



Open Prototype Initiative

Transforming the Way America Builds Homes

A project of [MIT House_n](#) and [Bensonwood Homes](#)



Open Prototype Initiative Overview

The Open Prototype Initiative is a collaboration between the Massachusetts Institute of Technology House_n Research Consortium, Bensonwood Homes and other construction industry members to develop a [series of four prototype homes](#), deploying advanced designs, materials, systems, and fabrication strategies, with a goal of showing how high-quality, sophisticated, and personalized homes can be built more cost-effectively and in less time.

Each home will be built in 20 working days. The first prototype, Open_1 - a three-story 28-by-46-foot house begins in June 2006, with another new home being built every 18 months through 2010.

Open_1 will be built in Greenfield, New Hampshire at Crooked Mountain, a school, hospital and rehabilitation facility for children and adults with disabilities, serving as a transitional residence for clients leaving its Brain Injury Center. While the designs and innovations of the Open Prototype Initiative homes are focused on improving the way all homes are built, information learned through Open_1 and subsequent prototypes will also help improve in-home treatment of people with disabilities, and a generation of older Americans with a desire to age in place.

Open Building and “Disentanglement” Leads to the Open Prototype Initiative

A cornerstone of the Open Prototype Initiative is the principle of Open Building, developed in part at MIT during the 1970’s and 80’s. Open Building is an innovative approach to design and construction that disentangles construction, enhancing the efficiency of the building process, while increasing the variety, flexibility and quality of the building.

In Open Building, the building is viewed as a well-organized combination of systems and sub-systems, each of which can be carefully coordinated to ensure a better process and product for the homeowner and a parallel positive outcome for the building professionals.

Disentangling the systems and sub-systems from each other, increases opportunities for better organization, increased consistency, quality and more control and flexibility for the homeowner.



“Exploded” View of Open_1 – Illustrates how “layering” of home, “core wall” and a library of components including stairs, windows and doors makes construction more efficient, and the home more adaptable.

Major systems include:

- Building site;
- Division of space inside the building;
- Wiring;
- Cabinets;
- Other items people put in the building;
- Structural envelope;
- Plumbing;
- Heating/cooling;
- Furniture.



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Tedd Benson, founder of Bensonwood Homes, has been involved with Open Building for the past fifteen years and has developed the Open- Built®* approach to building, which represents the state of the art in Open Building in the United States.

Bensonwood will build the Open Prototype homes using Open Built® techniques as the basis for design and construction. During the OPEN_1 project, Bensonwood is also leading the design, prefabrication and on-site construction of the home aided by state-of-the-art 3D modeling and computer aided design.

Throughout the Open Prototype Initiative process, Bensonwood and MIT House_n will work to create an affiliation of industrial companies to fuel the growth of design, data, electronics, software, and physical components of contemporary home building, while seeking industry support and sponsorship.

Average House Construction	Open Prototype Home
Life expectancy of 28 years.	280 year life (many lasting 500 years).
Produces two dumpsters of waste onsite.	Two trash cans of waste on the site.
Needs 40-50 btu's per sq. ft. of heat*	Less than 10 btu per sq. ft.
6 month project.	Completed in 20 working days on site.
Inflexible, dull, repetitive design.	Adapts to homeowners, making each home unique.
Entangled/Inaccessible mechanical and communication systems.	Systems are upgraded and reconfigured easily. Technology can be easily added as it develops.

*In cold climates

*Non-Proprietary Process - Open Built® is the equivalent of 'open source software.' It is an open access system, designed to be shared with architects, builders and manufacturers. Bensonwood is partnering with software developers, manufacturers and builders to make Open Built® a new standard in the building industry.