

Game-Based Learning of Incentives in Systems Engineering

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RESEARCH BASIS

Gaming in Systems Engineering

- The process of game-thinking and game mechanics to engage users and solve problems.

Elements

- Gamification: Use of game elements to improve the system
- Game-Based Learning: Use of games to train individuals.

Game-based Learning

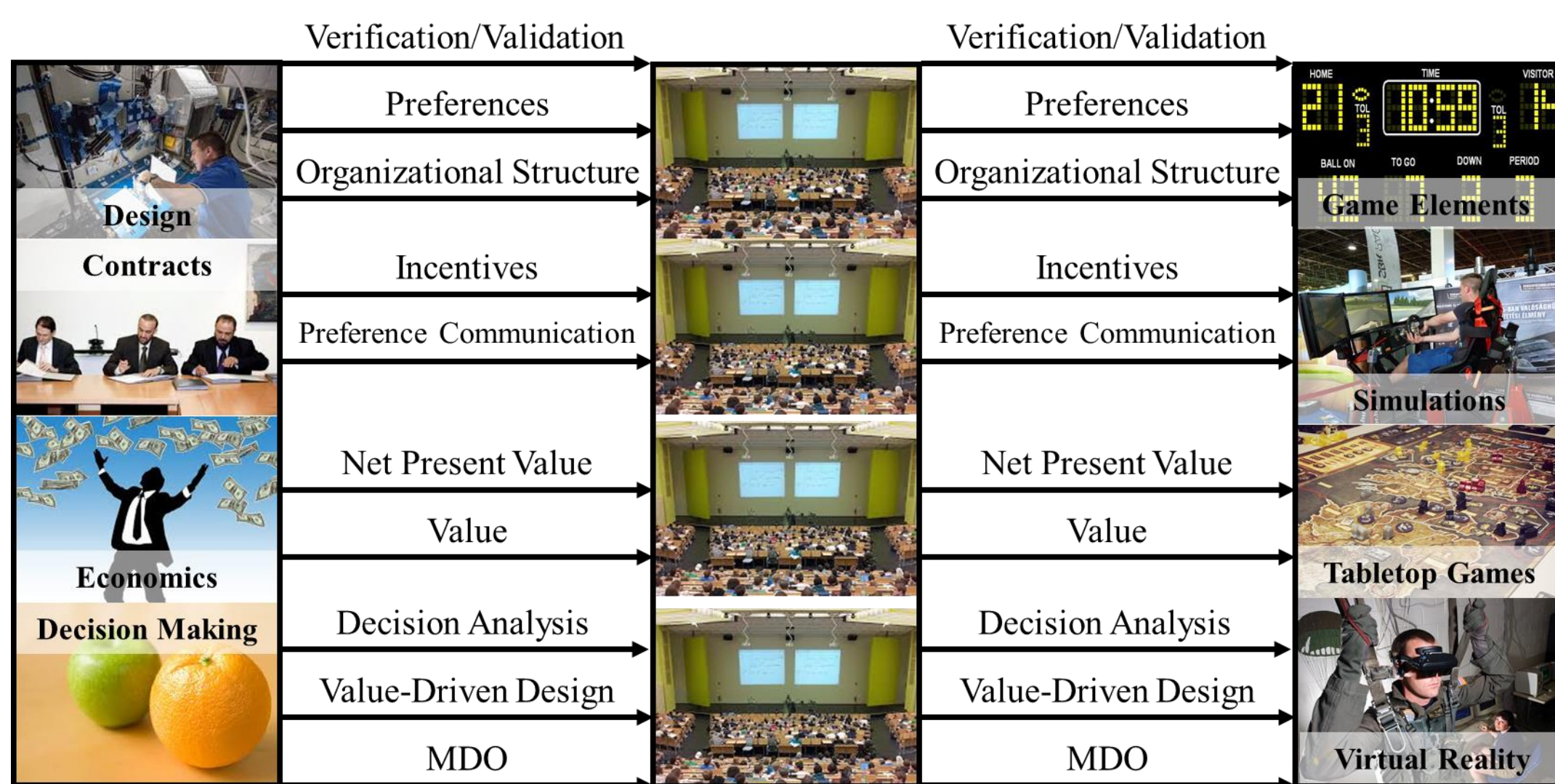
- Use of games to train individuals.

Game Concepts

- Score Keeping
- Competition
- Game Theory
- Engagement
- Rewards

Additional Uses

- Identification
- Crowdsourcing
- User Experience



Game Design

- The process of designing games

Design Choices

- Theme
- Story
- Mechanics
- Gameplay



Our Design Choices

- None to Complex
- Concepts to Story
- One to Many
- Simple to Complex

Game Theory

Game Theory allows us to examine games for solutions in a game form.

Prisoners' Dilemma

	Silent	Talk
Silent	1, 1	0, 10
Talk	10, 0	3, 3

Acknowledgements

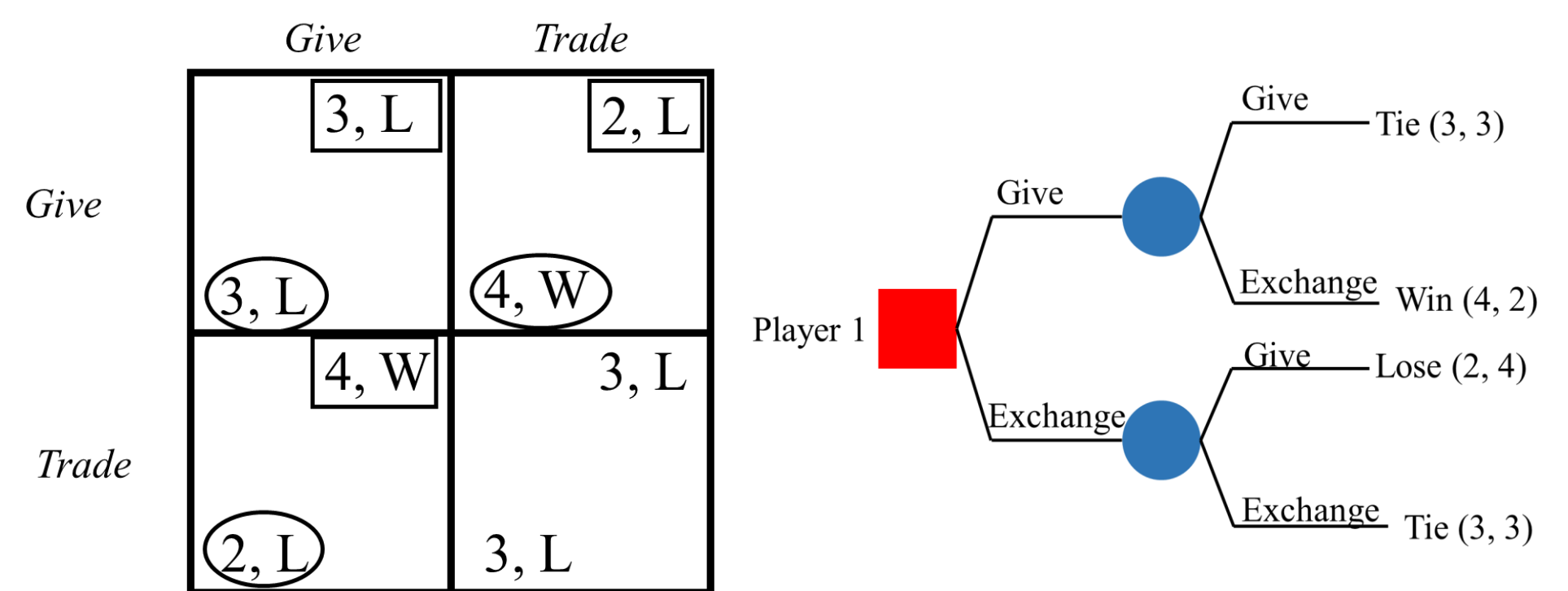
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Games and Results

Simple Games

Goal: Get More than 3 Points. Mechanic: Select Gesture

Game 1



Game 2

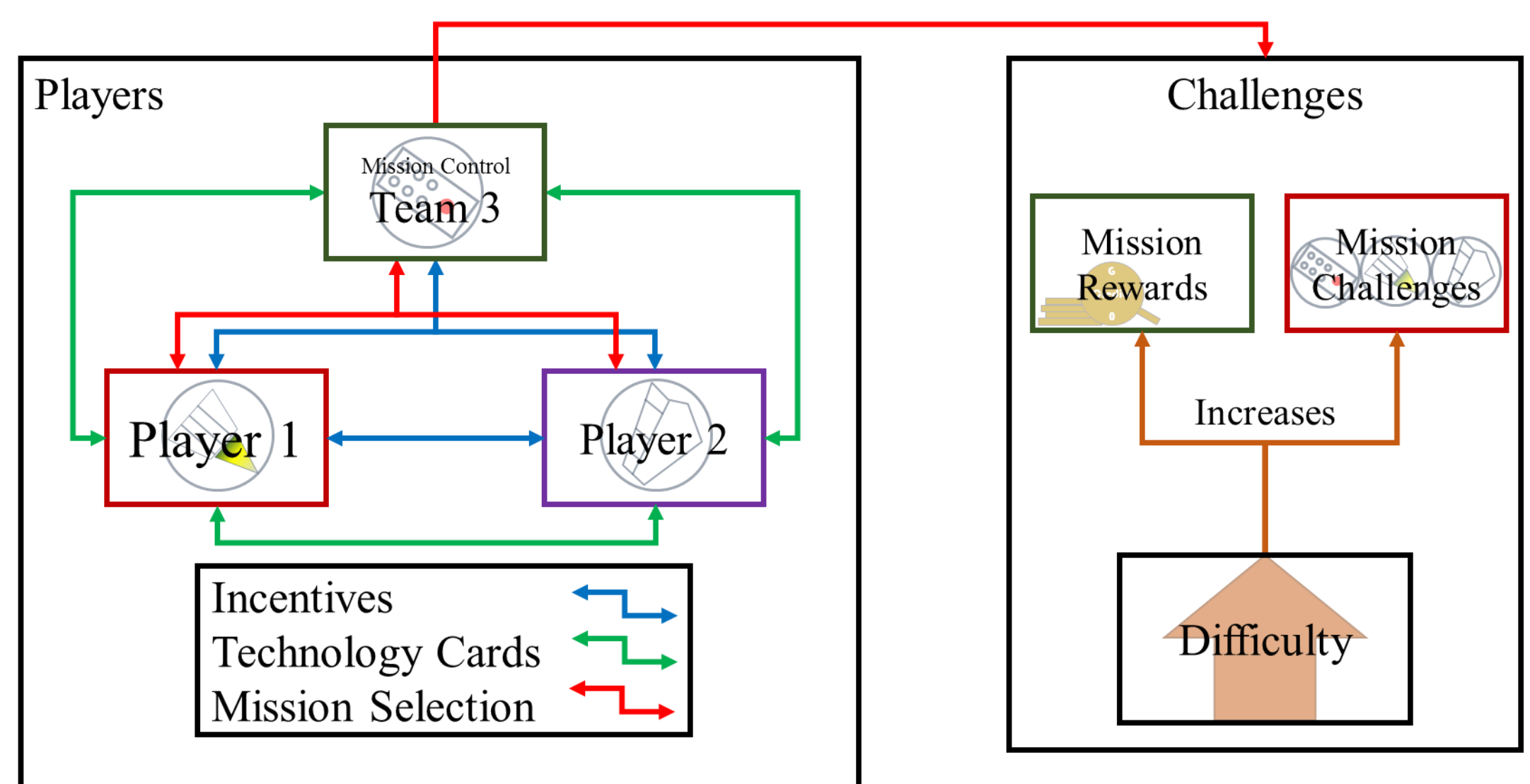
		Incentive			Reverse Incentive		
		G	T	DN	G	T	DN
I n c e n t i v e	G	0, 0	1, 0	0, 1	0, 0	1, 0	0, 1
	T	1, 0	1, 1	0, 1	0, 0	1, 1	0, 0
	DN	0, 1	1, 0	0, 0	1, 1	0, 0	0, 1
R e v e r s e	G	0, 0	1, 0	0, 1	0, 0	1, 0	0, 1
	T	1, 0	1, 0	0, 0	1, 1	0, 0	0, 0
	DN	1, 0	0, 0	0, 0	1, 0	0, 0	0, 0

Objectives:

- Internal: Introduce Incentives, Gradually Increase Challenge
- External: Experiment with Game Designs

Complex Game

Goal: Collect the most points (Credits)



Objectives:

- Internal: Increase Incentive Proficiency, Increase Player's Challenge
- External: Experiment with Game Designs, Experiment with mechanics