



Making mainstream videogames more accessible: a pilot study applied to Buzz!™ Junior Monster Rumble for PlayStation

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Background: PLAY

- Play is a fundamental right of every child.
- Play is a basic factor for the child's quality of life.
- Play is a mean for the child's motor, cognitive, communicative and social development.
- Play is the main activity through which children interact and participate to social life.

Background: VIDEOGAMES

- Videogames are one of the most common and beloved play activities.
- Videogames are becoming a socially accepted, cross-generational and social play activity.
- Videogames are increasingly targeting the family: they must be accessible to people with different abilities (young children, elderly people, people with different abilities).

Background:

UNIVERSAL DESIGN

- Universal Design (Design for All) aims at developing mainstream products more accessible for persons with disabilities.
- Universal Design improves the quality of mainstream products for all the consumers.
- Universal Design is coherent with the current inclusion perspective: not only special games!

OBJECTIVE

To define a possible set of changes or improvements to be applied to an existing mainstream videogame with the following conditions:

- The game should remain the same.
- Existing built-in functions should be used.
- Interaction with AT interfaces should be possible.

Changes mainly address children with motor and/or cognitive disabilities.

THE GAME: Buzz!™ Junior Monster Rumble

- Designed for kids
 - Low functional requirements
 - Consumers' awareness
- Multiplayer family activity
 - Social context
 - Inclusive approach

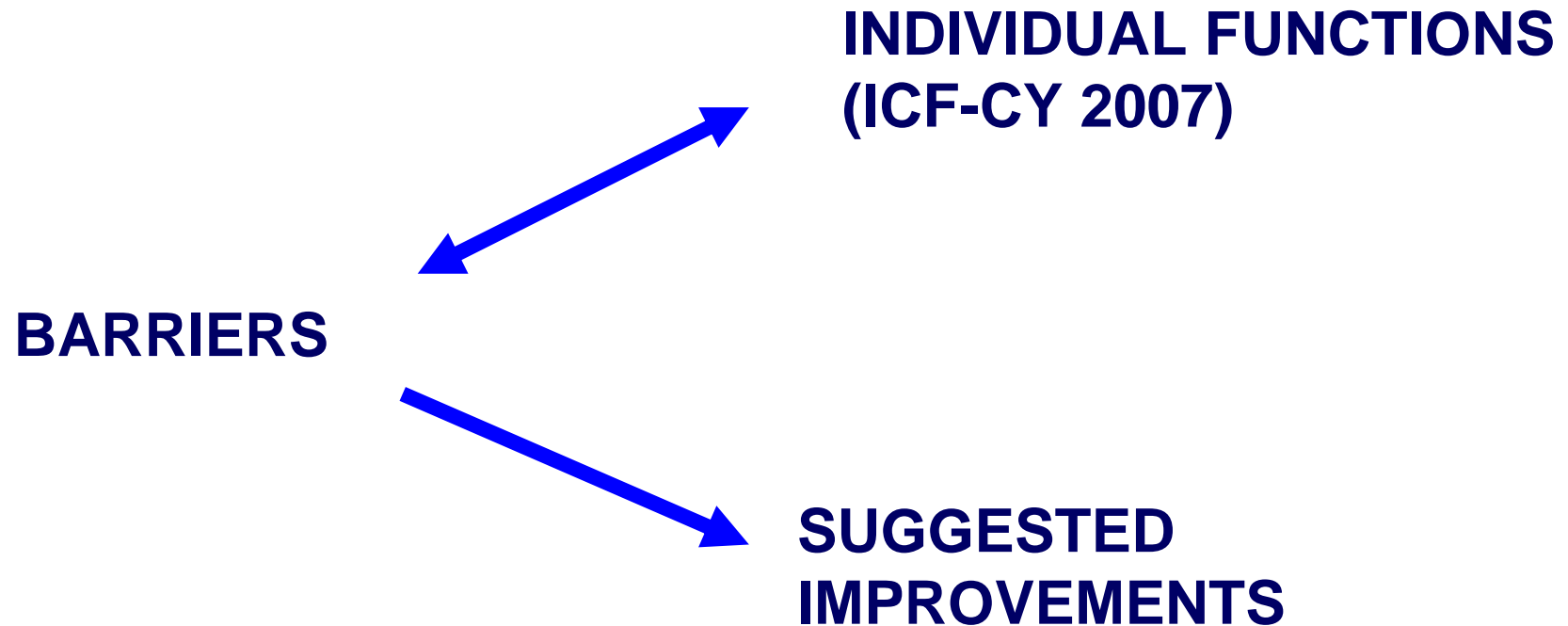


THE GAME: Buzz!™ Junior Monster Rumble

- simple hardware interface
- many different activities



GAME ANALYSIS

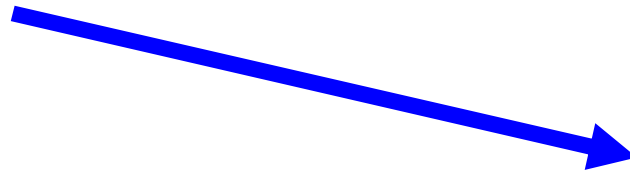


GAME ANALYSIS

Number of controls
(1 to 5 buttons)

Fine hand use

Hand-eye coordination



Good accessibility!!
Maybe with different
hardware interfaces

Game Artificial Intelligence
could:

- reduce the possible options
- control some functions

GAME ANALYSIS

To reduce the possible options



ALL WRAPPED UP

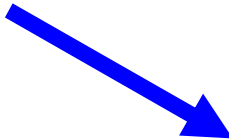
GAME ANALYSIS

Timing

- no time constraints
- maximum time
- fast action
- rhythm
- synchronization



executive mental functions
complex movements



Game Artificial Intelligence
could:

Reduce time constraints.
Increase maximum time
Slow down activities



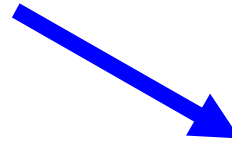
GAME ANALYSIS

Attention to:

- defined part of the screen (fixed or moving targets)
- moving characters



focusing attention,
dividing attention



Changes in the interface
probably change the
playability ... But ...

Some tricks could reduce
distracting stimuli

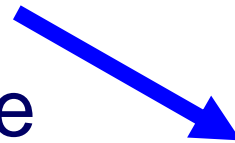
GAME ANALYSIS

Types of environmental interactions:

- different positive score
- negative score
- limited set of “lives”



making decision
planning



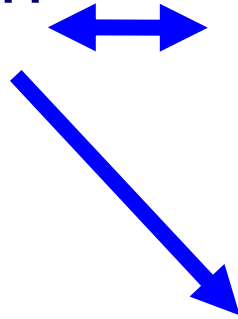
Game artificial Intelligence
could:

- add more positive targets
- reduce negative targets
- give more lives

GAME ANALYSIS

Movement direction
control

- up and down
- right and left
- direction
- direction and speed



higher level cognitive functions
space and movements perception

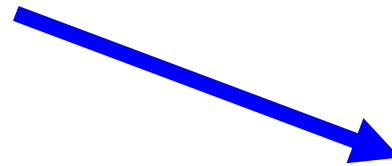
Additional visual and
auditive stimuli

GAME ANALYSIS

Colors recognition
- color and position
- only color
Short term memory
Counting
Concentration



Color vision
Higher mental functions



Additional auditive and
visual stimuli

CONCLUSIONS

- Game Artificial Intelligence can be used to improve accessibility
- Customization and learning capabilities of the game can be used to tailor the game to match the player's ability

CONCLUSIONS

- Accessibility level obtained cannot satisfy everybody, we still need “special games”, adaptation and special interfaces
- The range of players could be enlarged
- Cognitive disabilities are more challenging than motor impairments

What is going on?

EXPERIMENTAL TRIALS

- In a rehabilitation centre (A.I.A.S. – Massa – Italy)
- 14 users asked to be involved in the trials
 - age 6 to 16
 - Children that need to play (due to context or limitations in functions)
- 8 users involved in a first cycle of testing
- No educational or rehabilitative objectives, **ONLY PLAY!!**

What is going on?

EXPERIMENTAL TRIALS

- A presentation meeting with parents
- 4 play sessions (one a week)
- Sessions driven by educational professionals
- Questionnaire to be filled in by educators to explore difficulties met by children
- Adaptation of the hardware interface to single and multiple switches.
- A final meeting with parents to collect feedback on the experience

What is going on? EXPERIMENTAL TRIALS

Some preliminary observations

FROM

our research question: theoretical results
can be supported by experience?

TO

their aim (A.I.A.S. Rehabilitation Centre):
LET CHILDREN PLAY!!!

What is going on? EXPERIMENTAL TRIALS

Some preliminary observations

FROM (the idea)

accessibility is related to performance!

TO (a new question)

is accessibility related also to amusement?

Planned activities

Going on with trials and results dissemination: what have we learnt from children?

Going on with this approach: accessible mainstream videogames.

Thank you for your attention



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