Build the Haystack Find the Needle

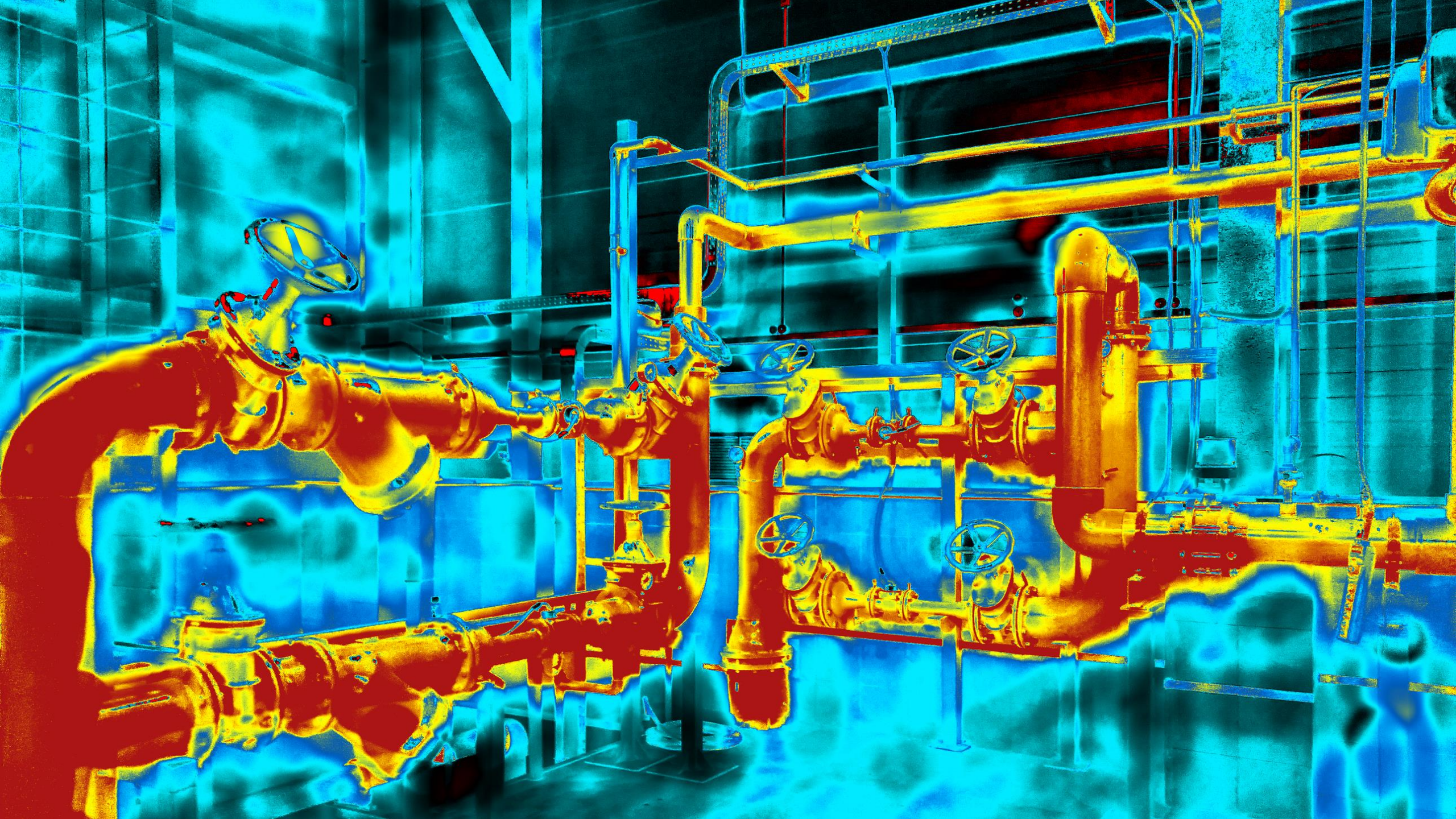
Generative Data for Better Building Decisions

Anthony A. Hauck

President + Founder | Hypar

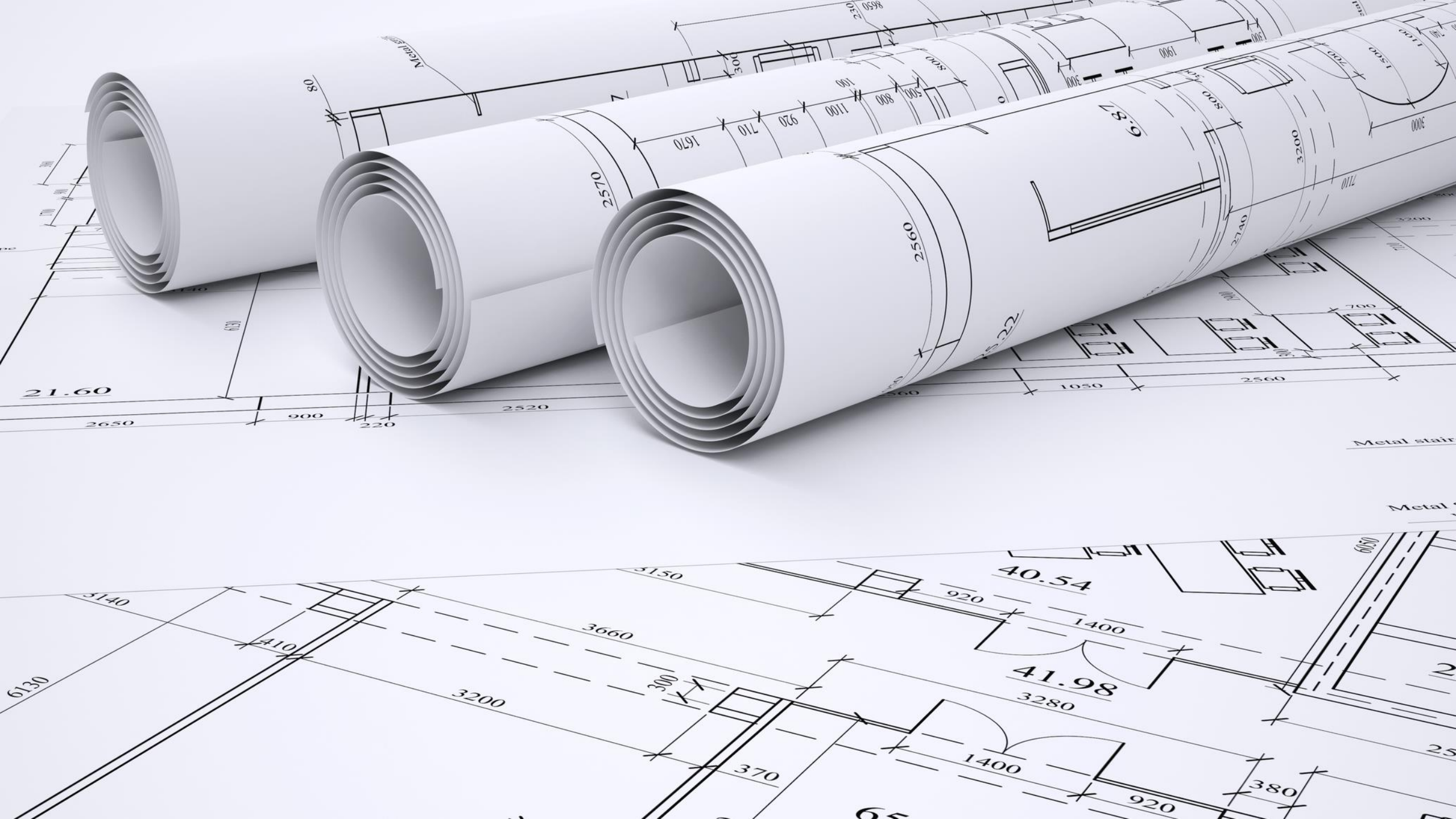
- Director of Product Strategy
- Director of Product Management
- IT Director
- AEC Firms

dataset
data

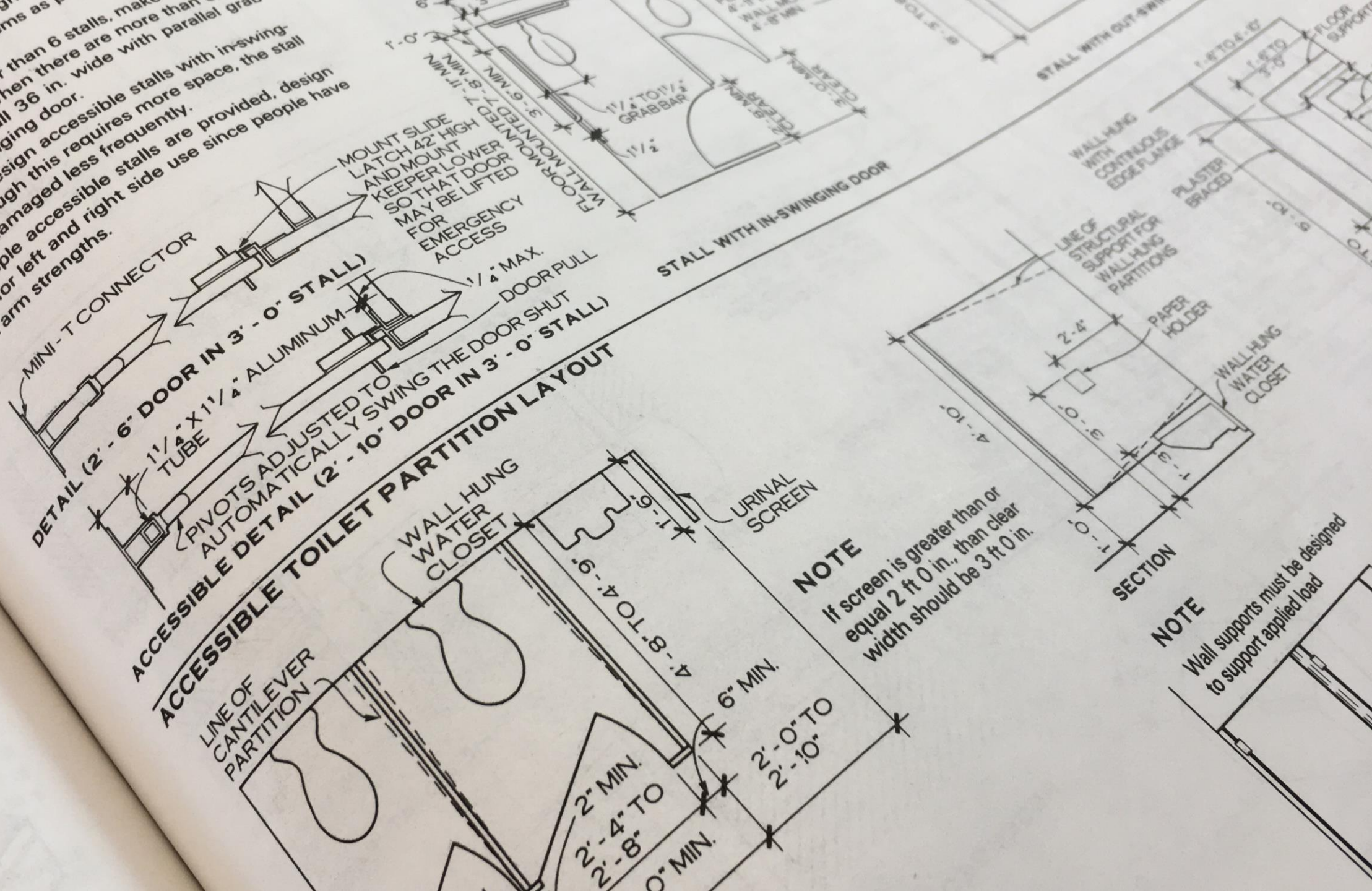


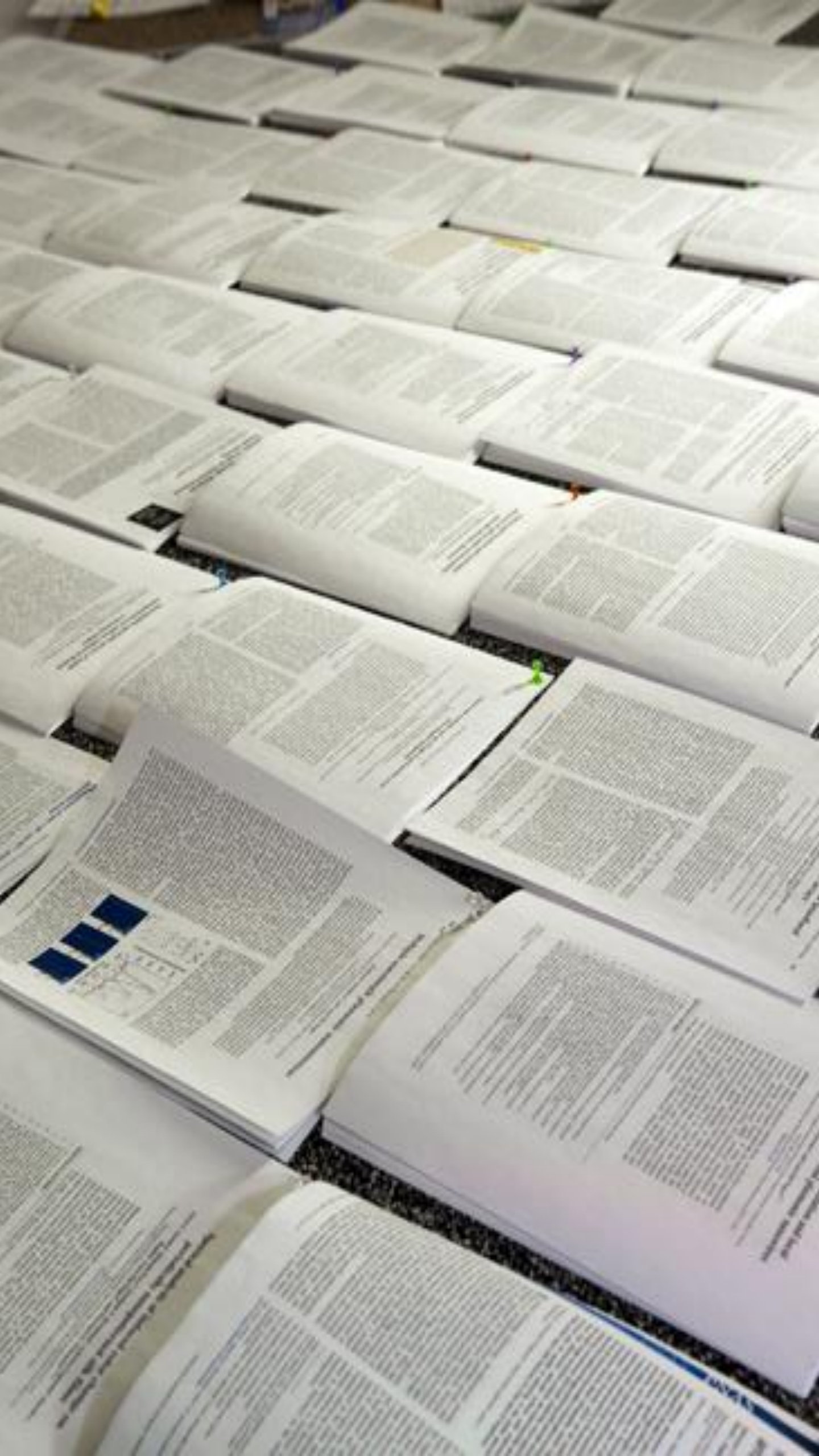
0	1	0	0	27	0	7_15
1	1	0	0	750	0	-1
2	1	0	0	14	0	11
3	1	0	0	14	0	3
4	1	0	0	56	0	3
5	1	0	0	14	0	5
6	1	0	0	38	0	4
7	1	0	0	19	0	0
8	1	4.25	3.65	0	0	-1
9	4	4.25	3.35	0	0	-1
10	6	3.65	2.75	0	0	-1
11	1	9.5	4.5	0	0	2
12	4	6	4.25	0	0	-1
13	6	5	4.5	0	0	-1
14	2	0	0	4	0	-1
15	3	0	0	6	0	-1
16	2	0	0	2	0	3

Name	ID	Quantity	Width	Depth	Area	Floor	Adjacent
Reception	0	1	0	0	27	0	7_15
Office Open	1	1	0	0	750	0	-1
Kitchenette	2	1	0	0	14	0	11
Kitchen	3	1	0	0	14	0	3
Break	4	1	0	0	56	0	3
IT	5	1	0	0	14	0	5
Servers	6	1	0	0	38	0	4
Shipping	7	1	0	0	19	0	0
Office Large	8	1	4.25	3.65	0	0	-1
Office Medium	9	4	4.25	3.35	0	0	-1
Office Small	10	6	3.65	2.75	0	0	-1
Conference Large	11	1	9.5	4.5	0	0	2
Conference Medium	12	4	6	4.25	0	0	-1
Conference Small	13	6	5	4.5	0	0	-1
Supply	14	2	0	0	4	0	-1
Print	15	3	0	0	6	0	-1
Janitor	16	2	0	0	2	0	3

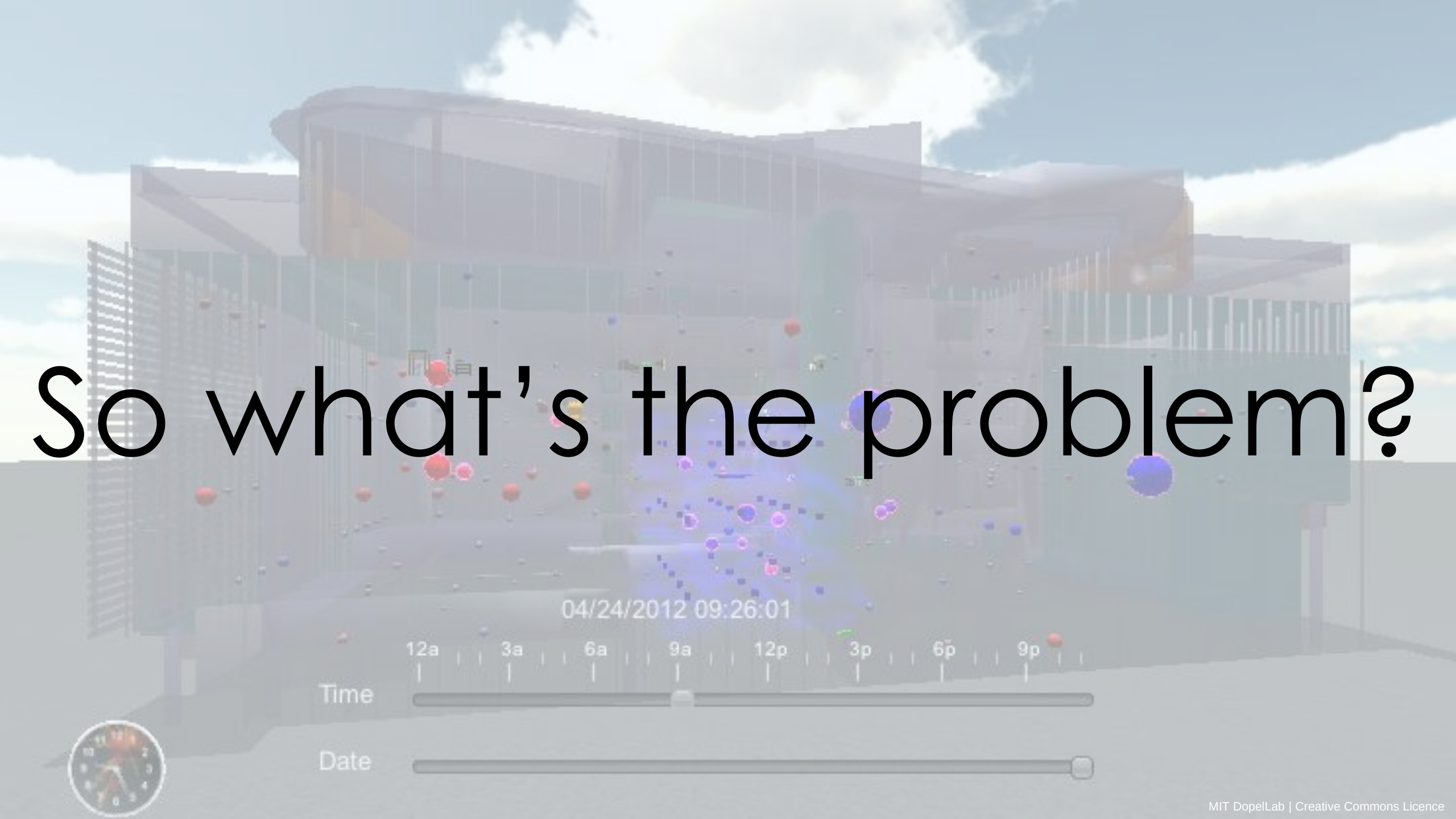

21.60
2650
900
220
2520
2570
2560
1050
2560
40.54
41.98
3660
3200
3280
1400
920
1400
920
370
380
6130
6050
3140
410
3150
300
Metal stair

...d 29 ... stalls.
...andard pilaster ... standard sizes tha... 4 in.
...D = standard panel widths. ...ments. All panels are 58 in. high...
7. Accessories include such items as p... hooks, and purse shelves.
8. In toilet rooms with fewer than 6 stalls, make ... partment accessible. When there are more than ... sign an additional stall 36 in. wide with parallel grab bars and an outswinging door.
9. When possible, design accessible stalls with in-swinging doors. Although this requires more space, the stall doors will be damaged less frequently.
10. Where multiple accessible stalls are provided, design grab bars for left and right side use since people have different arm strengths.

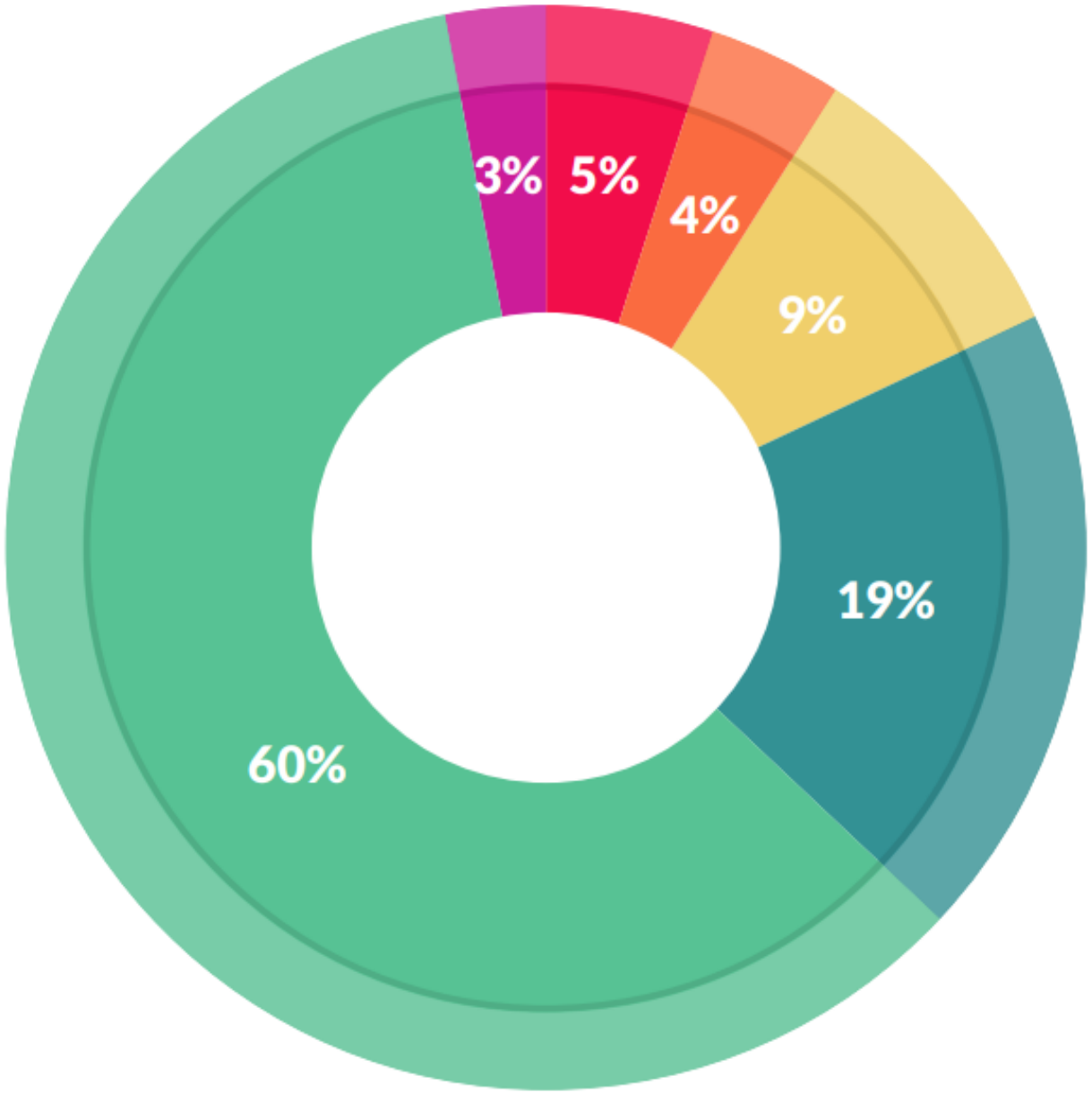




So what's the problem?



MIT DopelLab | Creative Commons Licence



Data scientist time commitment

- *Building training sets: 3%*
- *Cleaning and organizing data: 60%*
- *Collecting data sets; 19%*

82%

- *Mining data for patterns: 9%*
- *Refining algorithms: 4%*

13%

- *Other: 5%*

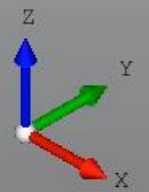
https://visit.figure-eight.com/rs/416-ZBE-142/images/CrowdFlower_DataScienceReport_2016.pdf

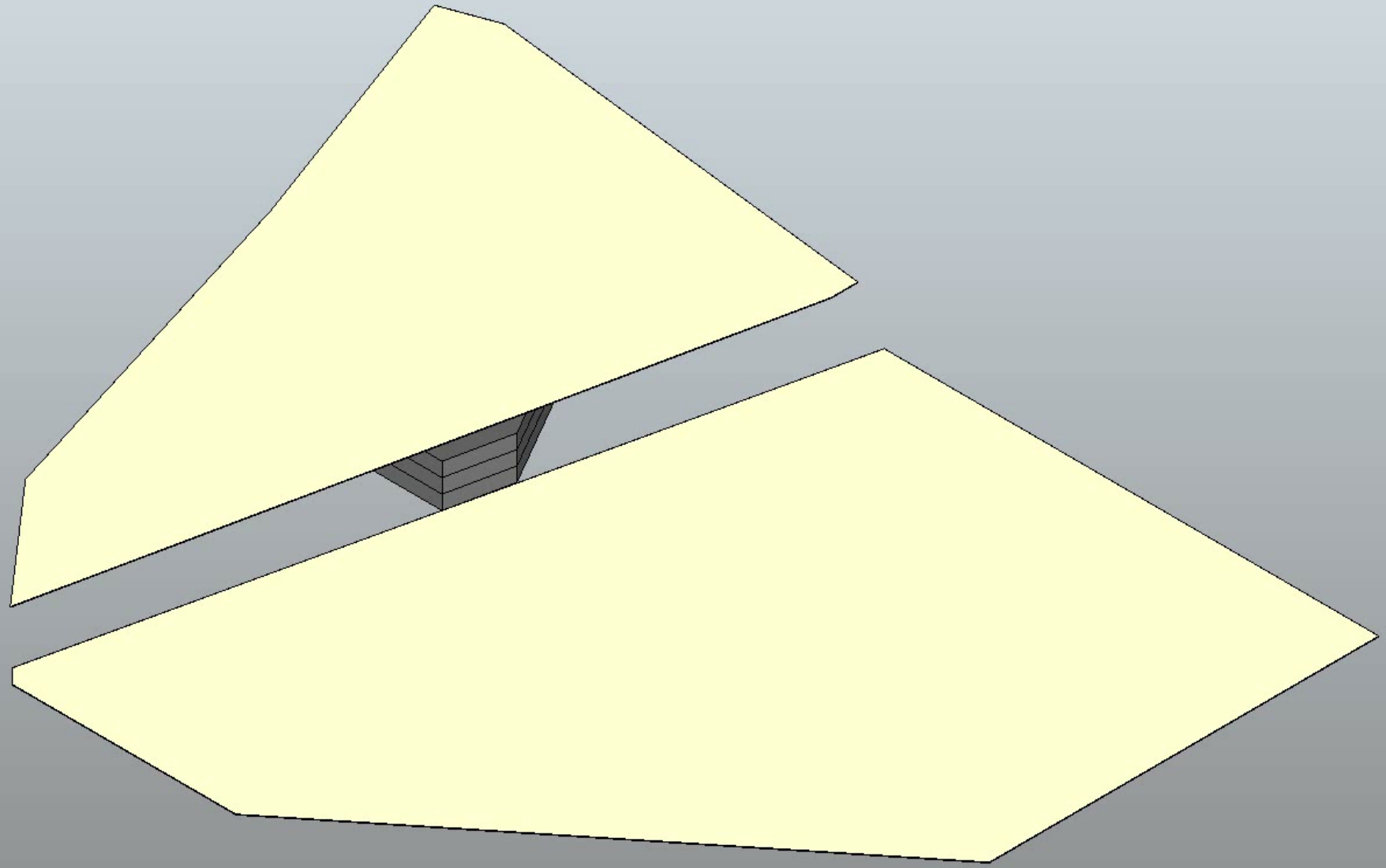
tedious

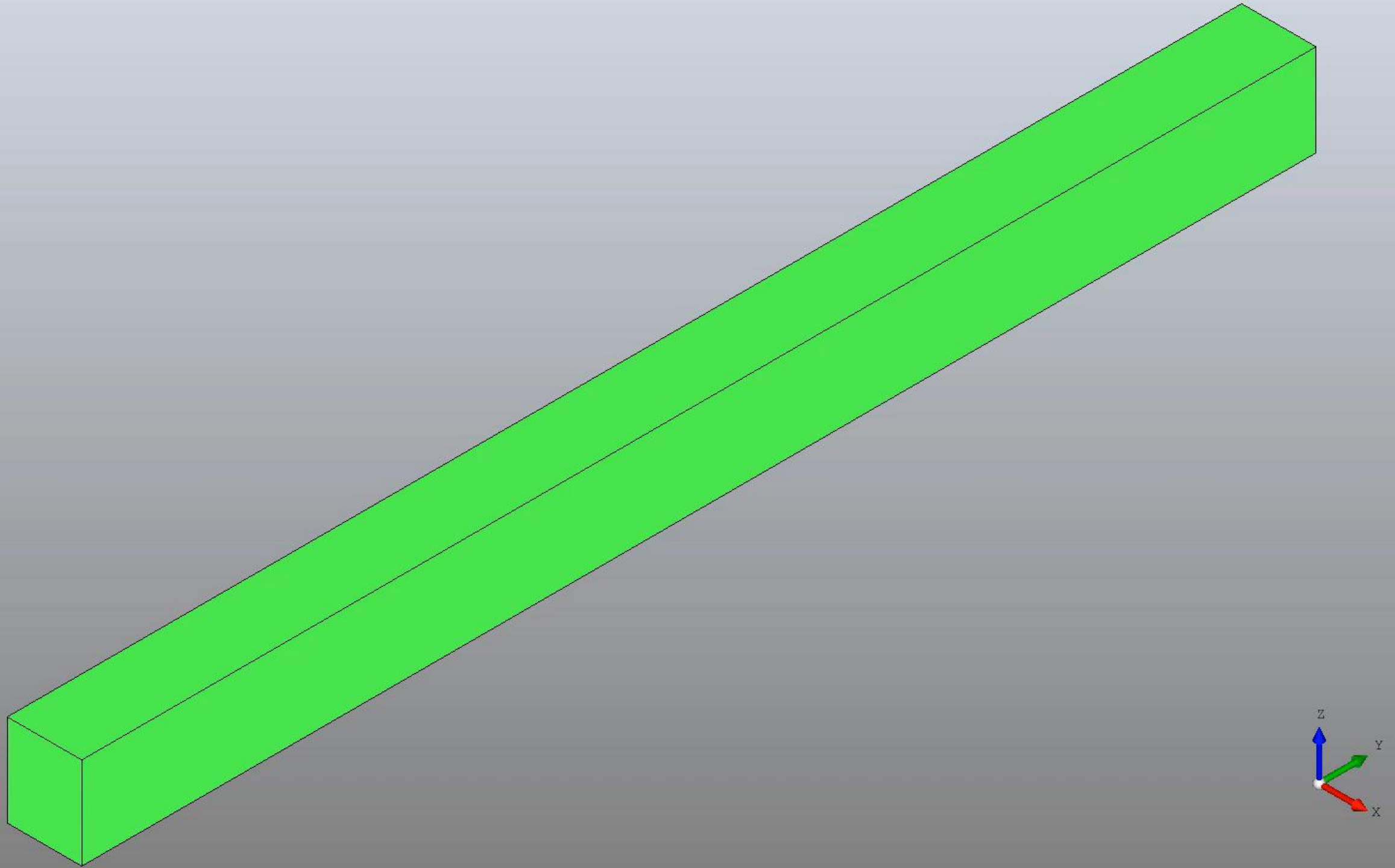
difficult

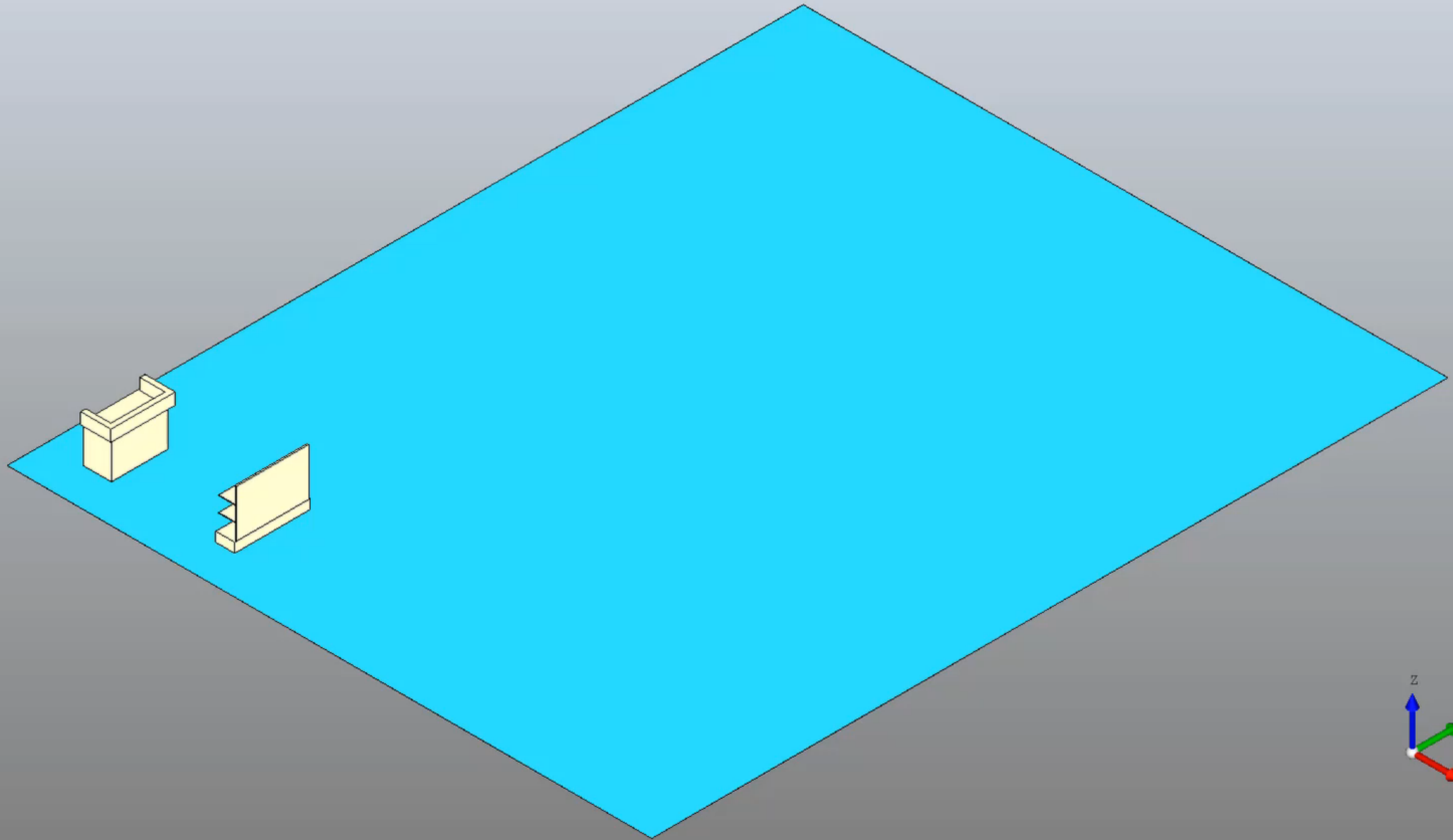
expensive

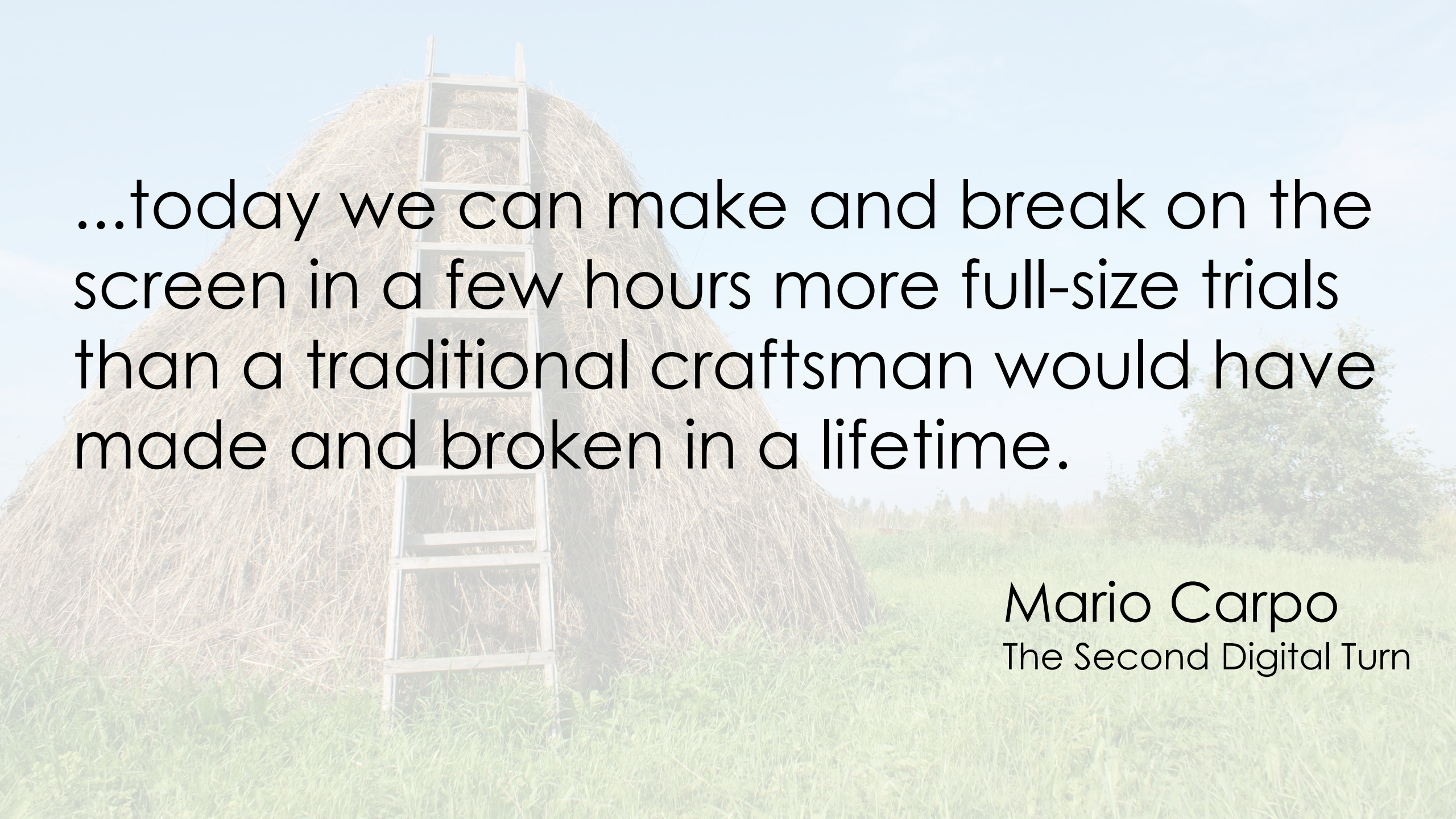
impractical


Z
Y
X


Z
Y
X


Z
Y
X


Z
Y
X



...today we can make and break on the screen in a few hours more full-size trials than a traditional craftsman would have made and broken in a lifetime.

Mario Carpo

The Second Digital Turn

Name	ID	Quantity	Width	Depth	Area	Floor	Adjacent
Reception	0	1	0	0	27	0	7_15
Office Open	1	1	0	0	750	0	-1
Kitchenette	2	1	0	0	14	0	11
Kitchen	3	1	0	0	14	0	3
Break	4	1	0	0	56	0	3
IT	5	1	0	0	14	0	5
Servers	6	1	0	0	38	0	4
Shipping	7	1	0	0	19	0	0
Office Large	8	1	4.25	3.65	0	0	-1
Office Medium	9	4	4.25	3.35	0	0	-1
Office Small	10	6	3.65	2.75	0	0	-1
Conference Large	11	1	9.5	4.5	0	0	2
Conference Medium	12	4	6	4.25	0	0	-1
Conference Small	13	6	5	4.5	0	0	-1
Supply	14	2	0	0	4	0	-1
Print	15	3	0	0	6	0	-1
Janitor	16	2	0	0	2	0	3

Inputs | Sort

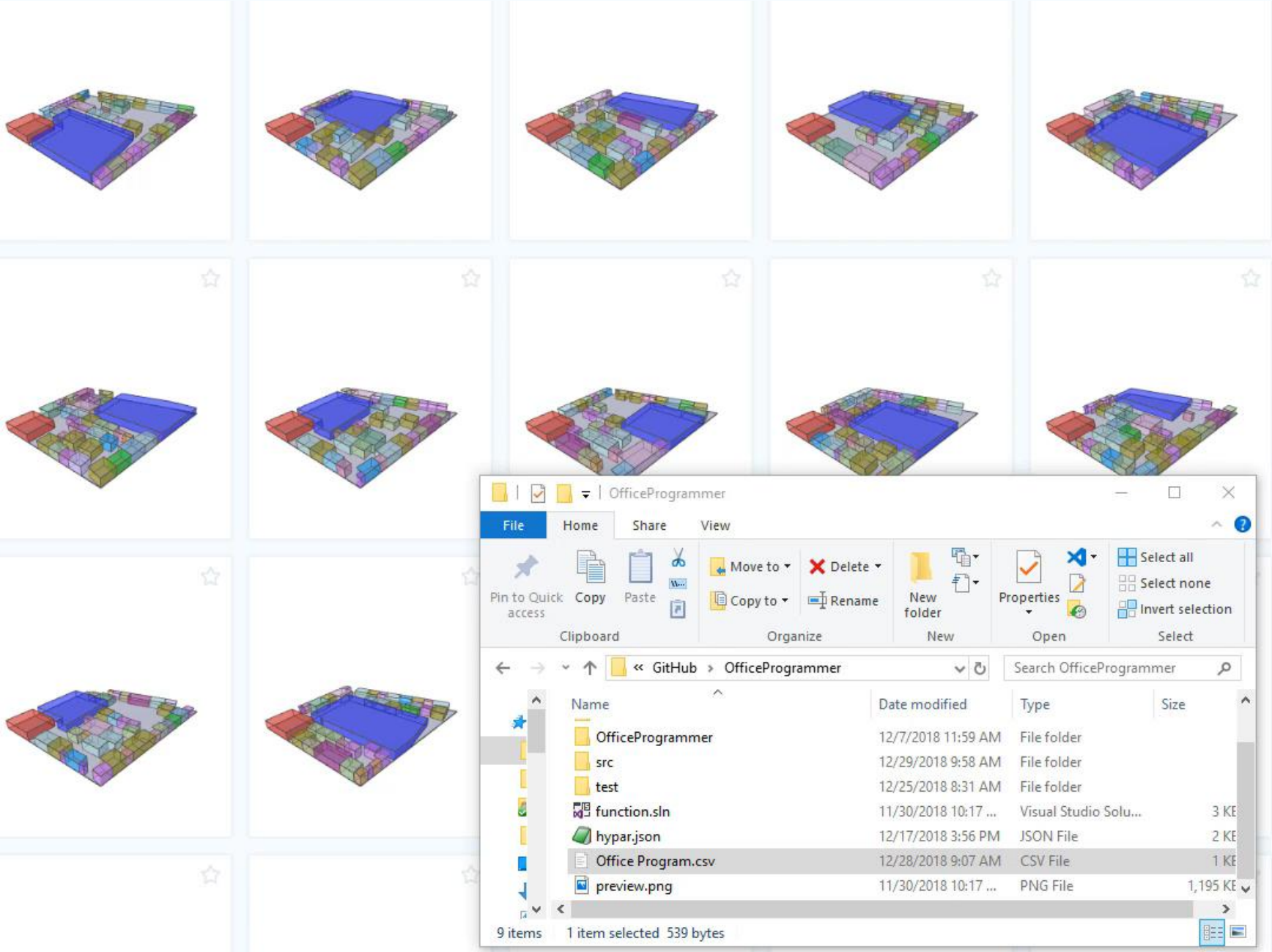
Program

Drop a .csv file here.

Random Order Seed — Sample Range

1 — 20 — 10.5

Sample 20 Options

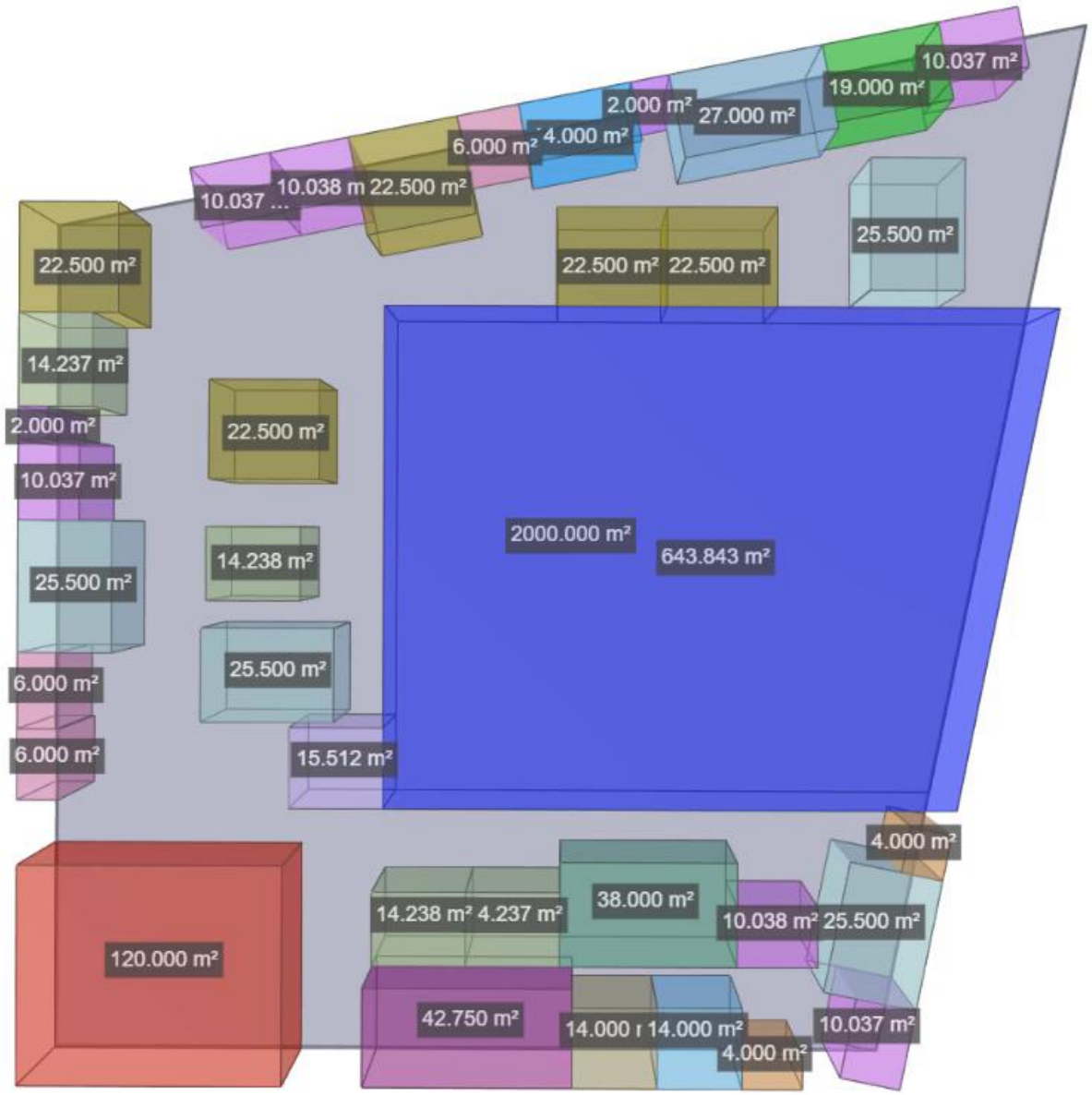


263,130,836,933,693,530,167,218,012,160,000,000

$$2.631308369 \times 10^{35}$$

dataset (actual size)

Function Id	
hypar-office-programmer	
Input	
Program	[["Name","ID","Quantity","Width","Dep
Random Order Seed	1.200
Output	
Quantity Unplaced	2.000
Tenant Utilization	0.633
Area Placed	1189.780
Quantity Placed	35.000
Area Designed	962.000
Quantity Designed	37.000
Selected	
Nothing selected.	
Execution	
Id	3bff7e62-67c7-484f-a4e0-a1a2...
Date/Time	Jan 02, 2019 4:26:08 pm
Elapsed	0.290 sec.
Download	
.json	
Label	
Area	



Inputs | Sort

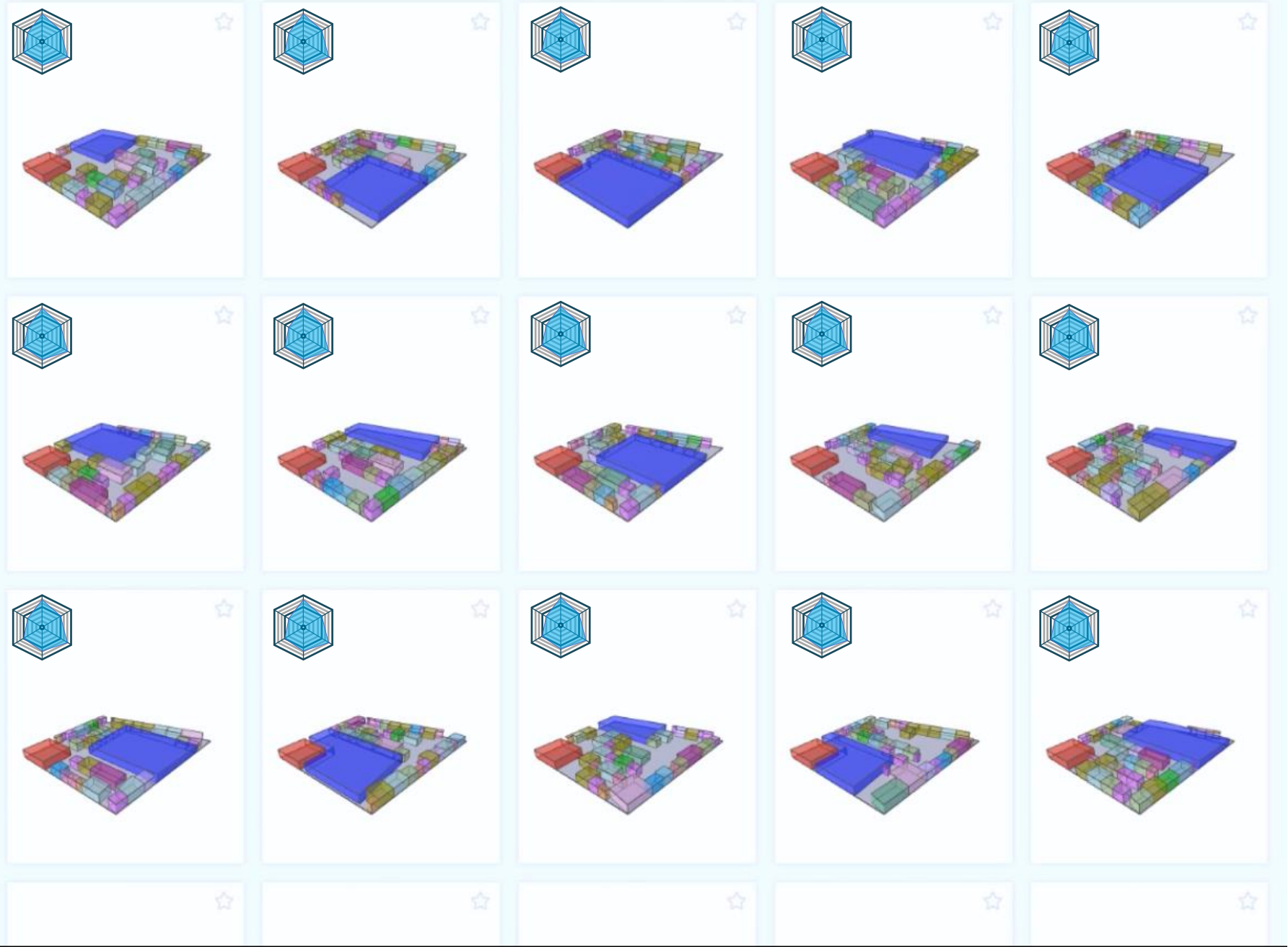
Program

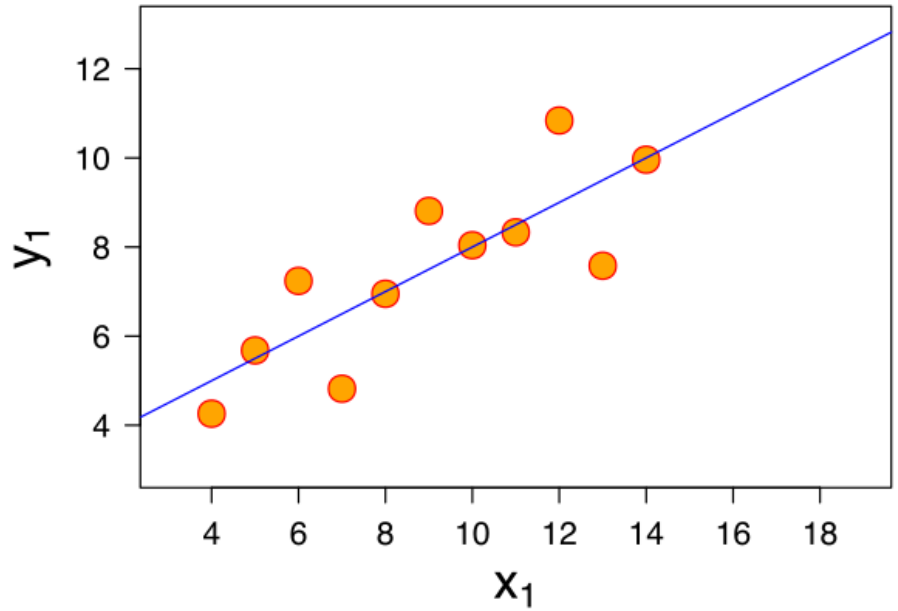
Office Program.csv

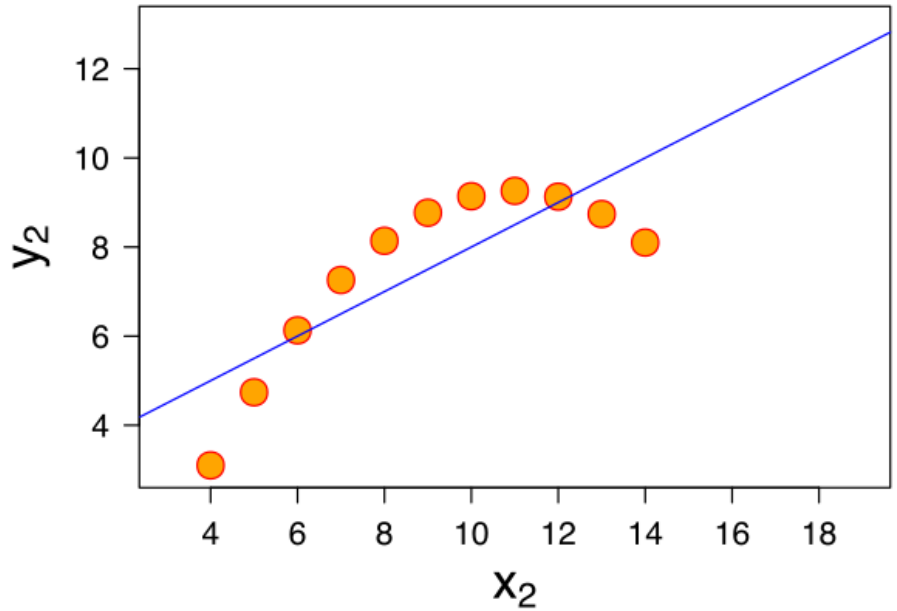
Random Order Seed — Sample Range

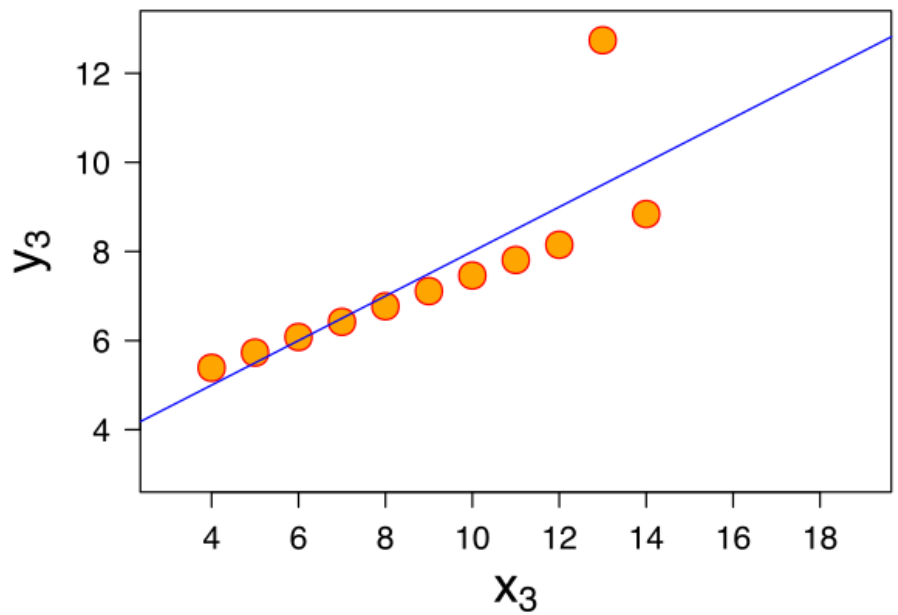
1 — 20 — 10.5

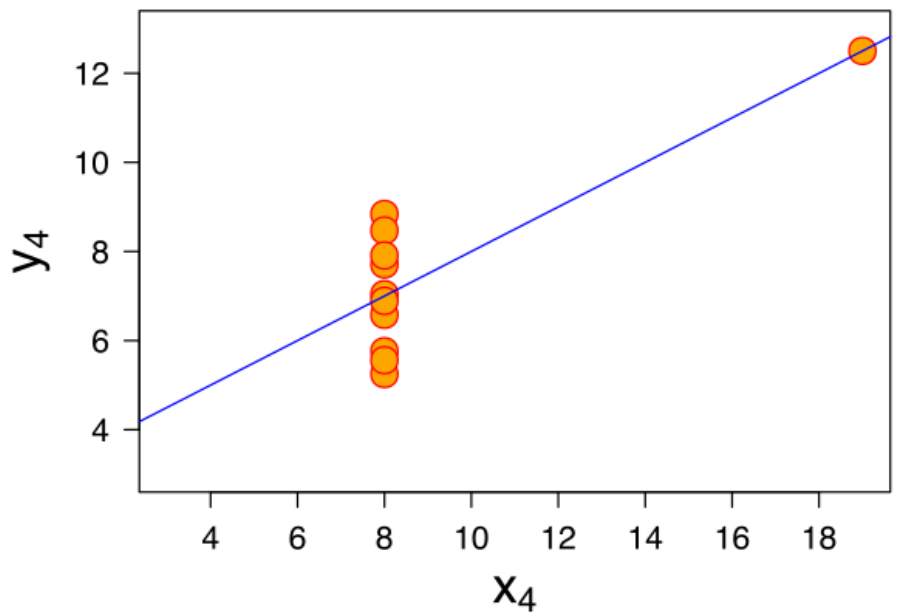
Sample 20 Options











By Anscombe.svg: SchutzDerivative works of this file:(label using subscripts): Avenue - Anscombe.svg, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=9838454

...intuition is a form of pattern recognition. It's a bit like playing chess. The more you practice, the more patterns you recognize.

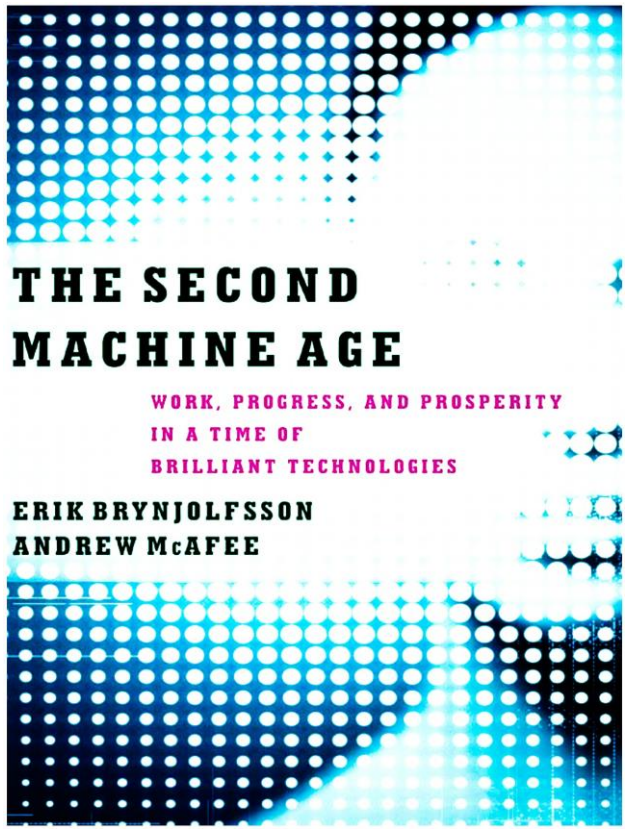
John Winsor
Founder + CEO
Open Assembly

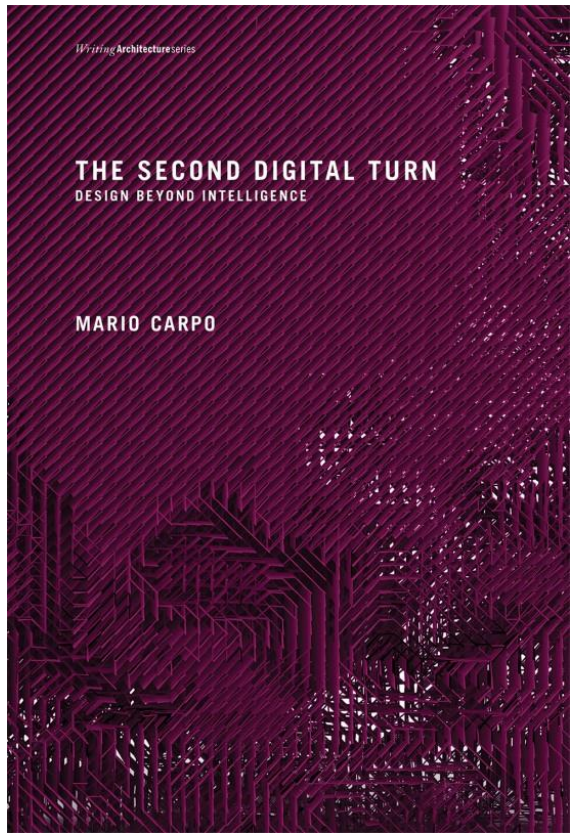
expert intuition

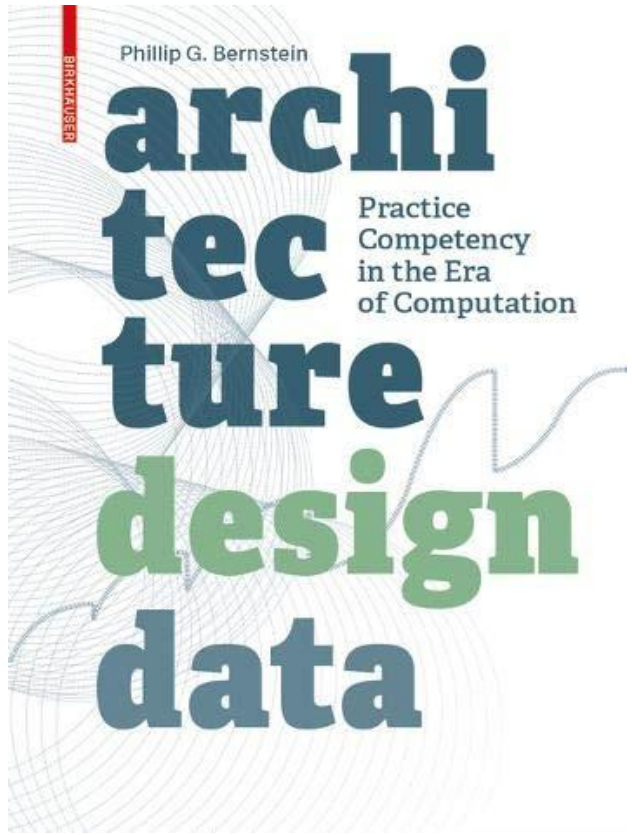
Increasingly capable systems will transform the work of professionals, giving birth to new ways of sharing practical expertise.

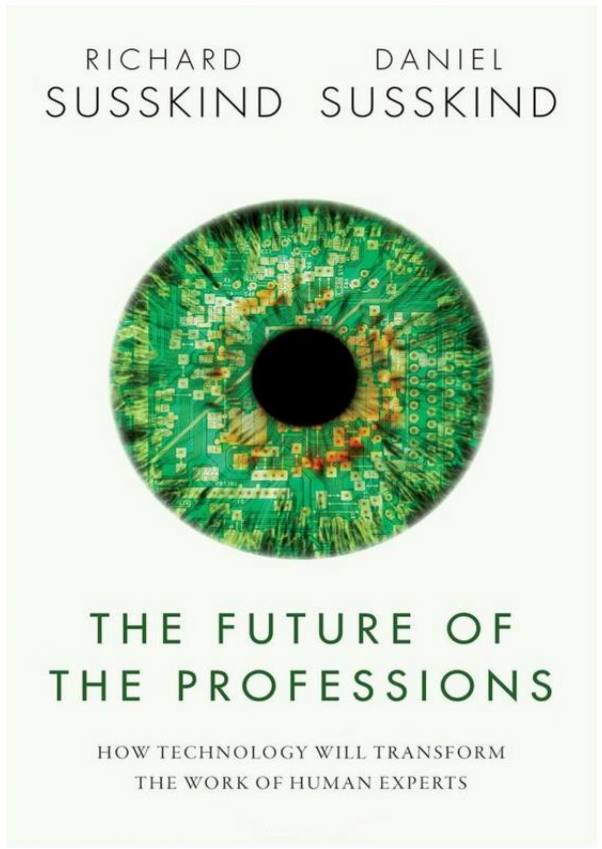
Richard + Daniel Susskind

The Future of the Professions


THE SECOND MACHINE AGE
WORK, PROGRESS, AND PROSPERITY IN A TIME OF BRILLIANT TECHNOLOGIES
ERIK BRYNJOLFSSON
ANDREW McAFEE


Writing Architecture series
THE SECOND DIGITAL TURN
DESIGN BEYOND INTELLIGENCE
MARIO CARPO


Phillip G. Bernstein
BIRKHÄUSER
architecture design data
Practice Competency in the Era of Computation


RICHARD SUSSKIND
DANIEL SUSSKIND
THE FUTURE OF THE PROFESSIONS
HOW TECHNOLOGY WILL TRANSFORM THE WORK OF HUMAN EXPERTS

THANK YOU
anthony@hypar.io