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LAM Ambiente

EXTERNAL TUTOR

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Let'Set

Executive summary

The tourism industry is undergoing a deep transformation due to new and different activities that people are willing to perform. This trend is called *experiential tourism*, since travellers are increasingly organizing their holidays looking for an occasion to try and discover something new, rather than a full week relax. Nevertheless, relax is not completely excluded and it can be turned into a new experience. Any entrepreneur or company interested in investing in hospitality service must be aware of this tendency; as a matter of fact, experiences should be perceived also inside the accommodation and several studies (*Booking, ISTAT, Osservatorio del Turismo*) have demonstrated how traditional hotel are no longer so much in demand.

Well-aware of the current change, the project has been focused on developing a *service* aimed at answering to these needs, called *Let'Set*, in collaboration with *LAM Ambiente*, an Italian company producing wooden accommodations. The service aims at providing the businessman with an experiential structure. The development of the service has been articulated in two levels:

- The first focused on the methodological process through which the client is addressed and the dwellings are designed;
- The second was about the technological design of the module.

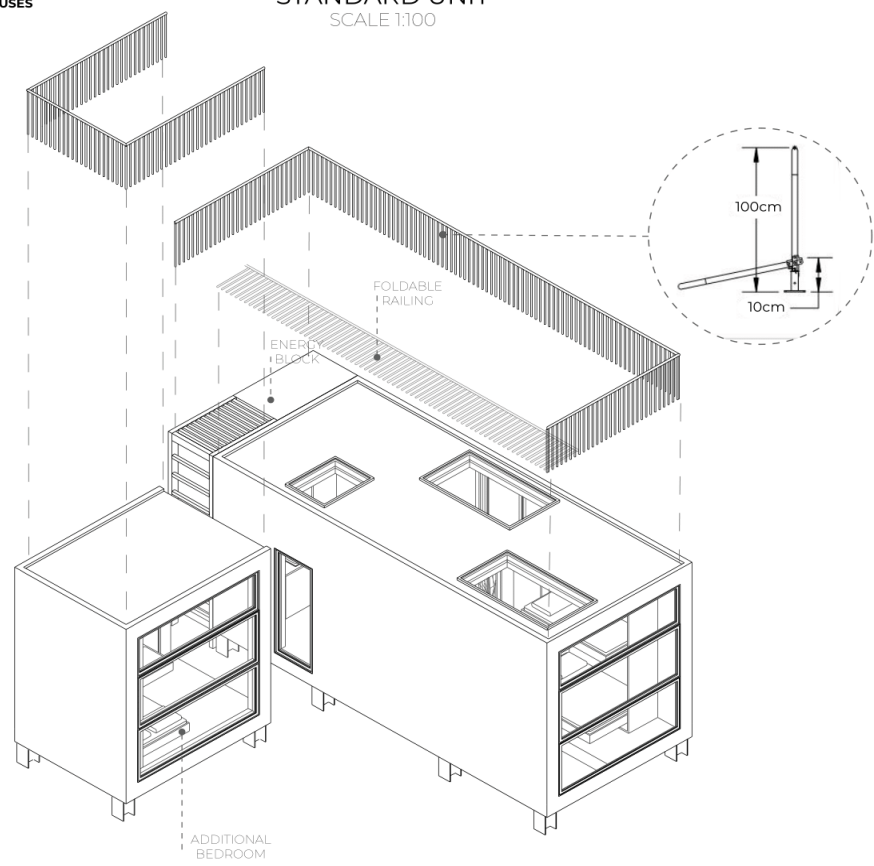
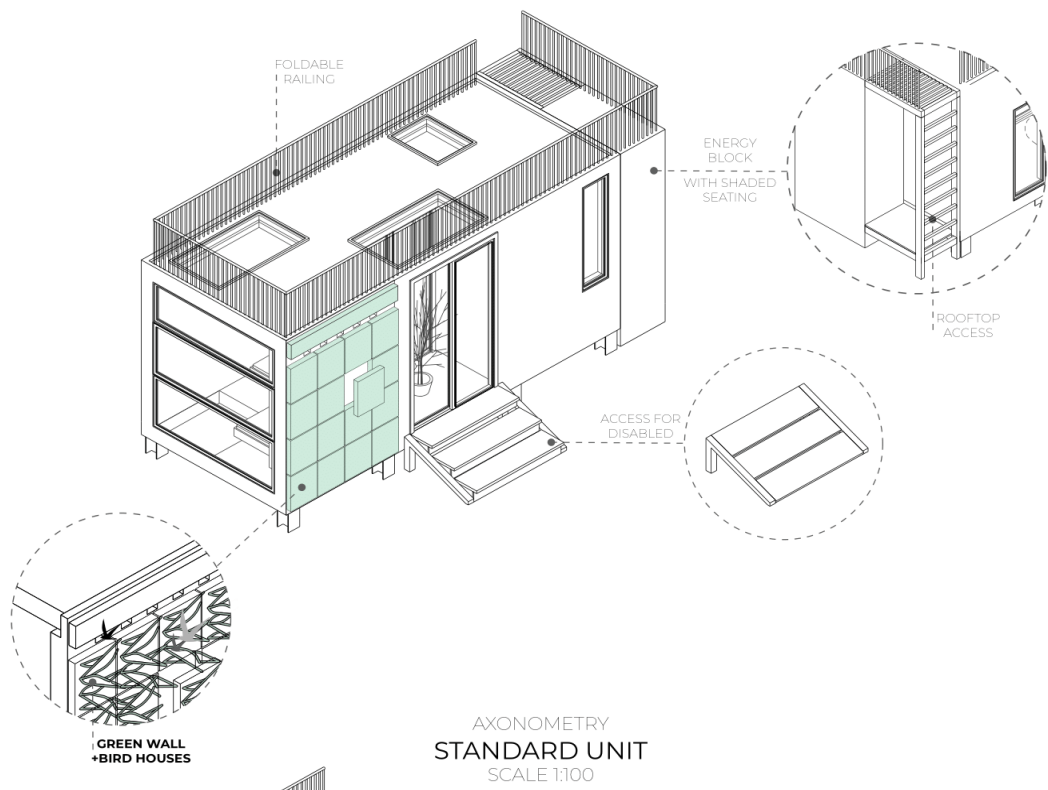
The cutting-edge methodology thought to manage the whole building process is the *core* of *Let'Set*, since it represents the innovative proposal which permits to stand out among various competitors. The owner requirements are collected by means of an online questionnaire, the *flow-chart*, by which he describes the basic information, such as the number of hosts or the location. These are the input data for the *matrix*, a decision-making tool containing all the possible solutions for each part of the module, selectable by simply clicking on the corresponding icon: the project is so designed *piece-by-piece*. Such a systematic management leads to provide the client with high-quality solutions in a short period of time.

The units, in line with the value proposition of *LAM Ambiente*, have to respect the key word of sustainability, generating an environmental impact as low as possible. This has been possible by using nearly fully recyclable materials to ensure high energy performance, together with the use of Renewable Energy Sources (RES) to satisfy the energy needs of the unit.

Moreover, the team developed the minimalistic idea in its accommodation: every unit has been designed to collect the higher number of experiences in the minimum space, since they must be moved, avoiding the use of special transport to reduce the cost, already prefabricated from *LAM Ambiente* headquarter to the building site. Finally, all the accommodation have been designed to ensure the accessibility also to disabled people, making *Let'Set* a promoter of social inclusion.

Key Words:

“Experience”, “Building fast”, “Service”, “Sustainability”



Drawings of the dwelling designed for the city environment, as an example of the final layout. Experiences and possible modifications selectable by the client are shown.

**Project description
written by the
Principal Academic
Tutor**

The De SEED Italy project for the Alta Scuola Politecnica was born from the selection of the group SEED Italy (Sustainable & Efficient Energy Design) as a competitor in the international challenge, for universities, on solar architecture, called Solar Decathlon Europe 2019, which was held nearby Budapest last July. The SDE19 competition is about the design and construction of a small residential solar-powered tiny house, that has to compete against 15 other houses, from all over Europe and beyond, through 10 contests (Architecture, Market Potential, Engineering Communications, Innovation, Water, Health & Comfort, Appliances, Home Life, Energy).



The team with the academic and the external tutors in LAM Ambiente headquarter.

The ASP team's students were supposed to support the SEED Italy team in the competition, exploring the design aspects of the solar energy module related to water: production and consumption but, above all, possible recycling in a strong sustainability logic. Unfortunately, due to organizational problems with the host country and economic issues related to the cost of participation, in February 2019, after almost a year of work, the SEED Italy team had to withdraw from the competition. Although the ASP team of students was already working on the aforementioned aspects, in the absence of a really built module their project would not have met the ASP program's concrete and validity requirements for the productive world.

Thanks to the resourcefulness of the ASP students, the support of external tutors and LAM Ambiente company, involved since the initial project's phases, a new topic was identified that could recover part of the work previously produced for the international competition but which at the same time, it could constitute an interesting development from the point of view of the implementation of the LAM business plan. The new project revolves around two key moments, two intensive workshops that saw the involvement of different stakeholders. The first at La Bella Vite in Carpeneto, where the external tutor Paolo Scoglio had already designed and built small modules for experiential tourism in the vineyard, and where the students of the ASP team, in addition to experiencing first-hand, were able to measure the modules and analyse them from the point of view of the energy consumption and their thermo-hygrometric performances, forming a cognitive framework of the critical aspects and possibilities, useful for the design of the original modules. The second workshop was organized at the LAM Ambiente company (AR), allowing the team to deal with the concrete problems that real production entails. Here is how the "De SEED Italy for Let 'Set" was born, starting from the idea of the small residential module, with low environmental impact, however declined for a particular tourist function, that is the experiential tourism in heterogeneous environmental contexts (city, seaside and mountain).

**Team description by
skill**

The *Let'Set* team was originally formed by eight students, but subsequently reduced to the following seven members:

Anna Brazzini: With her architectural skills she contributed to design the accommodation for the seaside environment, as well as to cluster possible users and to study the structure of the unit.

Federica Caruso: With her expertise on web design and client relationship, she worked on designing the website interface to address the entrepreneur, helping in the development of the flow-chart, studying all his interactions with the company.

Aleksandra Cheremuchina [Team leader]: With her architectural skills she contributed to design the accommodation for the city environment and to transcript all the projects in BIM language for the Configurator platform.

Elia Lupo: With his expertise on stratigraphy and sustainable materials he developed and verified the unit envelope for each environment and the connection between two modules, designing also the mountain accommodation.

Ilaria Martarelli: With her architectural-constructive ability she contributed to design the accommodation for the seaside environment, as well as to analyse the connection between modules and the transportation constraints.

Francesca Meineri: With her architectural expertise she contributed to design the accommodation for the city environment and she led the development and the design of the decision-making matrix on which the Configurator is based.

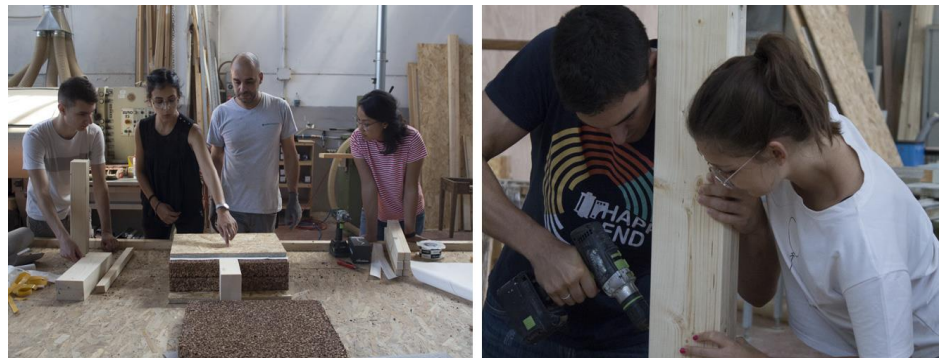
Stefano Viti [Team Controller]: With his energy engineering skills he contributed to the climate classification of the three environments and to design the equipment and services to satisfy the dwelling energy needs, as well as their integration.

Goal

The *Let'Set* project aims at drawing the next frontier of experiential tourism, a brand-new concept that emphasizes the emotions and the discoveries of a journey. Since the experience of the tourist must begin with a suitable accommodation, consistent with his needs, *Let'Set* is a completely new approach in this field both for travellers and businessmen:

1. The latter can start or improve his activity by simply setting the features of the site and of the desired experience:
2. The tourist will find the perfect solution in terms of experiential accommodation: the tiny units are full of every needed comfort implemented by a basic experience and a deep contact with nature.

In this design framework, accessibility to disabled people has been always a must, also to overcome social barriers.



The team while prototyping its solutions in LAM Ambiente manufacturing department.

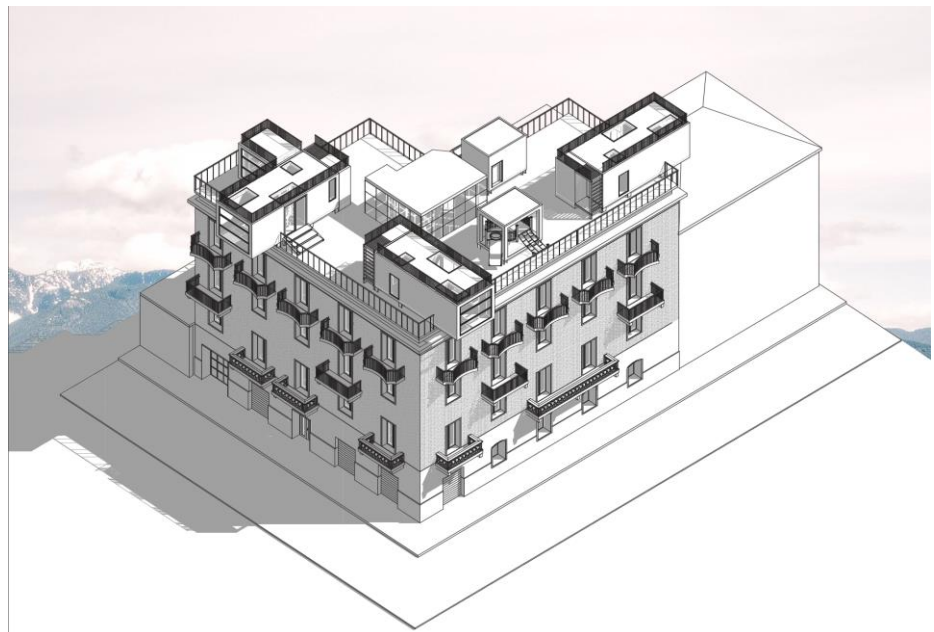
Understanding the problem

For a long time, tourism has been conceived as a standard product for masses, since holiday was seen only as an opportunity to take a break from the daily routine. Nowadays, people's needs are undergoing a drastic change and this old concept is disappearing, giving way to a new trend denoted by richness in experience and interaction with tradition. Holidays are so understood as an occasion of enrichment and tourists want to come back home with the memory of a journey that has left a mark inside them. One of the occasions to enjoy such experiences is surely when staying inside the chosen accommodations.

Therefore, firms designing them must know these new needs and propose suitable solution.

As the engagement of LAM Ambiente in the field of tourism is recent, they are not currently proposing solution to answer to the growing phenomenon of experiential travels. Thus, the team has been required to design suitable hospitality services to improve the catalogue of LAM Ambiente. Among the most challenging requests, that of space surely stands out: modules have to be completely prefabricated within the manufacturing department and be transported directly on the building site without the use of exceptional transport, as other companies currently do. In addition, every module must ensure the accessibility to disabled people, requiring so more space, and logically be comfortable for hosts. Satisfying together all these needs has been for sure the hardest challenge of the project.

Furthermore, LAM Ambiente is a milestone in the wooden structure sector and it has made sustainability one of its strength. Accommodations must embody this value, having low energy request and being made of nearly fully recyclable materials.



Masterplan of a possible hospitality service offered by *Let'Set* – City environment.

Exploring the opportunities

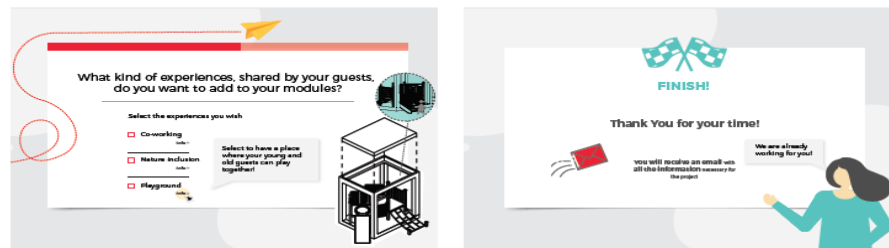
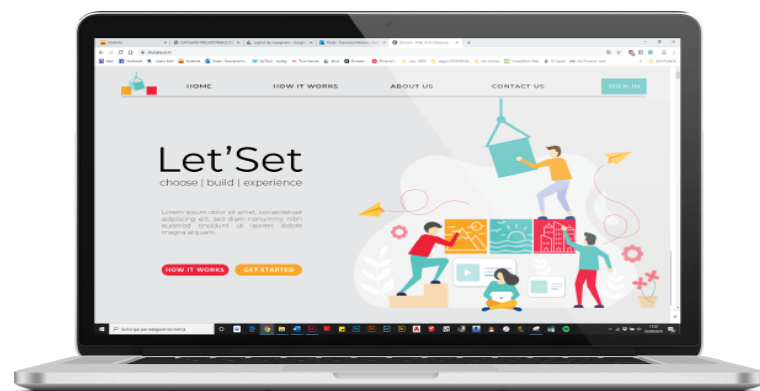
In the recent years, several examples of tiny experiential houses, even if not necessarily designed for tourism, are becoming increasingly spread throughout the world. Moreover, pertinent tourism analyses have demonstrated that in Italy the sector develops around three main environments: mountain, seaside and city. In these locations, dwellings able to ensure a deep contact with nature, provided with beautiful glass façade for breath-taking views, are the new target of architects. Also where nature lacks by definition, such as in cities and urban areas, minimalistic units can be found, especially on existing rooftops, as representative of the new architectural trend called parasitism. In this framework, the team had the opportunity to get physically in touch with experiential hospitality services designed by the architect Paolo Scoglio, an expert in this field, performing a workshop inside one of his projects.

Considering these examples as the state of the art of experiential tourism, the team has been required to design similar structures, for each one of the three environments. Nevertheless, limiting the project to the design of tiny, eco-sustainable and prefabricated dwellings would have been too reductive. Therefore, since *“building fast”* has always been a must, the team developed a way to lead this concept to the extreme, trying to give to its final solution something more with respect to other competitors already active in the market.

After all, the idea of *Let'Set* was born: the team decided to plan, alongside with the dwellings, a new way to address the entrepreneur and to fast design the accommodations. The service is thus based on an online platform able to collect the owner's requirements, communicate them quickly to the architects and drive the latter in the project. On the other hand, several technological solutions have been explored to satisfy all the requests: different possibilities for the wall structure (X-Lam, Platform, Hybrid wood/steel), several ways to connect two modules (Dovetail joint, Hooks and screws) and various plants to ensure the internal comfort. The final solution has been always established by doing the best trade-off between performances and techno-economic feasibility.

Generating a solution

Having in mind all these needs and requirements, the team developed the *Let'Set* service by rooting it on an online Configurator, to offer a direct and effective communication between the client and the designers and a complete control over the process. This online interface is composed by two parts: the *flow chart* (front-of-house) for the entrepreneur and the *matrix* (back-of-house) for the architects.

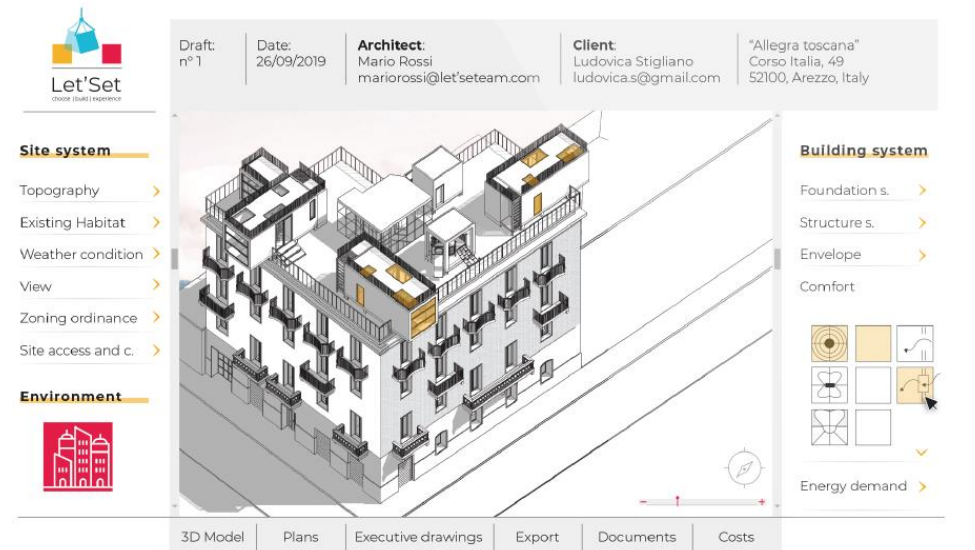


Website layout where the flow chart starts (top) with a possible question (bottom).

The first is a schematic questionnaire to collect the necessary information aimed at classifying the owner desires. Answering to some specific questions, the client who wants his experiential accommodations provides the architects with his needs and possibilities. He has to specify where he owns the location, if he has already an activity, the experience he wants to include and the number of hosts. The flow chart output will be a draft project of the required hospitality service, sent to the client by e-mail.

The second step of the Configurator is the matrix, seen only by the designers. This decision-making tool helps to visualize all the technical elements of the dwelling, guiding the architect in the project. For each row (i.e. the three environments) and each column (i.e. the elements), every box of the matrix contains the possible solutions among which the designers have to choose the one that best meets the requirements. Therefore, when an element has been clicked, the BIM model of the dwelling starts to take shape, being it so built systematically step-by-step; the possibility to avoiding the drawings of each elements, as if even the design itself were already prefabricated, dramatically increases the speed of the process.

On the other hand, the second level of *Let'Set* has been focused on developing some solutions to be inserted in the matrix database, especially those regarding the envelope, the connection and the energy plants, keeping in mind that the maximum external dimensions of each module to avoid special transport are 3.25x2.50x3.25 meters. Defining a correct technology used to link two modules has been a challenge, since nodes tend to be thermal bridges. They are provided with hooks to facilitate the first attachment, so that after the touching frames are joint with screws.



Matrix interface: choosing the best solution for each element (sides of the screen), the project is drawn in the center.

Sustainability is translated into practice with high energy performances and Zero Energy Building (ZEB). The envelope chosen according to the climate constraints of each environment is always able to guarantee low heating and cooling demand; stratigraphies are made of a platform OSB system containing two cork insulation layers, where the climate is particularly harsh, or coupled with a thermo-reflective cavity to manage the radiation in hot climates. Finally, RES based plants were adopted when it came to design the energy system: all the needs are satisfied by an electrically driven heat pump fed by photovoltaic panels coupled with storage batteries; these devices have been inserted all in a small cupboard easily integrated outside the house, following again the minimalistic idea. The total independency of the module from fossil fuels brings to several tons of CO₂ saved every year, like ZEBs do.

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