

Learning Evaluation in a Persuasive Serious Game

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Introduction

Concepts

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Context

Use of Serious Games (SG) in education

3 big categories :

- SG of message (educational, informative, persuasive)
- SG of training (cognitive, driving performance)
- SG of simulation (practices)

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Persuasive SG

Media of persuasive communication for a
wide public

Less studied

Aim:

Provoke on Player Learner (PL) behavioral
changes

Cognitive, affective and behavioural effects

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Modeling and evaluating PL behavior

Bayesian Networks

For modelling PL

Influence Diagram

For the formalization
of the decision problem

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Bayesian Networks (BN)

“Belief Networks”

or

“Probabilistic Networks”

Directed acyclic graph to formalize
knowledge



Node = Variable = Knowledge

Arc = Probabilistic dependencies between variables

Influence Diagram (ID)

Extension to BN

3 kinds of nodes:

- Chance Nodes: Same in BN (variables)
- Decision Nodes: Alternatives available
- Utility Nodes: Evaluation of alternatives

Arcs depending on node kinds O and D:

- 2 chance nodes
- Points to decision node
- From decision to chance node
- Points to utility Node

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Three steps

- 1. Identifying PL behavioral characteristics**
- 2. Modelling**
- 3. Evaluation**

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1. Identifying PL behavioral characteristics

Psychological Test

- Initial behavioral state before playing
- Based on random couple of images
- Each couple corresponds to a PL characteristic (Positive & Negative way)

Game

- Persuasive SG with several sessions
- Two outcomes: Positive or negative behaviour
- Intermediate behavioral state of PL

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2. Modeling

Elements :

- Initial characteristics given by the psychological test
- Characteristics' outcomes given by the game

Transformation into variables having relationships between each other

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3. Evaluation with 2 floors: Probabilistic and Decision

Using principles of ID to provide a behavioral evaluation of the PL in each session of the game

- Calculate:
 - Probability of occurrence of behavioral characteristic
 - Chance of occurrence of results found in different sessions
- Use the probabilities just calculated and concepts of utility and decision to assess behavior.

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Anticorruption SG

« *Corjalean Planet* »



Project: action against corruption

SG of raising awareness against corruption
by *Tunisia For All* association

Player plays with flows of money, which go towards
a corrupt monster

Aim: demonstrate him the utility to divert
these flows towards a better use in the
interest of all

Change his behavior

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Corjalean planet



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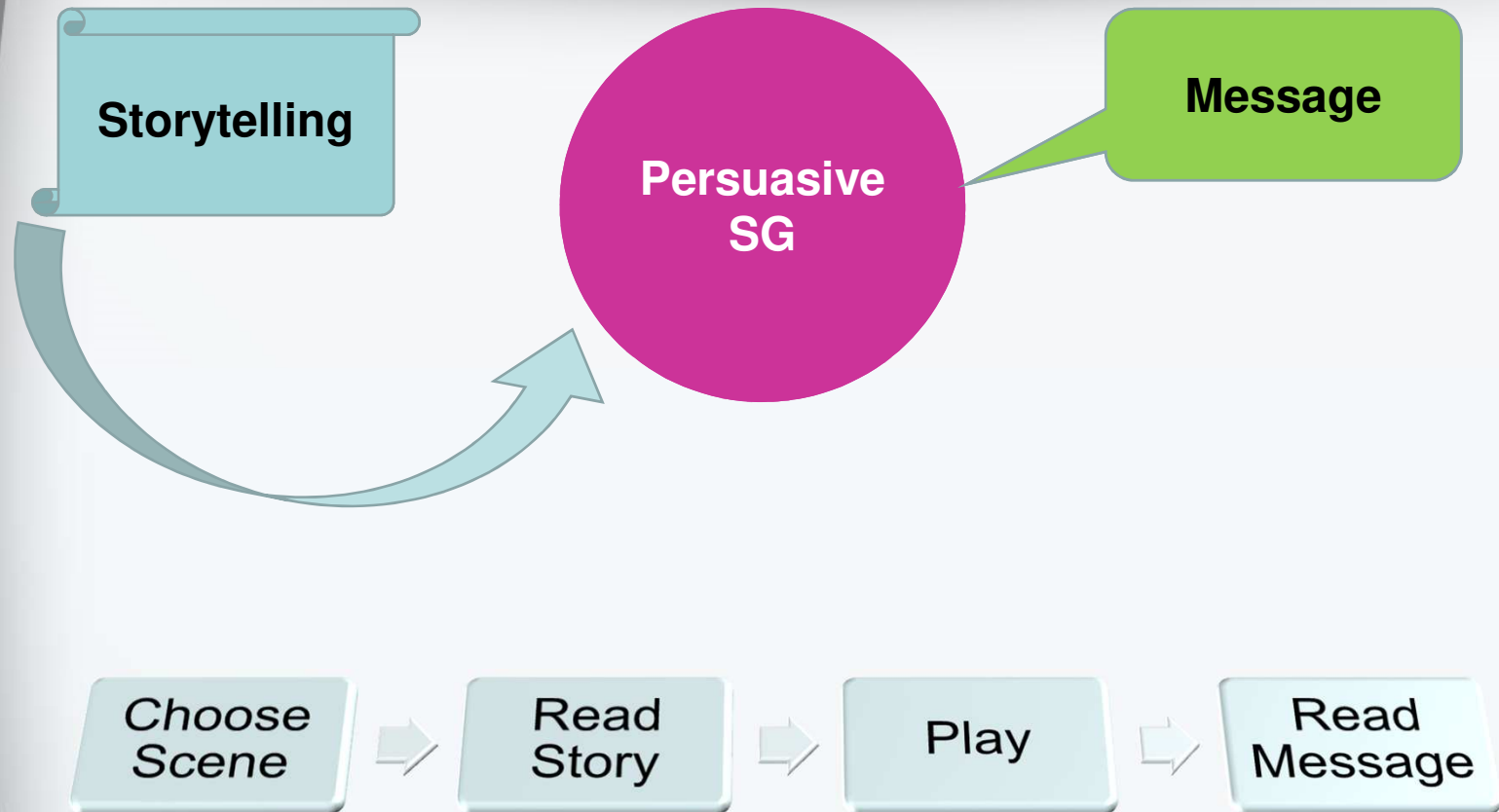
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Identifying behavioral characteristics



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Example: Scene in a school



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Conclusion

- Evaluate the PL progress using a persuasive SG
- Give an indicator about the effectiveness of the SG in itself
- Model : predictive results about probabilities of occurrence of behavior change
- Applying this model : promising results
- Next step : Experimentation with real PL samples



Thank you for your
attention !