CDE Portal Tutorial

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1. Basic Information

Name：CDE Portal

Version：V1.0

URL：https://cdepotal.bmicc.cn

GitHub URL：https://github.com/MedportalProject/CDEPortal

Description：CDE Portal provides users with a range of tools for building, querying, and managing Common Data Elements (CDE) and Case Report Forms (Form), supporting the standardization and exchange of biomedical science data. Additionally, it offers APIs and an Excel-based plugin (CDE Tools) for users.
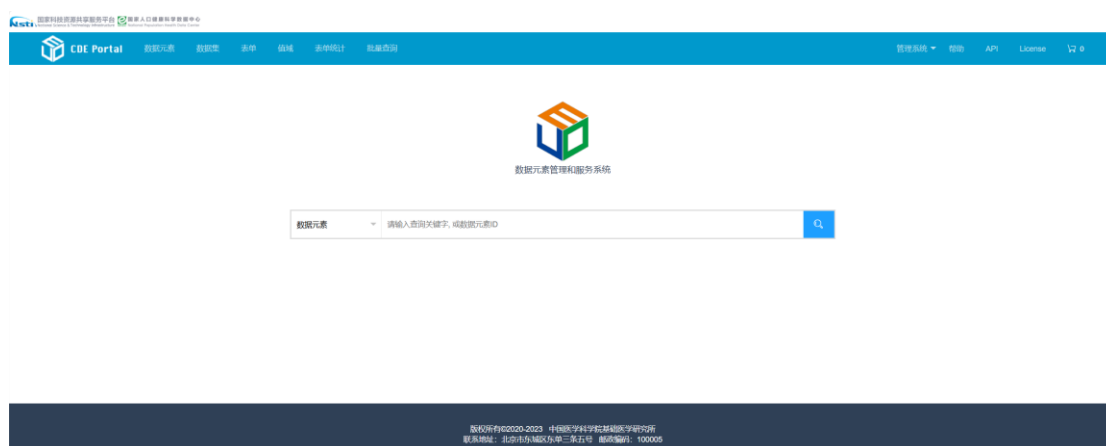

Fig.1：Homepage of CDE Portal

2. Features

2.1 Project Management

Common Data Elements (CDE) are organized and managed by project. Users can add new projects in the backend management system, as shown in Fig. 2, and fill in the necessary project information, including ID, project name, abbreviation, etc. (Fig. 3). Categories can also be created within each project.

Fig.2 Page for Project Management

Fig.3 Page for necessary information to create a project

2.2 CDE Browser

2.2.1 CDE Query and Browsing

Users can search for publicly released CDEs in the CDE Browser of CDE Portal(https://cdeportal.bmicc.cn/cde). The system allows users to enter search keywords in the query text box. For English keywords, the system tokenizes the text based on spaces. For Chinese keywords, the system automatically performs Chinese word segmentation. Data elements that meet the search criteria will be displayed automatically. As the search keywords change, the suggestions will adjust accordingly. In the list of retrieved data elements, users can click on a data element title

to access detailed information about it. For filtering options, the system provides three types: filtering by project category, by value domain type, and by registration status, as shown in Fig. 4.
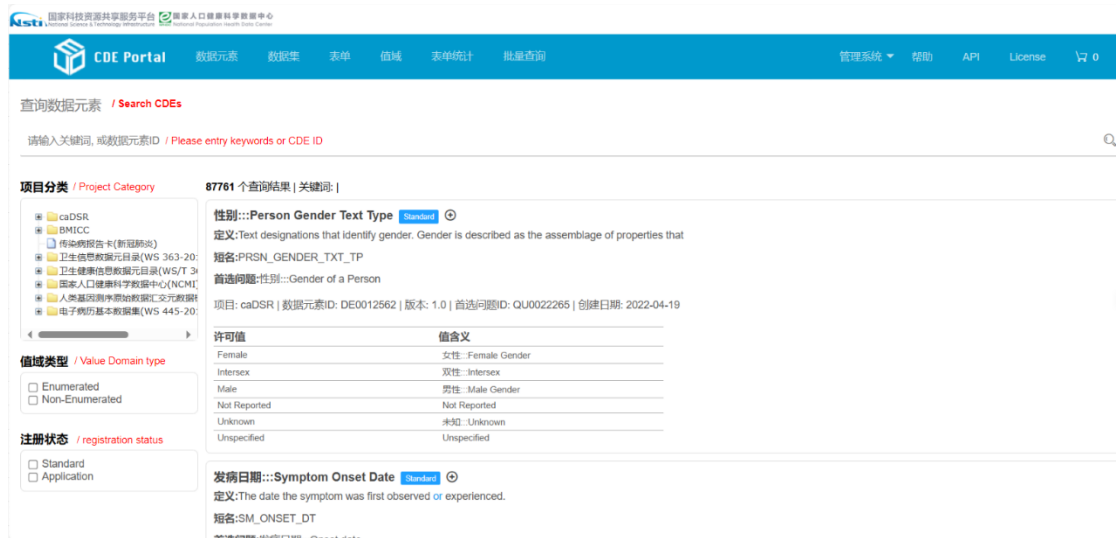

Fig.4 Search released CDEs in CDE Portal

2.2.2 CDE Creation and Management

Users can select, create, and manage CDEs in the backend management system (Fig. 5). A CDE is a well-defined data unit that can be reused across different datasets. The content includes ID, name, description, etc. The system supports user-created CDEs (Fig. 6) and provides structural and standardization support. It also enables the management of CDE concepts, objects, attributes, value domains, permissible values, and their meanings. To better support CDE reuse, the system allows common CDEs to be exported and shared in Excel, XML, and JSON formats (Fig. 7). **The components for building data element concepts, value domains, permissible values, questions, etc., are similar to those of CDEs and are therefore not elaborated here.**
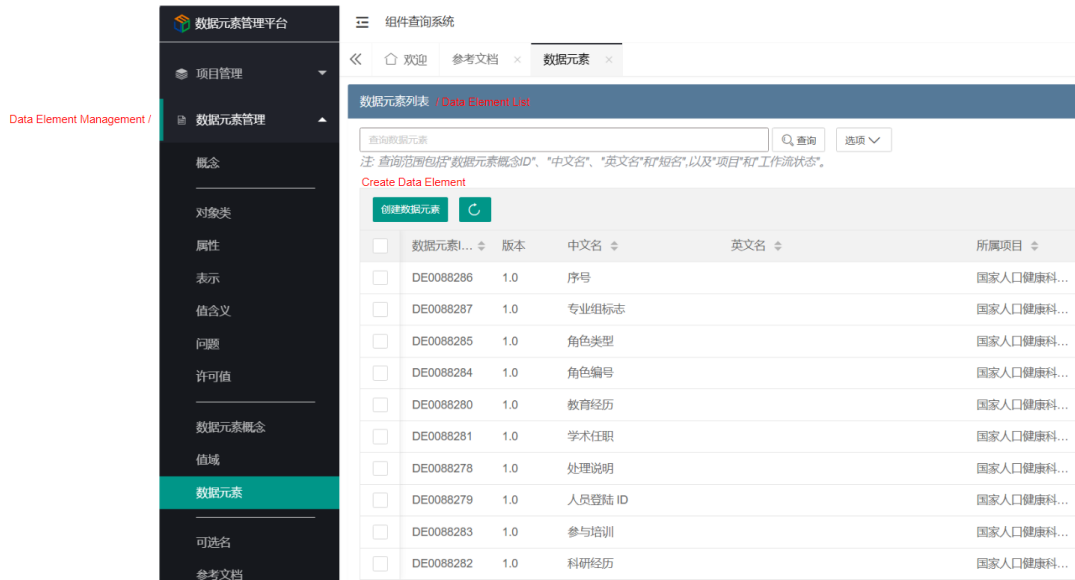
Fig.5 Backend management system of CDEs

Fig.6 Page for new CDE creation

Fig.7 The system supports CDE export in various formats

2.3 Form Browser

2.3.1 Form Query and Browsing

Users can search for publicly released Forms in the Form Browser of CDE Portal (https://cdeportal.bmicc.cn/form). By entering keywords in the search input box, the system will automatically suggest matching forms. Clicking on a form title allows users to view detailed information about the form, as shown in Fig. 8.

Fig.8 Search released Forms

2.3.2 Form Creation and Management

Users can select, add, delete and manage Forms in the backend management system (Fig. 9)

Fig.9 Page for Project Management of forms

Similar to the process of creating a new CDE, when users create a new Form, they first need to fill in the basic information for the Form, as shown in Fig. 10.

Fig.10 Basic information for new form creation

A Form is composed of multiple modules, with each module requiring the addition of necessary CDEs. Currently, two methods are supported for adding CDEs: (1) adding CDEs to the cart while browsing CDEs, and (2) using the batch add function. Once the desired CDEs are added, the Form construction is complete, as shown in Fig. 11, 12, and 13.

Fig.11 Page for constructed module information

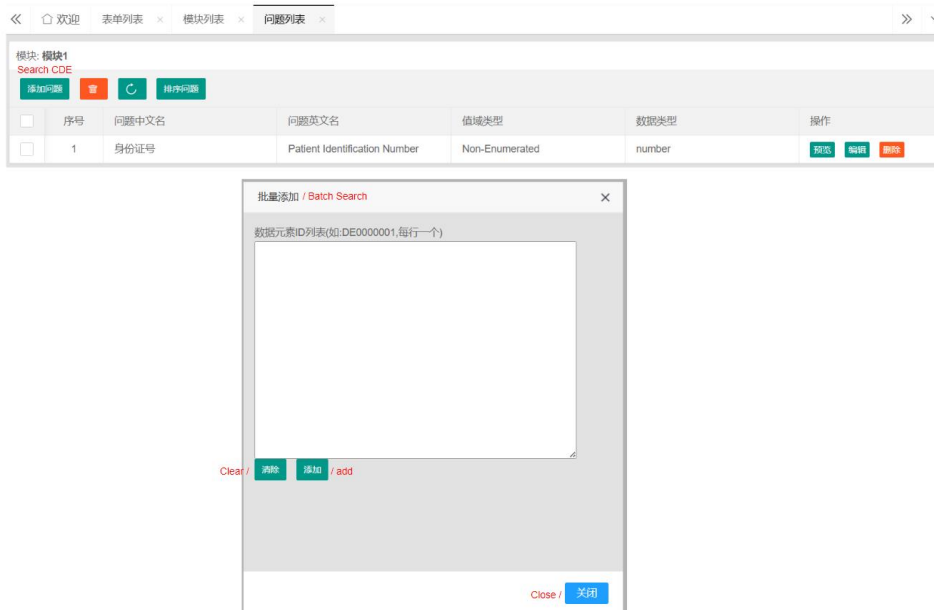

Fig.12 Page for module creation

Fig.13 Adding CDEs to a module

2.4 API of CDE Portal

To better support users in utilizing CDEs and Forms, we provide APIs for searching CDEs and Forms. For detailed usage, please refer to https://cdeportal.bmicc.cn/doc/api. The API supports queries for Data Element Concepts, Value Domains, Data Elements, and Forms.

Fig.14 Page for CDE Portal's API details

2.5 The tool of CDE Portal: CDE Tools V3.0

CDE Tools V3.0 is an Excel-based plugin that allows users to query ontology terms and annotations directly through the tool. In version 3, new features for data element search and scale retrieval have been added. Researchers can directly query and use the common data elements and scale resources published by the CDE Portal within Excel, enabling them to apply standardized data resources to their own research projects. This tool does not require installation and can be downloaded for use. The download URL is: https://github.com/MedportalProject/CDE-Tools.
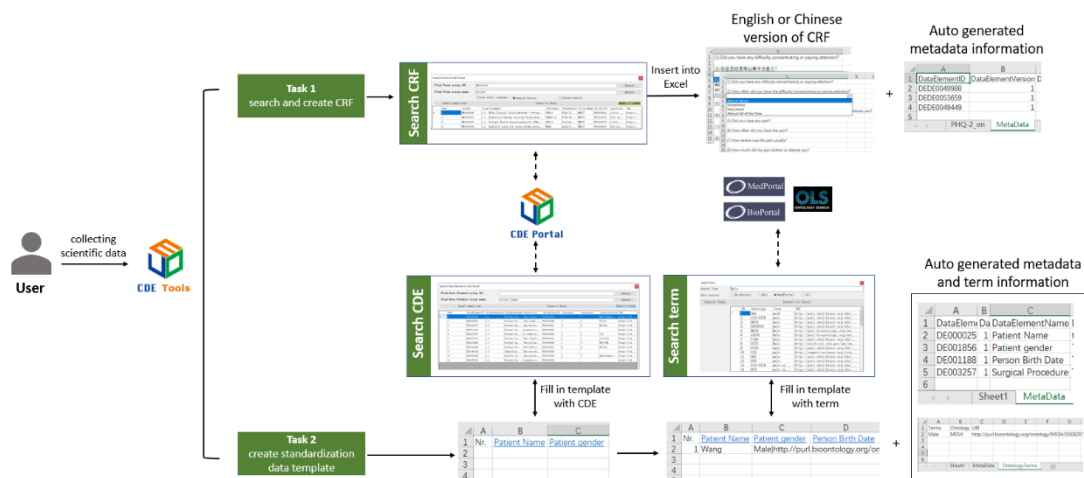

Fig.15 Main features of CDE Tools