A Multistakeholder and Interdisciplinary Charrette Organized by the Research Coordination Network for Science, Engineering and Education for Sustainability on Climate, Energy, Environment and Engagement in Semiarid Regions (RCN/SEED – CE^{3}SAR)

Understanding the Corpus Christi Educational Ecosystem: Promoting a Culture of STEM + A/D

Facilitated by:
Dr. Jorge Vanegas, Dean

TEXAS A&M UNIVERSITY
College of Architecture

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Texas A&M University-Corpus Christi
Corpus Christi, TX

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Overview

In partnership with NSF-funded **Research Coordination Network for Science, Engineering and Education for Sustainability on Climate, Energy, Environment and Engagement in Semiarid Regions** (**RCN CE³SAR**), Texas A&M University - Corpus Christi invites you to a charrette entitled:

Understanding the Corpus Christi Educational Ecosystem: Promoting a Culture of STEM + A/D

RCN CE³SAR brings together the combined power of regional research organizations in South Texas with specific expertise related to sustainability in semiarid climates contiguous to the Gulf of Mexico.

Today's global societal challenges are of such a magnitude of complexity that multiple areas of expertise are needed to conceive, plan, design, and implement effective solutions at multiple spatial and temporal scales. This is particularly evident in the pursuit of sustainable economic growth, which requires that citizens be educated and informed, and display active and high levels of social, cultural, and political engagement, in the development, promotion, and application of policies, which encompass the social, economic, and environmental dimensions of sustainability. In particular, grasping the complexities of sustainability in order to effectively address and solve societal challenges such as climate change, energy, water, and other environmental, social, and economic issues, requires mindsets, skills, abilities, and competencies solidly anchored in **Science, Technology, Engineering and Mathematics** (**STEM**) innovations.

However, **STEM** innovations have not been, and will never be, enough to provide comprehensive solutions to societal challenges, particularly within the global context of volatility, uncertainty, complexity, and ambiguity that surrounds sustainability. In this context, several issues converge: (1) the nature, dynamics, and speed of change; (2) a low level of awareness and understanding, lack of predictability, and prospects for surprise of some issues and events; (3) a plethora of forces, confounding issues, chaos, and confusion that surround organizations, both public and private; and (4) cause-and-effect confusion caused by haziness of reality, potential for misreads, and mixed meanings and understanding of conditions. As a result, more than ever, there is a need to transcend **STEM**, and add imagination, creativity, and design to the set of mindsets, skills, abilities, and competencies required to effectively address and solve societal challenges. For some constituents, **Art and Design** (**A/D**) is poised to transform societies, economies, and the environment in the 21st century, just as science, technology, engineering and mathematics did in the last century.

The goal of this charrette is to initiate the planning process for creating **STEM + A/D** culture in Corpus Christi that leads to a measurable increase in the number of its graduates in these disciplines over the next decade. Lessons learned from the Corpus Christi region will be generalized for use in other areas.

The charrette will be grounded on the thesis that an "*educational ecosystem*," defined as *a hierarchical community of institutions, organizations, agencies, societies, businesses and people that interactively learn and educate in the same area or environment,* exists in Corpus Christi and its outlying regions.

It will be organized around a primary question:

> ➢ *What are the key elements of Corpus Christi educational ecosystem?*

And the following complementary questions:

> ➢ **How are the key elements of Corpus Christi educational ecosystem networked?**

> ➢ **How do resources flow through the present network?**

> ➢ **Does the present network and resource flow minimize or optimize STEM + A/D education?**

> ➢ **How can the Corpus Christi educational ecosystem promote a regional STEM + A/D culture?**

A charrette has several characteristics that are important to the success of this regional planning process. First, it will be a collaborative and inclusive process. In our case, the collaboration will embrace outside experts and community stakeholders who are interested in and will benefit from **STEM + A/D** development in the region. Second, it will take a rigorous interdisciplinary approach to examining the Corpus Christi educational ecosystem. Third, it will take into consideration the unique values and vision of the region.

A charrette has several characteristics that are important to the success of this regional planning process. First, it will be a collaborative and inclusive process. In our case, the collaboration will embrace outside experts and community stakeholders who are interested in and will benefit from STEM development in the region. Second, it will take a rigorous interdisciplinary approach to examining the Corpus Christi educational ecosystem. Third, it will take into consideration the unique values and vision of the region.
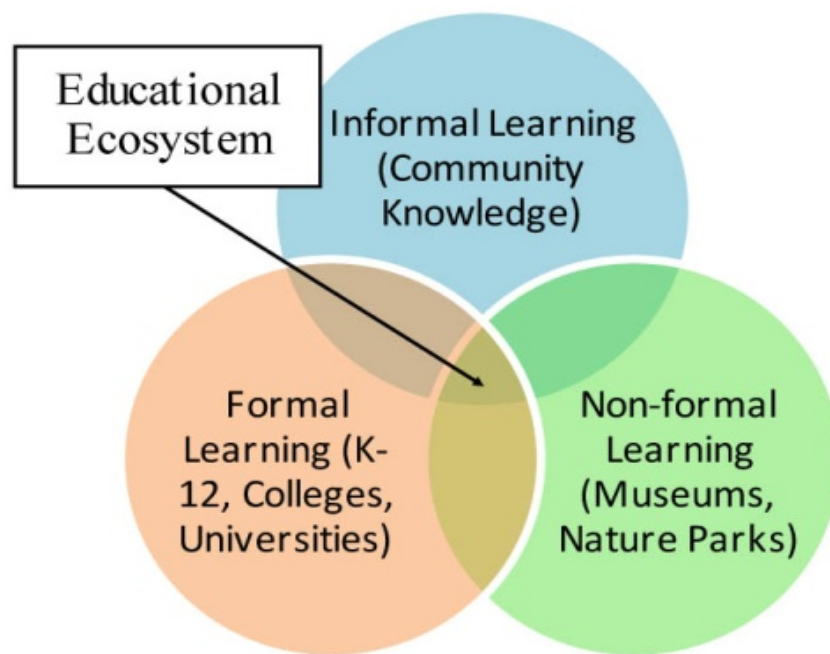
Charrette Agenda

Charrette Activities – (Morning Sessions)

Session 1: **"Establishing the Point of Departure for the Charrette"**
8:00 a.m. - 8:40 a.m. (~40 minutes)

- Introduction to Charrette objectives and logistics [~5 minutes]

- Facilitated plenary discussion on, and formal documentation of, *roles*, *drivers*, and *expectations* of the Charrette participants; ~35 minutes

  ➢ *[Input Sheet No. 1]*

Session 2: **"What is an Educational Ecosystem and Does One Exist in Corpus Christi?"**
8:40 p.m. - 9:00 a.m. (~20 minutes)

- Formal presentation by Dr. Luis Cifuentes

  ➢ Participants complete *[Input Sheet No. 2]* during the presentation

Session 3: **"SWORT Analysis"**
9:00 a.m. – 10:00 a.m. (~60 minutes)

- Facilitated plenary discussion on, and formal documentation of, general *strengths*, *weaknesses*, *opportunities*, *risks*, and *threats* of **STEM + A/D education in Corpus Christi**

  ➢ *[Input Sheet No. 3]*

Coffee Break & Networking; 10:00 a.m. – 10:30 a.m. (30 minutes)

Session 4: **"Key Elements of Corpus Christi Educational Ecosystem"**
10:30 a.m. – 11:00 a.m. (~30 minutes)

- Formal discussion on, and documentation of, the *key elements* of a potential **Corpus Christi Educational Ecosystem**

  ➢ *[Input Sheet No. 4]*

Session 5A: **"Network, Resources and the Culture of STEM +A/D"**
11:00 a.m. - 12:00 a.m. (60 minutes)
[In Breakout groups (five)]

- Formal discussion on, and documentation of, the principal *questions*, *problems*, *needs*, *opportunities*, *aspirations*, and *priorities* in **Promoting a Culture of STEM +A/D**

  ➢ *[Input Sheet No. 5]*

Lunch Break & Networking; 12:00 noon – 1:00 p.m. (60 minutes)

Charrette Activities – (Afternoon Sessions)

Session 5B: *"Network, Resources and the Culture of STEM +A/D"*
1:00 p.m. – 1:30 noon (30 minutes)

- Formal plenary presentation, by the rapporteurs of each of the breakout groups, of the results and highlights from the discussions held in Session 5A

Session 6A: *"An Initial Plan of Action"*
1:30 p.m. – 3:00 p.m. (~90 minutes)
[Breakout groups (five)]

- Formal discussion on, and documentation of, the principal elements of a *plan of action* for **Promoting a Culture of STEM +A/D**

  ➢ *[Input Sheet No. 6]*

Coffee Break & Networking; 3:00 p.m. – 3:30 p.m. (30 minutes)
[& Rapporteur preparation time]

Session 6B: *"An Initial Plan of Action"*
3:30 p.m. - 4:30 p.m. (~60 minutes)

- Formal plenary presentation, by the rapporteurs of each of the breakout groups, of the results and highlights from the discussions held in Session 6A

Session 6C: *"An Initial Plan of Action"*
4:30 p.m. – 5:00 p.m. (~30 minutes)

- Facilitated plenary discussion on, and formal documentation of, a preliminary consensus among Charrette participants on the content of the presentations done in Session 6B

Session 7: *"Challenges, Reflections and Assessment"*
5:00 p.m. – 6:00 p.m. (~60 minutes)

- Facilitated plenary discussion on, and formal documentation of, *challenges, reflections on, and assessment of* the charrette

  ➢ *[Input Sheet No. 7]*

Reception

6:00 p.m. – 7:30 p.m.
[Networking and Socializing Activity]

INPUT SHEET NO. 1:
Documenting the Baseline of Stakeholders

"HATS"
Please list all the different "***hats***" that you are wearing within this charrette In other words, what ***roles*** do you play, what ***perspectives*** do you have, and/or what ***points of view*** do you represent.

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DRIVERS
Please list all the different ***drivers*** that pushed or pulled you to attend this charrette In other words, ***why are you here today***?

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EXPECTATIONS
Please list all the different ***expectations*** you have for this working session. In other words, what specific ***outcomes*** or ***results*** do you want to see from this charrette that will make you ***satisfied*** or ***happy***?

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INPUT SHEET NO. 2:
Documenting Initial Reactions
(to the formal presentation by Dr. Luis Cifuentes on:
"What is an Educational Ecosystem and Does One Exist in Corpus Christi?")

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Reactions from the *"GUT"*

Based on your personal and/or professional experience, what is your initial ***instinctual reaction*** from your ***individual personal point of view***? From your ***professional point of view***? From the ***point of view of the organization you represent***?

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Reactions from the *"HEART"*

Based on your personal and/or professional experience, what is your initial ***emotional reaction*** from your individual personal point of view? From your professional point of view? From the point of view of the organization you represent?

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Reactions from the *"MIND"*

Based on your personal and/or professional experience, what is your initial ***intellectual reaction*** from your individual personal point of view? From your professional point of view? From the point of view of the organization you represent?

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I LIKE, LIKE…

Please take a moment to tell us what did you **_like_** most about the presentation from your individual personal point of view? What do you like about it from your professional point of view? What do you like about it from the point of view of the organization you represent?

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I WISH… ("Genie Wishes")

If you had "**_Aladdin's Lamp_**," please state three **_wishes (aspirations) you would make_** for the presentation from your individual personal point of view? What do you like about it from your professional point of view? What do you like about it from the point of view of the organization you represent?

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I WOULD CHANGE… ("Magic Wand")

If you had "**_Harry Potter's Magic Wand_**," please state three **_changes that you would make_** to the presentation from your individual personal point of view? What do you like about it from your professional point of view? What do you like about it from the point of view of the organization you represent?

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INPUT SHEET NO. 3:
Documenting Strengths, Weaknesses, Opportunities, Risks, and Threats (SWORT Analysis)

STRENGTHS...
What are the *strengths* that may result from the potential application of the concept of an *Educational Ecosystem in Corpus Christi*?

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WEAKNESSES...
What are the *weaknesses* that may result from the potential application of the concept of an *Educational Ecosystem in Corpus Christi*?

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OPPORTUNITIES...

What are the ***opportunities*** that may result from the potential application of the concept of an ***Educational Ecosystem in Corpus Christi***?

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RISKS...

What are the ***risks*** associated with the strengths, weaknesses, and opportunities that may result from the potential application of the concept of an ***Educational Ecosystem in Corpus Christi***?

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THREATS...

What are the **_threats_** stemming from the risks that may prevent or affect in some way the potential application of the concept of an **_Educational Ecosystem in Corpus Christi_**?

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INPUT SHEET NO. 4:
Documenting Key Elements of a Potential Educational Ecosystem for Corpus Christi

GENERATING Ideas...
Please apply the ***Divergent Thinking Guidelines***, to generate and list as many ideas as possible on the **Key Elements of *a Potential Educational Ecosystem for Corpus Christi.***

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PRUNING Ideas...

Please apply the ***Convergent Thinking Guidelines***, to identify the **Top Three (3) Key Elements of *a Potential Educational Ecosystem for Corpus Christi.***

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INPUT SHEET NO. 5:
Documenting Drivers (the Push and the Pull)

QUESTIONS to ANSWER...

Please list as many ideas, suggestions, and recommendations as you can for the types of ***questions*** that you would like to see answered in ***Promoting a Culture of STEM +A/D in Corpus Christi***.

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PROBLEMS to SOLVE...

Please list as many ideas, suggestions, and recommendations as you can for the types of ***problems*** that you would like to see solved in ***Promoting a Culture of STEM +A/D in Corpus Christi***.

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NEEDS to SATISFY...

Please list as many ideas, suggestions, and recommendations as you can for the types of ***needs*** that you would like to see satisfied in ***Promoting a Culture of STEM +A/D in Corpus Christi***.

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OPPORTUNITIES to REALIZE…

Please list as many ideas, suggestions, and recommendations as you can for the types of *opportunities* that you would like to see realized in *Promoting a Culture of STEM +A/D in Corpus Christi*.

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ASPIRATIONS to FULFILL…

Please list as many ideas, suggestions, and recommendations as you can for the types of *aspirations* that you would like to see fulfilled in *Promoting a Culture of STEM +A/D in Corpus Christi*.

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PRIORITIES…

Of these drivers, which are the top three (3) *priorities* that you would like to see in *Promoting a Culture of STEM +A/D in Corpus Christi*?

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INPUT SHEET NO. 6:
Documenting an Initial Strategy and Plan of Action
[*Note: You can use this same Input Sheet for multiple strategic goals*.]

STRATEGIC GOAL No. 1
Brief description of ***Strategic Goal No. 1***, which will enable achieving the ***vision*** of a ***Potential Educational Ecosystem for,*** and a ***Culture of STEM +A/D in, Corpus Christi***
(i.e., *What to do…*)

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TACTICAL OBJECTIVES
Brief description of the main ***tactical objectives***, which will enable achieving **Strategic Goal No. 1**.

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OPERATIONAL PLANS OF ACTION

Brief definition of the associated *operational plans of action*, which will enable achieving **Strategic Goal No. 1,** and its **Tactical Objectives**.

What needs to be done to achieve the objectives (i.e., specific *tasks*)?

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Why (i.e., *justification* of these tasks)?

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How (i.e., *procedures/methods* to be followed)?

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Who (i.e., *responsibility* for execution of the tasks)?

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With What (i.e., *resources* required to complete the tasks)?

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When (i.e., target *date for completion* of the tasks)?

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Where (i.e., *location* for the execution of the tasks)?

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POTENTIAL PITFALLS

Please list any ***assumptions***, and any ***expectations*** associated with **Strategic Goal No. 1**, and its **Tactical Objectives**, and its **Operational Plan of Action**.

Assumptions: _____

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Expectations:_____

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Please list any ***wants*** and ***needs*** associated with **Strategic Goal No. 1**, and its **Tactical Objectives**, and its **Operational Plan of Action**.

Wants: _____

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Needs: _____

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Please list any *do's* and *don'ts* associated with **Strategic Goal No. 1**, and its **Tactical Objectives**, and its **Operational Plan of Action**.

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Don'ts: _____

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ANTICIPATED OUTCOMES AND DELIVERABLES

Please list any anticipated *Outcomes* and *Deliverables* associated with **Strategic Goal No. 1**, and its **Tactical Objectives**, and its **Operational Plan of Action**.

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COMMITMENTS

Please list any **commitments** that need to be made to ensure achieving **Strategic Goal No. 1**, and its **Tactical Objectives**, and its **Operational Plan of Action**.

individual Commitments: _____

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Institutional Commitments: _____

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Commitments from Others: _____

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INPUT SHEET NO. 7:
Documenting Final Reflections

"BUGS"
Please list anything that still **_bothers_** or **_annoys_** you about a **_Potential Educational Ecosystem for,_** and a **_Culture of STEM +A/D in, Corpus Christi._**

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"RANTS"
Please list anything that you **_hate_** or **really do not like at all** about a **_Potential Educational Ecosystem for,_** and a **_Culture of STEM +A/D in, Corpus Christi._**

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"RAVES"
Please list anything that you **_love_** or **_really like_**, about a **_Potential Educational Ecosystem for,_** and a **_Culture of STEM +A/D in, Corpus Christi._**

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"HUH's...?"

Please list any *muddy points* (i.e., *anything that may not be clear*) and/or specific *questions* that might have been generated by about a *Potential Educational Ecosystem for,* and a *Culture of STEM +A/D in, Corpus Christi,* for which you would like to find an answer.

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"AHA's...!"

Please list any specific *insights*, *revelations*, or *lessons learned* that might have been generated by about a *Potential Educational Ecosystem for,* and a *Culture of STEM +A/D in, Corpus Christi,* which you will take away with you.

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GRADE

On a **scale of 1 to 10**, with **1 being the worst** and **10 being the best**, what *grade* would you give to this **Charrette**?

Worst

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Best

Perfection

If the grade you gave is not 10, *what could/should/must be done* to make it a 10?

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If you would like to (1) learn more about the charrette process, (2) organize a training session to learn how to implement the charrette process within your organization, or (3) organize a facilitated session to apply the charrette process within a specific project or initiative, please contact:

Dr. Jorge A. Vanegas
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Professor, Department of Architecture
Texas A&M University
and
Research Professor,
Texas Engineering Experiment Station (TEES)
Texas A&M University System

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