C·SPECC

NSF CREST Center for Security and Privacy Enhanced Cloud Computing (C-SPECC)

Director and Lead PI: Ravi Sandhu, University of Texas at San Antonio

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PROJECT OVERVIEW

C-SPECC Director and Lead PI:
Ravi Sandhu, *College of Sciences, Institute for Cyber Security, Computer Science*

Education and Outreach
Co-PI: Guadalupe Carmona
College of Education and Human Development, Interdisciplinary Learning and Teaching

Sub-Project 1 Protection

Access Control
Private Computing
Protected Computing

Co-PI:
Ram Krishnan
College of Engineering, Electrical and Computer Engineering

Sub-Project 2 Detection

System Monitoring
Host Monitoring
Cloud Forensics

Co-PI:
Nicole Beebe
College of Business, Information Systems and Cyber Security

Sub-Project 3 Policy

Policy Specification
Policy Composition
Policy Verification

Lead:
Jianwei Niu
College of Sciences, Computer Science

Multi-Cloud Laboratory
Co-PI: Jeff Prevost, *College of Engineering, Electrical and Computer Engineering*

PARTNERS

Industry
Rackspace,
NSS Labs

Federal
National Institute for Standards and Technology (NIST)

High Schools
Northside Independent School District (NISD):
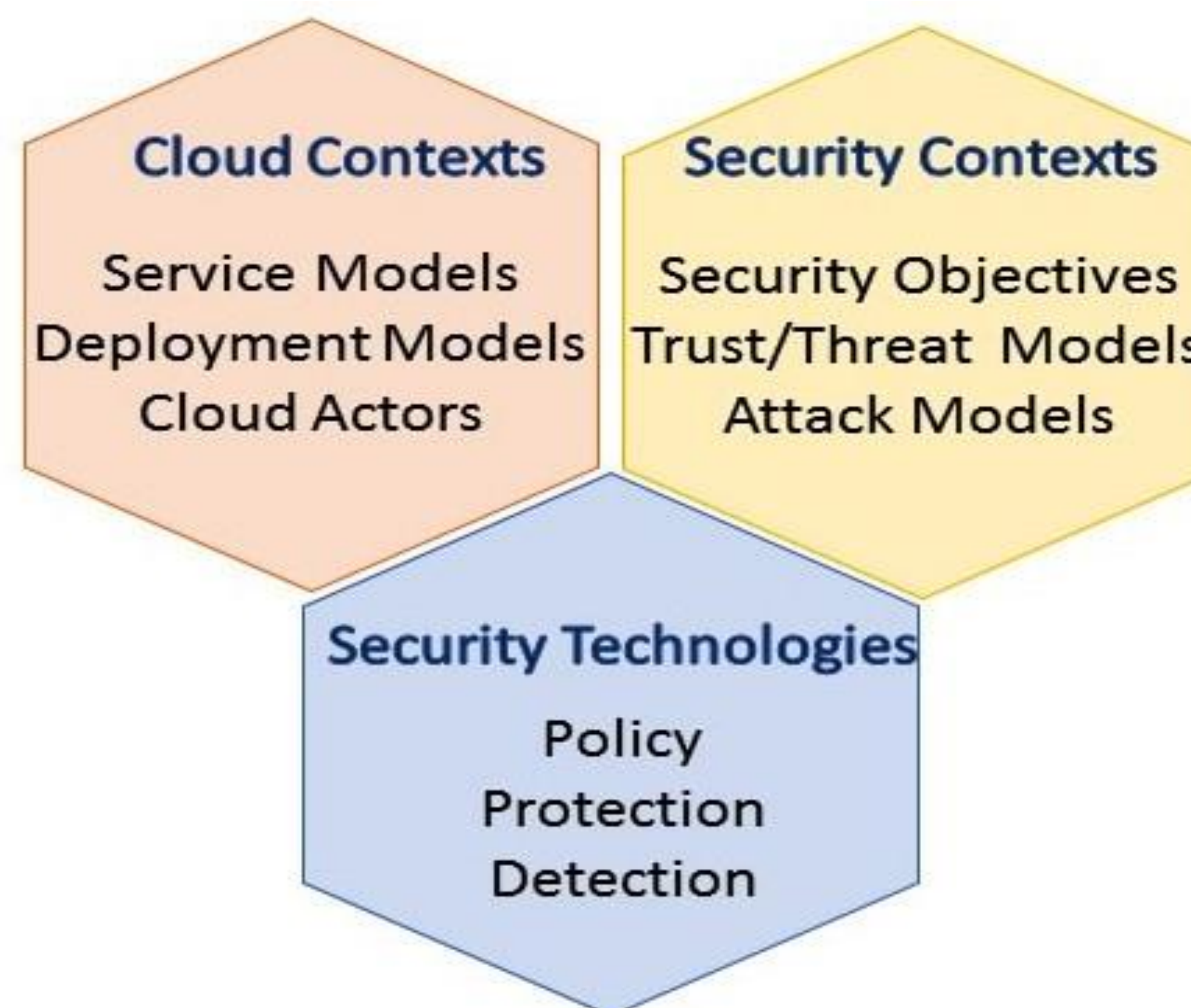- Business Careers
- Harlan
- Taft
- Warren

UTSA Centers
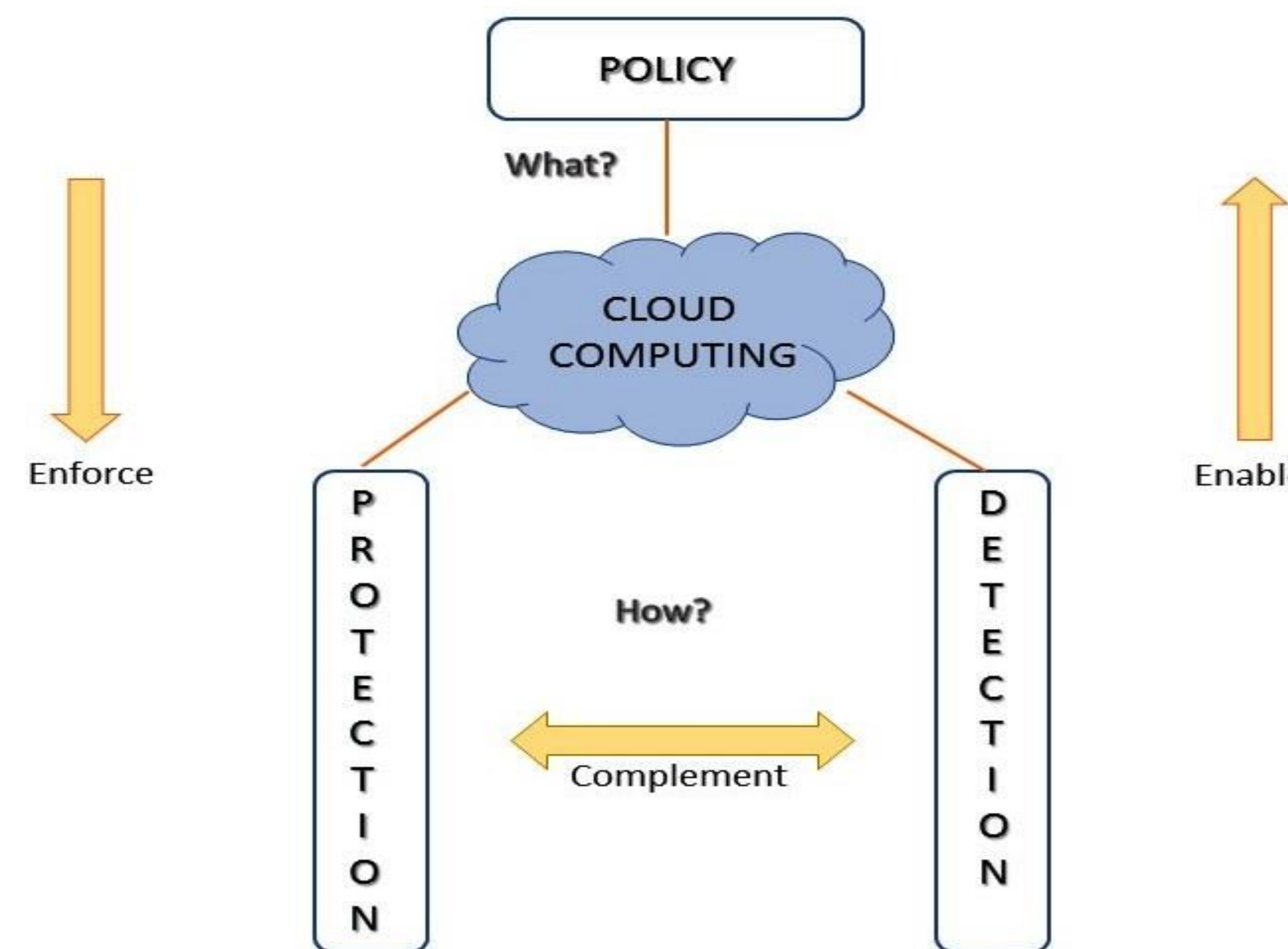Inst. for Cyber Security (ICS), Cyber Center for Security and Analytics, Open Cloud Institute (OCI)

C-SPECC GOALS

- pursue excellence in research, innovation and education in secure cloud computing,
- increase participation of underrepresented groups in high tech computing, and
- pursue innovative research-based educational strategies in this arena.

C-SPECC RESEARCH APPROACH

Cloud Contexts
Service Models
Deployment Models
Cloud Actors

Security Contexts
Security Objectives
Trust/Threat Models
Attack Models

Security Technologies
Policy
Protection
Detection

SECURITY TECHNOLOGIES HOLISTIC RESEARCH

POLICY
What?
CLOUD COMPUTING
Enforce
Enable
PROTECTION
DETECTION
How?
Complement

C-SPECC RESEARCH THRUSTS

- **Protection:** access control, private and protected computing
- **Detection:** system and host monitoring, anomaly detection and digital forensics
- **Policy :** policy specification, composition and verification
- **Education and Outreach:** mechanisms and protocols to increase participation of underrepresented groups
- **Multi-Cloud Laboratory:** operates multiple instances of the open-source, and free OpenStack cloud platform

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EDUCATION AND OUTREACH

NORTHSIDE INDEPENDENT SCHOOL DISTRICT (NISD)

- Harlan High School
- Taft High School
- Warren High School
- Business Careers High School
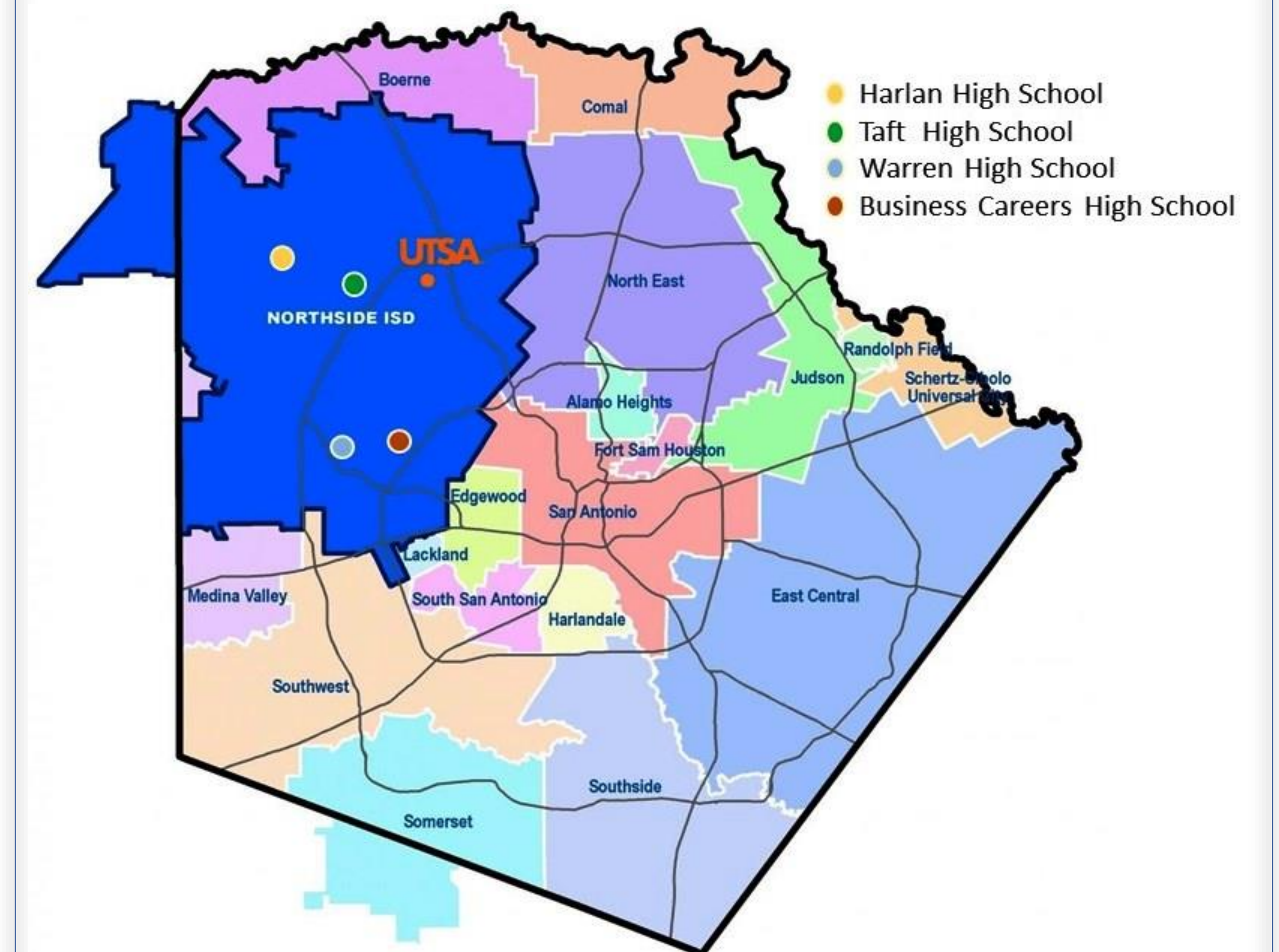
❖ **About NISD**
- Established in year 1949
- 4th largest in Texas
- Rapid growth: Adding 1500 students each year
- Diverse population and communities

❖ **Strategic Plan**
- Partner with 4 high schools
- NISD high school teachers receive iSTEM Graduate Education Certificate at UTSA (4 courses)
- Collaboratively develop cloud focused cyber security curriculum at high schools
- First cohort of 5 teachers for 4 schools start in Spring 2018

❖ **Biggest Challenge**
- Scalable, sustainable engagement within and beyond NISD

BEYOND NISD

❖ **CyberTexas.org**
- San Antonio based non-profit organization
- Mayor's Cyber Cup
- CyberPatriot at local schools
- Engaged with multiple school districts

Excellence in Secure Cloud Computing Research and Education!

I·C·S
The Institute for Cyber Security

UTSA
Computer Science