# "SplashGame": a ludo-educative application based on Genre and Verbal Interactions concepts

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**Abstract.** This paper focuses on interactive applications design. We consider that interactive applications' acceptability can be improved by enhancing their genre dimension, which is inherent in any communication activity. Moreover, we notice that human cognitive predisposition to follow principles of verbal interactions can be helpful to structure the interactions that occur between a user and an interactive application. This paper presents design elements derived from the two former theories and illustrates how these elements are used to describe interactions of a ludo-educative application.

**Keywords:** genre, verbal interactions, design, experimentation.

## 1 Introduction

This paper focuses on the design of interaction systems that are conveyed by interactive applications[1]. We name interaction system a set of interactions that occur between a user and the interactive application he/she is using. We consider that enhancing the genre dimension in interactive applications design aids supporting their acceptability [2]. Indeed, genre can be viewed as a set of rules supported by communication structures, which matches to designers' communication intentions and fulfils users' expectations [5]. Moreover, we aim at basing our purpose on the verbal interaction theory [1], which identifies three dialogical levels of inter-actors communication: interaction, sequence and exchange.

In the second section, we propose concepts derived from these points of view, and organize them within a schema that can be used for the description of interactive applications. In the third section, the named concepts are succinctly illustrated thanks to an experimentative design process.

[1] We distinguish leisure oriented interactive applications and production applications which support a human activity in a professional context.

## 2 Design elements

The model we propose [3], provides designers with a language for genre interactive applications description. It results, on the one hand, from a mixed survey of three levels of the genre study: a theoretical level (genre theory), a specific genres level and a products level, and on the second hand, from concepts derived from verbal interactions principles applied to user / application interactions.

An application treats a domain, which can be either formally (e.g. ontology) or informally described. The genre specificity of an application is defined by a communication intention, which can be considered as expressing the justification of the system usefulness, and associated communication structures which organization is stated in scenarios. The resulting structures, aiming at a specific goal, concern rhetoric. They participate in the implementation of the intention.

On the one hand, among these structures, we stress:

- rhythm (e.g. binary, ternary or enumerated),
- analogy figure (e.g. metaphor, comparison or personification) and
- utterance, made up of an enunciative authority, it defines the author of the statement, and an enunciative mode, it defines the form of the statement expressed by various media (e.g. the narrative one, the explanatory one, the descriptive one, the injunctive one or the argumentative one)

that result from traditional rhetoric and genre theory.

On the other hand, the interaction units are dynamic communication structures that describe interactors' allowed actions. These units, partly derived from the verbal interactions theory, are hierarchically organized in session (the whole interaction), activities (they are genre specific: exercise, research engine, node navigation, buying activity, mission game…) and exchanges (e.g. notification, selection, interrogation, move…) which in turn are composed of interactors interventions.

The interaction scenarios satisfy an intention, they use and organize the communication structures, to be carried out by interactors in order to fulfil this intention.

Depending on the interaction units where they behave, interactors participate to a place system in which they play a precise role. Their interventions are then materialized by the means of capabilities associated to their role.

Despite the fact that genre taxonomy is not stable in time, the former presented model do not depend on any specific genre, it allows designers to use a transversal set of properties to describe interactive applications belonging to any genre.

## 3 Experimentation

The project was initiated as we were requested by an association of lifeguards working in the beaches of Anglet, seaside city located on the Atlantic coast of south-western France. Each year, this association organizes workshops in Anglet's schools in order to make 8 to 10 years old pupils more aware of the risks to health that can occur when going to the beach during holiday season (May-September).

The association wanted to strengthen its action allowing young pupils to consolidate and evaluate knowledge acquired during the workshops. Our contribution consisted in the design of an interactive application that obeys to ludic and educative principles.

The domain covered by « Splash ! » is organized as follows:

- topological components of the beach (e.g. `H-LandingPlatform`): label, location, description,
- risks at beach (e.g. `ToBeLost`): label, rules to be known,
- beach vocabulary (e.g. `Current`, `Flags`): label, description,
- beach actors (e.g. `BeachGoer`, `LifeGuard`): label, function.

The scenario that organizes session level derives from ludic genre. User plays the role of a lifeguard trainee, which has to keep the beach under surveillance. User can move the trainee over the beach in order to achieve different activities. The goal of the session is reached when the activities are completed successfully.

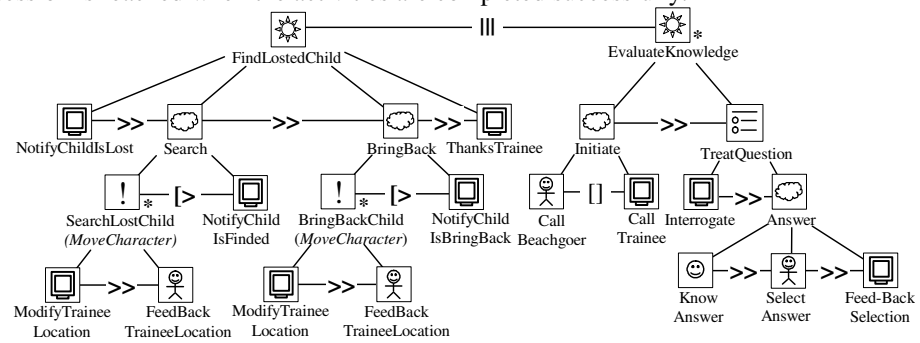


**Fig. 2**: Scenario of the `FindLostChild` mission[2]

Most of the scenarios that organize activities derive from ludic genre: they organize missions. Each mission is associated to one risk; it ends successfully when the rules associated with the risk are mastered. Mission's success acts like an indicator for user's pedagogical evaluation. Missions consist of intervention exchanges, which occur between user and the application. Interventions are performed in accordance with the interactors roles capabilities, as well as depending on authorized protocols.

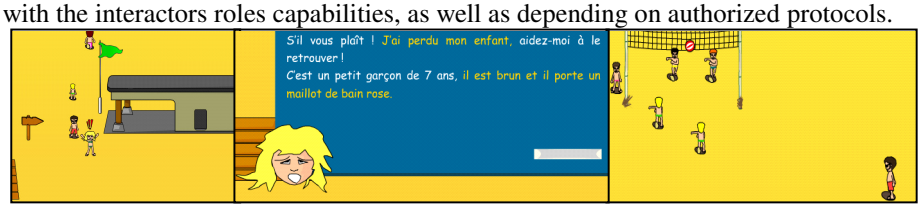


**Fig. 3**: Screen shots of the `NotifyChildIsLost` intervention

The `FindLostChild` mission, presented in (Fig. 2), is bounded by the `NotifyChildIsLost` opening intervention and the `ThanksTrainee` closing intervention, both performed by the application. In the `NotifyChildIsLost` intervention, the lost child's mother speaks using an injunctive « *`Please! I have lost my son, help me to find out him!`* » and then a descriptive mode « *`He is a 7 years old boy. He has brown hair and wears a pink swimsuit!`* » (Fig. 3).

[2] Presented with an extension of the Concurrent Task Tree notation [4].

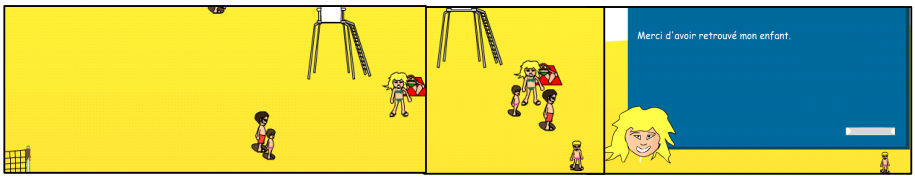


**Fig. 4**: Screen shots of the `NotifyChildIsBringBack` and the `ThanksTrainee` interventions

The sequential (`>>`) `Search` and `BringBack` sub-missions both consist of an iterative (`*`) specialized *`MoveCharacter`* exchange borrowed from the ludic genre. They are respectively interrupted (`[>`), when the child is found or when the child is brought back to the right place, that is to say the life guards watchtower (Fig. 4).

Simultaneously (`|||`), while performing the mission, the trainee can be evaluated thanks to the `EvaluateKnowledge` activity borrowed from the educative genre. This activity can be initiated (`Initiate`), either by the user, thanks to the trainee's capabilities (e.g. `CallBeachgoer` or `WhistleBeachgoer`), either (`[]`) by the application, thanks to a beachgoer's capabilities (e.g. `CallTrainee`). In both cases, the initiating intervention leads to a multiple choice questionnaire like exchange, which questions are asked by the beachgoer. The `Initiate` mechanism is also used in order to notify the trainee of non mastered knowledge.

Material given to « Splash! » design teams to carry out the applications design and coding consisted in the former presented model, guidelines, as well as referential documents about educative, ludic and encyclopedic genres. The authors of this paper observed the use of this material during the design process. Differentiation between the different genres has been clearly appreciated and respected during the whole design process, as well as the focus on interaction's hierarchy. Ludic and pedagogic intentions have been systematically considered in each communication structure. However, the suggested CTT notation for interaction description was considered quite difficult to use. An evaluation of product usage will be done by July 2006.

## 4 References


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