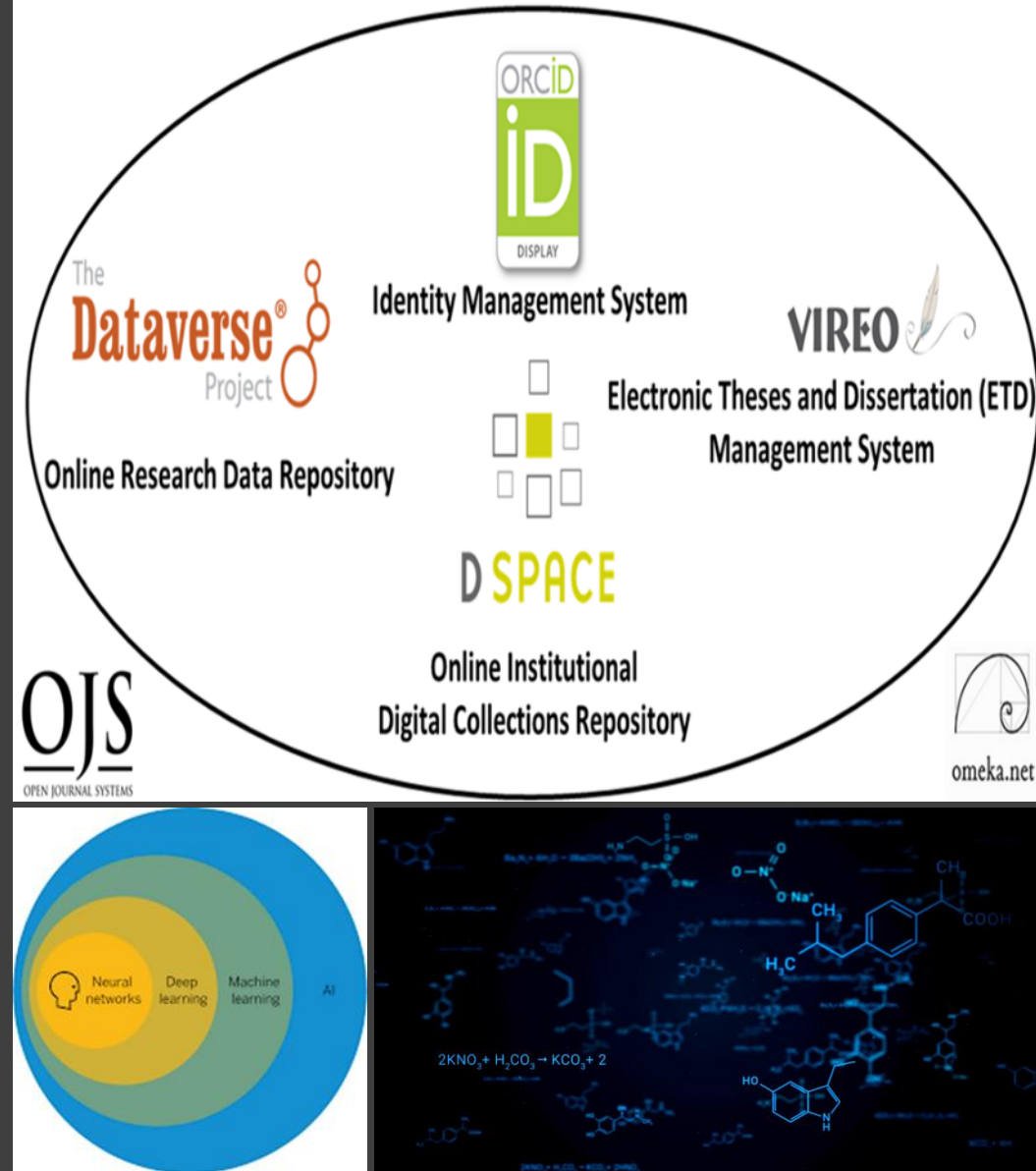
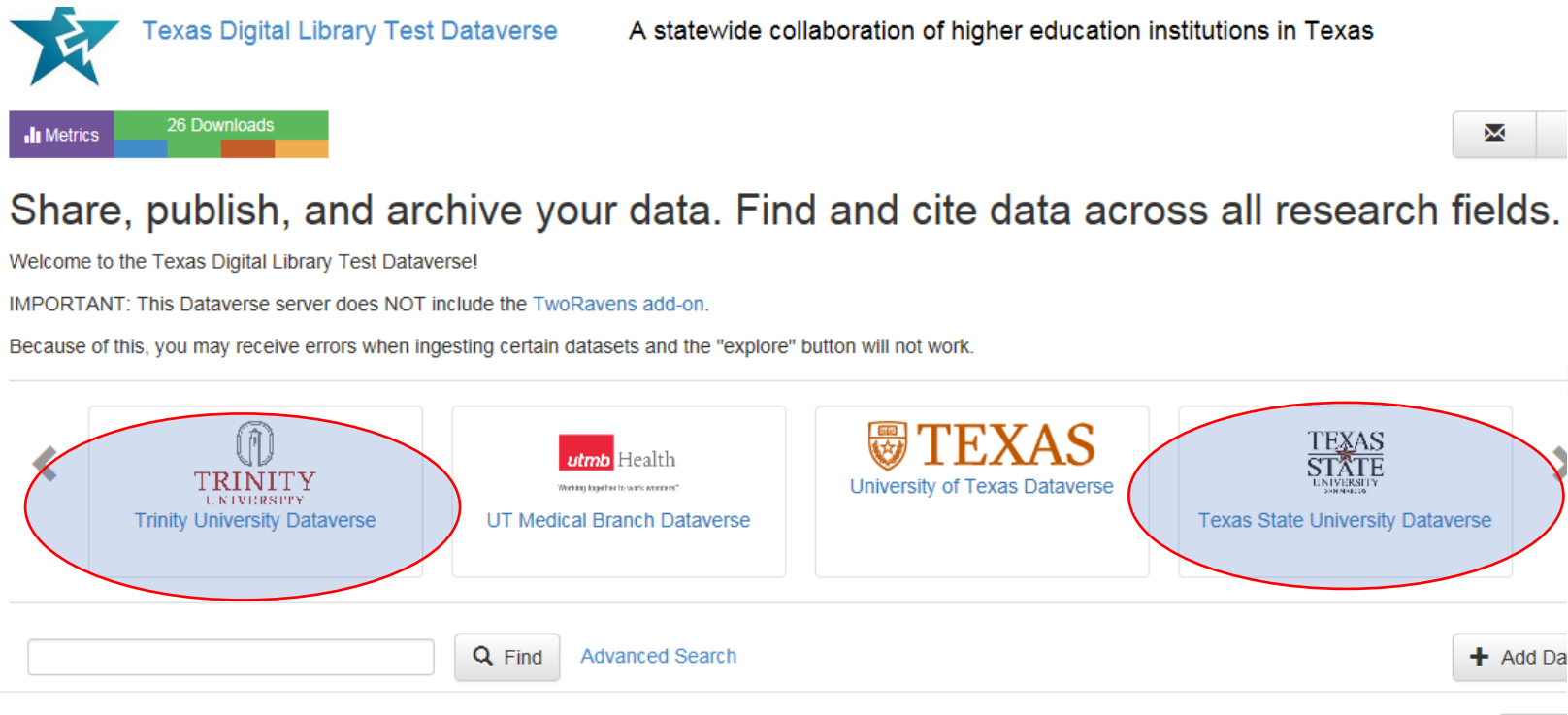


Online Research Data Repositories

From Research Data and Datasets
to Artificial Intelligence
and Discovery



What is an Online Data Research Repository?



The screenshot shows the homepage of the Texas Digital Library Test Dataverse. At the top left is a blue star logo with the text "Texas Digital Library Test Dataverse" and "A statewide collaboration of higher education institutions in Texas". Below this is a "Metrics" bar showing "26 Downloads". A navigation bar contains a search icon and an email icon. The main heading reads "Share, publish, and archive your data. Find and cite data across all research fields." Below this is a welcome message and an important note about the TwoRavens add-on. A row of four data repository logos is displayed, with the first and last logos circled in red: Trinity University Dataverse, UT Medical Branch Dataverse, University of Texas Dataverse, and Texas State University Dataverse. At the bottom is a search bar with "Find" and "Advanced Search" buttons, and an "Add Data" button.

Texas Digital Library Test Dataverse A statewide collaboration of higher education institutions in Texas

Metrics 26 Downloads

Share, publish, and archive your data. Find and cite data across all research fields.

Welcome to the Texas Digital Library Test Dataverse!

IMPORTANT: This Dataverse server does NOT include the [TwoRavens add-on](#).
Because of this, you may receive errors when ingesting certain datasets and the "explore" button will not work.

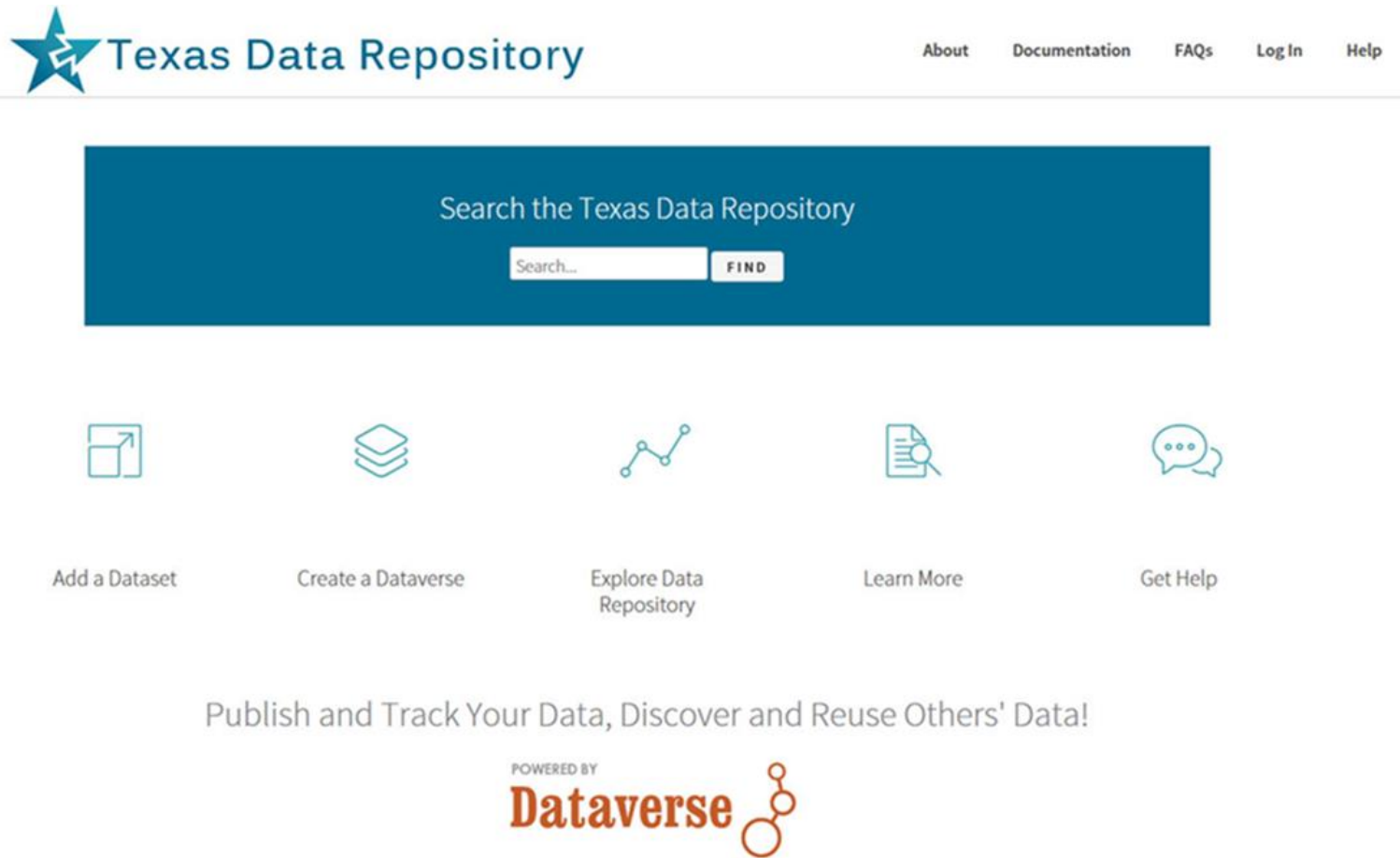
Trinity University Dataverse UT Medical Branch Dataverse University of Texas Dataverse Texas State University Dataverse

Find Advanced Search Add Data

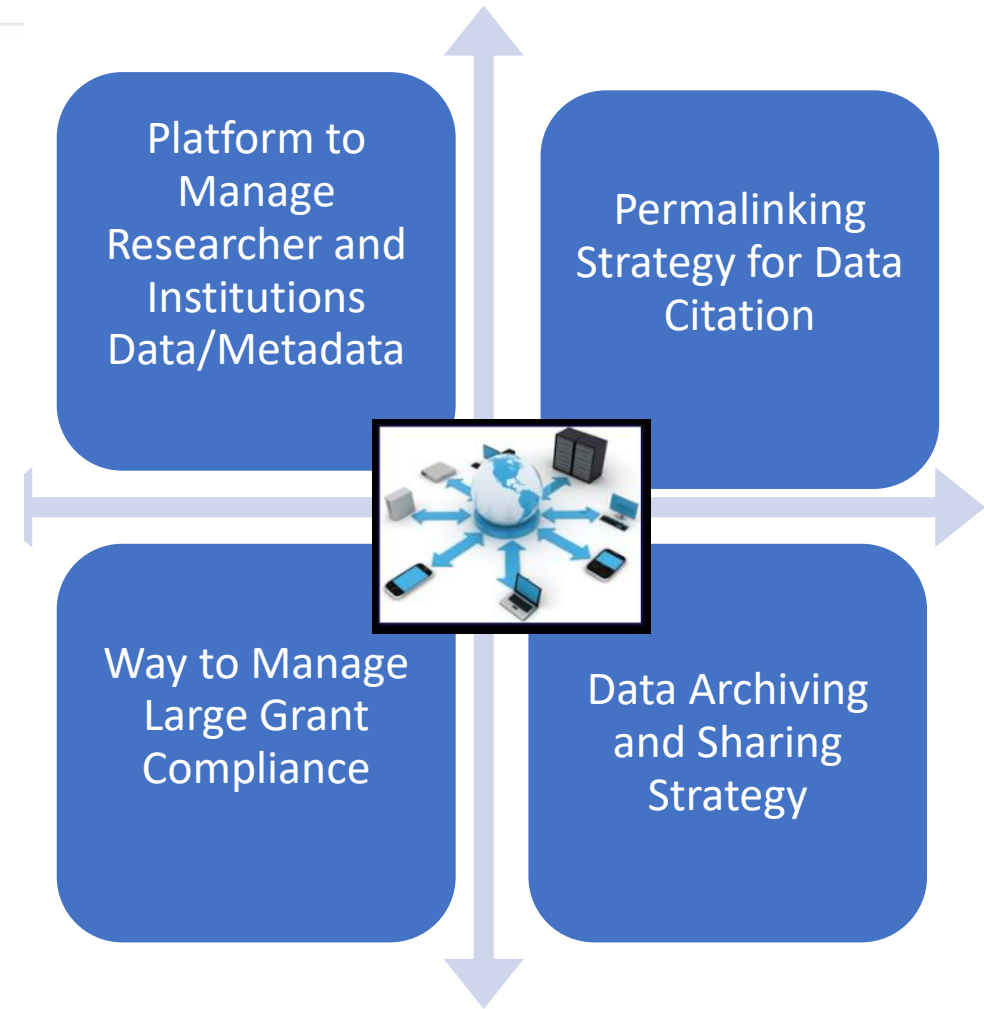


Texas Data Repository which is a shared repository of several Texas Universities leveraging technological cooperation and expertise among academic research libraries libraries, <https://dataverse.tdl.org>

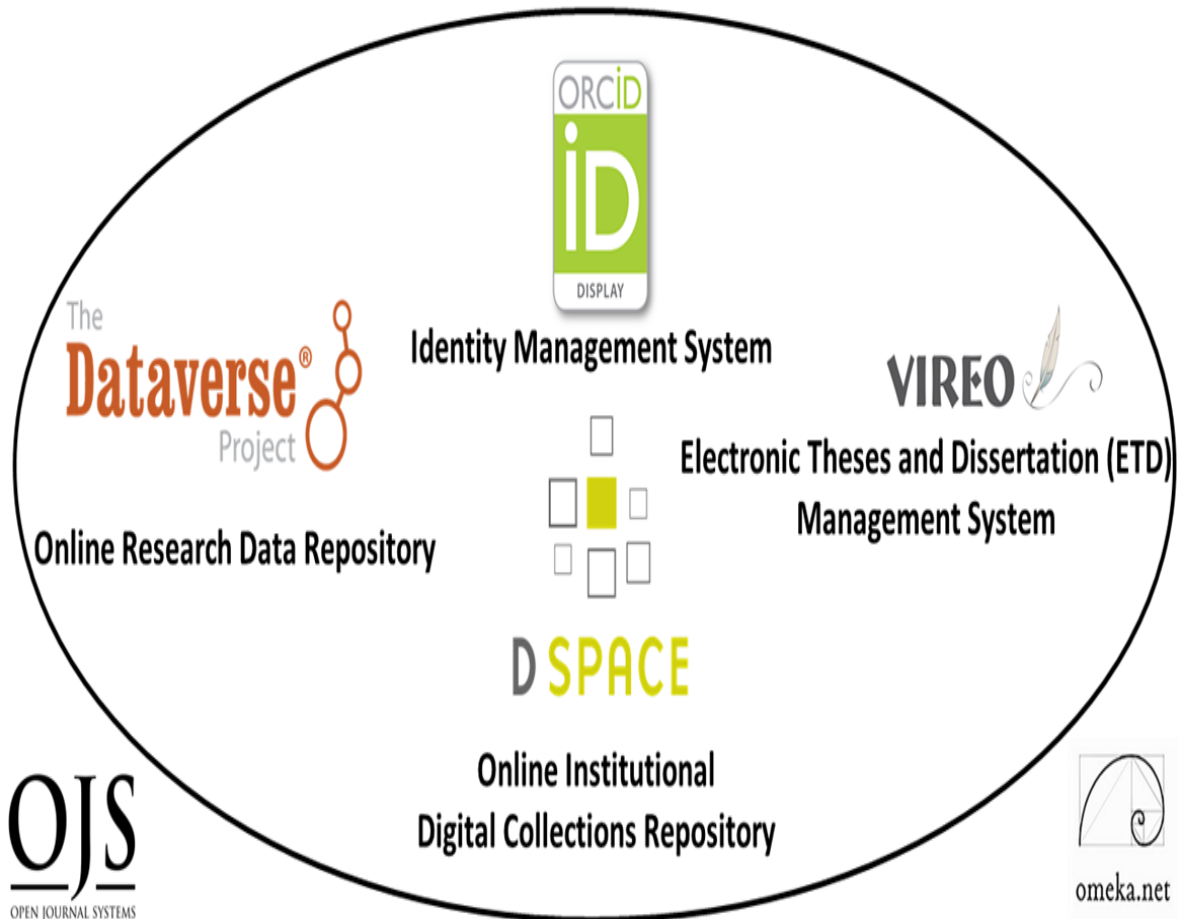
What is the Utility of An Online Research Data Repository?



<https://dataverse.tdl.org/>



A Data Repository May Also Be Placed Within a Larger Digital Scholarship Research Ecosystem



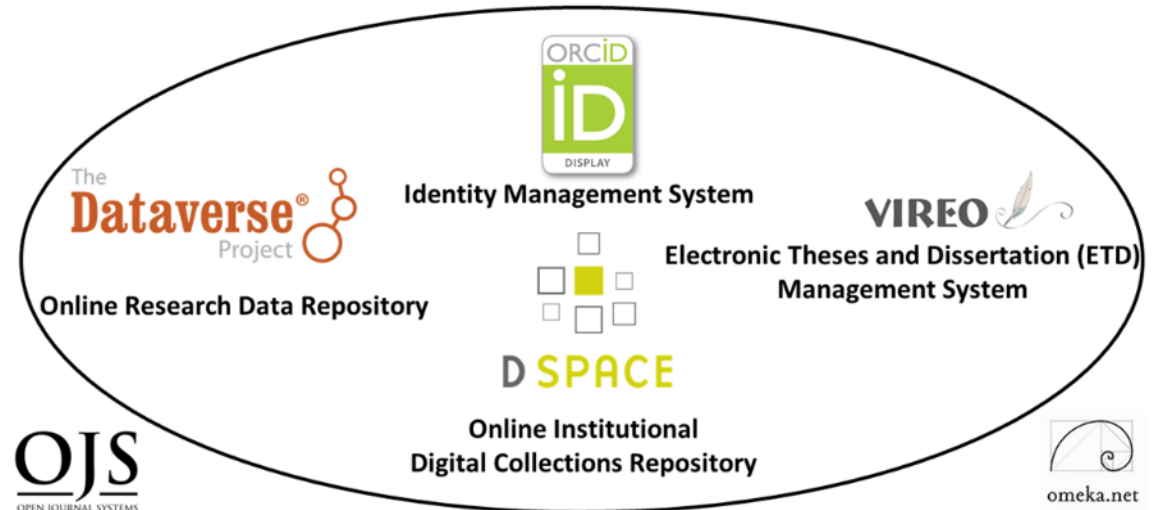
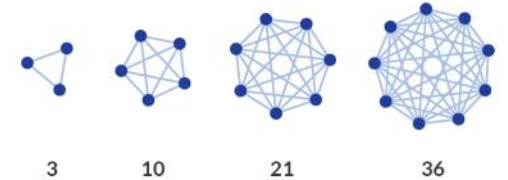
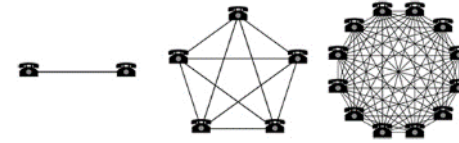
TWO PRIMARY COMPONENTS (Content)

- **RESEARCH DATA REPOSITORY**
- **DIGITAL COLLECTIONS REPOSITORY**

FOUR TERTIARY COMPONENTS (Communication)

- Electronic Thesis and Dissertation Management System
- Identity Management System
- Open Academic Journal Software
- User Interface/Content Management Software

Collocating Open Source Digital Components in a Networked Research Ecosystem Enables Larger Connections and/or Network Effects



Together These Digital Ecosystem Components Enable the Academic Research Cycle



Pragmatic Levels

One Size Does Not Fit All for Various Data Research Repository Project Needs

Many Types of Data Projects (Sizes)

1) Normal range (<4GB Files <10GB Datasets)

Files/Data Fit on Server/Cloud, may be uploaded to the Data Repository, 4GB files, 10GB Datasets)

2) Large Projects, Bigger Data <TB

(Data may require specialized university IT Support, i.e. terabyte/petabyte tape drives, Pointers, Checksums)

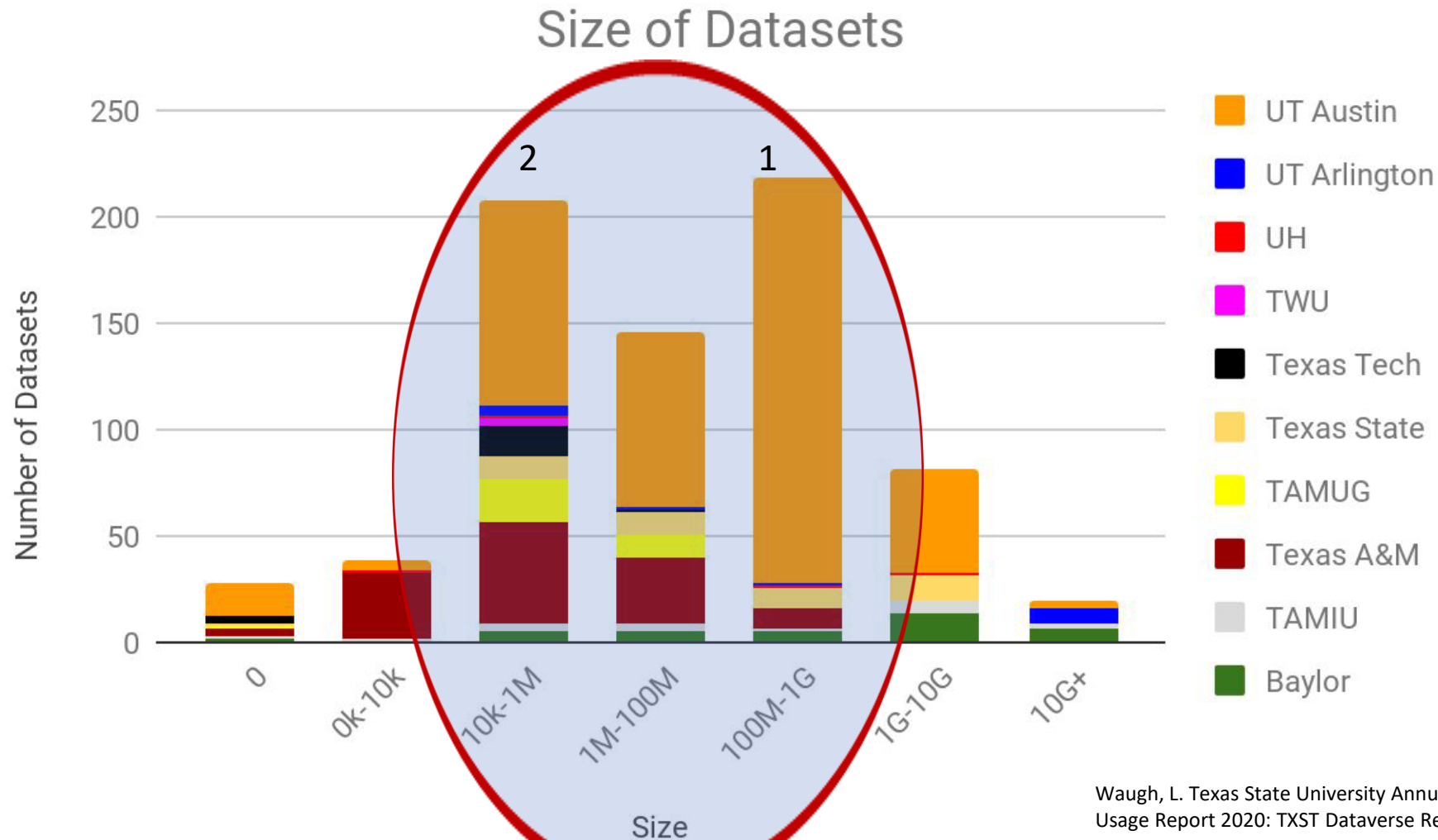
3) Huge Projects, Big Data

(Projects require consortial possibilities, national models, **Texas Advanced Computer Center TAAC**, Lyrasis, Duracloud, AWS S3, Custom Solutions)



Present Sizes of Texas Data Repository Datasets

Most 1MB <1GB, Greater than 10 GB+ Rare

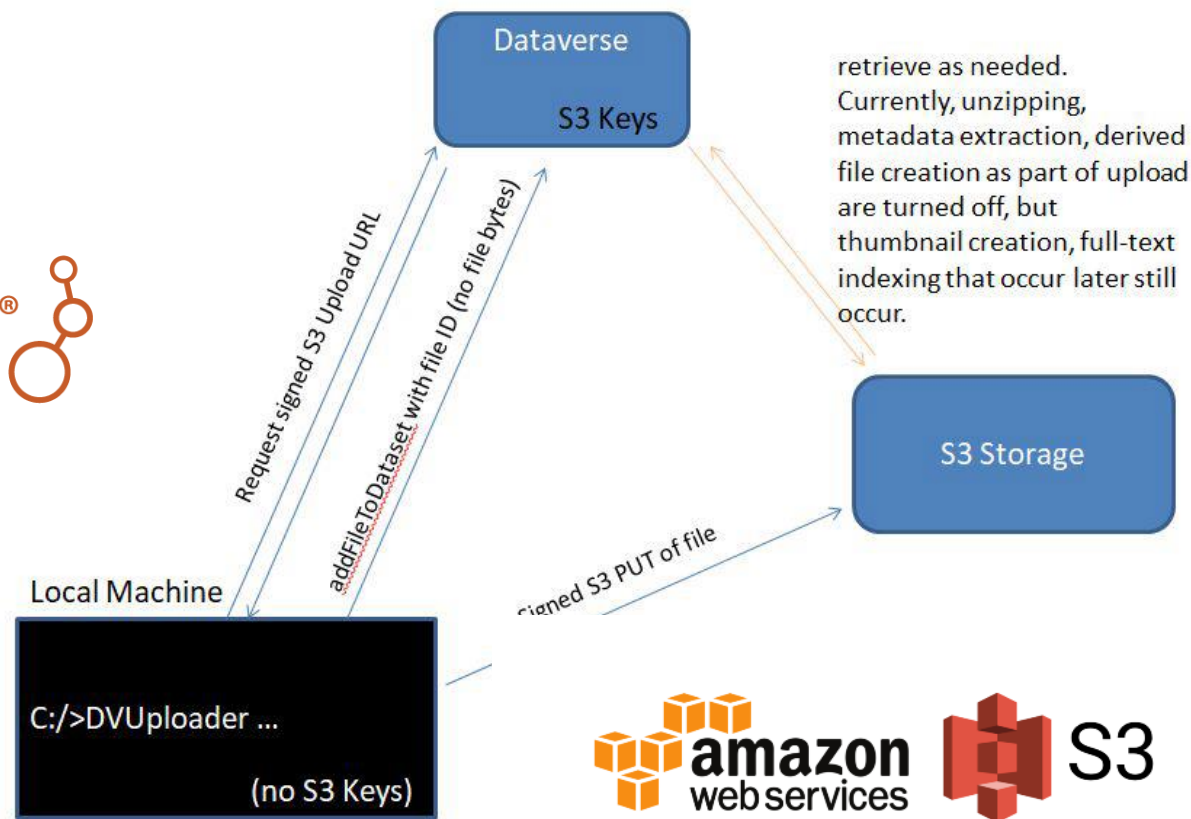


Beta Prototyping Big & Bigger Data Options

2020-2022

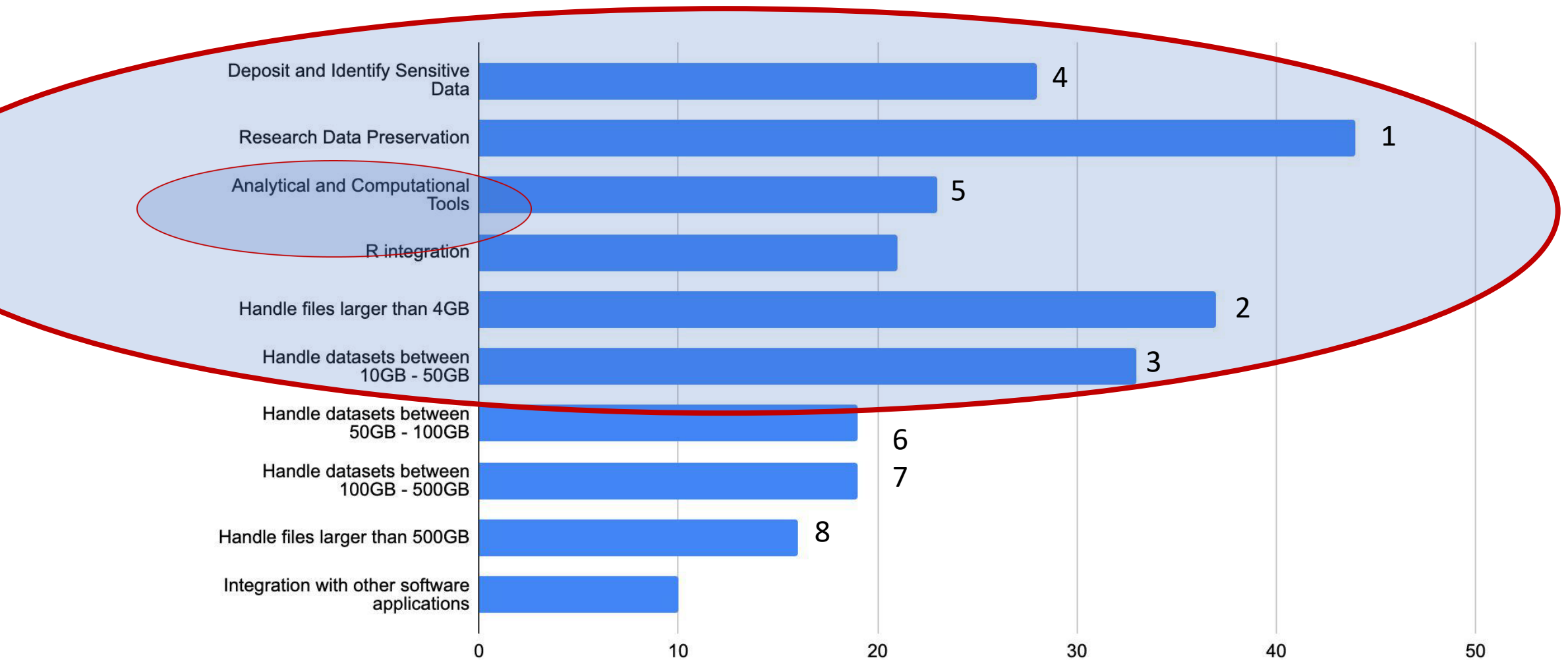


Up to 300 GB/dataset
Fee Based Institutional Model 7.5/13.5 K/Year



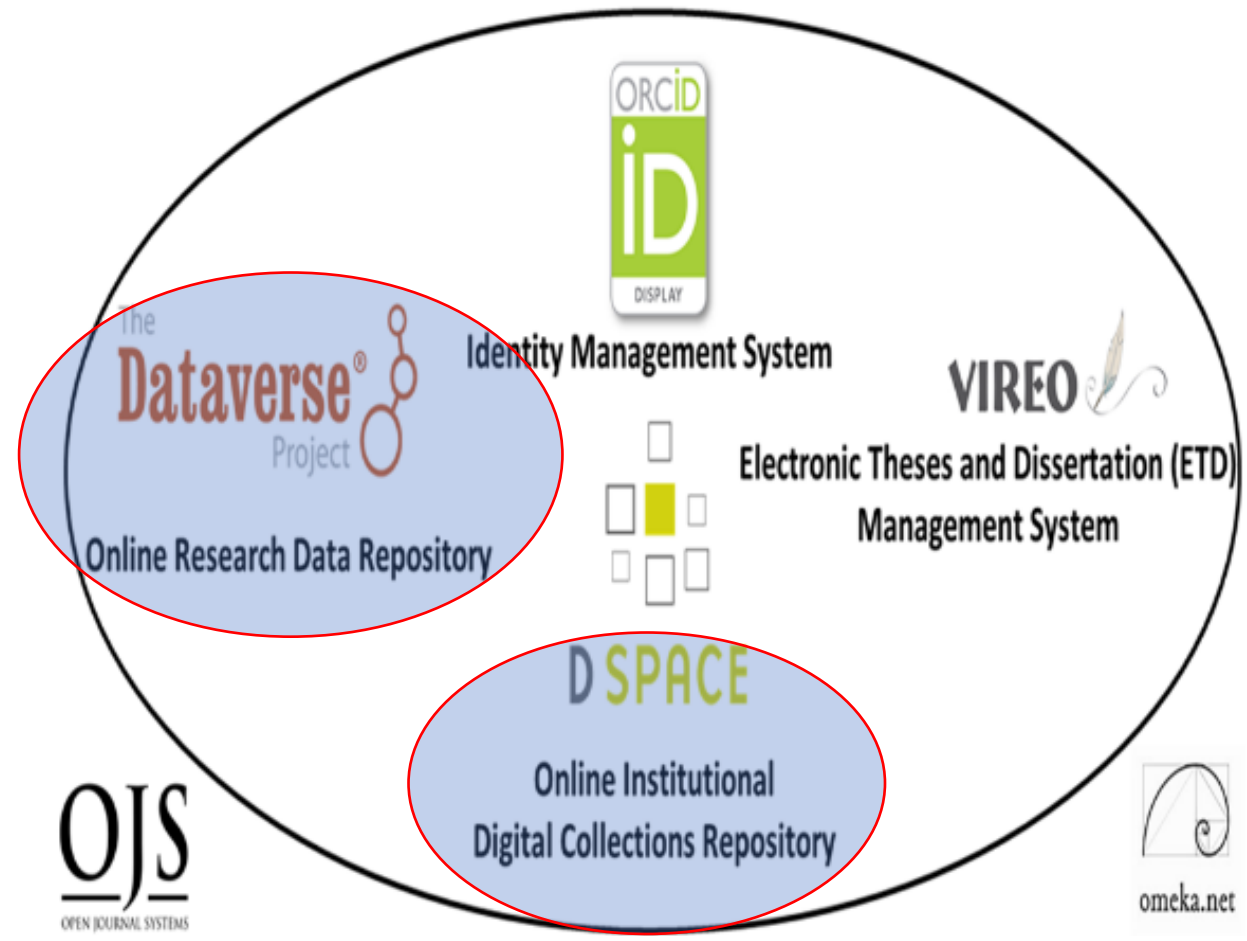
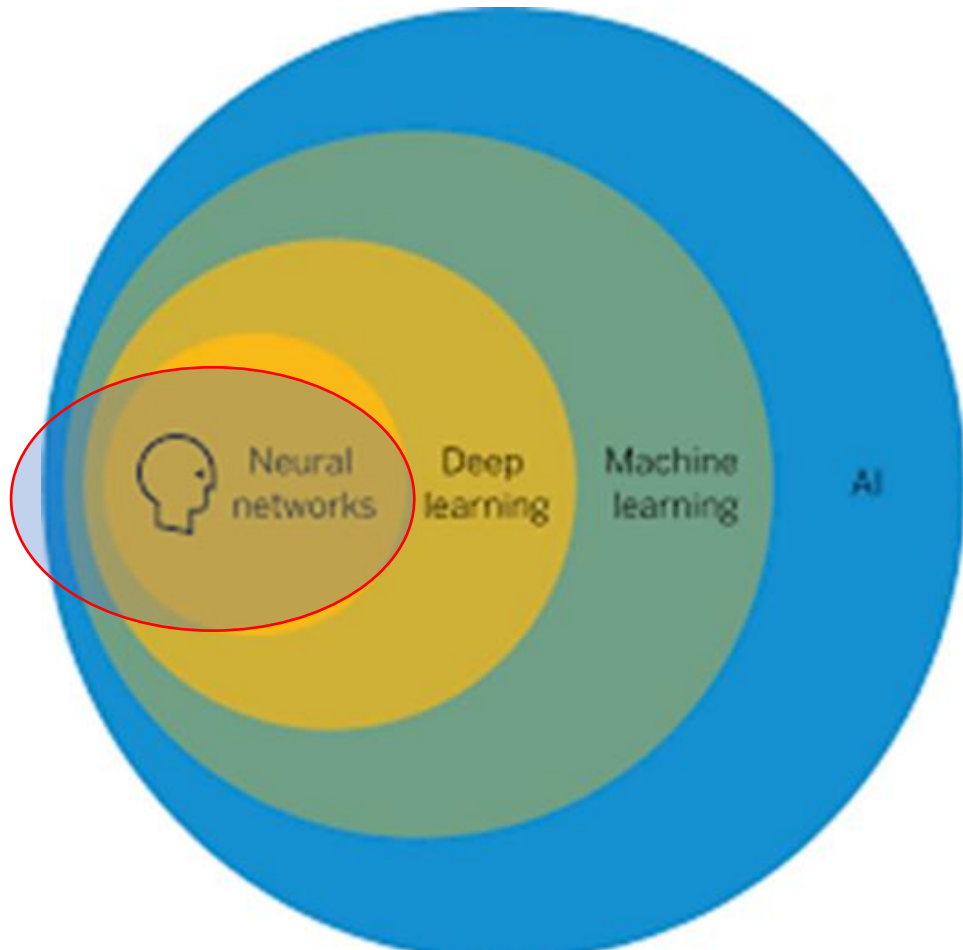
<20 GB Upload
(Download Challenges)

What New Data Repository Features Would Users Like to See in 2022?



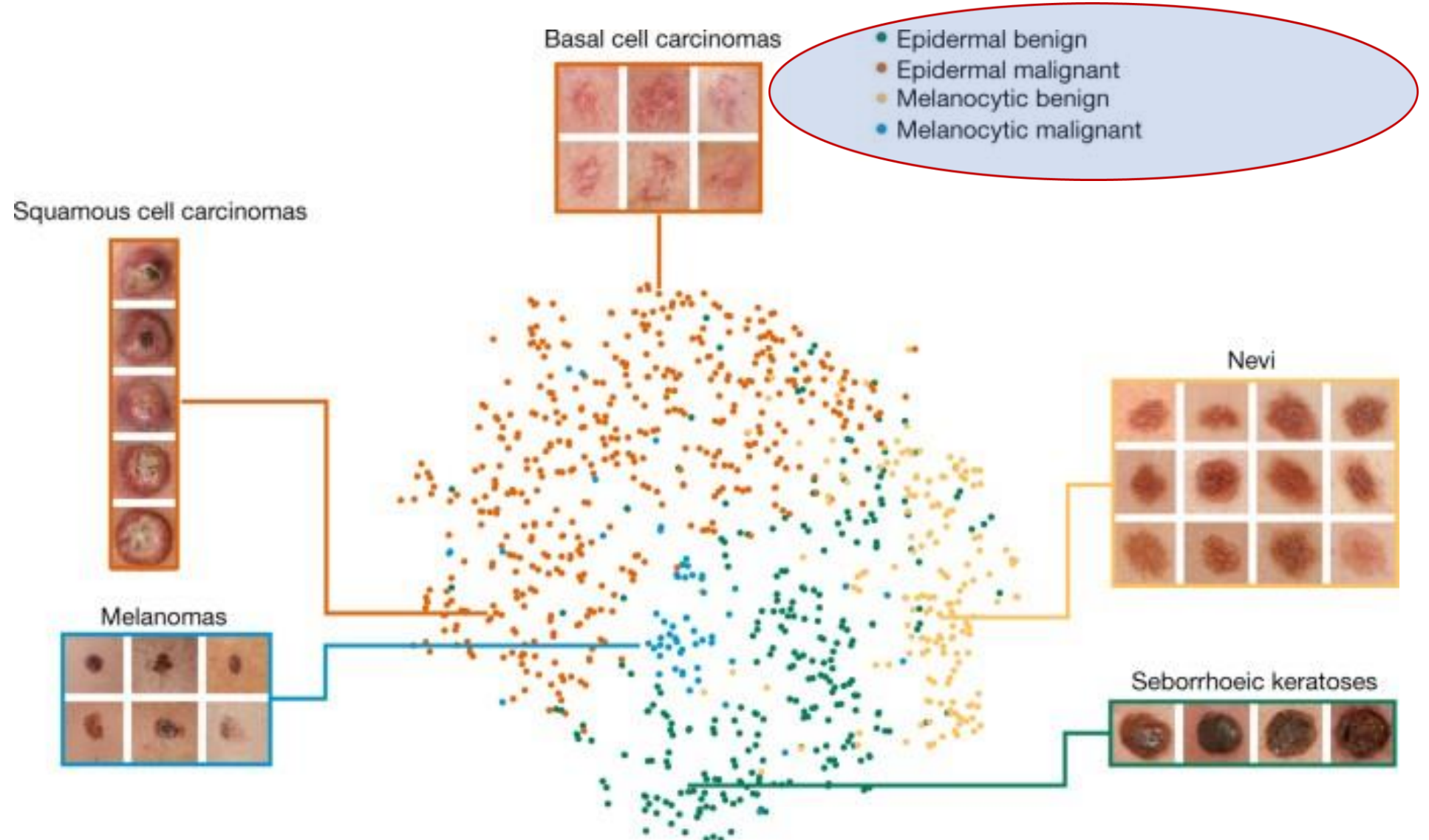
Last Five Years Has Shown Incredible Progress of, Analytical Computational Tools, Particularly, AI

Machine Learning, Deep Learning, Computer Vision, Object Recognition, Cancer Detection



Dermatologist-Level Classification of Skin Cancer with Deep Neural Networks

2017, Nature, Esteva, Thrun et Al



Data Research Repository Upload

Open Science Dermatology Image Dataset, Dr. Philip Tschandl

<https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/DBW86T>

The HAM10000 dataset, a large collection of multi-source dermatoscopic images of common pigmented skin lesions

Version 3.0



Tschandl, Philipp, 2018, "The HAM10000 dataset, a large collection of multi-source dermatoscopic images of common pigmented skin lesions", <https://doi.org/10.7910/DVN/DBW86T>, Harvard Dataverse, V3, UNF:6:APKSSdGVDhwPBWzsStU5A== [fileUNF]

Cite Dataset ▾

[Learn about Data Citation Standards.](#)

Access Dataset ▾

Contact Owner

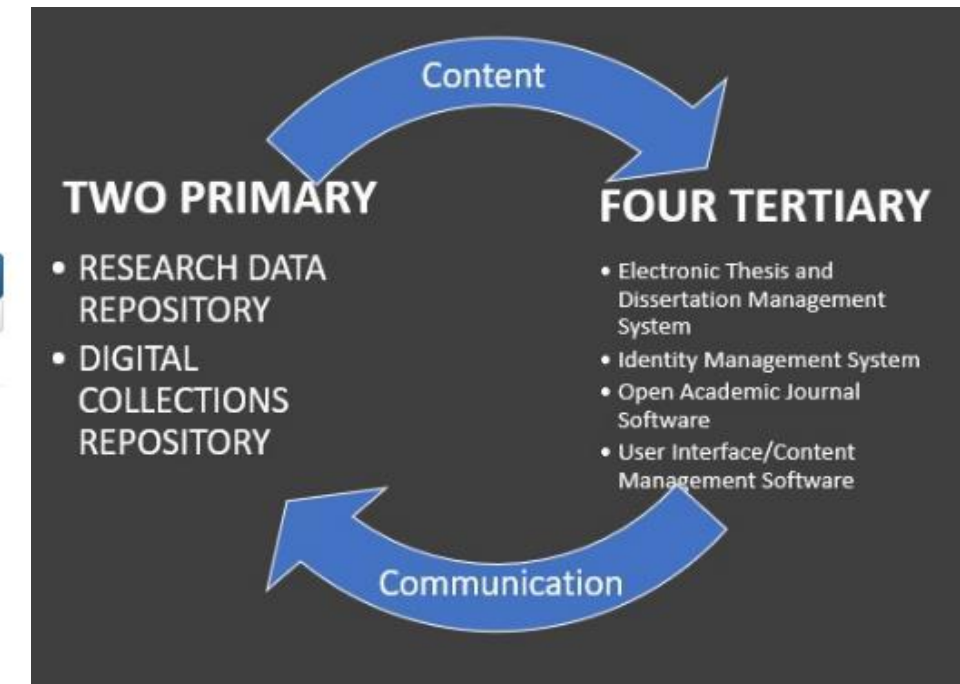
Share

Dataset Metrics ⓘ

58,334 Downloads ⓘ

Description ⓘ

Training of neural networks for automated diagnosis of pigmented skin lesions is hampered by the small size and lack of diversity of available dataset of dermatoscopic images. We tackle this problem by releasing the HAM10000 ("Human Against Machine with 10000 training images") dataset. We collected dermatoscopic images from different populations, acquired and stored by different modalities. The final dataset consists of 10015 dermatoscopic images which can serve as a training set for academic machine learning purposes. Cases include a representative collection of all important diagnostic categories in the realm of pigmented lesions: Actinic keratoses and intraepithelial carcinoma / Bowen's disease (**akiec**), basal cell carcinoma (**bcc**), benign keratosis-like lesions (solar lentigines / seborrheic keratoses and lichen-planus like keratoses, **bk1**), dermatofibroma (**df**), melanoma (**mel**), melanocytic nevi (**nv**) and vascular lesions (angiomas, angiokeratomas, pyogenic granulomas and hemorrhage, **vasc**).



An efficient deep learning approach to detect skin Cancer



View/Open

 20341030, 19141024, 16141014_CSE.pdf (2.208Mb)

Date

2021-09

Publisher

Brac University

Author

Islam, Ashfaque
Khan, Daiyan
Chowdhury, Rakeen Ashraf

Metadata

Show full item record

URI

<http://hdl.handle.net/10361/15932>

Abstract

Each year, millions of people around the world are affected by cancer. Research shows that the early and accurate diagnosis of cancerous growths can have a major effect on improving mortality rates from cancer. As human diagnosis is prone to error, a deep-learning based computerized diagnostic system should be considered. In our research, we tackled the issues caused by difficulties in diagnosing skin cancer and distinguishing between different types of skin growths, especially without the use of advanced medical equipment and a high level of medical expertise of the diagnosticians. To do so, we have implemented a system that will use a deep-learning approach to be able to detect skin cancer from digital images. This paper discusses the identification of cancer from 7 different types of skin lesions from images using CNN with Keras Sequential API. We have used the publicly available HAM10000 dataset, obtained from the Harvard Dataverse. This dataset contains 10,015 labeled images of skin growths. We applied multiple data pre-processing methods after reading the data and before training our model. For accuracy checks and as a means of comparison we have pre-trained data, using ResNet50, DenseNet121, and VGG11, some well-known transfer learning models. This helps identify better methods of machine-learning application in the field of skin growth classification for skin cancer detection. Our model achieved an accuracy of over 97% in the proper identification of the type of skin growth.

Keywords

Cancer detection; Convolutional neural networks; Image classification; Deep learning

LC Subject Headings

Machine learning; Cognitive learning theory (Deep learning)

Description

This thesis is submitted in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering, 2021.

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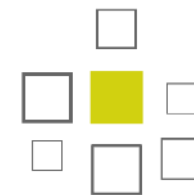
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Institutional
Repository

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- Model Building and Evaluation using VGG11
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An Efficient Deep Learning Approach to Detect Skin Cancer

by

Ashfaul Islam

20341030

Daiyan Khan

19141024

Rakeen Ashraf Chowdhury

16141014

A thesis submitted to the Department of Computer Science and Engineering
in partial fulfillment of the requirements for the degree of
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Department of Computer Science and Engineering
Brac University
September 2021

**The Progress of Knowledge
Through Global Open Science
& Network Possibilities**

**2017 Stanford
Nature Deep Learning
Cancer ID Article**

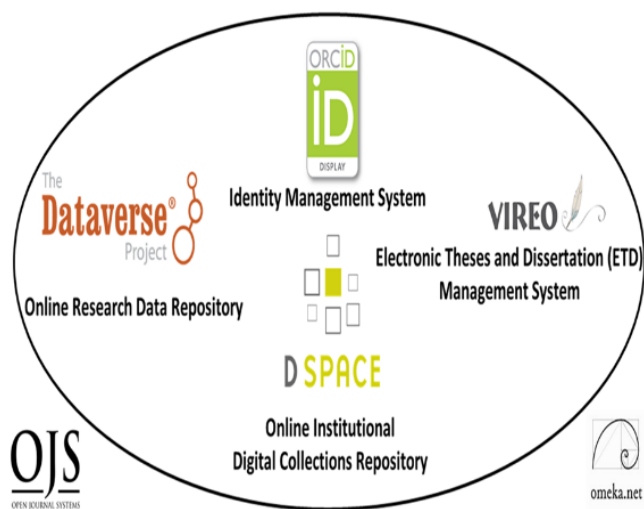
2018 Vienne Doctor in
Austria
uploaded Dermatological Image
Library to **Harvard Dataverse
Data repository**

**2021 (November) Undergrad
Thesis Published in
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BRAC University, Dhaka
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Computer Science and
Engineering

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Texas, USA for Dublin IFLA
Big Data Presentation**

Questions & Comments

Ray Uzwyshyn, ruzwyshyn@txstate.edu
<http://rayuzwyshyn.net>



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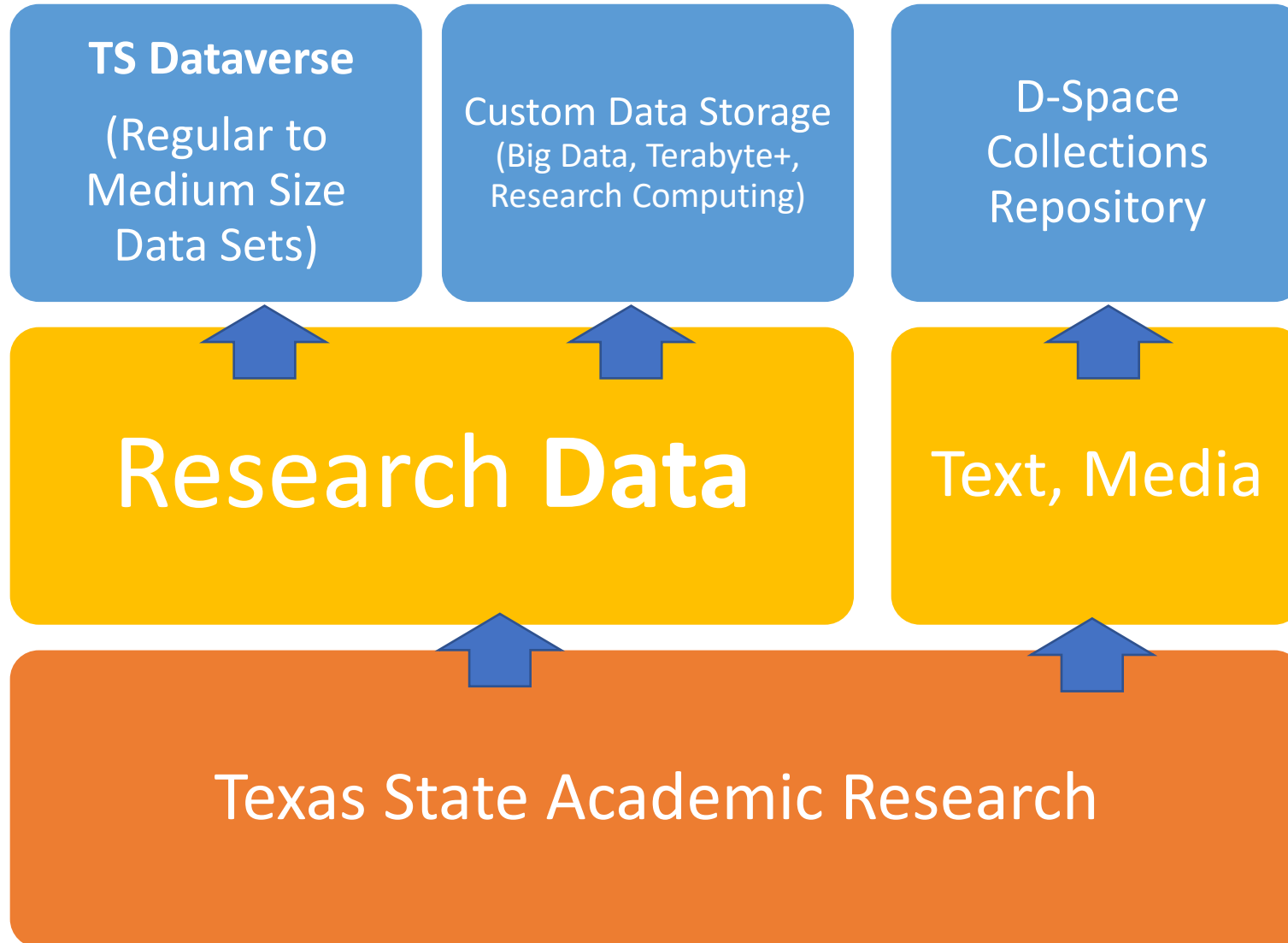
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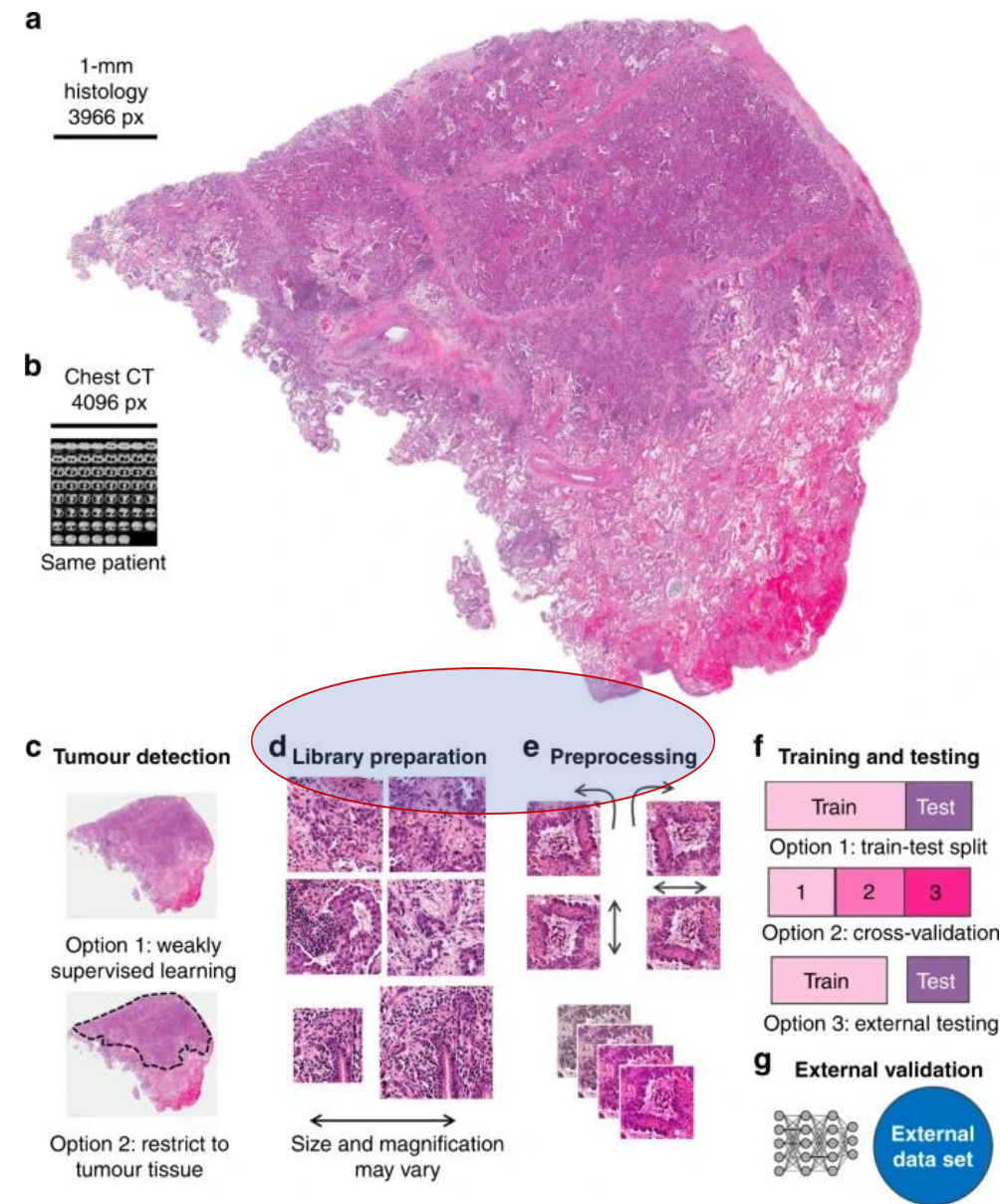
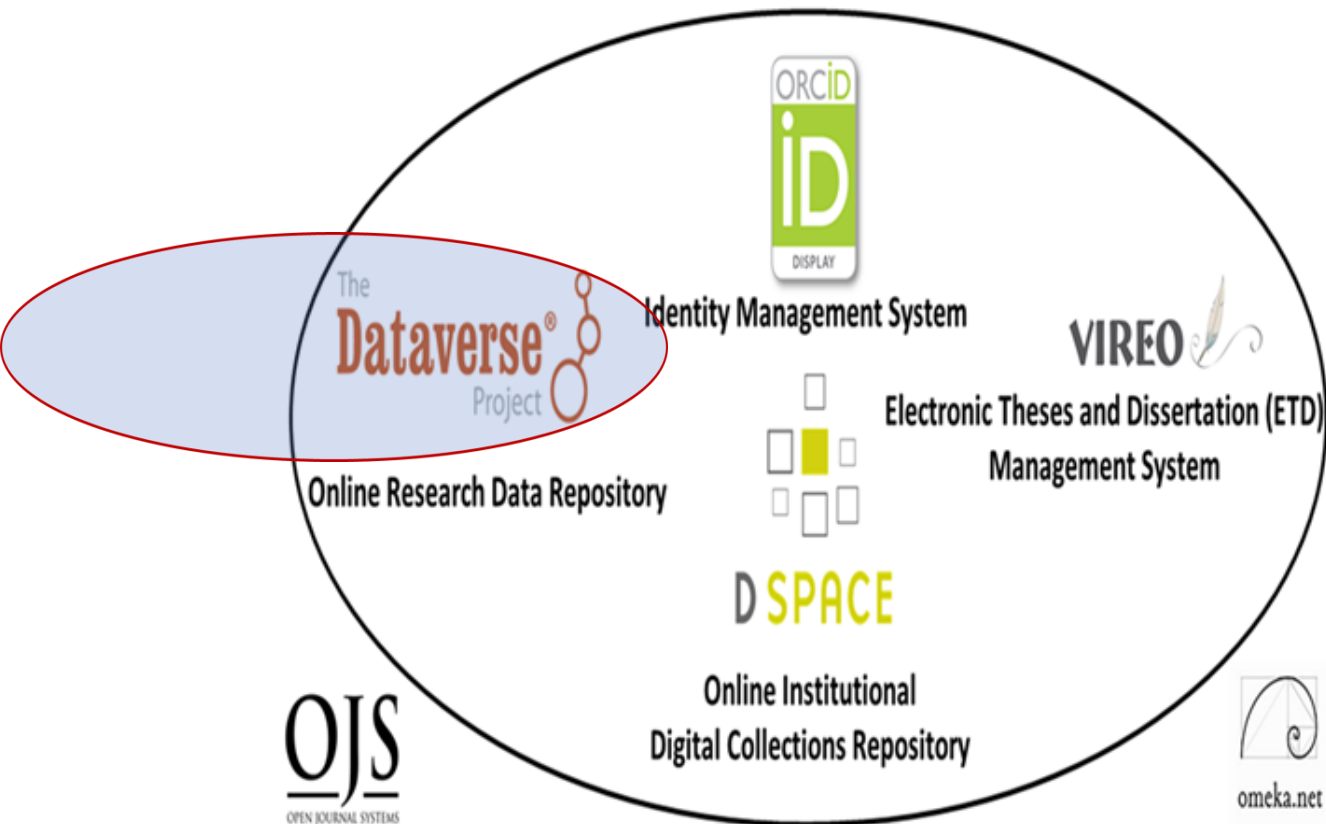
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Texas State Repositories Architecture



Combining Data Centered Research Ecosystems + Artificial Intelligence

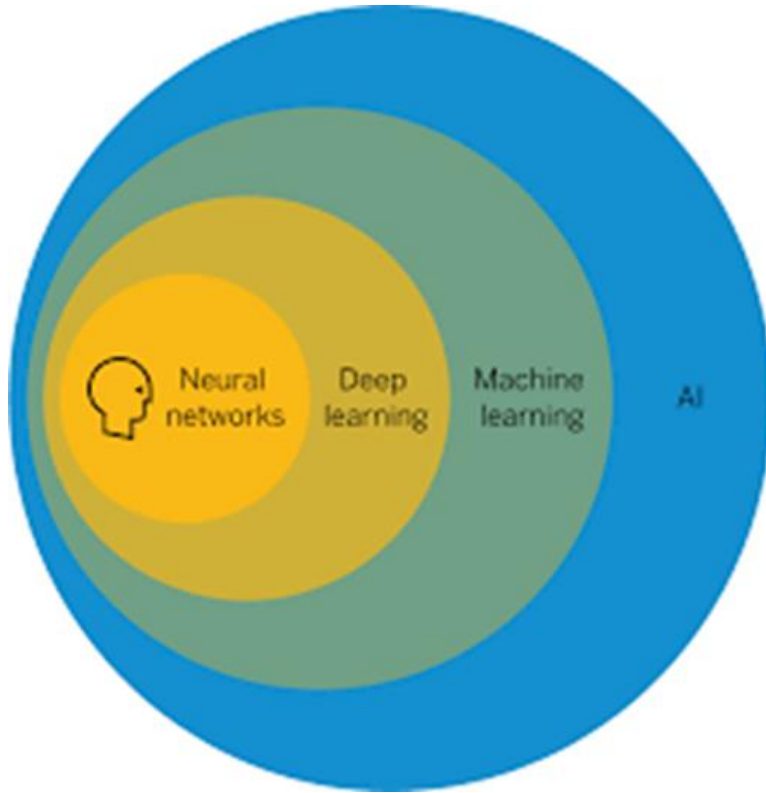
(Many New Possibilities for Global Open Science, New Insights and NewDiscovery)



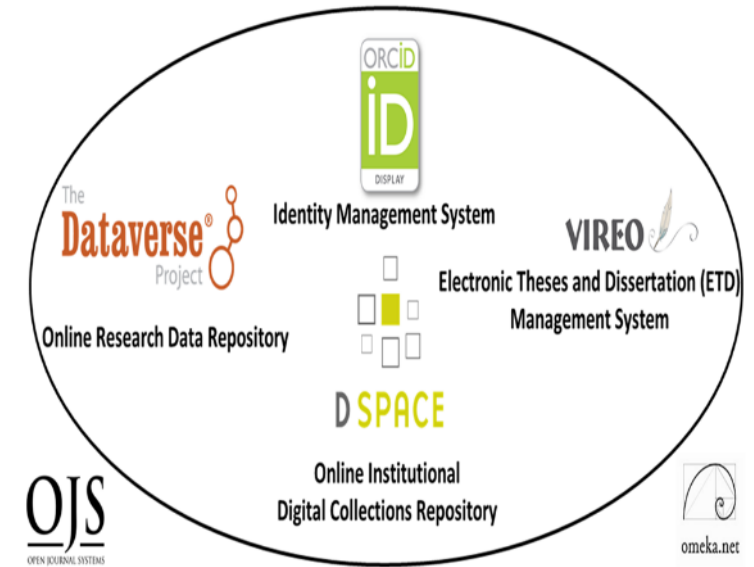
Deep Learning in Cancer Pathology: A New Generation of Clinical Biomarkers. British Journal of Cancer, Echle et al. November 2020

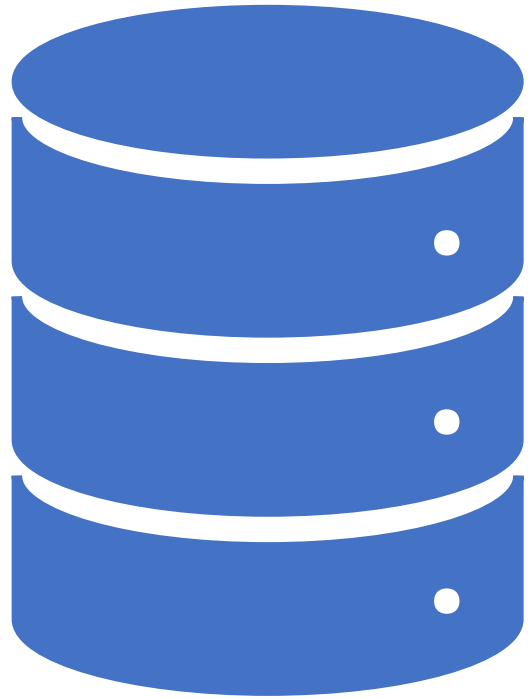
Last Five Years Has Shown Incredible Progress of, Analytical Computational Tools, Particularly, AI

Artificial Intelligence (Machine Learning (Deep Learning)) = Better Algorithms + Greater Computing Power + Large Data Sets



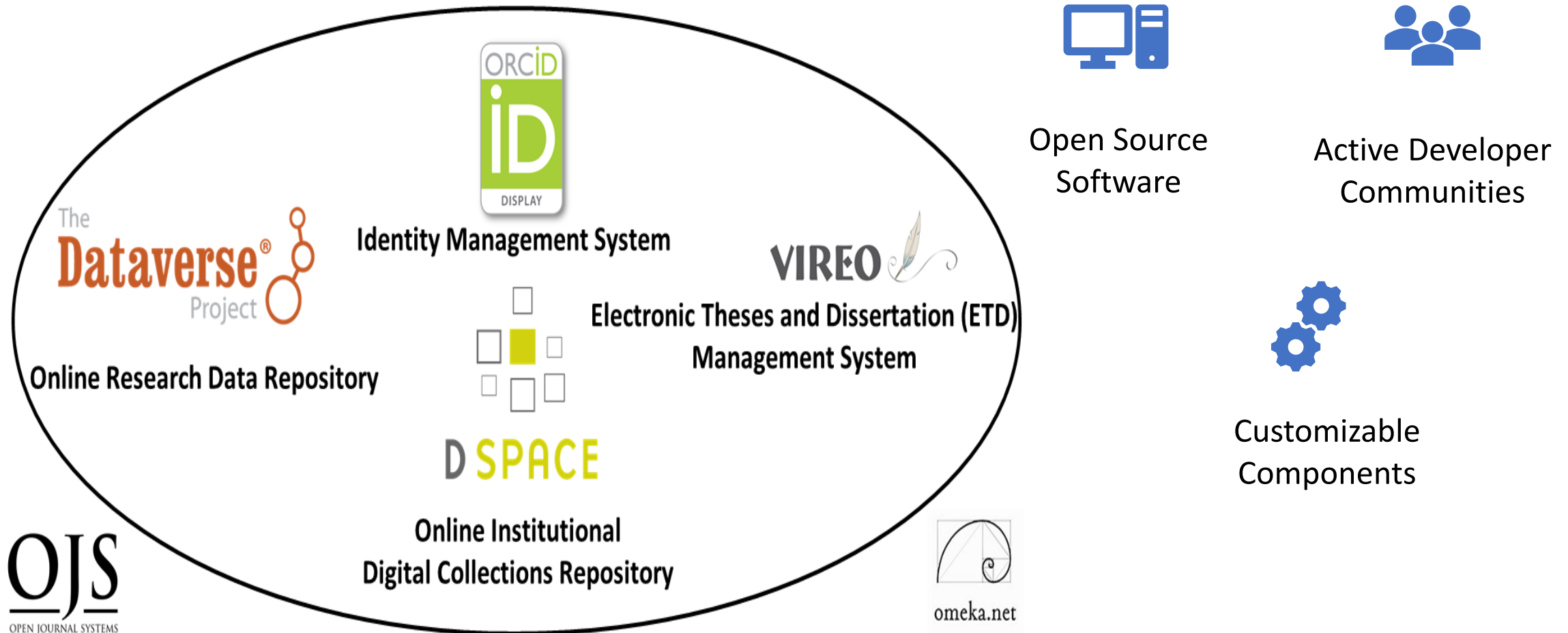
- **Computer Vision**
(Facial/Object Recognition
Cancer Cell Detection))
- Natural Language Processing
(Speech to Text, Translation)
- Cybersecurity,
Fraud Detection
- Conversational Chatbots
& Robotic Agents
- Strategic Reasoning (AlphaGo)





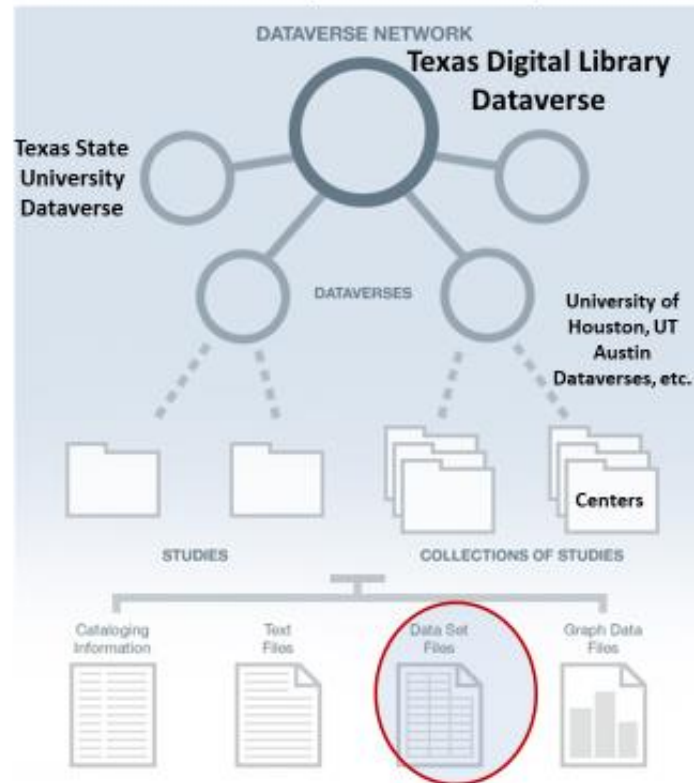
Big, Bigger Data and Big Data

What are the General Common Characteristics for a Data Repository and Digital Scholarship Ecosystem?



Texas State University Dataverse: Can be configured as Single Instance or as a Consortial Model

Dataverse Architecture (Consortial)



(Texas Aggregates Various Individual Universities through the Texas Digital Library)



<https://dataverse.tdl.org/>

The Progress and Potential of AI, Discovery, Data and Big Data Ecosystems for Libraries and Research Institutions



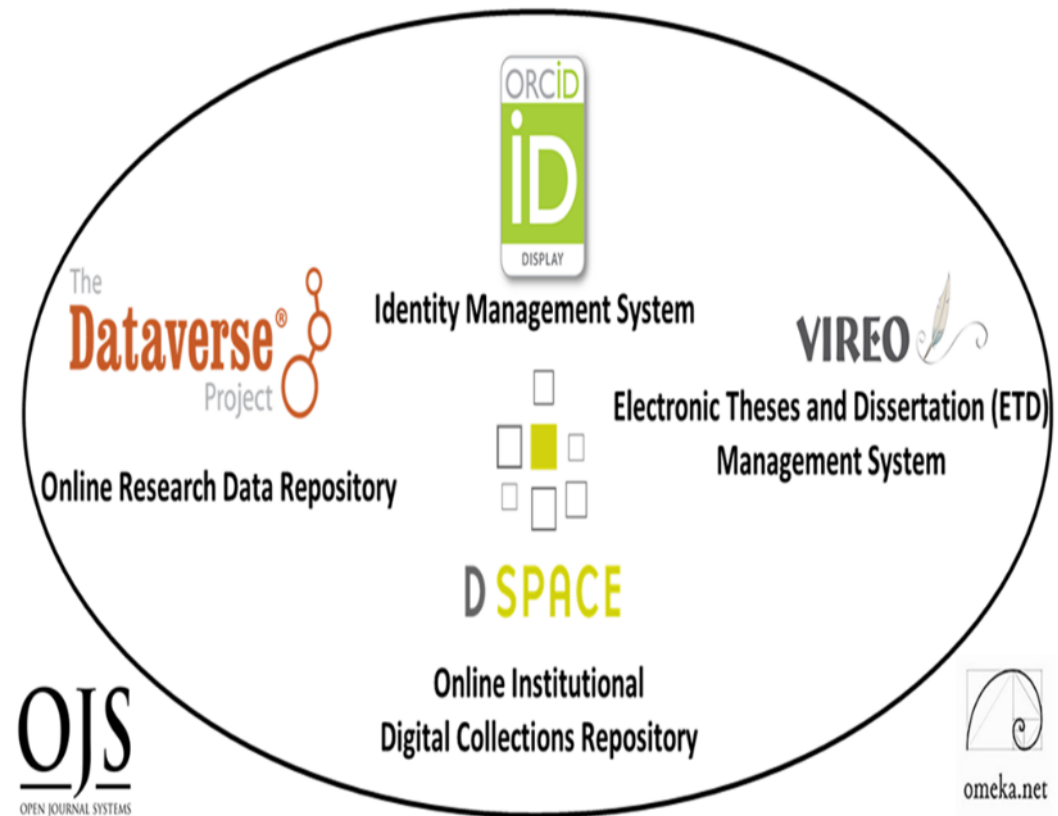
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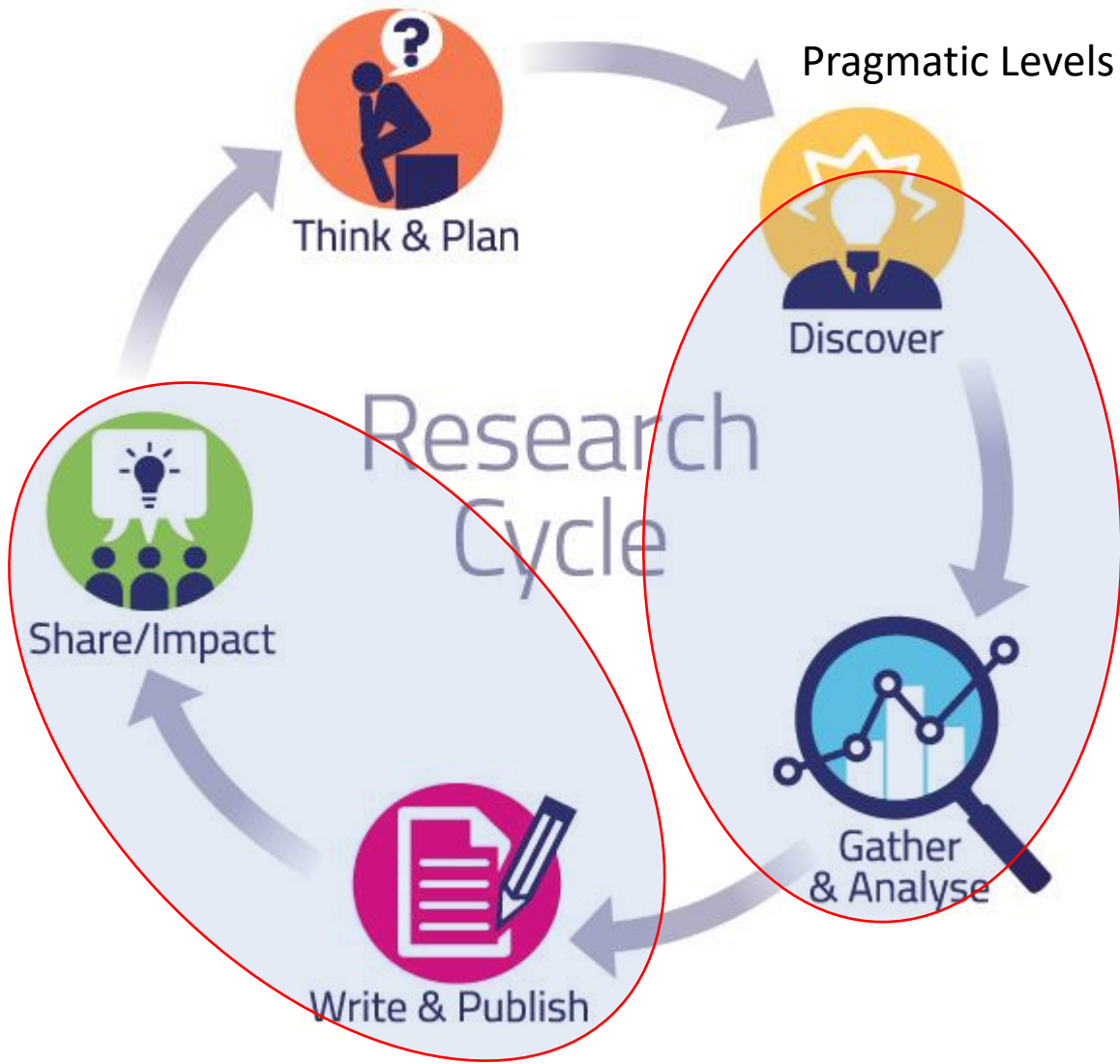
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203411030
Dulyan Khan
19141024
Rakwan Ashraf Chowdhury
16141014

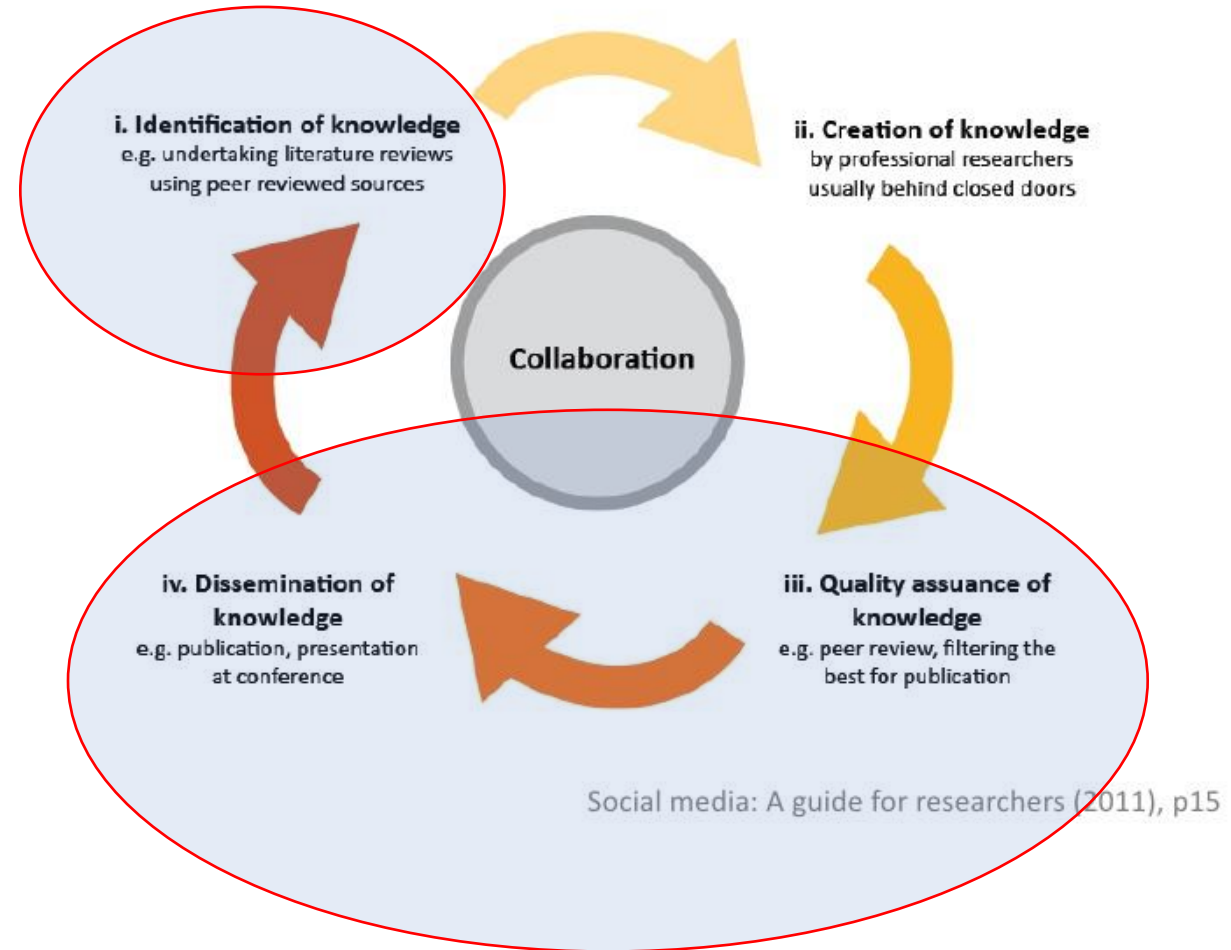
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Department of Computer Science and Engineering
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Together These Digital Ecosystem Components Enable the Academic Research Cycle

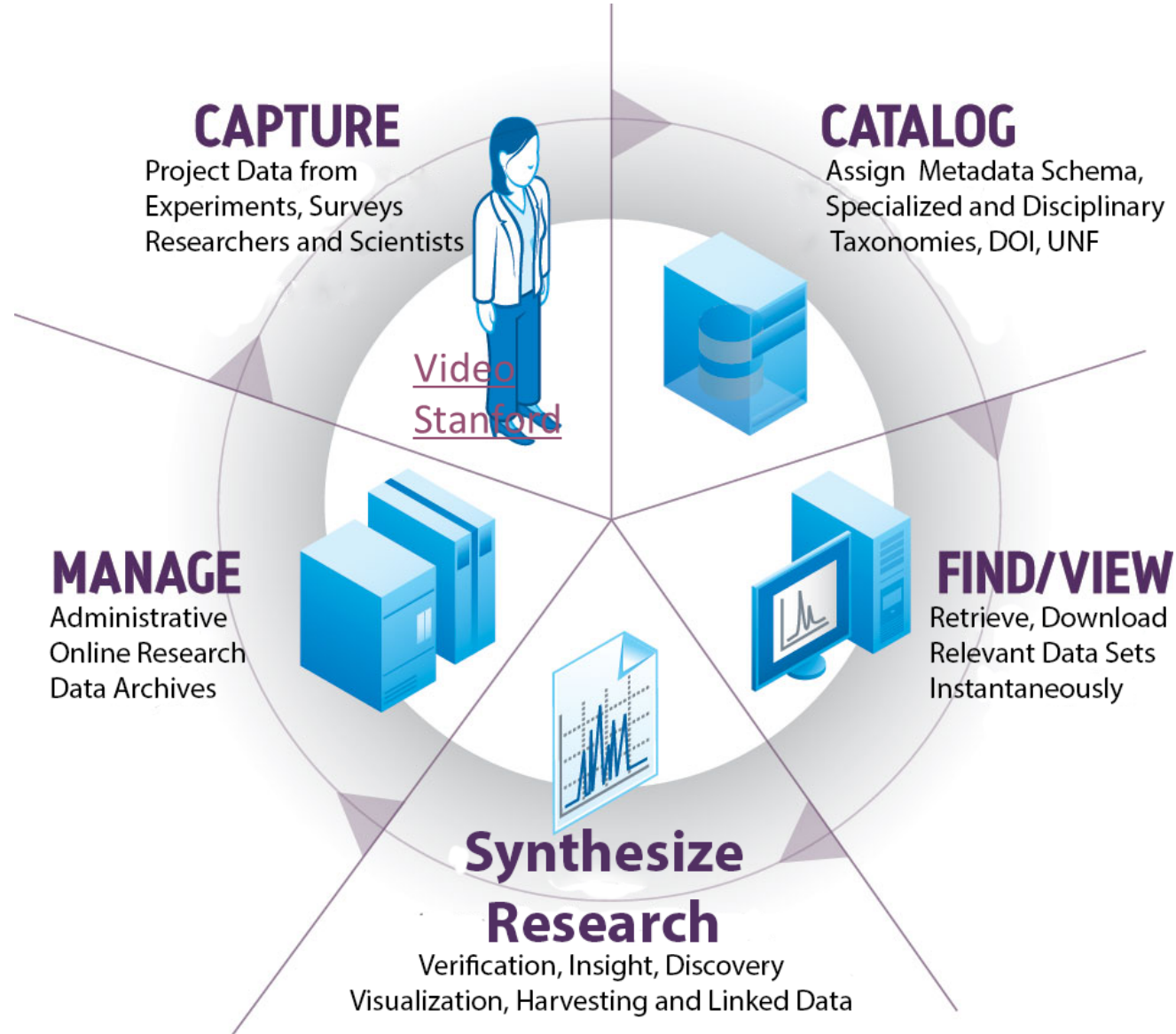


The academic research cycle

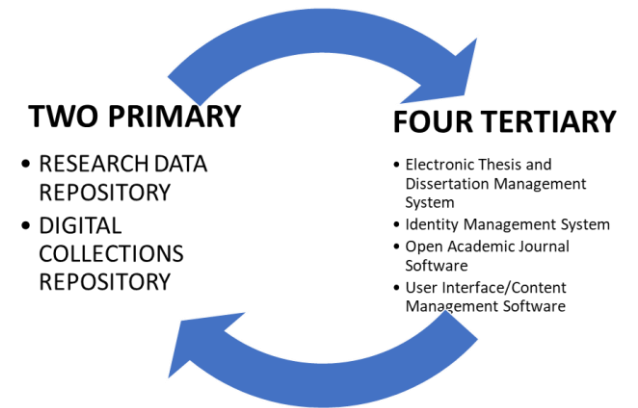
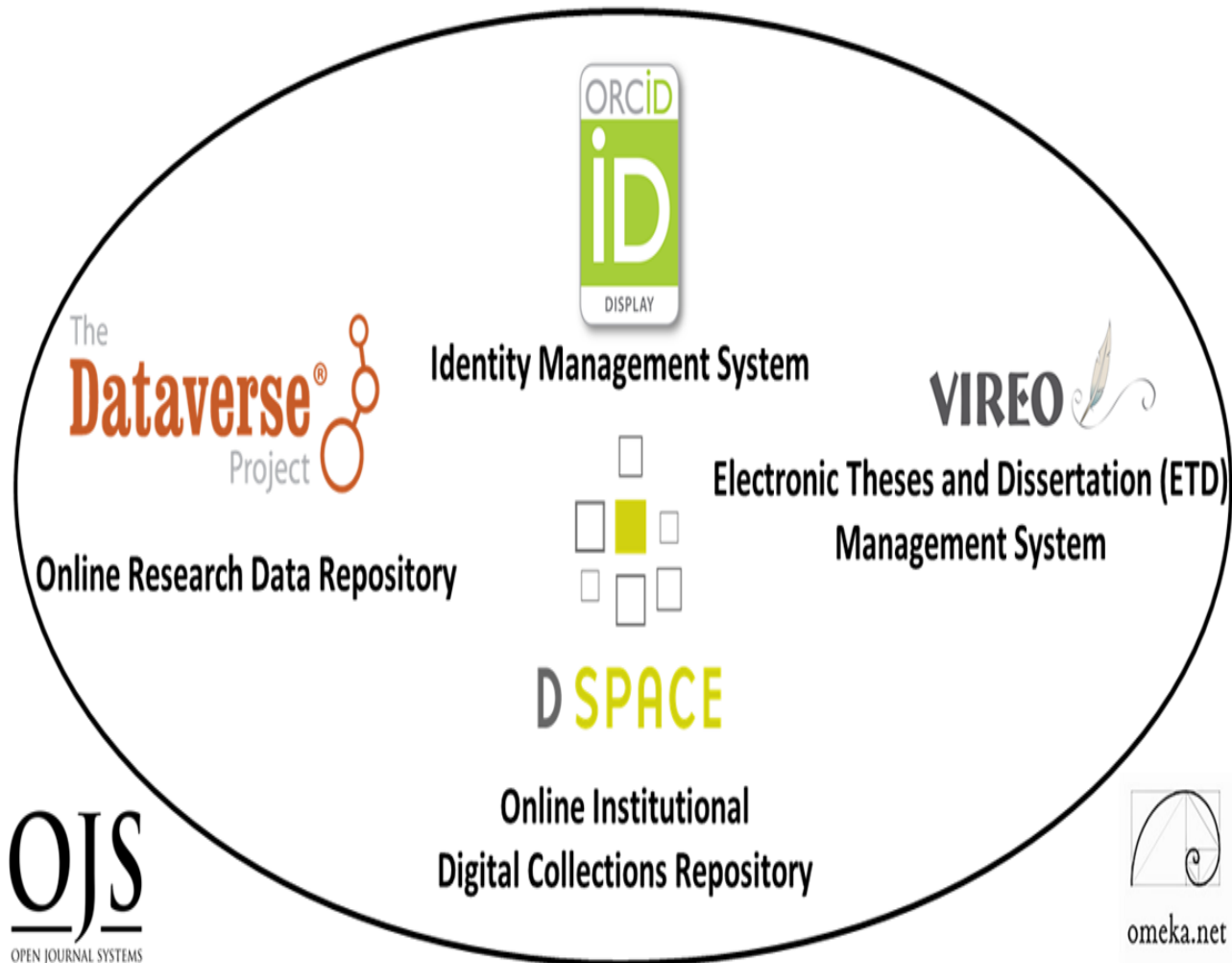


The Research Data Repository Lifecycle

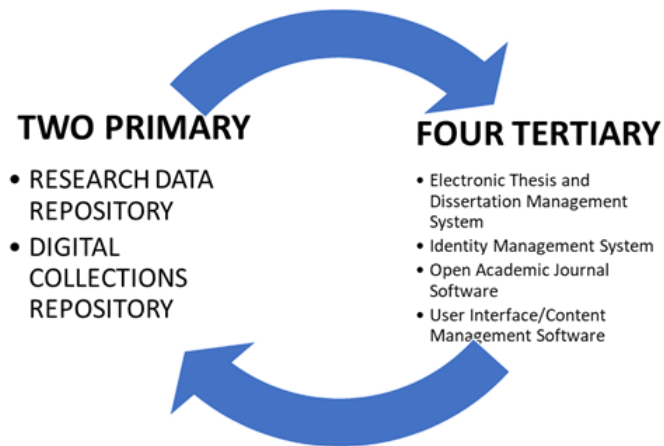
Setting Better Foundations & Organization for AI Infrastructures



Digital Scholarship Ecosystem Centered on Research Data Repository and Collections Repository



Questions Comments



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Director, Collections and Digital Services
Texas State University Libraries
ruzwyshyn@txstate.edu
<http://rayuzwyshyn.net>

