Case Study:
Toni-Areal

Toni-Areal
The New
in ZÜRICH WEST

EM2N is planning

one of the largest

construction projects

in Switzerland with

Vectorworks Architect.

From a milk processing facility to an educational and cultural platform—a transformation.

New Zürich University of the Arts

The Toni-Areal is a crucial part of the plan to breathe new urban life into Zürich West. It features spaces for cultural events, as well as apartments for the Zürich University of the Arts and the Zürich University of Applied Sciences. The Zürich based architecture firm EM2N | Mathias Müller | Daniel Niggli is planning the project using Vectorworks® Architect software.

One of the largest construction projects in Switzerland

Starting in 2013, the former milk processing facility will be the new home of the Zürich University of the Arts and two departments of the Zürich University of Applied Sciences. "The Toni Areal is an important investment in Zürich as an educational and cultural center that benefits the local creative economy," noted Regine Aeppli, Director of Education, at the beginning of the remodeling and extension work. Many of the main areas of the building will be accessible to the public. Construction Manager Markus Kägi says, "Though the industrial character of the colossus is preserved, we're not creating a fortress, but an open and permeable building."

The Toni-Areal is one of the largest construction projects ever undertaken in Zürich and will be the largest construction site in Switzerland during its realization phase. The total usable floor space is 108,500 m² (c. 1,167,884 ft²), of which the colleges comprise 84,500 m² (c. 909,550 ft²). The remaining 23,500 m² (c. 274,480 ft²) are dedicated to housing, cultural events, restaurants, and small retail shops, as well as parking and technology. The construction price—including basic upgrades and tenant upgrades—amounts to about 350 million Swiss francs.
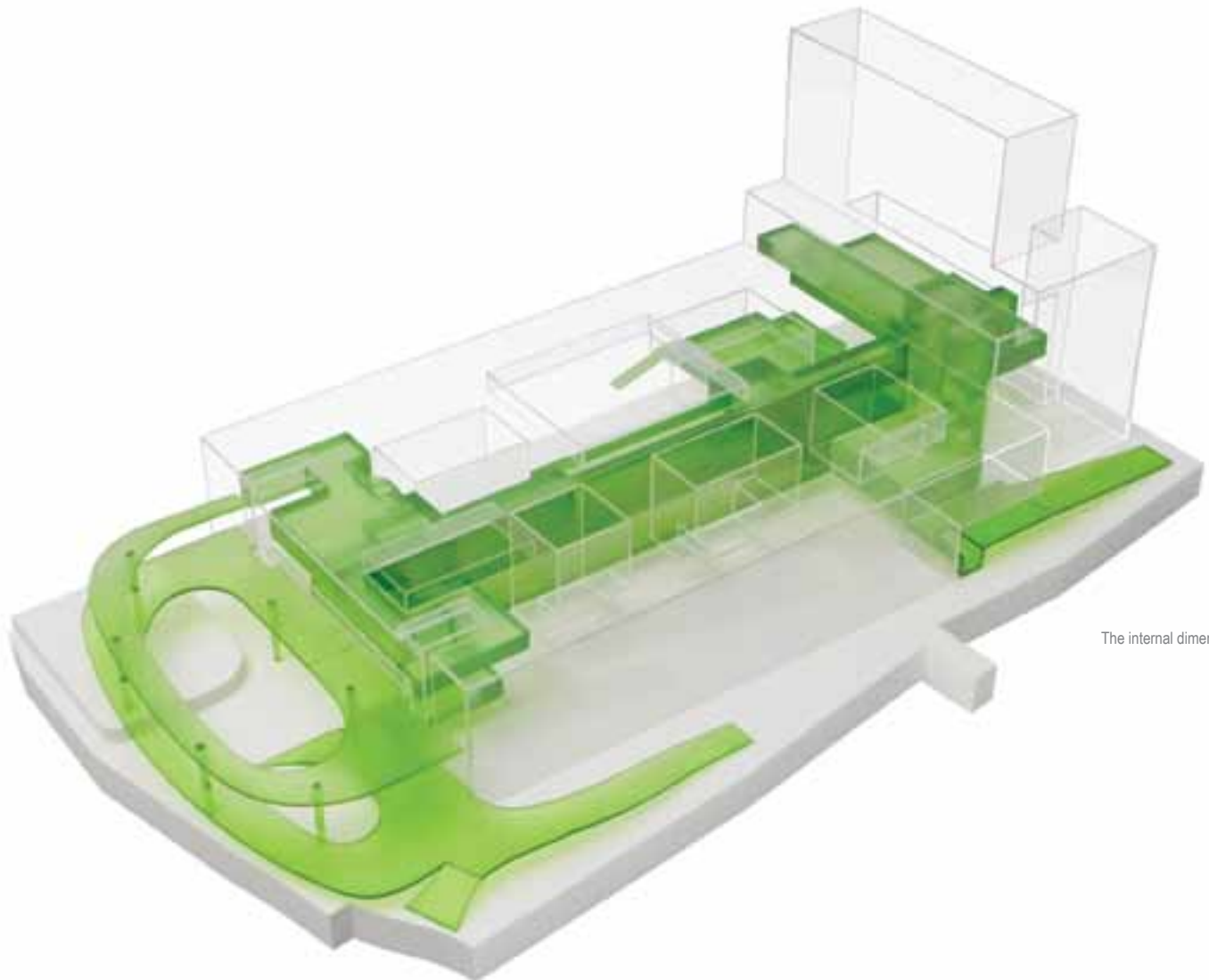
Rapid Urban Development

The gigantic industrial complex in Zürich West first opened in 1977 as Europe's largest and most modern milk processing facility and was closed in 2000 after only 23 years. During the interim period, the Areal was used by clubs for cultural and sporting events. In 2006, a contracted study pursued the possibility of its architectural rebirth as an educational and cultural center. The new Zürich University of the Arts and the Universities of Social Work and Applied Psychology now look forward to sharing their new homes here.

Today, Zürich West is a thriving area that has largely escaped its industrial past. Its transformation into a mixed, lively part of town serving many diverse uses is still in full swing—Zürich West is up and coming. The Toni-Areal project combines two interesting developments—on one hand, the project represents a spatial implementation of the reformed academic landscape in Switzerland. On the other, it is a crucial element in the urban transformation process that has overtaken this town–a development that will change and shape the character of Zürich as a whole.

The Toni-Areal: Numbers and Data	
Toni-Areal milk processing facility:	(1977 – 2000)
Contracted study completed:	2006
Completion of building:	2013
Building volume (SIA 116):	520,500 m³ (c. 18,381,284 ft³)
Total usable floor area:	108,500 m² (c. 1,167,884 ft²)
Countable gross floor area:	125,000 m² (c. 1,345,489 ft²)
Façade:	40,000 m² (c. 430,556 ft²)
Heat production:	Waste heat and district heating
Minergie Standard (new building):	Compliant

The internal dimensions.

Planning with Vectorworks Architect

Like all EM2N projects, the Toni-Areal was planned with the help of Vectorworks Architect software. In a project with a building volume of 520,500 m^3 (c. 18,381,284 ft^3) and a 125,000 m^2 (c. 1,345,489 ft^2) gross floor space that approximates the size of an entire city quarter, the sheer volume of data represents a formidable challenge. Thanks to Vectorworks' simple and flexible data model, EM2N was able to efficiently manage this enormous amount of data. Depending upon the need at hand, EM2N could store one plan in a single document, assemble several plans in one CAD/BIM document, or reference certain

In addition to the entire construction detail, as well as the countless plans for layouts, profiles, façades, staircases, details, and other components, the firm also compiled special plans for the "pearls," a name coined by EM2N project manager Enis Basartangil for the six most significant locations within the Toni-Areal. The pearls include the library, the entrance hall, and the concert hall, among other locations. The plans for these representative locations are graphically more elaborate than those for other building components and display additional information such as structural engineering information, since these spaces usually extend over several floors.

Space and acoustics play a crucial role in the concert hall's design. The entrance hall drawings include all surfaces with the construction joints, as well as all façades. With the Vectorworks program, the firm was able to handle the large size and number of all the plans with precision and efficiency–the program was at all times fully in control of the Herculean task

Teamwork

The scope and complexity of the project, as well as the size of the team, made it necessary to create a system of parameters that would record and standardize the ground rules for working with the design software for all involved parties. This included directions for the program settings, a definition of the class structure, correct naming of plans, a plan structure, adept handling of the Vectorworks' teamwork functions, as well as details like the seven line widths and numerous tips for concrete. The system ensured a uniform use of the Vectorworks program, and subsequently the creation of consistent plans and documents. It serves as an encyclopedia and assists all those that newly join the project.

The CAD-integrated database used BIM to collect building information for doors, door numbers, room sizes, and room numbers. Moreover, the team compiled a symbol library specifically for the Toni-Areal. "Once we introduced the necessary structures and everyone observed them, Vectorworks ran impeccably," observes Basartangil. In the meantime the system of rules has become so comprehensive that a revised version was adopted by EM2N as the office standard.

EM2N did not just use symbols for doors, interior glazing, sinks, and other items. Rather, entire residential units were defined as one symbol in order to perform changes in the 20 plus residential units in an efficient and consistent manner.

Becoming Part of Town

With the realization of the Toni-Areal, two educational institutions, The College of Design and Arts and the Academy of Music and Theater, will be united to form the new Zürich University of the Arts, which will share space with the Zürich University of Applied Sciences. By consolidating the two institutions in one location, they will be able to optimize their space requirements and reduce their operating costs.

components in other plans, like the Toni-Areal's inventory. Traditionally, the Vectorworks application has been especially effective for creating layouts. "A plan composition with layout, profile, and detail views must happen quickly, and Vectorworks does a very good job with it," says Christof Zollinger, one of the two general project managers for the Toni-Areal and an associate at EM2N. He has managed the Toni-Areal team at EM2N since 2006. "Vectorworks is a CAD program which creates the perfect balance between the expectations that typically exist for a contest competition plan and those that exist for an implementation plan. This CAD software accomplishes both tasks without any problem," explains Zollinger.

EM2N's proposal was chosen primarily for its flexibility, which was best able to accommodate the entirely different requirements of two educational institutions with respect to their home. "What mattered was the space allocation plan that we compiled with the help of Vectorworks. We did not initially define each room with its detailed function, but rather specified areas and quarters within the existing structure," Zollinger explains. "Only in this way could the current and possible future needs of the two universities be satisfied."

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– Christof Zollinger, EM2N, Zürich, Switzerland

The team conceived of the existing ramp construction in the north as a vertical boulevard and redesigned it as one of the major improvements. The architects created a large public hall at the intersection of high and low rise elements. These two pieces are linked by a cascade-like sequence of halls and staircases, and this layout created internal addresses that position the various spaces just like buildings in the city. At the same time the building becomes a city component in an inhospitable environment.

 "We want the Toni-Areal to be not just a school, but a part of the city. We think of the Toni- Areal as a perforated urban object that you can stroll through as you would through any other part of town. Of course, this lends a crucial significance to the walk within and through the building as a 'promenade architecturale,' in the sense of a mutual permeation and interconnection," write Niggli and Müller.*
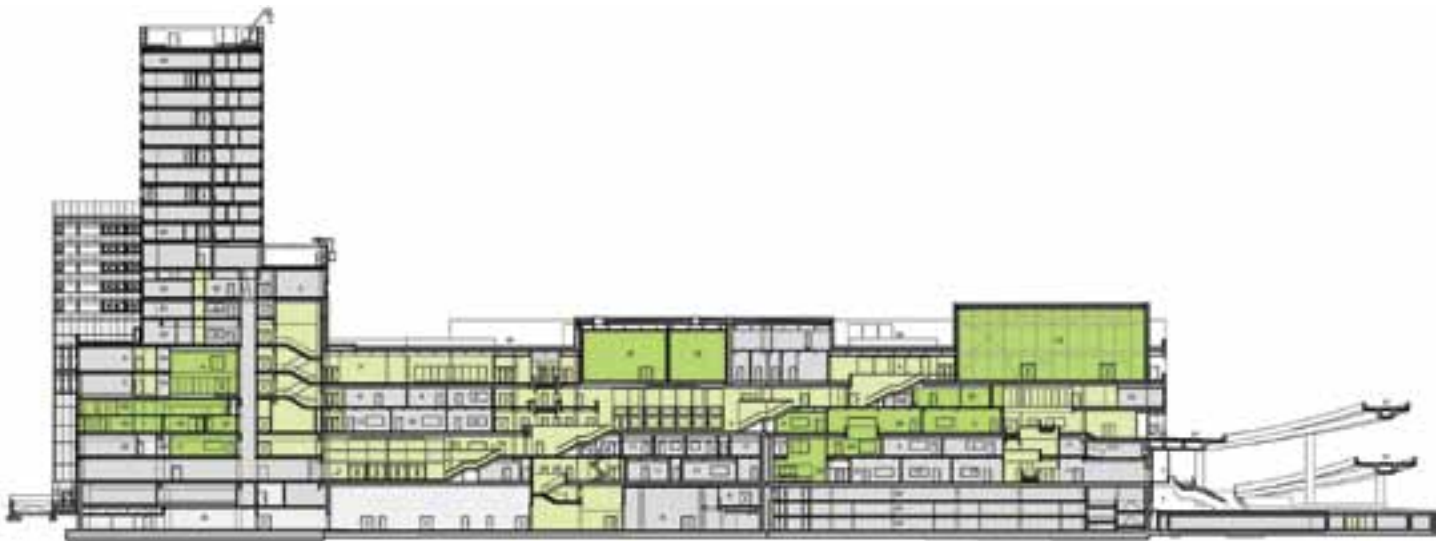
The building as city, the city as building. Green and yellow rooms, hallways and outdoor areas are public.

We think of the Toni-Areal as of a perforated urban object that you can stroll through as you would through any other part of town"

– Daniel Niggli, Mathias Müller, Principals, EM2N, Zürich, Switzerland

The unconventional architectural framework requirements also ensure that the project constitutes an architectural challenge. To create an open scope of action for the campus visitors, EM2N worked with various precisions, scales, and tonalities—sometimes rough, sometimes refined, in part over-defined and in part under-defined, with a selection of both large public and intimate private rooms. The building as a city, the city as a building.

Daniel Niggli   Mathias Müller

* Ilka & Andreas Ruby (Hrsg.): EM2N sowohl als auch, gta Verlag 2009

Acknowledgements

Mathias Müller and Daniel Niggli aim to produce architecture that is powerful and personal, architecture with the capability of developing its own character. As a result their projects may polarize the public, which is fine with them. One may love or hate their architecture, but one should never be left indifferent.

Müller and Niggli are convinced that there is never just one solution. The projects must cope with the unforeseen, even the accidental. Therefore, they tend to think in scenarios, work with hypotheses, and generate oppositional alternatives.

Each one of these projections into the future originates from different assumptions and has its own history or story to tell.

If EM2N manages to develop projects that can stand for themselves in the urban fabric, the architects consider having achieved their goal.