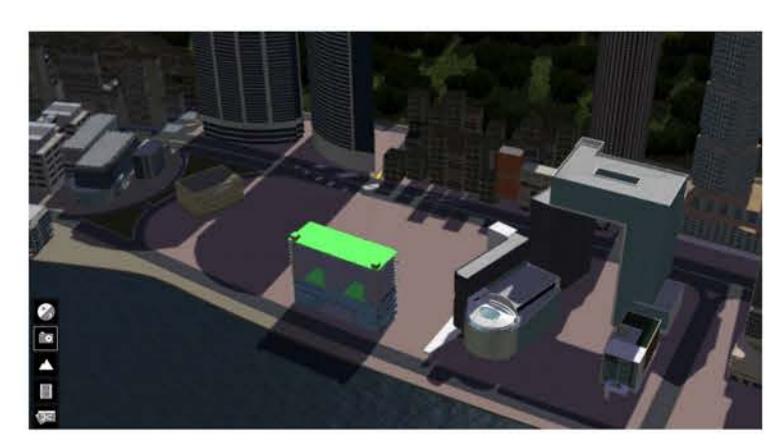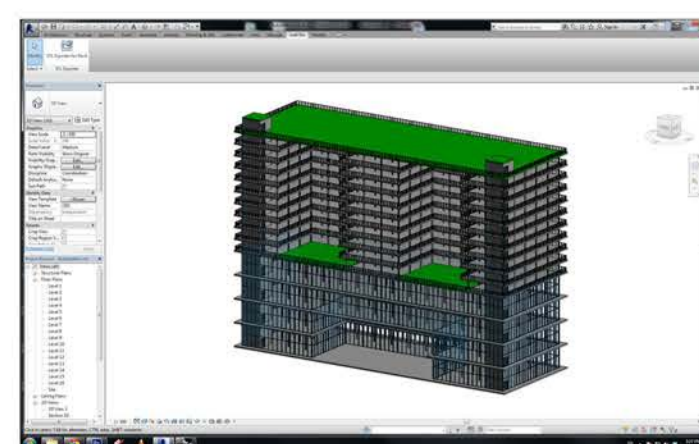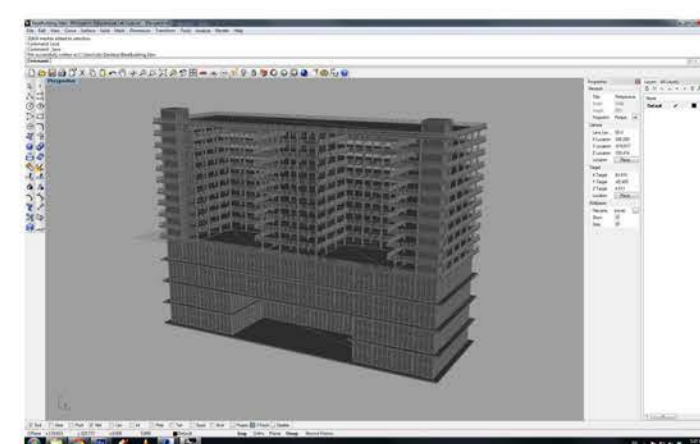# Collaborative Mass housing Design Studio

Design Brief
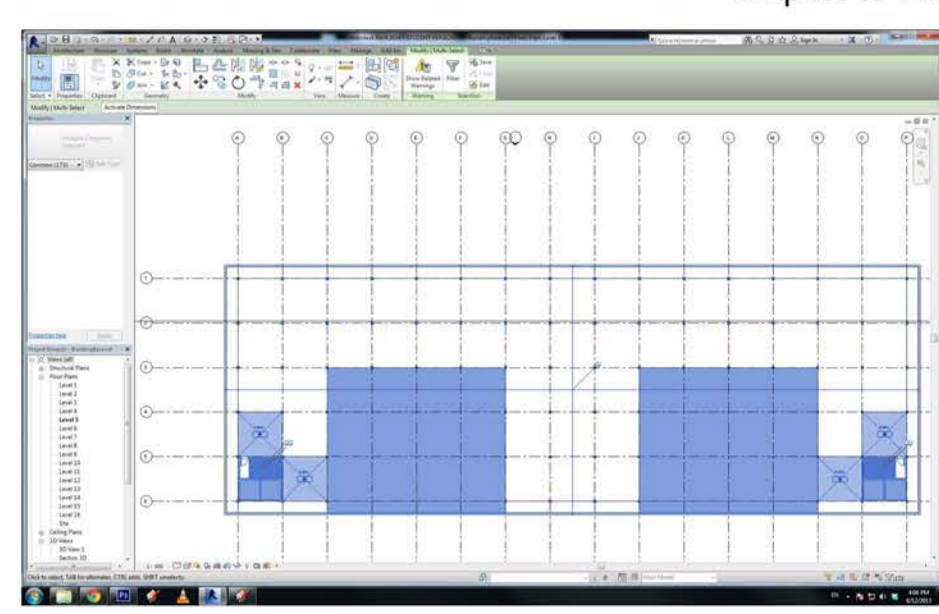

Visualisation in Virtual Environment

Base Model in Revit (BIM)

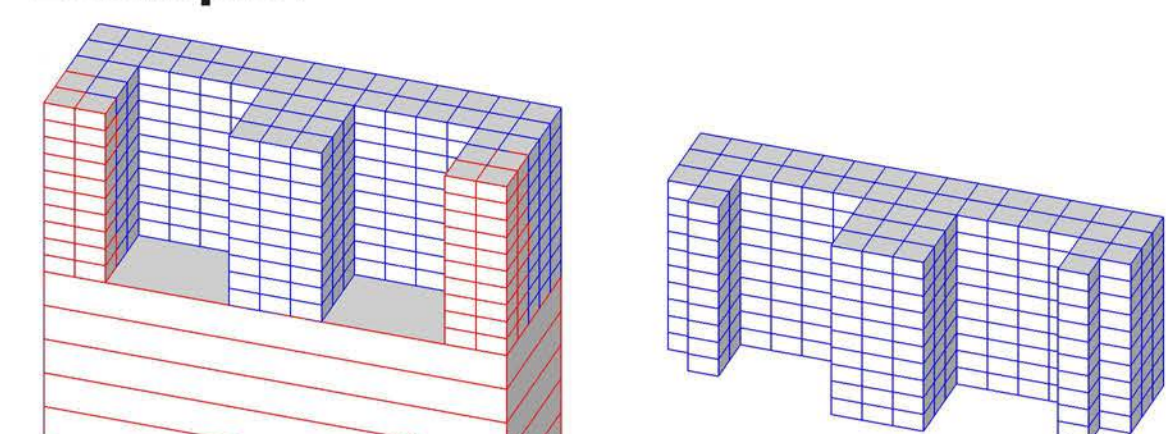Export to Rhino to do model or link with Grasshopper

Grid plan

Example:

2 Set of model.
Each 450 units (5m by 5m by 3m)
10 students to each set.
Each students will have (45 + 5) units to work with.

10 sets of 45

Extra 5 units
(not Compulsory)

1st Pattern: Layout of units

2nd Pattern: Facade

With Constrain	Without Constrain
• Units divided and allocated	• Choose own group of 45 units
• Circulation defined	• Self - defined circulation
	- no dead - end
	- connect to elevators
• Unit design specified	• Unit design not specified
• Groups are not to be changed	• Group of units need not be together (set of 45 can be separated in more groups)

• Keep within the boundary of the building unless structurally possible
• Every grid can have the choice of being empty (shared space)

- Students will be split into 2 groups.
- Every student is allocated 45 + 5 massing units to work with.
- The massing units can be a solid unit or a void.
- With the allocated / chosen geometry, the initial task of the students will be to arrange their massing units in any manner possible.
- The 45 units is a must-use, the extra 5 units are optional and can be used to trade with other students.
- The aim of each student is to use the massing units and design a living space for 9 - 15 families.
- It can be 9 families of 5 units each, 15 families of 3 units each or even 6 families of different number of units etc
- Each housing unit must be livable (receive ample sunlight, comfortable spatial quality etc)
- Before each lesson, the students will submit the soft copies of the massing/models to be compiled for discussion.
- Part of the grade will be determined by the extent of design consideration given to the neighbours.
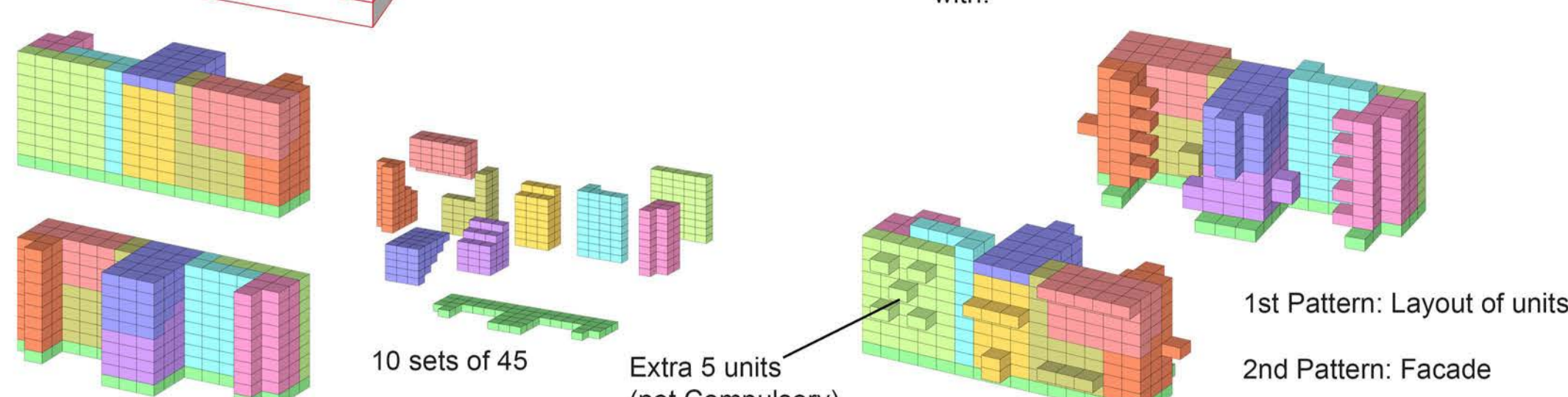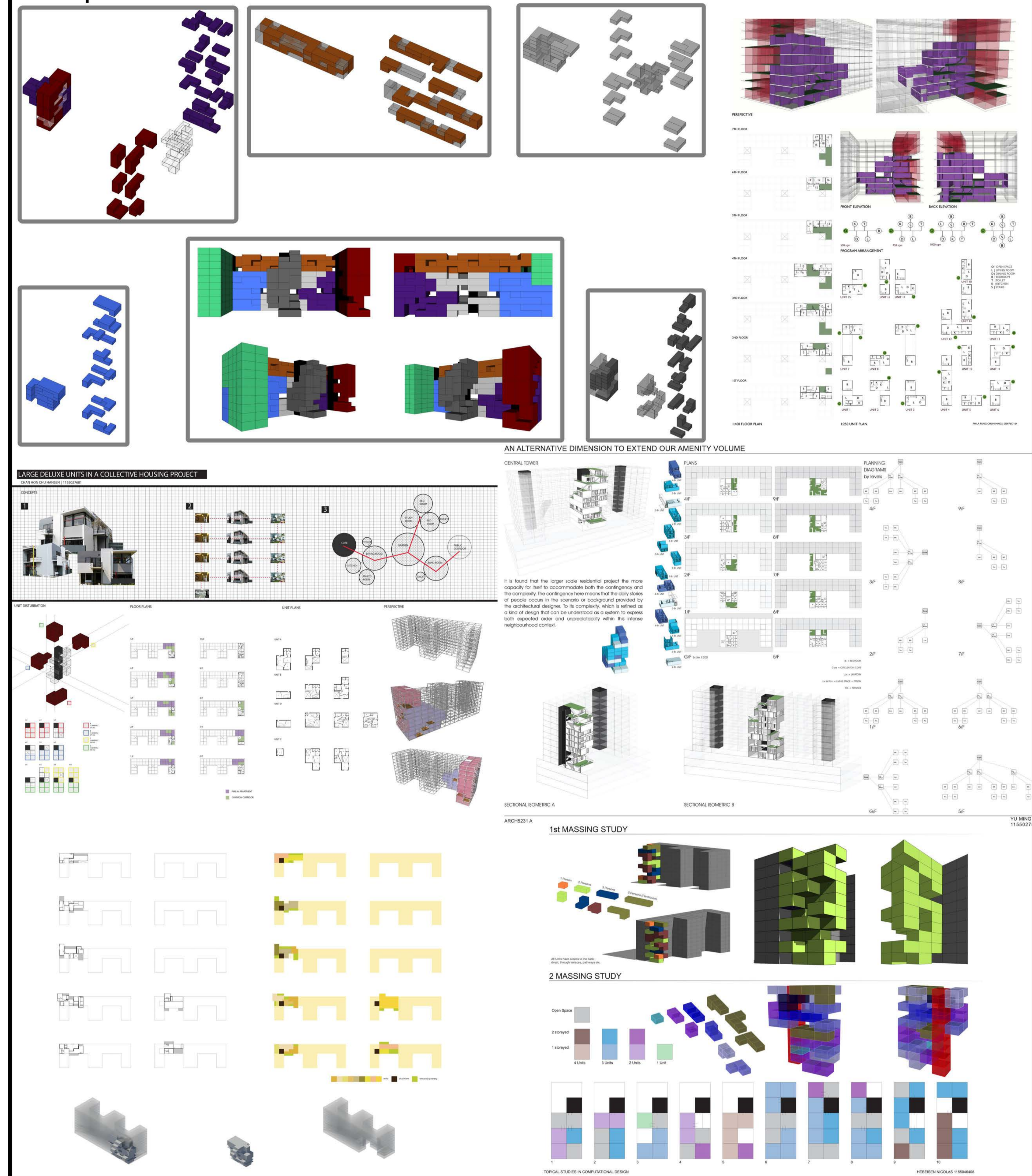- Collaboration between each student in the group is encouraged.

With the rising densities of cities, many housing has transformed from individual floored units to multistoried sky-high apartments to accommodate more people. The aspiration to own an own home with roof, walls, and backyard is replaced with the need to just simply have a 'container' for living. Families are living in identical units designed and 'prefabricated' for efficiency and affordability and not for them as users. They are not involved in the design process. However, with the advancement of technology in digital architecture, there is a possibility for a user-centric design process (Fabian et al, 2013). 'Barcode housing system' (Madrazo et el, 2009) is such an example but the freedom of design provided for the occupant is limited. At present, most of the computational method addresses the possibilities of a fully parameterized design yet it is still mainly generated by a top-down approach of being controlled by solely architects. On the other hand, housing that highly engaged occupants closely are generated using primitive methods (Bech-Danielsen, 1996). By adopting computational methods, the freedom of design can be developed further, yet maintaining the possibility of mass production for economical purpose (Gao et al, 2012). The poster and the presentation aim to understand the extent of design freedom necessary for a user-participatory design system. The study is done in a bottom-up approach where two groups of ten designers (assumed to be user in this study) generate each one high-rise apartment. The uniqueness of this method is that each of the ten designers are allocated one tenths of the total units of the apartment that have to collaborate on one building to fit the individual designs and proposals into the framework of one building envelope. The poster/presentation outline the process and the extent of consistency vs. individuality that appears in this design method and the possibility of an integrated system of this bottom-up approach (user-involved) with the top-down approach where the design is generated fully by computational method.
The Collaborative Studio has at its core a blended designing- and learning-environment that constructs knowledge in an authentic setting with scaf-folded and interaction experiences. Contraire to a conventional sequential problem-based learning (PBL) setting, in the presented collaborative studio everybody engages and contributes to a common goal that shares not only resources and exchanges knowledge, but also generates a high motivation for the all stakeholders through the social interaction of the design studio set-up (Howe and Schnabel, 2010).

Precedence Studies

GIFU KITAGATA APARTMENT BUILDING
Kazuyo Sejima (SANAA)

MVDRV PARKRAND
Amsterdam

FALA ATELIER Alvenaria Social Housing
Lisbon, Portugal

72 Collective Housing Units
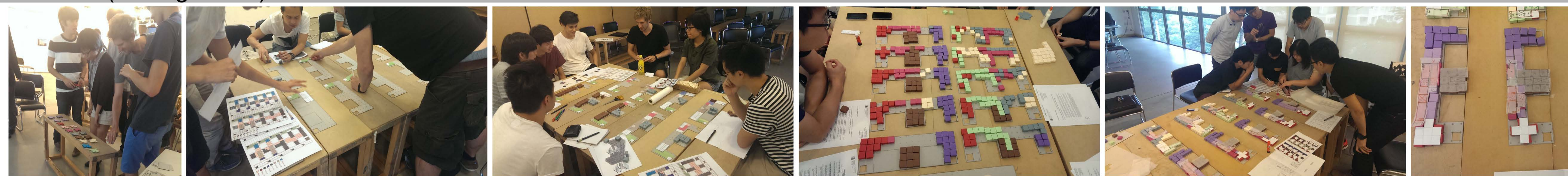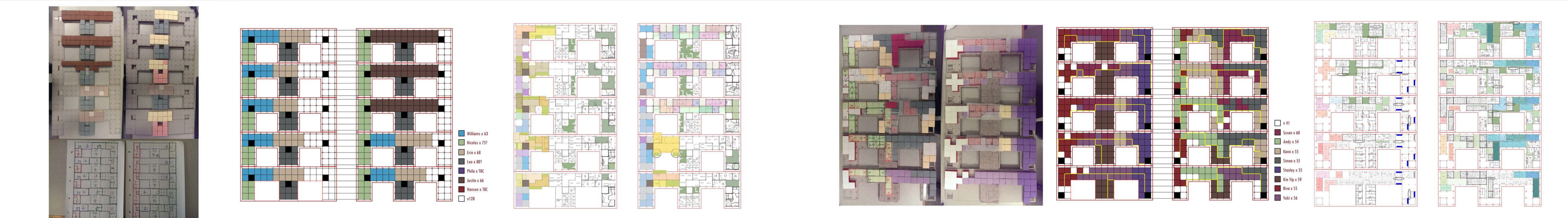LAN Architecture

Group 1

Group 2

Process (Arrangement)

Process 2 (Planning)

Process 3 (Form-Making)

Course Title: Patterns and Ornaments 2013
Course Instructors: Professor Marc Aurel Schnabel
Sky Lo Tian Tian

Students:
Chan Hon Chu Hansen
Chan Kuok Hong Stanley
Cheung Chung Kan
Leung Oi Chi Riva
Justin Chan

Lau Kin Yip
Lau Pak Huen Erin
Yu Ming Tai Leo
Nicolas Hebeisen
Phila Fung Chun Ming

Simon Liu Sui Lung
Taylor Williams
Wong Ka Po
Yuki Chen Yong Qi
Susan Yung