



AUTONOMY RESEARCH CENTER FOR **STEAHM**

CDIO CONVERGENCE ENVIRONMENT FOR AUTONOMY RESEARCH: DESIGNING AND BRANDING

ARCS Research Seminar

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CSUN

CALIFORNIA
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In this paper, the team shares the experiences and processes involved in the creative strategy to establish ARCS as an innovative Convergence Research space on the CSUN campus. The multidisciplinary team's collaboration on:

- branding exercises
- creative brainstorming
- prototyping designs, and
- criticism/feedback

Produced a design of a cohesive visual and spatial presence. This strategy is similar to the engineering fundamentals:

- Conceiving - Designing - Implementing - Operating (CDIO) with operating being the end goal or outcome.

ALIGNMENT + CONCEIVING

Competitive Analysis



Several other universities in our region and beyond also received a grant through NASA's MUREP Institutional Research Opportunity (MIRO) program. Each university has the same goal:

“Advance understanding of Earth and develop technologies to improve the quality of life on our home planet. Objective 2.4: Advance the Nation's STEM education and workforce pipeline by working collaboratively with other agencies to engage students, teachers and faculty in NASA's missions and unique assets.” (May, Dunbar, 2020)

ARCS recognizes that fields such as art + design are also an essential part in achieving the goals of the MIRO program.

- Established collaboration between students within the STEM education expanding it to entrepreneurship and business, art + design, and humanities
- Reinventing STEM into STEAHM.

ALIGNMENT + CONCEIVING

Defining the ARCS Brand



Art and design have played a significant role in ARCS by creating its unique identity.

- Any start-up business or organization needs to establish an identity that differentiates them within a competitive arena and makes a memorable impression on their audiences.

First phase of collaboration:

- Students and faculty from various CSUN colleges were involved in an integrated learning process to define the brand messaging and creative strategy for ARCS.

In the initial 2-hour session, they implemented exercises inspired from the CORE Discovery framework established by Chris Do and Jose Caballer of The Futur, two highly regarded brand design consultants and educators based in the Los Angeles area

- The group participated in team collaboration and brainstorming to establish the Brand Attributes and Audience/Customer Profiles.

ALIGNMENT + CONCEIVING

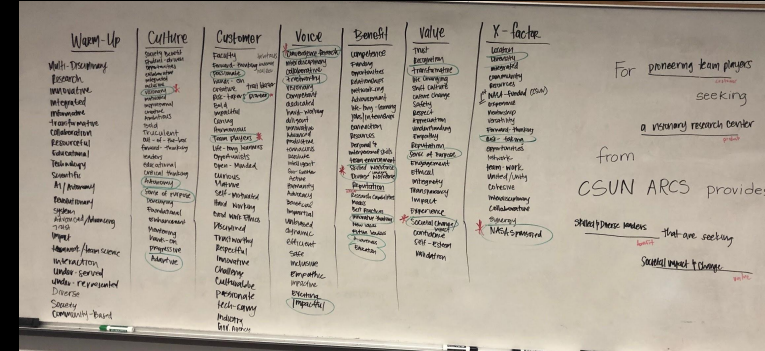
Brand Attributes Exercise



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The Brand Attributes exercise is conducted by dividing a whiteboard to 6 columns in the categories of:

1. Culture: How would your community describe ARCS?
2. Customer: How would you describe ARCS' customer?
3. Voice: How does ARCS sound to others?
4. Feeling: How do others feel after they interact with ARCS?
5. Value: What tangible impact do you have to others?
6. X-Factor: What makes you different from others?



The team is moderated and starts by brainstorming words for each column, then narrows down each column to one final word or phrase.

At the end of the exercise, a formula is used to develop a brand attributes statement by utilizing the chosen words:

- **“For pioneering team-players seeking a visionary research center, ARCS, a NASA sponsored center, provides skilled and diverse leaders that seek societal impact or change.”**

CULTURE	CUSTOMERS	VOICE	BENEFITS	VALUES	X-FACTOR
Visionary Sense of purpose Adaptive Autonomy	Passionate Team Players Pioneers	Trustworthy Impactful Convergence	Skilled Diverse Leaders Innovative thinking	Transformative Societal change/ impact	Diversity NASA Sponsored Risk-taking

ALIGNMENT + CONCEIVING

Audience/Customer Profiles Exercise

Next steps: Define the audience or customer. Based on the MUREP goals and through group collaboration, the team established three key customer profiles: faculty researchers, industry partners/scientists, and students.



Qinqin Sun, Faculty Researcher

- Needs an environment that enables her to collaborate with students
- looking for research topics, resources, and opportunities
- ARCS Solution: network, internships, funding



Sarah Carter, Industry Partner/Scientist

- Needs diverse and skilled leaders interested in influencing the next generation of space exploration
- ARCS Solution: Serve on boards, teach courses, lab/facilities access, funding



Ramon Iglesias, Student

- Needs a sense of purpose, research experience, mentors
- ARCS Solution: scholarships, internships, lab resources, connection to NASA/JPL

CREATIVE STRATEGY + DESIGNING



Second phase of collaboration: Reviewed the finalized brand attributes/personas to create the brand identity.

- Three week process: analyze, design, internally critique, and prepare a presentation to stakeholders.
- Restriction: CSUN guidelines to use red and font (ATC Overlook)
- Concepts of space exploration, autonomy, sustainability, and zero waste.
- Out of five, two logos were chosen to be explored further.

Logo A:

- White spacecraft orbit – space travel and path of a celestial object.
- The orbit around the “C” – this center will become main sphere of influence for CSUN students interested in STEAHM.
- The orbiting craft – represent zero waste, renewable energy, and sustainability.

Logo B:

- Red chevron – aeronautics
- Circular shape – planet
- Converging point and the idea of "rising up" (used in CSUN brand)
- The stars and satellite further emphasize space and exploration.



A

B



Some of the responses received regarding logo A were:

- It is a simple and straightforward design.
- It maintains accessibility guidelines by being versatile.
- It conveys the look and feel of a long-lasting brand.
- It emulates concepts that were most representative of ARCS' brand message.

TOUCHPOINTS + IMPLEMENTING



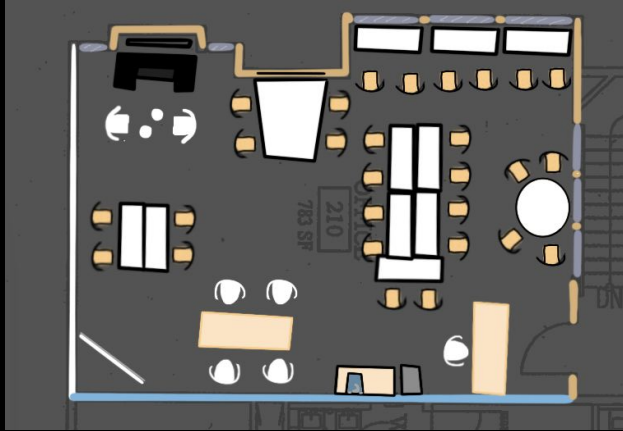
Next steps:

- Apply the brand to internal and external applications
- Created a website landing page describes who ARCS is + three integrated research thrusts:
 - developing assured and trusted autonomy
 - human autonomy teamwork and explainable AI
 - social barriers, acceptance and impact.
- Created powerpoint templates and business cards
 - These will be used by the ARCS CO-Investigators

Planned the ARCS Launch Off Event from February 2020.

- Gave NASA/JPL collaborators and CSUN partners an opportunity to celebrate the groundbreaking convergence research projects
- To promote, we created email blasts, shirts, stickers, and program flyers



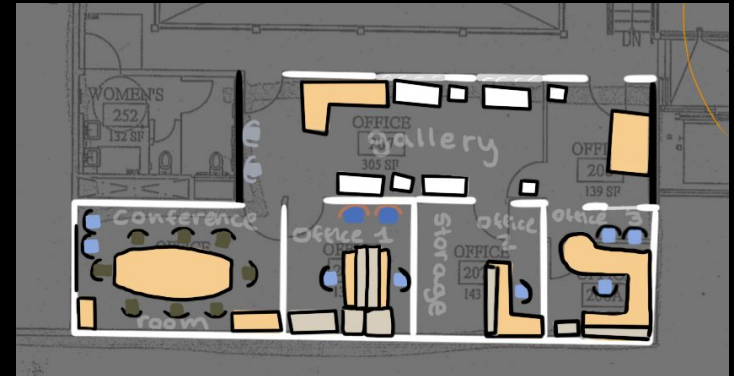


Tasked to design the interior for both the ARCS Convergence Research Opportunity Program (CROP) space and the gallery space within the main offices.

- The CROP space – communal area for Fellows to collaborate on projects.
- Building a sense of community by utilizing the brand identity and guidelines to provide the Fellows with a welcoming and collaborative space.

The main gallery space – ARCS Fellows and Co-I's can display prototypes, drones, robots, etc.

- Gallery will be the first stop for visitors
- Goal for the space:
 - Inspirational to new and existing members
 - Encourage students and faculty to get involved
 - Logo on the wall adjacent to the main entrance where there will be a waiting area and a reception desk.



The use of creative processes in branding ARCS concepts aligns with the CDIO model:

- **Conceive** ideas and attributes for the brand
- **Design** a brand identity
- **Implement** the brand by applying it to internal and external deliverables
- **Operate** a newly renovated space for future and existing members of ARCS.

Next steps:

- Gather information about reactions to the ARCS branding and physical space
- Review qualitative responses.
- Revisions based on responses
- Continue to investigate ways to use art + design processes within a STEAHM environment
 - Inspire collaboration between designers and engineers and help build a sense of community and trust.

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