# THE INTELLIGENT RESIDENCE

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## Summary

*The intelligent residence consists of a collection of divisions, systems, secondary systems that have the capacity of interacting, or of functioning independently, in order to provide house owners a high level of comfort. This allows the house owners to control every system and secondary system inside the house, individual or collective, by using the automatic setting or by making temporary changes.*

*Beside the statement above, and the concept already familiar to us, it is recommended to analyze more the impact of the inhabitants' lifestyle, due to their use of a wide range of IT systems in their domestic life, of virtual interactive communication, of instant inter-connections.*

*The intelligent residence is the house of the future. The identification of changes occurred in the way of spending time at home, of the activities performed shall generate new approaches adjusted to the planimetric and spatial design of the residence.*

## 1. INTRODUCTION

The residence is a privileged area. It is the place of departure, of arrival, or passing through, of all the society flows, the privileged area for consumption (of food, equipment, information, relaxation) and the complexity of its aspects opens a wide field of research on the urban society assembly.

To many of us, the cotemporary home is most of all the sum of technical and technological changes. The question raised at the house level is the same with the one raised by all segments of the society: how local aspects deal with the global ones, the groups with its areas, under the conditions of new communication systems that are not limited by space and distance.

## 2. THE INTELLIGENT RESIDENCE

### 2.1 How to use the space of the intelligent residence

The progressive reduction of the workweek and, the increased free time spent at home shall lead to the end of the organization functionalism present in the design of individual or collective residence: the day-night zoning. Thus, the pleasure of using shall reappear, pleasure that has been hidden so far behind the biological needs of the function.

The communication instruments already affect the way of using the habitation.

The passive TV screen progressively becomes an interactive one, opening a huge dimension of imagination. The accelerated progress of technical inventions in this field shall facilitate the imagination of a virtual space, built by the viewer himself, who now becomes the actor, highlighting his/her own personality.

A very important moment of these changes is the huge change in people's mind towards media instruments: telephones, color TV, internet. If, at the beginning, the Europeans were not interested in these useful innovations, later on, between 1970 and 1980, they did exactly the opposite. The technological progress of the communication means led to the unexpected and unplanned appearance of unpredictable models and types of communication instruments that allow the use of these utilities outside the traditional rules (fixed or mobile phone message box, fax, etc.), providing thus immaterial connections that do not necessarily lead to a face to face meeting. This "pot" mixing all the communication techniques, reveal another aspect of the developing process – the "space-time" relation and the space built. The "electronic time", the time of high speed transfer of information and immaterial communication, is added to the three ordinary dimensions.

The "space-time" reorganization becomes vital in the context of the significant reduction of production times, of the improvement of distance work agreements, of reduction of locations.

Facing these space-time changes and their possible effects, the contemporary architecture preserves the three dimensions concept. If the internal structure of dwellings is not modified, the insertion of telephone

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lines, personal computers and cable TV, shall be in most of the cases a tight juxtaposition of direct communication instruments (corresponding to the living room) and of media communication space; the superposition of these antagonist functions shall thus significantly lead to a family break up.

The classical picture of the furniture consisting in armchairs, 2 or 3 seats sofas, the floor lamp directly or indirectly shining upon the small table, usually belongs to the sociopetal of a living room that invokes the direct communication ritual.

This type of furniture in a room designed for relaxation, lacking of planimetric organization formulas ( L, U, I I) seems to be an old fashion after the wide spread of television, internet, computer, video player, DVD player etc, into the house.

The conversation and change of opinions, the direct communication are replaced by the consumption of virtual image, information (passive or interactive ways). In the same context, the fast changes in IT technology resulted in a rapid adjustment of the living room arrangement:

The furniture now located in a radiophone or radio centered position, specific to the 3rd – 5th decade of the 20th century was replaced, after the '60s, by the orthogonal position of the sofa, at a convenient distance from the TV screen.

Furthermore, new furniture styles have been created (office style, mainly) with sizes adjusted to the new work instruments and to their ergonomic use.

The information -terminal connected to database, relaxation – computer network games, the work at home – via internet, the participation in cultural events -theatre, opera, movies are activities that shall be virtually consumed in front of big screens, alone or with the family member in the same living room. The old living room shall become a telematic space for work and leisure, semantically improved.

The technological contamination will reach all the functional spaces of the dwelling; the already traditional day-night segregations, the old hierarchies and habits will fade, being replaced by a type of dwelling in which the habitation shall be the most significant factor. For example, we mention a model proposed at the Europan contest, focused on the design of new living styles, that shall be soon implemented. The Mardi team of architects focused on the inhabitants with a high residential and professional mobility, as the future image of the European individual. The team named these mobile

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Europeans – the urbanauts – and the residence designed for them is seen as an equipment that integrates multiple services with a central computerized control panel, a mobile and independent module, connected to a central database.

The changes we face will definitely change our domestic life, due to the interaction with the ultimate domestic programmable facilities and tools.

Using one or several control, monitoring and information terminals, the inhabitant shall have a different vision on how to use the space; the remote control of the automation and information system of the house shall become the magic stick, used by the inhabitant to deal with the activities and events of his/her domestic life. Furthermore, the objects themselves will communicate, by binary interrogation interaction, via internet, making domestic decisions, with or without the owner's knowledge.

In a few years, listening our favorite concert at the microwave speakers, while ordering food via internet on the refrigerator's touch-screen, or watching with concern the display of the washing machine, showing the list of domestic expenses made in the last weeks, shall no longer be unusual. The computerized house shall become a pleasant partner, and also a live and personalized extension of the inhabitant.

Obviously, these changes shall place us into a new society, where we could easily and simultaneously function, both in the real and in multiple virtual worlds. Almost every object or event from the real or virtual world shall become the raw material to be shaped and owned, as we wish.

## 2.2 The equipments of the intelligent residence

If we try to define the intelligent residence as the house equipped with the technology that allows the interaction of automatic systems and secondary systems, or to operate independently, to raise the general level of comfort, then we should propose from the very beginning a short list of the communication ways between the automatic devices and the standard electrical systems of the house, the new technologies and the types and levels of intervention.

Some of these terms refer to the main current trends in an automated residence: security, improved thermal and climatic comfort, optimal natural and artificial light of the residence, and IT communication.

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Here we can mention the domestic appliances, telephones, thermostats, monitors, built in home theatre systems , all connected to microprocessors that allow the intercommunication and the communication to the inhabitants. The washing machine can interrogate the house plant on the proper water temperature, the inhabitants can use the remote programming facility for the DVD-recorder, the music station and reduce the sound level when the telephone rings.

The cost of equipment shall not be prohibitive, if the devices are serial manufactured, and the communication is wireless. The real reason for which the totally automated residence of the future seems hard to achieve is that the user interface must be as simple and friendly as possible. People are generally intimidated even when they have to program their own VCR, or when they set the thermostat temperature to other values than the factory settings.

This is where a new aspect of the intelligent residence appears: the adaptability of systems to the inhabitant's needs and lifestyle. Such residence should not produce special interactions. The inhabitants will continue to use the same switchers, thermostats, volume controls and remote controls, as they already do. But these signals should be monitored and used as "educational" signals of a self-programmable system, to indicate the conduct for the future.

As the dwelling automation system becomes more customized, it shall start to anticipate the needs of the inhabitants, by setting the corresponding devices and temperature values, in order to replace the manual control of their surrounding environment. For instance, the system could automatically maintain the room temperature at an optimal level for a certain activity, depending on the number and preferences of the persons in the room, on season, etc.

Alex Pentland, researcher at Media Lab, MIT, considers that the automation system should recognize the presence of a person in the room, to interpret body movements and gesture, in order to execute the orders. A modern dwelling should be equipped with at least two surveillance cameras that analyze the face and the mood of the inhabitants, in order to react properly. They shall also be properly located, to facilitate the recognition of the movement direction – for example, through a dark hall, towards an underground garage or cellar – to illuminate the way. In general, this can already be achieved using the existing technology: movement sensors

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connected to the existing applications through a central control system of the building.

## 3. CONCLUSIONS

The space density in contact with the new communication and information systems shall become a real example of how to transform the interior of the house.

Although the virtual image shall not be used only as mass communication support, it shall also serve to the interpersonal exchanges and to bring back the community to a direct interaction area.

This is why, from this point of view, we shall not witness only a simple extension of the application field of technology.