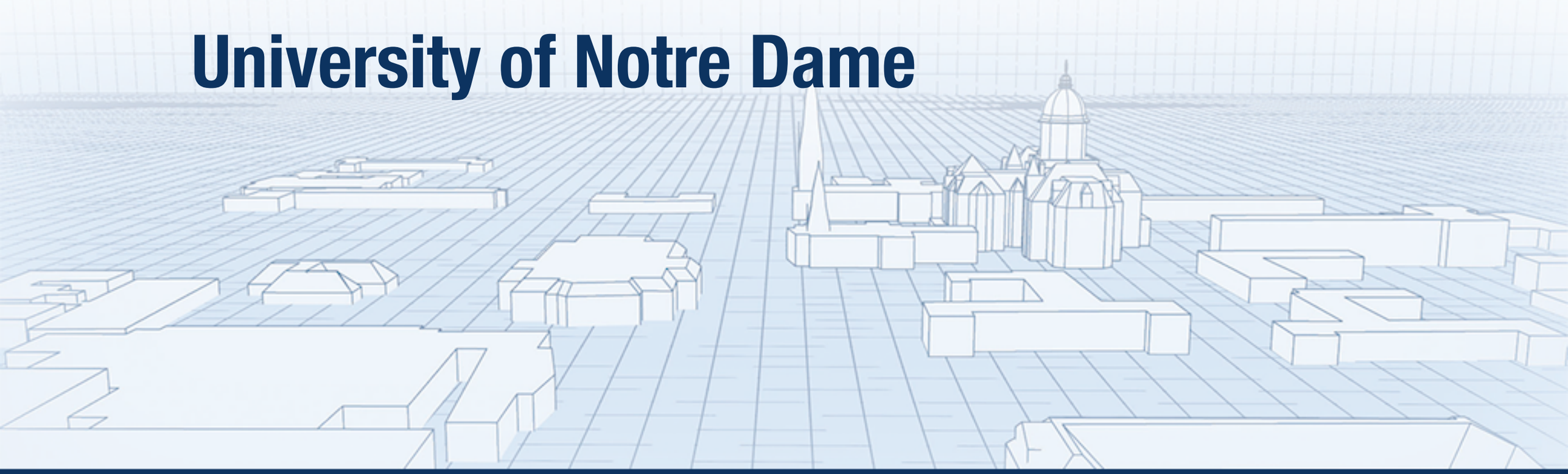
Making the Grade: Using OpenEdX to build an online M.S. program

Elliott Visconsi

University of Notre Dame



UNIVERSITY OF NOTRE DAME | DIGITAL LEARNING

STRATEGIC AIMS

1. ENHANCE TEACHING & LEARNING @ NOTRE DAME

2. EXTEND THE REACH & ACADEMIC IMPACT OF FACULTY, DEPARTMENTS, COLLEGES & UNIV.

3. ACCESS TO EDUCATION AND ENRICHMENT

BIG DATA BIGGER OPPORTUNITIES

UNIVERSITY OF NOTRE DAME | DATA SCIENCE

R^2 is a measure of goodness of fit
of a linear model.

It ranges between 0 and 1; the closer to 1,
the better the fit of the model to the data.

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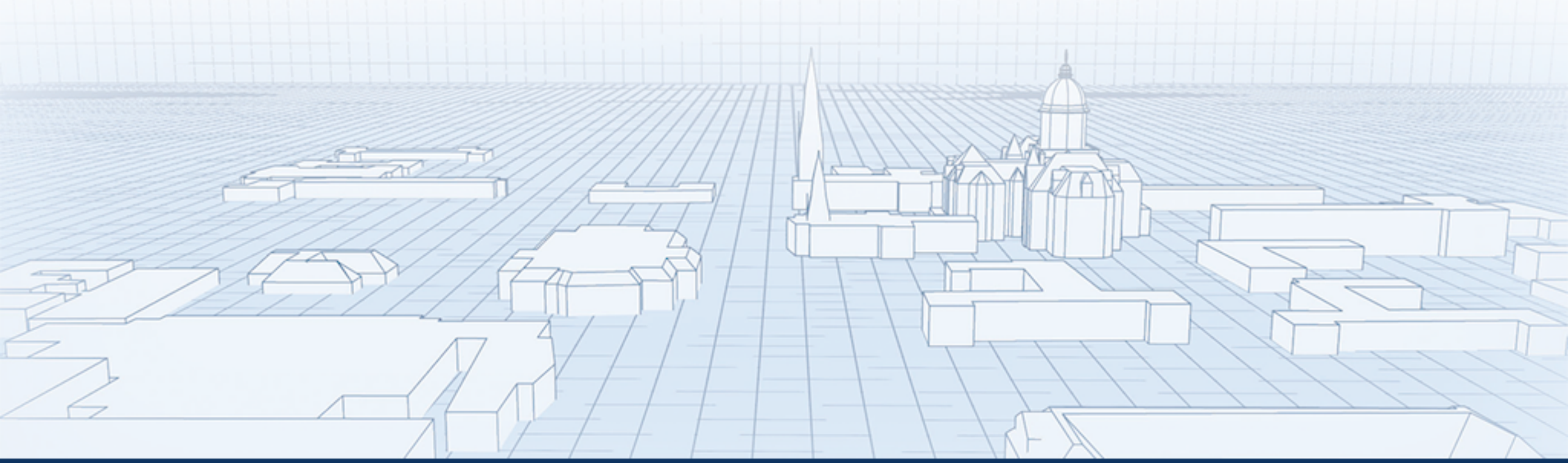
PARTICIPATORY LEARNING
LIVE WITH IMPACT
INTERACTIVE CASES/SIMULATIONS



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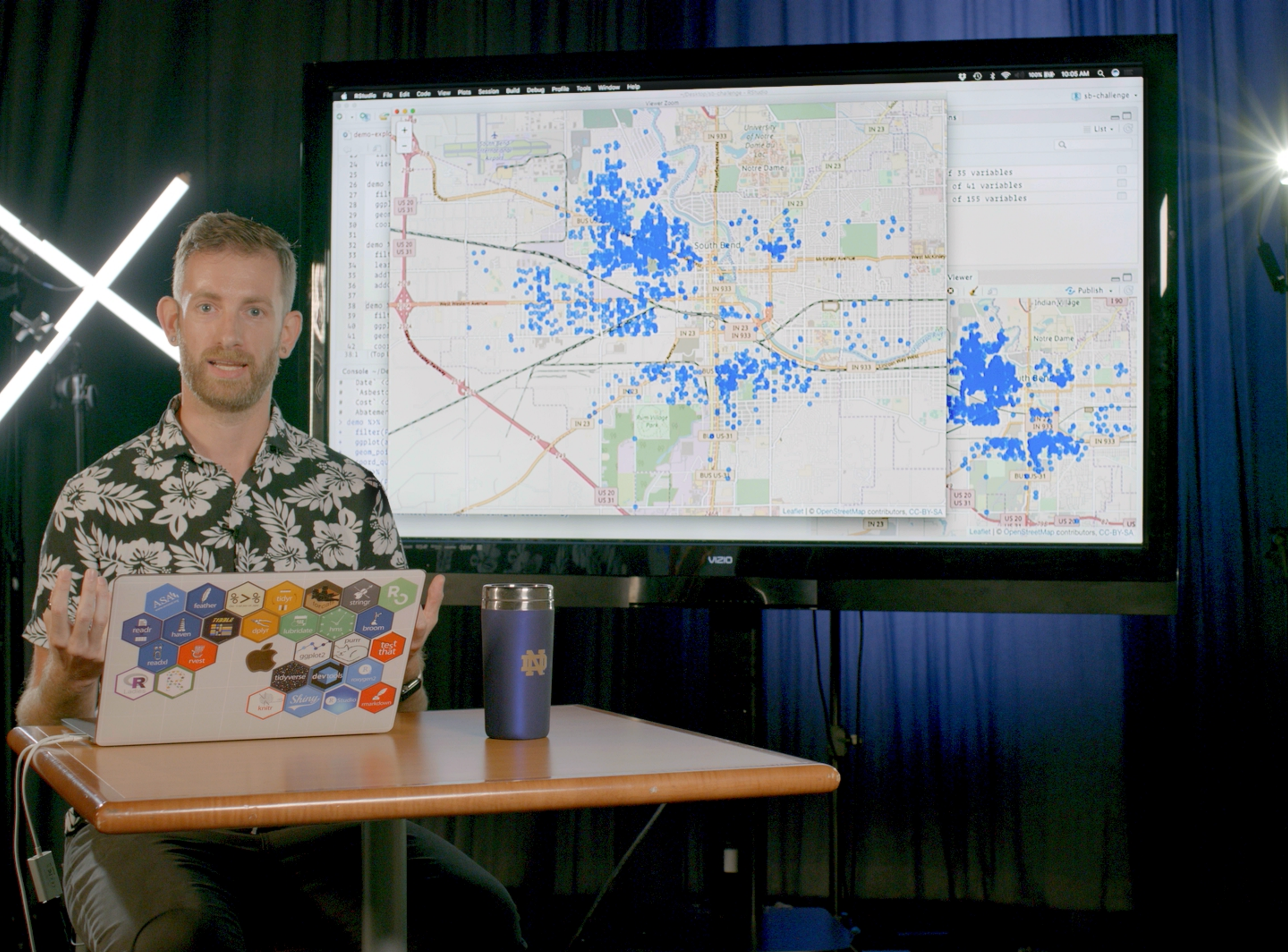
RStudio File Edit Code View Plots Session Build Debug Profile Tools Window Help
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sb-challenge
List
of 35 variables
of 41 variables
of 155 variables
Viewer
Publish
South Bend
Notre Dame
University of Notre Dame du Lac
Indian Village
Leaflet | © OpenStreetMap contributors, CC-BY-SA
VIZIO
tidyr
stringr
feather
readr
haven
dplyr
lubridate
hms
broom
purrr
ggplot2
test that
readxl
rvest
tidyverse
devtools
roxygen2
Shiny
knitr
rmarkdown

PLAN OF STUDY

PROGRAM LAUNCH

AUGUST 2017 - SOUTH BEND CAMPUS

DATA SCIENCE: PROCESS AND PRACTICE REQUIRED

SEMESTER 1

FALL 2017 - ONLINE

SYSTEMS AND TECHNOLOGIES CREDITS: 3

PROBABILITY AND STATISTICS CREDITS: 3

JANUARY 2018 - SILICON VALLEY

DATA SCIENCE INDUSTRY INSIGHTS

OPTIONAL

SEMESTER 2

SPRING 2018 - ONLINE

DATA MINING CREDITS: 3

LINEAR MODELS CREDITS: 3

SEMESTER 3

SUMMER 2018 - ONLINE

STORYTELLING & COMMUNICATIONS FOR DATA SCIENCE CREDITS: 1.5

ETHICS AND POLICY CREDITS: 1.5

DATABASES CREDITS: 3

SEMESTER 4

FALL 2018 - ONLINE

DATA VISUALIZATION CREDITS: 1

BEHAVIORAL DATA SCIENCE CREDITS: 3

STATISTICAL LEARNING IN DATA SCIENCE CREDITS: 2

JANUARY 2019 - SILICON VALLEY

DATA SCIENCE INDUSTRY INSIGHTS

OPTIONAL

SEMESTER 5

SPRING 2019 - ONLINE

DATA SCIENCE NOW: INDUSTRY, CASES AND PROJECTS CREDITS: 3

GENERAL LINEAR MODELS CREDITS: 2

TIME-SERIES CREDITS: 1

GRADUATION

MASTER OF SCIENCE IN DATA SCIENCE

Data Science is an interdisciplinary field that utilizes processes and systems to facilitate the precise analysis of massive amounts of information. Data scientists use this analysis to provide businesses and organizations with critical insights that shape decisions and solve problems. They are highly valued team members in major industries, including technology, finance, healthcare, management consulting, marketing, science, government policy and education. Join the renowned Notre Dame network and launch your data science career with a graduate degree that prepares you for success.

PROGRAM DETAILS

LOCATIONS
Online with exclusive immersions at Notre Dame & Silicon Valley

DURATION
21 months
at full-time pace

CLASS FORMAT
Small Evening Classes Online

CURRENT ADMISSIONS WINDOW
Now - April 16, 2018

LEARN MORE

THE NOTRE DAME EDGE

A leading research university with rigorous academics and a mission to be a force for good in the world.

The student-centered experience of small classes, faculty interaction, on-campus, industry and alumni connections.

A multidisciplinary program that develops quantitative and computational skills as well as effective communication and ethical judgment.

A state-of-the-art online learning environment, designed for the data scientist student.

HOW TO BECOME A DATA SCIENTIST

Data science is now influencing almost every department within every industry. From product development to sales and marketing to government operations, data scientists are emerging as important new players within businesses and organizations across the world. But what does it take to actually become one? Start your journey to becoming a data scientist by learning about: data science basics, applications, job opportunities and education and training.

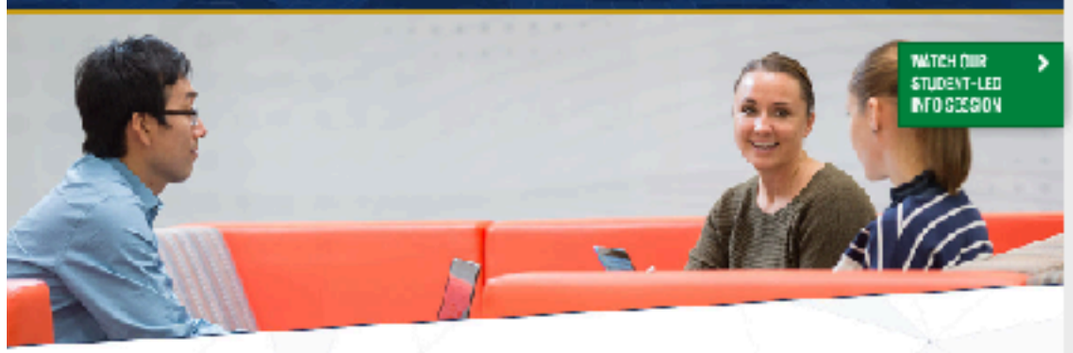
LEARN MORE ABOUT BECOMING A DATA SCIENTIST

A MULTIDISCIPLINARY PROGRAM THAT DEVELOPS QUANTITATIVE AND COMPUTATIONAL SKILLS AS WELL AS EFFECTIVE COMMUNICATION AND ETHICAL JUDGMENT

We call this a three-dimensional data scientist. A data scientist uses quantitative and computational skills to create value from data – transforming, organizing and analyzing it using computing, mathematics and statistics. But a three-dimensional data scientist complements quantitative and computational skills with the ability to communicate effectively and act ethically.

Our multidisciplinary MS-AOMS: Data Science program gives students the edge they need to perform at the highest levels of the field by producing three-dimensional data scientists. Through programming, statistics, storytelling, ethics and behavioral data science coursework our MS-AOMS: Data Science program students learn more than just technical quantitative skills. They learn to communicate effectively and act ethically.

LEARN MORE ABOUT BECOMING A 3D DATA SCIENTIST



THE STUDENT-CENTERED EXPERIENCE

SMALL CLASSES, FACULTY INTERACTION, ON-CAMPUS EXPERIENCES AND INDUSTRY AND ALUMNI CONNECTIONS

The online program provides a social and collaborative learning experience centered around the student. We feature small class size, a bond between faculty and student, on-campus program launch, optional immersion weekends in Silicon Valley, industry and alumni connections and more. Learn about our student-centered approach.

AN ONLINE EXPERIENCE CUSTOM BUILT FOR YOU: THE DATA SCIENCE STUDENT

We provide an online learning environment unlike any other, built just for this platform to create exceptional learning outcomes. The uncompromising commitment to academic quality and personal interaction between faculty and students, for which Notre Dame is known, is at the heart of the program. It is modern, way, and engaging – designed for the online study of data science. Learn more about our unique online learning environment.

ENGAGING
Modern and easy to use – our online environment, built specifically for how data scientists learn, will engage you and improve your learning outcomes.

PERSONAL
Small class size, close student-faculty bond and a personalized approach to online learning

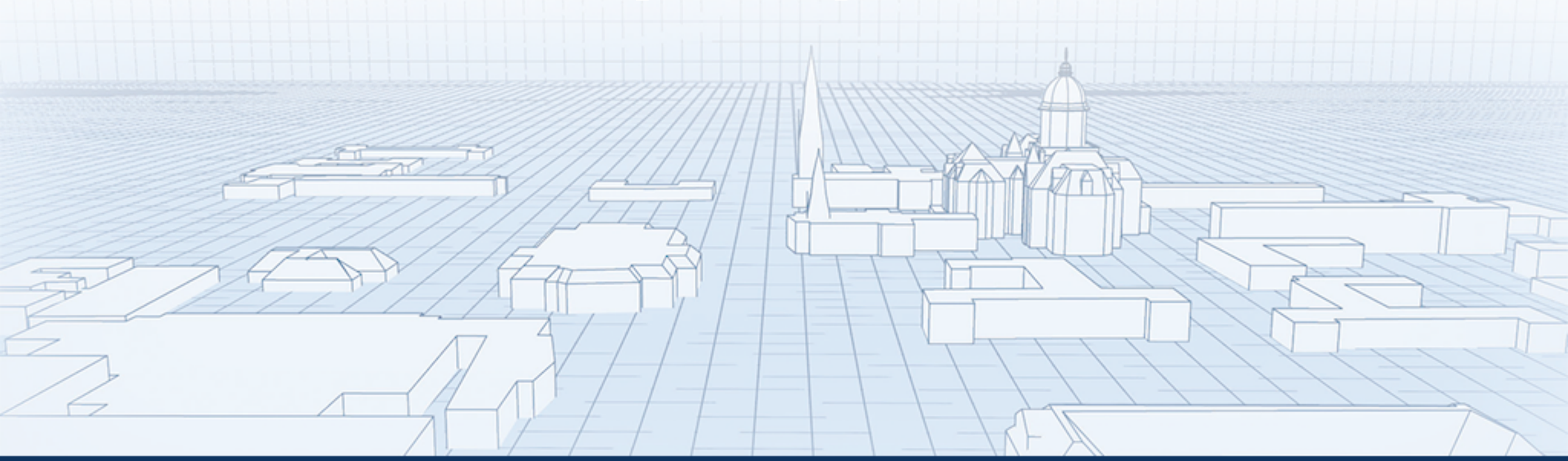
STUDENT-CENTERED
Online tools and content that reflects our high standards of academic excellence and student-centered focus

COLLABORATIVE
Collaborative learning and interactions that mirror data science professional practice and enhance study

REAL WORLD DATA
An emphasis on applied projects, real data and case studies

LEARN MORE

DEGREE PROGRAM as the organizing principle



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Security

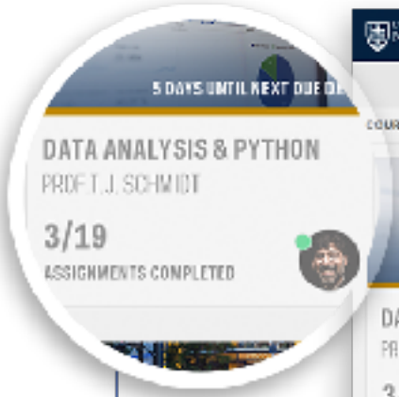
Learner Dashboard

Open edX

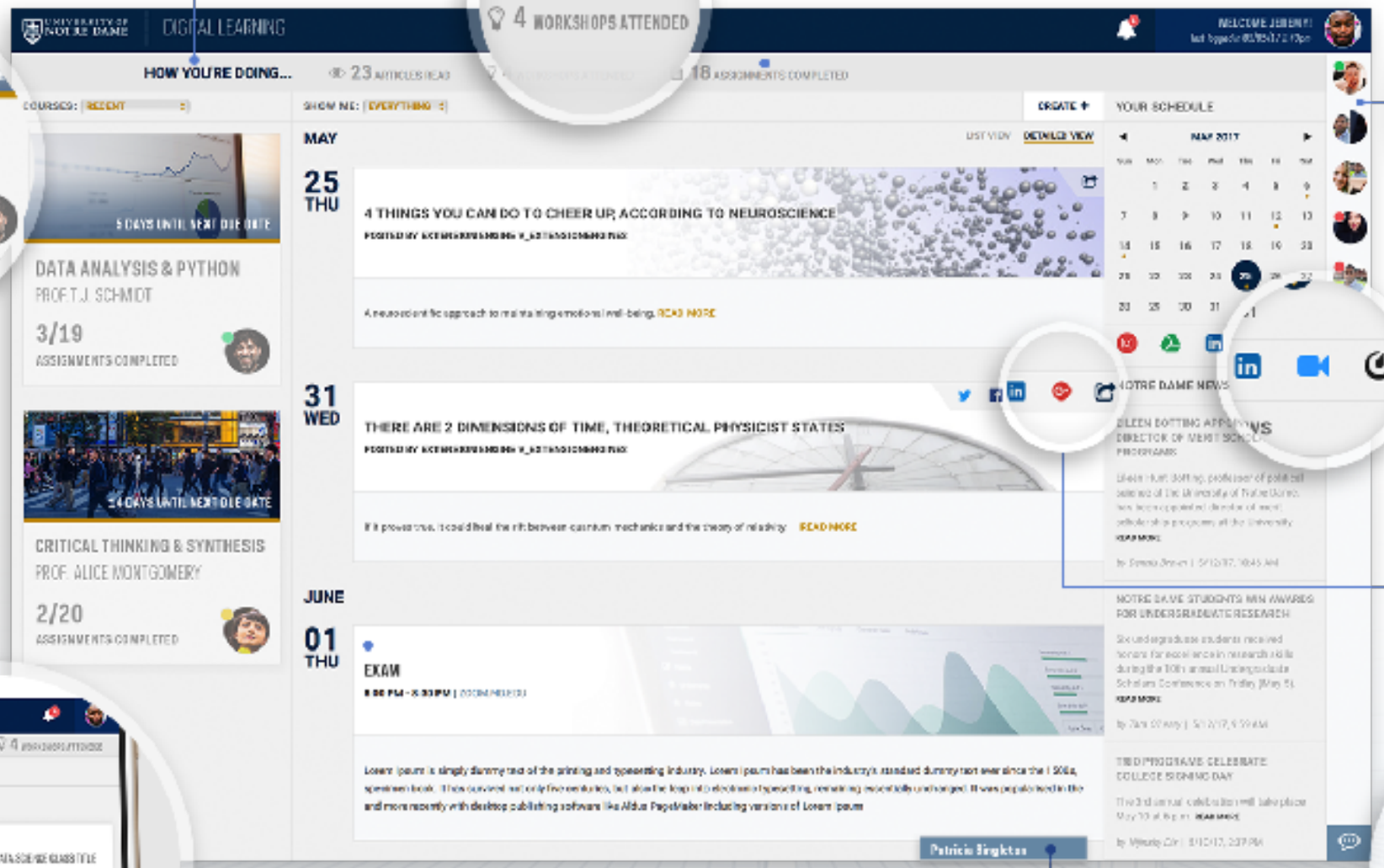
ACTIVITY TRACKER

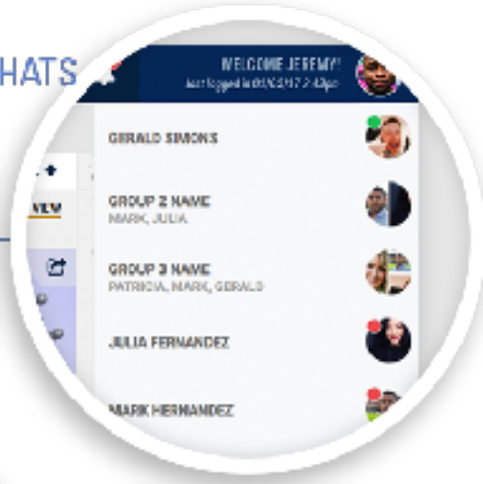
HOW YOU'RE DOING...
4 WORKSHOPS ATTENDED

RECENT PERSONAL & GROUP CHATS



Course Icons, assignments/Exams lever an API that takes the User directly to that location in Open edX.

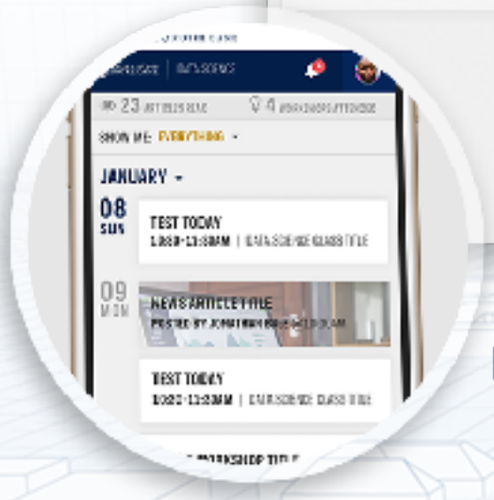




BAR FOR LOCATING THIRD-PARTY TOOLS.

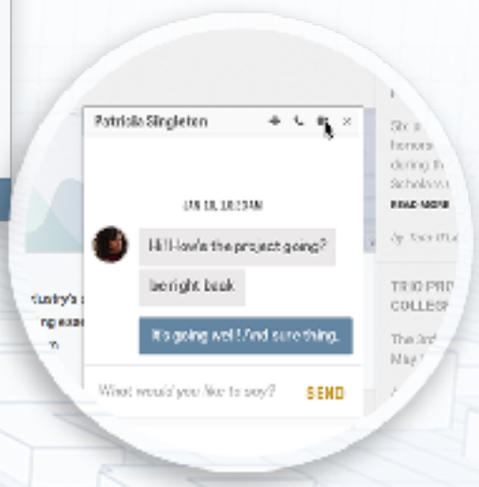
99% CAS controlled with exception of LinkedIn

EMPHASIS ON SHARING ARTICLES ON SOCIAL MEDIA



MOBILE OPTIMIZATION

PERSONAL & GROUP MESSENGER



Key Functionality

General degree program needs	Data science at ND
Time-gated asynchronous learning paths	Awesome UX
Synchronous learning	Programming
Regular performance feedback	Auto grading
Proctored high-stakes tests	Social (faculty, peer interaction)
Event management	Environment integration
SIS integration	

CAS

Mattermost

zoom

DIGI[cation]™

31 Google

Google Drive

COURSES

Proctortrack

RStudio

OPENedX®

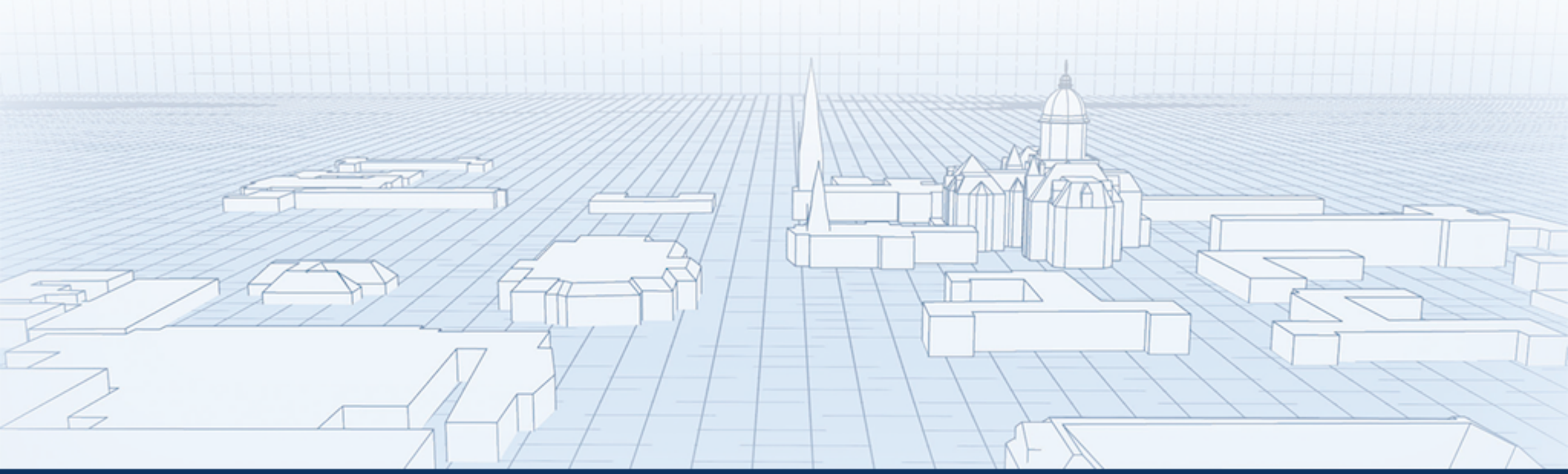
jupyter

qualtrics

DataCamp

vocareum

INSTRUCTOR EXPERIENCE



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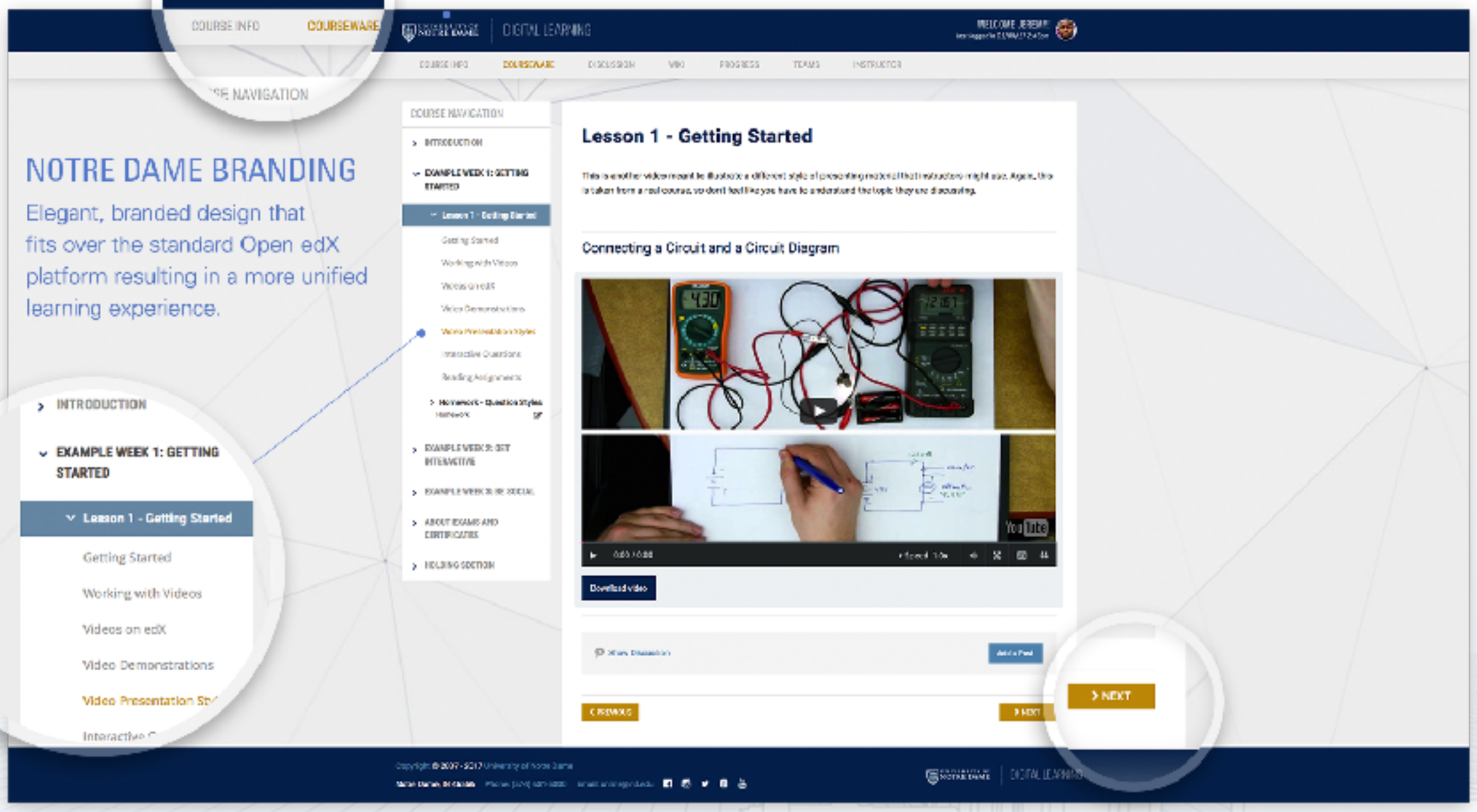
Open edX Customizations

Gradebook	Nested block	Theme
• Manual Grading • Group Projects • Inline grading • Summative Points • Custom score view • Custom data export • Supports extended point entries	• Multiple custom created templates • Customizable courseware layout to support content and verbiage layout. (i.e. videos, text, images.)	• Custom theme created with Notre Dame's branding guidelines and color schema in mind.

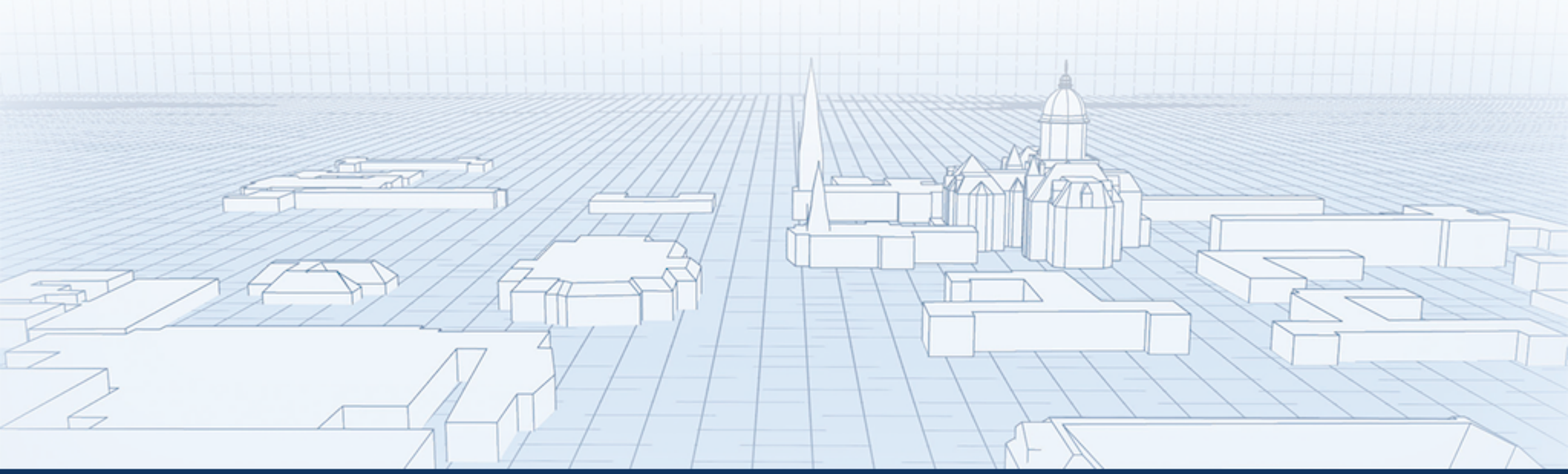
Open edX + Notre Dame

NOTRE DAME BRANDING

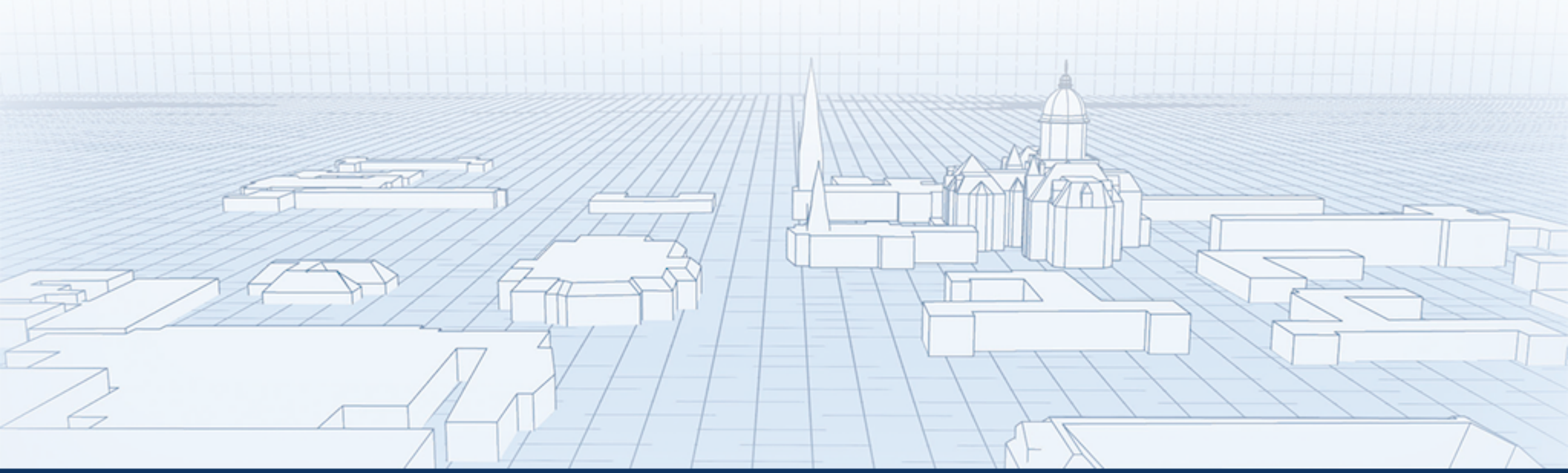
Elegant, branded design that fits over the standard Open edX platform resulting in a more unified learning experience.



WHY?



OPEN SOURCE



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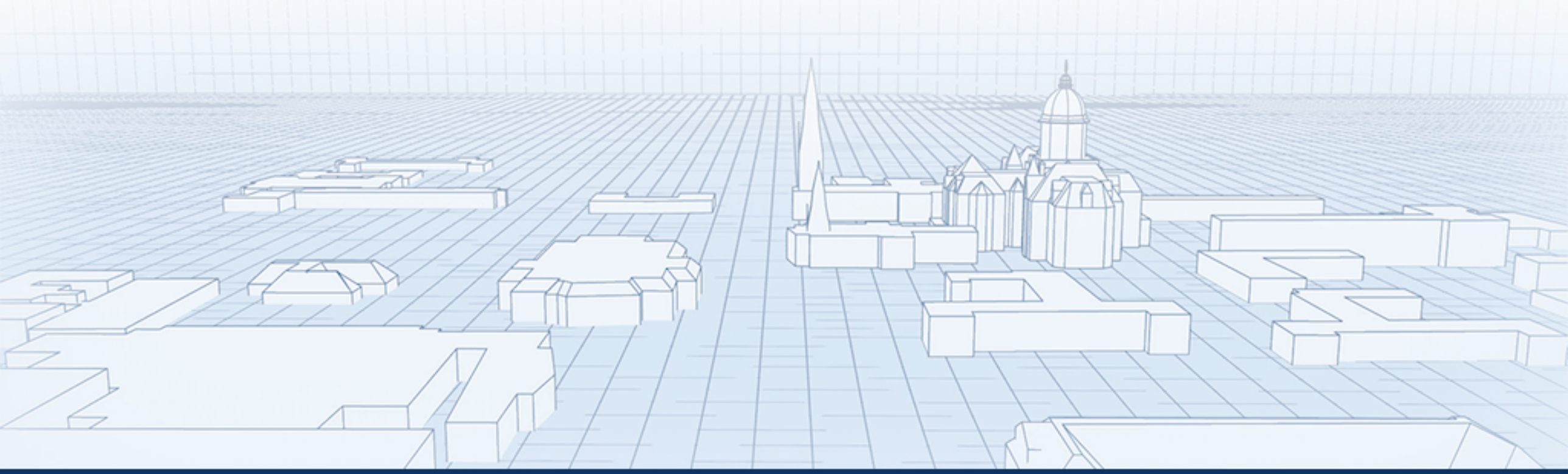
BORN ONLINE



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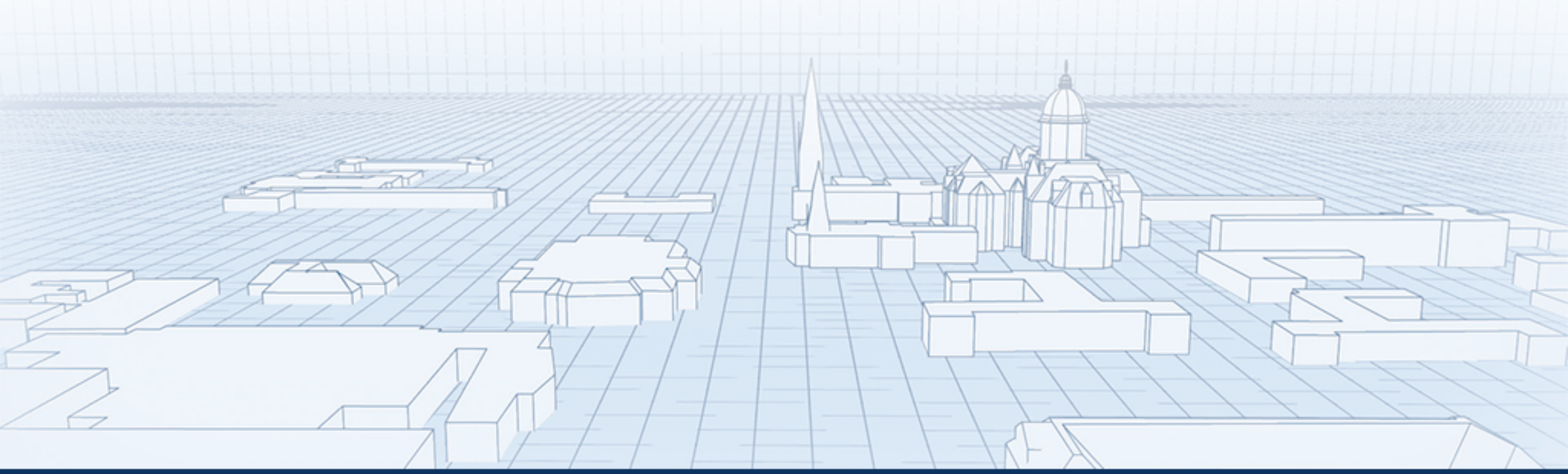
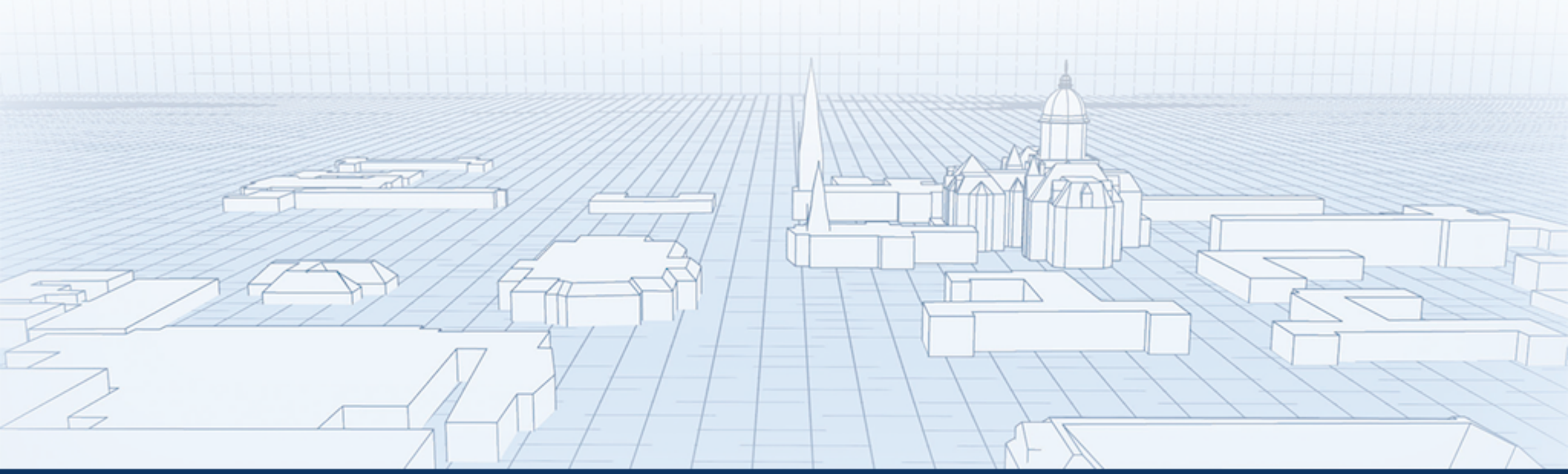
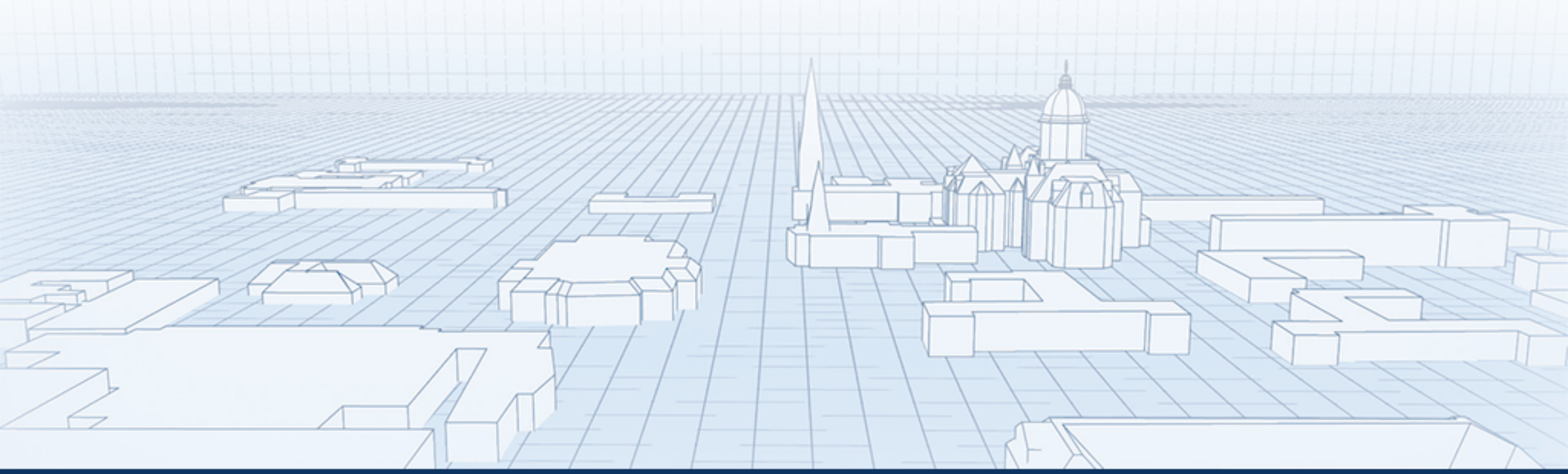
SCALABILITY OVER TIME



DIFFERENTIATION



AUTONOMY



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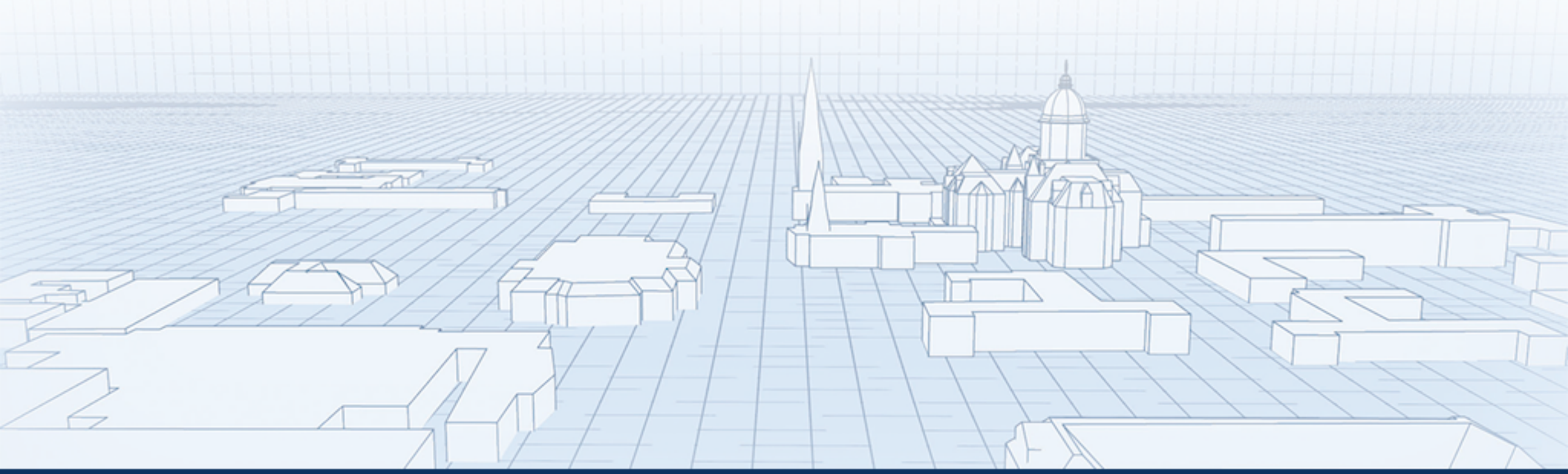
COHESION for LEARNING



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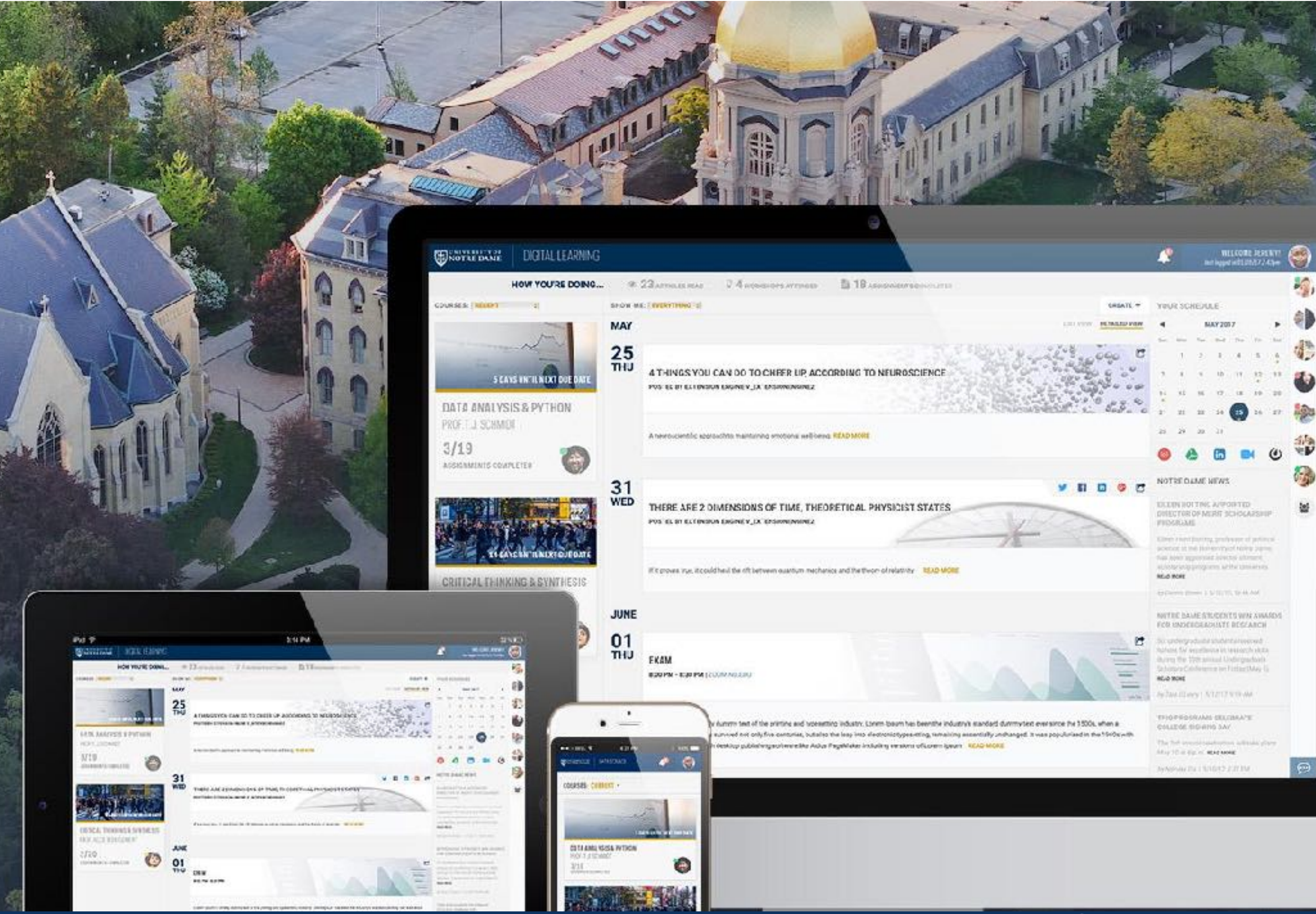
UNIVERSITY OF NOTRE DAME
DIGITAL LEARNING
HOW YOU'RE DOING...
MAY
25
THU
4 THINGS YOU CAN DO TO CHEER UP, ACCORDING TO NEUROSCIENCE
DATA ANALYSIS & PYTHON
3/19
31
WED
THERE ARE 2 DIMENSIONS OF TIME, THEORETICAL PHYSICIST STATES
CRITICAL THINKING & SYNTHESIS
JUNE
01
THU
EXAM
YOUR SCHEDULE
NOTRE DAME NEWS

Partnerships

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