

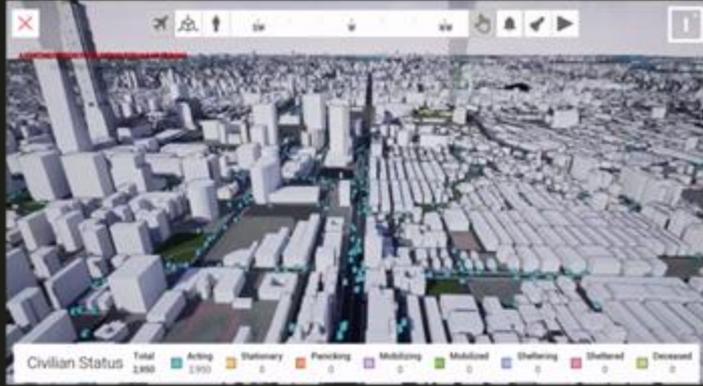
Improbable U.S. Defense & National Security

HAYSTAC Proposer's Day

22 March 2022



Improbable Overview



Solution Highlights

- + Platform approach to compose complex, adaptable synthetic environments
- + Content ecosystem encourages best-of-breed approach for models, visualizations, and interactivity
- + Base synthetic environment includes entity generator with realistic patterns of life and geolocated, goal-directed human behaviors

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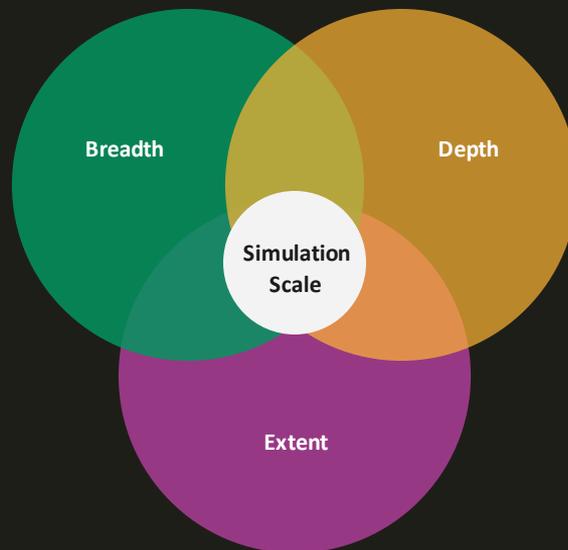
- + Independent, U.S.-based subsidiary of Improbable Worlds Limited, a London-based games tech company with flagship Improbable Multiplayer Services offering and UK Defence Unit
- + Founded in 2018
- + Based in Arlington, VA
- + Active work across the U.S. national security community



Enabling Massive Simulation Scale

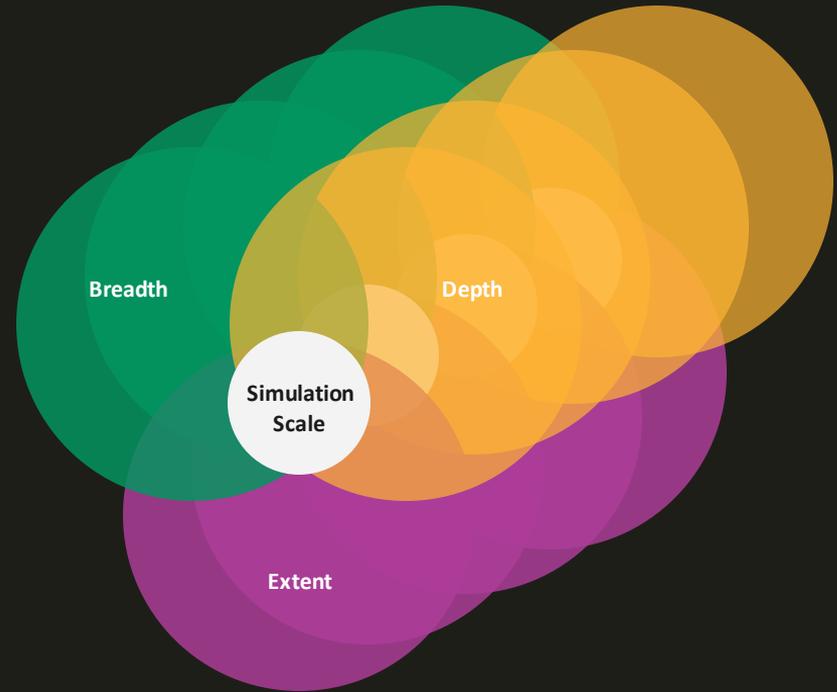
We deliver credible, useful and flexible Synthetic Environments, providing technology that enables broad, deep, and extensive simulations

- + Multiple domains and systems with strong interactions delivers massive **BREADTH**, allowing for SEs with large numbers of entities or model types (e.g., PMESII-PT variables, military domains, other layers and content, etc.)
- + High levels of **DEPTH** in detail and credibility, allowing for many different attributes per entity resulting in deep fidelity and high resolution
- + Large, dense environments without compromising entity count provides limitless **EXTENT**



Enabling Massive Simulation Scale

- + Multiple copies of the SE allows for **REPLICATION** to run the same SE many times in series or parallel, allowing cross-SE and cross-simulation results to inform analysis and machine learning

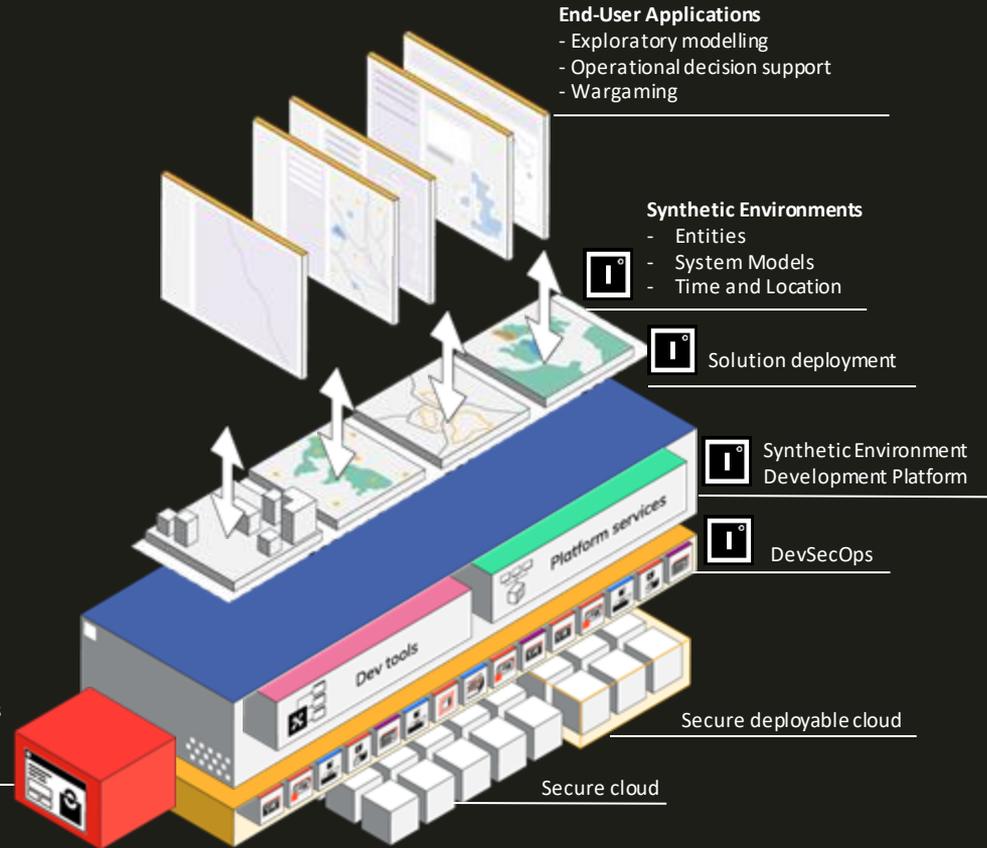


Improbable Synthetic Environment Platform Ecosystem

- Create and reuse models, data, and assets
- Integrate into existing user applications and workflows
- Accommodate many users
- Achieve massive scale
- Cloud-native distributed compute
- Modular and open approach

Content ecosystem

- Third party content
- AI and behavioral models
- Open-source models
- Domain-specific content



THE ROYAL SOCIETY

+



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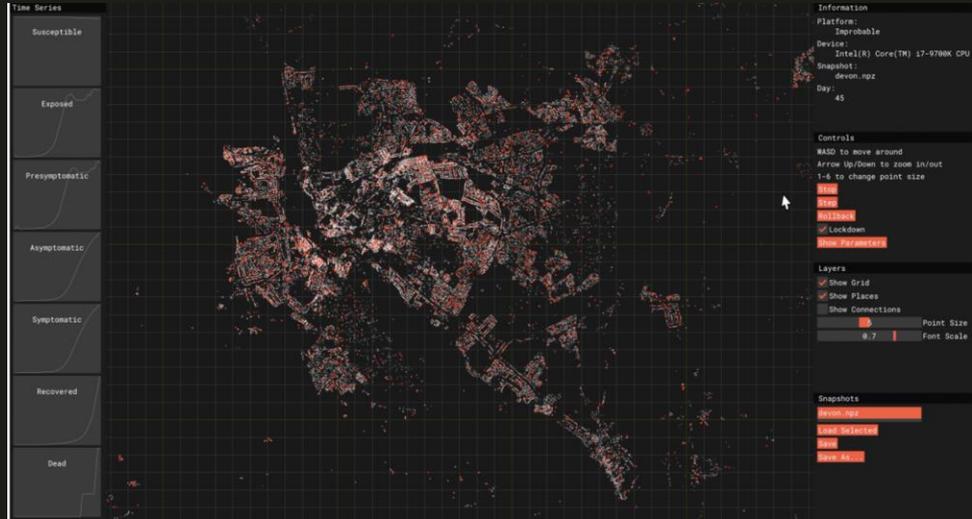
Faster Pandemic Modeling for Better Science

“By speeding up the simulation so that it runs in seconds rather than hours, Improbable has made it possible for us to conduct new research into the impacts of the pandemic.”

Professor Nick Malleson
University of Leeds

 IMPROBABLE

- + Improbable integrated disparate agent-based models into a single unified environment
- + The UI visualizes the interaction of complex models and allows users to explore different scenarios
- + Improbable research scientists increased the speed of the pandemic transmission model by a factor of 10,000



The Urban Analytics group's model is agent-based and simulates behavioral patterns of a detailed synthetic representation of the county of Devon and a population of 700,000 individuals.



defense.improbable.io

