



SIMULTECH'19
Prague, Czech Republic, July 29-31, 2019

Opening Panel:

**What to use: Simulation Packages, Simulation Languages
or General Purpose Programming Languages?**

(Organized by: Prof. M. Obaidat)

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http://www.site.uottawa/~oren/y/2019/07-29_Prague-panel.ppsx

(For a decision based on facts)

Some facts about simulation and computerization

“So far as users are concerned, **the aim of computerization is not necessarily to develop software but to solve problems with the assistance of computers.** Therefore, the software industry would serve the users better by providing **Computer-Aided Problem Solving (CAPS) environments.**”

Ören, T.I.(1993). [Needs of the Software Industry in the Next Decade](#). In: Proceedings of the National Workshop on Software Engineering Education, H.A. Müller and J. Slonim (eds.). Toronto, Ont., May 31, 1993. IBM Canada, Toronto, Ont., 109-111.

Maintenance of **specifications** has advantages over maintenance of **codes.**

***Some facts** about simulation and computerization*

(For a decision based on facts)

A **structured approach** in computerization is preferable over an unstructured approach.

Concepts for advanced simulation methodologies



by

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Simulation theory/methodology provides a **systematic structure** for simulation specifications.

Ören, T.I., Zeigler, B.P. (1979). [Concepts for Advanced Simulation Methodologies](#). Simulation, 32:3, 69-82.

Relationships of basic concepts in simulation and in real-world experimentation

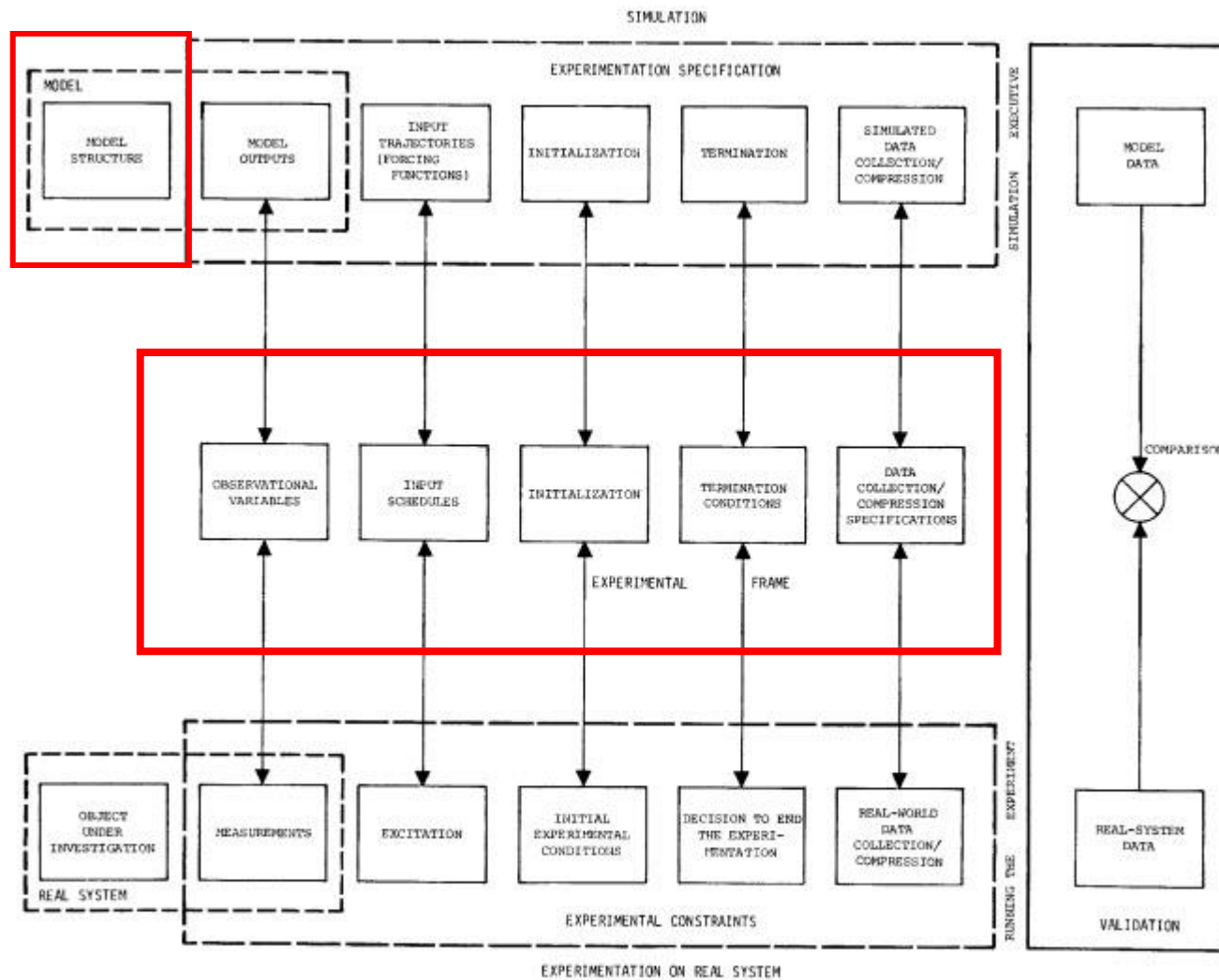


Figure 3 - Relationships of basic concepts in simulation and in real-world experimentation

Types of **inputs** in simulation:

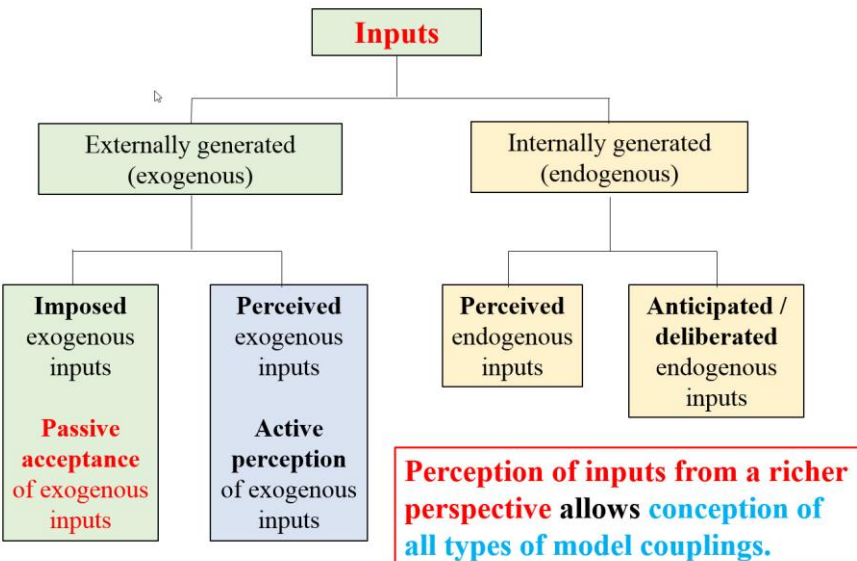


Table 3: Types of sensations (Adopted from Ören and Yilmaz, 2004)

Type of stimulus	Type of perception
light	- vision (visual perception): visible light vision, ultraviolet vision, infrared vision
sound	- hearing (auditory sensing): audible / infrasonic / ultrasonic sound (medical ultrasonography, fathometry, sonar)
chemical	- (gas sensing / detection): smell (smoke / CO2 / humidity sensor) - (solid, fluid sensing): taste, microanalysis
heat	- heat sensing
magnetism	- magnetism sensing: geomagnetism / thermo-magnetism sensing, electrical field sensing
touch	- sensing surface characteristics
motion	- acceleration sensing
vibration	- vibration sensing: seismic sensor

SIMULTECH'15, Colmar, France
July 21-23, 2015

**Awareness-based Couplings of Intelligent Agents
and Other Advanced Coupling Concepts for M&S**

http://www.site.uottawa.ca/~oren/y/2015/D04_couplings-pres.ppsx

***Some facts** about simulation and computerization*
(For a decision based on facts)

***6 main components** of a simulation program:*

Model

Experimental conditions
(experimental frame)

Behavior
generator

Model

Experimental conditions
(experimental frame)

Behavior
generator

Parameters

Simulation Packages and Simulation Languages

- can embed components of simulation systems
- and **would not require** to have them implemented for every study
- hence **have advantages over general purpose languages**.

However, **if you realize** that some structural features are **not available** in simulation packages or simulation languages:

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1. You are lucky, since **innovations are based on non-met requirements.**
2. **No progress** is ever possible by keeping the status quo.
3. Consider the words of the Carthaginian general [Hannibal Barca](#) (247-183 BCE):
“I shall find a way or make one.” (*“Inveniam viam aut faciam.”*)
(**A motto fit also for researchers.**)