ENACTS

Equitable Nature-Based Solutions: AR Co-Creation of Community Stormwater Design for Resilient Cities

What is ENACTS?

Funded by the National Science Foundation, ENACTS (Equitable Nature-based Climate Solutions) is a group of teachers and students from 5 colleges working in three cities: Manchester, NH; Providence, RI; and Louisville, KY.

With a shared interest to work together with community members–like you–to learn and co-create nature based-solutions in your local parks, and other outdoor spaces in your neighborhoods.

Community Co-Creation Design through AR

As part of the Equitable Nature-Based Climate Solutions project, the co-creation workshops explore how augmented reality (AR) can support an immersive, community-driven approach to storm water design. Through a series of co-creation workshops across three living hubs, **Providence, RI; Manchester, NH; and Louisville, KY**, community participants engaged with site-specific AR visualizations of potential nature-based storm water interventions, co-creating landscape design scenarios in situ that incorporated hybrid recreational elements and green infrastructure.

To support an immersive experience, the ENACTS team developed a unique process for introducing participants to AR technology. Central to this process was the creation of a custom asset library, including native plants, trees, and park amenities custom-built for use during the workshops. These assets allowed participants to place and arrange familiar, place-based elements directly within their neighborhood environments, lowering the technical barrier to engagement and grounding the design process in local ecological and community context– bringing participants closer to the issues and opportunities of nature based solutions.

The workshops combined AR visualization with participatory design methods, including skill sharing, discussions, and think-aloud surveys, allowing participants to propose ideas rooted in lived experience, neighborhood priorities, and environmental concerns. Through this process, participants developed an understanding of storm water dynamics, assessed design trade offs, and contributed directly to potential interventions. This work demonstrates how immersive technologies can bridge technical expertise and community knowledge to co-produce responsive, place-based solutions and advance equitable climate resilience.

Workshop #1: participants are introduced to the storm water function of nature-based interventions. They learn to work with various infrastructural assets in 3D in the Hoverlay app. This begins with a "placemat", where participants can move digital assets over a physical space, allowing participants to become more comfortable with the AR design platform. Next they proceeded to use the AR platform Hoverlay to model their own vision for their park space in the app, which they can experience in real time in AR by scanning the QR code.

Between workshops, the RISD team consolidates feedback, statistics and models from the workshops to understand the community's priorities. This includes using the participant AR models as a form of survey feedback. They also model storm water parameters affecting the sites, and model two high-resolutions scenarios for the design.

Workshop #2: Participants spend the second workshop experiencing two fully developed landscape designs for the park by using iPads and walking through the physical site. Simultaneously, the team conducts 1:1 interviews regarding their experiences.

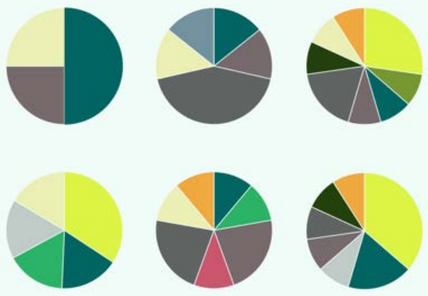
WORKSHOP #1

Placemat

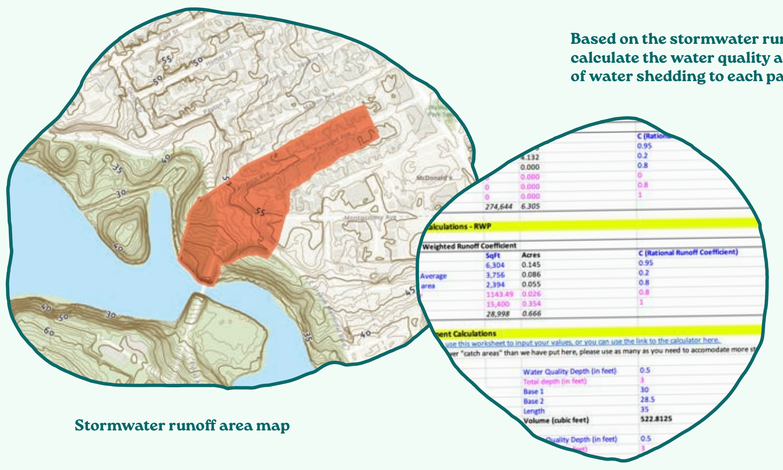
Participant engaging with the placemat

Participant AR visualization model

BETWEEN WORKSHOPS



We coded the participant AR visualizations to quantify preference of specifc elements



Based on the stormwater runoff area, we calculate the water quality and quantity of water shedding to each park site

Stormwater runoff area map

Manchester, NH

TRY ME!

WORKSHOP #2

Participants walk through the resolved landscape design scenarios at the park sites using the AR app

TRY ME!

Providence, RI

RISD · RHODE ISLAND SCHOOL OF DESIGN · 1877

UNIVERSITY OF RHODE ISLAND · HOPE · 1892

UNIVERSITY OF LOUISVILLE

ANTIOCH UNIVERSITY · UNITING PASSION & PURPOSE · 1852

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