

SIN^{AN}NELL

Oasys

Rethinking Event Traffic:
Modern Crowd Simulation

Introductions & Housekeeping

Yes - this program is being recorded

Yes - we encourage Q&A



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About SimWell

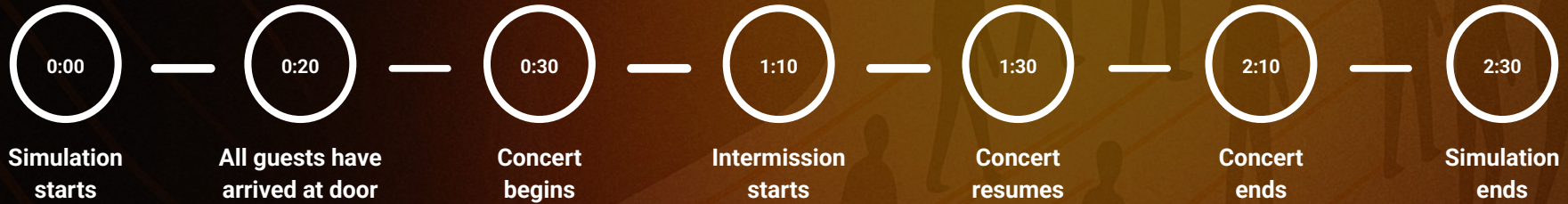
- International Decision Intelligence Company
- Specific Expertise in:
 - Simulation
 - Optimization
 - Digital Twins
- Reseller for MassMotion
- Available for both Model Building & Updating

Agenda

- A simple walk through of a 2019 crowd model
- What drives the model?
- How have crowds changed?
- The same building, rebuilt for 2025 crowds

2019 Model Assumptions

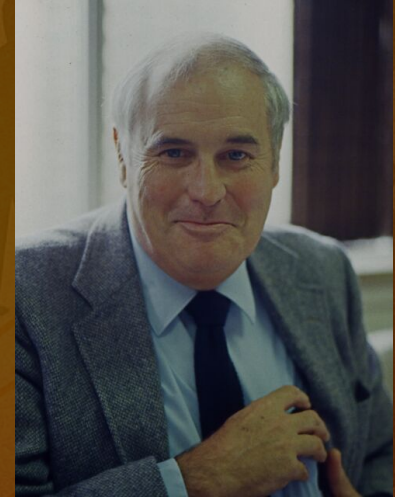
- 1600 guests split over 3 levels of seating
- 3 ticket checkpoints at entrance: 5 seconds on average
- At intermission: 44% restroom, 36% bar, 20% stay put



Let's see it in MassMotion!

What's driving the 2019 Model?

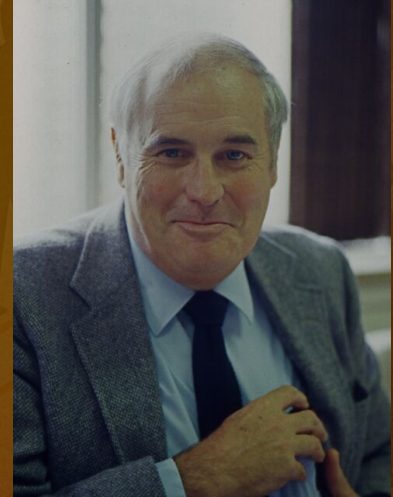
- Wrote Pedestrian Planning and Design (1971; revised 1987).
- Defined comfort as the freedom to walk at your normal speed, pass slower pedestrians, and avoid conflicts.
- “Human body ellipse”: each person’s moving footprint effectively narrows usable width; designers reduce measured widths by ~12–18 inches per side to reflect buffers.



John J. Fruin, Ph.D.
1928-2025

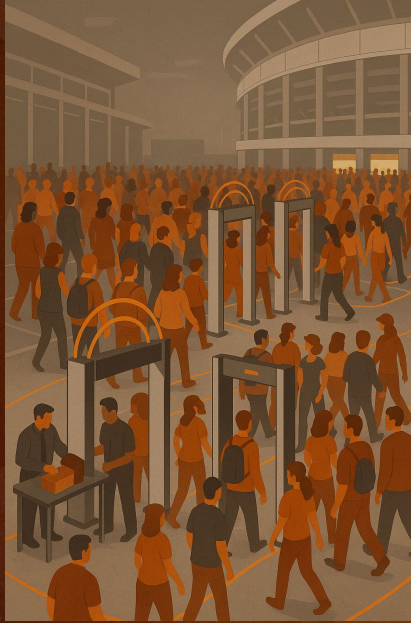
What's driving the 2019 Model?

- Fundamental relationships: as density rises, speed falls and flow peaks then collapses.
- Side bias: in right-hand-traffic cultures pedestrians tend to keep right; the bias flips in left-hand-traffic countries.
- The MassMotion agent model is calibrated against Fruin's Level-of-Service.



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A Lot Has Changed Since 1971

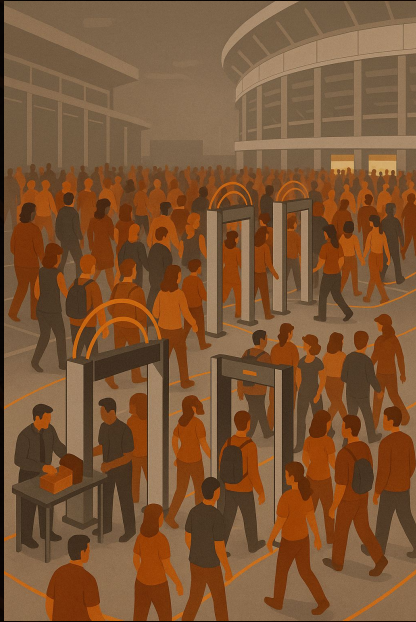


Cellphones



- 1971 penetration: 0%, 2025 penetration: **98%**
- Pedestrians are now **10-13% slower** and make more deviations and quick “course directions”
- Higher likelihood of trips, falls & stumbles which impact you **and those around you**

Security Stations



- Event security is now a **\$12B industry** (similar to the global game streaming business)
- Security decreases throughput by **50-80%**
- Highly contextual, depending on “how” it’s done: turnstyles, AI, clear bags, etc.

Rideshare



- Public transit no longer the driver it was, particularly post-event
- Pedestrians **decrease their speed 5-10% more in rideshare zones**
- Curb choreography > parking capacity

WWFD? What Would Fruin Do?



2025 Model Assumptions

- 1600 guests split over 3 levels of seating
- 3 ticket checkpoints at entrance:
 - **Security considered: 10 seconds on average, instead of 5**
- At intermission: 44% restroom, 36% bar, 20% stay put
- **Slower walking because of cell phones :**
 - **30% of guests walk at 45% of normal speed**
- **Rideshare added: 20% of guests**
 - **They wait 5 minutes on average, before exiting building**
- Timeline unchanged: arrival/concert/intermission

Let's see it in MassMotion!

Takeaways

- Remember: a model is only as good as what goes in it
- How you handle security will have a direct impact on traffic
- Slower traffic requires better planning, but it also opens up opportunities:
 - Promote future events
 - Sell more merchandise
- Seeing real-world changes in action helps venues make better, data-driven decisions
 - Model animation provides valuable intuitive insight
 - Simulation output files and charts indicate key metrics for analysis

Thank You/Q&A



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