REFERENCE MODEL-BASED EVENT MANAGEMENT

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ABSTRACT

Events are becoming more and more important for companies as an instrument of marketing communication. The management of events is an interdisciplinary task, addressed in the most diverse fields in practice and in research establishments. Because careful preliminary planning and precise execution are extremely important for events, modeling languages, such as the event-driven process chain (EPC), can contribute greatly to the systematic design of event management systems. Accordingly, this article will make recommendations for an application system and organization design in the form of an EPC reference process model for event management.

KEYWORDS

Event marketing, Event management, Business process, Process modeling, Reference model, Event-driven process chain

INTRODUCTION

In the past few years, events have been enjoying more and more attention in research and practice. As a result, a separate, special branch of service geared to events has developed in which event agencies, trade fair constructors, talent agencies and sound and light engineers are involved in the organization and creation of events. Numerous studies attest a high potential to events as communication instruments and forecast not only quantitative, but also qualitative growth for the event market (Jago & Shaw, 1998; Goldblatt, 2000; The George P Johnson Company, 2002; Müller, 2003; Zanger & Drengner, 2004).

Due to the high significance of events in practice, it does not come as a surprise that the scientific world is now beginning to address the phenomenon of the "event". Noteworthy results have particularly been achieved in marketing and tourism-management (Getz, 1997; Nufer, 2002; Hede, Jago, & Deery, 2002; Lasslop, 2003; Drengner, 2003). One of the most important insights gained by the research done since the end of the 1980s is, that the management of events must be seen as an interdisciplinary task field requiring effective and efficient cooperation between diverse partners. The strategic preparation, as well as the planning and coordination of the execution of an event require professional handling in order to guarantee the

optimal interplay between all participants. Support from modern information and communication systems for this process, summarized here under the term “event management”, appears to be a good idea and offers many starting points (Luppold, 2004).

Up to now however, the design of event management processes, as well as the systematic development of supportive information systems have not occurred, although for several years now, an established approach for the support of a systematic procedure for the analysis, improvement, implementation and control of business processes exists using information modeling (Weber, 1997; Mylopoulos, 1998; Scheer, 1999; Rossi & Siau, 2001; Kilov, 2002; Wand & Weber, 2002; Hay, 2003). It therefore appears wise to make recommendations for application system and organization design in the form of a reference process model. The construction of such a model is the topic of this article.

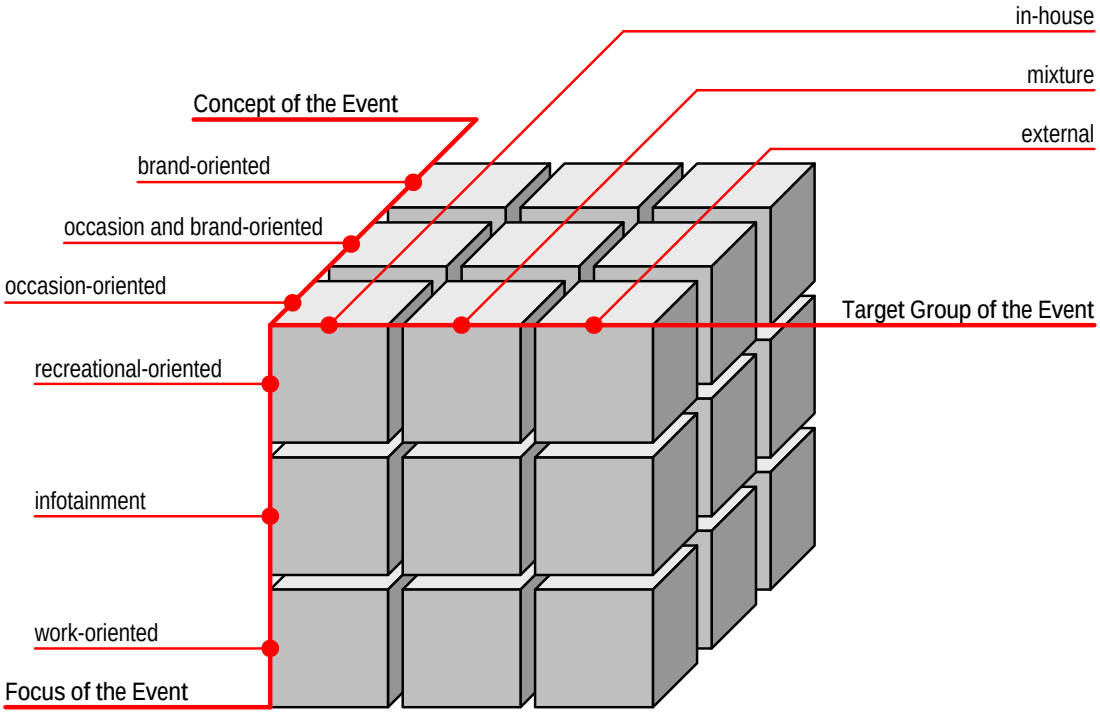
The article is structured in the following manner: We first lay a terminological foundation by differentiating between the terms “event”, “event marketing” and “event management”. After that, we study the event management process, as well as the model-based development of supportive information systems. Following this, we bring the fields “event management” and “reference modeling” together, define the requirements for a reference model for event management and determine the procedure necessary for the creation of such a reference model (construction process). Then, the construction of this reference process model takes place (construction results). We close with a critical discussion of the results and an outlook on future research challenges.

From Event to Event Management

The common and the scientific use of the term “event” do not coincide with each other. Different terms and definitions for “event” have developed in various areas of life and research. In research, this especially leads to communication and comprehension problems. In a first approach, one can understand events as “temporary occurrences, either planned or unplanned” (Getz, 1997, p. 4). In order to emphasize the difference between planned and unplanned occurrences, the term “special” is added to “event”. A special event is understood to be a “one-time or infrequently occurring event outside a normal program” (Getz, 1997, p. 4). Often events are classified, in order to better deal with the term. Thus for example, a one-dimensional classification in “Hallmark events” (traditional events which take place at a certain location, such as e.g. the Mardis Gras in New Orleans) and “Mega events” (e.g. the Olympic Games) is possible (Getz, 1997, pp. 3-4).

A differentiated, multi-dimensional classification of events can be carried out using the categories “target group”, “concept” and “staging of the event” (Figure 1; Nufer, 2002). The first category focuses on the differentiation of events according to their target groups as often found in the literature. Thus, one can differentiate between public events (company-external) and corporate events (company-internal), whereby exhibition events (mixed forms) comprising for example, trade fairs and exhibitions, are also possible. One can also classify events according to the second dimension: in work-oriented and leisure-oriented activities or the way an event is staged, whereby infotainment events (infotainment = information + entertainment) are classified between both characteristics. The third category refers to the concept upon which the event is based. Here, the question is asked as to whether the event marketing is carried out brand or occasion-oriented, or whether both aspects apply. The activities connected with the planning and control of events is generally summarized under the terms “event marketing” or “event management”. In differentiating between these terms the literature argues that event marketing deals with the marketing-theoretical foundations of the phenomenon “event” and in doing so, observes aspects such as visitor motivation and perception or effects on image. Event management on the other hand, emphasizes questions of planning, as well as the quality, personnel and risk management for the event (Hede, Jago, & Deery, 2002).

Figure 1: Classification of events



After Nufer, 2002, p.40.

It slowly becomes clear in the search for a definition of the term “event management”, that in the literature there is no consensus about the term and the activities connected with it. Often, only the organizational and controlling measures necessary for the ultimate execution of an event are understood as event management (Erber, 2002; Holzbaur et al., 2003). This however, neglects the strategic alignment of management with its integrative tasks and contradicts the established term “management”, which grants extraordinary decision-making possibilities to those responsible.

In addition, it is important to mention that, as a rule, schemes for the planning and execution of events exhibit two typical characteristics. *First*, they begin with the definition of requirements for an event and end with its conclusion. They are thus limited in time and have a clear start and finish point. And *second*, these ventures are often one-time initiatives in which various internal and external organizations participate. Due to these two characteristics, it is generally said that the processes for the planning and execution of events possess project character. This interpretation of events as projects is based on established definitions of the term “project” (e.g. Lock, 2003). Most authors see the time limitation (clearly defined start and finish points), as well as the singularity of an event as distinct project characteristics. These project characteristics of events are often neglected in the search for a definition in literature.

As a result of these considerations, the following working definition will be used here: *Event management* comprises the coordination of all of the tasks and activities necessary for the execution of an event regarding its strategy, planning, implementation and control, based on the principles of event marketing and the methods of project management.

EVENT MANAGEMENT SYSTEMS

In addition to general planning activities, it is important to observe aspects regarding information transparency, documentation and controlling possibilities and the exchange and storage of information in order to guarantee comprehensive support for all of the activities and participants in the entire event management process. Proprietary software solutions for word processing, spreadsheets, project management or e-mail communication do not provide an integrated approach for event management. In addition to the established standard applications, there are application systems geared to special domains, such as for example, gastronomy or ticket systems. These however only provide special functionalities, such as calendars, solutions for the scheduling of rooms, possibilities for storing additional information or solutions for visitor registration (Luppold, 2004). Up to now, no comprehensive IT-support for the entire event management process exists, from the very first idea to its integration in the corporate strategy to the conclusion of the event supporting the workflow from strategic planning to controlling of an event.

The potential of such a software solution lies in the fact that it provides the highest possible information and cost transparency. The increase in efficiency and effectiveness which would result from the use of such a tool for planning, carrying out and controlling an event can be compared with the use of corresponding systems in supply chain management (Lambert, 2006). Thus, in addition to the improved coordination and communication among the participants involved in the process, for example, event agencies and service providers, the customer - respectively the sponsor of the event - also profits from improved transparency. Decisions regarding possible changes can be made more quickly and cost efficiently, because the channels of communication are much shorter and thus, information can be exchanged more quickly.

In addition, topics such as controlling or risk management are becoming more and more interesting for the planning of events. The existing approaches have concentrated on economic evaluations after the conclusion of an event (Clarke, 2004). Often however, it is required that controlling measures be carried out in all phases of the event management process, in order to guarantee the sustainability of an event. Thus, adequate alternatives for the documentation and provision of appropriate controlling methods are needed and these can only be guaranteed by way of appropriate tool support.

Event management systems, understood here as information systems used for the support of managing events, must function as an intermediary between the business frameworks of event marketing, management and information technology. Event management systems work both on a business and a technical level, they are - as are generally all information systems - very complex. With the help of a model, we will attempt to create manageable artifacts which make the complexity of these information systems controllable.

Modeling Event Management Systems

Information models have established themselves as a medium for bridging the gap between business problems and the realization of an application system (Weber, 1997; Mylopoulos, 1998; Scheer, 1999; Rossi & Siau, 2001; Kilov, 2002; Wand & Weber, 2002; Hay, 2003). The application possibilities of information models range from software design and the introduction and configuration of standard software to business process reengineering.

Due to the possibility of their reutilization, in many cases the construction of models is connected to the demand to abstract from enterprise specific characteristics. One must thus differentiate between enterprise-specific information models and reference models. The term “enterprise-specific” characterizes only the individual character of the corresponding model; there is no restriction to legally independent companies connected with it. Thus, due to reasons of linguistic clarity, one must speak of specific models in order to allow for the fact that the specificity of models does not only result from an enterprise context alone, but rather, for example, also from a project context. To emphasize this context one can also speak of project-specific models.

In contrast to this, a reference model for the development of specific models constitutes a point of reference, because it represents a class of applications (Thomas, 2006; vom Brocke & Buddendick, 2006; Thomas, 2008a; Thomas, 2008b). On the one hand, the possibility of orienting oneself on the technical content of such reference models promises the model users savings in time and costs, while on the other, the quality of the model to be constructed, and thus the quality of the software based on this model, can be increased by the use of a reference model. The fundamental idea of reference modeling to save process knowledge in models, in order to use it at a later point in time, has currently been recognized by the event management literature. Thus for example, Schwandner states that "it is almost always better to adopt good ideas from others, follow their tips and then optimize them for your individual needs" (Schwandner, 2004, p. 27). Nevertheless, at present there are no reference model-based design recommendations for event management systems. This shortcoming is the result of the following problems:

- *Lack of process orientation:* Business research in the field of event marketing and event management continues to neglect process management aspects for events: "Less research has been focused on special events operational management" (Hede, Jago, & Deery, 2002, p. 322). Research has primarily dealt with questions regarding the cultural, social and economic effects of events. A perspective integrating all of the aspects of event management is missing (Pepels, 1998, p. 612; O'Toole, 2000, p. 86).
- *Lack of standardized forms of representation:* Marketing-oriented research concentrates on explaining interdependencies, which are, as a rule, compiled by way of market research studies. In addition, exemplary descriptions and suggestions for the management of events dominate in the literature. The forms of representation used here are hardly standardized and limit the significance of the introduced concepts which makes an application-specific adaptation difficult (Larson, 2003, p. 219). There are only a few cases where generally accepted methods for example, from project management, were deductively transferred to the field of event management (O'Toole, 2000).
- *Lack of models:* It is primarily practice-oriented analyses, dealing with the planning and organization of events, which focus on additional benefits in the form of prefabricated check lists, tables, forms and road maps (Erber, 2002; Holzbaur et al., 2003). Demonstrative, exemplary representations, customary in the field of information modeling, are quite rare.

The following analyses attempts to solve these problems by way of a reference model-based design recommendations for event management.

REQUIREMENTS FOR REFERENCE MODELS IN EVENT MANAGEMENT

This section's goal is to define the most important requirements for the reference model being designed. First, an analysis of the reference model market must be made, as the existence of an adequate reference model, i.e. a model which fulfills the defined requirements, can make the development of a new model obsolete.

Existing Reference Models in Research and Practice

There are many reference models in literature for many different fields of application - for a current tabular overview see Fettke, Loos (2003). While early approaches, such as for example, the "Cologne Integration Model" (Grochla et al., 1971), oriented themselves on the representation of aspects from all possible enterprises, the authors of current constructions often assign their reference models to concrete economic branches. Prominent examples of this are the reference model for industrial business processes from Scheer (1994) and the Retail Information Systems from Becker, Schuette (2004), which both come from the research field.

In practice, reference models can be found by providers of modeling tools and consulting firms. Thus, for example, the IDS Scheer, Inc. (2003b) offers diverse reference models. These are reference models for the service sector (financial services, commercial enterprises, local governments, hospitals, mail-order businesses, municipal utility companies and insurance companies), product-oriented manufacturing (plant construction, automobile suppliers, mechanical engineering, the consumer goods industry and the furniture industry) and process-oriented manufacturing (the chemical industry and the paper industry). On the other hand, comprehensive documentation on established ERP-systems exists in the form of reference models, such as for example, the SAP R/3-reference model (Curran, Keller, & Ladd, 1998). A reference model assigned to the field of event management is however, unknown to the authors.

The Necessity of Constructing a Framework

In order to satisfy the claim for reusability in the construction of models, reference models must describe a wide range of company conditions and their interdependencies. They are, in addition, seen from different perspectives which make a survey-like graphic representation of reference models very complicated. The data model for the SAP R/3-reference model, for example, contains more than 4,000 types of entities and the corresponding reference process model more than 1,000 business processes (Curran, Keller, & Ladd, 1998). The use of a framework for comprehensive reference models has shown itself to be well-tried in research and practice (Scheer, 1994; Frank, 2002; Becker & Schütte, 2004). Reference model frameworks provide a navigable directory, whose domains refer to detail models of the reference model. The following creation of an event management reference model will therefore be divided up into the design of the framework and then the construction of the reference model itself.

In contrast to the creation of detail models, modeling languages are usually not used for the construction of frameworks. Through the use of freely defined graphic symbols, model developers can illustrate the wide variety of contextual aspects of the reference model. These can also help to emphasize the trademark character of a reference model framework. Nevertheless, in addition to the “established” languages (e.g. ERM, EPC), there are “simple” modeling languages in the language portfolios of the modeling tools of a few providers and these are especially geared to the construction of a framework. In the *ARIS-Toolset* for example, an Y-diagram is used “for the function-oriented entrance into complex reference models” (IDS Scheer AG, 2003a, pp. 4-7). The simplicity of these languages refers to the low number of language elements and the constructible relationships between these language elements, as well as the graphic representation of the language elements using elementary geometric structures, such as lines, circles or polygons.

By assigning the parts of a reference model to an index of the framework, the respective elements of the model are grouped according to contextual criteria. The model object upon which the construction of the reference model framework is based is the reference model. Thus, framework and reference model have a macro-micro-relationship. In this spirit, a framework is always on a “higher” aggregation level than the reference model it represents. The disaggregation of macro models can also be pursued “within” a reference model over several aggregation levels. This is especially practical for comprehensive reference models. It, however, assumes that the possibility for disaggregation in the modeling language used is embedded as a supported construction technology. With the event-driven process chain (EPC) a process modeling language for the representation of the reference process model for event management will be selected.

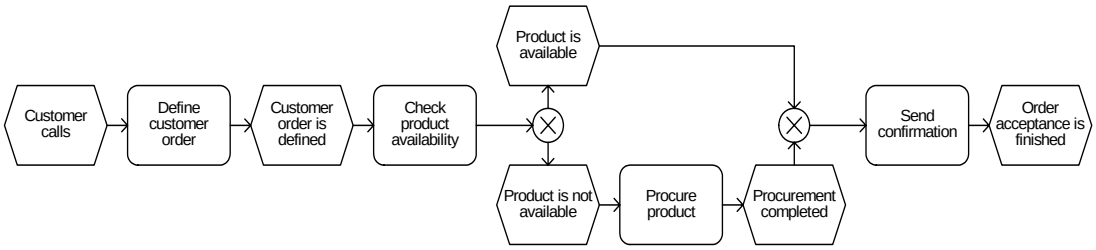
A MODELLING LANGUAGE FOR REFERENCE MODEL REPRESENTATION

Although the first ideas concerning the reusability of information models date back to more than three decades, up to now, very few modeling languages have been conceived for the creation and use of reference models alone. Two of the few exceptions are the reference process modules from Lang, Taumann, Bodendorf (1996) and the reference model component diagram from vom Brocke (2003). Most of the research in the field of reference modeling concentrates on an application or domain-specific selection of established languages for information modeling. The spectrum of reasons for the selection of these languages ranges from the basic orientation on paradigms (e.g. object-oriented or non-object-oriented) or modeling methods (e.g. ARIS or UML) to the absolutely uncritical und unreflected use of these languages. Occasionally, the selected modeling languages are extended.

Since the end of the 1970s, a multitude of modeling languages has been developed to describe process models. The event-driven process chain (EPC) has especially established itself in the German-speaking world for the construction of reference process models on a conceptual level. A lot of reference process models using the EPC as modeling language have been introduced in the literature (Fettke, Loos, & Zwicker, 2006). The EPC will be used in the following for the construction of the reference model for event management.

The EPC was developed at the Institute for Information Systems (IWi), Saarland University, Saarbruecken (Germany), in cooperation with the SAP, Inc. (Keller, Nüttgens, & Scheer, 1992). It is the central modeling language of the architecture of integrated information systems (ARIS) and is, due to its application orientation and comprehensive tool support, widely used and accepted in practice. It is an integral part of the *ARIS-Toolset* from IDS Scheer, Inc. as well as the business engineering and customizing from the SAP R/3-system. An EPC model is an ordered and connected graph. Its nodes are events, functions and connectors. Error! Reference source not found. shows an EPC model that describes a customer order processing.

Figure 2: EPC model for customer order processing



Events are the passive elements in the EPC and are represented by hexagons. Functions, represented by rounded rectangles, are the active elements in the EPC. The term function is equivalent to the term task (Keller, Nüttgens, & Scheer, 1992). While functions represent time-consuming happenings, events allude to a certain point in time. In the literature, the respective object and an infinitive verb are suggested as a naming convention for functions, whereas for events, the object that experiences the change, as well as a verb in perfect tense, which states the type of change (Scheer, Thomas, & Adam, 2005) are suggested. Events trigger functions and are their result. Control flow edges represent the relationships between functions and events. Conjunctive "⋀", adjunctive "⋁" and disjunctive "⊗" logical connectors are introduced to express that functions are started by one or more events or that a function can create one or more events as a result (Error! Reference source not found.). They are referred to as AND-, OR- or XOR-connectors. Thus, the example process in Error! Reference source not found. has the following meaning: A customer call (start event) triggers the definition of the order (first function). Then, it is checked whether the product is available (separation of the process by an XOR-connector). If it is available (first case), an order confirmation is sent to

the customer. Otherwise (second case), the desired product is procured before sending the order confirmation.

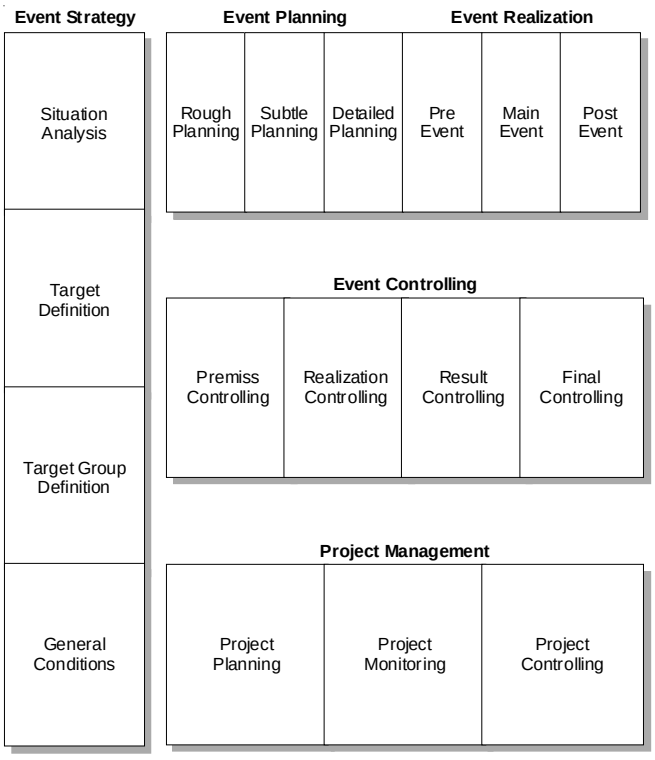
CONSTRUCTION OF A REFERENCE MODEL FOR EVENT MANAGEMENT

The models discussed in the following were developed at the Institute for Information Systems (IWi) over a period of six months. They were created with the help of interviews and workshops in cooperation with three large German event agencies, a representative from the marketing department of an automobile company, as well as employees in an internationally active trade fair service provider. In addition to this inductive procedure for extracting knowledge, during which a multitude of actually observed process structures were described, ordered and compared, knowledge was gained from the generally accepted principles and models of the event management "theory" dealt with in business management literature - in compliance with a deductive course of action.

The Construction of a Reference Model Framework

The framework for event management represented in Figure 3 and named *Event-E* due to its form, structures the activities necessary for the planning and execution of events in a coherent sequence. The framework is divided up into five domains: "Event Strategy", "Event Planning", "Event Realization", "Event Controlling" and "Project Management".

Figure 3: Event-E-reference model framework for event management



In accordance with the chronological sequence of the event management process we will start with the domain "Event Strategy". In this phase, all of the basic problems regarding the event are solved in coordination with the company and marketing strategy. In the planning phase the chronological and spatial

coordination of all of the activities and participants for the event is worked out. The “Event Realization” phase comprises the actual execution of the event at the venue. The “Event Controlling” phase provides the event management team with all of the controlling methods and measures at any possible time. The “Project Management” phase forms the knowledge basis for the planning of the entire event management process.

Each domain is assigned special functions (also called activities). These functions are characterized by chronological and logical dependencies, for example, the conclusion of preceding activities or the existences of certain documents are prerequisite for the execution of some activities. The five domains should however, not be understood as processes which are dependent upon each other. Relations of interchange und interdependencies exist between the domains and their functions. The framework for event management emphasizes the equality of the sub-processes for the management of events through its design. The analogies of the domains are characterized by their parallel alignment. Furthermore, the alignment of the phases “Event Planning” and “Event Realization” emphasizes their close proximity in time to each other.

The connection of the separated processes in the sense of the creation of a whole is also symbolized by the arrangement of the individual domains. This shows that the planning, execution and control of events have a very tightly knit interdependent relationship with one another. The domain “Event Controlling” plays a special role because it takes ongoing functions into account which support the planning and execution of the event and serve the evolution of the tasks to be achieved. This phase is therefore set in the middle of the framework. The “Project Management” phase is an overall aspect and forms thus the foundation for the execution of all types of events along all phases of the event management (O’Toole, 2000).

The special goal of projects for the planning of events is to create a “model” which then can be used to support the execution of an event. Due to the personnel and chronological separation in the planning and execution process, an event manager must forecast the requirements of the potential event participants in early planning phases. These uncertain prognoses are subject to repeated modifications due to their heavy influence on the cost effectiveness of the process in event management projects. The procedure for event management projects can therefore not be carried out purely sequentially. It must be possible, at any time, to return to previous phases. This guarantees that requirements to the event defined in early phases can, for example, be revoked or corrected later.

With the help of the areas and functions identified by it, the framework makes a recommendation for a procedure for projects where events are planned and/or carried out. Because this procedure may vary in practice, the framework must be adapted to the respective project. For example, in the case of planning for an event where the customer has very clear ideas about a certain target group he wishes to reach, the work connected with defining a target group is heavily reduced. If the customer is already capable of identifying the target group (i. e. for a company-internal celebration), this function can even be dispensed with completely. The only thing necessary would be a definition of the specific peripheral requirements resulting from the target group. This adaptation would lead to a project-specific framework, for whose construction the framework for event management would be used. The event management framework could then be referred to as a reference model due to its reusability.

In the following, the sections of the framework for managing events will be explained. A section is devoted to each domain (Events have project-character and require their own management for their target-oriented and professional design, organization and execution. A study on the methods and concepts in project management is therefore useful for the successful execution of an event. Because however, these aspects do not show event-specific content, we have dispensed with the representation of a corresponding process model.). The domains will be dealt with one after the other, whereby references will be made to topics already discussed in order to avoid redundancies. The explanations also specify further requirements for the functionalities of an information system that can help event managers in fulfilling their tasks.

THE CONSTRUCTION OF DETAIL-MODELS

Event Strategy

A strategy describes a precisely planned course of action for a project, i.e. it serves as a foundation for further planning. The EPC reference model for the event strategy is represented in Figure 4. The two start events represented in the model illustrate the fact that the event management process can begin within a company or can be assigned by a customer to a service provider, e.g. an event agency.

Within the framework of a comprehensive situation analysis, the goals and target groups of the event are defined. In order to carry out an evaluation of the event later, the measurability of the goals must be guaranteed. To do so, the goals can be divided into strategic and operative goals. Economic goals are also formulated to make the financial success measurable. This can comprise increases in sales, increases in market share or an increase in the buying intensity, in addition to the revenue directly relevant for the event. Contact goals can, for example, be operationalized through the number of registrations or participants. Event goals are connected to a company's communication politics via the event-marketing strategy and thus, directly connected with the super ordinate corporate strategy. The derivation of an event's target structure must be compared with the corporate strategy's guidelines. If discrepancies arise they must be revised.

The narrowing down of the target group is also closely connected with the definition of goals. As a rule, primary and secondary target groups are defined for events (Figure 4). The primary target group is seen as all groups taking part in an event directly. The secondary target group is integrated into the event through media or other forms of communication. Usually, the secondary target group consists of the public not directly taking part in the event. Additional information is collected within the function "concretize primary target group". This information allows one to derive the structure of the target group, as well as experience values about the target group. The definition of the target group structure extends beyond the registration of age, residence and purchasing power. In fact, more differentiated methods must be consulted, such as for example, lifestyle-groupings or scene marketing. Detailed knowledge about the target group structure guarantees a high degree of individuality and thus, high contact intensity.

The concretion of the event type and the general conditions for the event follow the definition of the goals and target groups for the event (Figure 4). First, the size of the event is defined. A decision is then made about whether the event is exclusive or open to public event. If a decision is made for an exclusive event, then the number of participants must be determined. The number of participants may tend to vary more strongly for public events than for exclusive events. Therefore, all possible participant groups must be determined for public events. In addition, one must also narrow down the maximum number of participants. All of the following planning, such as the selection of the venue or catering, is oriented on this information. Following this, the exact timeframe for the event must be defined. Here the first dates are set. Events can be held for a day (e.g. a gala or anniversary), several days (e.g. Olympic Games or conferences) or in cycles (e.g. concerts or shows). The location can be selected based on this data. While for example, a concert hall is understood as a venue, the term "location" refers to the geographic area where the event takes place, for example, "the city of Berlin and its surrounding area".

The individual results regarding the size, timeframe and location of the event are then combined). Requirements for the event are then made based on this data. These requirements then serve, in turn, as a basis for further planning. A comparison of this data with the goals and target groups for the event should secure the consistency of the coming event. If a "non-fit" occurs (e.g. a gym was selected as the venue for an anniversary with senior managers of a company), then the process for the specification of the event-type and the general conditions must be run-through again, in order to achieve a match (the loop in). In the case of a

"fit", the sub-process is concluded. The results from the event strategy phase are then recorded in a briefing after a final tuning with the super ordinate strategic requirements and an initial budget for the event.

EVENT PLANNING

In the planning phase, represented in Figure 5, the requirements worked out in the strategy are concretized. This phase is characterized by controlling activities, which on the one hand, relate to the adaptation of the procedure to the customer's wishes and on the other, to periodic activities, such as budget checks or the monitoring of deadlines. Most of the adaptive measures should therefore be carried out in this phase.

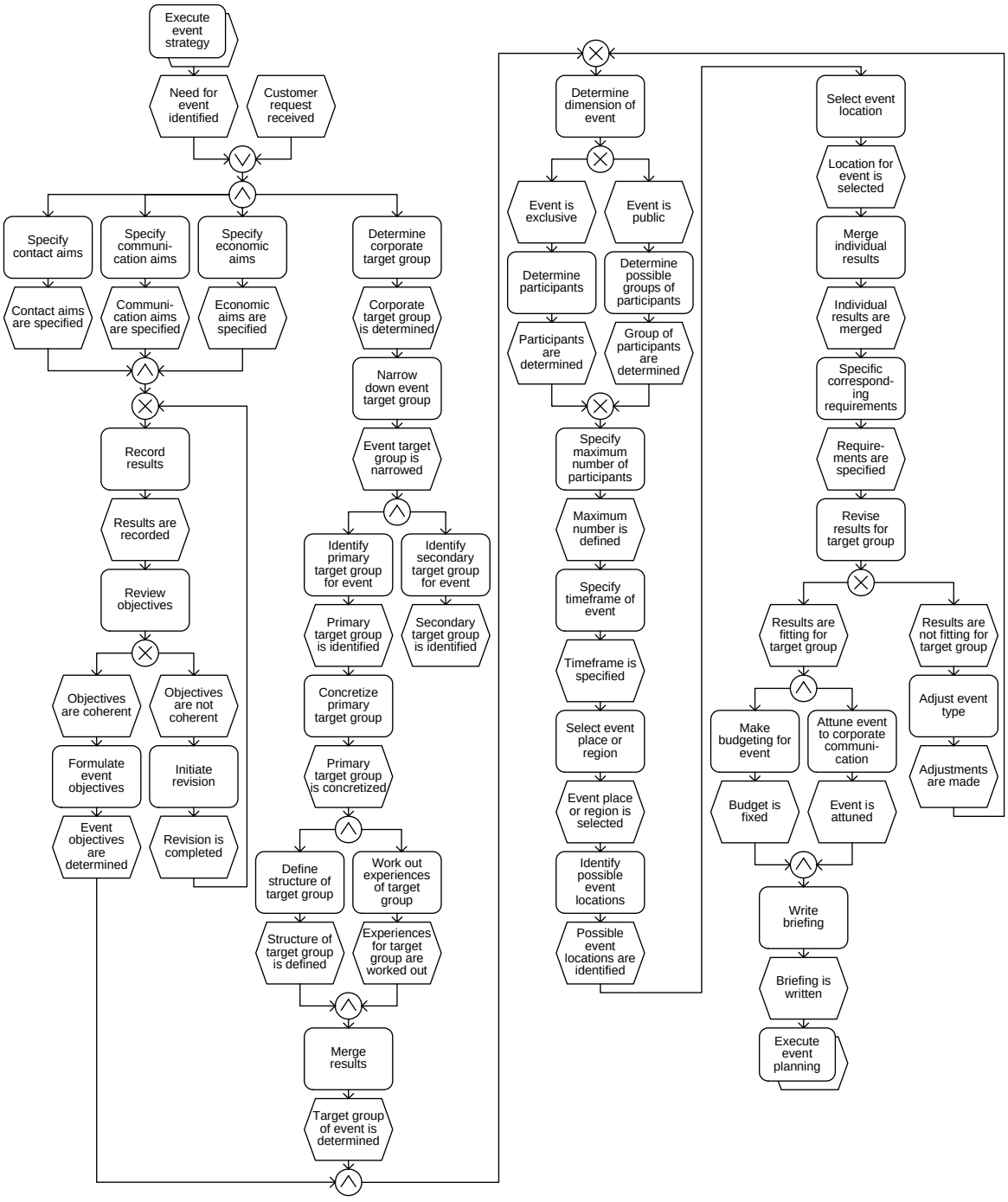
The development of the event concept, upon which the planning for the event is based, is the center of the EPC model in Figure 5. It is similar to a screenplay, with exact plans for each time-section. As a start, the event planning can be divided into three sub-functions "Rough planning", "Fine planning" and "Detail planning". Organizational problems are solved in the rough planning phase. First, due to the project-character of events, the appropriate project team must be put together. Here methods from the field of project management can be used. The function "Build team" comprises the selection of a project manager and team members. Due to their complexity, large projects are often divided into parts. These parts are then assigned to individual team members. The members of the team are informed about their tasks and the customer's commission.

After the team has been put together and all of the tasks have been assigned, one can turn to the conceptual field of activity (Figure 5). Here, the feasibility of the initial input and ideas regarding the venue, hotel capacity or the artists is checked. A concept is then developed based on this information. A well thought-out concept is necessary for a successful event and the starting point for subsequent planning. Creativity techniques, such as for example, brainstorming or mind mapping, can be very useful for finding ideas. The visualization of the conceived concept helps to make the course and the content of the event tangible. Thus, for example, in practice, three-dimensional presentations of a venue, including a detailed representation of the stage settings, decorations and lighting effects are often created in order to better assess them. This can be very useful for the subsequent presentation of the results.

The aim of a presentation is, above all, to convince the customer of the conceived concept, record desired changes and clarify all issues. If the customer is satisfied with the results, then the fine-planning phase is started. If he is not satisfied, then a rebriefing must be held (Figure 5). Here, all of the problematic points are recorded and a new conceptual formulation is developed. We recommend drawing up a briefing paper as a basis for discussions. A list of questions helps the contractor clear up any remaining confusion. In this manner, the desired changes can be recorded and a new concept developed. The customer is presented with the results of this revision process. The fine planning phase can be initiated only when the customer has agreed to the concept.

In this early planning phase, the capacity of the most important venues, as well as the scheduled accommodation or means of transportation are checked. It is especially important here to include the customer's requirements in this research. In accordance with the capacity check, the individual measures required for the event are concretized. This function comprises planning the sub-contractors needed for the event, such as caterers, artists, stage engineers, etc. Then the availability of the sub-contractors is checked. For the case that some of them are not available for the required date, further research must be carried out.
Following this, the guests are invited to the event. For private events, written invitations can be sent. For public events the event and its dates must be announced via print, radio or TV advertising. The final costs for the individual measures can now be integrated into the budget. Should the costs exceed the budget, then the calculation must be reworked. The budget is then rechecked. If all of the costs are within the given limits, the detail planning process is started.

Figure 4: Reference process model for the event strategy



The detail-planning phase is carried out in close proximity to the actual event. Methods from the field of project management, above all, time-planning techniques, such as Gantt-Charts, can also be a great support in this phase. First, deadlines are set for all of the individual measures and outstanding tasks. This should guarantee the timely processing of each activity. Each deadline is checked again and again. If a deadline cannot be held, then the respective adjustments must be made. If the adjustments are unacceptable, then this can lead to the termination of the plans. The adjustments made to deadlines must be kept under permanent control. Parallel to the creation of the deadlines, checklists are made with all of the tasks already completed and those which still need to be dealt with. These checklists contain for example, job lists for every sub-contractor and their respective tasks.

Detailed plans must also be made in addition to the check lists. These include all of the organizational details for the event. An inspection of the plans is carried out during the realization phase of the event. If all of the plans and check lists have been made and the deadlines kept, the realization phase may begin.

EVENT REALIZATION

The realization of an event is understood as the actual putting into practice of the event. The realization phase spans the period of the event, which takes place on location in direct contact with the target group. Therefore, in this time section, the emphasis is put on process flows, the coordination of participants and short-term problem solving. Although the actual embodiment is different for every single event the event realization phase can be divided up into three sub-phases: the pre-event, main-event and post-event phases (Figure 3). In the pre-event phase all preparatory measures are carried out. The main-event phase comprises the progress and concrete execution of the event. In the post-event phase, all activities set for after the event is carried out.

The dress rehearsal is the most important function in the pre-event phase, in addition to the basic preparatory, organizational activities, such as the delivery of the stage mechanics or settings (Figure 6). It is used to give the customer an overview of the activities taking place during the main event. Thus, the customers are, for example, shown the most important “settings” of the event. These settings are for example, the foyer, buffet area or stage. In addition, the light and stage mechanics are made ready during the dress rehearsal.

In the main-event phase the participants are actually addressed with the items of the event. The workflows planned and rehearsed earlier must now be carried out adequately in order to achieve the event goal. This phase of the realization can vary heavily depending on the type of the event. The main-event is the result of the concept worked out within the planning phase and is thus, subject to the creativity and organizational skills of the event-manager. Due to this, a detailed representation of this phase is only possible in individual cases. Therefore, only the main functions (arrival, admission, greeting, execution and leave-taking) of the event are considered here. The function “carry out program” requires attentiveness. Due to its specific and individual structure, a unique program must be developed for each event.

The departure of the guests is the point where the post-event phase begins. Their departure is supervised in the same manner as their arrival. As soon as the guests leave the venue, the dismantling and cleaning can begin. As soon as this has been done, the materials used can be returned to their owners. The organization team can depart only when all of the activities pertaining to the venue have been carried out. The realization is thus concluded.

Figure 5: Reference process model for event planning

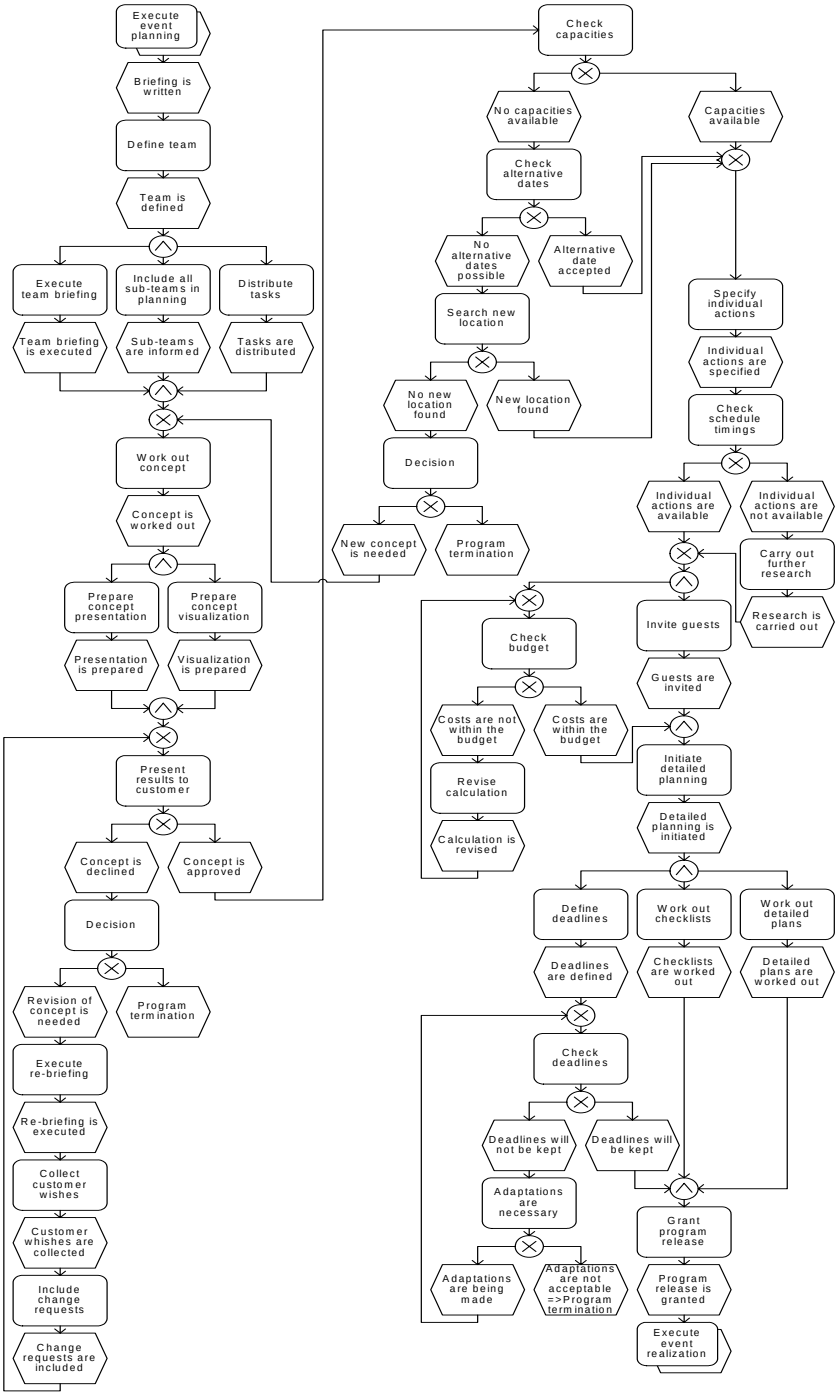
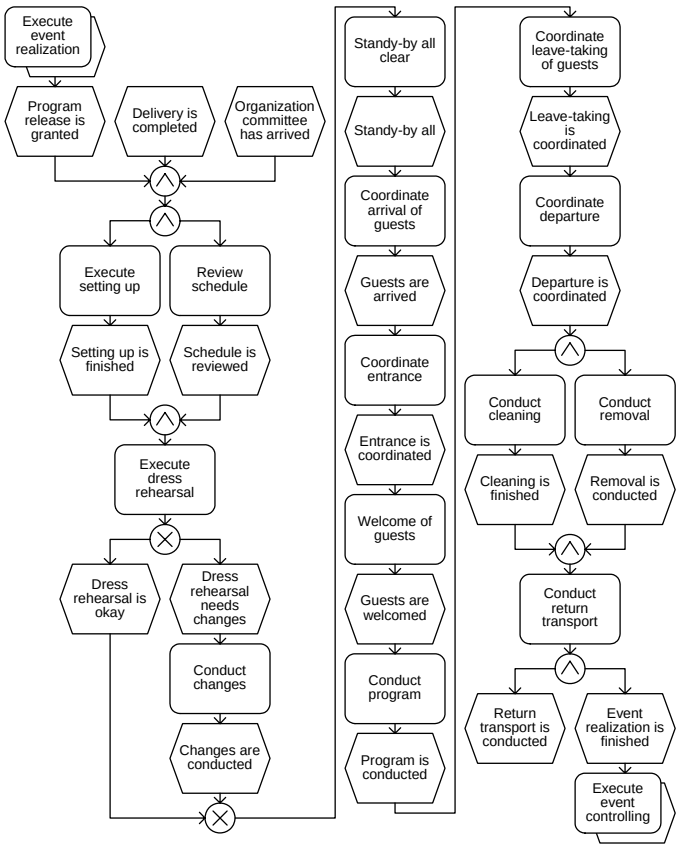


Figure 6: Reference process model for the event-realization

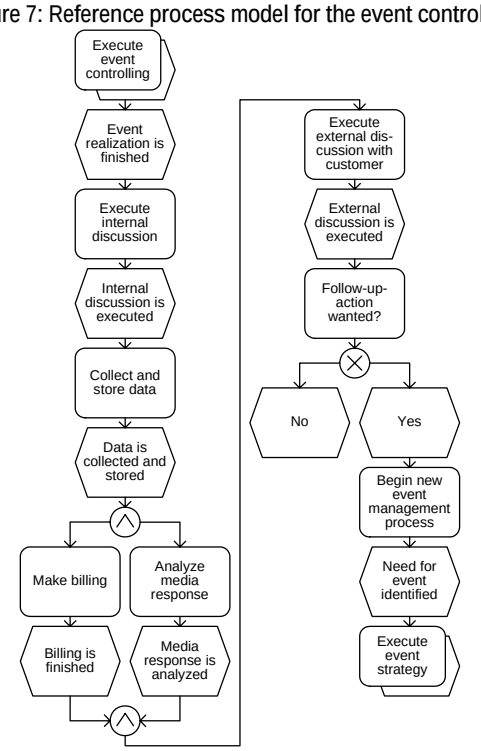


EVENT CONTROLLING

The controlling of the event is an aspect which spans all phases and can take place at any time. It controls the entire event management process by registering deviations and identifying the causes. Different controlling mechanisms are possible in the various phases of the event. The general conditions specific to the market can be determined with a feasibility study in the preliminary stages of the event. During the event, the continuous controlling and documentation of the operation allow one to gain experience and, in doing so, make use of the knowledge generated in this manner for later events. The controlling of the results determines the marketing relevant effects of the event, for example, effects on image, using marketing research activities. The post-processing phase comprises accounting, subsequent data preparation and a project evaluation. Here, we represent only the process for the final controlling phase.

The event controlling is characterized by the integration of planning, information, organization and control. This refers to the controlling of costs, as well as the monitoring of progress and the quality control connected with this (Stickel, 2001).

Figure 7: Reference process model for the event controlling



After the event realization has been concluded, post-processing can begin with a final controlling phase. First, an internal project evaluation is carried out. This is an analysis of the various areas of activity for the event in the responsible teams, whereby for example, suggestions for improvement are collected or especially successful work recorded, in order to make this knowledge useful for following events. Lastly, all of the data relating to the event is collected. This data can result from the feedback collected during the project evaluation or have been collected during the entire event management process. Thus, for example, all data from the sub-contractors is deposited in the databases provided for this.

Parallel to issuing invoices, an analysis of the resonance in the media is carried out. The secondary target group can only take part in the event when the appropriate medial post-processing of the event takes place. The results of the analysis of the resonance in the media provide information for the project evaluation carried out with the customers. Depending on the type of event, one must decide whether a follow-up-event will be carried out and in doing so, a new event management process started.

CONCLUSION

The topic of this article was the construction of a reference process model for event management. The reference model makes recommendations for the design of process-oriented information systems which serve to support event management. The merging of the two separately developed fields of research intended here - on the one hand, event marketing or event management as a discipline of business economics and on the other, reference modeling as a discipline of information systems research - is new for two reasons: first, up to now, there have been no noteworthy research results on the modeling of event management systems. Second, the construction results in this article are a reaction to the often-criticized lack of reusable domain models in the field of reference modeling. The construction of the reference model was, as is customary in reference modeling, divided up into the creation of a framework, the Event-E, and the

modeling of the detail models assigned to the domains of this framework. While the construction of the detail model with the EPC was based on an established domain-independent process modeling language, the motivations for the structure of the Event-E showed that in the construction of the reference model framework thoughts with symbolic character dominate.

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The following tables compare notable reference management software. The comparison includes older applications that may no longer be supported, as well as actively-maintained software. In the "notes" section, there is a difference between: web-based, referring to applications that may be installed on a web server (usually requiring MySQL or another database and PHP, Perl, Python, or some other language for web applications). a centrally hosted website. Event-driven Architecture (EDA) is a software architecture paradigm promoting the production and consumption of events. An event represents an action of significant interest. Often, events correspond to a creation or a change of state of some entity. For example, raising an order in an e-commerce application is an event. Dispatching a product as a result of an earlier order is also an event.Â They are typically backed by one or more disk-based logs under the hood. Equally, streams might be backed by database tables, a distributed consensus protocol, or even a blockchain-style decentralised ledger. Brokers govern access to streams, facilitate the reading and writing operations, handle consumer state and perform various housekeeping tasks on the streams. Event data modeling is the process of using business logic to aggregate over event-level data to produce â€˜modeledâ€™ data that is simpler for querying. Letâ€™s pick out the different elements packed into the above definition: a. Business logic. The event stream that Snowplow delivers is an unopinionated data sets. When we record a page view event, for example, we aim to record it as faithfully as possible: What was the URL that was viewed? What was the title? Software Engineering Paradigm of Event management system. 4. Tools/Platform, Hardware and Software Requirement Specification: 5. Hardware Interface of Event management system: Software InterfaceÂ Based on the requirements for the event, the various services needed are listed down and based on the rates of a specific service provider, the rates are quoted. Different services would have different specifications and units for quoting rate.Â This model has many cycles. The radial dimension represents the cumulative cost incurred in accomplishing the steps done so far, and angular dimension represents the progress made in completing each cycle of the spiral. A spiral model is divided into a number of framework activities, also called task regions. Event marketing, Event management, Business process, Process modeling, Reference model, Event-driven process chain. INTRODUCTION In the past few years, events have been enjoying more and more attention in research and practice. As a result, a separate, special branch of service geared to events has developed in which event agencies, trade fair constructors, talent agencies and sound and light engineers are involved in the organization and creation of events.Â Nevertheless, at present there are no reference model-based design recommendations for event management systems. This shortcoming is the result of the following problems