



# OnTheGO

A Dream Home for Populations on the Move

The Why Factory MSc1 Design Studio 2017-2018

Delft University of Technology

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Think of a city at a given moment. Traffic jams mean most people are on the move towards work or returning home while both workspaces and living ones remain unused. During the day, suburbs and average neighborhoods stand almost empty. If one made a scan of the city, it would not be surprising to find that a big chunk of it (even a dense city) is empty, or more precisely latent, waiting for the users to activate it. The great living room in your apartment remains unused perhaps 80 or 90% of the time. The bathroom gets used for 15 min and then spends 23 hours and 45 minutes waiting to be used again, not to mention the bedroom or the storage spaces. The story can go on to most functions of the housing block or the city. This reading would be irrelevant if space would be endless and the environment would be in perfect shape. But it is not.

Humans consume and demand more and more space, so the answer given since time immemorial has been to compress the living quarters of those at the bottom of society to maximum levels and give to those at the top the sensation of power by space abundance. Density indeed has come with great advantages; it has brought affordable dwelling to millions and with it transport access, infrastructure, schools and so on. But the price tag of this has meant that families have to live in fixed environments of 35m<sup>2</sup> even in rich Europe.. Can we challenge this?

Now as new technology emerges we are suddenly able to locate our position, and crucially for architecture, we are now able to manipulate our space from a distance. Software and architecture seem to be merging into one. At last, it seems plausible to rethink what density means and introduce a key factor to the equation that has been largely ignored: time.

With this we think that another conception of architecture is possible, an architecture that can provide what users need in real time, to then compress and transform into other functions when not needed to achieve maximum use. In an ideal scenario, we can immediately think that a city perhaps could shrink enormously if it only offers the space that real time demands. Or one can think of keeping our current footprint, but instead of living in 35m<sup>2</sup> we could ditch this concept of austerity and invent a new one where current use is what matters, space expands as never seen to be then compressed to maximum levels. Finally, a generous scenario would mean our cities could hold much more people than expected, perhaps double or triple our current densities.

Now perhaps one could say that if everyone goes to work at the same time and returns at the same time, there would be little space for improvement. Yet that scenario is to be tested with real schedules of users. Gaps in time from the different schedule of neighbors would mean that space is available for usage. The best way to test this scenario would be to take into account a contemporary context of users. In that sense, we arrive at a contemporary condition where x-pats, asylum seekers, home starters, students and so on share a common envelope, everyone is on the move.

**OnTheGo** asks the students to design a housing block capable of accommodating the different needs of each of its temporary residents and maximize the space to arrive at new levels of both compression and expansion. But we want to achieve this without sacrificing the specific requirements of its users, OnTheGo is a tailor made house on the move.

We want to test the capacity of architecture to evolve over time, in real time, as newcomers arrive and old comers depart, as users coincide for a few minutes in rush hours or to explore the potential of time gaps for expansion and compression. The project is interested in finding intelligent and innovative solutions for ever changing environments and maximum customization and adaptation within a highly constrained envelope. The constructive solutions for facilitating real time spatial transformations will be part of the core of the proposal.

**OnTheGo** will challenge students to reflect on the problematic of maximum desires and pressing needs. What sort of organizing principle is needed to accomplish a 100% adaptability in real time to ever changing demands of temporary users? How can time be taken into account to use the maximum potential of space resources? Can we think of game software that can accommodate different temporary modes of accommodation?

After our projects Egocity and Wegocity, The Why Factory wants to keep investigating the potentials of desire-based design processes, capable of introducing the residents' wishes in the construction and adaptation of housing and the city. If Egocity and Wegocity focused on the construction of the permanent dwelling that fulfilled one's ultimate dreams, OnTheGo will explore

modes of temporary living capable of adapting—in real time— to a vast array of comers and goers.

**OnTheGo** is organized jointly with the Illinois Institute of Technology. Students from IIT Chicago will spend their Fall semester in Delft.

# STUDIO PROCESS

The studio is organized in 3 phases, the collective making of a brief, the principles and the testing simulation.

## 1. The making of a brief

Composed of 3 items running in parallel, this first phase of the studio is dedicated to forming the information base for both studios.

### 1.1 The client

In this phase, we aim to understand the type of users that will inhabit the block. Each user will get its own profile and will include data regarding daily schedules, desires and needs. This phase is important in the sense that we will see the required spaces and their furniture specifications; also we will start to note here the amount of unused space during the day for each type of user. Following the template of Neufert, the users will get for each activity a GIF that shows how the activity is performed in time. The representation of all users will use the same format of scale and will show the results in 3D with Axo views with time cycles. A compilation of activities makes a final index table with all the gifs embedded organized in an adequate taxonomy.

The different types of users include: the evolutionary, the nomad, the x-pat, the new normal, the pensioner and the sharers. For details of their needs see appendix calendar.

### 1.2 The envelope

Since a crucial aim of the studio is to rethink density with time involved. The type of envelope confining all activities must be the most suitable for achieving the densest results. Using the data of overall surface needs from the clients the team will test the following envelopes: slab, tower, cube.

The initial test will show the space needed for a usual scenario of space occupation; then it will compare the results with different gradients of compression where not used spaces are compacted to a minimum.

The results will be shown first is overall data needed for all users, then it will compare the different envelope form given and arrive at an ideal dimension for each. All measures should include surface and volume. For volume, we will use the voxel as a measuring unit. Each voxel measures 50cm x 50cm x 50cm. Drawings in axos for each envelope are accompanied by data and users location distinguishing active, latent and redundant voxels. For each envelope test 3 overall dimensions are given, maximum luxury, standard need and maximum compression.

Note:

IIT will work with 6 housing units.

TU Delft will work with 24 housing units.

### **1.3 The calendar**

The studio aims to compare different approaches to transforming architecture. It is therefore required that all teams for the project phase based their strategies on a common platform of demands. This part of the studio it is dedicated to forming a calendar of activities for the users based on their profile (see the client). It is a fictional set of movements but the intention is to arrive at a calendar that reflects the main characteristics of each of the users.

Since the results of the studio will include a testing phase in video (TU Delft) and prototype models (IIT) this calendar will set the parameters to be addressed.

Transformation is about time needs. It is expected that the fastest transformations will require a higher degree of complexity. Therefore, potentially powerful script will start with a slow tempo leading to a standard rhythm of change ending in a highly hectic demand of users. The aim of the exercise and the studio is to test the maximum speed of change to achieve the most diverse and yet compact result.

## **2. The principles of change**

This is the core of the studio. In this phase, research and conceptualization will run parallel to each other.

### **2.1 The application patents**

What change is made of? For the research part, we will spend effort on understanding current and upcoming technologies regarding material and software possibilities for accelerating transformation based on real time demands. The research aims to find ultimate solutions beyond architecture, high and low tech can be incorporated. The research phase of each technology aims to be tested in a restricted situation for different types of demand including the needs of change for wall, ceiling, roof, furniture, stairs, lift and pipes.

For presenting the results of this phase, each team should test the possibilities of their selected technology applied to each of the categories and include the time and compression factor to be able to compare and select the most adequate technologies for the design phase.

The results of this phase show in the format of a patent the idea behind each concept. The patent document most show all the elements that make the concept work, the material specifications, the moving parameters, its speed capacity as well as its expansion and compression limits.

### **2.2 Architecture on the go**

Following the results and selection of the most suitable and challenging technologies each team will now apply their technology and transformation concepts into the scale of a building. (For IIT it involves 6 housing units and for TU Delft 24 housing units).

All teams must follow the common transformation script from the calendar as well as testing the concept into the envelope to be selected from the first phase of the studio. The best transformation concepts will be able to offer believable speed of change; tailor made results for each of the users and maximum compression. Each team is free to position the list of users into space according to their concept but the script should have common matching points between all teams.

The result of this phase is a series of transformation moments that show the challenges required by users and time and how each concept responds with a particular type of architecture. The results are shown in small line drawing videos in frontal view showing both the general composition of the housing block and the way space is transformed according to each of the user's demands.

### **3. Towards realization**

In this phase, the results of phase 2 move towards a highly precise document where comments from the tutors and guest critics are incorporated. There is a possibility that only a selection of the proposals from phase 2 is worked in this phase. In this phase each university will have its own particular format of deliverables.

#### **3.1 The prototypes (IIT)**

In this last phase, the students will choose a selection of technologies and will develop them further in detail with the intention of testing their changing capacity in a scale model. The selection of technologies will be accompanied by an at least 2 transformation activities. The scale of the model is to be defined but it cannot be a static model.

The model results should be documented in video with captions and subtitles explaining how the architecture adapts to demands of its users.

#### **3.2 The movie (TU Delft)**

For the last part of the studio the students should make a simulation of the housing block gets transformed. The movie shows in detail how each element (walls, ceiling, floor, lift, stairs, pipes) adapts to the changing demand of customization but also how each of these elements gets compressed when not in use.

The films follow the common calendar and include the most exciting transformations from each of the users. The film aims to be a powerful tool of communication for the project and it is required that all teams follow a common template with same drawing representation technique. The film must be accompanied by subtitles and voice over.

#### **3.3 The book (TU Delft & IIT)**

For all phases of the studio a book should be compiled and regularly updated during the studio. The book should follow The Why Factory template standards and a precise and updated table of contents.

## 4. Evaluation and references

### 4.1 Evaluation criteria

For both studios (IIT and TU Delft) evaluations will be conducted through out the semester. Each phase will get the following proportion of the overall result and will have an additional element of personal involvement.

1. The making of a brief	25%
2. The principles of change	40%
3. Towards realization	25%
4. Personal involvement	10%

The criteria to evaluate this will follow common TU Delft and IIT standards.

#### TU Delft

See Teaching and Examination Regulations  
(In accordance with Article 7.13 of the Higher Education and Scientific Research Act)

#### IIT

Only letter grades will be given and these will be based on a curve.  
Grades will be issued for each project and these will be based on the following criteria:

1. Conceptual sophistication and critical thinking
2. Sophistication and extent of project investigation and development
3. Sophistication and quality of presentation material (drawings and models)
4. Participation in class and critiques

A final letter grade will be compiled from all assignments

The School policy on grading is attached here:

- A Excellent work that is on time and complete
- B Above average work that is on time and complete
- C Average work that is on time and complete
- D Below average work, late work, or incomplete work
- F Unacceptable work

Please refer to Graduate Bulletin for official IIT University grading policies

It is expected that all students will put considerable time, thought, and effort into their work. However, those factors do not of themselves guarantee any particular grade. On time and complete work is needed for a grade of A, B, or C, but timeliness and completeness alone do not constitute or guarantee a passing grade. When the work is on time and complete, quality in both thought and production are the primary considerations for the grade:

Excellent work – Demonstrates an ability to identify and develop a unique line of inquiry derived from, yet extending, the basic proposition of the assignment or course. Exceed the expectations of the faculty and the assignment in the quality of thought and production.

Above average work – Excels in understanding and development of work relative to assignment scope. Demonstrates an ability to assess feedback and respond thoughtfully in the further development of the assignment.

Average work – Meets the basic expectations and requirements in terms of assignment scope as outlined in assignments or stated by the instructor.

Below average work – Does not meet all of the basic expectations and requirements. Does not consistently demonstrate a basic understanding of primary course objectives and concerns and/or an ability to respond to feedback and guidance by the instructor. Is inconsistent in its production and development, and is frequently late and/or incomplete.

Unacceptable work – Does not meet the majority of basic expectations and requirements. Seldom demonstrates a basic understanding of primary course objectives and concerns and/or an ability to respond to feedback and guidance by the instructor. Is inconsistent in its production and development, and is consistently late and/or incomplete.

Americans with Disabilities Act (ADA) Policy Statement

Reasonable accommodations will be made for students with documented disabilities. In order to receive accommodations, students must go through the Center for Disability Resources office. The Center for Disability Resources (CDR) is located in Life Sciences Room 218, telephone 312 567.5744 or disabilities@iit.edu.

## **4.2 References and bibliography**

### **Architectural Robotics**

Ecosystems of Bits, Bytes, and Biology

By Keith Evan Green

ISBN: 9780262033954

MIT Press

### **Architecture of the Well-Tempered Environment**

By Reyner Banham

ISBN: 9780226036984

The University of Chicago Press Books

### **Architecture or Techno-Utopia**

Politics after Modernism

ISBN: 9780262195621

MIT Press

### **Sentient City**

Ubiquitous Computing, Architecture, and the Future of Urban Space

Edited by Mark Shepard

ISBN: 9780262515863

MIT Press

### **Barba**

Life in the Fully Adaptable Environment

By The Why Factory

Winy Maas, Ulf Hackauf, Adrien Ravon, Patrick Healy

ISBN: ISBN 978-94-6208-253-3

Nai 010 Press

# OnTheGo

The Why Factory in collaboration with IIT

Parallel Studio IIT & TU Delft  
 Professor Winy Maas  
 Tutors TU Delft: Felix Madrazo & Stavros Gargaretas  
 Tutors IIT: John Manaves & Felix Madrazo

TUTOR ACTIVITIES #	TASK #	TEAMS TU DELFT	TEAMS IIT	UNIT TITLE	TASK TITLE	TASK SUBTITLE	CONCEPT	FORMAT	WEEK #IIT
<p><b>THE BRIEF</b></p> <p>WHY CHANGING TIME IS IMPORTANT?            CAN COMPRESSION CAN SAVE ENERGY?            WHY DENSITY THEORIES NEED TO BE REVISED?            HOW CAN WE GET RID OF IDLE SPACES?            HOW WILL THIS CONTRIBUTE TO SUSTAINABILITY?            CAN THIS NEW LIVING CONDITION IMPROVE OUR WAY OF HABITATING THE CITY?</p>									
	1	1	1		The evolutionary		The house needs of a person through his/her life (e.g. you)		1
	2	2	2		The nomad		By moving along different locations the nomad develops a system of what he/she carries along and what gets discarded.		
	3	3	3		The xpat		A company provides accomodation for their employees. But their employees live 6 months here, 3 months abroad, and so on. Sometimes he/she is alone, sometimes family comes to visit.	A flip book where a person develops through the years different needs of space, privacy and program. Axonometrics with dimensions of space needs.	
	4	4		<b>THE CLIENT</b>	The new normal		A family is born. Kids are adopted. Parents divorce but both decide to stay close to their kids, but they have new couples. How to cope with all those changes?		
	5	5			The pensioners		An old couple loves to be in the apartment in the spring time and the fall. For the summer they escape on holidays north. For the winter they escape to the south. How can they help solving the housing deficits of the city?		
	6	6			The sharers		A certain amount of people decide to unite forces to cope with their housing needs in a more efficient way. (e.g. family/ students groups)		
	7	1 & 2	1	<b>THE MAKING OF A BRIEF</b>	The slab		An analysis of the advantages and difficulties of this form. The three envelopes must have the same amount of m3 and be able to host 50 housing units. The envelopes show also structure and fixed components (eg. Circulation) and mark temporary divisions. The study is accompanied by density studies to accomodate 1000 housing units. A final selection of envelope is decided for all groups. What form offers maximum density? Should we have fixed outer volume and flexible inner one?	The result is presented in axonometrics with data	WEEK 01-04
	8	3 & 4	2	<b>THE ENVELOPE</b>	The tower				
	9	5 & 6	3		The cube				
	10	1			The common moments		A list of activities that everyone uses as standard		
	11	2	1		The calendar		A calendar of activities is developed. It includes key actions of characters in a living environment. The calendar is for 10 days		
	12	3		<b>THE CALENDAR</b>	The actions and their characters		Using the calendar each character gets a role within the script	Text arranged by time with indication of main actions, circumstances, characters involved, requirements.	
	13	4	2		The space needs		Using the charaters needs an analysis of spatial requirements is drawn and described with precision		
	14	5			The support		The piping, the structure, the circulation form the support of the changing architecture		
	15	6	3		The manager		A software or organizing principle keeps track of upcoming changes, prepares for expansion, compression and customization. The manager can be an interface given to each user.		
<p><b>THE SYMPOSIUM ON THE TIME FACTOR</b></p> <p>INFORMAL SYMPOSIUM ON WHY FACTORY EXPLORATIONS ON TRANSFORMATION. With presentations by Arend van Waart, Adrien Ravon, Ulf Hackauf, Stavros Gargaretas, Marek Nosek. Roundtable moderated by Felix Madrazo.</p>									
	16	1			The floor		Research into existing and possible tranformation of floor systems		

17	2	1			The wall	Research into existing and possible transformation of wall systems.		
18	3			<b>THE APPLICATION PATENTS (TU Delft &amp; IIT)</b>	The stairs	Research into existing and possible transformation of circulation systems.	Presentation and a5 booklet including drawings, texts, diagrams, sources.	
19	4	2			The furniture	Research into existing and possible transformation of furniture systems		
20	5				The lift	Research into existing and possible transformation of vertical transportation systems		
21	6	3		<b>THE PRINCIPLES OF CHANGE</b>	The pipes	Research into existing and possible transformation of piping systems and other energy related devices		WEEK 5-10
22	1				Concept 1			
23	2	1			Concept 2			
24	3			<b>ARCHITECTURE ON THE GO</b>	Concept 3	Using the common script the students come up with a strong and innovative concept that puts to the test the combination of changing situations and the response of walls, floors, piping and circulation systems	Presentation and a5 booklet including drawings, texts, diagrams, sources. The application booklet includes a story board with key moments.	
25	4	2			Concept 4			
26	5				Concept 5			
27	6	3			Concept 6			
28			ALL TEAMS		The constructive sections			
29			ALL TEAMS		The structure principle			
30			ALL TEAMS		The installation scheme	A set of drawings, diagrams and model 1:50 explain how the building works. It is a prototype and does not have a site. Drawings must include notes, dimensions, scale references.	A3 Booklet horizontal. Reference to regulations and diagrams justifying decisions are required.	
31			ALL TEAMS		The concept diagrams			
32			ALL TEAMS		The models			
33			ALL TEAMS	<b>TOWARDS REALIZATION</b>	Plans, elevations, sections			WEEK 11-14
34	1				Concept 1			
35								
36	2			<b>THE FILMS (TU Delft)</b>	Concept 2	The film aims to explain the viewer how the building operates under constant change pressure. This includes more or less density, circulation of persons, privacy issues. It shows how the elements move and transform to adapt to the emerging needs.	The film shows in frontal view how the building is transformed according to the script and highlighting the concept of transformation. The film should not last less than 2 minutes and should not be longer than 3:30 min.	
37								
38	3				Concept 3			
39								
40	1 & 2	1		<b>THE BOOK</b>	The Indesign team			
41	3 & 4	2		<b>THE BOOK (TU Delft &amp; IIT)</b>	The illustration team	The best concepts for each of these themes is developed in further detail including a moving mechanism when necessary	The book must follow T?F Template and font standards	WEEK 1-15
42	5 & 6	3			The manuscript team			