Week 7: Asynchronous Design Studio

3D Printed Housing Project

PERSEID Method: Regulatory Layer

Overview

Recall in Week 3, you began brainstorming the various considerations and parameters for the project relative to the PERSEID screening layers. This week, you will focus specifically on REGULATORY elements. The suggested considerations in Week 3 were,

Performance

1. Weather performance
2. Print throughput

Regulatory

1. Building code
2. Municipal regulations

Socio-cultural

1. Appeal of the house
2. Consumer price

Environmental

1. Carbon footprint
2. Hazardous substance use

Step 1 – reflect on the importance of socio-cultural issues

Read the following brief articles:

3D Printing in Construction

3D Printed Buildings and UL 3401

What are some key regulatory challenges that these articles are suggesting?

- High engineering cost and labour cost
    - transport costs are very high and labour cost is in high demand
- Liability and legal obstacles
    - similar to autonomous vehicles, who is responsible for an error by the printer or an accident related to the printing process?
- Safety
    - adhering to code and safety standards is a challenge

Step 2 – Other regulatory concerns

Are there other aspects of this project that are generally the subject of regulation that you think your team should discuss?

A guide to research on regulatory requirements is provided to you ENG 2PX3 Guide to Standards and Regulations under [5-Design Studio → Week 7]

Context	What would be some regulatory issues?
Any municipal regulations and bylaws?	Regulations and bylaws regarding zoning and 3D printed housing across Canada are still very primitive, there may be changes to the by-laws in the future that will affect our current methods
Any labour concerns?	Currently there is a skilled trade and labour shortage. Labourers are high demand and it is required to adhere to the standards set by the labourer's union, which can increase cost.
Any consumer concerns?	As mentioned before, consumers will be concerned with constantly changing by-laws and would be less inclined to buy homes that they may need to spend money changing in accordance with new 3D-printed building codes.
Anything else?	

Step 3 – revisit Regulatory considerations

In previous weeks, you were asked to recommend key parameters for the PERFORMANCE and then SOCIO-CULTURAL, and recommend the key parameters and factors that you think you should consider for this stage in the design. When you do this, reflect on some of your thoughts on Step 1.

If your group has already dealt with some of the issues but your thoughts are changing as you learn more, feel free to adjust your recommendations. The whole point of this process is to

constantly iterate and if needed, make adjustments. So you can even add a consideration if your group has identified additional considerations above and beyond the two that were suggested. Feel free to add rows to the table.

Parameter choice	How will you measure, calculate, or assess the impact of the parameter?	Which consideration?
1. Constantly changing building codes	Cost difference between new and old designs	Building code
2. Pollution and noise laws	Noise, air, water, and other pollution levels produced by the 3d-printer & construction, as well as the cost to adhere to standards.	Municipal regulations
3. Adherence to construction safety and transportation regulations	Cost in time and money to ensure the proper safety equipment and strategies are used i.e. traffic cones, specialized training for the 3d printer, etc	Municipal regulations
4.		
5.		

From the above, which parameters or factors do you think are the most important or influential in the decisions? Which should be discussed more thoroughly when you get together with the team?

I think the constantly changing building codes and adherence to municipal construction safety regulations are the most impactful in terms of monetary cost and time. Both these factors have a high chance of increasing our liability by constructing houses that could possibly become quickly outdated or also holding us accountable for any accidents surrounding the printing process. I think both of these element should be discussed more thoroughly as they affect our throughput and house appeal.

Submission Instructions

1. Upload a *.**PDF** copy of the Wk-7 - Asynchronous Design Studio 7 Worksheet to the Avenue Dropbox titled **Asynchronous Design Studio Week 7** by Friday, March 4th, end of day (5:30pm)
    - Use the following naming convention: **macID_AsynchDS7.pdf**