be able to enable access-control to reject ACL and group creation and update requests so that I can safely transition an environment to NGAP.

Story ID	User Story
<a href="#">CMR-STORY-2601</a>	As a Client Developer, I would like to view CMR Access Control Documentation in a consistent Earthdata styling
<a href="#">CMR-STORY-2975</a>	As a CMR Administrator, I want to get the health of the access control service

### 2.3.1 Group Management

The stories in this Jama component are based off the Group2ManagementService on the ECHO SOAP API <http://api.echo.nasa.gov/echo/ws/v10/Group2ManagementService.html>. The new API would be a simpler REST API that uses JSON. It uses provider id and user id instead of guids to represent them.

Story ID	User Story
<a href="#">CMR-STORY-2093</a>	As a Client User, I want to be able to create an access control group associated with a provider.
<a href="#">CMR-STORY-2094</a>	As a Client User, I want to be able to create a system level access control group.
<a href="#">CMR-STORY-2095</a>	As a Client User, I want to be able to add a new member to an access control group.
<a href="#">CMR-STORY-2096</a>	As a Client User, I want to be able to remove a member from an access control group.
<a href="#">CMR-STORY-2097</a>	As a Client User, I want to be able to find access control groups by member id.
<a href="#">CMR-STORY-2098</a>	As a Client User, I want to be able to find access control groups by the id of the provider associated with the group.
<a href="#">CMR-STORY-2099</a>	As a Client User, I want to be able to find system level access control groups.
<a href="#">CMR-STORY-2101</a>	As a Client User, I want to be able to remove an access control group.
<a href="#">CMR-STORY-2102</a>	As a Client User, I want to be able to update the description of an access control group.
<a href="#">CMR-STORY-2103</a>	As a Provider, I want the CMR to reject attempts to create, view, update, or delete a provider owned group if the user does not have permission.
<a href="#">CMR-STORY-2104</a>	As a CMR Administrator, I want the CMR to reject attempts to create, view, update, or delete a system level group if the user does not have permission.
<a href="#">CMR-STORY-2105</a>	As a Client User, I want to be able to find access control groups by name.
<a href="#">CMR-STORY-2111</a>	As a Client User, I want to be able to save groups to metadata db.

Story ID	User Story
<a href="#">CMR-STORY-2112</a>	As a Client User, I want to be able to save group tombstones to Metadata DB
<a href="#">CMR-STORY-2113</a>	As a Client User, I want to be able to find group revisions in Metadata DB
<a href="#">CMR-STORY-2206</a>	As a Client User, I should be able to specify an initial management group when creating a group.

### 2.3.2 ACL Management

Administrative users of the CMR will be able to manage access control lists. See

<https://wiki.earthdata.nasa.gov/display/CMR/Access+Control+Lists+Design> for details of the ACL Management design.

#### 2.3.2.1 CRUD

The CMR will allow users to Create, Update, and Delete (CRUD) Access Control Lists.

Story ID	User Story
<a href="#">CMR-STORY-2271</a>	As a Client User, I can create an ACL.
<a href="#">CMR-STORY-2272</a>	As a Client User, I can update an ACL.
<a href="#">CMR-STORY-2273</a>	As a Client User, I can delete an ACL.
<a href="#">CMR-STORY-2274</a>	As a Client, I can retrieve an ACL by concept id.

#### 2.3.2.2 CRUD Error Cases

The CMR will provide useful error message in the case of a CRUD error.

Story ID	User Story
<a href="#">CMR-STORY-2276</a>	As a Client User, I receive an error if creating or updating an ACL with permissions that are not allowed according to the target.
<a href="#">CMR-STORY-2277</a>	As a Client User, I receive an error if creating or updating an ACL referencing a provider that does not exist in a provider identity.
<a href="#">CMR-STORY-2278</a>	As a Client User, I receive an error when I try to create or update an ACL with a <code>single_instance_identity</code> property that targets a concept which does not exist
<a href="#">CMR-STORY-2279</a>	As a Client User, I receive an error if creating or updating an ACL with an invalid catalog item identifier

### 2.3.2.3 Permission to Modify ACL

The CMR will allow users to modify Access Control Lists.

Story ID	User Story
<a href="#">CMR-STORY-2281</a>	As a Client User, I receive an error when creating a system level ACL if my user does not have permission to create system level ACLs.
<a href="#">CMR-STORY-2282</a>	As a Client User, I receive an error when creating an ACL with a provider identity if my user does not have permission to create provider level ACLs for the given provider
<a href="#">CMR-STORY-2283</a>	As a Client User, I receive an error when creating an ACL with a single instance identity if my user does not have permission to create a single instance identity.
<a href="#">CMR-STORY-2284</a>	As a Client User, I receive an error when creating a catalog item ACL if my user does not have permission to create catalog item ACLs for the given provider.

### 2.3.2.4 Referential Integrity

The CMR will clean up Access Control Lists when elements contained within those lists are deleted.

Story ID	User Story
<a href="#">CMR-STORY-2286</a>	As a Client User, when a group is deleted I want ACLs granting permission to that group to be updated to remove references to the group.
<a href="#">CMR-STORY-2287</a>	As a Client User, when a group is deleted I want ACLs granting permission to manage that group to be removed.
<a href="#">CMR-STORY-2288</a>	As a Client User, when a provider is deleted I want ACLs granting permission to items owned by that provider to be removed.
<a href="#">CMR-STORY-2289</a>	As a Client User, when a collection is deleted I want ACLs granting permission to that collection through entry title to be updated to remove a reference to that entry title.

### 2.3.2.5 Has Permission

The CMR will allow users to review permissions contained within ACLs.

Story ID	User Story
<a href="#">CMR-STORY-2291</a>	As a Client User, I receive an error if checking permission with invalid data.
<a href="#">CMR-STORY-2292</a>	As a Client User, I can check if a user has permission to a specified system target.
<a href="#">CMR-STORY-2293</a>	As a Client User, I can check if a user has permission to an object managed by a provider.
<a href="#">CMR-STORY-2294</a>	As a Client User, I can check if a user has permission to a manage a group.
<a href="#">CMR-STORY-2295</a>	As a Client User, I can retrieve a user's permissions for a list of specified collections

### 2.3.2.6 ACL Search

The CMR will allow users to search for Access Control Lists

Story ID	User Story
<a href="#">CMR-STORY-2297</a>	As a Client User, I receive an error if searching for ACLs with an unknown parameter.
<a href="#">CMR-STORY-2298</a>	As a Client User, I can optionally retrieve ACL search results in a pretty printed format.
<a href="#">CMR-STORY-2299</a>	As a Client User, I can page through ACL search results.
<a href="#">CMR-STORY-2300</a>	As a Client User, I can search for ACLs by permitted group.
<a href="#">CMR-STORY-2301</a>	As a Client User, I can search for ACLs by permission
<a href="#">CMR-STORY-2302</a>	As a Client User, I can search for ACLs by provider
<a href="#">CMR-STORY-2303</a>	As a Client User, I can search for ACLs by identity type
<a href="#">CMR-STORY-2304</a>	As a Client User, I can search for ACLs by permitted concept id.
<a href="#">CMR-STORY-2305</a>	As a Client User, I can search for ACLs by permitted user.
<a href="#">CMR-STORY-2306</a>	As a Client User, I can retrieve any ACLs through search if I have permission to read all ACLs.
<a href="#">CMR-STORY-2307</a>	As a Client User, I receive an error if searching for ACLs with an unsupported response type.
<a href="#">CMR-STORY-2308</a>	As a Client User, I can retrieve ACLs from a search response in a minimal reference format.
<a href="#">CMR-STORY-2309</a>	As a Client User, I can retrieve full ACLs from a search response.
<a href="#">CMR-STORY-2314</a>	As a Client User, I can specify multiple criteria when searching for ACLs.

### 2.3.2.7 All Collections ACL

The system and administrators require permission to see all items in the CMR. These stories create ACLs that always refer to every granule and collection. They cannot be removed by the provider. They can only be updated to specify which groups have access to them.

Story ID	User Story
<a href="#">CMR-STORY-2311</a>	As a Client User, I want an ACL granting all collections and granules for the provider to be created when the provider is created.
<a href="#">CMR-STORY-2312</a>	As a Client User, I want the CMR to only allow modification of group permissions of the All Collections ACL
<a href="#">CMR-STORY-2313</a>	As a Client User, I want the CMR to reject attempts to delete the All Collections ACL

## 2.4 Browse Scaler

Stories related to the CMR Browse Scaler application.

Story ID	User Story
<a href="#">CMR-STORY-3025</a>	As an EDSC user, I would like to see browse thumbnails from SEDAC.

## 2.5 Bulk Update

The CMR will allow users to update multiple metadata records simultaneously using Bulk Update.

### 2.5.1 UMM-C

The CMR will allow users to update multiple collection records simultaneously using Bulk Update.

Story ID	User Story
<a href="#">CMR-STORY-2654</a>	As a Metadata Provider, I want my UMM-C records to be automatically updated with correct science keywords when science keywords change in the KMS
<a href="#">CMR-STORY-2655</a>	As a client, I want warnings/error responses for fields that cause a UMM-C bulk-update operation to fail
<a href="#">CMR-STORY-2656</a>	As a Metadata Provider, I want to Find & Replace multiple keywords in a single UMM-C bulk update operation

Story ID	User Story
<a href="#">CMR-STORY-2657</a>	As a Metadata Provider, I want to select all UMM-C records for my provider for a bulk update.
<a href="#">CMR-STORY-2658</a>	As a Metadata Provider, for each UMM-C record in my bulk update, I want to know if the record was updated, not updated, or the update failed
<a href="#">CMR-STORY-2659</a>	As a Metadata Provider, I want to reject any UMM-C bulk updates for collections belonging to a different provider.

### 2.5.2 UMM- VAR

The CMR will allow users to update multiple variable records simultaneously using Bulk Update.

## 2.6 CEOS WGISS Integrated Catalog components

The CMR will index granules stored by level 1, 2, and 3 providers within the CEOS WGISS Integrated Catalog (CWIC), so those granules can be searched in CMR.

Story ID	User Story
<a href="#">CMR-STORY-2424</a>	As an application developer, for each collection that I want to enable granule discovery, I want to register a provider's granule-level, collection-specific OSDD with CMR so that users can discover their granule metadata
<a href="#">CMR-STORY-2429</a>	As a user of a Type 2 or Type 3 provider's metadata, for each collection, I want to determine the properties of the provider's granule search via a granule-level, collection-specific OSDD so that users can discover the provider's granule metadata
<a href="#">CMR-STORY-2430</a>	As a user of a Type 2 or Type 3 provider's metadata, for each collection, I want to be able to search for granules of a single collection using the contract of a granule-level, collection-specific OSDD so that I may discover science data of interest
<a href="#">CMR-STORY-2431</a>	As a user searching for granules from a Type 2 provider I want my granule search results translated from a standard CMR format to an OpenSearch compliant Atom result so I can parse the results given an understanding of OpenSearch

Story ID	User Story
<a href="#">CMR-STORY-2433</a>	As a user searching for granules from a Type 3 provider I want my granule search results translated from a native format to an OpenSearch compliant Atom result so that I can discover their granule holdings via CMR OpenSearch
<a href="#">CMR-STORY-2434</a>	As an application developer, I want to store the url of a Type 2 or Type 3 provider native granule search API as configuration so that I can allow discovery of their granule holdings via CMR OpenSearch
<a href="#">CMR-STORY-2435</a>	As an application developer, I want to store the https authentication credentials of a Type 2 or Type 3 native granule search API in a secure manner as configuration so that I can allow discovery of their granule holdings via CMR OpenSearch
<a href="#">CMR-STORY-2436</a>	As an application developer, I want to store the search result format of a Type 2 provider's search API results as configuration so that I can allow discovery of their granule holdings via CMR OpenSearch
<a href="#">CMR-STORY-2437</a>	As an application developer, I want to add support for a Type 2 provider by adding a search query translation module so that I can allow filtering of their granule holdings via CMR OpenSearch
<a href="#">CMR-STORY-2438</a>	As an application developer, I want to add support for a Type 3 provider by adding a metadata translation module so that I can allow filtering and rendering of their granule holdings via CMR OpenSearch
<a href="#">CMR-STORY-2439</a>	As an application developer, I want to define a granule-level OSDD corresponding to a Type 2 or Type 3 provider's native granule search API so that clients with an understanding of OpenSearch may discover my holdings
<a href="#">CMR-STORY-2440</a>	As a user of a Type 2 or Type 3 provider's metadata, I want my granule OpenSearch request routed to the Type 2 or Type 3 provider associated with the collection being queried

## 2.7 CMR System Requirements

System requirements for the CMR.

### 2.7.1 Zero downtime deployment

The CMR will be able to deploy new code without planned downtime.

Story ID	User Story
<a href="#">CMR-STORY-863</a>	As a CMR Operator, I want to deploy new versions of software components without any external downtime.
<a href="#">CMR-STORY-864</a>	As a CMR Operator, I want to patch servers, switches, and firewalls without any external downtime.
<a href="#">CMR-STORY-865</a>	As a CMR Operator, I want to deploy COTS updates without any external downtime.
<a href="#">CMR-STORY-2958</a>	As a CMR Administrator, I want to shutdown a CMR application and deploy a new one without causing client failures

### 2.7.2 Operator Alerts

The CMR will alert Operations of errors or issues.

Story ID	User Story
<a href="#">CMR-STORY-867</a>	As a CMR Operator, I want to monitor the availability of every application on every node so that I can be notified when an application is unavailable on a node.
<a href="#">CMR-STORY-868</a>	As a CMR Operator, I want to monitor the availability of external endpoints so that I can be notified when an external endpoint is unavailable.
<a href="#">CMR-STORY-869</a>	As a CMR Operator, I want to monitor the performance of every application so that I can be notified when an application is not meeting its performance requirements.
<a href="#">CMR-STORY-870</a>	As a Client User, I want to know when the CMR is unavailable due to planned maintenance or an unexpected outage.
<a href="#">CMR-STORY-2955</a>	As a CMR Administrator, I should be able to tell when reindexing all collections has finished
<a href="#">CMR-STORY-2985</a>	As a CMR Administrator, I should be notified when a rebalanced collection has finished indexing into a new index.
<a href="#">CMR-STORY-2987</a>	As a CMR Administrator, I should be able to verify that a rebalanced collection has been moved successfully.

### 2.7.3 High Availability

The CMR will be load-balanced for high availability.

Story ID	User Story
<a href="#">CMR-STORY-871</a>	As a Client User, I want to access the CMR APIs according to the availability needs for each environment.

Story ID	User Story
<a href="#">CMR-STORY-872</a>	As a CMR Operator, I want requests to be load balanced across available application nodes.

#### 2.7.4 Documentation

CMR services and APIs will be documented.

Story ID	User Story
<a href="#">CMR-STORY-873</a>	As a Client User, I want up to date documentation available for every CMR API.
<a href="#">CMR-STORY-1180</a>	As a Client User, I want a publicly accessible landing page for the CMR.
<a href="#">CMR-STORY-1181</a>	As a Client User, I want a CMR Client Developers Guide
<a href="#">CMR-STORY-1182</a>	As a Data Provider, I want a CMR Data Providers Guide.
<a href="#">CMR-STORY-2974</a>	As a translate API user I should see info about problems encountered when parsing specific UMM fields
<a href="#">CMR-STORY-2993</a>	As a Client User, I should get a link of where to go for help with the CMR APIs in API error responses
<a href="#">CMR-STORY-3020</a>	As a CMR user, I should be able to determine the current version of the API

## 2.8 EMS Support

The ESDIS Metrics System (EMS) is designed to support the ESDIS project management by collecting and organizing various metrics from the EOS DAACs) and other Data Providers. Data Providers support the exchange of information on product and service usage. These data are in turn used by the EMS for processing and generating metrics.

## 2.9 Environments

The CMR will support separate environments as part of its development and release process.

### 2.9.1 SIT

Stories related to the CMR System Integration Test (SIT) environment.

Story ID	User Story
<a href="#">CMR-STORY-3013</a>	As a developer, I want to create consistent and clean concept system integration tests

## 2.9.2 Workload

Stories applicable to the Workload (WL) environment for CMR.

Story ID	User Story
<a href="#">CMR-STORY-3011</a>	As ESDIS, I want to be able to spin up and down workload application instances to save costs when workload is not in use.
<a href="#">CMR-STORY-3088</a>	As ESDIS, I want to be able to shut down the CMR WL Oracle RDS instance when not in use so that I can reduce costs
<a href="#">CMR-STORY-3089</a>	As a CMR developer, I want to be able to bring up the CMR WL Oracle RDS instance from a workload database snapshot
<a href="#">CMR-STORY-3090</a>	As a CMR developer, I want to be able to update the CMR WL database from a production snapshot
<a href="#">CMR-STORY-3091</a>	As ESDIS, I want to start up only the application instances in WL that are needed for a workload run in order to reduce costs
<a href="#">CMR-STORY-3092</a>	As ESDIS, I want to be able to shut down the CMR Elasticsearch instances in workload when not in use in order to reduce costs
<a href="#">CMR-STORY-3093</a>	As a CMR developer, I want to be able to start the CMR Elasticsearch instances in workload after shutting them down without losing any data
<a href="#">CMR-STORY-3094</a>	As a CMR developer, I want to be able to restore the workload Elasticsearch cluster from a production snapshot
<a href="#">CMR-STORY-3095</a>	As ESDIS, I want to automatically remove old workload database snapshots in order to reduce costs
<a href="#">CMR-STORY-3096</a>	As a CMR developer, I want the Oracle database snapshot to be performed around the same time as the Elasticsearch snapshot so that a restoration in workload of both will be as close to in sync as possible

## 2.10 Launchpad Integration

The CMR will allow and require users to authenticate with Launchpad Single Sign-on when ingesting or updating metadata.

Story ID	User Story
<a href="#">CMR-STORY-3031</a>	As the CMR development team, I want to test the Launchpad integration in the UAT environment, so we can prepare an effective launch runway for this feature.

Story ID	User Story
<a href="#">CMR-STORY-3032</a>	As the CMR development team, I want to test the Launchpad integration in the PROD environment, so we can prepare an effective launch runway for this feature.
<a href="#">CMR-STORY-3033</a>	As the CMR, I want to validate the Launchpad token's SSO zone, so we can add another layer of security onto token validation.
<a href="#">CMR-STORY-3034</a>	As the CMR, I want to validate the token's expiration time, so we can properly decline tokens that have expired.
<a href="#">CMR-STORY-3035</a>	As the CMR, I want to ensure that all endpoints have code in place to deny the URS token, so that we can effectively disable URS login for ingest functions when the time comes.
<a href="#">CMR-STORY-3039</a>	As a CMR Operations member I want a phone escalation tree for Launchpad
<a href="#">CMR-STORY-3040</a>	As an Ops person I want CMR to notify users when the Launchpad system is not available.
<a href="#">CMR-STORY-3123</a>	As NASA, I want the CMR to require users to provide a Launchpad Token for authentication, to increase the security behind ingest actions.
<a href="#">CMR-STORY-3124</a>	As NASA, I want the CMR to require users to be approved for the CMR Ingest Workflow for tag CUD and tag association actions.
<a href="#">CMR-STORY-3125</a>	As a CMR Administrator, I want to control whether Launchpad authentication is enabled, so I can turn it on when ESDIS requests.
<a href="#">CMR-STORY-3126</a>	As NASA, I want CMR to be compliant with the new Token Service request format.

## 2.11 Metadata Database

The CMR will provide collection concept revisions.

### 2.11.1 Services

CMR will allow users to create and suspend concept revisions.

Story ID	User Story
<a href="#">CMR-STORY-1958</a>	As a Metadata DB Client User, I want to be able to create service concept revisions.
<a href="#">CMR-STORY-1959</a>	As a Metadata DB Client User, I want to be able to create service concept revisions tombstones.

Story ID	User Story
<a href="#">CMR-STORY-1960</a>	As a CMR Operator, I want older, superseded service concept revisions to be removed, to reduce storage requirements.

### 2.11.2 Concept Revision Retrieval

Concept revisions will be searchable.

Story ID	User Story
<a href="#">CMR-STORY-1961</a>	As a Metadata DB Client User, I want to be able to search for collection concept revisions by concept id.
<a href="#">CMR-STORY-1962</a>	As a Metadata DB Client User, I want to be able to search for collection concept revisions that are tombstones.
<a href="#">CMR-STORY-1963</a>	As a Metadata DB Client User, I want to be able to search for collection concept revisions by revision date.

### 2.11.3 Additional Concept Revision Info

Additional requirements related to concept revision types.

Story ID	User Story
<a href="#">CMR-STORY-1964</a>	As a Metadata DB Client User, I want to be able to specify an associated user id with a collection concept revision.
<a href="#">CMR-STORY-1965</a>	As a Metadata DB Client User, I want to be able to specify an associated comment with a new collection concept revision.

## 2.12 Metadata on Data.gov

The CMR will facilitate accurate and user-friendly representation of its metadata on data.gov and data.nasa.gov.

Story ID	User Story
<a href="#">CMR-STORY-3064</a>	As a user browsing data.gov, I want each dataset to show up in my search results exactly one time, so that I am not confused when I see the same dataset show up repeatedly.
<a href="#">CMR-STORY-3065</a>	As a user browsing data.gov, I want datasets to display the correct format, so I can find my intended search results more effectively.

Story ID	User Story
<a href="#">CMR-STORY-3066</a>	As a user browsing data.gov, I want the resources under the "Downloads & Resources" section of the page to display the correct content type, so I can easily tell what type of content each link contains.
<a href="#">CMR-STORY-3067</a>	As a user browsing data.gov, I want the References section of the page to display clean data and good links, so I can effectively browse other content related to the dataset I'm looking at.
<a href="#">CMR-STORY-3068</a>	As a user browsing data.gov, I want the Homepage URL field to correctly direct me to the homepage for the dataset, so I can find accurate related information to the dataset I'm looking at.
<a href="#">CMR-STORY-3069</a>	As a user browsing data.gov, I want the Data First Published and Data Last Modified fields to be accurate, so I can determine when the dataset was originally published and when the last modification was made.
<a href="#">CMR-STORY-3070</a>	As a user browsing data.gov, I want the dataset to display a graphic preview when one is available, so I can see a "thumbnail" view of the data right from the metadata page.
<a href="#">CMR-STORY-3071</a>	As a user browsing data.gov, I want only live links to be shown on the page, so I don't waste time clicking on 404 links.
<a href="#">CMR-STORY-3072</a>	As a user browsing data.gov, I want metadata citations to appear on the page.
<a href="#">CMR-STORY-3073</a>	As a user browsing data.gov, I want the relevant Google Scholar link to appear on the page, so I can easily reference these listings.

## 2.13 Metrics

The CMR will provide metrics to gauge its performance.

Story ID	User Story
<a href="#">CMR-STORY-3086</a>	As a CMR Operator, I want all necessary evaluation metrics to be logged, so I have visibility into system performance.

### 2.13.1 Query Performance

The CMR will provide metrics about the speed of search results.

Story ID	User Story
<a href="#">CMR-STORY-81</a>	As a CMR Operator, I want CMR Search to capture query metrics in a searchable database so that I can run adhoc reports.
<a href="#">CMR-STORY-855</a>	As a Project Manager, I want to report on collection search query metrics on a weekly basis to compare to past performance.
<a href="#">CMR-STORY-856</a>	As a Project Manager, I want to report on granule search query metrics on a weekly basis to compare to past performance.
<a href="#">CMR-STORY-857</a>	As a Project Manager, I want to report on combined search query metrics on a weekly basis to compare to past performance.
<a href="#">CMR-STORY-858</a>	As a CMR Operator, I want to configure a metrics retention policy specifying how long to retain the details associated with a query metric.
<a href="#">CMR-STORY-859</a>	As a Project Manager, I want to be able to perform ad-hoc query metrics report for any time range as allowed by the historic metrics retention policy.
<a href="#">CMR-STORY-953</a>	As a Project Manager, I want to report on CMR collection and granule search query metrics by client ID (and/or IP address).
<a href="#">CMR-STORY-3017</a>	As a CMR Operator, I want a query running at a set time interval to help identify when search performance is degraded for users.
<a href="#">CMR-STORY-3018</a>	As a CMR Operator, I want to log the client-id in the line where we log the time a query took

### 2.13.2 Provider Holdings

The CMR will provide metrics about the data held by its provider accounts.

Story ID	User Story
<a href="#">CMR-STORY-860</a>	As a Project Manager, I want to report on collection holdings by provider on a weekly basis to compare to past holdings.
<a href="#">CMR-STORY-861</a>	As a Project Manager, I want to report on granule holdings by provider on a weekly basis to compare to past holdings.
<a href="#">CMR-STORY-862</a>	As a Project Manager, I want to report on browse link holdings by provider on a weekly basis to compare to past holdings.

## 2.14 Operationalize OUS for CMR Deployments

Story ID	User Story
<a href="#">CMR-STORY-2665</a>	As an EDSC developer, I need the ability to obtain OPeNDAP URLs from the CMR REST API
<a href="#">CMR-STORY-2666</a>	As an EDSC developer, I would like to test against a continuously deployed OUS app
<a href="#">CMR-STORY-3074</a>	Provide infrastructure for service
<a href="#">CMR-STORY-3087</a>	As a CMR developer, I want to be able to re-use components created in the CMR OPeNDAP project

## 2.15 Operator Administration

Story ID	User Story
<a href="#">CMR-STORY-2421</a>	As a Client User, I want to be able to submit humanizer fixes for immediate use.
<a href="#">CMR-STORY-2983</a>	As a CMR Administrator, I should be able to clear a specific cache in an application.
<a href="#">CMR-STORY-2984</a>	As a CMR Administrator, I should be able to start the process to move a collection from small collections into its own index.
<a href="#">CMR-STORY-2986</a>	As a CMR Administrator, I should be able to finalize the process of moving a collection from small collections into its own index.
<a href="#">CMR-STORY-2988</a>	As a CMR Administrator, I should be notified when the number of granules in a collection in small collections has exceeded a threshold.
<a href="#">CMR-STORY-2989</a>	As a CMR Administrator, if I force delete the latest revision of a concept I want the latest previous revision to be indexed in Elasticsearch.
<a href="#">CMR-STORY-3015</a>	As a client user, I want landing pages to prominently show a link to a collection-constrained EDSC search
<a href="#">CMR-STORY-3027</a>	As a CMR Operations Developer, I want to check EC2 instances for performance before completing a deployment
<a href="#">CMR-STORY-3028</a>	As a CMR Operations Developer, I want to ensure that Elastic primaries and replicas are not in the same AZ
<a href="#">CMR-STORY-3029</a>	As a CMR Operations developer, I want to update ElasticSearch to the latest version

Story ID	User Story
<a href="#">CMR-STORY-3030</a>	As a CMR Operator, I want any reindexing requests to the bootstrap application to be rejected if the user does not have system ingest management update permission.
<a href="#">CMR-STORY-3037</a>	As an NGAP Security Administrator, I want to ensure the CMR Elasticsearch Load Balancers do not allow TLS 1.0 and 1.1
<a href="#">CMR-STORY-3061</a>	As an operations user, I want to remove all references to @echo.nasa.gov from our system

### 2.15.1 System Monitoring

Operators will be able to monitor the status of the CMR system.

Story ID	User Story
<a href="#">CMR-STORY-939</a>	As a CMR Operator, I want to be able to retrieve the availability of all applications.
<a href="#">CMR-STORY-940</a>	As a CMR Operator, I want to be able to track the performance of all applications.

### 2.15.2 Reporting

Operators can access reports about the CMR's availability and operations.

Story ID	User Story
<a href="#">CMR-STORY-679</a>	As a CMR Operator, I want any system configuration changes to be logged including a timestamp, the user ID making the change, the original configuration value, and the updated configuration value.
<a href="#">CMR-STORY-680</a>	As a CMR Operator, I want to retrieve a holdings report for one or more providers detailing granule counts by collection.
<a href="#">CMR-STORY-681</a>	As a CMR Operator, I want to retrieve an ingest metrics report against one or more providers detailing ingest events over a given time period.
<a href="#">CMR-STORY-3005</a>	As a CMR Administrator, I want the CMR to log an error if there is an unrecognized environment variable configured during startup
<a href="#">CMR-STORY-3009</a>	As a Client User, I can run a local CMR instance and have it log all requests in curl syntax to help CMR developers debug issues
<a href="#">CMR-STORY-3024</a>	As a consumer of the CMR API, I would like to perform health checks via JS and not be blocked by CORS

Story ID	User Story
<a href="#">CMR-STORY-3038</a>	As a CMR Operations Developer I want the community usage metrics update task to be automated.

### 2.15.3 Provider Management

Provider records can be created and managed.

Story ID	User Story
<a href="#">CMR-STORY-690</a>	As a CMR Operator, I want to create CMR providers in order to support ingest for new partners.
<a href="#">CMR-STORY-691</a>	As a CMR Operator, I want to delete CMR providers when they are no longer required.
<a href="#">CMR-STORY-3008</a>	As a client user, I can associate my URS token with a provider

### 2.15.4 Index Management

Data in the CMR will be indexed for faster access.

Story ID	User Story
<a href="#">CMR-STORY-675</a>	As a CMR Operator, I want to reindex all granules in a collection.
<a href="#">CMR-STORY-676</a>	As a CMR Operator, I want to retrieve the status of an in progress search indexing task.
<a href="#">CMR-STORY-677</a>	As a CMR Operator, I want to be able to stop an in progress search indexing task.
<a href="#">CMR-STORY-678</a>	As a CMR Operator, I want the CMR to begin using a new search index once the index is fully populated without manual intervention.
<a href="#">CMR-STORY-937</a>	As a CMR Operator, I want to reindex all data for a provider.
<a href="#">CMR-STORY-938</a>	As a CMR Operator, I want to be able to reindex all data in the CMR.
<a href="#">CMR-STORY-3010</a>	As a CMR operator I want to be able to bulk index batches of concepts by concept-id

## 2.16 Order Service

Users will be able to "order" large amounts of data, to be processed and delivered when the data is ready for retrieval.

### 2.16.1 Order Submission

Users will be able to submit requests for orders.

Story ID	User Story
<a href="#">CMR-STORY-809</a>	As a Client User, I want to create an order for items belonging to multiple providers.
<a href="#">CMR-STORY-810</a>	As a Client User, I want to specify items to add to an order based on a search query.
<a href="#">CMR-STORY-811</a>	As a Client User, I want to be able to modify the items in an order after initial creation, but prior to submittal.
<a href="#">CMR-STORY-812</a>	As a Client User, I want to be able to modify the order options associated with items in my order after initial creation, but prior to submittal.
<a href="#">CMR-STORY-813</a>	As a Client User, I want order items from different providers to be handled independently (e.g. failures / rejections from one provider do not cause items from another provider to fail / be rejected).
<a href="#">CMR-STORY-954</a>	As a Client User, I want to cancel an order prior to performing the order submission.

### 2.16.2 User Contact Information

Users will be able to provide contact information where they can be reached when their order is ready.

Story ID	User Story
<a href="#">CMR-STORY-814</a>	As a Client User, I want to provide a URS access token when creating an order so that I can identify myself, track prior orders, automatically populate contact information, and access data that may be restricted from other users.
<a href="#">CMR-STORY-815</a>	As a Client User, I want to order publicly available data without having to sign in.
<a href="#">CMR-STORY-816</a>	As a Client User, I want my order contact information to be automatically populated with the information from my URS profile if I provide a URS access token when creating my order.
<a href="#">CMR-STORY-817</a>	As a Client User, I want to be able to override my contact information for individual orders.
<a href="#">CMR-STORY-947</a>	As a Provider, I want all orders to include contact information including a name and email address should I need to contact an end user regarding an order.

### 2.16.3 Option Definitions

Options will be presented to the user for their order.

Story ID	User Story
<a href="#">CMR-STORY-818</a>	As a Client User, I want to retrieve a listing of the valid order option definitions for granules based on a search query.
<a href="#">CMR-STORY-819</a>	As a Client User, I want to retrieve a listing of the valid order option definitions for collections based on a search query.
<a href="#">CMR-STORY-820</a>	As a Client User, I want to be able to specify potentially different order option selections for individual items in an order.
<a href="#">CMR-STORY-821</a>	As a Client User, I want to be able to specify the same order option selections should be applied to multiple items in an order.

#### 2.16.4 Order Tracking

Order status will be tracked by the CMR.

Story ID	User Story
<a href="#">CMR-STORY-822</a>	As a Provider, I want to add status messages to an order as the order is being processed.
<a href="#">CMR-STORY-823</a>	As a Client User, I want to retrieve the current status of an order.
<a href="#">CMR-STORY-824</a>	As a Client User, I want to specify which fields to retrieve when requesting the status of an order.
<a href="#">CMR-STORY-825</a>	As a Client User, I want to retrieve the full status history of an order.
<a href="#">CMR-STORY-826</a>	As a CMR Operator, I want to configure a historic order retention period specifying how long to retain the details associated with an order.
<a href="#">CMR-STORY-827</a>	As a Client User, I want to retrieve a listing of all the orders that I have previously submitted according to the historic order retention policy.
<a href="#">CMR-STORY-828</a>	As a Client User, I want to receive a single tracking ID to track the entire order, and individual tracking IDs for each of the provider orders.
<a href="#">CMR-STORY-829</a>	As a Client User, I want to be able to specify the order statuses for which I want to receive an email notification.

#### 2.16.5 Order Validation

Orders will be validated to ensure they are understandable by the CMR.

Story ID	User Story
<a href="#">CMR-STORY-831</a>	As a Client User, I want the Ordering Service to reject an order submission if the order option selections are invalid.
<a href="#">CMR-STORY-832</a>	As a Client User, I want the Ordering Service to reject an order submission if the order option selections do not match the order option definitions allowed for the granule or collection.
<a href="#">CMR-STORY-833</a>	As a Provider, I want the Ordering Service to reject an order submission if the user does not have access to one or more items in the order.
<a href="#">CMR-STORY-834</a>	As a Client User, I want the Ordering Service to provide a detailed error message if an order submission is rejected.
<a href="#">CMR-STORY-835</a>	As a Client User, I want to be able to validate my order without actually having to submit the order.
<a href="#">CMR-STORY-836</a>	As a Provider, I want to be able to reject a provider order submission request with an appropriate rejection status message.

#### 2.16.6 Order Handling

The CMR will manage orders that are in process.

Story ID	User Story
<a href="#">CMR-STORY-837</a>	As a Client User, I want the Ordering Service to retry any requests which could reasonably be expected to succeed on retry.
<a href="#">CMR-STORY-838</a>	As a Provider, I want to be able to resubmit an order on behalf of a user for situations where resubmitting will allow the provider order to complete successfully.
<a href="#">CMR-STORY-839</a>	As a Provider, I want to be able to mark an order as closed.
<a href="#">CMR-STORY-840</a>	As a Provider, I want to be able to mark one or more items in a provider order as closed (and have the order automatically closed if all of the order items are marked as closed).
<a href="#">CMR-STORY-948</a>	As a CMR Operator, I want the Ordering Service to suspend dispatching orders to a provider endpoint and mark it as suspended if order submission fails after all retries have been exhausted.

#### 2.16.7 Order Format

Orders will adhere to a predefined format.

Story ID	User Story
<a href="#">CMR-STORY-850</a>	As a Client User, I want to be able to send request parameters to the Ordering Service using a JSON format.
<a href="#">CMR-STORY-852</a>	As a Client User, I want the Ordering Service to return responses in JSON format.

### 2.16.8 Order Fulfillment API

When the user's data is ready, it will become available for download by the user.

Story ID	User Story
<a href="#">CMR-STORY-853</a>	As a Provider, I want to be able to receive order submissions from end users using the Ordering Service.

### 2.16.9 Order Administration

Providers will be able to administrate orders made against their data.

Story ID	User Story
<a href="#">CMR-STORY-651</a>	As a Provider, I want to retrieve the detailed order information for an individual order.
<a href="#">CMR-STORY-652</a>	As a Provider, I want to search for orders based on a unique order ID for the entire customer order.
<a href="#">CMR-STORY-653</a>	As a Provider, I want to search for orders based on one or multiple order states.
<a href="#">CMR-STORY-654</a>	As a Provider, I want to search for orders against my data for a given user ID.
<a href="#">CMR-STORY-655</a>	As a Provider, I want to search for orders based on a time range of the order submission.
<a href="#">CMR-STORY-656</a>	As a Provider, I want to be able to define an option definition form to allow users to select options when ordering data for a specific collection.

## 2.17 Provider Administration

The CMR will allow for administration of provider records.

### 2.17.1 General

Users with Provider accounts will be able to manage their accounts.

Story ID	User Story
<a href="#">CMR-STORY-635</a>	As a Provider, I want to administer settings for my provider (but should not be able to access other providers).
<a href="#">CMR-STORY-2886</a>	As a CMR Administrator, I should be able to specify a long name when creating a provider

### 2.17.2 Provider Contacts

Provider accounts will manage their contacts.

### 2.17.3 Data Quality Summaries

Providers will have access to data quality summaries.

### 2.17.4 Reporting

Provider accounts will have access to reporting about their data.

Story ID	User Story
<a href="#">CMR-STORY-661</a>	As a Provider, I want to retrieve a holdings report detailing granule counts by collection for my provider.
<a href="#">CMR-STORY-662</a>	As a Provider, I want to retrieve an ingest metrics report detailing ingest events over a given time period for my provider.

## 2.18 Size Estimation Service

The CMR will provide the estimated size of a user's download.

Story ID	User Story
<a href="#">CMR-STORY-3075</a>	As a science user, I want to obtain a size estimate for download of one or more granules in the binary format
<a href="#">CMR-STORY-3076</a>	As a science user, I want to obtain a size estimate for download of one or more granules in the netcdf4 format
<a href="#">CMR-STORY-3077</a>	As a science user, I want to obtain a size estimate for download of one or more granules in the netcdf3 format
<a href="#">CMR-STORY-3078</a>	As a science user, I want to obtain a size estimate for download of one or more granules in the ASCII format
<a href="#">CMR-STORY-3079</a>	As a science user, I want to obtain a size estimate for download of one or more granules for multiple variables
<a href="#">CMR-STORY-3080</a>	As the size estimation service, for netcdf3, I need to determine the uncompressed metadata size of the granules

Story ID	User Story
<a href="#">CMR-STORY-3081</a>	As a science user, I want to obtain a size estimate for download of spatially subsetted global granules
<a href="#">CMR-STORY-3082</a>	As a science user, I want to obtain a size estimate for download of spatially subsetted EASE grid granules
<a href="#">CMR-STORY-3083</a>	As a science user, I want to obtain a size estimate for download of spatially subsetted MODIS Sinusoidal Grid granules
<a href="#">CMR-STORY-3084</a>	As a science user, I want to obtain a size estimate for download of spatially subsetted granules supporting multiple variables.
<a href="#">CMR-STORY-3085</a>	As a science user, I want to obtain a size estimate for download of spatially subsetted granules supporting multiple formats.

## 2.19 Tagging

The CMR will allow users to apply searchable "tags" to metadata records for easier indexing and categorization. Tags can be applied to metadata records, and can be searched to return those records. Data providers will be able to apply access controls to limit users who can apply and delete tags to their data.

Story ID	User Story
<a href="#">CMR-STORY-1826</a>	As a Client User, I want to create tags to identify subsets of collection metadata records.
<a href="#">CMR-STORY-1827</a>	As a Client User, I want to delete a tag.
<a href="#">CMR-STORY-1828</a>	As a Client User, I want to update a tag.
<a href="#">CMR-STORY-1829</a>	As a Client User, I want to search for all tags.
<a href="#">CMR-STORY-1836</a>	As a Client User, I want to search for collection metadata records by tag category.
<a href="#">CMR-STORY-1837</a>	As a Client User, I want to associate a tag with all collection metadata records that are a result of a search.
<a href="#">CMR-STORY-2064</a>	As a Client User, when I delete a tag, I want to remove all of its associations with collection metadata records.
<a href="#">CMR-STORY-2068</a>	As a Client User, I want to search for collection metadata records by tag namespace.
<a href="#">CMR-STORY-2069</a>	As a Client User, I want to search for collection metadata records by tag value.
<a href="#">CMR-STORY-2070</a>	As a Client User, I want to search for collection metadata records by tag originator ID

Story ID	User Story
<a href="#">CMR-STORY-2071</a>	As a Client User, I want to search for tags by tag category.
<a href="#">CMR-STORY-2072</a>	As a Client User, I want to search for tags by tag value.
<a href="#">CMR-STORY-2073</a>	As a Client User, I want to search for tags by tag namespace.
<a href="#">CMR-STORY-2074</a>	As a Client User, I want to search for tags by tag originator ID.
<a href="#">CMR-STORY-2075</a>	As a Client User, I want to receive an error message if I submit a tag without a required field.
<a href="#">CMR-STORY-2089</a>	As a Client User, I want to receive an error message if I attempt to create, update, or delete tags without permission
<a href="#">CMR-STORY-2090</a>	As a Metadata DB Client User, I want to create tag concept revisions
<a href="#">CMR-STORY-2091</a>	As a Metadata DB Client User, I want to be able to search for and retrieve tag concept revisions
<a href="#">CMR-STORY-2092</a>	As a Client User, I want to search for collections using tag parameters in a JSON Query.
<a href="#">CMR-STORY-2106</a>	As a client, I want to be able include arbitrary data when creating or updating a tag
<a href="#">CMR-STORY-2124</a>	As a client user, I want to retrieve tags I specify among my facet results so I may provide facets for data not yet a part of the UMM
<a href="#">CMR-STORY-2148</a>	As a client, I want a way to know that a collection has undergone curation so that I can notify my users accordingly.
<a href="#">CMR-STORY-2158</a>	As a Client User, I want to be able to save tag associations in metadata db
<a href="#">CMR-STORY-2159</a>	As a Client User, I want to be able to save tag association tombstones in Metadata DB
<a href="#">CMR-STORY-2160</a>	As a Client User, I want to be able to find tag association revisions in Metadata DB
<a href="#">CMR-STORY-2161</a>	As a Client User, I want to be able to find latest tag association revisions associated with a collection in Metadata DB
<a href="#">CMR-STORY-2163</a>	As a Client User, I want tag concept revisions associated with a Global Transaction Id in Metadata DB
<a href="#">CMR-STORY-2164</a>	As a Client User, I want tag association concept revisions associated with a Global Transaction Id in Metadata DB

Story ID	User Story
<a href="#">CMR-STORY-2165</a>	As a Client User, I want tag associations with a specific collection revision to be removed when a collection revision is removed in Metadata DB
<a href="#">CMR-STORY-2168</a>	As a Client User, I want to search for collections with a tag key pattern.
<a href="#">CMR-STORY-2169</a>	As a Client User, I want to be able to search for collections by tag key and an associated value.
<a href="#">CMR-STORY-2170</a>	As a Client User, I want to associate a tag with multiple specified collections.
<a href="#">CMR-STORY-2171</a>	As a Client User, I want to associate a tag with a specific revision of a collection.
<a href="#">CMR-STORY-2172</a>	As a Client User, I want to dissociate multiple specified collections from a tag.
<a href="#">CMR-STORY-2174</a>	As a Client User, I want a tag association to optionally include an indexed searchable string value.
<a href="#">CMR-STORY-2175</a>	As a Client User, I want a tag association to optionally include specified JSON data.
<a href="#">CMR-STORY-2176</a>	As a Client User, I want to search for tags by using a pattern to match the tag key.
<a href="#">CMR-STORY-2177</a>	As a Client User, I want to optionally include associated tag keys and data with a collection in JSON search results.
<a href="#">CMR-STORY-2178</a>	As a Client User, I want to optionally include associated tag keys and data with a collection in Atom search results.
<a href="#">CMR-STORY-2179</a>	As a Client User, I want to optionally include associated tag keys and data with a collection in metadata search results.
<a href="#">CMR-STORY-2180</a>	As a Client User, I want to optionally include associated tag keys and data with a collection in reference search results.
<a href="#">CMR-STORY-2181</a>	As a CMR Administrator, I want to be able to grant a group permission to make collection tag association changes with tag keys with a specified prefix.
<a href="#">CMR-STORY-2184</a>	As a CMR Administrator, I want to be able to grant a group permission to view tag associations for tag keys with a specified prefix.
<a href="#">CMR-STORY-2186</a>	As a Client User, I want a tag to be automatically created by the CMR if it does not yet exist when associating a collection with that tag.
<a href="#">CMR-STORY-2193</a>	As a Client User, I should be able to search for collections with tag parameters and indicate multiple parameters apply to a single tag.

Story ID	User Story
<a href="#">CMR-STORY-2602</a>	As a Client User, I should be able to tag multiple collections at the same time and receive individual success failure responses for each association.
<a href="#">CMR-STORY-2650</a>	As a user, I want tags to be returned with my JSON collection search results so I may efficiently retrieve unstructured metadata
<a href="#">CMR-STORY-2651</a>	As a Client User, I want collection concept revisions associated with a Global Transaction Id in Metadata DB
<a href="#">CMR-STORY-2962</a>	As a CMR Administrator, I want to re-index tags using the indexer API.

## 2.20 UMM- C JSON

The CMR will be able to ingest collections in Unified Metadata Model -Common (UMM-C) JSON format, and translate collections to UMM-C JSON format.

Story ID	User Story
<a href="#">CMR-STORY-2898</a>	As a client user, I want to be able to retrieve UMM JSON with Entry Id
<a href="#">CMR-STORY-2899</a>	As a client user, I want to be able to retrieve UMM JSON with Entry Title
<a href="#">CMR-STORY-2900</a>	As a client user, I want to be able to retrieve UMM JSON with Short Name
<a href="#">CMR-STORY-2901</a>	As a client user, I want to be able to retrieve UMM JSON with Version id
<a href="#">CMR-STORY-2902</a>	As a client user, I want to be able to retrieve UMM JSON with long name
<a href="#">CMR-STORY-2903</a>	As a client user, I want to be able to retrieve UMM JSON with the Abstract field
<a href="#">CMR-STORY-2904</a>	As a client user, I want to be able to retrieve UMM JSON with the purpose field
<a href="#">CMR-STORY-2905</a>	As a client user, I want to be able to retrieve UMM JSON with data language
<a href="#">CMR-STORY-2906</a>	As a client user, I want to be able to retrieve UMM JSON with data dates
<a href="#">CMR-STORY-2907</a>	As a client user, I want to be able to retrieve UMM JSON with organization and personnel fields
<a href="#">CMR-STORY-2908</a>	As a client user, I want to be able to retrieve UMM JSON with collection data type
<a href="#">CMR-STORY-2909</a>	As a client user, I want to be able to retrieve UMM JSON with processing level
<a href="#">CMR-STORY-2910</a>	As a client user, I want to be able to retrieve UMM JSON with collection progress

Story ID	User Story
<a href="#">CMR-STORY-2911</a>	As a client user, I want to be able to retrieve UMM JSON with quality
<a href="#">CMR-STORY-2912</a>	As a client user, I want to be able to retrieve UMM JSON with use constraints
<a href="#">CMR-STORY-2913</a>	As a client user, I want to be able to retrieve UMM JSON with access constraints
<a href="#">CMR-STORY-2914</a>	As a client user, I want to be able to retrieve UMM JSON with ISO Topic Category
<a href="#">CMR-STORY-2915</a>	As a client user, I want to be able to retrieve UMM JSON with ancillary keywords
<a href="#">CMR-STORY-2916</a>	As a client user, I want to be able to retrieve UMM JSON with temporal keywords
<a href="#">CMR-STORY-2917</a>	As a client user, I want to be able to retrieve UMM JSON with metadata association
<a href="#">CMR-STORY-2918</a>	As a client user, I want to be able to retrieve UMM JSON with distribution fields
<a href="#">CMR-STORY-2919</a>	As a client user, I want to be able to retrieve UMM JSON with spatial keywords
<a href="#">CMR-STORY-2920</a>	As a client user, I want to be able to retrieve UMM JSON with instrument fields
<a href="#">CMR-STORY-2921</a>	As a client user, I want to be able to retrieve UMM JSON with sensor fields
<a href="#">CMR-STORY-2922</a>	As a client user, I want to be able to retrieve UMM JSON with project fields
<a href="#">CMR-STORY-2923</a>	As a client user, I want to be able to retrieve UMM JSON with publication reference
<a href="#">CMR-STORY-2924</a>	As a client user, I want to be able to retrieve UMM JSON with science keywords
<a href="#">CMR-STORY-2925</a>	As a client user, I want to be able to retrieve UMM JSON with paleo temporal coverage
<a href="#">CMR-STORY-2926</a>	As a client user, I want to be able to retrieve UMM JSON with spatial extent fields
<a href="#">CMR-STORY-2927</a>	As a client user, I want to be able to retrieve UMM JSON with tiling identification system fields
<a href="#">CMR-STORY-2928</a>	As a client user, I want to be able to retrieve UMM JSON with platform fields
<a href="#">CMR-STORY-2929</a>	As a client user, I want to be able to retrieve UMM JSON with related url
<a href="#">CMR-STORY-2930</a>	As a client user, I want to be able to retrieve UMM JSON with temporal extent
<a href="#">CMR-STORY-2931</a>	As a client user, I want to be able to retrieve UMM JSON with spatial geometry

Story ID	User Story
<a href="#">CMR-STORY-2960</a>	As a Client User, I should be able to get granule counts in umm-json search results
<a href="#">CMR-STORY-2996</a>	As a Client User, I want my collection metadata validated against the UMM-C JSON Schema to ensure that my metadata is valid UMM-C data.
<a href="#">CMR-STORY-3001</a>	As a client user, I want to be able to retrieve UMM JSON with organization and personnel fields translated from DIF
<a href="#">CMR-STORY-3002</a>	As a client user, I want to be able to retrieve UMM JSON with organization and personnel fields translated from ECHO 10
<a href="#">CMR-STORY-3003</a>	As a client user, I want to be able to retrieve UMM JSON with organization and personnel fields translated from ISO19115
<a href="#">CMR-STORY-3004</a>	As a client user, I want to be able to retrieve UMM JSON with organization and personnel fields translated from DIF10

## 2.21 UMM- G JSON

The CMR will be able to ingest granules in UMM-G JSON format, and will be able to translate granules into UMM-G JSON format.

Story ID	User Story
<a href="#">CMR-STORY-3044</a>	As a Client User, I want to parse and generate granuleUR in SWOT granule metadata format
<a href="#">CMR-STORY-3045</a>	As a Client User, I want to parse and generate data-provider-timestamps in SWOT granule metadata format
<a href="#">CMR-STORY-3046</a>	As a Client User, I want to parse and generate collection-ref in SWOT granule metadata format
<a href="#">CMR-STORY-3047</a>	As a Client User, I want to parse and generate data-granule in SWOT granule metadata format
<a href="#">CMR-STORY-3048</a>	As a Client User, I want to parse and generate access-value in SWOT granule metadata format
<a href="#">CMR-STORY-3049</a>	As a Client User, I want to parse and generate temporal in SWOT granule metadata format
<a href="#">CMR-STORY-3050</a>	As a Client User, I want to parse and generate spatial-coverage in SWOT granule metadata format
<a href="#">CMR-STORY-3051</a>	As a Client User, I want to parse and generate orbit-calculated- spatial-domains in SWOT granule metadata format
<a href="#">CMR-STORY-3052</a>	As a Client User, I want to parse and generate measured-parameters in SWOT granule metadata format

Story ID	User Story
<a href="#">CMR-STORY-3053</a>	As a Client User, I want to parse and generate platform-refs in SWOT granule metadata format
<a href="#">CMR-STORY-3054</a>	As a Client User, I want to parse and generate project-refs in SWOT granule metadata format
<a href="#">CMR-STORY-3055</a>	As a Client User, I want to parse and generate related-urls in SWOT granule metadata format
<a href="#">CMR-STORY-3056</a>	As a Client User, I want to parse and generate product-specific-attributes in SWOT granule metadata format
<a href="#">CMR-STORY-3057</a>	As a Client User, I want to parse and generate cloud-cover in SWOT granule metadata format
<a href="#">CMR-STORY-3058</a>	As a Client User, I want to parse and generate two-d-coordinate-system in SWOT granule metadata format
<a href="#">CMR-STORY-3059</a>	As a Client User, I want to ingest SWOT granules in CMR
<a href="#">CMR-STORY-3060</a>	As a Client User, I can translate granule metadata to/from SWOT granule metadata format to other supported granule metadata formats
<a href="#">CMR-STORY-3127</a>	As a Client User, I want to search granules in UMM-G format

## 2.22 UMM JSON Translation Support

The CMR will translate metadata presented in JSON format into other formats of the user's choice.

Story ID	User Story
<a href="#">CMR-STORY-1955</a>	As a CMR Client User, I want to be able to parse metadata in a supported UMM metadata standard into a JSON representation of the UMM fields.
<a href="#">CMR-STORY-1956</a>	As a CMR Client User, I want to be able to convert a JSON representation of UMM fields into a specific UMM metadata standard.
<a href="#">CMR-STORY-1957</a>	As a CMR Client User, I want to be able to translate metadata in a supported UMM metadata standard into another supported specified metadata standard.
<a href="#">CMR-STORY-2661</a>	As a client user, I want to be able to retrieve UMM JSON collections with CollectionCitation
<a href="#">CMR-STORY-2662</a>	As a client user, I want to be able to retrieve UMM JSON with organization and personnel fields translated from ISO SMAP

## 2.23 UMM Validation

The CMR will ensure that metadata being ingested conforms to metadata standards.

### 2.23.1 Collection General Validation

The CMR will ensure that ingested collections conform to metadata best practices, so that the metadata can be translated properly to other formats.

Story ID	User Story
<a href="#">CMR-STORY-692</a>	As a Provider, I want the CMR to perform validation of collection ingest requests and return an appropriate error if the metadata is invalid.
<a href="#">CMR-STORY-693</a>	As a Provider, I want the CMR to reject a collection update ingest request if the entry title does not match the existing entry title.
<a href="#">CMR-STORY-694</a>	As a Provider, I want the CMR to reject a collection update ingest request if the CMR Concept ID does not match the existing CMR Concept ID.
<a href="#">CMR-STORY-695</a>	As a Provider, I want the CMR to reject a new collection ingest request if a collection already exists for my provider with the same Entry ID.
<a href="#">CMR-STORY-697</a>	As a Provider, I want the CMR to reject a collection update ingest request if the metadata includes a change to Projects that invalidates any of granules for that collection.
<a href="#">CMR-STORY-698</a>	As a Metadata Curator, I want to be able to validate collection metadata without actually ingesting the collection.
<a href="#">CMR-STORY-2970</a>	As a client, I do not want to provide ECHO10 fields which would be lost during conversion to UMM-C

### 2.23.2 Granule General Validation

The CMR will ensure that ingested granules conform to metadata best practices, so that the metadata can be translated properly to other formats.

Story ID	User Story
<a href="#">CMR-STORY-699</a>	As a Provider, I want the CMR to perform validation of granule ingest requests and return an appropriate error if the metadata is invalid.
<a href="#">CMR-STORY-700</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata references a non-existent collection.

Story ID	User Story
<a href="#">CMR-STORY-702</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains a platform which does not match the allowed platforms of its collection.
<a href="#">CMR-STORY-703</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains an instrument which does not match the allowed instruments of its collection.
<a href="#">CMR-STORY-704</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains an instrument operation mode which does not match the allowed instrument operation mode of its collection.
<a href="#">CMR-STORY-705</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains a sensor which does not match the allowed sensors for its collection.
<a href="#">CMR-STORY-706</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains any platform, sensor, or instrument characteristics that do not match its collection.
<a href="#">CMR-STORY-707</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains a campaign which does not match the allowed campaigns for its collection.

### 2.23.3 Service General Validation

The CMR will ensure that ingested services conform to metadata best practices, so that the metadata can be translated properly to other formats.

Story ID	User Story
<a href="#">CMR-STORY-1907</a>	As a Provider, I want the CMR to perform validation of service ingest requests and return an appropriate error if the metadata is invalid.
<a href="#">CMR-STORY-1908</a>	As a Provider, I want the CMR to reject a service update ingest request if the entry title does not match the existing entry title.
<a href="#">CMR-STORY-1909</a>	As a Provider, I want the CMR to reject a service update ingest request if the CMR Concept ID does not match the existing CMR Concept ID.
<a href="#">CMR-STORY-1910</a>	As a Provider, I want the CMR to reject a new service ingest request if a service already exists for my provider with the same Entry ID.
<a href="#">CMR-STORY-1911</a>	As a Metadata Curator, I want to be able to validate service metadata without actually ingesting the service.

#### 2.23.4 Additional Attribute Validation

The CMR will ensure that ingested attributes conform to metadata best practices, so that the metadata can be translated properly to other formats.

Story ID	User Story
<a href="#">CMR-STORY-708</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata includes an invalid additional attribute parameter range.
<a href="#">CMR-STORY-709</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata includes an invalid additional attribute type.
<a href="#">CMR-STORY-710</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata includes an additional attribute value that does not match the type.
<a href="#">CMR-STORY-711</a>	As a Provider, I want the CMR to reject a collection update ingest request if the metadata includes a change to additional attributes that invalidates any of granules for that collection.
<a href="#">CMR-STORY-712</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata includes an invalid additional attribute value based on the additional attribute type.
<a href="#">CMR-STORY-713</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata references an additional attribute which does not exist for its collection.
<a href="#">CMR-STORY-1912</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata includes an invalid additional attribute parameter range.
<a href="#">CMR-STORY-1913</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata includes an invalid additional attribute type.
<a href="#">CMR-STORY-1914</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata includes an additional attribute value that does not match the type.

#### 2.23.5 Temporal Validation

The CMR will ensure that metadata with temporal considerations provide valid temporal data, and that temporal data for collections doesn't conflict with the granules within.

Story ID	User Story
<a href="#">CMR-STORY-714</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata includes an invalid temporal coverage.
<a href="#">CMR-STORY-715</a>	As a Provider, I want the CMR to reject a collection update ingest request if the metadata includes temporal coverage that invalidates any of granules for that collection.
<a href="#">CMR-STORY-716</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains a temporal coverage which is outside the bounds of the allowed temporal coverage of its collection.

### 2.23.6 Spatial Validation

The CMR will ensure that metadata with spatial considerations provide valid spatial data, and that spatial data for collections doesn't conflict with the granules within.

Story ID	User Story
<a href="#">CMR-STORY-717</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata includes an invalid 2-D coordinate system.
<a href="#">CMR-STORY-718</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata reference a 2-D coordinate system that does not match its collection coordinate system.
<a href="#">CMR-STORY-719</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains spatial metadata that do not match the allowed granule spatial representation for its collection.
<a href="#">CMR-STORY-720</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains spatial coordinates that are outside the range of the allowed spatial bounds for its collection.
<a href="#">CMR-STORY-721</a>	As a Provider, I want the CMR to reject a collection ingest request if the spatial metadata is invalid.
<a href="#">CMR-STORY-722</a>	As a Provider, I want the CMR to reject a granule ingest request if the spatial metadata is invalid.

### 2.23.7 Duplicate Fields Validation

The CMR will prevent ingest of metadata with duplicate fields, or multiple duplicate data records of the same type.

Story ID	User Story
<a href="#">CMR-STORY-723</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple instruments with the same short name.
<a href="#">CMR-STORY-724</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple additional attributes with the same name.
<a href="#">CMR-STORY-725</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple algorithm packages with the same name.
<a href="#">CMR-STORY-726</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple associated DIFs with the same entry ID.
<a href="#">CMR-STORY-727</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple campaigns with the same short name.
<a href="#">CMR-STORY-728</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple CSDT descriptions with the same primary CSDT.
<a href="#">CMR-STORY-729</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple online access URLs with the same URL.
<a href="#">CMR-STORY-730</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple collection associations with the same short name and version IDs.
<a href="#">CMR-STORY-731</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple platforms with the same short name.
<a href="#">CMR-STORY-732</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple 2D coordinate systems with the same name.
<a href="#">CMR-STORY-733</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains a platform with multiple instruments with the same short name.
<a href="#">CMR-STORY-734</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains a platform with multiple characteristics with the same name.
<a href="#">CMR-STORY-735</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains an instrument with multiple sensors with the same short name.
<a href="#">CMR-STORY-736</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains an instrument with multiple characteristics with the same name.

Story ID	User Story
<a href="#">CMR-STORY-737</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains a sensor with multiple characteristics with the same name.
<a href="#">CMR-STORY-738</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains multiple campaigns with the same short name.
<a href="#">CMR-STORY-739</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains multiple platforms with the same short name.
<a href="#">CMR-STORY-740</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains multiple measured parameters with the same parameter name.
<a href="#">CMR-STORY-741</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains multiple online access URLs with the same URL.
<a href="#">CMR-STORY-742</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains a platform with multiple instruments with the same short name.
<a href="#">CMR-STORY-743</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains a platform with multiple characteristics with the same name.
<a href="#">CMR-STORY-744</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains an instrument with multiple sensors with the same short name.
<a href="#">CMR-STORY-745</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains an instrument with multiple characteristics with the same name.
<a href="#">CMR-STORY-746</a>	As a Provider, I want the CMR to reject a granule ingest request if the metadata contains a sensor with multiple characteristics with the same name.
<a href="#">CMR-STORY-1915</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata contains multiple instruments with the same short name.
<a href="#">CMR-STORY-1916</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata contains multiple additional attributes with the same name.
<a href="#">CMR-STORY-1917</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata contains multiple algorithm packages with the same name.
<a href="#">CMR-STORY-1918</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata contains multiple project/campaigns with the same short name.

Story ID	User Story
<a href="#">CMR-STORY-1919</a>	As a Provider, I want the CMR to reject a collection ingest request if the metadata contains multiple project/campaigns with the same short name.
<a href="#">CMR-STORY-1920</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata contains multiple platforms with the same short name.
<a href="#">CMR-STORY-1921</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata contains a platform with multiple instruments with the same short name.
<a href="#">CMR-STORY-1922</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata contains a platform with multiple characteristics with the same name.
<a href="#">CMR-STORY-1923</a>	As a Provider, I want the CMR to reject a service ingest request if the metadata contains an instrument with multiple characteristics with the same name.

#### 2.23.8 UMM-S and UMM-Var

The CMR will properly validate Unified Metadata Model -Services (UMM-S) and UMM-Var metadata being ingested.

Story ID	User Story
<a href="#">CMR-STORY-2649</a>	As a provider, I want the DOI values to be validated on ingest and return a warning if in an invalid format
<a href="#">CMR-STORY-2652</a>	As a Client User, I want to search services sorted by its long name
<a href="#">CMR-STORY-2653</a>	As a provider, I would like to validate my UMM-Var data before ingesting
<a href="#">CMR-STORY-2660</a>	As a Metadata DB Client User, I want to be able to create a UMM-Var

### 2.24 UMM Versions

These stories will follow CMR upgrades to UMM-C, Unified Metadata Model -Granules (UMM-G), UMM-S, and UMM-Var

#### 2.24.1 UMM-Var

Stories which detail version upgrades for UMM-Var in CMR.

Story ID	User Story
<a href="#">CMR-STORY-3121</a>	As the CMR system, I want to support version 1.3 of UMM-Var.

## 2.25 Virtual Directory Maker

The CMR will simulate a directory structure for files stored in AWS, so that applications that rely on folder structures will be able to access metadata properly.

Story ID	User Story
<a href="#">CMR-STORY-2642</a>	As a Client User, I want to request facets to be returned for granules in the JSON format
<a href="#">CMR-STORY-2643</a>	As an operator, I want granule facets to be limited to only searches which resolve to a single collection
<a href="#">CMR-STORY-2644</a>	As a Client User, I want granule facets to include a has_children field
<a href="#">CMR-STORY-2645</a>	As a Client User, I want to include temporal facet counts by month in granule facets
<a href="#">CMR-STORY-2646</a>	As a Client User, I want to include temporal facet counts by day in granule facets
<a href="#">CMR-STORY-2648</a>	As a Client User, I want granule facets to return all date values in ascending order.
<a href="#">CMR-STORY-3097</a>	As a client, I want to request a JSON listing of virtual directories and files for a given collection concept ID
<a href="#">CMR-STORY-3098</a>	As a client, I want a directory in the virtual directory capability to include a name, navigation URL, and file count
<a href="#">CMR-STORY-3099</a>	As a client, I want a file in the virtual directory capability to include a name, access URL, last modified time, size in MB, and MIME-type
<a href="#">CMR-STORY-3100</a>	As a client, I want a virtual directory listing based on the temporal coverage of the granules for the collection
<a href="#">CMR-STORY-3101</a>	As a client, I want a directory returned in the virtual directory listing to navigate back a level in the hierarchy
<a href="#">CMR-STORY-3102</a>	As a client, I want the temporal virtual directory listing to always include year directories
<a href="#">CMR-STORY-3103</a>	As a client, I want the temporal virtual directory listing to include month directories if there are more than 31 granules within a year
<a href="#">CMR-STORY-3104</a>	As a client, I want the temporal virtual directory listing to include day directories if there are more than 31 granules within a month and year
<a href="#">CMR-STORY-3105</a>	As a client, I want the temporal virtual directory listing to include a list of data files when there are no remaining temporal subdirectories

Story ID	User Story
<a href="#">CMR-STORY-3106</a>	As a client, I want the temporal virtual directory listing to include a list of metadata files when there are no remaining temporal subdirectories
<a href="#">CMR-STORY-3107</a>	As a client, I want a directory in the virtual directory capability to include a last modified time reflecting the most recent creation time of a granule within that directory

## 2.26 Virtual Product Metadata Generator

Virtual products are data products generated by our providers in real-time, on demand. CMR will store metadata on these virtual products and make it searchable to users who wish to view them.

Story ID	User Story
<a href="#">CMR-STORY-2009</a>	As a Provider, I want the CMR to apply changes to Virtual Product holdings only if the source granule's UMM fields match configured filters.
<a href="#">CMR-STORY-2010</a>	As a Provider, I want the Virtual Product Granule's metadata to be generated via a template using the source granule's metadata as input.
<a href="#">CMR-STORY-2011</a>	As a Provider, when I create granules in a configured Virtual Product Source collection I want Virtual Product Granules representing the derived products of those granules to be created in a Virtual Product Collection.
<a href="#">CMR-STORY-2012</a>	As a Provider, when I update granules in a configured Virtual Product Source Collection I want updates applied to the equivalent Virtual Product Granules.
<a href="#">CMR-STORY-2013</a>	As a Provider, when I delete granules in a configured Virtual Product Source Collection I want the equivalent Virtual Product Granules to be deleted.
<a href="#">CMR-STORY-2014</a>	As a Provider, I want Virtual Product Granules to be processed asynchronously from ingest of a source granule so as not to increase ingest time of source granules.
<a href="#">CMR-STORY-2015</a>	As a CMR Administrator, I want failure to process Virtual Product granules to retry multiple times with increasing wait times until successful or a maximum number of retries is exceeded.
<a href="#">CMR-STORY-2016</a>	As a CMR Administrator, I want to be notified if any Virtual Product granules fail to process.
<a href="#">CMR-STORY-2017</a>	As a CMR Administrator, I want the Virtual Product Metadata Generator to be a separate CMR Service.

Story ID	User Story
<a href="#">CMR-STORY-2018</a>	As a CMR Administrator, I want to be able to bootstrap the Virtual Product granules in a specified configured collection.
<a href="#">CMR-STORY-2019</a>	As a CMR Administrator, I want the bootstrap rate of Virtual Product granules to be at least 10 million generated granules a day so that it can finish in a reasonable amount of time.
<a href="#">CMR-STORY-2020</a>	As a Provider, I want ordered Virtual Product Granules to be sent to my Order Fulfillment endpoint with the ids of their original source granules and the appropriate option selection.
<a href="#">CMR-STORY-2083</a>	As a Provider, I want the CMR to keep virtual products in sync with the corresponding source products.
<a href="#">CMR-STORY-2084</a>	As a provider, I want the database synchronization job to ignore virtual products when synchronizing ECHO and CMR holdings
<a href="#">CMR-STORY-2085</a>	As an Ingest User, I want virtual collections to be rejected if they do not define an additional attribute for source Granule UR
<a href="#">CMR-STORY-2086</a>	As an Ingest User, I want to be able to create a collection with a data type of virtual product.
<a href="#">CMR-STORY-2087</a>	As a Client User, I want to be able to update the source granule for a virtual product such that it no longer matches filters and have that delete the associate virtual granule.
<a href="#">CMR-STORY-2088</a>	As a CMR Administrator, I want to configure different virtual product rules in different environments.
<a href="#">CMR-STORY-2969</a>	As a data provider, I want to be able to enable/disable creation of virtual products by individual collection.
<a href="#">CMR-STORY-2990</a>	As a user of AST_LIT Virtual Products I only want to see applicable URLs
<a href="#">CMR-STORY-2991</a>	As a user of the AST_FRBV virtual products I want the ability to perform services on these virtual granules.

## Appendix A Abbreviations and Acronyms

2D	2-Dimensional
ACL	Access Control Lists
API	Application Programming Interface
ASCII	American Standard Code for Information Interchange
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
AWS	Amazon Web Service
AZ	Availability Zone
CCB	Configuration Change Board
CCR	Configuration Change Request
CKAN	Comprehensive Knowledge Archive Network
CMO	Configuration Management Office
CMR	Common Metadata Repository
CORS	Cross-Origin Resource Sharing
COTS	Commercial Off-The-Shelf
CRID	Customer Registration Identification Number
CRUD	Create, Read, Update, and Delete
CSV	Comma-Separated Values
CSW	Catalogue Services for the Web
CUD	Create, Update, and Delete
CWIC	CEOS WGISS Integrated Catalog
DAAC	Distributed Active Archive Center
DB	DataBase
DIF	Directory Interchange Format
DOI	Data Object Identifier
EC	European Commission
ECHO	Earth Observing System (EOS) Clearinghouse
ECS	EOSDIS Core System
EDSC	Earthdata Search
EED2	EOSDIS Evolution and Development 2
EMS	ESDIS Metrics System
EOSDIS	Earth Observing System Data and Information System
ESDIS	Earth Science Data and Information System
GCMD	Global Change Master Directory
GSFC	Goddard Space Flight Center
GUI	Graphical User Interface
HTML	Hypertext Markup Language
HTTPS	Hyper-Text Transfer Protocol
ID	Identifi er

IDN	International Directory Network
IP	Internet Provider
ISO	International Organization for Standardization
JSON	JavaScript Object Notation
KML	Keyhole Markup Language
KMS	Keyword Management System
MB	Megabyte
MENDS	Metadata Evolution for NASA Data Systems
MIME	Multipurpose Internet Mail Extensions
MMT	Metadata Management Tool
MODIS	Moderate Resolution Imaging Spectroradiometer
MRT	MODIS Reprojection Tool
NASA	National Aeronautics and Space Administration
NGAP	NASA-Compliant General Application Platform
NPR	NASA Procedural Requirements
OMI	Ozone Monitoring Instrument
OPeNDAP	Open-source Project for a Network Data Access Protocol
OSDD	Open Search Descriptor Document
OUS	OPeNDAP URL Service
PROD	Production
RDS	Relational Database Service
REST	Representational State Transfer
RMS	Requirements Management System
SIN	Sinusoidal
SIT	System Integration Test
SMAP	Soil Moisture Active Passive
SOAP	Simple Object Access Protocol
SSO	Single Sign-On
SWOT	Surface Water Ocean Topography
TBD	To Be Determined
TLS	ransport Layer Security
TOMS	Total Ozone Mapping Spectrometer
UAT	User Acceptance Test
UMM	Unified Metadata Model
UMM-C	Unified Metadata Model – Collections
UMM-G	Unified Metadata Model – Granules
UMM-S	Unified Metadata Model – Services
UMM-Var	Unified Metadata Model – Variables
UR	Unique Record
URL	Uniform Resource Locator
URS	User Registration Service
UUID	universally unique identifier

UX	User Experience
WCS	Web Coverage Service
WGISS	Working Group on Information Systems and Services
WL	WorkLoad
XML	eXtensible Markup Language