



University of Colorado **Denver**



Decision Support Toolkit

Version 1 Release



DSTk v1 Modules

Unit Profile



Provides an overall outlook on a unit's business inputs/outputs

Metrics:

Course Credit Hours and Revenue, Student Headcount, Faculty/Staff Headcount and Expenditures

School/College Profile

- School/College Comparison
- High-level Trends

Department Profile

- Formerly "Scenario Planner"
- Department Comparison
- "The Breakdown" provides analysis comparing costs/benefits by department
- Course and Program Specific Comparison

Program Performance



View program success and find areas of opportunity

Metrics:

Student Headcount, Credit Hour and Revenue Contribution, Program Flows, Demographics

Level- Set Page

- High-level overview of primary program related detail
- School/College Comparison
- Department Comparison and Analysis

Detail Page

- Student headcount and credit hour contribution by Student Type
- Program Flows – shows where students are going
- Demographics – who are your students and where to they come from

Course Efficiencies



Analyze efficiencies in course offerings

Metrics:

Credit Hours, Sections Offered, Course Fill Rates, Modality Utilization, DFWs

Level- Set Page

- High-level overview of course related detail
- School/College Comparison
- Department Comparison and Analysis

Detail Page

- Department and Subject Comparison
- Collapsible Course Analysis
- Section Demand Calendar
- Modality Insight
- Success Detail

Instruction Insights



How are people resources being utilized?

Metrics:

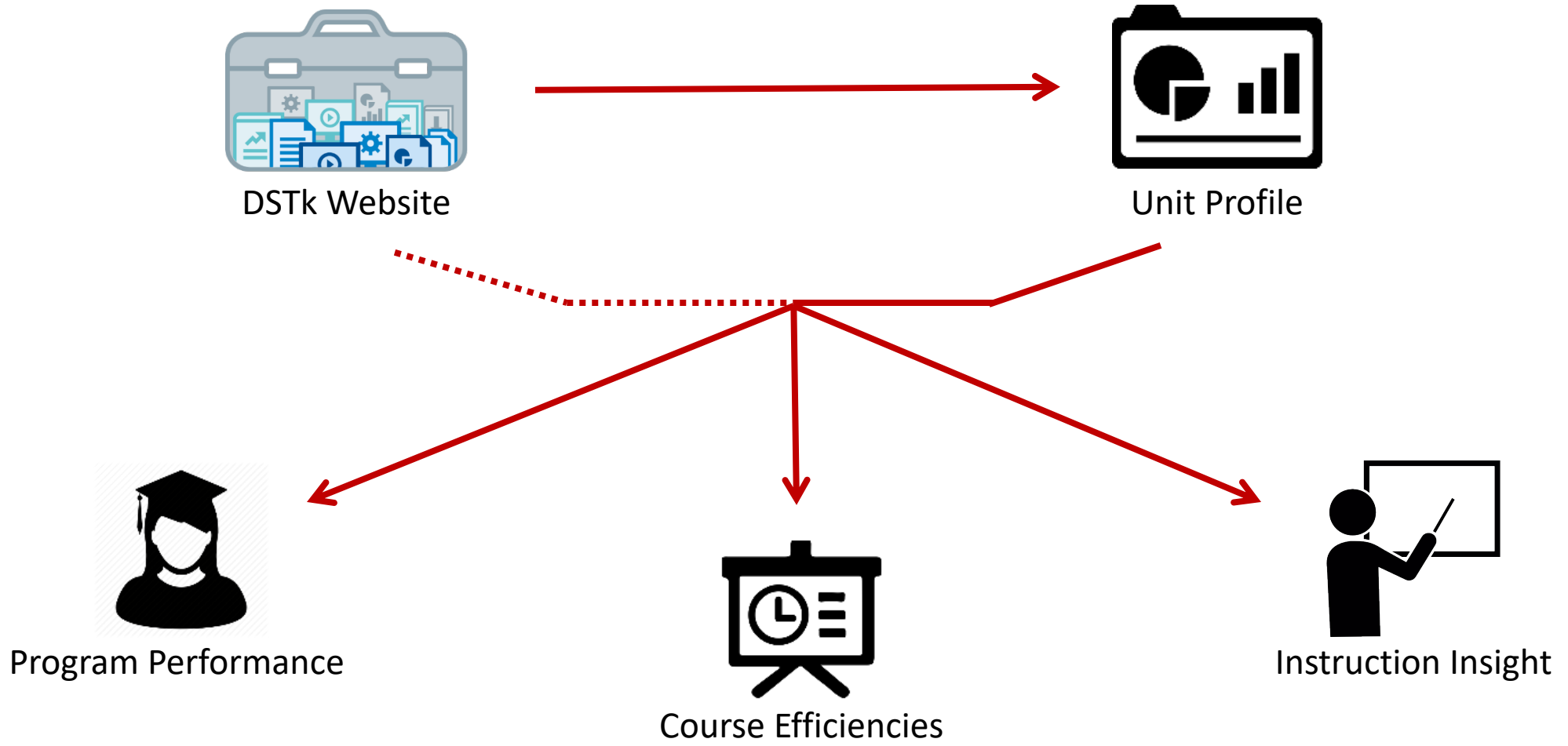
Headcount and FTE, Workload, Instruction Expenditures

Main Page

- School/College Comparison
- Instruction by Rank
- Faculty Expenditures
- Instructional Capacity Gap
- Department Breakdown



DSTk v1 Diagram





Website

Office of Institutional Research and Effectiveness

CU Denver Decision Support Toolkit

A collaboration between OIRE and the Budget Office

Welcome to the **Decision Support Toolkit (DSTk)**, CU Denver's ever-evolving analytics platform, designed to support school and college leaders in addressing academic and fiscal planning challenges. The **DSTk** synthesizes institutional data from financial, academic, and HR data sources, providing accessible and actionable information to assess the efficiency and financial health of their unit.

Each of the **DSTk** modules focus on the three pillars of financial sustainability: Revenue Generation, Cost Containment, and Reallocation of Resources. With these three pillars in mind, the **DSTk** allows users to dig deep into business components and gain insights needed to inform strategy and decision making.

With a CU Denver designed platform, the **DSTk** will grow and evolve with the needs of the campus. Its collaborative design and development process brings together contributors from every facet of the institution. The tool is designed to provide campus leaders with data and information needed to thrive operating under the incentives-based budget model, and ultimately contribute to CU Denver's strategic priority in achieving long-term financial sustainability.

CONTACT US



The **DSTk** is intended to be used by academic decision makers and thus currently has limited access.

Please direct questions, comments and access requests to david.doig@ucdenver.edu

AVAILABLE NOW!

Version 1 of the Decision Support Toolkit is now available! Below you will find direct links to the four modules for your use in planning for the semesters ahead.

Navigate to one of the modules using the tiles below and log in with your university credentials. **Remember, you must be logged on to the campus network or VPN to access the DSTk.** Please keep in mind, access to this set of tools is currently limited to certain users within our schools and colleges. Please reach out to david.doig@ucdenver.edu to request user access.

Unit Profile

This tool provides an overview of your school/college's inputs and outputs. Assess trends and comparative data to guide strategic decision-making.

Program Performance

Dive into trends and comparisons across programs. Use this tool to determine which programs are producing successful students and sufficient revenues.

Course Efficiencies

Explore trends in student credit hours, student outcomes, fill rates and more. Start with an overview of your school/college, then dig into departments and subject areas for more insight.

Instruction Insights

Get familiar with the instructional costs and outputs in your unit. Begin with an overview of faculty types and credit hours produced, then dig into detail for programs and subject areas.

<https://www1.ucdenver.edu/offices/institutional-research-and-effectiveness/decision-support-toolkit>

- The website serves as a starting place to each of the DSTk modules
- Stores training resources
- The DSTk website is housed under the Office of Institutional Research webpage
- For easy access, Google: "CU Denver Decision Support Toolkit"



Unit Profile



Start with the Unit Profile

- Gain insight on high level stats from all parts of your business with the **School/College Overview**
 - View your data as compared to the other Schools and Colleges
 - Keep track of your high-level metrics and trends
- Dive deeper the **Department Detail**
 - Formerly the **FY 20-21 Scenario Planning Resource**
 - Sort through department level data
 - Use **The Breakdown** to view analysis and trends on department level detail
 - Dive even further into program and subject level comparisons

Once you've found some areas to dig into, dive deeper with the Program Performance, Course Efficiencies, and Instruction Insight modules

The screenshot displays the 'Decision Support Toolkit' interface for the 'Unit Profile: School/College Overview'. It features a navigation menu on the left with options like 'School/College Overview', 'Department Detail', 'Program Performance', 'Course Efficiencies', and 'Instruction Insight'. The main content area is divided into several sections:

- School/College Comparison:** A table comparing various metrics across different departments. The table includes columns for Major Student Headcount, Major Credit Hours, Est. Revenue from Majors Only, All Instruction Credit Hours, Est. Revenue from Instructional One, Organized Instr. Sections Offered, All Instructional Faculty Headcount, All Staff Headcount, and Estimated FY Expenditures. The 'College of Liberal Arts and Sciences' is highlighted in the first row.
- School/College Trends and Detail: College of Liberal Arts and Sciences:** This section provides a detailed view of the selected department. It includes:
 - Students:** Metrics on students enrolled in primary major within the College of Liberal Arts and Sciences. It features three charts: 'Major Student Headcount' (line chart), 'Major Students by Residency' (donut chart), and 'Major Credit Hours' (line chart).
 - Courses:** Metrics on organized instruction sections offered by the College of Liberal Arts and Sciences. It features three charts: 'Instruction Credit Hours' (line chart), 'Service Teaching Credit Hours' (donut chart), and 'Instructional Tuition Revenue by Residency' (stacked bar chart).
 - Faculty and Staff:** Metrics on faculty and staff headcount and expenditures within the College of Liberal Arts and Sciences. It features three charts: 'Faculty and Staff Headcount' (line chart), 'Instructional Faculty Breakdown' (donut chart), and 'Direct Expenditures' (stacked bar chart).



Course Efficiencies



Get into course offerings with the **Course Efficiencies** module

- Use the **Level-Set** page as a place to start to understand your course level data
 - Jump to **The Breakdown** section to start comparing stats by department
- Dig into more detailed analysis all the way down to the subject level on the **Detail** page
 - Look at fill rates and section utilization
 - Find savings with **Collapsible Course** analysis
 - Narrow down high and low demand courses
 - Know when to offer classes with the **Course Demand Calendar**
 - Learn which modalities work best
 - Identify areas where students are most successful

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Decision Support Toolkit
Course Efficiencies - Level Set

The **Course Efficiencies** module is designed to help provide insight into your courses. Identify course areas that are thriving and others that may need some attention.

First, select your School or College:

Selected Term Year:
Selected Term Season:
Select Course Level:

Start by looking at overall growth in student credit hours at your School or College compared to others at CU Denver, then take a deeper dive into other performance stats and see how departments and individual subject areas are performing in **The Breakdown** section.

Use the filter set to the right to get started. You'll look at yearly trends on a semester basis. The calendar year you choose serves as a base year for the entire module. As with all Decision Support Toolkit modules, be sure to hover over any visualization for more info.

Data as of: September 2, 2020

[Jump to Detail Page](#)

Course Offerings
When Campus course info with totals and 3 year % change. Note: All measures (credit hours, section counts, fill rates, etc) within this module are based off of organized instruction only - on-main lab sections, recitations and all specialized instruction are not included in this module.

	Instruction Student Credit Hours	Sections Offered	Median Class Size	Trends			
Business School	19,501	3%	194	-10%	35	9%	
College of Architecture and Planning	8,580	13%	101	2%	15	0%	
College of Arts and Media	16,219	9%	341	2%	16	14%	
College of Engineering, Design and Computing	14,041	23%	185	6%	25	25%	
College of Liberal Arts and Sciences	80,389	-3%	962	2%	23	0%	
School of Education and Human Development	10,040	12%	171	4%	18	6%	
School of Public Affairs	5,184	29%	77	22%	23	35%	

Course Fill Rates
Fill rates for College of Liberal Arts and Sciences as compared to all other schools/colleges.

The table below details sections that fall into higher (>90% Full) and lower (<70% Full) fill rate categories. Courses with low fill rates could potentially be collapsed into a similar section. More on Collapsible Courses on the Detail page.

Average % Full	Number of Sections Offered	Percent of Sections <70% Full	Percent of Sections >90% Full
83%	962	26%	55%
75%	1,111	39%	37%

Average for all other Schools/Colleges (selected School/College excluded)

Trends in Fall Fill Rates
College of Liberal Arts and Sciences | All Other Schools and Colleges

Modality
College of Liberal Arts and Sciences enrollments by modality
Online | In Person | Hybrid

Trend in Modality

Service Teaching
College of Liberal Arts and Sciences course credit hours taught to majors in the college vs. outside the college.

Trend in Service Teaching

The Breakdown
View detailed data and analysis for College of Liberal Arts and Sciences departments. After you've gained some insight on department comparisons, get more detailed on the Detail Page

Section and Credit Hour Growth Ratio
Considerations: This scatterplot compares the growth in sections offered to growth in credit hours by department. Ideally, you'd like to see growth rates trending together.
SCH Growth Outpacing Sections Growth | Section Growth Outpacing SCH Growth

Department Detail
Take a look at the subjects offered during the Fall 2019 semester. Sort departments to identify thriving or struggling areas.

Department	Instruction SCH	3yr Change	Sec. Offered	Sec. 3yr Change	Enroll Count	Course Cap	Fill Rate	DFW Rate	College Service Teaching	Dpt Service Teaching	Trends
Mathematics	10,290	9%	118	17%	3,075	3,626	85%	26%	58%	8%	
Biology	9,356	0%	83	6%	3,285	4,009	82%	20%	85%	53%	
Psychology	8,754	7%	79	22%	2,883	3,221	90%	13%	85%	55%	
English	7,905	-7%	131	0%	2,635	2,837	93%	14%	62%	18%	
Chemistry	6,801	-3%	77	4%	2,674	3,179	84%	25%	89%	16%	
Communication	4,917	-1%	66	-1%	1,639	1,856	88%	11%	78%	46%	
Physics	3,978	-1%	49	-2%	1,407	1,836	77%	14%	57%	4%	

Sort By: Descending

Now that you've gathered information, dig into details by visiting the Detail page

[Jump to Detail Page](#)



Program Performance



Identify your thriving programs with the **Program Performance** module

- The **Level-Set** page serves as a starting place in understanding your program level data
 - **The Breakdown** sets you up to start comparing stats by department
- Use the **Detail** page to get dive deeper into more granular data at them program level
 - View headcount trends by different groups of students
 - Understand credit hour and revenue contributions
 - Use **Program Flows** to view where students are end up from one semester to another
 - Find out where your students are coming from with the High School/Transfer College Map

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Decision Support Toolkit
Program Performance - Level Set

The **Program Performance** module is designed to help provide insight into your programs. Identify programs that are thriving and others that may need some attention.

Start by looking at overall growth in student headcounts at your School/College compared to others at CU Denver, then take a deeper dive into other performance stats and then see how departments and individual programs are doing in **The Breakdown** section.

Use the filter set to the right to get started. You'll look at yearly trends on a semester basis. The calendar year you choose serves as a base year for the entire module. As with all **Decision Support Toolkit** modules, be sure to hover over any visualization for more info.

All Student Headcounts
Enrolled Students with College of Liberal Arts and Sciences major, taking at least one main campus, state reportable class

	Fall 2019 All Student Headcount	Change From Prior Fall	3-Year Change	Trends in Fall Headcount
College of Liberal Arts and Sciences	5,962	-13.4%	-10.8%	
Business School	2,083	9.8%	7.4%	
College of Architecture and Planning	811	2.6%	17.7%	
College of Arts and Media	1,349	1.0%	8.4%	
College of Engineering, Design and Computing	1,594	14.1%	26.4%	
School of Education and Human Development	1,318	3.9%	54.7%	
School of Public Affairs	799	1.3%	14.1%	

Credit Hours and Tuition Revenue Contributions by All Students
Main Campus, State Reportable credit hours by All College of Liberal Arts and Sciences Students. For illustrative purposes only. Numbers may not reflect those used in the Budget Model.

Fall 2019 All Student Credit Hours: **68,714**

Estimated Tuition Revenue Generated: **\$28,486,208**

Trend in Fall Credit Hours:

Trend in Fall Estimated Tuition Revenue:

Campuswide Fall 2019 Credit Hour Contribution by College of Liberal Arts and Sciences:

Campuswide Fall 2019 Estimated Revenue Contribution by College of Liberal Arts and Sciences:

Who are your students?

Program Flows
Where are your enrolled students going?

Program Flows shows changes in enrollment status from one semester to another.

Here you will find **Fall 2019** College of Liberal Arts and Sciences undergraduate students and their Fall 2019 enrollment status

Enrollment Status	Percentage
Continuing in School/College to another	53%
Graduated	17%
Changed School/College	8%
Not Enrolled	22%

Student Demographics
All Students - Choose detail

Fall 2019 Total: 5,962

Age Group: 17 or Below, 18 to 21, 22 to 25, 26 to 30, 31 to 35, 35 or Above

The Breakdown
In this section, you'll have the ability to view detailed data for College of Liberal Arts and Sciences departments or programs just by clicking on it.

All Student Headcount by Department
Considerations: The scatterplot within this section compares overall headcount to recent growth. A large department with diminishing growth may require some attention, while quickly growing small departments may be an area of opportunity to focus resources on.

Headcount (Estimated Term Year) vs. Yr Percent Change

All Programs Offered
Take a look at the programs offered during the Fall 2019 semester. Sort by headcount and growth to identify thriving or struggling programs.

Programs (Count = 61)	Department	Fall 2019 Headcount	3-Year Change	Trends in Fall Headcount
ISMA-BA - Individually Structured Major	Liberal Arts & Sciences	28	366.7%	
CHM-MS - Chemistry	Chemistry	26	136.4%	
GEOS-MA - Applied Geog & Geospatial Sci	Geography/Environmentl Sci	34	88.9%	
AMEN-PHD - Applied Mathematics	Mathematics	41	46.4%	
EVSC-MS - Environmental Sciences	Geography/Environmentl Sci	51	45.7%	
ISBI-PHD - Integrative & Systems Biology	Biology	21	40.0%	
JITI & - Liberal Arts - Unclassified	Liberal Arts &	44	24.1%	

Now that you've gathered information, dig into details by visiting the **Detail page**



Instruction Insight



Understand resource utilization with the Instruction Insight module

- Understand your instructional costs
 - As a percent of total expenditures
 - In terms of cost per credit hour
- Look at credit hours and sections being taught by faculty rank
- View trends on workload by rank
 - Use the **Instructional Capacity Gap** analysis to compare target workload to actual
- Compare departments through all stats within this module and see how they've been trending

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Instruction Insight

The **Instruction Insight** module helps provide an understanding of how instructional resources are being utilized. Use the insights gained from this module to help make data-informed decisions on your faculty dynamics.

Parameter Selection

Select Fiscal Year: 2020
Select FTE or Headcount: Headcount

First, select your School or College: College of Liberal Arts and Sciences

Start by looking at some basic faculty metrics at your School/College compared to others at CU Denver, then use the **Analysis** section to gain some greater insight and see how your departments are comparing. **Important:** All faculty data within this module are from snapshots taken in November for each fiscal year - credit hours and sections are for the entire fiscal year for the population within the snapshot.

Use the filter set to the right to get started. The fiscal year you choose serves as a base year for all trends in the entire module. As with all Decision Support Toolkit modules, be sure to hover over any visualization for more info.

Data as of: September 1, 2020

School/College Level Instructional Insight

Select a Faculty Type: Tenured And Tenure Track Faculty

School/College	Instr. Faculty Headcount	Faculty Cost/SCH	Tenured And Tenure Track Faculty			Trends		
			Headcount	Workload	Cts Taught			
College of Liberal Arts and Sciences	480	\$214	178	0.0%	2.7	-4.8%	27.9%	
Business School	112	\$322	47	2.2%	2.8	0.1%	33.5%	
College of Architecture and Planning	73	\$278	21	5.0%	2.7	-23.8%	30.0%	
College of Arts and Media	112	\$205	30	4.3%	4.8	9.7%	24.5%	
College of Engineering, Design and Computing	77	\$355	46	2.2%	3.2	8.2%	38.9%	
School of Education and Human Development	153	\$314	36	2.9%	2.6	-1.7%	28.3%	
School of Public Affairs	52	\$340	19	11.8%	2.6	4.4%	32.4%	

Instruction by Rank

Student credit hours and sections taught by Full Faculty/Staff population

Full year sections and credit hours taught by only instructors included in Fall snapshot

Sections or student credit hours: Credit Hours

Breaking Down Expenditures

Faculty salaries and benefits as a portion of total Fund 1x expenditures

Fund 1x Faculty Salaries and Benefits | All Other Fund 1x Expenditures

FY 2020 Fund 1x Expenditures Breakdown:

FY 2020 Average Faculty Cost per Student Credit Hour: Full year fund 1x faculty salaries and benefits / Full year D1 credit hours

\$214 per SCH

Analysis

In this section, you'll have the ability to dig in deeper and view some interesting analysis with College of Liberal Arts and Sciences instruction data, down to the department level.

Instructional Capacity Gap

Choose Faculty Type: Tenured And Tenure Track Faculty | Target Workload: 4

Analyze your potential vs actual sections taught

Instructions: The instructional capacity gap analysis takes the total FTE for a selected faculty type, calculates a potential amount of sections taught based on your target load (from right) and compares that to your actual sections taught by the selected faculty group within the snapshot.

Potential Sections: 693 | Actual Sections: 477 | Capacity Gap: 216

Based off of your average per section lecturer rate: Enter Here: 4,500 | The potential cost of this capacity gap is equal to: \$972,000

Or, the amount paid to lecturers to teach sections in workload gap

Select the faculty group you'd like to analyze and provide the workload target for that group in the top right of this section

Department Breakdown

Take a look at how your departments compare to one another with a set of pre-designated metrics

Comparison Metrics: TT Faculty Workload

FY 2020 Department Comparison

Note that not all departments include the appropriate data for comparison

Pop up a department's bar to view their trends in this chart

Geography/Environment Sci
Economics
Modern Language
Philosophy
Ethnic Studies
Political Science
Sociology
Physics
Anthropology
English

Trendlines

Default = sum of all departments | (All)

Select a department from comparison or dropdown to view their trends.

Your Data at the Department Level

Choose Grouping Order: Department, Job Category

With what you've gathered from the analysis, use this area to diver deeper. Percentages in small unbolded font are 3-year changes.

Department, Job Category	Headcount	Average Workload	SCHs Taught	Trends			
Anthropology	Tenured And Tenure Track Faculty: 9	0.0%	2.8	-16.7%	1,850	-18.1%	
	Regular Instructors: 2	100.0%	7.0	-22.2%	1,259	28.7%	
	Lecturers: 4	-33.3%	1.8	-19.2%	560	-56.6%	
Biology	Tenured And Tenure Track Faculty: 16	-11.1%	2.4	7.0%	5,826	0.0%	
	Clinical Teaching: 1	0.0%	4.0	100.0%	696	31.8%	
	Regular Instructors: 8	33.3%	4.8	-10.9%	9,180	3.2%	
	Lecturers: 4	0.0%	1.5	-33.3%	1,047	-4.6%	
Chemistry	Tenured And Tenure Track Faculty: 13	8.3%	2.4	-7.7%	4,498	-16.7%	

*Lecturer data not available for metrics presented as FTE



What's Next?

Detailed Walkthroughs / Feedback

- Look out for calendar invites for each of the four modules
- We will do in-depth demonstrations and solicit feedback

Please reach out to set up an individual/tailored session

- Please reach out with questions you have on anything regarding DSTk content
- We're happy to do in-depth, tailored walkthrough with your units. Please reach out to set up a session
- Is there something you'd like to see that's not included in one of our tools? Feel free to request an enhancement!

Other users?

- Currently, DSTk is limited to those with approved access. Please reach out to David to add additional user

**Contact David Doig with
Feedback, Session Requests,
and User Access Requests:
david.doig@ucdenver.edu**

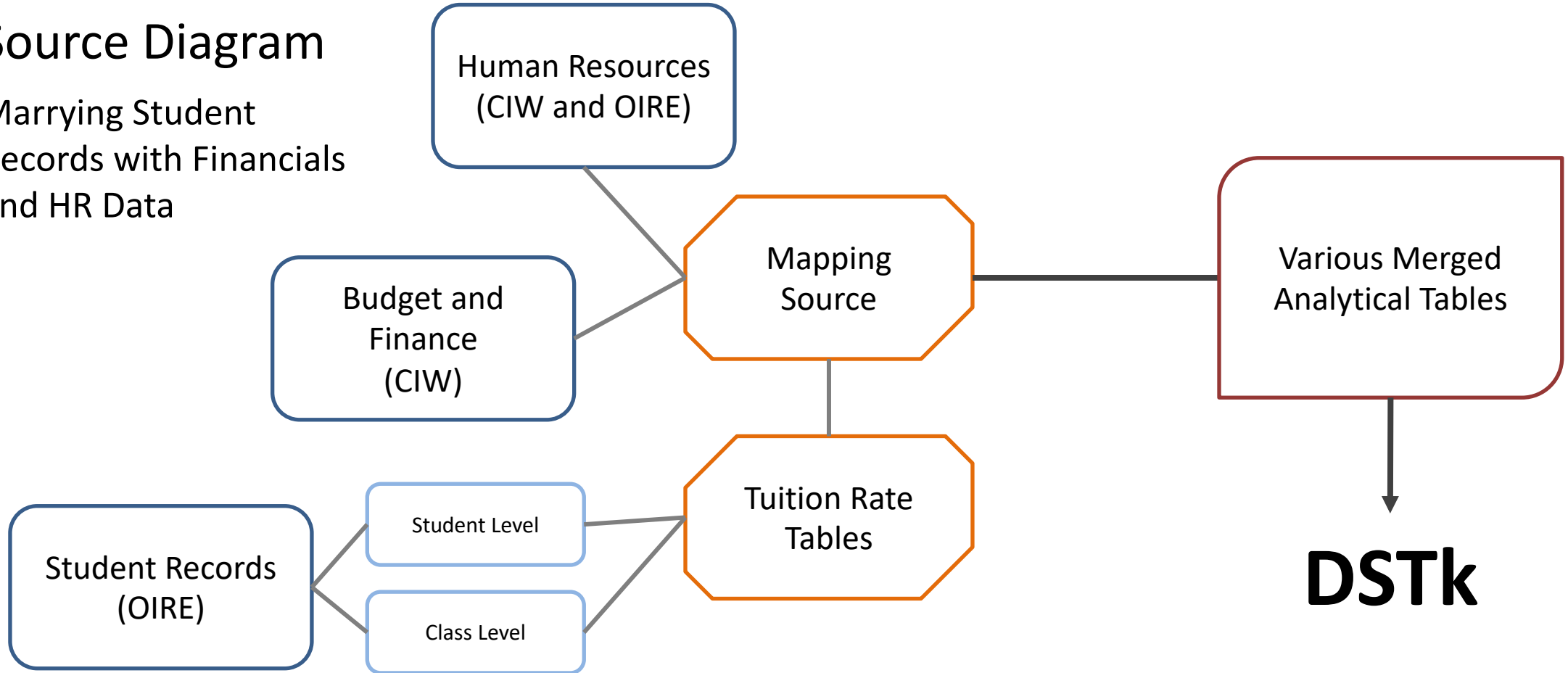
On to the Demonstrations



Data Diagram

Source Diagram

Marrying Student Records with Financials and HR Data

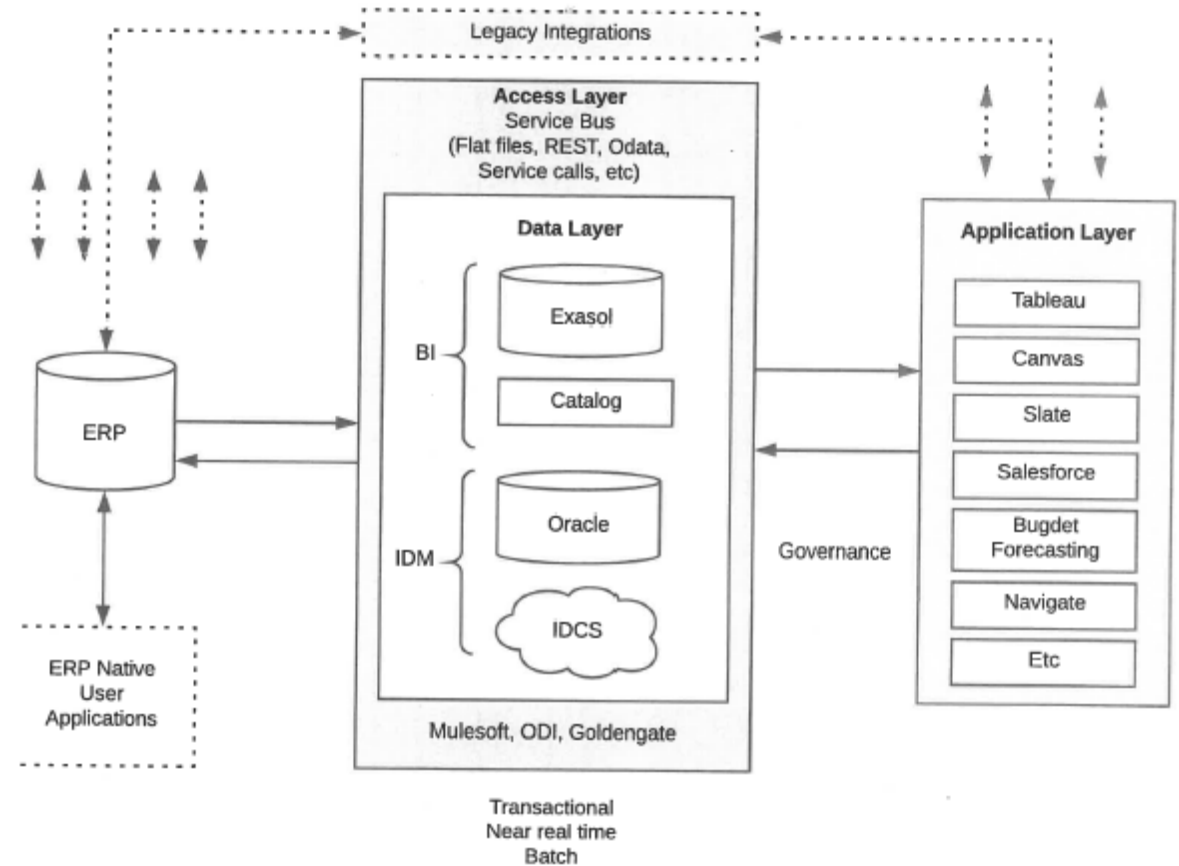




Technology

Leveraging OIT Tools For Seamless Updates

- In its optimal state (beyond version 1), the Toolkit will utilize Exasol and Mulesoft – enterprise data movement and warehousing tools provided by OIT
- This will allow for completely hands-off data refreshing and automation, and for some applications, near real-time data





Beyond DSTk v1 Launch

Outreach, Engagement, Maintenance, Improvements

Short Term (Q2 FY 2021)

- **Outreach and Training** (October 2020)
 - In-depths demos of each of the modules
 - Offer consultation to Schools and Colleges on
- **Collect Feedback** (November 2020)
 - Hold feedback sessions after demos
- **Enhancements and Modifications** (November and December 2020)
- **Data Movement and Infrastructure**

Medium Term (Q3 & Q4 FY 2021)

- **Version 2 Planning. Areas of focus:**
 - D2/Extended Studies
 - Central Administration Modules
 - Forecasting and machine learning
- **Communications**
 - Blog
 - Townhalls
 - Case studies
 - Consultation