

THECB's Data Modernization Initiative

The journey, accomplishments, and future opportunities
July 2023

1

Unique THECB Assets With Significant Potential



Education and
Workforce Data



Texas Higher
Education Foundation



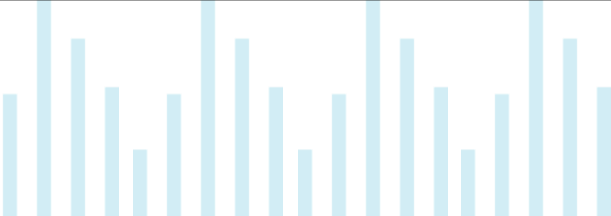
Student Financial
Aid Programs

2

Where We Started

Beginning State - August 2020

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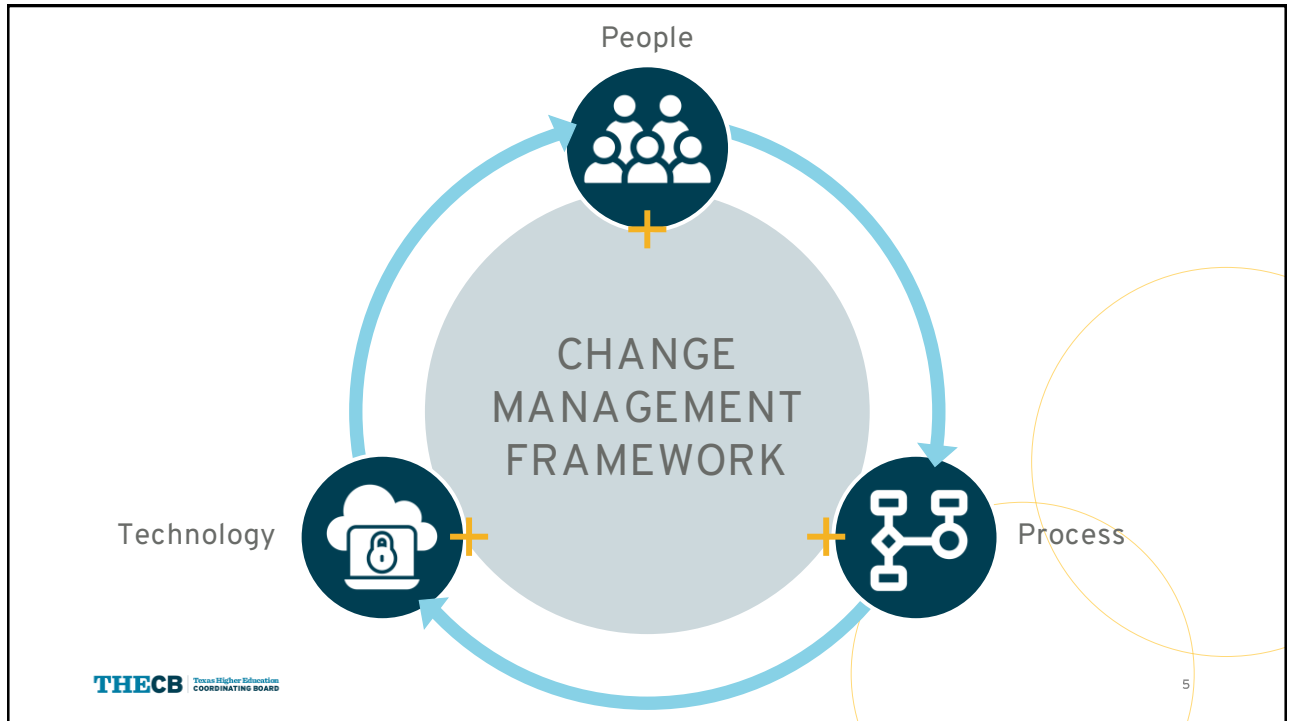
Texas' Data Clearinghouse

One of the agency's core functions is to serve as the **primary source for data, statistics, and information on higher education** in the state

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COORDINATING BOARD

- 1 POLICY**
Inform initiatives and policy recommendations that will strengthen our competitive workforce and elevate Texas' global standing
- 2 ACCOUNTABILITY**
Track the state's progress towards our goals for higher education, including performance on critical measures by institutions
- 3 RESEARCH**
Facilitate access to data for researchers and academic faculty to conduct research advancing understanding of higher education outcomes

4



5

August 2020: Initial Assessment



PEOPLE

- Significant ISS support required for changes to support data submission management
- Difficult to navigate and find data via websites due to limited search and sub-optimal user experience
- Reports created that no one uses



PROCESS

- Delayed analysis due to extensive manual processing of data submissions and data preparation
- Duplicated copies of data maintained across and within the organization
- Data not meaningfully linked to facilitate rapid analysis



TECHNOLOGY

- Organically evolved environment without unifying architecture
- Multiple technologies and tools that had evolved over time
- No unifying information architecture for websites
- Limited visualization capacities
- Not instrumented for continuous improvement

6

Where We Started: Previous Website

Our previous website had limited ability to provide actionable insights for campus-level leaders and was difficult to navigate for students, families, and policymakers

Stakeholders had to download Excel spreadsheets and run their own analyses

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7

The user experience was not ideal...

Fall Enrollment by Ethnicity
Texas Public Universities

Institution	Fall 2018						Fall 2019					
	White	African	Hispanic	Asian	International	Other	White	African	Hispanic	Asian	International	Other
003541 Angelo State University	5,320	762	3,501	174	226	249	10,242	4,796	714	4,167	153	228
003581 Lamar University	6,484	3,570	2,674	573	494	382	14,176	6,637	3,647	3,013	583	389
003592 Midwestern State University	2,885	905	1,145	177	386	214	5,712	2,694	910	1,123	163	301
003630 Prairie View A&M University	164	8,037	838	195	232	50	9,516	144	7,563	772	178	217
003606 Sam Houston State University	10,619	3,888	5,026	451	294	747	21,025	10,588	4,815	5,206	467	314
003624 Stephen F. Austin State University	7,784	2,201	2,355	174	117	427	13,058	7,713	2,031	2,395	169	116
003625 Sul Ross State University	661	161	953	14	10	86	1,885	578	141	884	12	6
000020 Sul Ross State University Rio Grande College	61	5	797	3	NA	24	880	54	9	733	2	2
003631 Tarleton State University	8,600	1,269	2,537	186	81	445	13,118	8,483	1,292	2,681	202	87
009651 Texas A&M International University	162	48	7,415	33	169	57	7,884	216	55	7,786	36	150
003632 Texas A&M University	35,920	2,156	11,753	4,596	5,284	1,985	63,694	35,370	2,642	14,194	5,030	5,130
010286 Texas A&M University at Galveston	1,195	30	348	42	15	67	1,806	1,138	43	340	42	12
042295 Texas A&M University-Central Texas	1,035	608	566	92	5	108	2,464	992	656	574	104	4
003565 Texas A&M University-Commerce	5,497	2,684	2,348	288	412	843	12,072	5,144	2,562	2,373	306	615
011161 Texas A&M University-Corpus Christi	4,416	751	5,756	360	362	284	11,929	4,256	699	5,486	381	370
003639 Texas A&M University-Kingsville	1,212	436	5,755	91	999	88	8,541	1,117	242	5,116	91	756
042485 Texas A&M University-San Antonio	1,176	471	4,616	106	138	109	6,616	1,067	461	4,822	81	178
029269 Texas A&M University-Texarkana	1,180	338	299	36	66	148	2,067	1,142	376	306	34	56
003642 Texas Southern University	202	7,646	871	317	642	54	9,732	197	2,306	788	295	438
003615 Texas State University	17,508	4,321	14,323	1,031	537	924	38,644	16,927	4,114	14,636	1,053	524
003644 Texas Tech University	20,358	2,646	10,283	1,147	2,153	1,258	37,845	20,686	2,752	9,967	1,160	2,312
003646 Texas Woman's University	6,388	2,775	4,943	1,406	254	498	15,364	6,292	2,838	4,289	1,477	326
009930 The University of Texas Permian Basin	2,208	429	2,762	165	121	159	5,834	1,952	378	2,555	145	123
003599 The University of Texas Rio Grande Valley	892	236	25,131	386	779	1,065	28,489	919	215	25,943	407	774
003656 The University of Texas at Arlington	14,231	6,457	11,615	4,533	4,467	3,655	47,864	15,668	6,545	15,501	4,576	3,583
003658 The University of Texas at Austin	21,247	2,494	11,296	10,354	4,247	3,655	47,864	15,668	6,545	15,501	4,576	3,583

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Tab	Report Title
Univ.EnrollByEth	Fall Enrollment at Public Universities by Ethnicity
Univ.EnrollByGende	Fall Enrollment at Public Universities by Gender
HRI.EnrollByEth	Fall Enrollment at Public Health-Related Institutions by Ethnicity
HRI.EnrollByGender	Fall Enrollment at Public Health-Related Institutions by Gender
2yr.EnrollByEth	Fall Enrollment at Public 2-year Institutions by Ethnicity
2yr.EnrollByGender	Fall Enrollment at Public 2-year Institutions by Gender
Fall.EnrollFlex	Fall Enrollment at Public Universities and 2-year Institutions Including Flex Entry

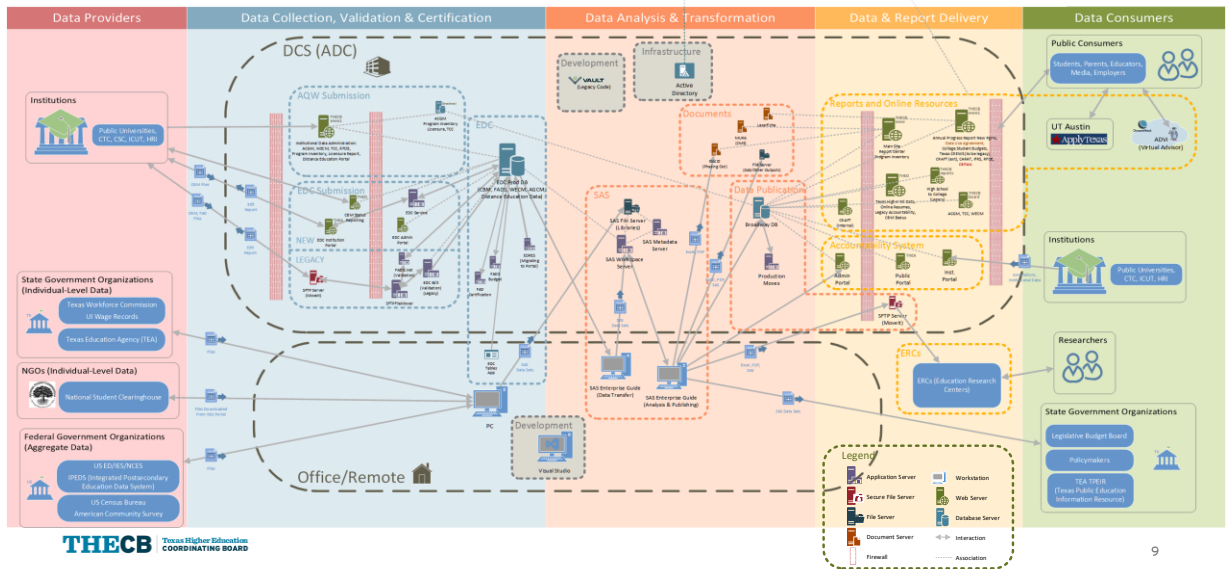
Source: THECB, CBM001

Flex enrollment only includes those students not otherwise enrolled in the fall semester.

*Flex enrollments shown here are unduplicated at the sector and state levels. Figures shown as totals will not sum to the individual flex enrollments from each institution.

8

The technology infrastructure was outdated and complex...



9

What We Set Out To Do

Vision and Goals

10

Data Modernization Initiative

VISION

Equip stakeholders with **actionable insight** and **data for decision-making purposes** to foster the skills and spur innovation vital to the Texas economy

GOALS AND PRIORITIES

1

REDESIGN INFRASTRUCTURE

- Design a modern, flexible, and secure **data architecture**
- Improve data submission methods and governance
- Implement cloud-based infrastructure providing **easy-to-use products**

2

EXPAND DATA OFFERINGS

- Deliver **user-centered value** through priority products
- Provide more reporting and analysis integrating **tri-agency data sets**
- Increase support to institutional leaders and other partners

3

EMBED CONTINUOUS IMPROVEMENT

- Update **data usage and sharing agreements**
- Implement **robust web analytics and product management**
- Create stakeholder feedback and engagement loops

Strategic GEER-funded Investments



FINANCIAL AID & WORK-BASED LEARNING

Provide financial aid to support student enrollment, retention, graduation and expand paid learning opportunities



WORKFORCE RESKILLING & UPSKILLING

Equip learners with the skills and knowledge needed to attain credentials of value in high-demand fields



DATA SECURITY & MODERNIZATION

Modernize education and workforce data infrastructure to be more secure, accessible, and actionable



ADVISING & STUDENT SUCCESS

Design online tools for students to develop plans that can help them achieve goals and advance careers



DIGITAL LEARNING SUPPORTS

Accelerate the design and delivery of digital learning, including courses and other student experiences

Delivering Stakeholder Value: A Robust Project Portfolio and Roadmap

STRATEGY PROJECTS

4

- S1 Partnership Decisions
- S2 Technology Decisions
- S3 Project Portfolio Mgmt.
- S4 Data Architecture

VALUE DELIVERY PROJECTS

5

- V1 Data Governance – Int
- V2 Data Governance – Ext
- V3 Refactor Dev. Operations
- V4 Data Product Mgmt.
- V5 New Adjacent Data

TECHNOLOGY PROJECTS

17

- T1 Integration
- T2 Configuration Mgmt.
- T3 IAM – Internal
- T4 IAM – External
- T5 Public Portal – Comms. Improvement
- T6 Portal Integration & Personalization
- T7 Data Lake
- T8 Automated Curation
- T9 Data Warehouse
- T10 Entity Resolution
- T11 Analytics Transformation
- T12 Predictive Analytics
- T13 Internal Admin Portal
- T14 Re-identifiable Data Portal
- T15 Data Submission Portal
- T16 Secure Data Enclave
- T17 Privileged Data Portal

TECHNOLOGY COMPONENTS

13

- C1 Data Integration
- C2 Configuration Mgmt.
- C3 Identity & Access Mgmt.
- C4 Core Portal
- C5 Data Mart Loader
- C6 Data Marts
- C7 API Gateway
- C8 Data Lake
- C9 Data Curation Services
- C10 Operational Data Warehouse
- C11 Entity Resolver
- C12 Analytics Tools
- C13 Predictive Tools

Data in Action

The Data Modernization Initiative is focused on new data products and services, transforming how we manage and use higher education data to drive programs, policy, and priorities

1 DATA SUBMISSION

Create new data product portals that simplify the submission experience for external users

- New FADS and CBM submission portal
- Course information approvals
- Program information approvals

2 DATA MANAGEMENT

Deliver user-centered value through dynamic access, robust governance, and data security

- Cloud-based data storage
- Automated data processes
- Flexible data storage capacity

3 DATA PROVISIONING

Provide data in a user-friendly way and ensure timely access to data for stakeholders

- Secure data portal
- Public data dashboards
- Institution-specific reports on TST outcomes

What We Accomplished

Phase I Deliverables through Sept 2023

15



Technology Accomplishments: Infrastructure

- 1** Designed and implemented **cloud-based infrastructure** for:
 - Institution submissions, including statutory data, document, and forms
 - Automated pipelines for data validation, certification, and management
 - Integrated and upgraded security utilizing Azure-native services
- 2** Migrated 20+ years of data from 37 annual data collections into **centralized data lake storage**
- 3** Built and deployed a **secure data portal** to provide authorized users with priority topics identified by institution partners
- 4** *(In progress)* Designed and working to complete initial proof of concept to provide **repeatable, automated data preparation and curation** for more efficient use and analysis

16



Technology Accomplishments: User-Focused Enhancements

- 1 Developed and launched **new agency website** with updated branding, navigation, and user experience
- 2 Designed and implemented **new data website** to serve as central access point for all data products and services, with robust data visualizations, including new *Talent Strong Texas* metrics & narrative
- 3 Partnered with TWC to create and on track to publish Texas' **first consolidated credential repository** to support analysis of credential programs across disparate providers & funding sources
- 4 (In progress) Created initial version of the agency's **first technology-based consolidated data dictionary** with comprehensive info on data elements collected and maintained, for use by agency and ERC stakeholders



Process Accomplishments: Governance and Policy Foundations

- 1 Evaluated and updated **agency data governance** taking an enterprise-wide approach
- 2 Analyzed and improved **key business processes** including program submission and approval, ad hoc data request, and data management team portfolio tracking
- 3 Established and led **Tri-Agency Data Work Group** to help inform and prioritize DMI deliverables and facilitate productive data sharing
- 4 Worked with Tri-Agency partners to develop and execute **first-ever Master Data Sharing Agreement**, including automated approval workflow across agencies
- 5 Strengthened **THECB policy foundation** to ensure appropriate access and use



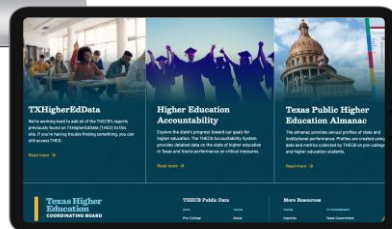
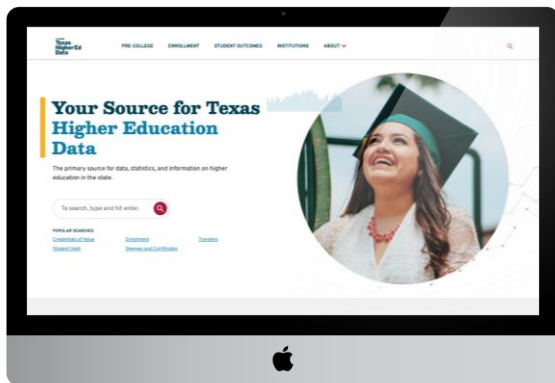
People Accomplishments: Increased Capabilities

- 1 Established **Project Management & Improvement Office** to ensure disciplined implementation
- 2 Leveraged **principles of user-centered design** to prioritize and shape initial data products
- 3 Added **critical skills and capabilities** including Chief Privacy Officer, Chief Technology Officer, key communications staff, new data governance director, and a new data management team
- 4 Fostered **strong working relationships with Tri-Agency** data leads to ensure timely and continuously improving approaches to data sharing and use
- 5 Implemented **new processes and tracking** to support implementation of updated data-related policies

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19

19



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THECB Texas Higher Ed Data

THECB maintains the Texas Higher Education Data website, providing direct access to various reports, statistics, queries, and interactive tools

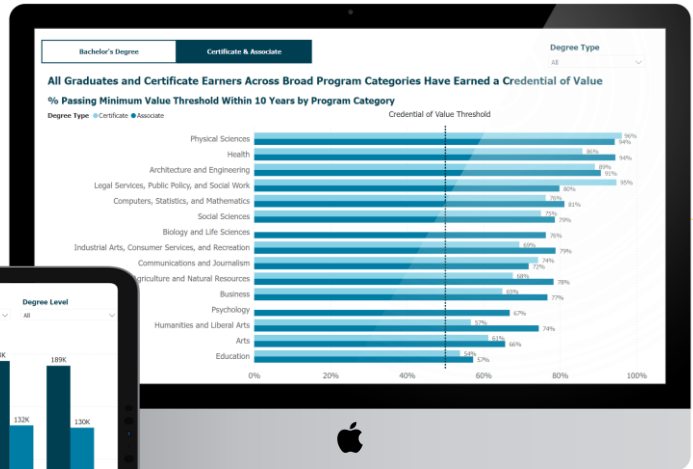
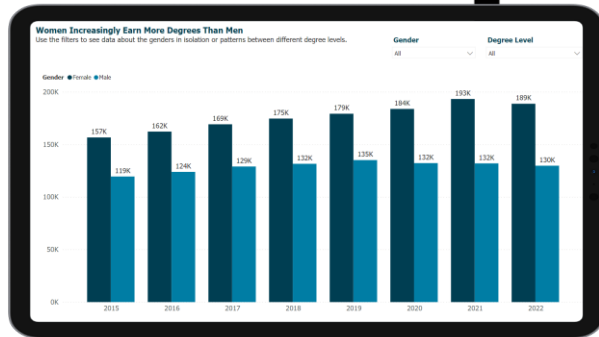


Scan for access to
<https://data.highered.texas.gov>

20

20

Your Source for Texas Higher Education Data



THECB Texas Higher Education Coordinating Board

21

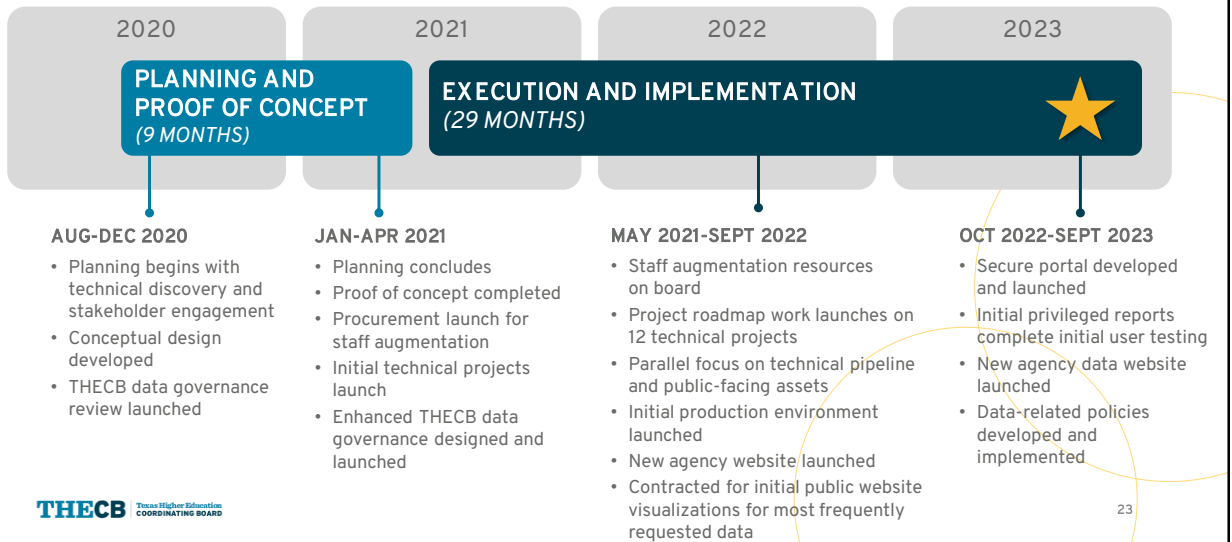
Privileged Data Portal: Improved Insight for Institutional Partners



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22

Data Modernization Initiative: Phase I Timeline



23

Leveraging public and private funds to deliver value

\$37M
Federal
GEER funds



\$5.8M
Philanthropic
Support



\$42.8M from public and private sources to support:

- Data modernization initiative including data governance
- Strategic partnerships to deliver credentials of value methodology, visualizations, and dashboards
- \$1.5M in grant support to 67 institutions for reporting system changes

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24

24

What's Next

Building on our momentum to sustain and accelerate progress

25

Building on Our Momentum: Sustaining Progress and Moving Forward



Complete Phase I GEER-funded projects with focus on transition to sustainability



Launch field training on new products and services



Prioritize Phase II projects to support decision making for higher education

26

