Actability Requirements Specification using the Concept of *VERSTEHEN* : The case of a Tourism Information System

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Abstract
In this paper we outline the application to a tourism information system (TIS) of a requirements specification approach based on Information Systems Actability Theory (ISAT). The main ISAT concepts entering this requirements specification methodology are described, and then used for the analysis. We introduce the concept of *Verstehen* (understand) as a further methodological tool for designers, grounding this concept in ISAT. We argue that when designers model an IS through ISAT, they should try to understand the meanings that users give to their actions in the actual business context.
We briefly describe the functionalities of a TIS system, and the social context within which users/tourists act and interact through the IS. Using the ISAT requirements specification methodology augmented by the concept of *Vertstehen* we outline a general requirements specification approach for the design of a TIS from a Language/Action Perspective.

Keywords: Requirements, Actability, Social Action, Verstehen, Tourism Information System.

1 Introduction

The Language/Action Perspective (LAP) has received much attention in the Information Systems (IS) field. The original idea behind LAP was to formulate social, norm-based and interpretative alternatives of how language is constituted in social life, and to analyze the implications of this view for the design of IS (Lyytinen, 2004). Over the years, LAP has stimulated the development of several IS design methodologies. Among these methodologies, Information Systems Actability Theory (ISAT) is of particular relevance to business process modelling and redesign. (Ågerfalk, 2003).

ISAT theorists have developed a methodology for IS requirements specification. We find that the major interest of this methodology resides in its concept of action-elementary message, and in its use of the concept of social action. ISAT is of particular importance because it links the actors closely with their actions. In a sense, this operation makes the various users of an IS accountable to each other. We intend to use ISAT to achieve the goal of designing an accountable and configurable IS (from the user's perspective). This goal is an important part of our "IS design philosophy" at the Laboratory of Informatic Engineering and Organizational Analysis (LIIAO), University of Trento. These themes have been partly described in previous papers (Jacucci et al, 2002 ; Jacucci, 2005).

We consider acquiring skills on ISAT to be an important objective, and it is pursued in this paper, where we briefly outline a requirements specification process based on ISAT in the case of a Tourism IS. The LIIAO has formed partnerships with a number of local Associations for Tourism Promotion (APT) in the Province of Trento and in other Provinces of Italy. The need to design a web-based application for Consumer Defined Holiday Packages (CDHP), has served as a first arena in which to test ISAT methodologies.

The paper is organized as follows: 1. A description of the general concepts and of the requirements specification methodology in ISAT; 2. A discussion of the concept of social action and *Verstehen* in ISAT; 3. A description of TIS and CDHP; 4. An outline of the requirements specification methodology; 5. Brief discussion and conclusions.

2 Main concepts in actability theory

Information systems actability is defined as «an information system's ability to perform actions, and to permit, promote and facilitate the performance of actions by users, both thorough the system and based on information from the system, in some business context» (Ågerfalk, 2003). The ISAT design background is a business-oriented approach and user-centred design. The main assumptions are that: (a). *conceiving information systems as information action systems is a key factor in the success of system development* and (b). *information systems are subject to change at an ever-increasing speed* (Ågerfalk, 2003).

The concept of *information action system* is grounded in the work of the sociologist Max Weber and on his notion of social action (Weber, 1922). According to ISAT, humans act in order to achieve ends. In other words, actors have means/ends rational behaviours (instrumental actions). An action is considered a social action when its meaning, as intended by the actor, takes account of the behaviour of others, and is thereby oriented in its course. A social action is an intentional action oriented towards other people's behaviour.

In LAP, actions are related to speech acts. The main assumption of the speech act thesis is that communication is a form of action. Thus a message (a speech act - utterance) comprises both a propositional content and an illocutionary force. The propositional content is what is being talked about. The illocutionary force is represented by the verb (action mode) attached to the propositional content.

This conceptualization of the speech act opens the way for a pragmatic perspective to be taken on Information Systems. ISAT[1] envisages information systems as having two pragmatic dimensions: (1) the communicative/social action within the message transfer and (2). the communicative/social action based on the transferred message. Both types actions are considered to be social actions according to Weber's definition.

2.1 Action-elementary messages

The concept of elementary-message (Langefors, 1966) has the purpose to represent an elementary fact about the world (e.g. the price of a product). The need to consider both the propositional content and the action mode induced the ISAT authors to extend the concept of elementary-message: while an elementary-message is the smallest unit that carries information, an action-elementary message is the smallest unit that carries an action mode. An ae-message therefore consists of one or several elementary-messages augmented with an action mode (Ågerfalk, 2003).

An ae-message represents the notion of speech-act in ISAT. Every ae-message has to be grounded in the context of social action, and it has to be viewed through the lens of pragmatics. This is to say, both the speaker and the listener are actors in communicative (social) actions. Every speech act produced by a speaker has at least one intended function directed toward at least one listener. We thus have a social action related to the ae-message transfer and another social action related to the interpretation of the transferred ae-message.

Propositional Content	***e-messages***			
	ID	***Object***	***Property***	***Time***
PC1	M1	Product	Description	As of Now

[1]ISAT uses a generic model of social action valid for both instrumental and communicative actions (Goldkhul, 2001).

	e-messages			
	M2	Product	Price	Valid Until
	M3	Salesperson	Name	As of Now
	M4	Customer	Name	As of Now

Table 1: A propositional content structure consisting of four e-message structures, adapted from Ågerfalk (2003).

Table 1 shows the possible propositional content of an ae-message composed of four elementary-messages. The concept of the ae-message adds an action mode to the propositional content, plus some other categories, such as the speaker (communicator), the performer (who performs the action on behalf of the speaker) and the listener (interpreter). Below we give an example of a generic ae-message related to a business offer. Several examples of ae-messages are provided in Ågerfalk (2003).

ae-message type	*Communicator*	*Performer*	*Prop. Content*	*Performance Time*	*Communication function*	*Intended Interpreter*
- AE1 - Business Offer	Sales Department	Salesperson	PC1	As of performance	Offer	Customer

Table 2: The ae-message structure for a generic business offer, adapted from Ågerfalk (2003).

The view on the concept of ae-message set out in this section will be used in the requirements specification methodology.

2.2 Requirements specification in ISAT

The design of information action systems usually begins with business descriptions. In ISAT these descriptions are directly linked with information systems modelling (Ågerfalk et al, 1999). ISAT requirements specification is then concerned with three main questions:

1. What ae-messages have to be sent to achieve the desired business effects?
2. For each ae-message, what are its propositional content, communication functions, communication effects, communicator and agent, intended interpreters; and what information from previously sent ae-message is required to formulate this one?
3. What computer support is required to formulate and send the ae-message?

The ISAT requirements specification requires answers to these three questions. We then need modelling tools and descriptions of use situation contexts. The Business Action Theory (BAT) model developed within ISAT divides business interaction into six generic phases (see Goldkhul and Ågerfalk, 1998, for details). Another well-known model is the Action Workflow (Denning and Medina-Mora, 1995). This model can be used to describe a business interaction between a customer and a "performer". Action Workflow divides a business interaction into four phases.

- *preparation*: the customer makes a request, or the supplier makes an offer;
- *negotiation*: the parties establish a mutual agreement of conditions of satisfaction;
- *performance*: the supplier declares that the undertaking is complete;
- *acceptance*: the customer declares satisfaction.

Diagrams are also needed to describe the business process and to model the IS. ISAT uses so-called 'action diagrams', which explicitly describe the various actions involved in a business process, and how these actions are related to each other. These diagrams also take account of actions performed both by human actors and by IS, and they also outline interactive, consequential, and automatic usage situations. For more information about these diagrams see Ågerfalk et al. (1999) and (Ågerfalk, 2003).

3 The problem of subjects' intentions in the LAP arena

We have found a major shortcoming in the ISAT methodology's concept of social action. This shortcoming can be related to recent discussion on the intentionality of action that took place at the international workshop on Communication and Coordination in Business Processes 2005, held in Kiruna, Lapland, Sweden on June 22, 2005, on the occasion of the 2005 LAP conference, which one of the present writers attended. During that discussion the need for the concept of intention in the LAP conceptualizations of action was questioned. In that they are considered to be unobservable mental states of human actors, the subjective intentions behind actions seem very difficult categories to handle (Clarke, 2005).

ISAT appears to use the notion of intention in relation to the concept of social action. A social action is related to the meaning intended by actors. Intentions are then related to the subjective meaning of actions. The question thus becomes 'how can these intentioned meanings be observed in ISAT?'. Or better, 'how can the subjective meanings of actions for the actors be observed?

3.1 Intentions and understanding

Our answer is that intentions cannot be observed in the same way as natural facts awaiting an explanation. During the nineteen century, German sociology constructed the methodology of the social sciences differently from that of the natural sciences.[2] In some sense the long debate on the peculiarities of the social sciences, as distinct from the natural sciences, ended with the work of Weber.
Weber rejected the positivist contention that the cognitive aims of the natural and the social sciences were basically the same. Against the positivists position, Weber took the stand that man, in contrast to things, could be understood not only in external manifestations (the behavior), but also in the underlying motivations (Coser, 1977). Weber's main distinction was between the concept of explanation (the German word *Erklären*) and the concept of understanding (the German word *Verstehen*). Thus for Weber we do not want to observe social actions (behaviour). Rather, we seek *to understand* the intended meanings (underlying motivations) of social actions in order *to explain* a social phenomenon.

Raymond Boudon (1984) has proposed a simple formula to show how this method works. A general social phenomena **M** (e.g., one resulting from interactions between sellers and customers) has to be interpreted as a function **M(mi)** of several individual social actions **mi**. The **mi** can be defined as a function **mi(Si)**, adaptive in situation **Si** for actor **i**. Also **Si** is a function, defined as **Si(M')**, where **M'** are macro-social data (e.g. the national economic situation, religious or cultural beliefs etc.). This method is usually known as "understanding sociology" (*verstehende soziologie*) and should be considered as the Boudonian function **M {m [S(M')]}**.

The concept of *Verstehen* lies at the **mi (Si)** level. For Weber, scholars interested in the intentions of social action must understand **mi(Si)**, the social action in the situation. Understanding is not a mysterious act by the researcher; we all perform this type of act every

[2]This also reflects a major distinction between positivist sociology and historical sociology.

day. When we have sufficient information about the situation (of course, we observe in order to collect information, e.g. by means of ethnographic research), we are able to understand the intended meanings of other people's actions. Thus, researchers have understand the social actions of subjects when they may conclude that, in the same situation, they would have acted in the same way (Boudon, 1984). By means of this method, the "unobservable" intentions of users or clients actions are taken into account by ISAT designers. A first attempt to ground the concept of *Verstehen* in ISAT will be the main theoretical contribution outlined in this paper.

3.2 Grounding the concept of *VERSTEHEN* in ISAT

As a matter of fact, ISAT already uses the formula M=M{m[S(M')]}, except, in our opinion, for the concept of *Verstehen*. ISAT cleverly links usability design to the social context in which users act. For Ågerfalk et al (1999) how well systems serve their users' needs and interactions must be judged in the light of the social context in which users act. In the Weberian/Boudonian formula, the social context is represented by the function S(M') and the users' actions by the function m[S(M')]. The results of generic business interactions undertaken on the basis of an information action system (the phenomenon we want to manage) should therefore be considered as the function M{m[S(M')]}. If we want to judge usability (users interactions) in light of the social context we must endeavour to understand the action in the situation m[S(M')]. An example may aid understanding of the point, with the help of Tables 1 and 2.

We consider the business interactions between a holiday sales department, and a customer/tourist. These business interactions should be considered in light of a model, for example the Action Workflow. We restrict our discussion to the preparation phase. In Table 1 we can put a product (a holiday), a description of the product (Hotel category, services etc.) and also its price. A sales department (i=1) offers this holiday on a web-based IS. Offering this product is a communicative/social action within a sign transfer. As in Table 2, the sales department (communicator) offers (communication function) a holiday (PC1).

A tourist (interpreter) visits the supplier's web-site in order to book a holiday. The resulting interactions between the seller(s) and the tourist, mediated by the IS, is the social phenomenon M that as designers we must understand and manage. The social action m2 of a user/tourist (i=2) is the function m2(S2). S2 refers to the situation of a tourist who wants to book a holiday via an IS. In the situation S, we must consider other things as well, for example personal values, goals, ready-to-end means (e.g. the actor's economic situation). The situation is itself a function of macro variables such as cultural values (e.g. the idea of sustainable tourism) and in general the normative structure of society. If we want to manage all the business interactions simultaneously, we must understand several user actions in the social context m2(S2), ..., mn (Sn).

The business interaction results jointly constitute an aggregate phenomenon M composed of several actions mi (i=1,2,....n). The business context (S) is partly a constrictive framework of actions (as related to macro social variables M'), and partly something that depends on the actors' local situation (as related to S). The question is now: are we able to manage the aggregate phenomenon M? As will be made clear in the next section, the concept of *Verstehen* helps us to answer this question.

Function term	***Elements of the analysis***

Function term	*Elements of the analysis*
M	Business interactions' results in general [from the outcome of business interactions via an IS as instrument for communication and action]
m	Social Actions [shaped within an information action system which permits, promotes and facilitates the performance of actions by users – Actability]
S	Generic business context [actors' economic situation, values, goals, information, ready-to-hand means etc.]
M'	macro social variables [e.g. national economic situation, cultural beliefs, information technology availability]
i (1,2,....,n)	Index for actors (1,2,..n) and related situations [the last as related to S]

Table 3: The terms of the Weberian/Boudonian function M{m[S(M')]} for managing business interactions in general.

3.3 The "truth" about ISAT and *VERSTEHEN*

We have not been exactly correct to that ISAT theorists have not taken account of the concept of *Verstehen*. In a very interesting paper, Goran Goldkhul (2001) puts forward a similar concept: that of comprehensibility. Goldkhul writes that «when observing other people's behaviour we understand what they are doing». This is exactly what Weber says about the "understanding sociology": when sociologists (read 'designers') have sufficient information about the situation, they are able to understand the intended meaning of other people's actions (read 'users' actions'). Understanding what users are doing in the situation is what the concept of *Verstehen* should mean for ISAT.

Goldkhul did not link *Verstehen*/comprehensibility to the work of designers. According to Habermas (1984), he considered that that the speaker and listener understood[3] each other if the utterance (propositional + illocutionary) was comprehensible. If the listener did not understand what the speaker said, it was impossible to act in accordance with what was being said. In addition, Goldkhul criticized Habermas on the point that this comprehensibility could not be restricted to communicative actions. For Goldkhul even material actions (then social action in general) must be comprehensible between participants.

We can now complete the circle. Goldkhul seems to extend the notion of the comprehensibility of communicative action to include the Weberian concept of social action. This extension serves the ISAT concept of information action systems: social actions performed by actors via an IS must be comprehensible, the goal being to reach common understanding between actors. Thus if we want to be Weberian we must distinguish between what relates to designers (the methodological principle of *Verstehen*) from what relates to users (achieving the goal of common understanding in a business context). On a Weberian view, achieving common understanding could be an intended meaning of the users' actions, not what shapes (every) social action in general. From a Weberian perspective, several other intended meanings and motivations may shape actions.[4]

[3] That of comprehensibility is one of the four Habermasian (1984) validity claims of a communicative action.

[4] For example Weber stressed that the intended meanings of the first modern capitalists were religious motivations.

From a designer perspective, the *Verstehen*/comprehensibility concept can be very useful when considered a way to explore business interactions and understand the intended meaning of mi(Si) users' actions in a complex business context S(M'). We claim that the Weberian concept of *Verstehen* should be adopted in ISAT modelling. The concept of *Verstehen* is a powerful methodological tool that ISAT designers should use in requirements specification. Only by using the Weberian concept of *Verstehen* can we (as designers) judge usability in the light of the social context in which users act. Moreover, by means of this concept we can avoid the designers' problem of how to observe users' intentions. We give an example of this situation in a following section.

We will solve also the *Verstehen*/comprehensibility dilemma in ISAT from a Habermasian perspective. In the third chapter of *The theory of communicative action,* Habermas discusses a *Verstehen*/comprehensibility mechanism.[5] For Habermas, a communicative actions theory is able to solve the problem of how the actions of several actors can be linked together. Thus, in business contexts we have a one (seller) to one (customer) interaction only in an ideal situation, although in these contexts it is probably more common to find a one (seller) to many (customers), or a many (sellers) to many (customers) situation.

The *Verstehen*/comprehensibility mechanism enables several communicative actions by several actors to be linked together: it serves to synthesise several communicative actions. The Weberian *Verstehen* serves to synthesise several social action m1(S1), m2 (S2), ... mn(Sn). In fact, here Habermas has simply applied the Weberian *Verstehen* to the theory of communicative actions. Thus, *Verstehen* will enable the designer to understand the intended meanings of several users related to an aggregated phenomenon. The outcomes of business interactions (M) are then represented by the synthesis of several social actions m(S). From this point of view, the Weberian *Verstehen* does not contradict the user-centred perspective of ISAT.

4 The case of tourism information systems

Internet technology has changed the nature of travel business interactions. Tourists have access to more information than ever before Moreover, the World Wide Web is an ideal medium for promoting tourism products. This trend does not affect simple travel products like hotel rooms alone. As the complexity of products increases, so new and more complex ways to manage on-line business interactions are needed. This complexity can be partitioned into four level of product complexity:

- pure tourism information
- simple products
- supplier-defined holiday packages (SDHP)
- consumer-defined holiday packages (CHDP)

A *holiday package* is the combination of a set of holiday services that together make up a complete holiday trip. The idea of (CDHP) is based on the concept of SDHP. A system at this level enables the customer to pick a SDHP and adapt it even further to his/her personal needs, thus constituting the first step towards CDHP. Customization options are usually price, departure time and length of stay (Pröll, 1998a).

4.1 A brief description of a tourism information system

A Tourism Information System (TIS) is based on intranet, extranet and internet technology. Figure 1 briefly explains the functional components of an outstanding example of TIS.

[5]Which seems to be different from communicative action comprehensibility between speaker and listener.

The DataBase stores a large amount of tourism information , and it can be managed consistently. The functionalities of the intranet components of a TIS are accessible to the system provider only. In the case of large TIS, the entire system (including Internet and Extranet) can be customized by the system provider in various ways. The public internet is related to the system functionalities accessible by tourists, who are therefore faced with several kinds of information and functionalities, as mentioned before, due to the complexity of products. The extranet serves the purpose of managing TIS content. Each tourism information provider is able to actualize and extend its tourism information and products by means of a decentralized maintenance approach able to handle the dynamic nature of (some) tourism information (Pröll, et al., 1998a and 1998b).

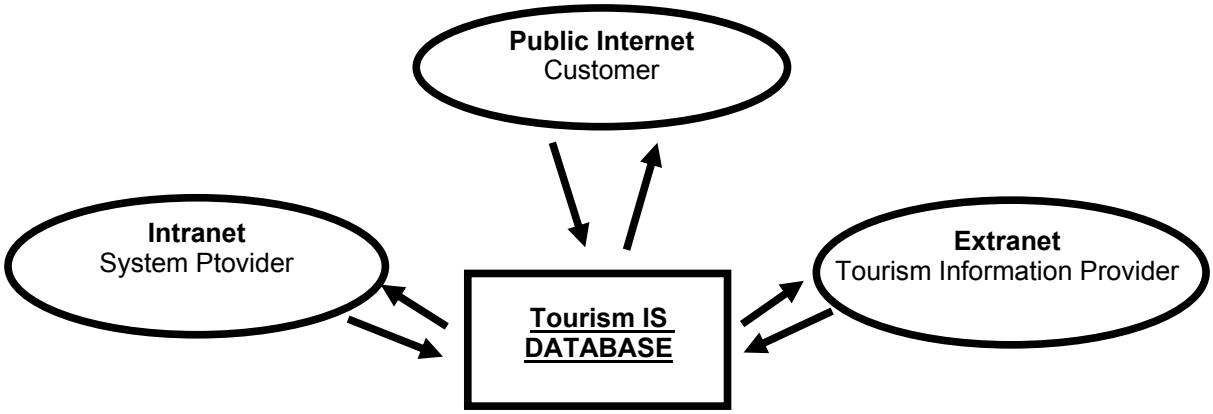

Figure 1: Functional components of the TIScover Tourism Information System (adapted from Pröll at al, 1998b)

When designing a TIS (or at least for the CDHP) we pursue three goals:
1. begin to add a Language/Action Perspective to this complex and structured view of TIS
2. design a TIS accountable and configurable from the user's point of view
3. provide some tourism web-based applications for small actors in the tourism market, for example the local APT (this implies cheap solutions, which are not always provided by large TIS).

Here we begin to develop point 1. as a first exploratory step in achieving goals 2 and 3.

5 ISAT requirements specification and *VERSTEHEN*

We now test the *Verstehen* concept in business interaction modelling and in requirements specification. Recall that *Verstehen* does not simply mean understanding other people's behaviour. Instead, we need to have *sufficient information about the situation* to conclude that in the same situation, we would have acted in the same way. An (ideal) example should clarify what information is needed and how *Verstehen* can increase understanding of business interactions.

The tourism literature usually draws a broad distinction between mass tourism and responsible tourism (Canestrini, 2001). Responsible tourism is a relatively new and non-marginal phenomenon,[6] closely related (among other things) to the emergence of more

[6]For example ecological tourism has increased at a rapid rate in recent years, becoming one of the main branches of the tourism business.

sustainable ways of life and consumption in western societies. Cultural beliefs about more sustainable lifestyles provide a clear example of what we called macro-social variables (M'). We can put mass and responsible tourism at the two extremes of a continuum representing the complexity of the tourism field: between the two extremes (mass and responsible) lie several hybrid situations.

O----------O
Mass Tourism **Responsible Tourism**

Figure 2: Continuum between mass and responsible tourism

The problem is that we must cope with at least[7] two different kinds of tourist with some (not all) different values and goals. By way of example, we can think that while mass tourists are motivated by the need for entertainment and recreation only, responsible tourists are driven by certain responsibility/sustainability values as well. We now have important information with which to understand tourists' intended meanings of actions in business interactions.

The Province of Trento (Trentino) lies in the eastern Italian Alps and offers both mass tourism holidays (e.g. kilometres of ski pistes, with hundreds of ski lifts – Propositional Content 1) and responsible tourism holidays (e.g. uncontaminated nature, natural parks and rural tourism – Propositional Content 2). An APT (communicator) in Trentino can usually offer and promote both types of holiday (PC1 and PC2). Holidays should be, and in fact are, managed and offered through a TIS (performer).

Tourists (interpreters) contact the TIS to obtain information about Trentino and perhaps to a holiday. As said, tourists may act according to different values and goals. Thus, if we consider the distinction between mass and responsible tourism important, we must manage the design accordingly.

A drawback may be that the APT does not distinguish clearly between PC1 and PC2 offers, and gives only generic information about holidays (both mass and responsible) in Trentino. The situation S(M') should entail that responsible tourists contact the TIS in order to book a holiday. We can image several situations:

1. a responsible tourist (i=1) judges that the information provided about sustainable holiday offers is sufficiently clear and matches his/her values and needs (S1). S/he then decides to enter a negotiation phase with the holiday provider: this is action m1[S1(M')] by actor 1.
2. a responsible tourist (i=2) does not find sufficient or clear information about holiday offers which match his/her values and needs (S2). S/he decides to ask the holiday provider for more information: this is action m2[S2(M')] by actor 2.
3. a responsible tourist (i=3) does not find sufficient information about holiday offers which match his/her values (S3). S/he decides to stop the interaction: this sis action m3[S3(M')] by actor 3.

In this case, the business interaction results are an aggregate phenomenon composed of actions m1, m2, m3 (M=m1S1+m2S2+m3S3).[8]

We find that common understanding arises between speaker and listener in the first case. In the second case, the common understanding will come about only if the listener (i=2) asks for more information. In the third case the common understanding does not happen at all. All

[7]Hybrid situations, and of course variables like the age or the annual income of tourists, affect tourism business interactions.
[8]For Boudon the aggregate phenomenon M is not the simple sum of actions

three cases are social actions, so that common understanding is not what shapes social actions in general.

The concept of *Verstehen* should instead be used by designers in all three cases. The issue is not how actors (i=1, 2 or 3) reach common understanding but how designers understand the subjective intended meanings of social actions in the situation. Designers are able to understand the intended meanings of actions m1, m2 and m3 because they have collected enough information about the situation. This point can clarified in the third case.

Let us imagine that we are a responsible tourist and our intention is to book a holiday compatible with our sustainability values. On consulting the TIS pages we do not find clear information about the possibility of booking a responsible holiday. We therefore decide not to enter the negotiation phase, and we change our destination. As designers, we have enough information to understand/*Verstehen* that in the same situation/context - S3(M') lack of information about responsible holidays on the TIS - we would have acted in the same way, m3[S3(M')], as the actors (i=3) did. We now have new and very valuable information with which to judge usability in the light of the social context, and to manage business interactions and information action system modelling.

Verstehen is also valid for actions m2 and m1. We understand the intended meaning of action m2 because we have enough information about tourists' values (i=2) and the situational/contextual actor needs for more information (the action m2[S2(M')]).

Thus apparent is the power of the *Verstehen* concept for design. Using the same methodological concept we can take into account several intended meanings of actions by several actors (i=1,2,...,n). The same concept can of course be used to understand the intended meaning of actions by mass tourists and responsible tourists. Given the claim by ISAT that social actions must be comprehensible between actors (Goldkhul, 2001), we are unable to manage all the social actions in the situation described above. ISAT's comprehensibility fails to manage action m3[S3(M')], thus failing to satisfy the user's need.

Verstehen also serves to synthesise all the actions which shape results of the business interactions, M{mi[Si(M')]}**.** By means of the same concept we can describe the complexity of business interactions among several actors (with their goals, values etc.) and the model the information action systems. In particular, we can now handle some situations (e.g. S3) where common understanding between actors does not arise and correct them.

5.1 Outline AE-messages for the CDHP

On the basis of the above considerations, we now outline a general requirements specification according to ISAT for a CDHP application. As previously noted, the first step toward this application is the chance for the tourists to extend the SDHP. The CDHP interactive usage is based most on a public internet where tourists can customize their holidays. In specifying the requirements for this application we use the Action Workflow model.

- PREPARATION

In the preparation phase, the tourism information provider (communicator), the Trentino APT in our case, offers some SDHPs (propositional content X) through a TIS (performer). APTs can usually provide both responsible holidays (**PC2**) and mass holidays (**PC1**).

According to our understanding of the tourists' actions and intended meanings, APTs must make it clear that tourists can customize both responsible and mass holidays. The APT will

thus be able to meet the needs of (at least) two kinds of interpreter: responsible and mass tourists. We consequently have two ae-messages related to two different kinds of propositional content and interpreter. In the preparation phase both ae-message 1 and 2 must be generated, because the tourist type (mass or responsible) is still unknown.

ae-message type	*Communicator*	*Performer*	*Prop. Content*	*Performance Time*	*Communication function*	*Intended Interpreter*
- AE1 - Business Offer	APT	TIS	PC1 (mass holiday)	As of performance	Offer to customize	Mass tourist
- AE2 - Business Offer	APT	TIS	PC2 (responsible holiday)	As of performance	Offer to customize	Responsible tourist

Table 3: Business offer ae-messages with two different propositional contents and directed towards two different interpreters.

- NEGOTIATION

Tourists may then decide to enter the negotiation phase and customize a mass or a responsible holiday. They are presented with an interface through which they can customize the holiday (only some generic fields, such as price, length of stay, and minor services). We can image, for example, an interface based on some HTML forms to be compiled (**PC3**). The compiled forms are then submitted by the tourist for a search in the Database. This is a request by the tourist to the APT.

ae-message type	*Communicator*	*Performer*	*Prop. Content*	*Performance Time*	*Communication function*	*Intended Interpreter*
- AE3 - Request resource	Tourist	Tourist	Compiled HTML forms	As of performance	Request	APT

Table 4: A generic ae-message requesting a customized holiday.

A major problem here is that submission of the compiled HTML forms will generate a query to the TIS database. As we will see in the next phase, this query will extract several customized holiday packages from the TIS database according to the SDHP. SDHPs have been previous inserted in the TIS database via Extranet (see figure 1).It must therefore be clear in the query generation whether we have to extract responsible or mass holiday packages from the TIS database.

- PERFORMANCE

When a query is submitted to the TIS database, the system will provide information about several customized holiday packages (suppliers, descriptions, prices, etc.). The TIS (performer) shows the query results to the tourist. Hence we need to generate two different ae-msgs, and we must distinguish between the declaration of mass (PC4) and responsible (PC5) packages intended for two different interpreters.

ae-message type	*Communicator*	*Performer*	*Prop. Content*	*Performance Time*	*Communication function*	*Intended Interpreter*
- AE4 - Declare Resource	APT	TIS	PC4 (mass holiday packages)	As of performance	Declaration	Mass tourist
- AE5 - Declare Resource	APT	TIS	PC5 (responsible holiday packages)	As of performance	Declaration	Responsible tourist

Table 5: Resource declaration ae-messages with two different propositional contents and directed towards two different interpreters.

At this level ae-messages 4 and 5 are mutually exclusive. While ae-message 1 and 2 are both generated in the preparation phase, in the performance phase we now know the meaning of the tourist action. We therefore generate the ae-message 4 if the user is considered to be a mass tourist, and the ae-message 5 if the user is considered to be a responsible tourist.

- ACCEPTANCE

The tourist now examines the customized holiday offers (AE4 or 5). S/he can choose among other actions:
a. navigate through the packages proposed (PC4 or PC5) and check the information;
b. decide to make another customization and return to the customization forms;
c. decide to order a specific holiday package.

In the last case (c) another ae-message is needed: the tourist orders a customized holiday

package (**PC6**). The transaction between the tourist and the APT does not end with this last ae-message. The design must be able to manage the need for online payment and reservation. Since this analysis is a preliminary exploration of both ISAT and of TIS, these problems are not addressed here. We intend to describe these aspects in future papers.

ae-message type	*Communicator*	*Performer*	*Prop. Content*	*Performance Time*	*Communication function*	*Intended Interpreter*
- AE6 - Order	Tourist	Tourist	PC6	As of performance	Order	APT

Table 6: Order ae-message for a holiday package

5.2 Computer support for AE-messages

In the light of the ISAT requirements specification methodology, we now briefly outline the computer support needed to formulate and send ae-messages. One key support is of course the (internet) user interface. When defining the ae-message, we spoke of an interface based on HTML forms, but large TISs propose both HTML forms based interfaces and natural language interfaces (Dittenbach, 2003). We have began to relate our ae-messages definition to the ISAT socio-pragmatic perspective on user interfaces (UI) (Sjöström J. and Ågerfalk P.J.,2004; Sjöström J. and Goldkhul G., 2003). Our analysis of a socio-pragmatic UI, in the case of TIS, is in its initial phase, and it is not yet sufficiently developed to be presented.

A query will be generated in ae-message number 3 (request resource). This query is of course related to the functionality provided by the interfaces (HTML forms are different from natural language interfaces). However, we encountered a major obstacle in the role of the query generated by tourists through the interfaces. This query will extract holiday packages from the TIS database. But our doubt is whether this query really represents the user's intended meanings of actions in ae-message 3 and what should be done to remedy this shortcoming.

6 Discussion and conclusions

In this paper we have outlined a new form of the requirements specification methodology using ISAT for a Tourism Information System. ISAT views IS as information action systems. Here, the concept of action is grounded in the work of Max Weber and intended as social action. According to Weberian methods, researchers must understand (*Verstehen*) the intended meaning of social action.

We have based our business analysis on the concept of *Verstehen* by means of which designers can understand the meaning of user actions. This constitutes our new form of the ISAT requirements specification methodology. What is the original contribution of this paper? What form does it take?

This paper has taken the LAP/ALOIS community as its reference audience. There is a continuing theoretical debate in this community on Information Systems as Information Action Systems, where Action means, from the ISAT perspective, Weberian social action. We have identified a shortcoming in this debate concerning the following question: how can the intended meaning of action be understood? To remedy this shortcoming, we have used the theoretical framework of the ISAT requirements specification methodology augmented with the Weberian concept of *Verstehen* to analyse and interpret real world data. We have apply this framework to TIS + CDHP for local APT and tourists (responsible+mass) in order to understand how this theory works when applied to a case study. Our data analysis has extracted requirements defined in the case study. The interpretation within the theoretical framework has to have an interesting capacity to distinguish among different interpreters and propositional contents. This capacity for distinction by the theory is the main contribution of our paper.

We believe that the our form of requirements specification methodology will improve system usability and transparency to users. In particular, with respect to our own aims, our main interest in LAP lies in

the prospect of using ISAT to design user-accountable and user-configurable information systems. With ISAT augmented by *Verstehen*, we believe, we have come closer to achieving this goal.

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