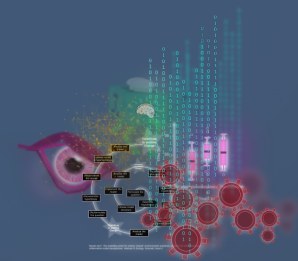


Made in BC – World First Model linking Climate Change, Risk Assessment, Urban Planning and Asset Management



Statsmen – Complex System
Modelling

Matt Bass – Owner & Founder
www.statsmen.com



Town of Gibsons

Emanuel Machado – Chief
Resiliency Officer

Michelle Lewis – Natural Asset
Technician

Acknowledgements

I respectfully acknowledge that I reside as uninvited guest on the traditional, unceded lands of the ɫəkwəŋən (Esquimalt and Songhees), and W̱SÁNEĆ (Pauquachin, Tsartlip, Tsawout, Tseycum) peoples. I would like to thank the ɫəkwəŋən and W̱SÁNEĆ peoples – past, present and future- for their stewardship, care and leadership on these lands.

Today, our work takes place on the traditional unceded territories of the Musqueam, Squamish, and Tseil-Waututh nations, and I am honoured to be here as an uninvited guest on these lands.

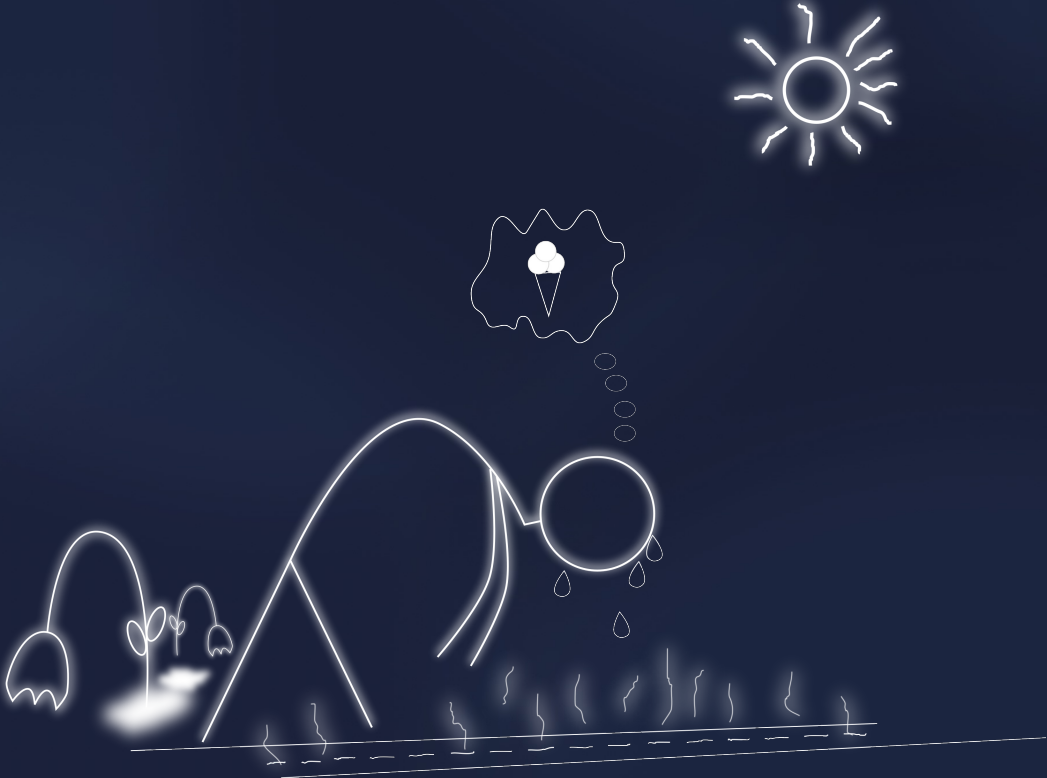


Partnership with the Town of
Gibsons

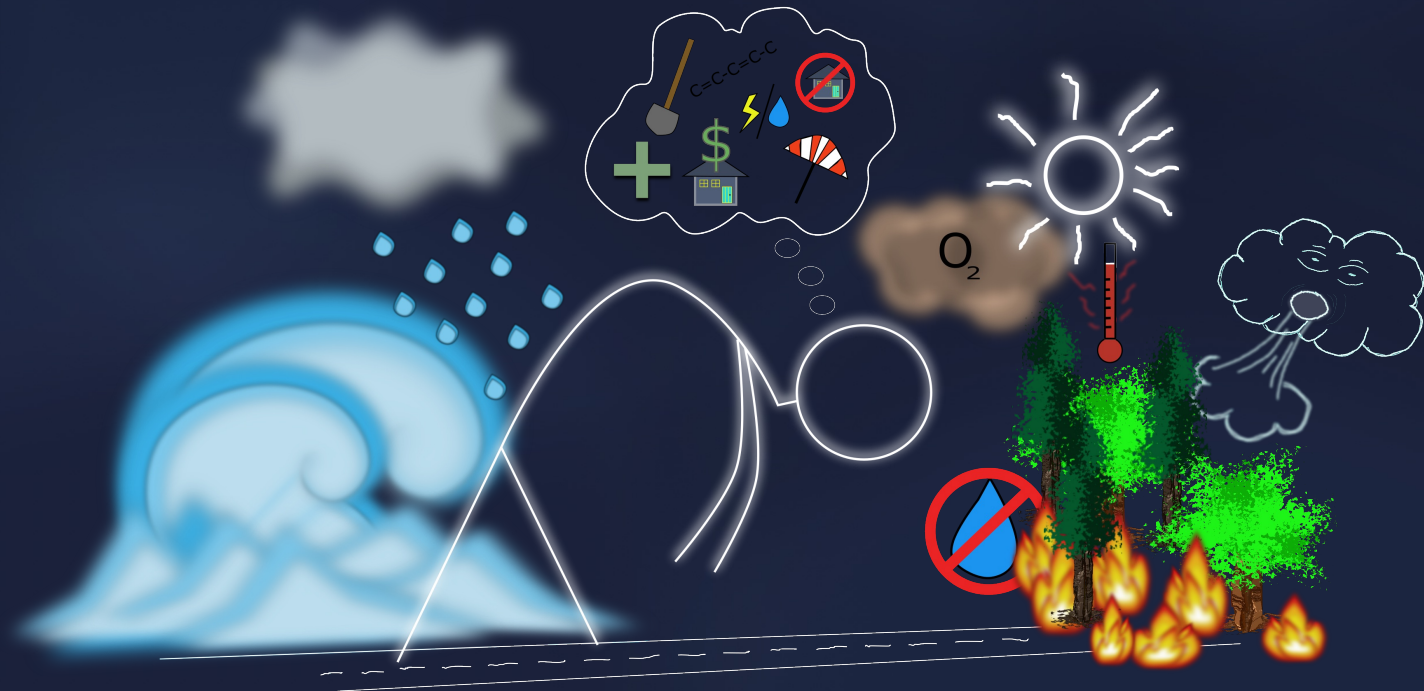
**Emanuel Machado – Chief Resiliency
Officer**

**Michelle Lewis – Natural Asset
Technician**

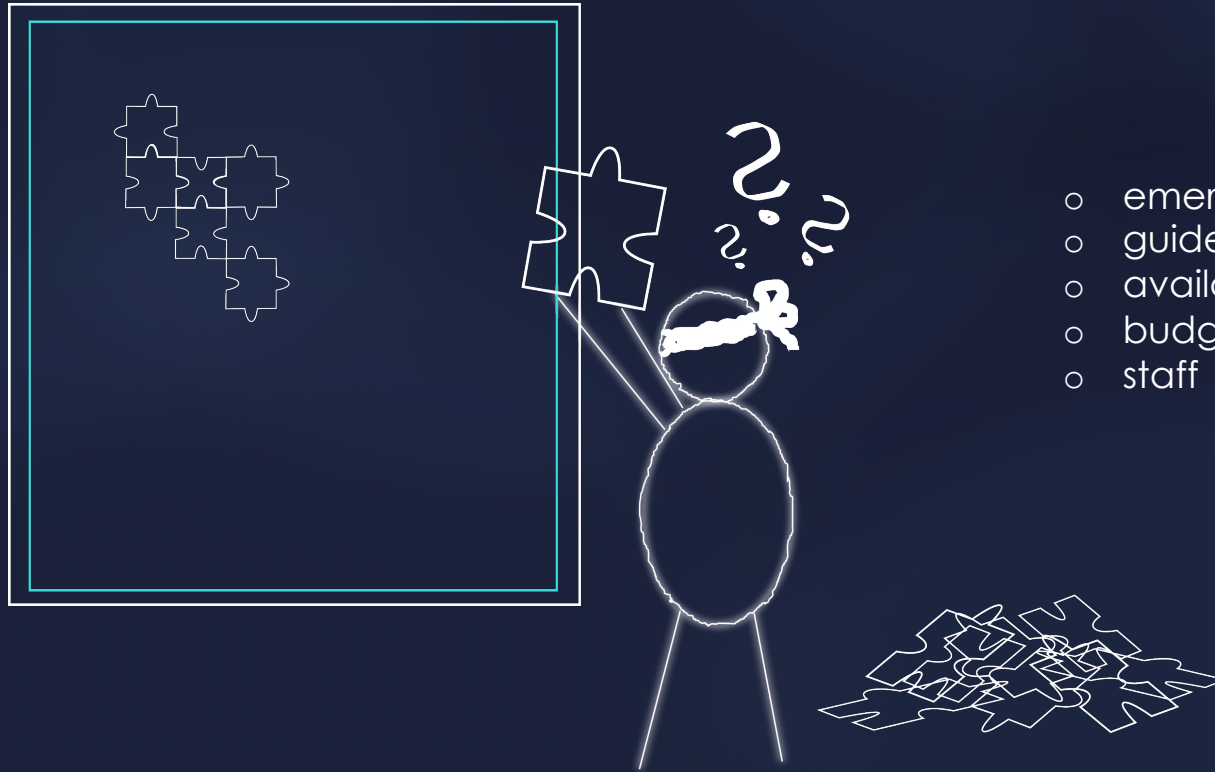
The past



The present



Prioritize and guidelines



- emergency
- guidelines (none or a billion)
- available resources
- budget
- staff

A lot of questions



- Where to build infrastructure?
- How to be resilient?
- Green Infrastructure versus grey infrastructure
- Best way to manage assets?
- Where to plant trees?
- Habitat restoration and protection
- Essential services like water, electricity, housing, medical care
- Reduce emissions
- Economic value and growth
- Emergency response
- Coastal protection

Everything is connected - I

cost

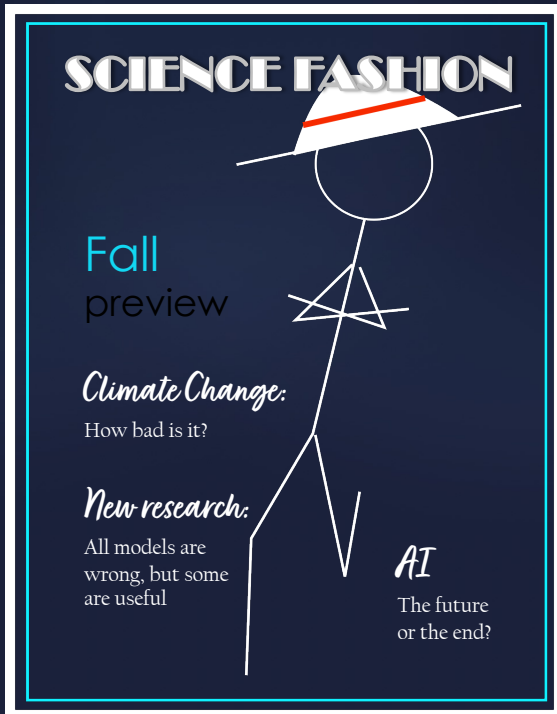


- carbon fixation
- aesthetics
- biodiversity
- UHI reduction

Everything is connected - II



A model



Most modern science experiments include some form of a model. A lot of statistical analysis, such as a Linear regression are models.

A model is a **simplistic** representation of a real-world problem, but very often they are limited and used for the wrong purpose

Nature and our world is not simple, it is complex

COMPLEX MODEL

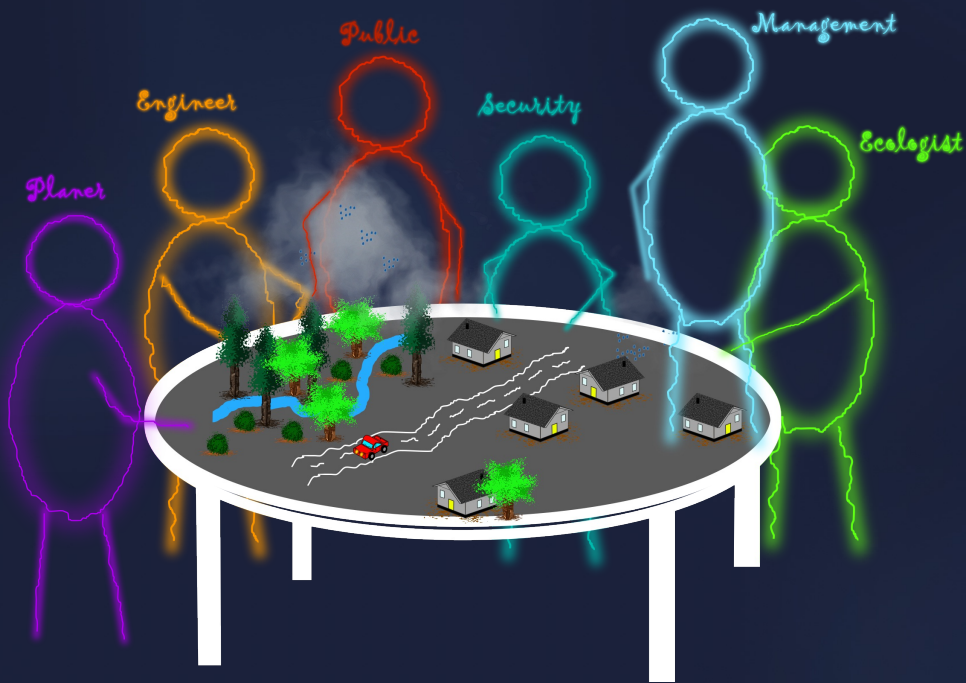
Complex Systems



Source: Smithsonian magazine

- interactions between parts
- behavior
- positive & negative feedbacks
- nonlinearity (small cause, big problem)
- multiple stable states
- dynamic
- adaptive
- difficult to understand
- impossible to understand without looking at its components
- hard to model

Purpose of the model - I

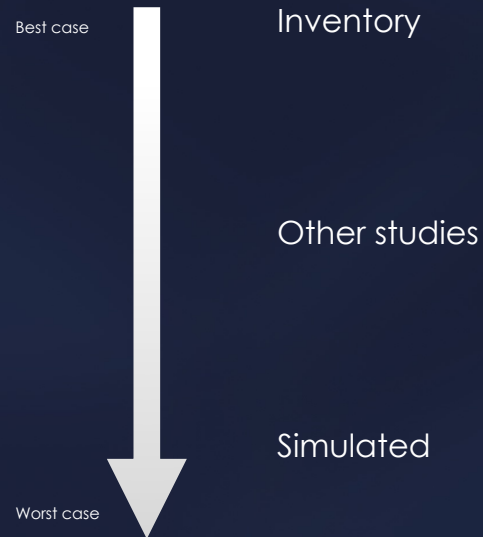


- one table
- easy-to-use
- cost-efficient (prize and staff)
- assists prioritizing
- accounts for complexity and interactions
- co-benefits
- social, ecologic, economic
- resilience
- current and future challenges
- customization and expansion

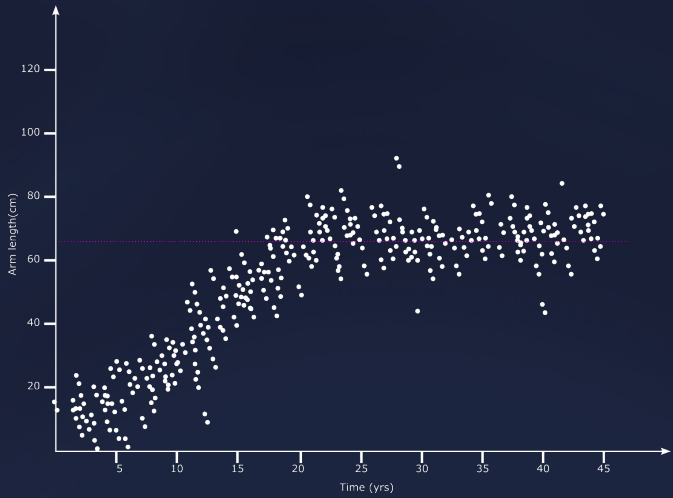
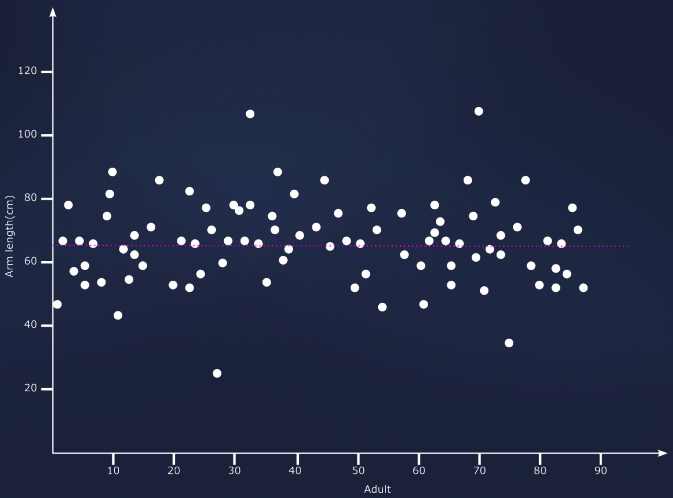
Purpose of the model - II

- Where to plant trees?
 - Asset management?
 - How to protect water?
 - Green infrastructure?
 - Carbon emission?
 - Resilient planning?
 - Climate Change?
 - Nature as economic asset?
 - Mental health?
 - Tourism?
 - Economic prosperity?
 - Natural disasters?
 - Housing?
 - Building guidelines?
 - Coastal protection?
- + 150 variables
 - 40 years simulated = ~ 1 hour
 - Everything can be customized down to water requirement of a single tree

Where does the data come from and is it accurate?



Where does the data come from and is it accurate?



Emerging pattern

Matt, this is impossible !!

- Completed > 160 objectives
- Bigger scale than world's best city simulator, without performance issues

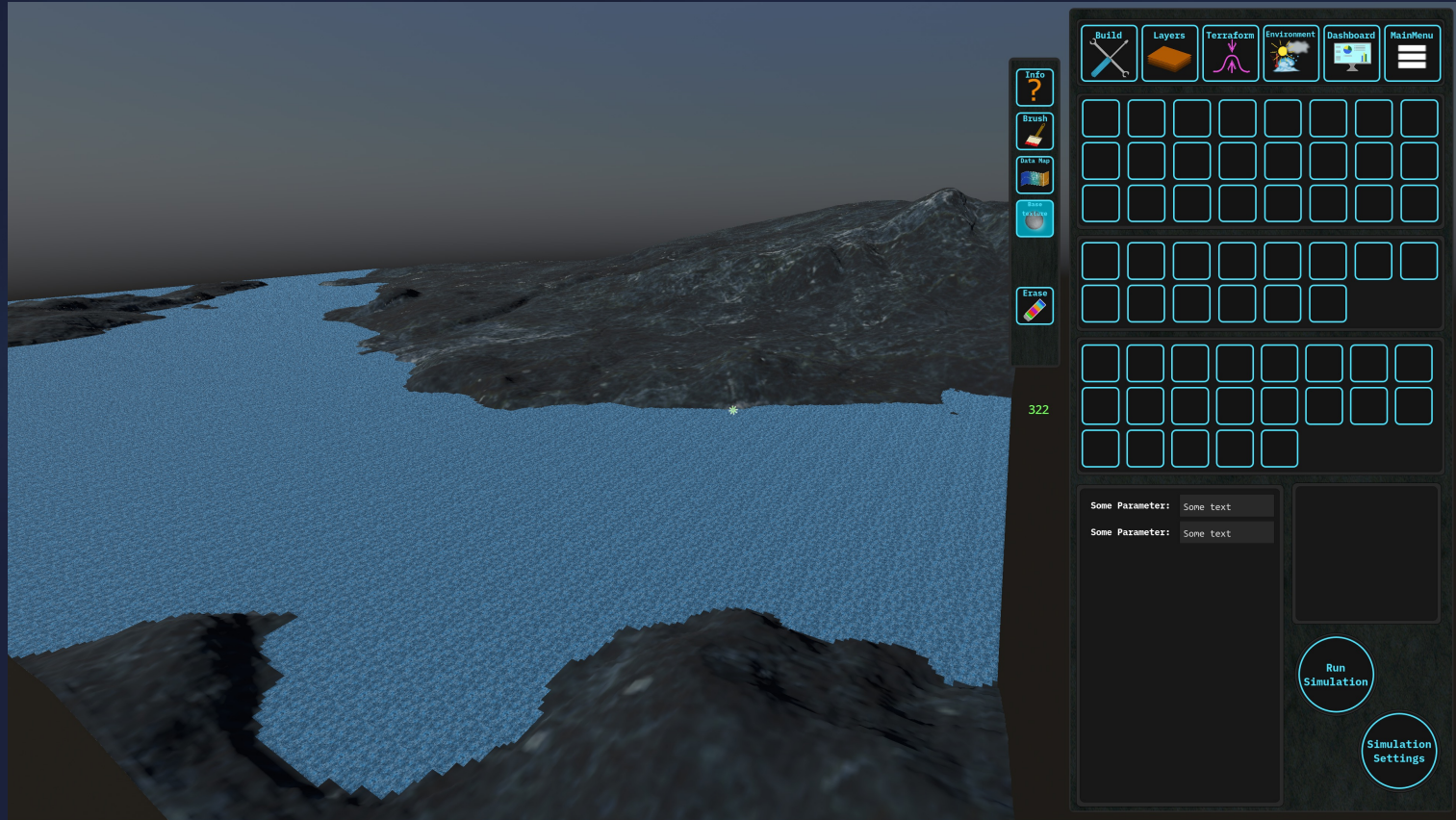


Impressions – most advanced city simulator (25.10.2023 8 years)

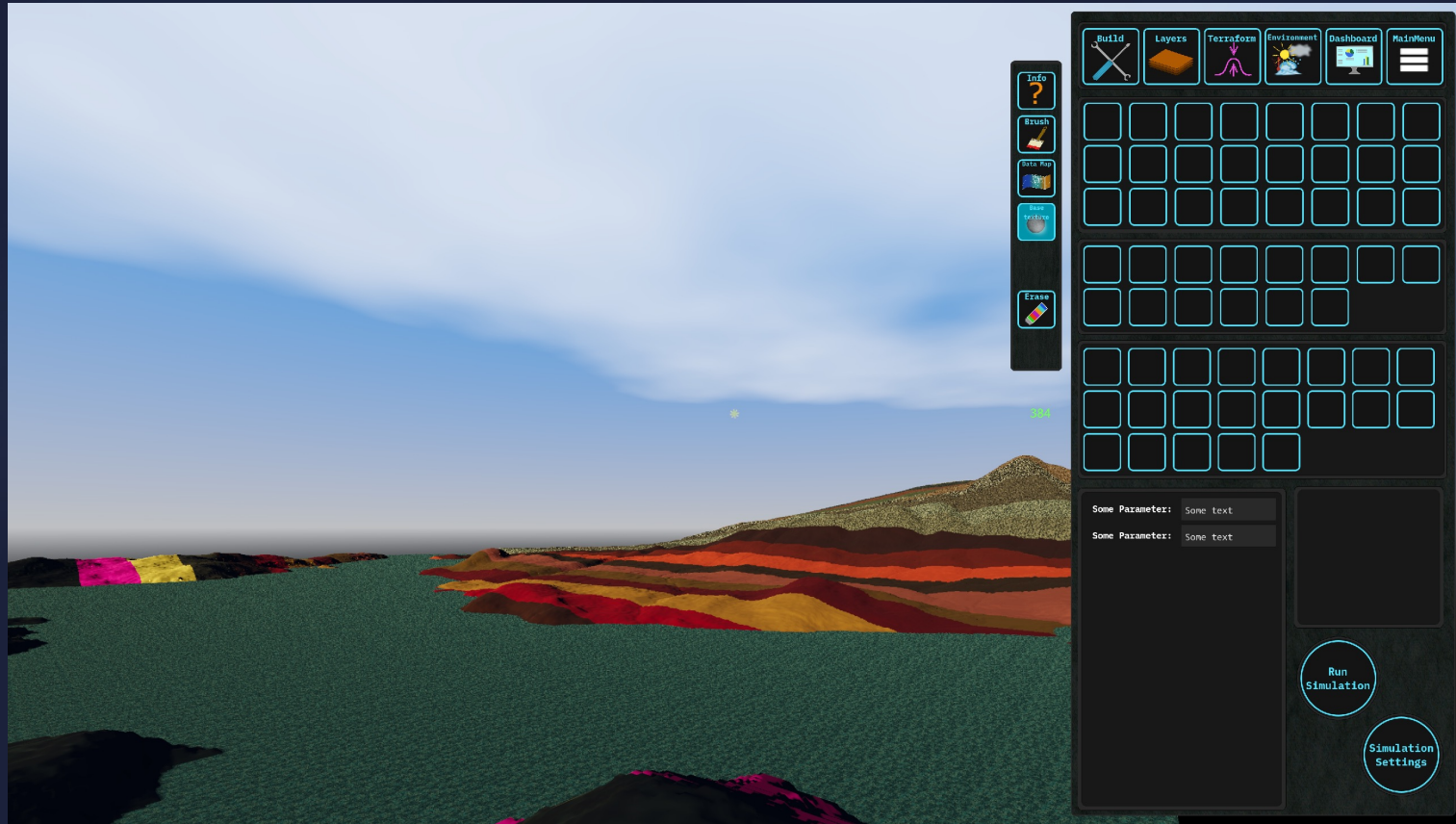


Source: GameRiot youtube – City Skylines II

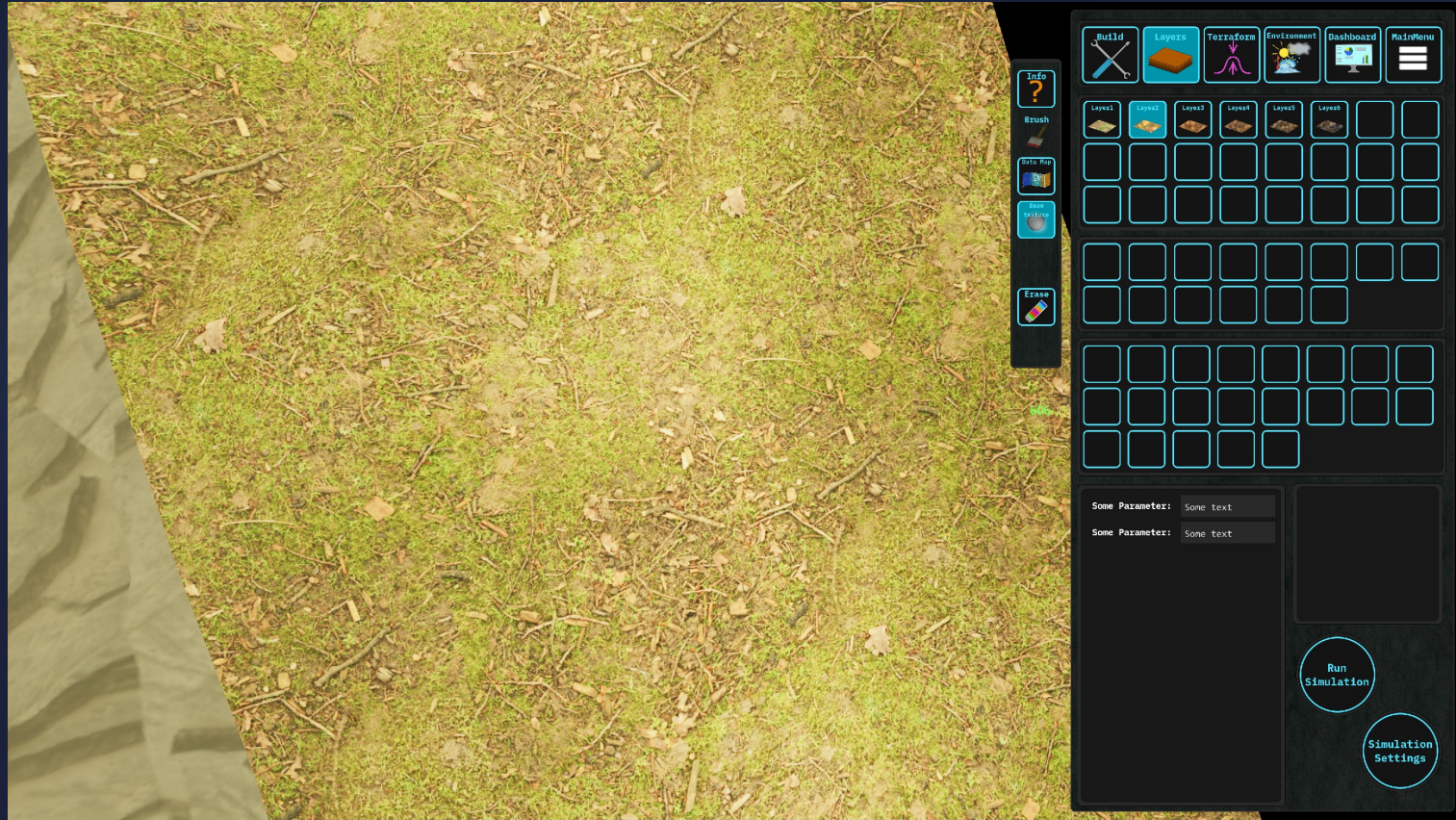
Impressions



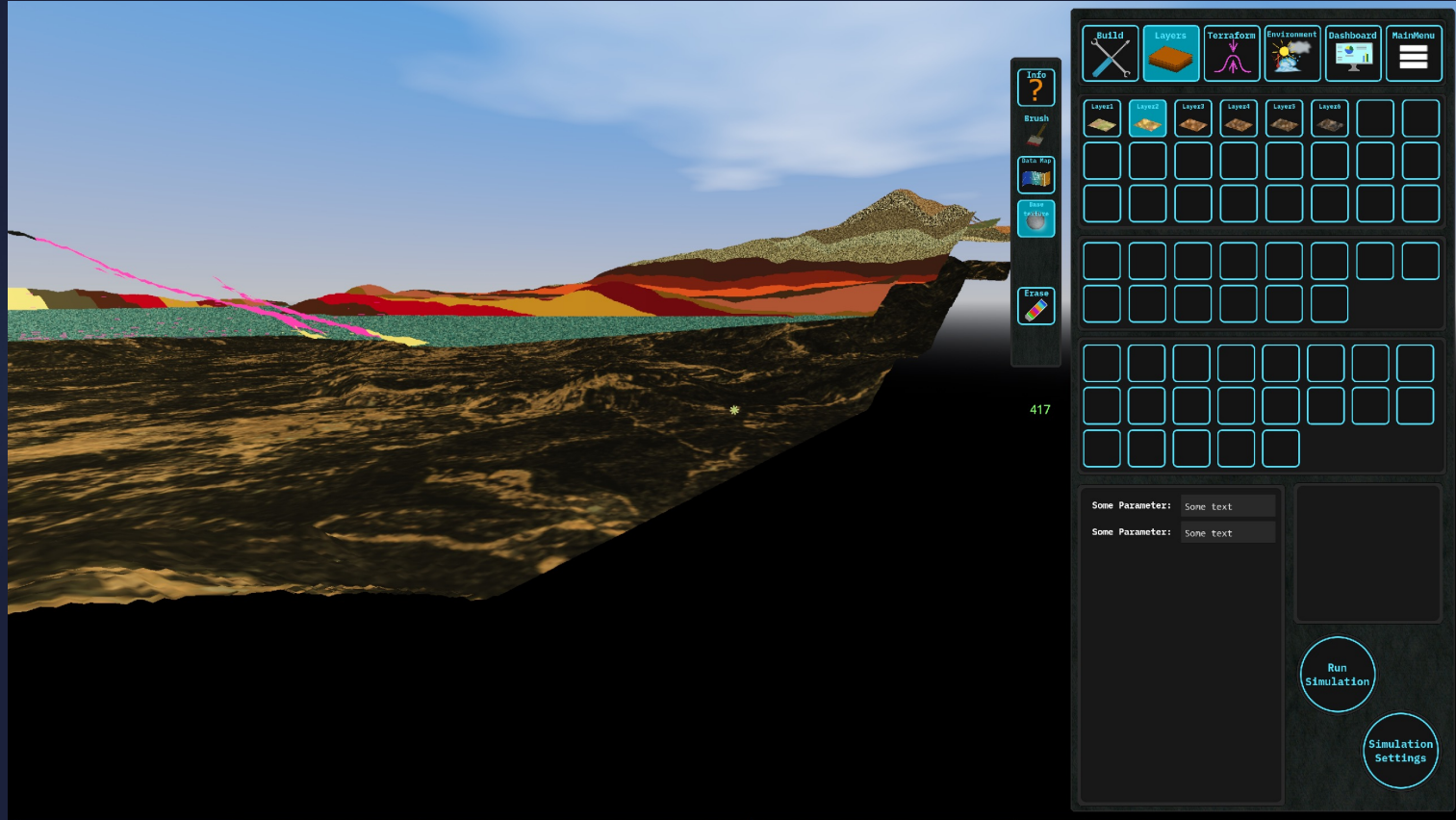
Impressions



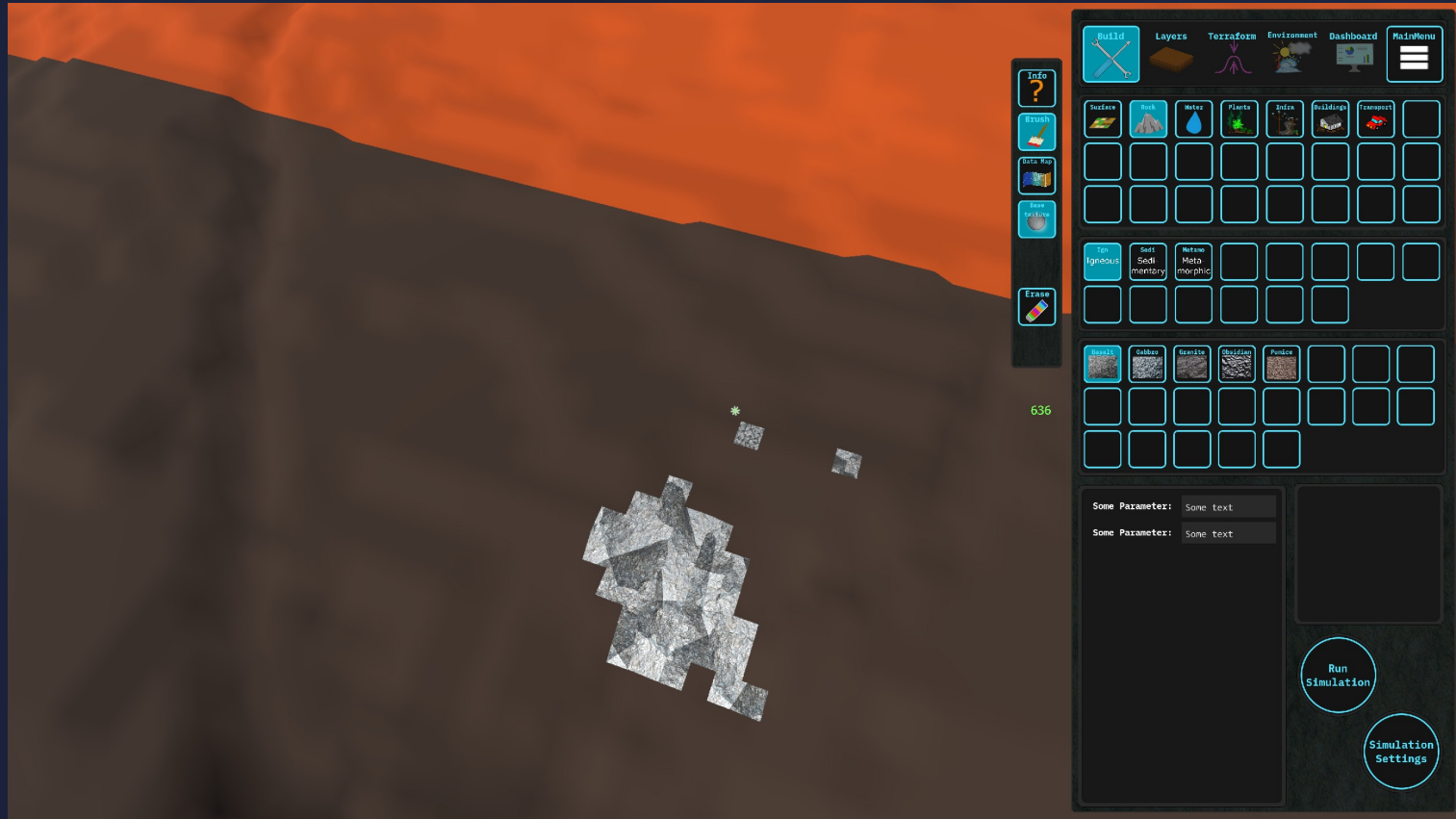
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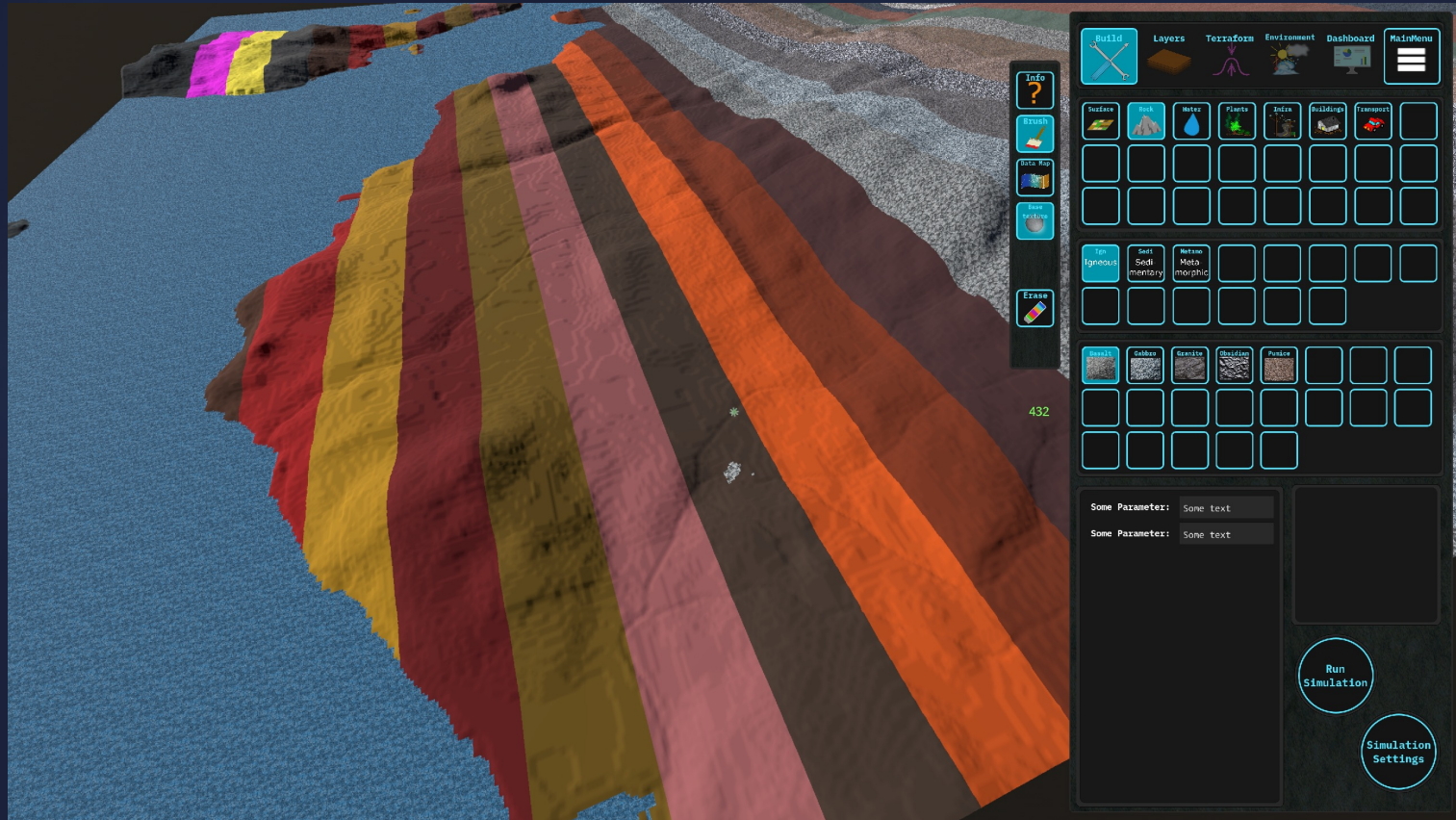
Impressions



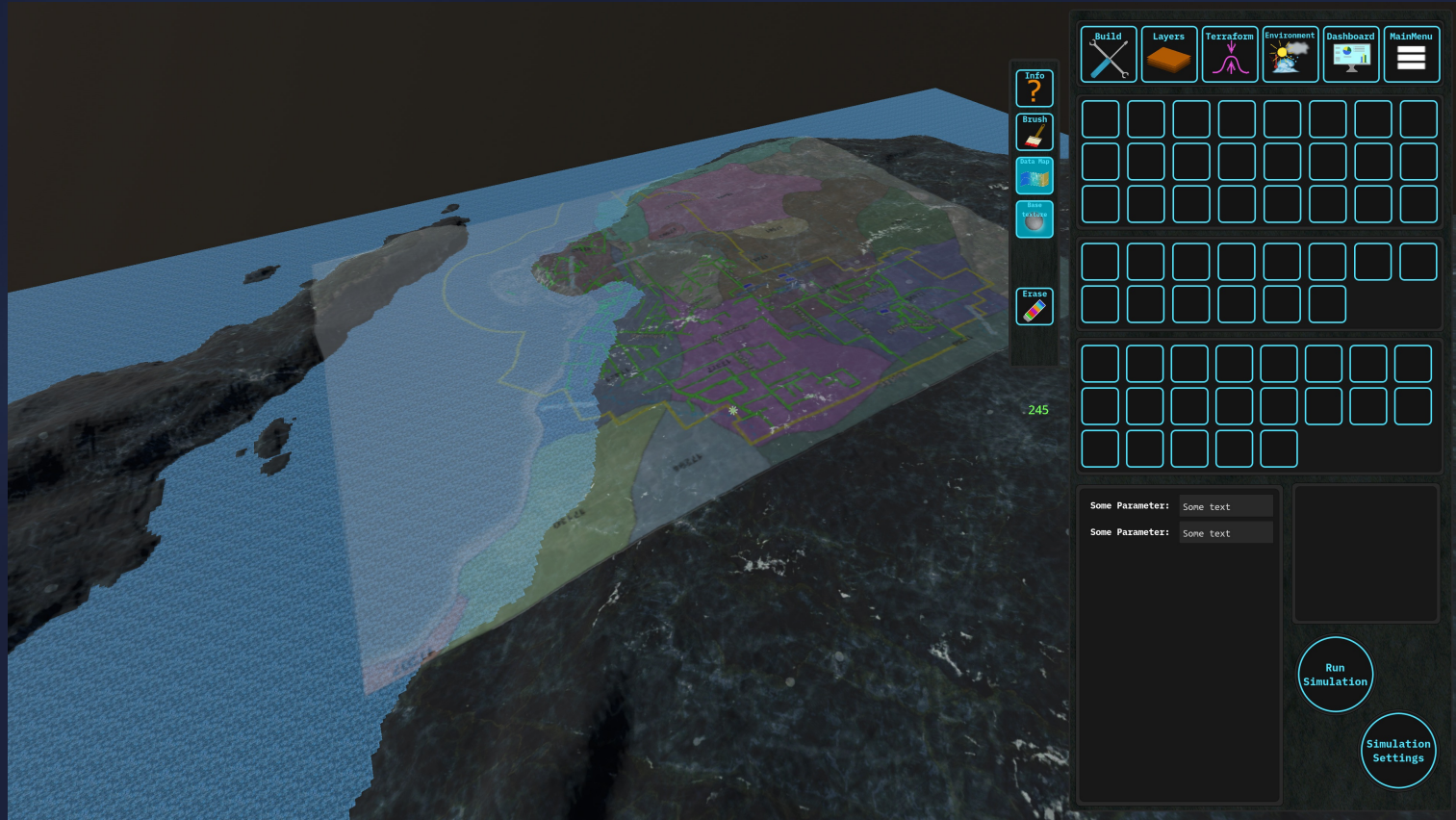
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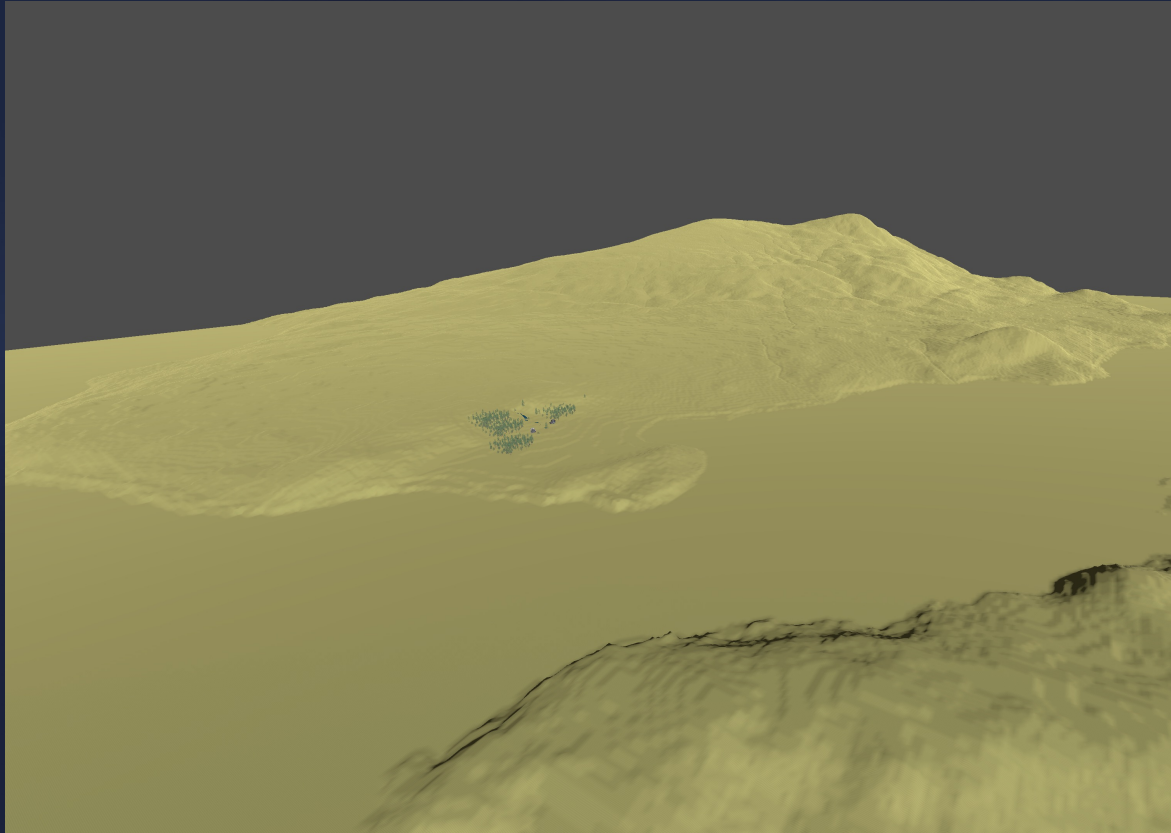
Impressions



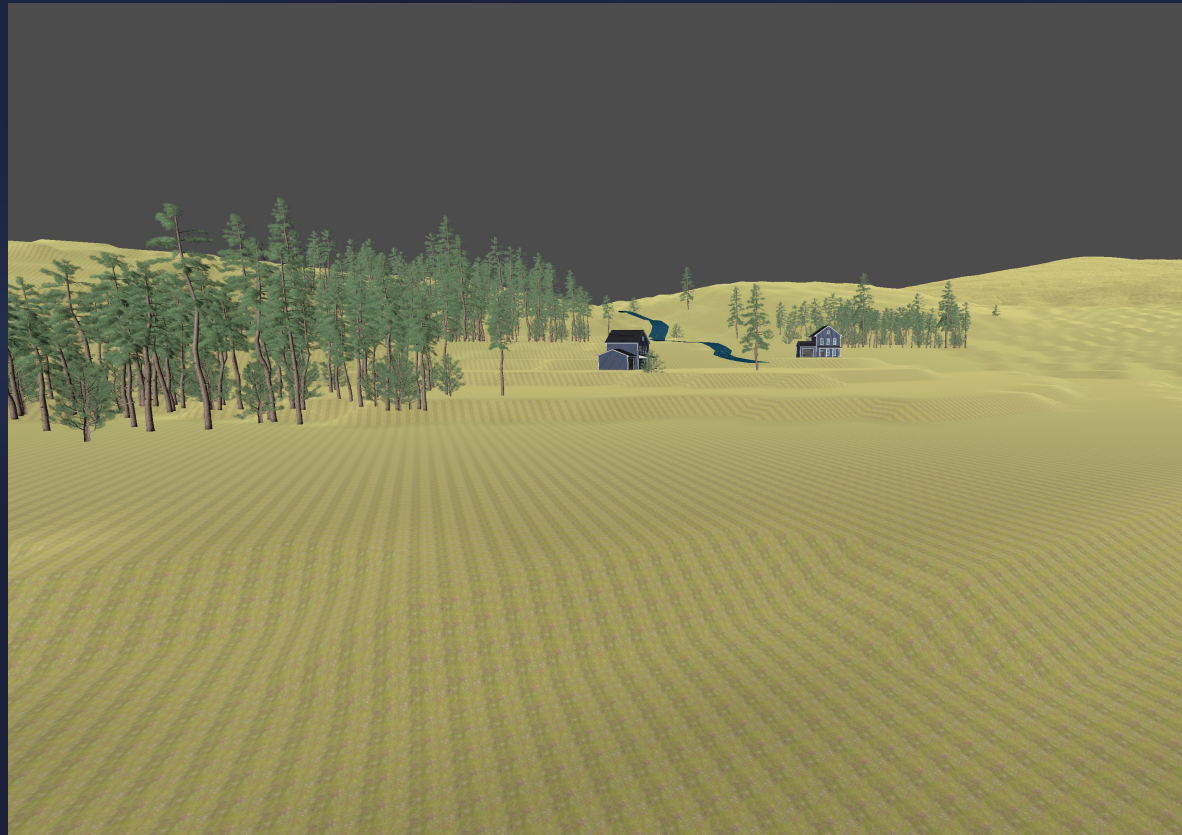
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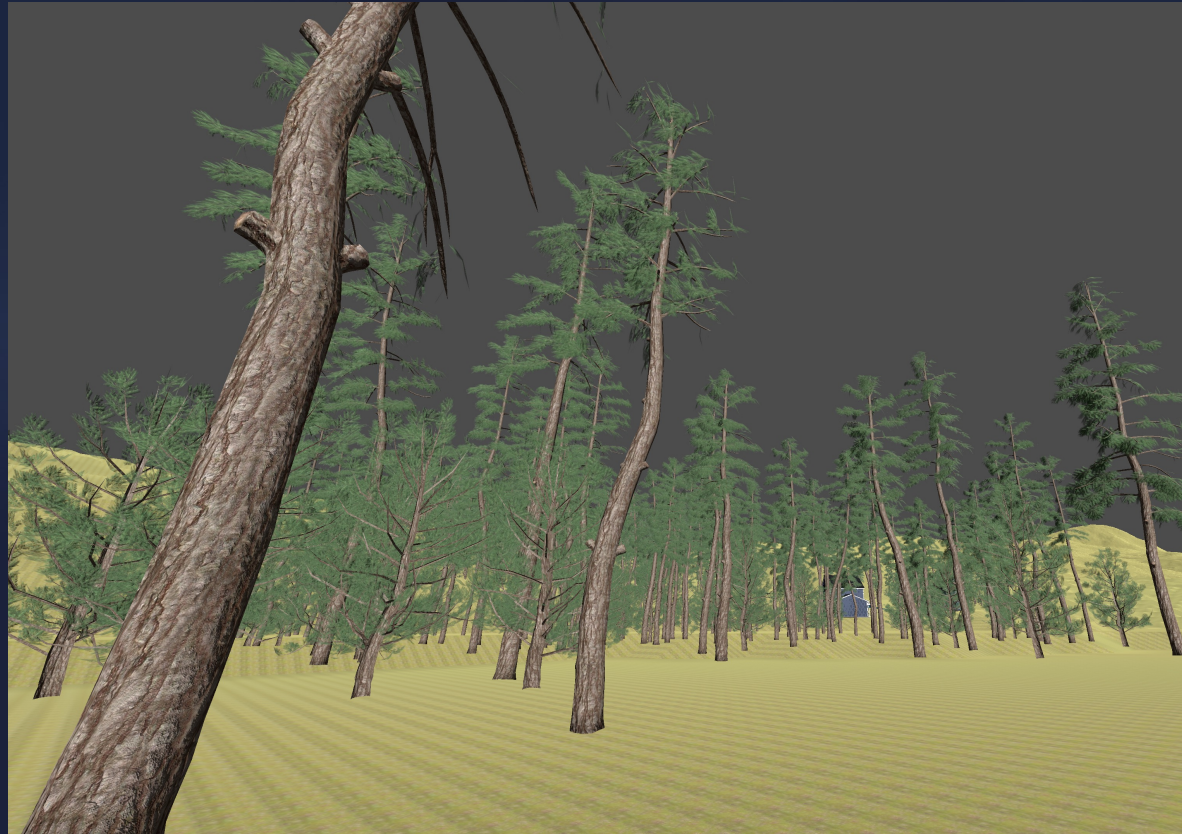
Impressions



Impressions



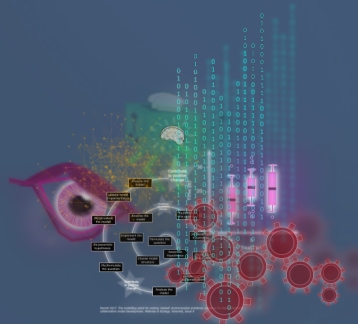
Impressions



How does the Town of Gibsons use the model?

- Climate Strategy
- Risk Management (mandatory to perform risk assessments)
- Asset Management
- Prioritize which questions to address first

Thank you



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