



Nice to Meet You!



Jim Chatas, AIA, LEED AP NCARB
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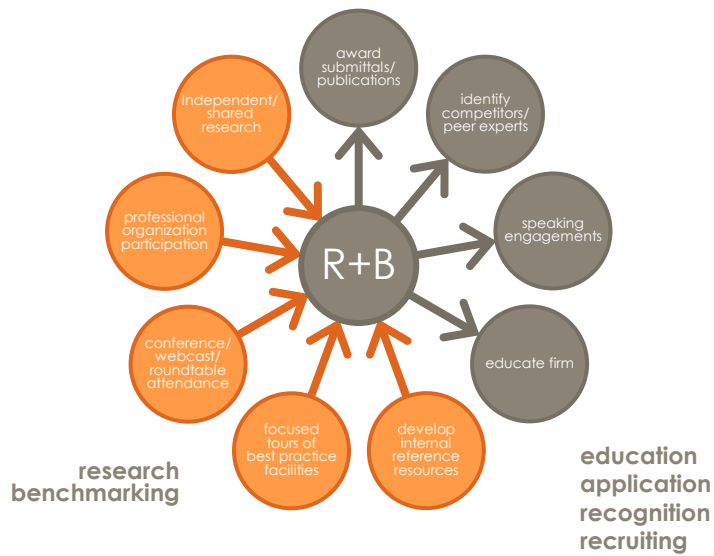
- 1 Who We Are
- 2 CTE Trends
- 3 CTE Clusters
- 4 Potential Strands
- 5 How the Business Community Benefits
- 6 Key Ingredients & Design Considerations
- 7 Frisco Career & Technical Center Case Study
- 8 Saline County CTE Feasibility Study
- 9 Q & A

Agenda





240+ High Schools	180+ Middle Schools	400+ Elementary Schools
9B \$ worth of K12 work	#1 K12 Firm Architectural Record	300+ Awards for Education Design



Expertise

Laboratories

Medical Learning

Innovative Engineering Technologies

Student Life

Special Needs Schools

Libraries/Media Centers

Sustainability

Furniture and Technology

Campus Master Planning

Colleges of Education

High Performance Schools/CTEs

Innovative Learning Environments

Law Schools

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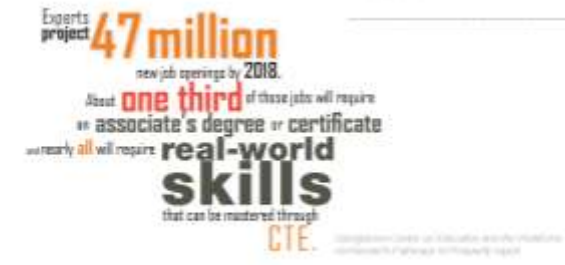
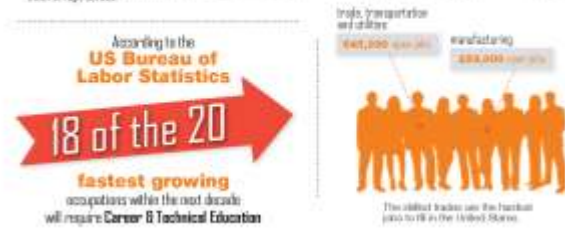
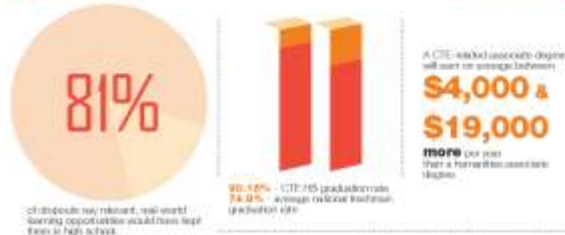
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BY the NUMBERS

trends in CTE education represent several significant shifts from traditional educational and career models. A look at some of those numbers below.

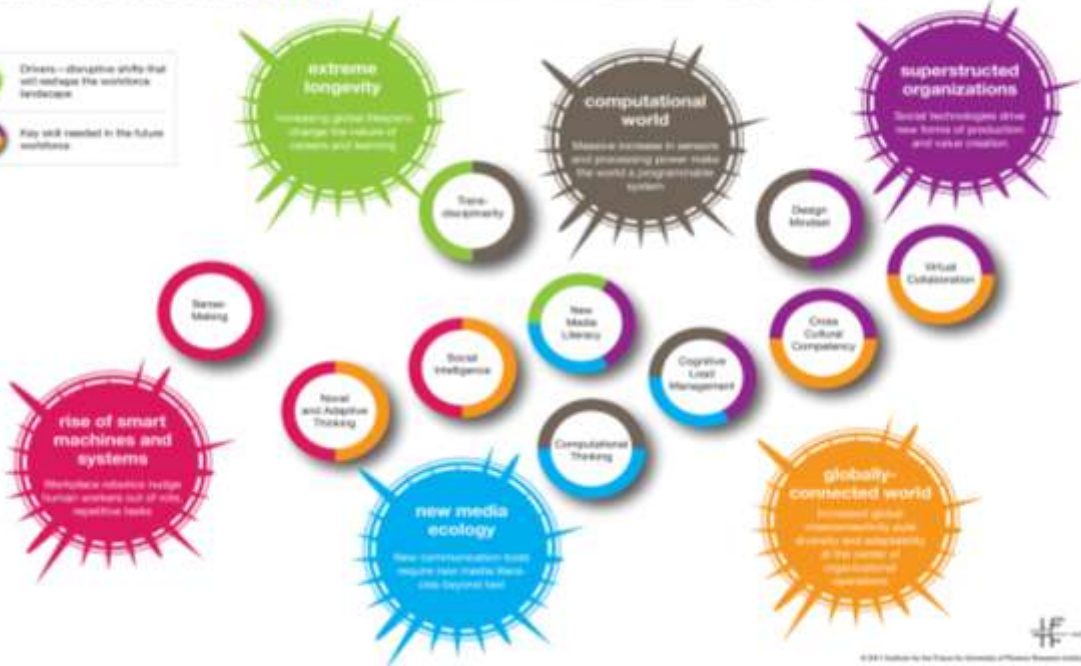


Future Work Skills 2020

While all six drivers are important in shaping the landscape in which each skill emerges, the color coding and placement here indicate which drivers have particular influence on the development of each of the skills.

KEY

- Drivers—blueprints skills that will reshape the workforce landscape
- Key skill needed in the future workforce



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Investing in Career & Technical Education Yields Big Returns



ACTE Reference to this report can be found at www.acteonline.org or by contacting info@acteonline.org

Stantec

National Trends: CTE ROI

- **Connecticut:** For every \$1.00 invested in CTE, Over \$16 is returned over student's career back to the community (\$5 Billion annually)
- **Washington State:** Every \$1.00 Invested returns \$9 in revenues and benefits
- **Tennessee:** For every \$1.00 invested returns \$2 in revenues and benefits (\$13 Million annually)
- Well trained and highly-skilled workers will be best positioned to secure high-wage jobs, further stimulating economic growth and demand for products and services
- Fastest growing occupations are directly targeted – STEM-Based Occupations, Health Sciences, Technology and Engineering

*Association for Career and Technical Education (ACTE) 

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Career Clusters






-  Agriculture, Food & Natural Resources
-  Architecture & Construction
-  Arts, AV Tech & Communication
-  Business Management & Administration
-  Education & Training
-  Finance
-  Government & Public Education
-  Health Science
-  Hospitality & Tourism
-  Human Services
-  Information Technology
-  Law, Public Safety, Corrections & Security
-  Manufacturing
-  Marketing, Sales and Service
-  Science, Technology, Engineering and Math (STEM)
-  Transportation Distribution & Logistics

Information provided by:
National Research Center for Career and Technical Education (NROC/TE)



career matrix

a comprehensive look at fields of specialization offered by trade CTE students and the types of job categories and future careers that these students can expect to qualify for.

Career Cluster	Current Career Path	Future Career Path
 Health Services	Therapeutic & Diagnostic Services Health Information	<ul style="list-style-type: none"> Health Informatics Technician
 Hospitality and Tourism	Restaurants Catering Arbitration Recreation	<ul style="list-style-type: none"> Business Catering Managers
 Human Services	Paralegal and Social Work	<ul style="list-style-type: none"> Paralegal Social Worker
 Information Technology	Building/Logistics Hardware Software	<ul style="list-style-type: none"> Data Interface Smart Grids Outer Security Cloud Services e-partners Internet of Connected Things
 Law, Public Safety, Corrections and Security	Legal Public Safety Domestic Security	<ul style="list-style-type: none"> Emergency Management Forensics Computer Forensics/Security

Career Cluster	Current Career Path	Future Career Path
 Education and Training	Education and Training Services	<ul style="list-style-type: none"> Course Counseling Curriculum Development Micro-credential MOOCs
 Architecture and Construction	Design, Planning and Construction	<ul style="list-style-type: none"> Smart Systems Smart Grids Augmented Reality Applications Building Simulators
 Arts, AV Tech and Communication	Programming/Marketing Multimedia Centers Entertainment Services	<ul style="list-style-type: none"> Simulation Development
 Manufacturing	Mobile Products	<ul style="list-style-type: none"> Medical Devices Biomedical Devices 3D Printing Advanced Robotics Big Data/BI Connected Devices 3D Web Management
 Transportation, Distribution, and Logistics	Transportation and Infrastructure Logistics Facility Management	<ul style="list-style-type: none"> Hyperloop Transportation (ETD) Diverse Everything Home delivery of goods & services Autonomous

Arkansas CTE Business Snapshot 2014-2018

- **Business Management** and **Administration Cluster** will be largest overall
- **Info Technology Cluster:** Fastest Growth Rate (31% Increase)
- **Hospitality and Tourism Cluster** will add the most jobs
- By 2018, **150,000 jobs** available for industry recognized certificate holders
- Strong in Aerospace, Manufacturing, Agriculture/Ag Products
- **Arkansas Department of Career Education (ACE) Data**

*Arkansas Department of Career Education (ACE)



Arkansas CTE Clusters/Pathways 2014

- Agriculture/Food/Natural Resources
- Architecture/Construction
- Arts/AV Tech/Communication
- Business Management and Administration
- Education/Training
- Finance
- Government/Public Education
- Health Sciences
- Hospitality and Tourism
- Human Services
- Information Technology
- Law/Public Safety/Corrections and Security
- Manufacturing
- Marketing/Sales/Service
- STEM
- Transportation Distribution and Logistics



Arkansas Potential Growth Industries

(Innovation Arkansas – AEDC)

- Advanced Materials and Manufacturing Systems
- Agriculture/Food and Environmental Sciences
- Biotechnology/Bioengineering and Life Sciences
- Information Technology
- Advanced Food Manufacturing/Packaging
- Aerospace/Aviation
- Paper/Timber Products
- Smart Grid Technologies
- Software Development/Data Management
- Sustainable Building Products
- Technical Support Services
- Alternative Energies



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What is a *Strand*?



“A Career Pathway **Specialization** within any CTE Cluster that engages private or public sector employers and/or higher education in the development of specific skills and training, toward the attainment of certification and/or post-secondary degrees”



Transportation/Distribution/Logistics Strands

- Automobile Collision
- Automotive Service Technology
- Aviation Mechanics
- Diesel Mechanics
- Power Equipment Technology



TDL Cluster – Arkansas Career Pathway



Program/Curriculum Development within TDL Strands

- **Basic Automotive:** Oil Change, Tire Repair/Replace, Alignments, Fluids
- **Advanced Automotive:** Brakes, Steering/Suspension, Electrical Systems, Transmission, Heating and Air Conditioning, Engine Performance/Repair, diagnostics
- **Other:** Heavy Equipment, Large Diesel Engines, Avionics, Marine, Alternative Fuel Engine Technology, Automotive Body Repair/Paint/Customizing
- **Next Generation:** Virtual Engine Lab



Certification Outcomes

(Basic and Master Level)

- Automotive Repair (Undercar Repair)
- Automotive Technology (NATEF MLR Standards)
- Advanced Engine Performance Specialist
- Medium/Heavy Truck Technician
- Collision Repair/Refinish Technician
- Engine Machinist





Health Sciences

- Therapeutic Services
- Diagnostic Services
- Health Informatics
- Support Services
- Biotechnology R&D



Medical Professional Cluster – Arkansas Career Pathway

Program/Curriculum Development within Health Sciences

- **Basic:** Forensics, Nursing, Medical Assistance, Medical Career Foundations, Allied Professionals, Emergency/Medical Technician, Sports Medicine, Physical Therapy
- **Advanced:** Biomedical Scientific Research, Advanced Laboratory and Lab Technology Skills, Toxicology, DNA Analysis, Disease Detection, Epidemiology, Public Health
- **Other:** Veterinary Medicine, Health Administration
- **Next Gen: Informatics/Advanced Sims**



Certification Outcomes (Basic and Master Level)

- Medical Office Assistant/Specialist
- Medical Administration
- Occupational/Physical Therapy
- Nursing Assistant (CNA)
- Emergency Med Tech





HEALTH SCIENCES



Marketing/Business Management

- Entrepreneurship
- Marketing Technology
- Office Administration
- Management



Business Cluster – Arkansas Career Pathway



Virtual Enterprises International (VEI)

- Replication/Simulation of real world business environment in both structure and practice
- Students create, manage and “own” virtual businesses: from product development to productions, distribution, marketing and sales.
- Worldwide “virtual economy” structured to support virtual business
- Simulated work environments/structures
- Measurable business outcomes and metrics





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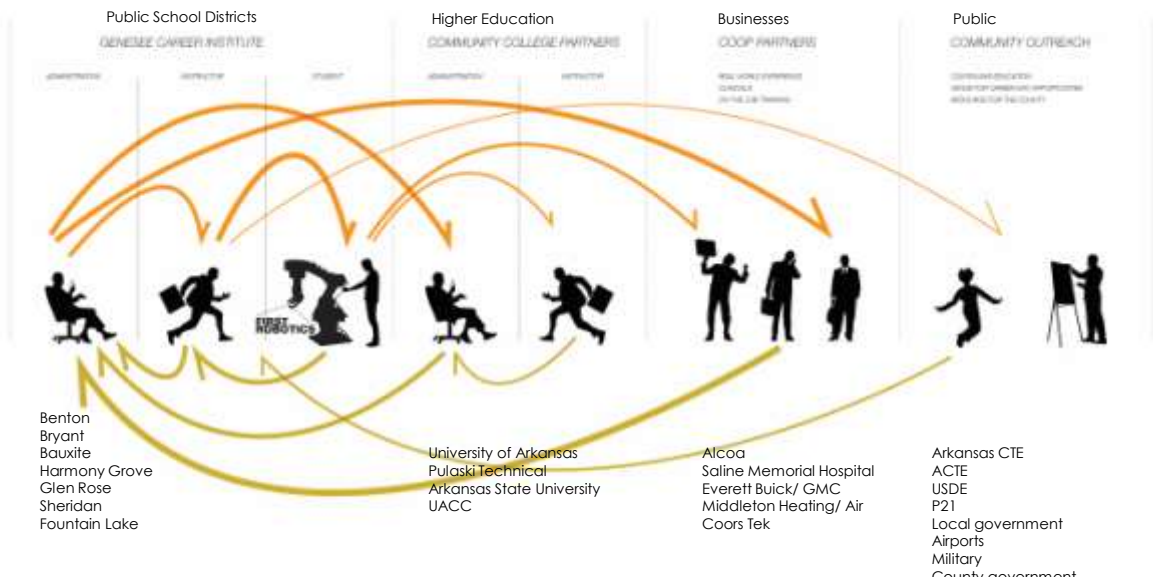


Saline County CTE: A New Synergy

Benton School District
 Bryant School District
 Bauxite School District
 Harmony Grove School District
 Glen Rose School District
 Fountain Lake School District
 Sheridan School District



A Community Partnership



Potential Private Sector CTE Strand Participation

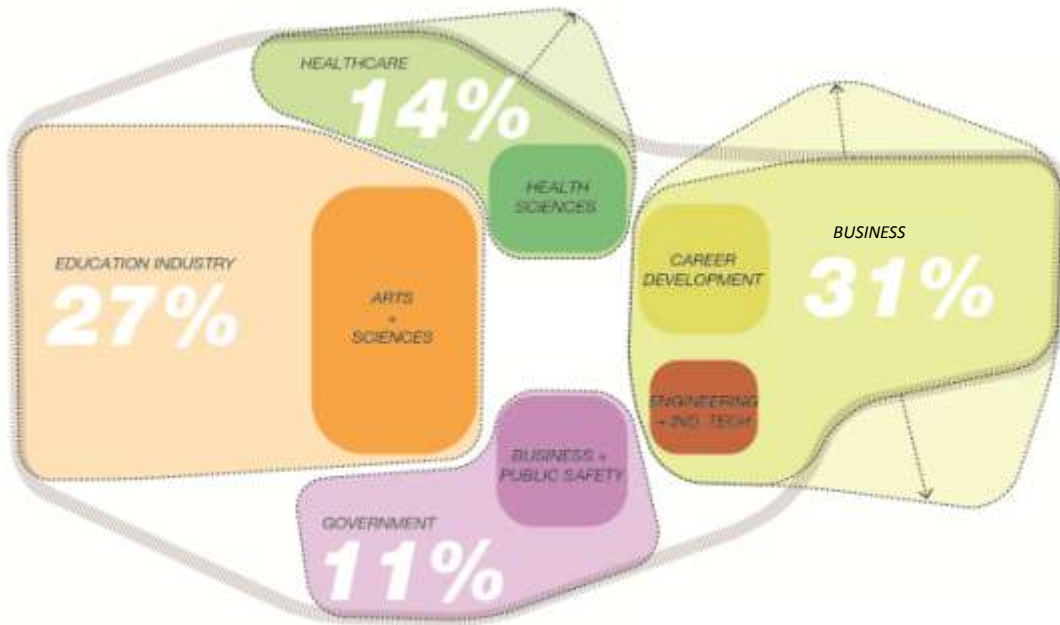
- Externships
- Internships
- Apprenticeships
- Mentorships
- Professional Industry Instruction
- Programs/Curriculum
- Equipment/Technology Donation
- Funding



How CTE Works for Local Business

- Develop a Skilled, Sustainable and Talented Workforce
- Community Work Force Retention – Stay Home
- Skilled Trade Gap Filled: 47 Million Job Openings nationwide for those with certifications/associates degrees (Health Sciences, Engineering, Info Tech)
- Participating Businesses **increase productivity and competitiveness**
- CTE Programs/Curriculum Driven by the **Needs/Demands of Employers**
- Real-World Trained Workforce is **immediately employable**



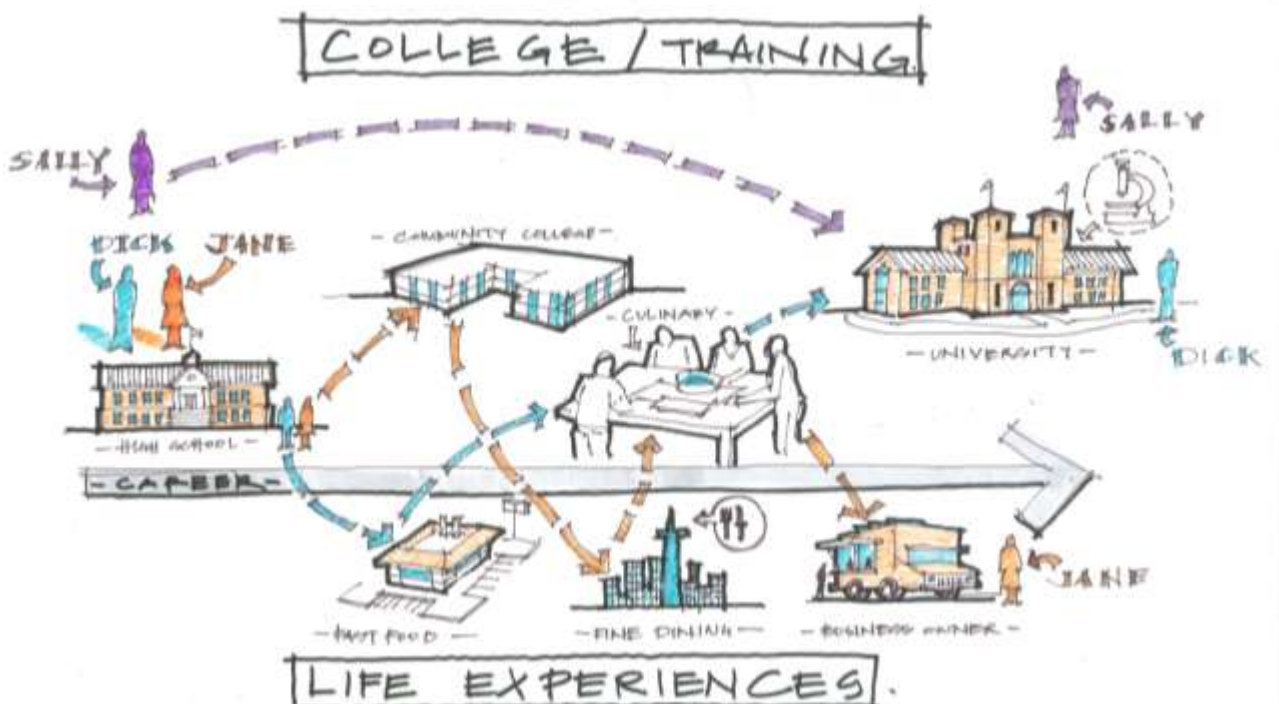


How CTE Works for Families and Communities



College + Training + Life Experience

- Determine the right path/Easier to Change Path
- More Options – work place/post-secondary
- Less Cost/**Less Debt**
- Quicker placement/compensation
- On-the Job Training



Economies of Scale for Education

- Efficient use of Expertise and Staff
- Banked Growth – “An addition to every high school”
- Shared Operational Costs/Efficiencies
- Gained Capacities for School Districts
- Expanded Curriculum for School Districts



CTE Growth Potential for Arkansas

- Local: Enhanced CTE Programs at District Level
 - Viable, Growing Communities, **Retained Talent**
- County/Regional Level:
 - Efficiencies with Resources
 - Business/Community Partnerships
 - Community College Connectivity
- Statewide Level:
 - University Level Connectivity
 - Business Attractor/Job Creation
 - New Industry and Business Opportunities



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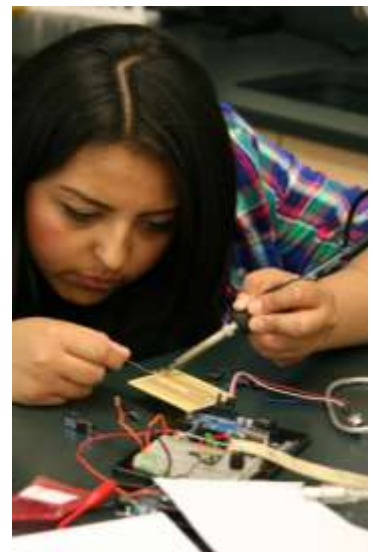
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[think]



[model]



[make]



Design Themes for CTE

Unique work-based learning experiences



Design Themes for CTE

Unique work-based learning experiences

Simulate real-world environments



Design Themes for CTE

Unique work-based learning experiences

Simulate real-world environments

Transparency/Learning on Display



Design Themes for CTE

Unique work-based learning experiences

Simulate real-world environments

Transparency/Learning on Display

Flexible/Multi-use



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Flexible/Multi-use

Collaborative



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Trans-disciplinary



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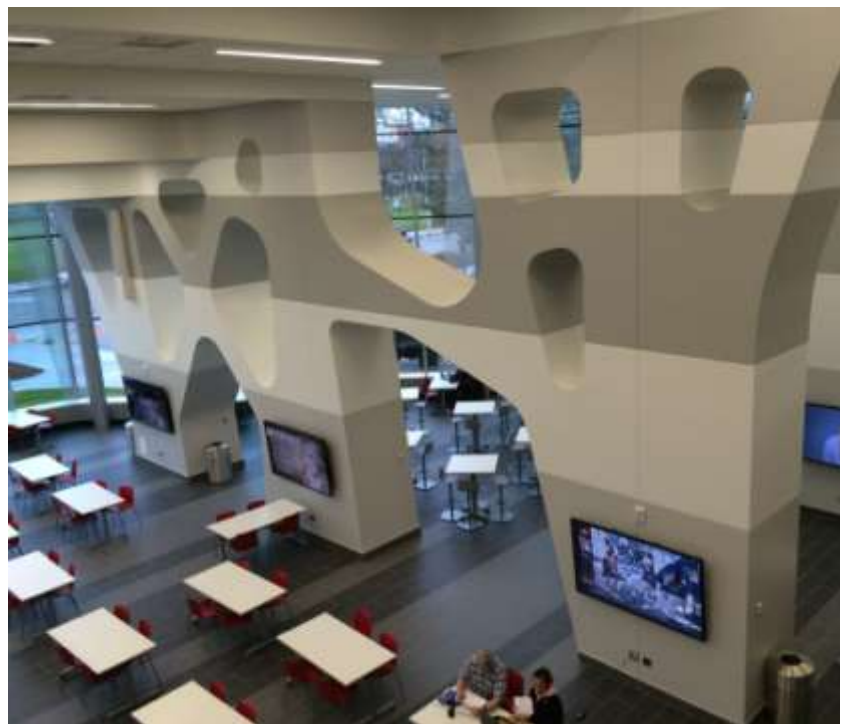
Trans-disciplinary

Community connections



Design Themes for CTE

Connecting Commons



Design Themes for CTE

Connecting Commons

Lab Volume



Design Themes for CTE

Connecting Commons

Lab Volume

Permeability & Porosity



Design Themes for CTE

Connecting Commons

Lab Volume

Permeability & Porosity

Instructional Space



Design Themes for CTE

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Lab Volume

Permeability & Porosity

Instructional Space

“Think Tank” as Bridge



Design Themes for CTE

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Lab Volume

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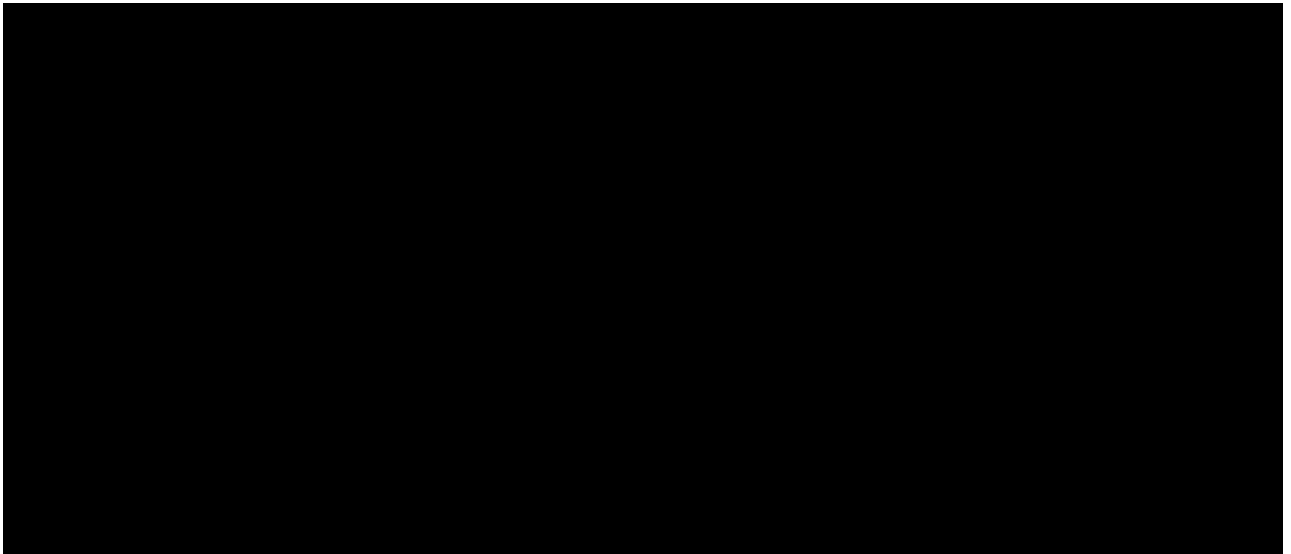
Instructional Space

“Think Tank” as Bridge

Identity



Design Themes for CTE



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FRISCO ISD Career Tech Education Center



FRISCO ISD Stats

- **45,000 students** (one of the largest school districts in Texas)
- CTE serves about **3,000** students
- CTE Phase One completed in 2008 (120,000sf)
- CTE Phase Two will be completed in 2015 (45,000sf)
- City of Frisco Population Growth: 5,000 (1990) to 130,000 (2015)
- Situated in high growth area surrounding Dallas/Plano Region
- CTE located in the **geographic center** of the Fisd
- Relatively affluent community/high performing students
- National businesses relocated to this area of Texas from California due to lower taxes and cost of living.



Demonstrated Indicators

Student Trends:

- 2008 (before CTEC): **87%** of Frisco ISD Students “trended” to HE/Workplace
- 2015 (after CTE): **95%** of Frisco ISD Students “trending” to HE/Workplace

Alignment of Career:

- 2008 (before CTEC): **50%** of Frisco ISD graduates aligned with program
- 2015 (after CTEC): **70%** of Frisco ISD graduates aligned with program

Proficiency:

- Overall FRISCO ISD student performance on standardized tests have improved by 15% since the inception of the CTEC
- CTEC students are better prepared/higher retention on ALL subjects compared to the average student (relevance)



FRISCO ISD Success Factors

- Very strong **Post-Secondary/HE Partners**: UT at Dallas/Collin College at Plano
- Very strong **business partners**: about 40 business partners
 - Embassy Suites Convention Center, NBC Network 5, Both Local Hospitals
- Very strong relationship with **Chamber of Commerce** (Frisco CTE considered “jewel” of community)
- Passionate and committed **leader**: Dr. Wes Cunningham
- Strong **internship** and **mentorship** programs
- Begin CTE “marketing” with **8th Graders**
- Programs/Curriculum determined by **work force demand**



What Frisco ISD CTE students enjoy:

- Authenticity
- Role-Playing
- Relevance
- Immersion
- Passion
- Transparency



How the Frisco business community benefits:

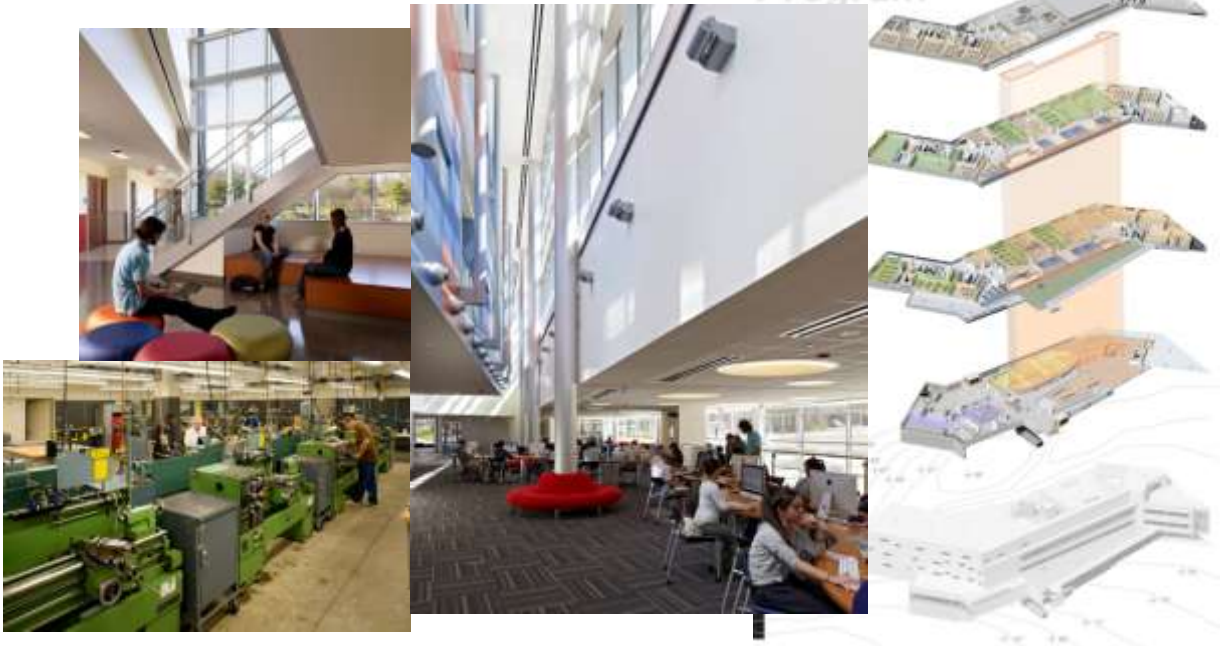
- Essential Resource: Properly Trained Work Force
- Quicker and more direct placement of students
- Knowledge of student abilities BEFORE the job interview
- Recruitment is concurrent with CTE participation
- Retention of workforce in community
(increased business activity with growth and education)



Other CTE Centers.....



Delaware STEM Center



TECH SHOP





Lewisville Career and Technical Center | Lewisville ISD



North Point High School | Charles County Public Schools



Wunsche Career Academy | Spring ISD



Centennial High School | Burlison ISD







**CRIMINAL JUSTICE
LAW**



**CULINARY ARTS
HOSPITALITY**

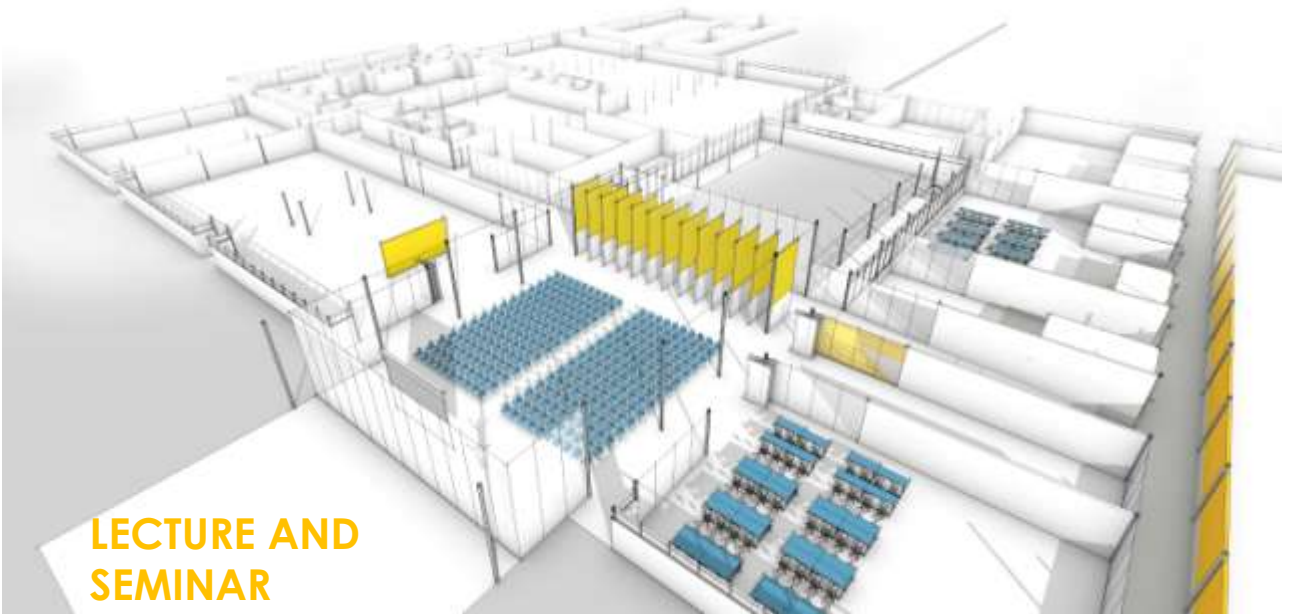


**INFORMATION
TECHNOLOGY**

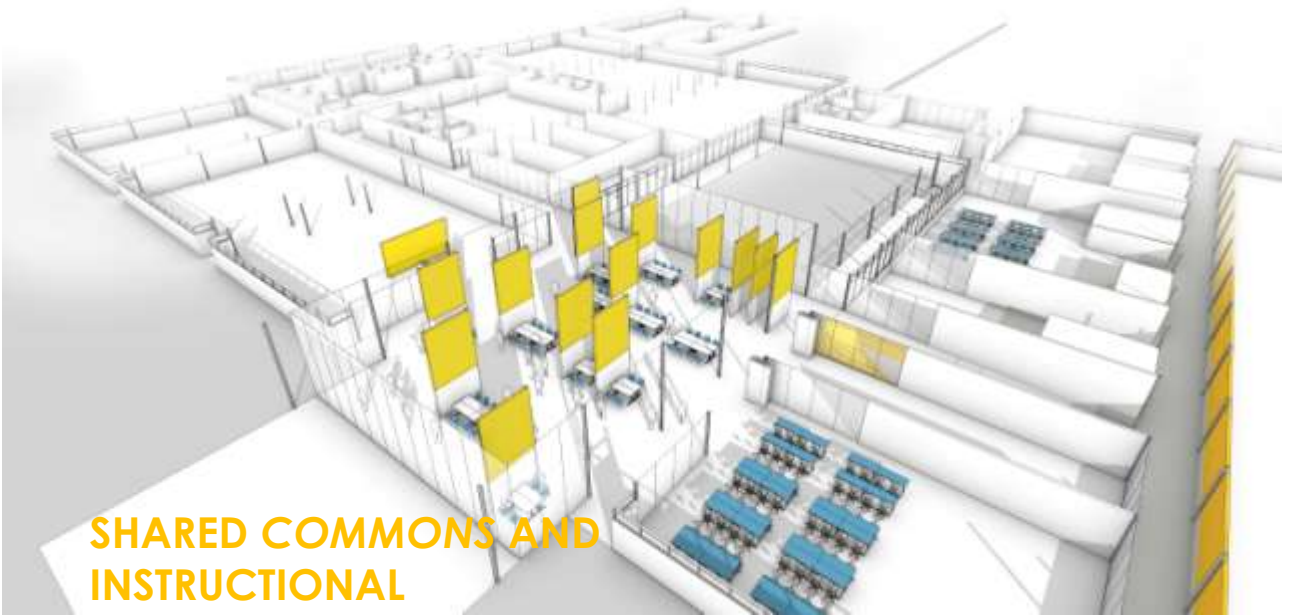


**CONSTRUCTION
TRADES**

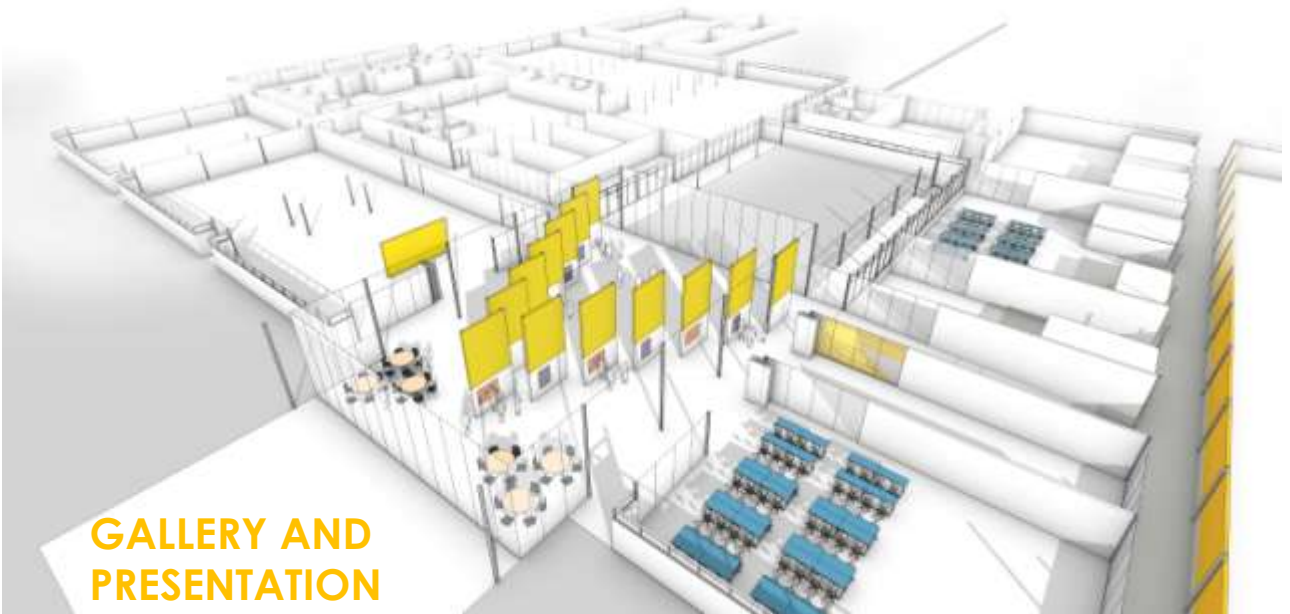




LECTURE AND SEMINAR

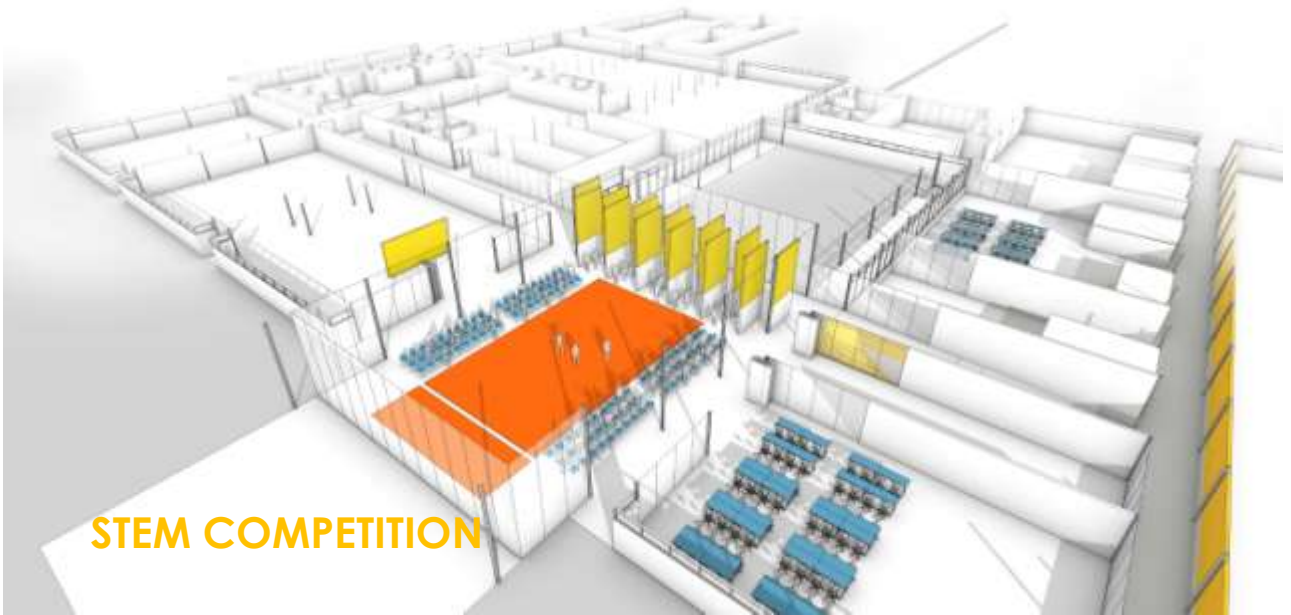


**SHARED COMMONS AND
INSTRUCTIONAL**

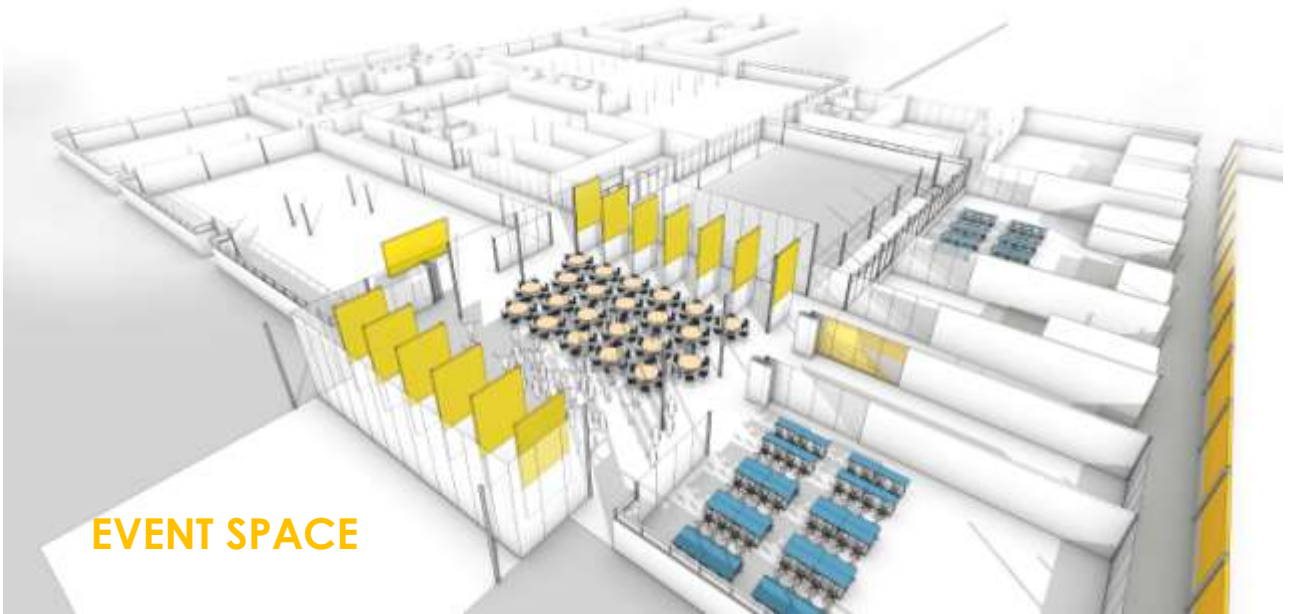


**GALLERY AND
PRESENTATION**





STEM COMPETITION



EVENT SPACE



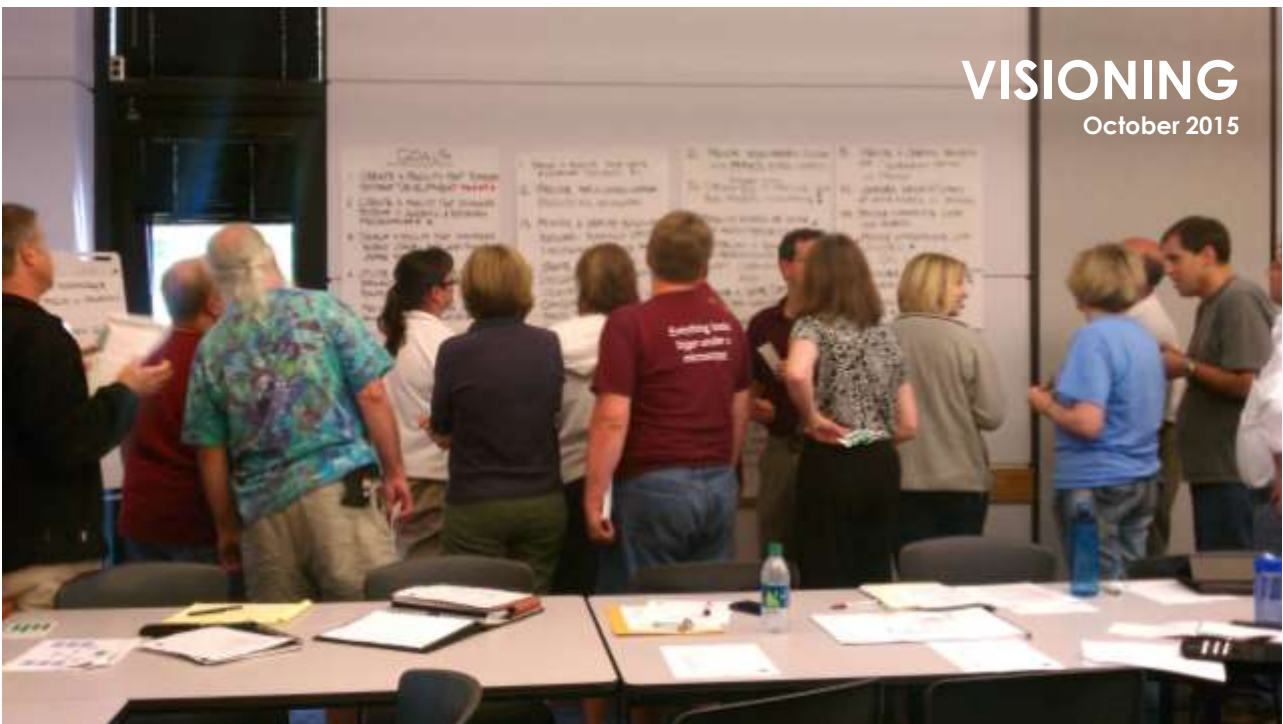
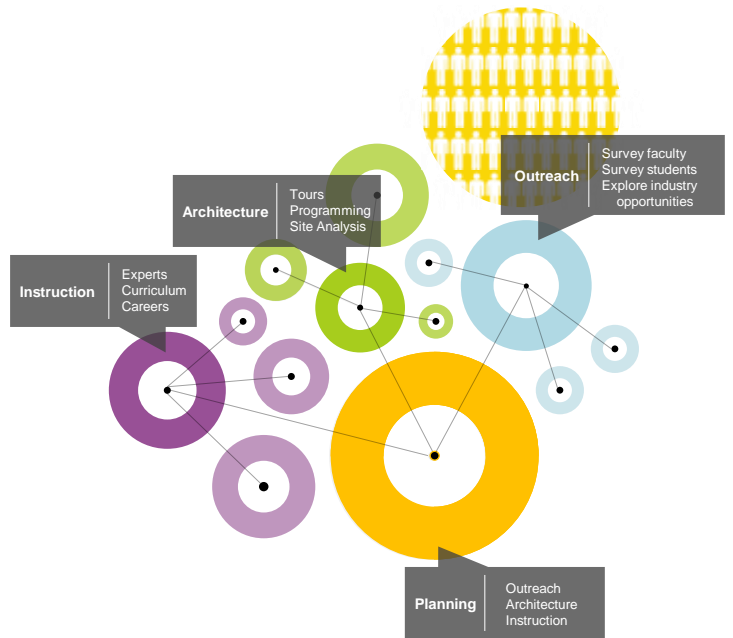


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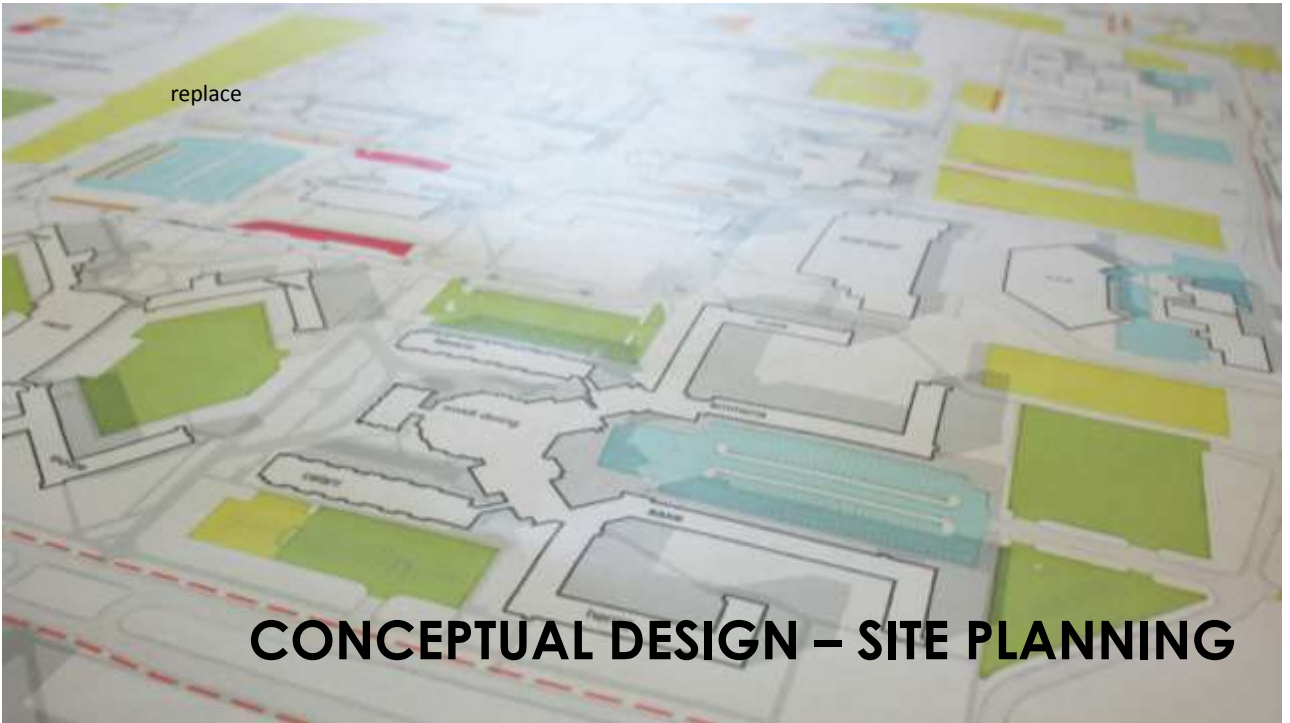
Process



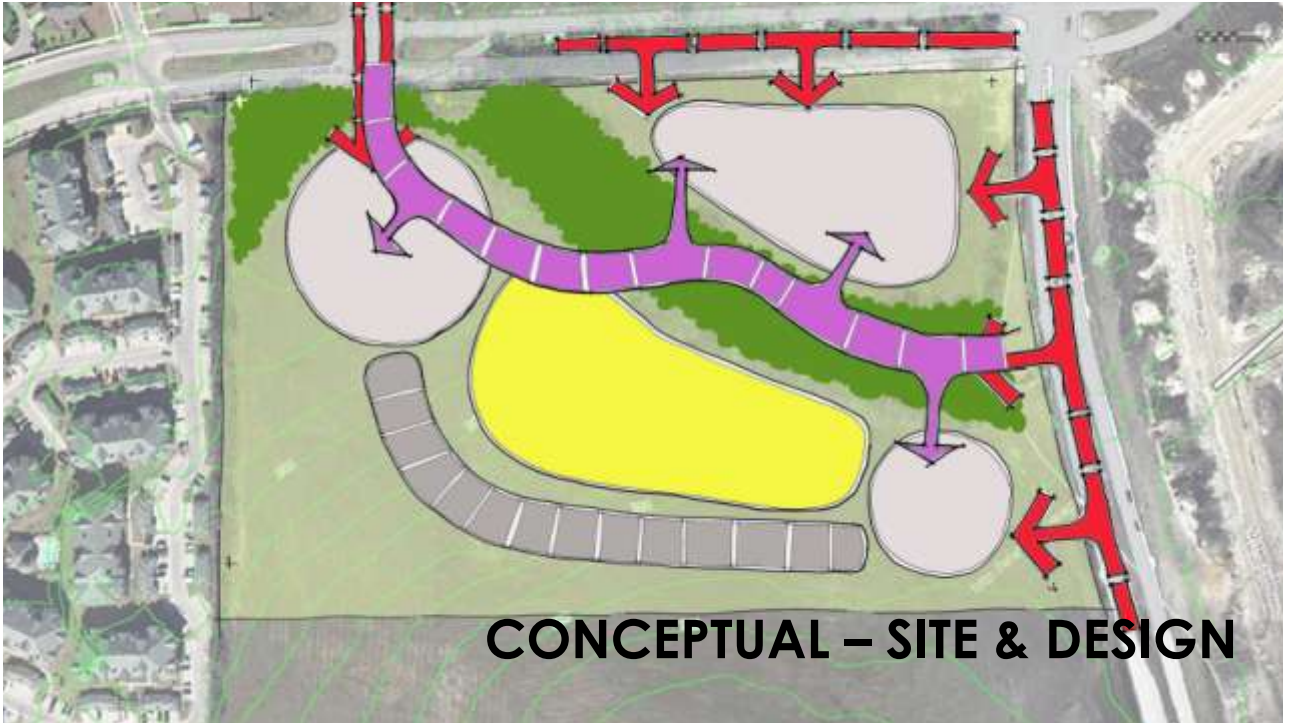


CONCEPTUAL PROGRAMMING

December 2015



CONCEPTUAL DESIGN – SITE PLANNING







Realization: Toward a New Saline County Career Tech Center Campus

- Establish Program and Design
- Determine Site
- Anticipate Growth/Master Plan for Facility and Site
- Establish Projected Cost Estimate for Project
- Establish Projected Operational Cost Estimates for Facility
- Consensus and Realization



Common CTE Capital Project Funding Options

- **Public: Countywide or Statewide Bond Initiatives**
- **Private: Grant Funding/Donor/Business Partnerships**
- **Public/Private Partnerships: Developer/Financier/Long Term Lease**
- **Combinations of Funding Strategies**
 - Phased Initiatives over time



