

SolARK

SCADA and Research Center

Keywords Masterplan, Competition, Schematics, Landscape

FACTS_

Year
2021

Location
Konya, Turkey

Field

Architecture

Category

Building

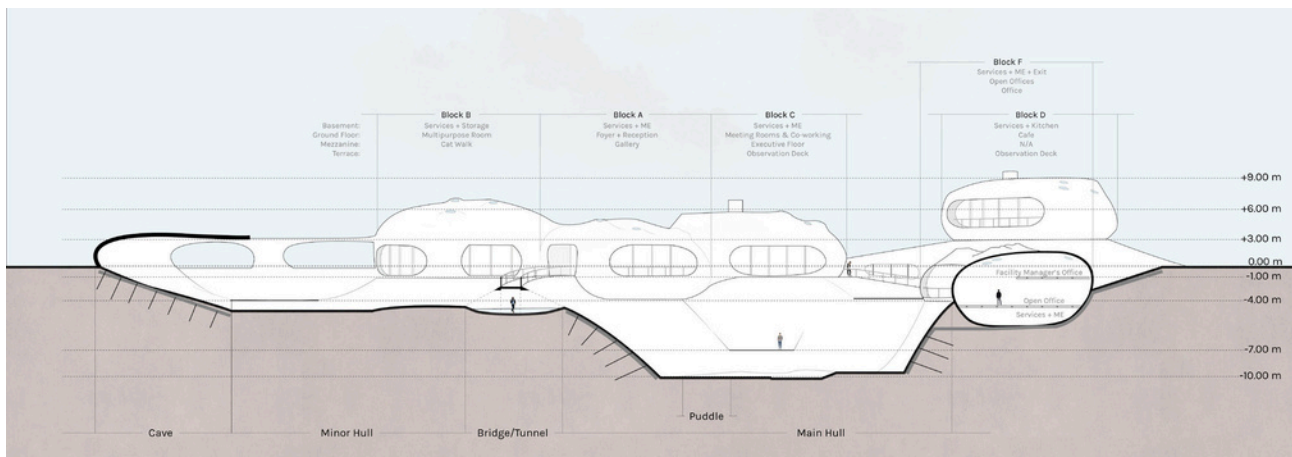


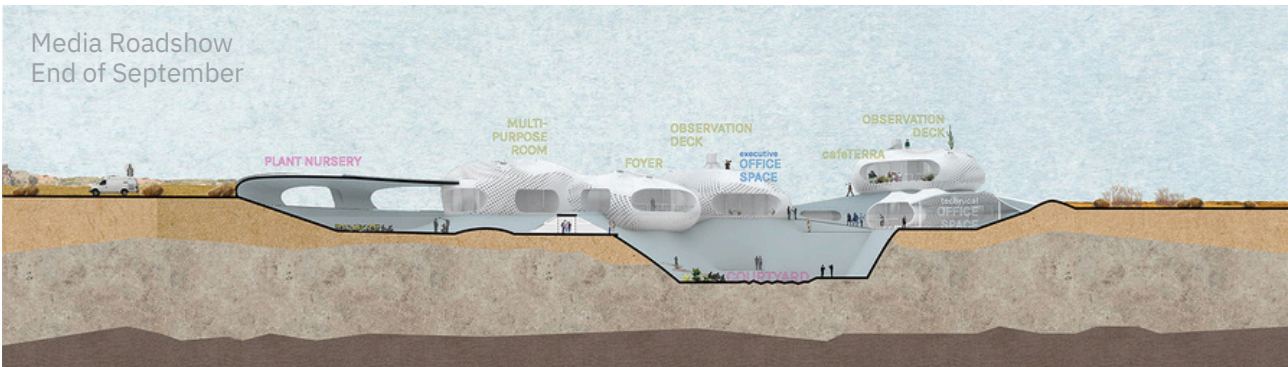
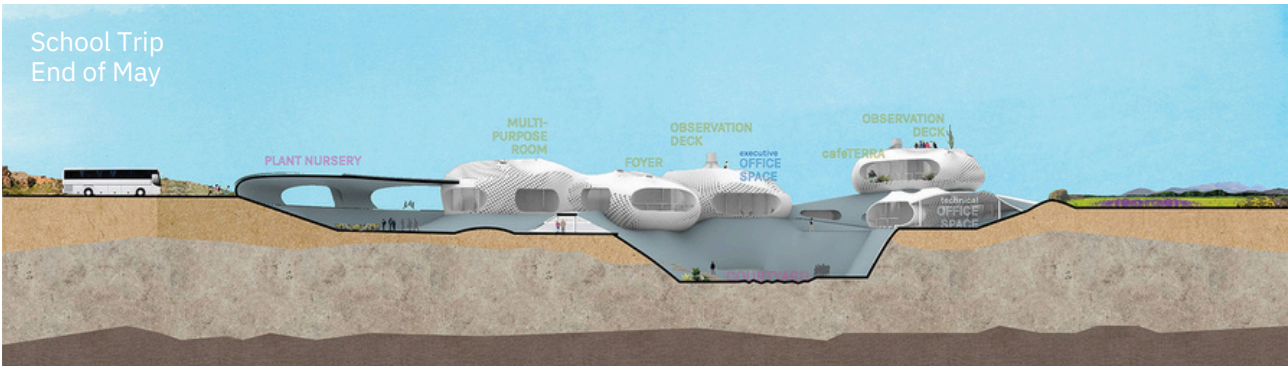
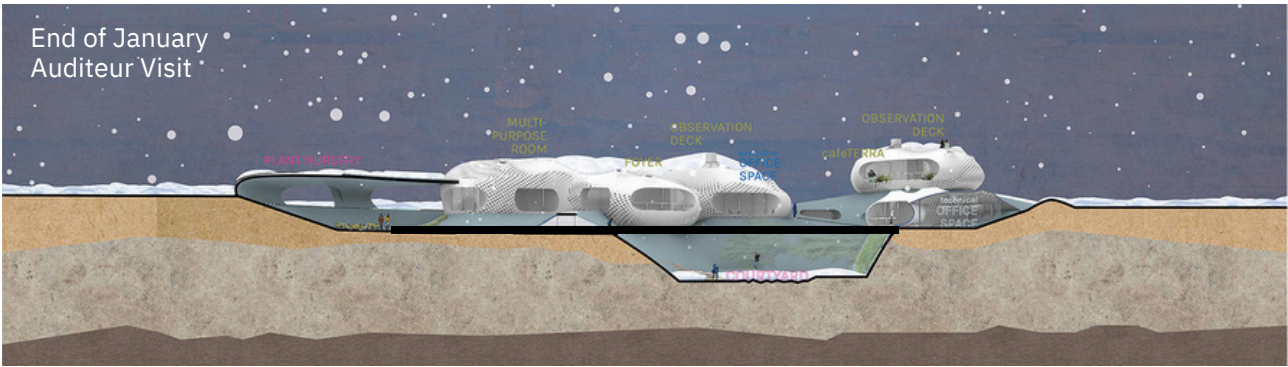
In the extreme registers of the climate spectrum, Noah survives with the creatures he takes aboard his ark; and today, to make peace with a nature that has grown wild through human impact, and to reckon with human nature itself, what remains in our hands is, once again, techné.

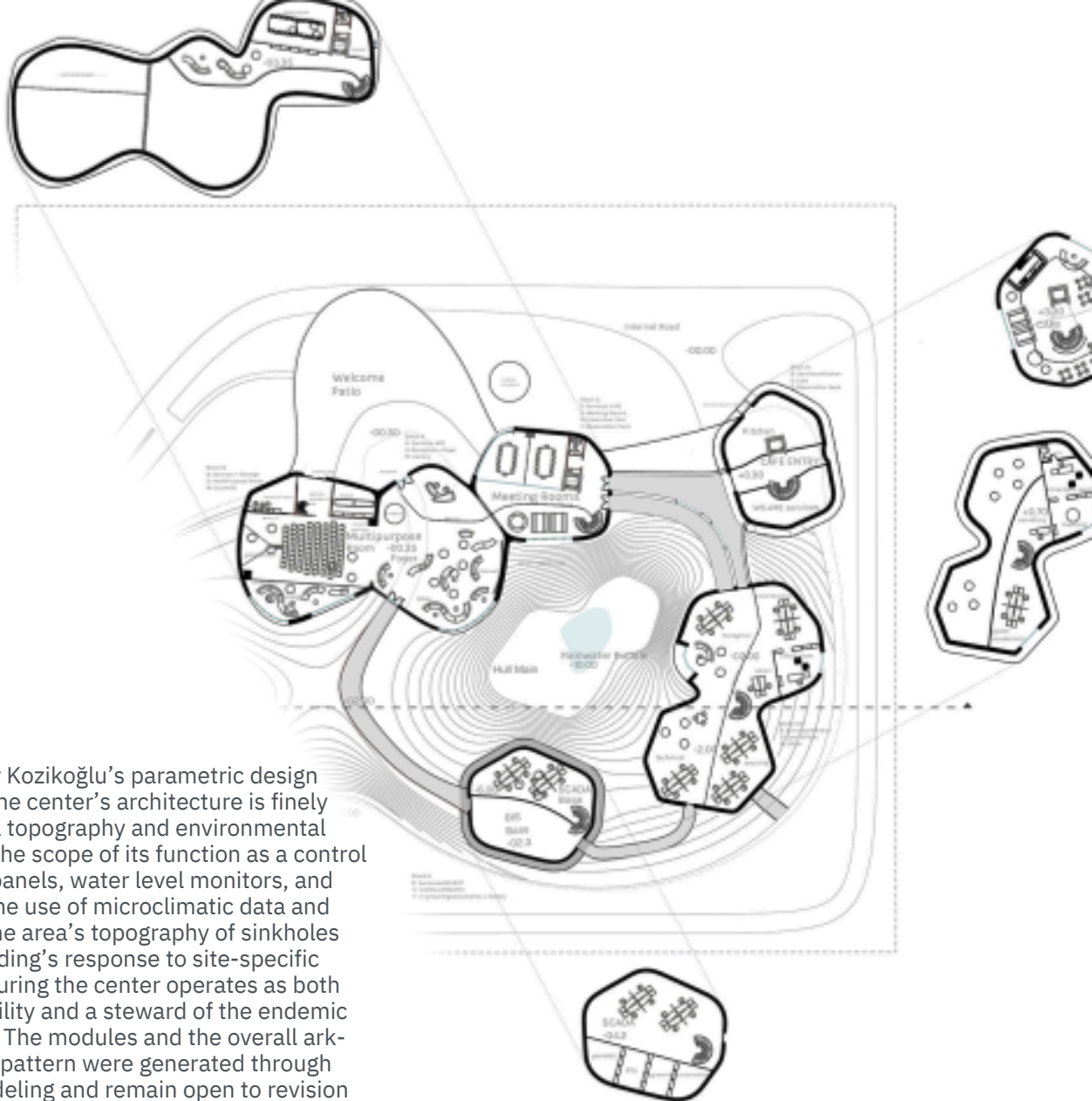


The SOLARK SCADA and Research Center by Urban Atölye as led by architect Nilüfer Kozikoğlu, is a visionary project that fuses natural forms, advanced technology, and environmental sustainability within a facility control center dedicated to renewable energy systems in Konya, Turkey.

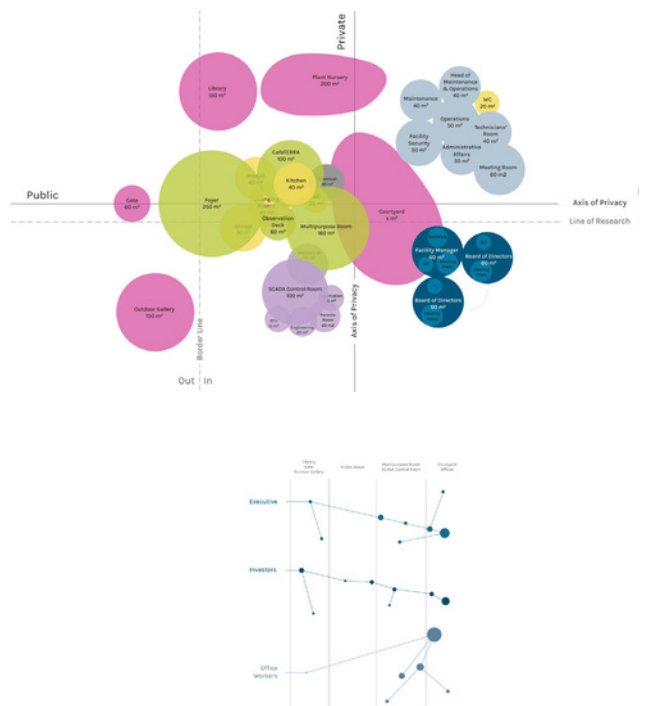
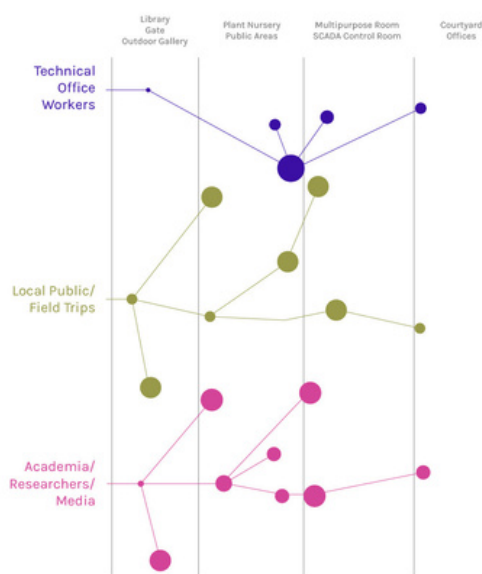
Embracing the natural desert landscape of the region, the only desert in Turkey and a living reference to Anatolia's rich geologic past, the design features amorphous, rounded structures embedded into the terrain, merging nature with a humanistic approach to technology. Drawing direct inspiration from the concept of Noah's Ark, the architecture is envisioned as a refuge for biodiversity and an incubator for new ideas in sustainability: capsule-like spaces that can stand alone or combine into larger units, with buried technical areas supporting their various functions. Utilizing both on- and off-site prefabrication alongside innovative concrete construction techniques, the center exemplifies a forward-thinking hybrid of natural contours and structure, an architecture that balances ecological responsibility with a design philosophy centered on the quality of space.



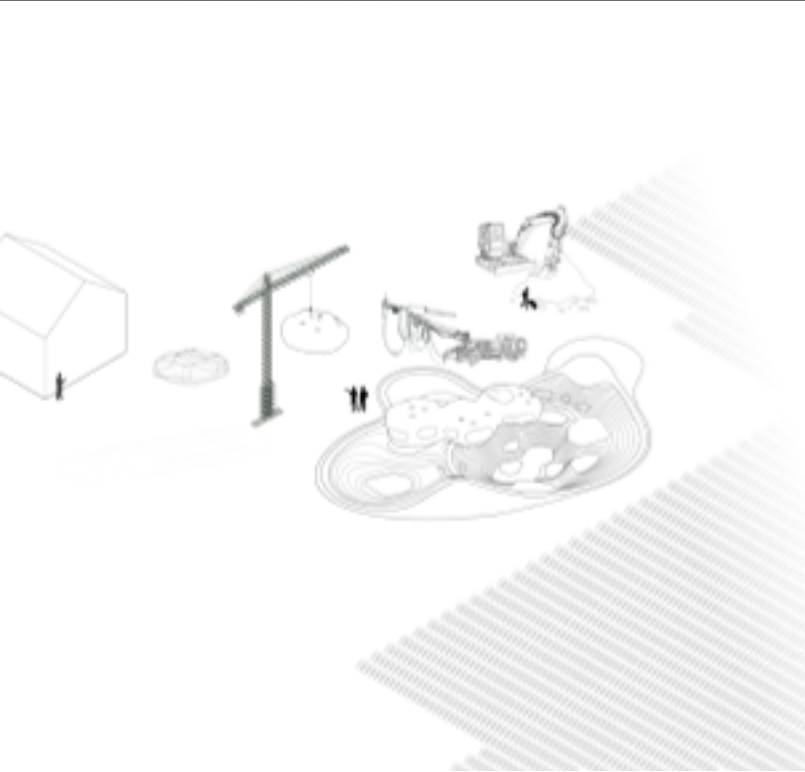
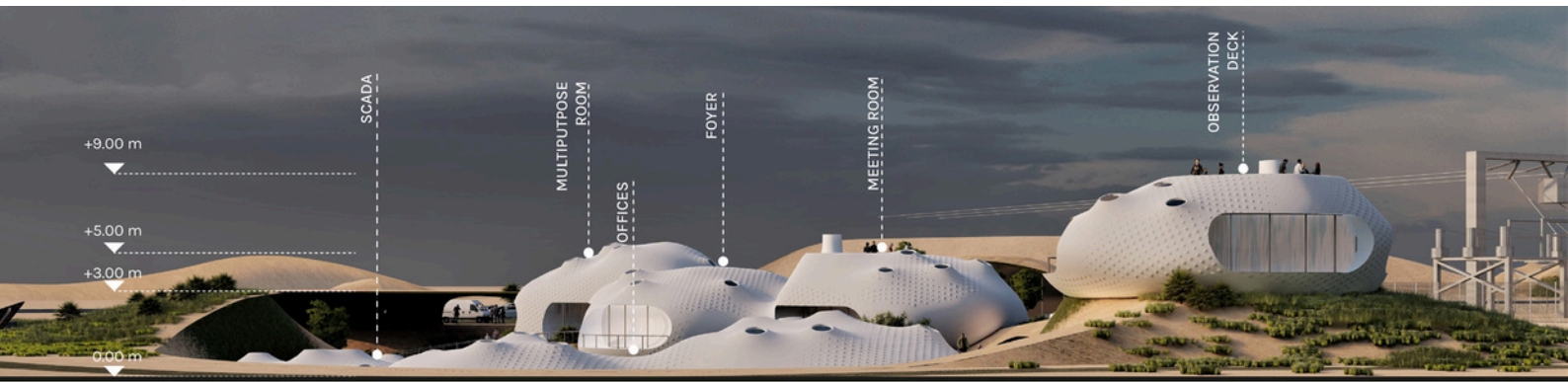




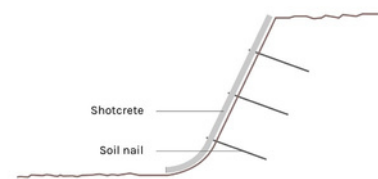
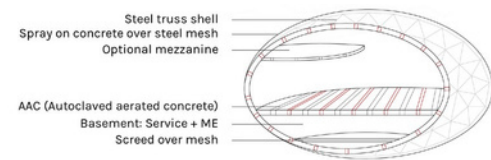
Through Nilüfer Kozikoğlu's parametric design methodology, the center's architecture is finely attuned to local topography and environmental context within the scope of its function as a control point for solar panels, water level monitors, and wind meters. The use of microclimatic data and references to the area's topography of sinkholes shapes the building's response to site-specific conditions, ensuring the center operates as both a functional facility and a steward of the endemic natural habitat. The modules and the overall ark-like settlement pattern were generated through parametric modeling and remain open to revision up until final execution.







The building sits like a vessel on slopes stabilized with shotcrete, its modules divided between above-ground and below-ground capsules. Each module is single-spaced in its base configuration, but can be extended vertically with a mezzanine level or merged horizontally to form twin or triple units as needs evolve. The underside of every module serves as a buried technical area. Independent heating and cooling capacity per module means that unoccupied sections require no unnecessary climate conditioning at any given hour or season, a direct and pragmatic expression of the project's energy philosophy.

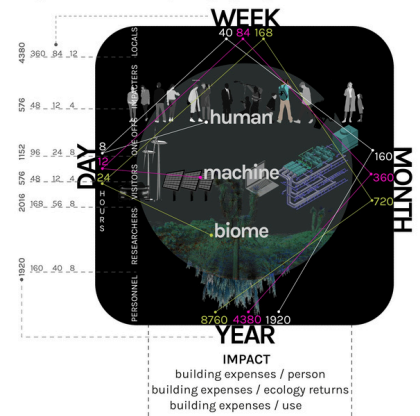


The structural system combines a numerically fabricated steel construction shell with layers of shotcrete anchored by soil nails, and prefabricated aerated concrete panels for floor slabs. The outer shell is composed of double-sided steel mesh over the structural frame, with rock wool between the mesh and the sprayed concrete, a configuration that achieves large spans at minimal thickness, with high load-bearing capacity and no stability concerns. The remaining structural units are organized with structural steel elements to the extent the architectural design allows. Given the weak ground conditions of the site, lightweight construction is favored throughout, and all on-site steel connections are fully bolted. Foundation design is calibrated to the site's poor soil bearing properties. The use of prefabrication brings significant construction advantages: floor slabs are executed with pre-reinforced aerated concrete panels, keeping the process modular, precise, and adaptable, a construction logic that mirrors the architectural one.



The organic and hypermodern architecture of the SOLARK Center functions as more than just a building; it is a living organism that harmonizes with its surroundings. By creating microclimate zones and incorporating solar and wind shading, it offers spaces that foster both human interaction and ecological growth, simultaneously a living design system and an architectural complex. This distributed, capsule-based approach not only supports community involvement but exemplifies how architecture can facilitate a reciprocal relationship between human activity and the natural environment, paving the way for future developments in sustainable design.

Diagram shows the hours spent day to year by biome, machine and human.



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