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Utilizing test events to ensure high reliability in organizations responsible for planning and implementing major sport arrangements:
A case study of the Nordic World Ski Championship 2011

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Summary

The main goal for this master thesis was to write a research article contributing to the literature on sport event management, regarding the planning and preparation for major sport events. This piece of work is divided into two different, but relating sections. Part I presents the research article. Supplementary theory and methodology constitute part II. The objective was to gain better understanding on how project organizations planning for major sport events worked in the implementation phase, and to assess the value of test events. The research question in the article is as follows: *How were the test-events used as a part of the effort to develop a reliable project organization?*

According to existing literature concerning project management and high reliable organizations (e.g. Weick & Sutcliffe, 2007; Söderlund, Vaagaasar & Andersen, 2008; Andersen & Hanstad, 2011), building capacity in the planning and implementation phase are vital precursors to managing challenges and potential risks during the event. Nevertheless, I have not been able to identify any studies of how test events may be exploited to develop a more reliable project organization preparing a major sport event.

This is a qualitative case study. The case was the Nordic World Ski Championship 2011 and the organization SKI-VM 2011 AS (VM2011). Six leaders, from the executive group and responsible for key functions in VM2011, were interviewed. The focus was experiences from the test events, the organizational development, and what processes were crucial in the implementation phase. In addition, documents were used to draw a preliminary perception of VM2011, and to support and complement the variety of issues discussed by the interviewees.

Findings show that project organizations preparing for major sport events cannot mitigate potential risks, but can enhance its capacity and competence to make quick decisions and do the right action in demanding situations. Test events have proven to open the possibility to fine-tune an organization, if the organization prioritizes reflection on recent actions and conceptualizing further actions. In addition, the establishment of close relationships and mutual trust internally, and with external partners at an early stage in the project process, was a crucial success criterion.

Part two consist of supplementary theory and methodology.
Acknowledgements

What a great feeling! After months, weeks and days striving for this day to come – I am proud and relieved, standing here with my final version of my master thesis. This has been an adventurous, challenging, and meaningful journey to me. I would love to express my appreciation to several people for their help and support in this project.

First of all, I want to thank the most important and crucial persons for conducting this study. My informants from VM2011; you know who you are. Without your openness, cooperation, time, and contributions this would be impossible. Thank you for sharing your experiences, thoughts and points of view. I have learned a great deal about project planning, organizational learning, leadership and cooperation from you.

Thanks to my supervisors Dag Vidar Hanstad, and Svein Andersen for constructive feedback, involvement and for guiding me trough this interesting journey. You have been engaged, listening, contributed with your knowledge, creative thoughts, academic weight, and provided me with great portion of motivation. Sara Kalantari, your proofreading was very valuable for me!

A lot of appreciation to my brilliant husband, Andreas, who has been such a patient partner, friend and supporter throughout this (from time to time frustrating) process! Thanks to our little daughter Tilde, who was born in the middle of my studies, she spread happiness and huge smiles on even the most hopeless days. Thanks to my parents for motivating me, and babysit so that I could concentrate in the process of writing.

I believe my work is of interest to academic colleagues in the field of sport management and project management, and especially useful for organizations planning for major sport events. Organizations may be inspired by this research to be more conscious of their own dynamism, and to develop high reliability.

Norwegian School of Sport Science, Oslo, October 2011
Kari Plejdrup-Skillestad
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PART I: The Article

Utilizing test events to ensure high reliability in organizations responsible for planning and implementing major sport arrangements: *A case study of the Nordic World Ski Championship 2011.*

**Abstract**

This article aims to examine how project organizations prepare for major sport events, using test events as a part of the effort to develop a high reliable organization. It explores experiences from the planning and preparation for the FIS Nordic World Ski Championship hosted in Oslo 2011, to answer the research question: *How were the test events used as part of the effort to develop a reliable project organization?* Results from the study show that test events may be very educational provided that the experiences and learning from it are taken seriously, and evaluated as a basis for the further development of the project. Learning from a test event might be almost necessary, and at least very useful as a foundation for building common understandings, common perception of reality, reduce risk issues, challenges, role changes and reorganization, – to develop a high reliability organization. The study of test events has largely been neglected in previous research. Paradoxically, most important is the lessons about the project organization itself, and how it is able to develop capabilities and competencies to handle events they are not able to foresee. There are always scenes or situations one might plan better for.

**Keywords:** Project management, major sport events, high reliable organizations, mindfulness, competence building, organizational capacity and flexibility.
1. Introduction

FIS Nordic World Ski Championship (NWSC11) was hosted in Oslo, Norway, from February 23rd to March 6th 2011. It was the largest sport event hosted in Norway since the Winter Olympic Games in Lillehammer, 1994. The corporation and temporary project-organization Ski VM 2011 AS (VM2011) was formed in 2007, and was a limited partnership created to fulfil a narrow, temporary objective facing a compound set of risks: to plan, implement, and carry out NWSC11. The International Ski Federation (FIS) owns the rights to the event, and Oslo municipality owns the arena and sport facilities. NWSC11 can be described as a major sport event in accordance to Bowdin, Allen, O’Toole, Harris and MdDonnell (2006), “major events are capable of attracting significant visitor numbers, media coverage and economical benefits” (p. 16). NWSC11 attracted at least 250 million television-viewers for live feed of the event (Oslo2011 a). A total of 570 000 spectators watched the disciplines live in Holmenkollen, and there were more than 1800 press- and media representatives in Oslo during the event (Oslo2011 b). Large-scale sport events are complex projects, and Gray and Larson (2000) define projects as “a complex, non-routine, one-time effort limited by time, budget, resources and performance specifications designed to meet costumers’ needs” (p. 4). The exclusive challenges of organizing one-off events, such as NWSC11, are the high requirements for timeliness and quality. Even small mistakes may have serious consequences. The opportunity to reduce risk through delays or by transferring it to others is limited in the implementation of a major sport event (Leopkey & Parent, 2009a; Leopkey & Parent, 2009b). Due to VM2011’s ambition to host the best World Championships of all time, VM2011 needed to possess high reliability, willingness and ability to cope with challenges in an efficient manner.

Project organizations are groups comprised of professionally competent staff and selected expertise from various backgrounds. In this case, the project organization has members from the national forces, the municipality, business relations, and politicians. This is an example where collaboration is needed to develop functional and effective teams that will meet the set objectives. The ability of organizations to develop standardized guidelines to ensure optimal performance, while remaining flexible enough to be responsive to unexpected circumstances, is a necessary characteristic for success.
Literature concerning sport events, event management and related topics is emerging. Frameworks for risk management issues, and organizational strategies used to deal with risk issues exist with in literature (e.g., Appenzeller 2005; Chang and Singh (1990); Getz (2007); Gray & Larson, 2000; Parent, 2008). A thorough literature review shows that test events, and the ways in which they may affect an organizations’ ability to organize and implement successful major sport events, have received little attention. There is limited evidence about how project organizations use experiences gained from test events to efficiently develop their organization and accomplish a successful major sport event. Preparation for extreme situations, preparedness training, stress management, capacity building, continuous development, and learning are salient processes to support an organizations’ ability to successfully perform. This paper focuses on how project organizations may ensure professionalism and success in the planning phase and accomplishment of major sport events, and answer the research question:

*How were the test events used as part of the effort to develop a reliable project organization?*

The major contributions of this article are to apply a new perspective on sport event management, and to demonstrate how test events may be used in the process of developing more reliable organizations. The study analyses processes initiated by the main operational committee after the main test events, and how the organization evolved in the given timeframe of the study.

The article is organized as follows: First, an overview and description of VM2011 is presented. Thereafter, literature concerning organizational mindfulness and HRO characteristics is portrayed. This is followed by a clarification and categorization of main challenges and risk factors related to NWSC11, from the main operational committee’s (OC’s) viewpoint. Finally, an analytical discussion regarding which processes initiated by the OC striving to be a more reliable organization is undertaken.

2. **Empirical Background**

Projects consist of many phases or stages, and there are several project frameworks suitable for sporting events (Burbank et al., 2001; Getz, 1993; Hall, 1992; Masterman, 2009; Shone and Parry, 2004). In this study, a standard project management model is
used which divides a project into five phases including: 1) initiation; 2) planning; 3) implementation; 4) accomplishment of event itself; and 5) the shutdown phase (Bowdin, Allen, O’Toole, Harris and McDonnell, 2006, p. 268). The following discussion outlines the phases of the NWSC11, including an overview of the history and progress of VM2011.

Different project phases consist of various types of tasks, areas of focus, and demand different organizational capabilities (Table 1). According to Andersen and Hanstad (2011), the main source of opportunities and reduction of risk takes place during the preparation and planning processes. VM2011 faced composite risk factors, and the preventive risk management effort involved developing risk analysis models for risks they could foresee. Equally important was to prepare the organization for the practical handling of unforeseen operational risks during the event in order to provide sufficient capacity and flexibility in the organization.

The planning of NWSC11 started more than five years before the actual event. The present study limits its focus to the area highlighted in grey (see table 1), which is the period from the main test event, FIS World Cup 2010 in Nordic disciplines (hereafter WC10), to the accomplishment of NWSC11 in 2011, which henceforth is referred to as the implementation and accomplishment phase. During this period, opportunities and challenges were identified, capacities were developed, reliability was strengthened, frameworks were established, and responsibilities and roles were formed. Key concerns in the implementation phase were to ensure that the construction work was on track, that a healthy and resilient work-staff were created based on problem solving, active dialogues, evaluations and educational activities to develop knowledge, skills, and competencies. An important aim of this phase was to develop common identity and culture where all members and involved parties established shared patterns, and common perception of reality.
### Table 1: Overview of main activities in each project phase

<table>
<thead>
<tr>
<th>TIMELINE</th>
<th>PROJECT PHASES</th>
<th>OPERATIONS AND ACTIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>INITIATION PROCESS</td>
<td>April 2003&lt;br&gt;- Rejection of application for NWSC11 2009&lt;br&gt;April 2005&lt;br&gt;- Oslo City Council supported a NWSC11 application&lt;br&gt;September 2005&lt;br&gt;- FIS inspected Holmenkollen required major improvements of the arena, to meet the FIS standards&lt;br&gt;January 2006&lt;br&gt;- Brainstorming. Establishment of an application committee&lt;br&gt;- Oslo city Council resolved the application for the NWSC11. Government guarantee for developing new national facilities for Nordic skiing and biathlon in Holmenkollen&lt;br&gt;May 2006&lt;br&gt;- The NWSC11 were assigned Oslo, Norway</td>
</tr>
<tr>
<td>2006</td>
<td>PLANNING PROCESS</td>
<td>January 2007&lt;br&gt;- The corporation Ski-VM 2011 established&lt;br&gt;2008&lt;br&gt;- Major sponsorships are established&lt;br&gt;- Overall organizational planning, recruitment processes</td>
</tr>
<tr>
<td>2009-2010</td>
<td>IMPLEMENTATION PHASE</td>
<td>2009&lt;br&gt;- Constriction work in Holmenkollen + Metro&lt;br&gt;- The head quarter (VM-pavilion) raised in Oslo city&lt;br&gt;- Volunteering recruitment processes for WC10 and NWSC11 - Stakeholders more involved (e.g. Oslo municipality, police and Norwegian armed forces)&lt;br&gt;March 2010&lt;br&gt;- MAIN TEST EVENT accomplished (March 13-14)&lt;br&gt;- Rehearsals, table top exercises and building competencies&lt;br&gt;- Reflecting and routinizing&lt;br&gt;- Prepare for unforeseen events&lt;br&gt;September 2010&lt;br&gt;- Ticket sale for NWSC11 starts&lt;br&gt;- COC, TEST in Midstuen, skijump.&lt;br&gt;- FIS inspection, the facilities was approved&lt;br&gt;- Operational planning and adjustment</td>
</tr>
<tr>
<td>2011</td>
<td>ACCOMPLISHED</td>
<td>January 2011&lt;br&gt;- Diverse events in the arena, VM2011 not responsible, but get feedback from organizers.&lt;br&gt;- VM2011 takes over the facilities in Holmenkollen. OPERATIONAL&lt;br&gt;February&lt;br&gt;- TEST event, National Championship, Mens’ skijump.&lt;br&gt;February 23 – March 6&lt;br&gt;- NWSC11 accomplished in Holmenkollen and Oslo</td>
</tr>
</tbody>
</table>
In addition to the WC10, VM2011 was responsible for accomplishing Continental Cup in ski jumping during September 2010 in Midstubakken, which was still a construction site at that point (oslo2011 c), as well as the National Championship in ski jumping for men in Holmenkollen during January 2011. The WC10 was the test event of the greatest size, and, naturally the event most transferable to NWSC11. Nevertheless organizational learning and development is a continuous process, and therefore experiences gained from the smaller test events and on a daily basis were also valuable for VM2011 in the process of preparing for NWSC11. The WC10 cannot be evaluated completely independently. Due to time and resource constraints this study limits its focus on the given timeframe, and especially to the arena in Holmenkollen, as it was the main arena for the sport competitions during the event.

VM2011 possessed about 40 employees, including fulltime and part-time positions. The OC consisted of 10 persons (the CEO and nine employees). From August 2010 VM2011 gradually turned into operational mode and the following structure was adopted.

![Operational organization chart, VM2011.](image)

**Figure 1:** Operational organization chart, VM2011.
The OC has representatives from VM2011, Oslo City, the police, FIS, and the operations centre (Figure 1). Due to the challenging and divided arena, with sport competitions in Holmenkollen and cultural events and medal ceremonies in the city centre of Oslo, VM2011 decided to divide the organization into two separate venues with venue managers responsible for overall decisions in each arena. The Norwegian Ski Federation and The Association for the Promotion of Skiing were heavily involved in VM2011. The two organizations possess valuable resources and have experience from hosting many World Cups in Holmenkollen. The operational organization ensured to have responsible decision makers from central stakeholder groups in the operation centre in order to secure quick and correct decisions.

This study focuses mainly on the processes initiated by the OC in the given timeframe of the study. Understandably, the investigation of the OC is not independent from the rest of the organization and its stakeholders, as they are all heavily dependent parties. Considering the research project’s time and resource constraints, it was sufficient to delineate the focus into a manageable size to ensure good quality of the research at hand. In what follows, a justification of the lack of investigation on the current theme and a description of the empirical basis for this study is provided. Henceforth, the theoretical perspective on mindfulness and HROs will be presented.

3. Mindfulness and high reliable organizations

VM2011 and its employees consider themselves as a HRO and emphasize a fundamental attitude to professionalism and performance. The ambition was to create the best ever Nordic world ski championship. In addition, VM2011 prepared a cultural festival aiming to involve the whole country and leave a lasting impression on the whole nation as well as the visiting spectators. Employees in the core organization were chosen not only because they were talented in their field, but perhaps more importantly because they all shared a common mind-set towards their way of working. VM2011 faced numerous challenges and potential risks, such as training of volunteers, providing facilities, managing spectators/crowd, as well as logistics and transportation. VM2011 was acting in a field with small margins and serious consequences. Furthermore, the organizers had to deal mindfully with unforeseen, unanticipated, and often unwanted happenings in a variety of risky domains in order to succeed.
The practice in VM2011 draws many parallels to organizational mindfulness and HROs, therefore this theoretical perspective will be utilized in the analysis of VM2011. The main idea of HROs is to develop a mindful infrastructure so that the organization is able to deal with unexpected events by possessing characteristics that will be explained in detail in the following sections. Like any other organization a HRO is not error-free, but errors normally do not disable the organization as it is competent to meet challenges and unexpected events (Weick & Sutcliffe, 2007). The main characteristic of HROs is that they act mindfully, that is, the culture of the organization is institutionally mindful. According to Weick and Sutcliffe (2007) mindfulness in organizations can be defined as:

This enriched awareness which we call mindfulness, uncovers early signs that expectations are inadequate, that unexpected events are unfolding, and that recovery needs to be implemented. Recovery requires updating both of one’s understanding of what is happening and of the lines of action that were tied the earlier expectations (p. 23).

This can be seen in line with Starbuck and Hedberg (2006) who claim that mindful organizations emphasize a more conscious, self-critical, and analytical approach to learning. To manage the unexpected, one has to be aware of and understand the expectations and anticipations in the organization, and to also engage them mindfully. For mindful appearance, the attention must not be distracted, so that awareness may improve. The focus should be on the here and now, and the organization is more likely to succeed acting mindfully if all the involved parties have the same perception of reality. In other words, to act mindfully as an organization, all members must realize the current expectations, continuously improve those expectations based on new experiences, and last but not least implement those expectations to improve the current situation into a better one.

### 3.1 Characteristics of high reliability

There are five defining characteristics of HROs and a mindful infrastructure: they continually track small failures; they resist oversimplifications; they are sensitive to operations; they maintain capabilities for resilience; and they take advantage of shifting locations of expertise (Weick & Sutcliffe, 2007). These characteristics will be further explained in the following section, shedding light on how HROs act, and why it is claimed HROs perform more successfully in unpredictable circumstances.
Preoccupation with failure
A high reliable organization “treat(s) any lapse as a symptom that something may be wrong with the system, something that could have sever consequences if several separate small errors happened to coincidence” (Weick & Sutcliffe, 2007, p. 9). HROs differ from other organizations by the way they recognize mistakes in relation to success. Learning is short-lived and therefore HROs are concerned by gaining experiences from failures and developing useful lessons from them (Weick & Sutcliffe, 2001). By conducting weekly meetings in each section while keeping tight and open communication between leaders, they may track and follow up small failures at an early stage.

Reluctance to simplify
Aware that the world is complex, unstable, unknowable and unpredictable, a HRO tries to control the whole picture, and to position itself to see as much as possible (Weick & Sutcliffe, 2007). Often, organizations simplify while they are planning, in order to stay focused on key issues and key indicators. HROs strive to not simplify casually, habitually or instantly, and live up to the belief that less simplification allows you to see more. Diverse experience and scepticism is desired, instead of received wisdom and negotiation tactics that reconcile differences of opinion without destroying the nuances that diverse people detect (Weick & Sutcliffe, 2007, p. 11-12).

Sensitivity to operations
Compared to most other organizations, HROs are more situational and less strategic concerning the “big picture”. Weick (1984) believes that the best way to reach a major goal is to break down the main target to multiple targets. In this way, one can form reliable knowledge based on experience, and the organization achieves several goals along the way. This again helps develop a confidence and energy for future work and an enhanced capacity to deal with uncertainty. HROs are aware of the “close ties between sensitivity to operations and sensitivity to relationships” (Weick & Sutcliffe, 2007, p. 13). Open, frequent communication is a success criterion in HROs, and people who refuse to speak up in fear undermine the system. An HRO constantly worries about the unexpected and the latent errors that may escalate, which is described by Weick and Sutcliffe (2001), p. 13 as “loopholes in the system’s defences, barriers and safeguards whose potential existed for some time prior the onset of the accident sequence, though usually without any obvious bad effect”. Unfortunately, most often, these mistakes are
first noticed in retrospect, and may then cause adverse events or injuries in the organization, or for others involved.

**Commitment to resilience**

To deal with something one had not foreseen happening requires a different mind-set than to predict that something will happen. Being good at anticipating will be a competitive advantage. HROs constantly “complement their anticipatory activities of learning from failure, complicating their perceptions, and remaining sensitive to operations with a commitment to resilience” (Weick & Sutcliffe, 2007, p. 14). Two main activities for a HRO are to keep errors small, and to improvise workarounds to keep a functional organization while meeting errors. These activities demand professional capabilities, but also deep knowledge of oneself, one’s co-workers, the system, and technology. Therefore, HROs train their workers such that they have personnel with deep and varied experience and skills to meet all kinds of challenges with a steady hand. In one-off major events, the importance of being dynamic is salient. The organizations’ ability to be flexible and to meet unforeseen events with strength are of great importance to act appropriate in all situations.

**Deference to expertise**

The structure in HROs appear as a combination of hierarchy and expertise, and the decision making structure is hierarchical in the sense that the person with the most appropriate background and expertise is responsible for decisions. Interestingly, this is constantly changing in relation to the special field of the person taking the decision. Normally, decisions are taken from the top. In a state where decisions are required rapidly, decisions are taken throughout the organization. In the state of emergency, a predefined structure is acquired. Importantly, the attention should be connected directly to the experts, regarding the problem, solutions and decisions (Weick & Sutcliffe, 2001). The entire organization should be characterized by attention to any unknown signal, and equally important is the empowerment of various levels of expertise within the organization.

Organizations preparing for and implementing major sporting events face a wide complexity of risks, and must act proactively to foresee all possible situations and outcomes. It is reasonable to assume that an organization’s daily routines and specific preparations determine to what extend it will succeed in the accomplishment of the sporting event.
4. Method

To answer the research question I opted for a single case study approach. Sport events are to be understood as a complex phenomenon, and the case study is designed for investigating such phenomena (Yin, 2009). The present case aimed to examine the processes initiated in VM2011 within the implementation phase of WNSC11, and understand to what extent VM2011 was able to develop a high reliable organization. Few prior studies have sought to understand this phenomenon, and therefore, an explanatory case study strategy was conducted. The research was limited to one event organization, as it creates the ability to go in depth with one single phenomenon (Yin, 2009). Details on the sample, data collection and the data analysis follow.

4.1 Sample and data collection

The project exploited organizational files, documents, newspaper articles, and notes, but the major data source was in-depth interviews (Rubin & Rubin, 2005) with key actors within VM2011. Data from organizational material, newspapers, and other media contributed to draw a preliminary perception of VM2011 in order to understand how the OC worked in the implementation phase. Also, the material supported, cross-validated and complemented the variety of issues discussed by the interviewees (Creswell, 2007). The six informants represent a strategic sample (e.g. Charmaz, 2006; Marshall, 1996), from the OC and the top management within VM2011. The respondents were selected after a thorough search within the organization, based on reading organizational documents (such as risk analysis, evaluations and other plan documents) and due to their expertise and experience. In addition, a dialogue with one key person in the OC was conducted, to map who were in positions dealing with especially challenging issues, and who could therefore provide the most relevant data regarding the research question. Ideally, interviews with administrative employees, volunteers, and external parties would be of great value, but this study takes into account the administrative employed leaders’ perspectives.

Because of their managerial position, the respondents may be more likely to promote and talk positively of their organization. Existing studies suggest that higher-status employees view their organization more favourably (Payne & Pugh, 1976), and that they have vested interests, are targets for blame when objectives are not achieved, or that they believe that they have more expertise than their colleagues (Starbuck & Hedberg, 2006). One should have in mind that the perception of VM2011 presented in
this article is not representative of the whole organization, nor is it necessarily representative of other project organizations planning for major sporting events. Despite this, the perception of the interviewees is that they are self-critical to a great extent, and have a nuanced picture of their given roles and organization. The situation may differ from the top management to other positions in the organization. By talking to other employees, volunteers, following exposure in media and news-posts, reading research-reports about the volunteers’ perception of the organization and their leaders, a more complete picture of VM2011 could be drawn. The presentation of VM2011 was relatively equal in all the documents, nevertheless I cannot exclude that there may be some nuances that are not captured.

The respondents were interviewed individually and face-to-face around five months after the main test event, and five months before the accomplishment of NWSC11. Each interview lasted between 45 to 95 minutes. In depth interviews with six persons were conducted because rich, in-depth data from those were considered to be more suitable and valuable than less relevant information from a higher number of respondents (Marshall, 1996)
Table 2: Informants position, timing and duration

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>Date</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director of events</td>
<td>Pre event, September 2010</td>
<td>45 minutes</td>
</tr>
<tr>
<td>CEO</td>
<td>Pre event, October 2010</td>
<td>54 minutes</td>
</tr>
<tr>
<td>Transport and Logistic</td>
<td>Pre event, October 2010</td>
<td>64 minutes</td>
</tr>
<tr>
<td>Manager</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crowd Manager</td>
<td>Pre event, October 2010</td>
<td>62 minutes</td>
</tr>
<tr>
<td>HR Director</td>
<td>Pre event, October 2010</td>
<td>58 minutes</td>
</tr>
<tr>
<td>Director of events</td>
<td>Pre event, October 2010</td>
<td>73 minutes</td>
</tr>
<tr>
<td>Sports Director</td>
<td>Pre event, November 2010</td>
<td>95 minutes</td>
</tr>
<tr>
<td>Transport and Logistic</td>
<td>Post event, May 2011</td>
<td>50 minutes</td>
</tr>
<tr>
<td>Manager</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director of event</td>
<td>Post event, June 2011</td>
<td>44 minutes</td>
</tr>
</tbody>
</table>

All interviews were conducted in VM2011’s visitor centre and headquarter in Oslo. Information about the research-project and central topics the interviews dealt with was given to the respondents a few weeks in advance so that they were sufficiently prepared before the interviews took place. To structure the interviews, main questions were asked first, then follow-up questions, to get the informants explore particular themes, and if relevant, concepts and ideas of special interest were discussed (Rubin & Rubin, 2005). Shortly summarized, the main topics in the interviews were: respondents’ general background and experience; identified risk factors and challenges related to NWSC11; experience based learning from the test event; decision making processes; the leader’s role; and, decision making processes in the implementation phase. The objective was to illuminate what VM2011 learned from the WC10 and how it affected VM2011’s work further in the implementation and accomplishment phase. Two of the informants, the transport and logistic manager and the director of events, were interviewed a second time post games to get their reflections and overall thoughts in retrospect. Due to their
departments being especially exposed to demanding challenges during the NWSC11, they could provide good information on areas of high relevance to the study.

### 4.2 Data analysis

The data analysis started simultaneously with the data collection; interviews were transcribed verbatim (i.e.: word by word) immediately after they were completed. To draw valid meaning from the rich explanations found in the data material, Miles’ and Huberman’s (1994) systematic approach was undertaken. Both deductive and inductive approaches were utilized analysing the data. To obtain an initial overview, the first coding (inductive coding) allowed essential research themes to emerge (Grønmo, 2004), and represented a categorization of specific risk issues and challenges, reflections, and initiated actions and processes. The second coding (deductive coding) based its categories on theoretical concepts of mindfulness and HRO characteristics. The researcher’s attention was directed to the specific challenges identified by the informants, and what characterized the preparations for NWSC11. Statements utilized in this article are translated from Norwegian into English, in the best of the researcher’s ability, to communicate what the respondents expressed. The results and an analytical discussion follow.

### 5. Results

VM2011’s ambition was to prepare and accomplish the best Nordic World Ski Championship ever. This study seeks to provide a better understanding of how the OC in VM2011 utilized test events to develop a high reliable project organization in the process of planning for, and implementing NWSC11. The crowd manager underpins the significance of testing the organization before a major event: “We have tested. We failed in some areas - and performed well in others. Both things are equally important (...) it plays a huge role in creating a successful event next year”.

The results will be presented in three sections. First, results concerning how VM2011 with its management and leaders fundamentally appears to possess high reliable characteristics based on general qualities in the organization. Second, how these characteristics were expressed in the practical work within VM2011. Last, a review of the operational outcomes is delivered.
5.1 VM2011 - A mindful organization?

VM2011 represents a mindful attitude. The respondents described its organization with these words: responsible members, personal and organizational development, solution-orientation, new-thinking, inclusivity, openness, complement each other, provide good skills, feasibility, reliability, value the final goals, and process conditions to achieve them. The CEO stated: “… a part of my leader philosophy is to build complementary teams, daring to put together people that supplement each other. Differences create dynamic development, and functional teams”. After an in depth study of VM2011, the researcher perceives that the CEO successfully implemented her philosophy within the organization. The constant strive for establishing knowledge through experiences and planned events throughout the project is a distinct sign of embedded organizational mindfulness. Ongoing learning processes emerge as an essential part of VM2011’s practice, as illustrated in figure 2. According to the interviewed leaders, initiated actions and events may only be used as a learning tool if sufficient time to reflect over them is set aside. By reflecting on both small and big actions through detailed evaluations, discussions and open communication, VM2011 was able to identify challenges and opportunities at an early stage. By reviewing and assessing recent action, asking themselves questions like: ‘how can we be better’ and ‘what if...?’, the organization continually did minor adjustments to improve their own performance. The plan documents were always developed with the presumption that they would be modified, since the leaders desired to act dynamically, and in relation to the requirements that arose during the project process. By conceptualizing, VM2011 prepared the flexibility, resources and explicit knowledge to be applied for more successful action in the next operation.
All elements in the learning process (figure 2) must be present, and functioning, for the organization to achieve continuous learning. Evidently, leaders within VM2011 were concerned about, and emphasized the organization’s constant learning and development. Nevertheless, to obtain high reliability, it is essential that also the rest of the organization share leaders’ mindset and approach to organizational mindfulness. The next section of the results provides a discussion on how high reliable characteristics were expressed in the practical work within VM2011.

5.2 Practical work in VM2011

To enlighten the central processes in VM2011 after the test events, main risk issues and challenges viewed by the OC were identified. Different issues vary in importance and focus during the stages within the planning process (Parent, 2008, p. 140), and as each event is unique, one always discovers a variety of issues. Therefore, the unique issues related to NWSC11, faced by the OC in VM2011 were identified.

Core challenges and experiences acknowledged during the Word Cup 2010 did to an extent reflect the respondents’ position, responsibilities and interests. Four out of the six respondents were members of the OC, and the remaining two respondents were head of two particularly exposed sections, (logistics and transportation, and crowd management) in terms of challenging tasks and responsibilities. Despite some individual areas of
concerns, all respondents shared a common understanding of what were central challenges during the period between WC10 and NWSC11, and were categorized into the following four groups: Organization and management; information and involvement; arena; transportation and logistics.

*Table 3: A categorisation of specific risk issues and challenges from the OC’s viewpoint.*

<table>
<thead>
<tr>
<th>Risk issue category</th>
<th>Examples of typical issues faced by the OC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization and management</strong></td>
<td>- Paid staff VS volunteers, different expectations and motivation.</td>
</tr>
<tr>
<td></td>
<td>- Training of volunteers.</td>
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<tr>
<td></td>
<td>- Unfixed command lines, not clarified roles and responsibilities.</td>
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<tr>
<td></td>
<td>- Lack of evident leadership section vice.</td>
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<tr>
<td></td>
<td>- Lack of experience from the event industry.</td>
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<tr>
<td></td>
<td>- Poor organizing internally.</td>
</tr>
<tr>
<td></td>
<td>– Lack of effective internal communication between sections.</td>
</tr>
<tr>
<td><strong>Information and involvement</strong></td>
<td>- Information flow with volunteers and stakeholders.</td>
</tr>
<tr>
<td></td>
<td>- Involve and integrate third parties (e.g. police, Oslo municipality, Norwegian armed forces, snow crews,</td>
</tr>
<tr>
<td></td>
<td>and so on).</td>
</tr>
<tr>
<td></td>
<td>- Communication between sections and teams within VM2011.</td>
</tr>
<tr>
<td></td>
<td>- Signage and information in English, for spectators and others affected.</td>
</tr>
<tr>
<td><strong>Arena</strong></td>
<td>- Arena unaccomplished during test event.</td>
</tr>
<tr>
<td></td>
<td>- New, small, unique, arena. NWSC11 is the first event hosted there.</td>
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<tr>
<td></td>
<td>- No test events in the city arena.</td>
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<tr>
<td></td>
<td>- Separated arenas.</td>
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<tr>
<td></td>
<td>- Logistics in the arena.</td>
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<tr>
<td></td>
<td>- Safety.</td>
</tr>
<tr>
<td></td>
<td>- Breakdown of tribune.</td>
</tr>
<tr>
<td><strong>Transportation and logistics</strong></td>
<td>- Difficult accessibility to facilities in Midstuen (spectator-flow, timing, logistics)</td>
</tr>
<tr>
<td></td>
<td>- Breakdown or damage on the metro</td>
</tr>
<tr>
<td></td>
<td>- Complicated roads (access on and off)</td>
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<tr>
<td></td>
<td>- Coordination of two separate arenas (Holmenkollen (sport) and the city centre (ceremonies and cultural events))</td>
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<tr>
<td></td>
<td>-Calculate number non-ticket spectators travelling with Ruter (metro)</td>
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<tr>
<td></td>
<td>- Media- and press representatives</td>
</tr>
<tr>
<td></td>
<td>- Budget vs. staff/services</td>
</tr>
<tr>
<td></td>
<td>- Develop more effective routines and functional systems</td>
</tr>
</tbody>
</table>
In table 3, risk issues and challenges most mentioned and discussed within the analysed documents and interviews are systematically listed and categorized in four main groups. Obviously, there are no tangible boundaries between the emerged categories, because factors in one group may influence conditions in other groups. Therefore, table 3 is a starting point in the process of providing a holistic picture of VM2011.

Aware that small failures may develop and cause significant errors, VM2011 strived to perform highly reliably and with a mindful appearance at any time in the process. An analytical discussion of the operational work follows.

**Organization and management**
The preparations after the WC10 dealt largely with fine adjustments and modifications of the organization itself, which proved to be one of the most critical functions during WC10. When VM2011 first was formed, it was designed based on the structure of previous World Cup events in Holmenkollen, but the size of NWSC11 and the new arena required supplementary professional skills and a greater work force compared to a World Cup event. Aware that one could not expect the organization to function smoothly right from the start, experience from test events uncovered quite a few unresolved issues in terms of responsibilities and lines of command, which appeared frustrating for paid staff and volunteers.

For example, the OC expressed general dissatisfaction on how the sections were divided, and the absence of venue leaders in both Holmenkollen and in the City arena. Some personnel were given too much responsibility, leaving them unable to take care of their own tasks and at the same time provide feedback and guidance to their colleagues. This again led to “lack of internal communication between departments and sections, lack of interaction between departments, and the tendency of blaming on each other was growing” (Crowd manager, Oct 2010).

Ambiguities like these may have negative outcomes over time, and it was necessary to resolve them quickly. To map and plan the further direction towards NWSC11, all sections and teams were set out to do an evaluation of their own efforts, define their development areas, and identify common improvement areas for VM2011. Then, several cross-section discussions built the foundation for a shared field report, compiled by the OC on a long-weekend evaluation seminar in May 2010. Schön, (1983) suggests that successful professionals must reflect on their actions to be able to convert tacit
experience into explicit knowledge. VM2011 were highly committed to the evaluations from the WC10, and devoted time to analyse the evaluations from all sections, to resolve faced challenges. The evaluation of WC10 took place mainly during, and immediately after WC10 was accomplished. This is how the HR director experienced the evaluations from the WC10 affected the organization:

One of the greatest things from the evaluation, I think, is to get the organization in place. It's sort of the premise for things to work, that the organization is neat and orderly. The facts that people now know what to do, and have clear role descriptions (…) accomplishment of the WC10 established a common picture for the organization. This again, leads us to work totally different, more effectively. Members of the organization suddenly speak the same language, and have something to build further processes on.

On the one hand, respondents stressed that they evaluated their work constantly in the planning and implementation phase, and in all parts of the organization. On the other hand, they communicated that experiences from the WC10 were particularly beneficial, because of the greatest transferability. Table 3 provides a simplified presentation of the areas in which VM2011 appeared highly reliable, and also illustrates areas lacking high reliability.

As mentioned above, VM2011 itself possessed a deep-rooted mindful attitude. Despite this, many small adjustments were required for optimal organizing of NWSC11. Obviously, there are many variables within each area, but based on the data analysis, the most salient observations are presented in table 3, to illustrate the main features of VM2011’s appearance. Regarding information and involvement, the need for increased involvement of external stakeholder groups was discovered, in order to achieve functional collaboration and fully exploit the resources and capabilities available. VM2011 carried out very thoughtful and detailed planning concerning the unfinished arena in Holmenkollen, as it was perceived as a major problem area. Surprisingly enough, the unfinished arena turned out to be a very small challenge compared to what VM2011 expected (probably due to the good planning in advance). Regarding the transportation and logistics, a lack of internal collaboration was revealed, and the need for greater professionalism was reported. By allocating time for reflections, and conceptualizing further directions, VM2011 was able to develop actual experience into explicit knowledge. More examples of how VM2011 performed and what they
experienced in the planning phase is presented in the following interview excerpts.

Volunteers: “One of our objectives was to renew the volunteer base” (HR director, Oct 2010). The intention was to establish a younger and cultural diverse staff reflecting the population, with diverse and complementary skills and capabilities. VM2011 started the recruitment process of volunteers at an early stage (February 2009), focusing on establishing a volunteer centre, training programs, and recruit the right leader for the different teams. This was a highly conscious choice, and one of the main success criteria, according to the HR director:

If one leader does a poor job, suddenly eleven people work ineffective. Therefore, we are very conscious of running interviews, and a little like an audition with assignments and group projects, where we see how people act while working together with others.

This reflects VM2011’s approach to the importance of who represented them. All in all, 2270 volunteers were recruited for NWSC11, 45% of whom were women and 55% were men. The average age was 43 years, and the volunteers represented 42 nations (Oslo 2011, 2011). By allocating effort and time during the recruitment process, VM2011 intended to quality control volunteers and choose the most suitable leaders, assuring that VM2011 may perform effectively and relying on employees (volunteer leaders) doing their tasks and taking care of the details. The goal was to educate volunteers through training from the test events, as well as Internet learning, live meetings and workshops.

All in all, 1200 volunteers were active during WC10, which was an overstated high number. VM2011 intended to provide volunteers with applicable knowledge, experience, motivation and professionalism. The outcome of this turned out to be somewhat counterproductive. The HR director (Oct 2010) stated: “Many volunteers were bored. They said it was no fun standing there without a task”. Experience from WC10 contributed to a modified strategy concerning volunteers in the NWSC11. The sections did a new assessment analysis, and gave rationale for the number of volunteers required, as well as what their tasks and responsibilities should involve. The HR director (Oct2010) stated: “We are going to be much tougher on the numbers, so that we can challenge a lot more. To make sure that those who are volunteering have something
to do, something useful to do”. Understandably, it was hard to find the right balance in this case, as the HR director stated:

It is about finding the right balance. On the one side, the volunteers want to have knowledge and expertise for what they do. It is no fun to stand there and not be able to answer any questions. But, as they are volunteers, one cannot expect and demand too much, either.

Hence, the focus for VM2011 was to establish mutual trust, create positive expectations, involvement, and provide effective “spot-on”-training for the volunteers. It was believed that this could affect volunteers’ effort in a positive direction, and at the same time provide increased enjoyment for the officials while volunteering. However, regarding the volunteer leaders, experience from WC10 was very useful. Volunteer leaders received close follow ups, and adapted preparedness training for their special responsibilities and tasks. They possessed key positions, but did not participate in the daily work in VM2011. For that reason, WC10 contributed to integration in the organization.

Role clarity and responsibilities: After WC10, there was a general agreement in the executive board that one of the main initiatives in the organization was to establish role clarity, and to define reporting lines and responsibilities within the organization. In order to do so, it was important to identify opportunities for a new structure. According to the HR director:

It has been a challenging process, having to explain to people – ‘you have many bosses that you must deal with. (...) and whom do you listen and report to?’ (...) for someone, it is okay; it is really no problem at all. They say ‘it does not matter to me. (...) I work with my own stuff’. While others think it can be confusing, they are wondering ‘who exactly is my boss? I like to have a boss, and I have to work under a boss and have clear limits’. So we have worked a lot with it, how to get the operational organization implemented, we have had many team meetings where we talked about these things.

Of course, many different views existed on various issues, which made it especially challenging to find the perfect solution for everyone. Most important of all though was to delegate responsibilities to different areas, to avoid unnecessary conflicts and to capture and manage challenges at an early stage. A driving force for creating clear role
descriptions and delegating responsibilities was the sport director, who is highly experienced in both technical and administrative capacities in the sport event management industry. He was entering VM2011 shortly after the WC10 and after finishing his role as the sport director for the Olympic winter games in Vancouver 2010. The new Sport director in VM2011 stated:

There were no descriptions of the various roles. (...) we have to focus on improving that, so everything flows better. Then people know what to do, and not to do. (...) for example, the transportation-section is divided into many areas; public transport, athlete transport, and the ‘taxi service’. You need to know exactly who to talk to, and talk directly with that person. If not, you risk talking to wrong persons, saying ‘yes, we fix it’, but then nothing happens.

Due to the organizational adjustments, the respondents expressed it was easier to relate to each other in a more professional manner. At the same time, the organization’s work was characterized by increased efficiency due to direct command lines, and everyone was more confident in their positions after WC10. The external partners were to a greater extent involved in VM2011, and its processes. This will be discussed more in the sections concerning structure, and information and involvement.

**Structure:** One of the most essential and beneficial adaptations in VM2011, according to the event coordinator, was to divide the organization into two geographical divisions, with managers at each venue. During NWSC11, the sport and competitions took place in Venue Holmenkollen, and the venue included the arena “Marka”. The cultural festival and medal ceremonies took place in Venue City Centre. During the WC10, VM2011 acknowledged it was impossible to control both venues simultaneously, without having a general manager responsible at each site. During the WC10, VM2011 conducted the medal ceremonies in Holmenkollen, which caused no real test of the City Centre venue. This fact strengthened the need for specific venue management there. The structural changes, integrated with role clarity and responsibilities, were healthy for VM2011.

Stakeholders (e.g. Oslo municipality, the police, the financial director, environmental director and so on), whom previously were positioned outside the organization, were incorporated with decision makers in the operational centre, resulting faster communication and decision-making processes concerning specific responsibilities. The CEO expressed this achievement with the following example:
If we because of a two meters snowfall have to redirect the snow crew one night, we must have decision makers who can implement it immediately. We cannot go the bureaucracy way - it must be done right there. (...) we saw the importance of the municipality, and those who work within the facilities. (...) they [the municipality and external stakeholders] had in a way their own organization, even if we were interacted. (...) they being incorporated in our organization in the implementation of the NWSC11 are very, very important.

Thus, it was essential to have access to an open dialogue and to establish good relations with the right people in the event of unforeseen incidents over which VM2011 did not have control. The implementation of WC10 established increased cohesion between VM2011 and its affiliates, and an evident picture of the connections that must be drawn appeared. Without the experience from WC10, these requirements would not have been revealed.

*Culture:* VM2011 aimed to create a unique culture from the start, and according to the CEO, it was essential:

If we shared office with Norwegian Ski Federation or the association for the Promotion of Skiing, we would have slipped into their particular culture. Here [in VM2011 headquarters], we have the chance to build our own culture and identity. (...) the culture we develop is crucial for our results. We are not focused on the goal itself, but the continuous processes to reach a set goal. The goal is therefore a consequence of the exact implementation of our very specific action-plans and tasks. Necessary adjustments will be done based on our regular measurements along the way.

The event coordinator stated, engaged: “The culture is ours! (...) we have the ability to influence much with our leadership”. It is therefore evident that VM2011, especially the OC and employed leaders, valued, and prioritized working purposefully to create its own culture. Based on how they described their everyday work, it appears they constantly made small changes to shape a comprehensive culture closer to NWSC11, emphasizing a focus on communicating the same messages through all media channels used (i.e. volunteer web portal, information meetings, press conferences, webpage, television, interviews, and more). During the WC10, the basis for a common culture was formed, where everybody involved got the chance to interact, to know each other,
and develop common identity. One prerequisite for developing a common culture is to interact with each other, and the WC10 was beneficial in that manner, because the majority of the volunteers participated and gained useful experience. Athletes, spectators and media representatives were encouraged to respond to a survey concerning their satisfaction with the event. “We got feedback that the volunteers were so gentle, service-minded and really were perceived as hosts and helpers. It shows that we have managed to implement our culture and value platform to the outer loop” (CEO). Results like this motivated for more targeted preparedness training in the last preparation for NWSC11.

**Preparedness training:** VM2011 strived to fully exploit its capacities, and the CEO compared their planning process with an athlete’s preparation for an important championship. Systematic exercise, detailed training programs, action plans, and small goals along the way, constitute the effort to reach the overall goal. The help from 2270 volunteers during NWSC11 was indeed necessary, and it was important that the volunteers felt meaningful while they participated. In an interview, the HR director stated: “Volunteers are our most important resource and a key success factor” (Oslo2011 d, e.), and for that reason, VM2011 strived to create a culture where volunteers experienced ownership and confidence. However, many volunteers had been active in several World cup events in Holmenkollen before, and one central person in VM2011 explained:

> In a World Cup context, it [the routines] is in the mind of most of the volunteers. We have advocated that ‘we have to produce implementation plans down to the smallest detail on each section level’. We started before the World Cup, but we will go on with this on an even more detailed level.

The OC highlighted the need for gearing up the organization to a ‘World Championship performance’, and underpinned the NWSC11 demanded much more from the organization, compared to an ordinary World Cup event. To develop dynamic capabilities, VM2011 utilized several techniques. In addition to the detailed implementation and action plans, visualization was often utilized. The transportation and logistics director appreciated the frequent training sessions, and said:

> We visualize. (...) ‘how do we set up the intersection? What if there is a car accident? A bus stop? If someone gets injured? Who will support us? Whom to report to? Do you know what to do?’(...) it is to verify the plan.
Through frequent discussions, open communication, and brainstorming, VM2011 developed awareness and knowledge of how to handle a wide range of possible scenarios.

*Expertise.* VM2011 strived to possess spot-on expertise in different positions, firstly to manage operational tasks, and secondly, to ensure decision-making at lower levels. During WC10, the need for higher professionalism in some areas was reported. Special expertise was required to operate flawlessly in the new facilities in Holmenkollen. No one in Norway was qualified to operate in the new freezing system in the outrun of the ski jump. The solution was to hire expertise from Canada, who utilized the same freezing system during the Winter Olympic Games in Vancouver 2010. Canadian experts educated people in Norway on how to operate the new technical freezing system.

In the transportation section, the required expertise was present, but the ability to interact with other sections within VM2011 as well as professional partners was lacking. According to the transportation and logistic manager:

> The transportation section actually managed their specific tasks during WC10. (…) but they did not collaborate well with the rest of the organizing team. They were literally out of sync. (…) we replaced people, and put together something completely new, last fall.

Due to requirements for increased collaboration with professional partners, the huge managerial step was taken, and the executives described the decision as both tough and demanding. In retrospect, it appears very significant for improved effectiveness and corporation, to obtain a more professional workforce.

**Information and involvement**

“We aim to involve widely, so that as many as possible have ownership of this”, CEO. Since VM2011 was established in 2007, it emphasized the importance of involving the city of Oslo and salient stakeholders, with the intent of creating ownership and fellowship. In accordance with one of the latest studies on risk management strategies in large-scale sporting events, the development of healthy relations is crucial. Event organizations must be aware that cooperation, ability to meet the needs of others, build long lasting relationships and engage those involved in the overall project management
is essential (Leopkey & Parent, 2009b). After WC10, VM2011 noticed increased interest from external stakeholders, and found it easier to involve people. The event coordinator proudly explained VM2011’s ability to involve and also integrate others in their project:

We have been able to involve and integrate external resources into our organization. Not just 'accepting help', but integrate, and say; 'you are a part of us'. (...) they [partners] are feeling the 'we-attitude’. When the subway operator tells us he is learning more English to communicate better with international visitors, we know we have achieved something.

The capacity of involving and integrating external resources was probably one of the greatest success criteria for VM2011. It was a time consuming job to establish tight relations, but it proved to be worth it during the accomplishment of NWSC, when all parties worked together in the same direction, everyone working for what was best for the event.

**Technology:** To feed more than 2000 volunteers with proper information, and to keep the entire organization updated at any time, project management tools must be user friendly and utilized by all joints in the organization. Before WC10, rarely anyone in the organization utilized the project management tools available. Due to adjustment and improvement of the existing management tools, and due to one central person in the top management promoting the use of them, all leaders were practically forced to use the tools. This again, had ripple effects, and when the top management utilized the project management tools, the rest of the organization followed (as this now was the main information channel). With a common communication system utilized by all members in the organization, VM2011 achieved a faster, more correct and effective internal communication.

**Arena**
During WC10, the arenas were not close to ready, which lead to several unusual challenges. The sport director stated it this way:

A unique problem is that parts of the venue existed from before, and has hosted numerous sport events in previous years. Some old routines were established here. (...) in Midstuen ski-jump there has never been a competition before, so
we don’t know how everything works. We have tested the jump without snow. That is not comparable with testing it in the right conditions.

Ineffective architectural solutions, reduced mobility and technical problems are just a few of a long list of identified issues VM2011 was concerned about. Despite lack of real-life training and experience in the arena, VM2011 experienced that it was not as challenging as they anticipated. A possible explanation for that may be that VM2011 had been foreseeing and visualising worst-case scenarios in all parts of the arena, so that they were excessively well prepared.

**Transportation and logistics**

Due to reduced mobility and lack of space for an event of the size of NWSC11, VM2011 faced a few challenges. The fear of overloaded parking areas, too many cars in the small roads close to the arenas, and the desire to have an environmental profile, led to environmentally friendly and effective spectator transportation. Ticket holders got free transportation with the metro to Holmenkollen. At the same time, it ensured a greater overview of the masses of people. According to the CEO, “Monitoring the public transportation, they [the police] can see on the screen when big crowds from Majorstua are moving up there [to Holmenkollen], and maintain control. (...) a reportedly useful experience, which was not done before.”

Based on the number of tickets sold, VM2011 could foresee the number of spectators in the main arena, but there were two zones, free for the public (ceremonies and cultural events in the city centre, and the arena “marka”, where spectators could watch the cross country competitions from the forest, close to the tracks without a ticket). Discussing the anticipated number of spectators, the event manager stated: “It is very difficult to calculate. We have no clue how many spectators are going to show up in addition to the tickets we have sold”. VM2011’s estimates were extremely low in some areas, especially concerning the expected number of spectators (a total of maximum 300 000). In retrospect, VM2011 admit that they did not foresee or dare to imagine the high number of spectators attending in both Holmenkollen and in the City venue. This led to several thousand spectators missing the competitions they had purchased tickets for during the first Saturday of the championships (which also attracted a lot of negative media coverage). The event coordinator described the experience like this:
Today, in retrospect, we know it would be a total catastrophe in the last weekend, if it was not for the "Black Saturday" [the first chaotic Saturday of NWSC11]. The fact that we managed to turn all the screws, opened up, and put the best people in the right places, provided enough resources, personnel and enough material, we managed last weekend too.

In other words, in this situation, VM2011 was really put to a critical test, and it is a great example illustrating that VM2011 possessed high reliability, as the organization overall was able to handle this situation, with the given resources and capabilities at hand.

5.3 Outcomes

It is difficult to conclude whether VM2011 operated mindfully in each of the different categories, because as mentioned earlier, the categories overlap each other extensively. It is more appropriate to consider the extent to which VM2011 as a single unit handled the various challenges in ways that are consistent with, or differ from what one might expect in high reliable organizations.

Nevertheless, I discovered situations where VM2011 did not act in accordance with the main characteristics of high reliability. To address a few examples, it seems that VM2011 performed poorly in estimating the interest of the public and it also lacked an understanding of the total impact of the event itself. The management in VM2011 admitted this, which may indicate that the organization simplified the estimates in specific areas at an early stage. It is also assumed that the relation between VM2011 and the main carrier of spectators lacked clarifications on matters concerning total contingency, operational limitations and responsibilities, which also suggests a possible over-simplification in the planning process. In return, VM2011 proved that the organization was capable of managing challenges and unexpected events, and it possessed the fundamental desire and capacity to perform when it really counted.

First, if it had not been for the test events, and especially WC10, the organization would have major problems during NWSC11. Experiences from test events contributed to an extra attention to the identified issues and challenges, and contributed to many internal adjustments in the organization. Secondly, exactly how much of VM2011's successful implementation of NWSC11 can be attributed to its good preparation and mindful appearance is difficult to determine. Many factors may have affected the success of such a large project, but it is reasonable to assert that VM2011's ability to ensure high
quality and possess the appropriate capacity in critical situations underlies its success in the implementation of NWSC11.

6. Conclusion

This article examines the way VM2011 utilized test events as a part of the effort to develop a high reliable organization. Contrary to previous research on the management of major sport events, this study provides a detailed analysis on the actual value of test events, striving to convey the possibilities that are opened by taking advantage of experiential learning. The performance of VM2011 was not error free. However, the organization tried to manage unforeseen events and risk issues professionally as it encountered them, by possessing flexibility and dynamic capabilities.

The findings of this study may be of interest to project managers in major sport events in the planning and implementation phase. In addition, the findings may be transferable to other fields performing in similar settings (e.g. cultural festivals, music festivals, sport events of greater or smaller scale).

This study suggests that in order to successfully implement an event such as the NWSC11, the contemporary project organization must invest considerable efforts and energy to establish close relationships and mutual trust amongst its members. Equally important, is that members are aware of the required capacities and skills to handle complex and unforeseen situations they expect will occur. The involvement of external stakeholders early in the project phase, emerged as a crucial success criteria for preparing the organization in the best way possible - both to fully exploit stakeholders’ expertise and capacity within the organization, but equally important, to establish relationships and mutual trust between the external parties, so that all involved are aware of given roles, responsibilities and tasks.

The desire to utilize experience and learning processes as widely as possible developed VM2011’s ability to deal with complex situations, and also to handle unforeseen events when they appeared. Test events have proven to open the possibility to fine-tune the organization further, and functioned very well for VM2011. Also worth mentioning is that the more explicit training and real-life testing is implemented, the better an organization can prepare for an event. It requires prioritizing of sufficient time to reflect on recent actions, and deciding initiatives for further work. Several initiated processes
Finally, it is not the researcher’s task to tell whether or not NWSC11 was the best Nordic World Ski Championships ever. Based on statements from the general public and FIS, one may conclude that the event has been received with gratitude and great joy. According to Gian Franco Kasper, the FIS President: “Oslo 2011 will surely be remembered as a spectacular championships. (...) Only in Norway, the birth land of Nordic Skiing, could we expect such masses of spectators making their way to the venue, day in and day out, regardless of the weather. (...) Simply unforgettable!” (Oslo2011 f). Also, the CEO emphasized a crucial point when saying in addition to having a satisfied crowd “We are especially happy to hear that the athletes really felt that they were at the center of the event, which was one of our main objectives,” (Oslo2011 f).

**Suggestions for further research**

This study identified a number of possible positive effects from consciously utilizing experiences from test events as a part of the effort to develop a high reliable project organization. A single master research project is by nature restricted to what can be accomplished during one year, and an important result of this project is that it raises a number of questions that can be used as ideas for further research. Similar studies of several different events, in other sports, in other countries, and of various sizes would either strengthen or contrast the recent findings, and also maybe open for new interesting research questions. By conducting similar studies, one may construct a more generalized view on how project organizations may better utilize experience from test events, in a long-term perspective. Again, this may lead to form the basis for a new theoretical framework for project organizations planning for major sports events, contributing to the existing literature of general project management.
References


PART II:

Complementary Theory and Methodology
**7. Introduction**

Are you a sport enthusiast, do you love watching sports on TV? Do you enjoy watching and cheering your favourite team or athlete competing live? There is no doubt that sport competitions and major events gather masses of people to experience sport and competitions of all kinds. Behind all these sporting events: days, months, and maybe years of structured and comprehensive planning is required to offer athletes and spectators an unique event and great experience. The event industry is a sizable, still growing industry, and sporting events are a huge part of this industry (Bowdin, Allen, O’Toole, Harris, McDonnell, p. 21). To provide error-free, successful sporting events, organizers must perform professionally and ensure the necessary capabilities and resources at hand. It is suggested that organizations able to prepare for the unexpected, and at the same time possess flexible capability and resources, are able to function better under conditions that exist in major sport event.

This piece of work is complementary to the present article, where additional theory and methodology is presented. The study conducted examined how leaders in a project organization prepare for major sport events, using test events as a part of the effort to develop a high reliability organization. It explores experiences from the planning and implementation for the Nordic World Ski Championship hosted in Oslo 2011, to answer the research question: *How was the test-events used as part of the effort to develop a reliable project organization?*

Results from the study shows that test events may be very educational provided that the experiences and learning from it are taken seriously evaluated as a basis for the further development of the project. Learning from a test event might be almost necessary and at least very useful as a foundation for building common understandings, common perception of reality, reduce risk issues and challenges, role changes and reorganization, – to develop a high reliable organization. Paradoxically, most important is the lessons about the project organization itself, and how it is able to develop capabilities and competencies to handle events they are not able to foresee. There are always scenes or situations one might plan better for. In this paper, the author present relating topics and literature concerning project- and event management, and how contemporary project organizations may perform to achieve successful results.
8. Supplementary theory

Mega and major events constitute an essential part of the field of sports management, which also relates heavily to the project management literature. Large-scale sporting events can be described as complex and big projects. The process of by which how project management is prepared, interpreted and performed by the organizing committee and stakeholders is of significant importance for accomplishing a successful event. This piece of work is prepared so that more general and complementary theory can be presented to the reader, in addition to build upon to what is written in the article. The following sections includes: Classification of events, the temporary project organization, leadership- and the leaders role, and organizational learning.

8.1 Classification of Events

There are several ways to categorize events; they may for example be grouped by size, form, and content. Sporting events are becoming a sizeable and growing sector of the event industry (Bowdin et al., 2006, p. 18).

![Diagram of event classification]

**Figure 3**: Mapping NWSC’s position in a categorization of events.

An example on categorization of events is presented in figure 3. NWSC11 is characterized as a major one-off event, which is described as “generally awarded after competitive bidding, substantial television rights interests nationally and
internationally” (Bowdin et al., 2006, p. 20). Major events may be one-time or recurring, taking place during one day or over several days. NWSC11 is a recurring event, but changing location every second year, depending where the event is hosted. Therefore, the Nordic World Ski Championship in Oslo 2011 is viewed as a one-off event. Jago and Shaw (1998) defined major sporting events as “a special event that is high in status or prestige, one that attracts a large crowd and wide media attention, has a tradition and incorporates festivals and other types of events, are expensive to stage, attracts funds to the host region, lead to demand for associated services and leave behind legacies” (p. 21-32). UK Sport (1999) claims that to be classed as a major sport event, these elements are required: The event involves competition between teams or individuals representing a number of nations; attracts nationally and internationally public interest through spectators attendance and media coverage; and it is of international significance to the current sport(s) and features prominently in their international calendar (p.4). Despite the many common characters mentioned above and elements required, major sport event vary greatly in size and scale. In relation to the NWSC11 in Oslo and Holmenkollen, improvements were initiated in Oslo and the region around. During the years before the event, the infrastructure was developed, a safe and reliable metro was established, roads were repaired and improved, hotels renewed, and venues and facilities were renovated and built, to mention a few examples. The event itself is a deliverable of a complex management process prepared of a temporary project organization.

8.2 The Temporary Project Organization

VM2011 was a temporary project organization established in 2007, responsible to plan, implement and accomplish the NWSC11 in Oslo 2011. According to Gray and Larson: “A project is a complex, nonroutine, one-time effort limited by time, budget, resources and performance specifications designed to meet costumer needs” (p. 4). Temporary project organizations face other challenges than permanent projects and organizations. Compared to other organizations, an organization like VM2011 has limited time to accomplish processes such as recruitment, team building and staff training. Also, during accomplishment of the event itself event organizers face numerous of possible risks. Direct television broadcasting, challenging conditions in trails, arenas or paths, and unsafe weather conditions are a few examples of such risks. Often, project groups are compound of persons from different backgrounds, with special experience and capabilities, to fulfil given responsibilities and expertise. It may be a great challenge to
coordinate resources from various backgrounds and get the group function and work effectively together. Common in major sporting events is to receive great help from volunteer workers, who offer a lot of time and effort. The relationship between volunteers and paid staff may be another potential challenge. The expectations, motivation and effort are most likely to differ within the two groups (Getz, 2007).

Controversy definitions and sport-event-management frameworks makes it is problematic to come up with one supreme framework for all event projects. Different frameworks divide project lifecycles for example into modes (Burbank, Andranovich & Heying, 2001), phases (Hall, 1992), stages (Getz, 1993; Masterman, 2009) or activities (Shone & Parry, 2004). However, most important is that the management frameworks discuss the same processes and tasks only utilizing different designations. Regarding the present study, the essential point is that the risk reduction should primarily be taken care of during the pre-operative stage (referred to as the planning or implementation phase), because there is limited space for ad hoc improvisation in the implementation phase (Andersen & Hanstad, 2011). Therefore, the present study investigated the operational processes in VM2011 and the appearance of mindfulness and high reliability in the planning phase.

VM2011’s organizational culture and performance strongly correlated to Weick and Sutcliffe’s (2007) theory concerning organizational mindfulness and characteristics of high reliable organizations (HRO), and was therefore utilized in the present study. The additional theory presented here are topics highly applicable for VM2011 and for high reliable organizations in general, which was not applied in the article. In the following sections, I provide an overview of leadership - the leaders role, and organizational learning, as it is central topics related to high reliable organizations.

**8.3 Leadership - the leaders role**

The term leadership has been defined in many different ways and it is impossible to find one consistent overall definition as of today (Yukl, 2006). I believe Peter Northouse (2010) defines leadership in a precise and simple way: Leadership is “a process whereby an individual influences a group of individuals to achieve a common goal (p. 3). One can view leadership as an active process and it undermines that the leaders themselves and the ones being lead, share objectives and work collectively to reach common goals.
There are often several leaders in a project organization distributed in different function groups or teams. The leader(s) fills different roles, for example; he or she appears as the decision maker, one who provides resources, a motivator, and also a role model. The leader is responsible for planning, budgeting, organize teamwork, follow up, implementing changes, communication with stakeholders, and very salient, the leader has the main responsibility for the accomplishment of the project and the results (Karlsen & Gottschalk, 2005). The CEO, Åsne Havnelid is the one in charge, having the overall responsible for VM2011 to deliver the best World Championship ever hosted, which was VM2011’s main goal (Oslo2011, 2011). In her crew, she had 35 responsible employees and a high number of leaders for smaller groups, which many of them were volunteers. According to Cleland (1995), a definition of project leadership is “a presence and a process carried out within an organizational role that assumes responsibility for the needs and rights of those people who choose to follow the leader in accomplishing project results”, as cited in Karlsen and Gottschalk, 2005, p. 92. The leaders in VM2011 followed a common philosophy and the CEO described the leaders behaviour as: “Leaders in VM2011 perform brave. They are impatient, but at the same time radiate security and strength. They set the direction, and do not command. We have close follow-up with collaborates, frequent evaluations and controls”. Understandable, VM2011 aimed to have leaders with close relation to colleagues, with a low profile, strong influence and involving strength. The organization was in constant development and the leaders must be able to create a strong and stable staff, which at the same time is prepared to meet unforeseen events with wise and quick solutions.

Closely correlated to an organization in constant development, is the learning organization. In the following, the concept of the learning organization, organizational learning, and related characteristics is reflected upon.

### 8.4 The learning organization

The many definitions and approaches to organizational learning and the learning organization, makes the topic almost indefinable and confusing. Several reseachers have discussed the difference and not reached consensus (e.g. Levitt and March, 1988; Senge, 1990; Cohen and Sproul, 1991; Argyris and Schöen, 1996). It is claimed that definitions are greatly broad, and cover the concept of organizational change to a great extent. In relation to the present study the important message is that VM2011 is believed to perform better if the organization is able to be open to new experiences and develop useful knowledge from them, in accordance to how Senge, 1990 explained it:
The learning organization is one which “(...) People continuously expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to learn together” (p.3). A learning organization can also be seen as processes whereby knowledge and understanding enhance behavioural patterns in the organization. Organizational learning is more than the sum of each individual’s learning in the organization. It is learning in three levels: individual, team and organization (Andersen, 2008). In other words, all levels in the organization must be open for new experiences, spend time to reflect, and routinize the content of it, so that the organization as a whole is receptive for the possible learning.

In VM2011, the necessity of continuous learning was crucial for operating in the best possible way at any time. By being processes-oriented, constitently aiming for legitimate failure and challenges at an early stage, and develop resilience based capacities, it is believed that VM2011 possessed the ability to continuous learn. Organizational learning mechanisms are likely to generate productive learning if they are implemented in a proper organizational culture, which can be described as shared values and beliefs in a normative system. This normative system shapes how the organizations members think, feel, and behave (Schein, 1990). Findings in the present study indicate that VM2011 possessed a strong and clear organizational culture.

To maintain continuous learning it is suggested that an organization possess valid information, transparency, issue orientation, and accountability. The mentioned values are established either by “compatible rhetoric (espoused values) or (more convincingly) by an actual investment of resources and the willingness to incur losses in order to realize compatible outcomes (values in use)” (Popper & Lipshitz, 2004). In other words, continuous learning is not given; organizations must invest effort and possess willingness to generate value from possible learning. A short explanation of the mentioned values follows.

**Valid information**

Learning in organizations (both individual, team, and organization) involves transformation of data into knowledge. To ensure learning, complete, undistorted, and verifiable information is required (Popper & Lipshitz, 2004). For example, organizational documents must at any time be updated or translated to make sure that employees or others involved get up to date information and not get mislead by wrong
information.

**Transparency**
To improve oneself and one’s organization, one must be willing to hold oneself and one’s actions open to inspection in order to receive applicable feedback. Successful transparency reduces the likelihood of self-deception, “by countering pressures to distort suppress threatening information, and by broadening the scope of one’s information base and points of view for its interpretation” (Popper & Lipshitz, p. 44). Employees’ willingness to lay themselves open in order to receive valid feedback will maximize the benefits of experience-based learning. VM2011 emphasized that honesty and open communication should characterize their organization, hoping it to be a part of building strong teams and to lead the organization as well as the employees in the right direction.

**Issue orientation**
When one evaluate information strictly on its merits without regarding attributes such as the social standing of its source or recipient one may call it issue orientation. One essential task in learning organizations is to expose failure and constructively promote dissent (McGill, Slocum & Lei, 1993). Issue orientation is related to democratization, power equalization, and participation, which also open communication channels, thereby enhancing innovation and learning (Kanter, 1991; McGill et al., 1993). The ability to constructively evaluate actions in all levels continuously may lower the threshold to dare to try (and maybe make an error). In this way, one can develop useful learning and at the same time exploit the resources at hand.

**Accountability**
Key to constantly learning and improvement is to always avoid doing the same error several times. An attitude where one admits mistakes, and strives to find out what went wrong is healthy to develop accountability in an organization. Holding oneself responsible for one’s actions and their consequences and at the same time learn from these consequences it is accountable behaviour. Accountability facilitates overcoming obstacles to effective learning in the form of action barriers that prevent the implementation of lessons learned (March & Olsen, 1976; Shaw & Perkins, 1992).

As already mentioned, the many definitions and approaches to organizational learning and the learning organization make the topic almost indefinable and more confusing. Popper & Lipshitz (2004) expressed the importance of:
Mapping an organization’s learning mechanisms, the culture in which they are embedded, and the contribution of both to improved performance and member’s ability to change the organization’s mission and values” (p. 49)

In relation to NWSC11, VM2011 achieved great benefits from hosting WC10. By accomplishing the event (of a lot smaller size than the WNSC) as a training for the organization and central stakeholders; involved parties had the chance to get to know each other, exchange expectations, perceptions, and opinions. At the same time, the organization itself got an indication on how the organization functioned in a situation close to the reality expected in NWSC11.

Double-loop learning is a suitable description of learning processes within VM2011, and occurs when an organization question and modify its existing norms, policies, and objectives, in addition to detection and corrections of errors (Argyris & Schön, 1978). Senge (1990) explains it as generative learning or the way an organization utilizes learning to expand an organization’s capabilities. On a daily basis VM2011 strived to always perform better, and to be self critical and questioning own action. VM2011 utilized the test event as a part of the effort to develop a high reliable organization, by reflecting upon the experiences from the test event, conceptualize the further work based on these experiences. In this way, VM2011 were able to develop knowledge based on learning from its experiences. The WC10 was a great part of VM2011’s effort to produce knowledge and function as a foundation to set the further direction for the organization.

9. Methodology

This part presents the methodology and methods utilized in the study. A rational for the chosen research approach, data collection, data analysis and quality standards, is included in the following sections.

9.1 Research Approach

Social research is known for the divine between quantitative and qualitative studies. Ragin (1987) simply illustrate the key difference between the two, by saying that qualitative researchers rely on few cases and many variables, and quantitative researchers work with less variables and many cases. Rubin and Rubin (2005) contrast
two different philosophies in research reflecting major intellectual disagreements. On the one side, the positivist philosophy is represented, where experiments, surveys and other statistical studies are common. On the other side, the interpretive constructionist approach, where observation and depth interviewing is more suitable. In qualitative research, the research question often starts with *how or what*, and one often study a topic that needs to be *explored*. In other words, qualitative research is suitable concerning topics one have identified the need for more developed theories to explain the behaviour of participants, and variables cannot be easily identified. In addition, one choose a qualitative approach to present a detailed view of a certain topic, and when one study individuals in their natural setting (Creswell, 2007). A qualitative research approach was utilized to conduct the present study.

Maynard (1994, p. 10) explains the relevance for choosing an epistemology, which provides “a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate”, when conducting research. According to Crotty (1998), one may view the world whether through objectivism, constructionism, or subjectivism, which are the three main epistemologies. For the present study a constructionist view (epistemology) was undertaken. The constructivist holds that there is no objective truth, and claim that truth, or meaning, comes into existence through our engagement of the world (Crotty, 1998), or, according to Asworth (2008), people are the ones constructing meaning. A constructionist holds that it is clear that different people construct meaning in different ways, also in relation to the same phenomenon. In the present study, the subject (me as a researcher) construct meaning through the thoughts and experiences of the objects (leaders within in VM2011), and the two parties emerged as partners in the generation of meaning (Crotty, 1998).

**Theoretical perspective**

Above, I gave a rational for the constructivists view (epistemology) in the present study, which describes in what way one choose to view the world. The theoretical perspective is an explanation of “how we know what we know” (Crotty, 1998, p. 8), or the understanding of how we choose to make sense of what we view in the world. This case study took a hermeneutic theoretical perspective, as to be explained in the following.

Interpretative research attempts to understand human and social reality, not only explain it. Within interpretative research, one finds three historical streams: Phenomenology,
symbolic interactionism, and hermeneutics. “Hermeneutics derives from the Greek word hermeneuein, which means ‘to interpret’ or ‘to understand’ (Crotty, 1998, p. 88), and this approach to interpretation can be traced back to the study of literature and to biblical exegesis in the Judeo-Christian tradition in the ancient Greeks (Crotty, 1998). The hermeneutic circle is often discussed within hermeneutics. One may encounter the circle in many different ways. I find this explanation very descriptive and understandable:

In order to understand something, one needs to begin with ideas, and to use terms, that presuppose a rudimentary understanding of what one is trying to understand. Understanding turns out to be a development of what is already understood, with the more developed understanding returning to illuminate and enlarge on starting point. (Crotty 1998, p. 92)

In order to understand how leaders within VM2011 utilized test events as a part of the effort to develop a high reliable organization, it was crucial that I knew how the participants’ viewed project management in general, and also the organization VM2011. In addition, I needed knowledge of their point of view, experiences, actions, and how they viewed event management. By conducting this research interpretatively, I was able to develop explicit awareness of meanings and assumptions that I otherwise would not have been able to articulate (Crotty, 1998).

In the field of qualitative research, there are many strategies to choose from. According to Yin (1994), when “a ‘how’ or ‘why’ question is being asked about a contemporary set of events over which the investigator has little or no control” (p. 9), case studies are an effective research strategy.

**Case Study**

A case study approach will be used, as it allows the researcher to understand deeply different circumstances or events in society, and can be used in many different ways, or for different purposes (Marby, 2008). Stake (2005) present three categories of case studies: intrinsic, instrumental and multiple or collective. The project organization VM2011, organizing for the Nordic World Ski Championship 2011, represents the case in this research. For that reason, the intrinsic case study research was the chosen strategy. The researcher aimed to capture the participants’ thoughts and experiences related to project management and planning of a major sport event. In addition, the
researcher aimed to provide better understanding and general insight in the field of project management concerning major sport events, and for this reason, the study was partly instrumental.

As mentioned above, Stake (2005) classifies case studies in to categories. Yin (1994) describes three different case study strategies: exploratory, descriptive and explanatory. Exploratory studies mainly have the goal to develop pertinent hypotheses and propositions for further inquiry. Descriptive studies have the purpose of being descriptive about certain outcomes. Explanatory studies test hypotheses and aim to find cause/ effect relationships between different variables (Yin, 1994). One finds great overlapping between the different case study strategies, even if each of them has its distinctive characteristics. The present study primary used an explanatory strategy, because a how question was asked and the aim of the study was to find out in what ways test events possibly could be a part of the effort to develop a high reliable organization. The researcher studied a contemporary event, and had now control over the respondents’ feelings, actions or behavior in the timeframe of the study (Yin, 1994). Since the study only focused on one organization (VM2011), it was a single case study.

**Setting**
The corporation and temporary project-organization Ski VM 2011 AS (VM2011) was formed in 2007, and was a limited partnership created to fulfil a narrow, temporary objective facing a compound set of risks: to plan, implement, and carrying out NWSC11. The International Ski Federation (FIS) owns the rights to the event, and Oslo municipality owns the arena and sport facilities. NWSC11 attracted at least 250 million television-viewers for live feed of the event (Oslo2011 a). A total of 570 000 spectators watched the disciplines live in Holmenkollen, and there were more than 1800 press- and media representatives in Oslo during the event (Oslo2011 b). The present study limits its focus on to the period from the main test event, FIS World Cup 2010 in Nordic disciplines, to the accomplishment of NWSC11 in 2011. In this period, opportunities were identified and exploited, specific unique challenges were well known, capacities were developed, and reliability was strengthened, frameworks established, and responsibilities and roles were formed. Key concerns in the implementation phase were to ensure that the construction work was on track, create a healthy, resilient staff, based on problem solving, active dialogues, evaluations and educational activities to develop knowledge, skills, and competencies. An important part of this was to develop common identity and culture where all members and involved parties established shared patterns.
Sample
According to Marshall (1996), an appropriate sample size for a qualitative study is one that adequately answers the research question. For this very detailed study, the sample was small, and focused; respectively six interview objects, and nine interviews were conducted in total. The most suitable strategy for this study was purposeful sample (Marshall, 1996), or a strategic sample (Charmaz, 2006). Utilizing this strategy, the researcher actively selected the most productive informants from the OC and top management in VM2011 to answer the research question. A dialogue with one key person in the OC was conducted to map participants in positions dealing with especially challenging issues, and who could therefore provide the most relevant data regarding the research question. The interview objects were: 1) the director of events, 2) the CEO, 3) the transportation and logistics manager, 4) the crowd manager, 5) the HR director, and 6) the sports director. It was believed that the chosen individuals could provide valuable information through their knowledge base and position in the organization. In addition, the interviewees had unlike backgrounds and insights. The sample can be characterised as a key informant sample, due to the respondents special expertise and experience in the field of project management, and is therefor not suitable for providing statistic numbers or representatives (Silverman, 2010). The researcher stopped collecting data when no new findings and information occurred in the interviews, and as the same matters were heard over and over again. Glaser and Strauss (1967) call this the saturation point.

9.2 Data collection
Some of the great strengths of the case study approach, according to Yin, (2009) are the ability to deal with a variety of data, for example from documents, physical artifacts, archival documents, interviews, and direct or participant observation. Methods most suitable for data collection in this qualitative case study were interview and document analysis. None of the data sources have total advantage over the others, but the different sources may be used in combination to complement each other (Yin, 2009). In this case, interviews were the primary data source. It was believed that interviews were most effective to provide insight in the organization’s effort to develop high reliability. Documents, such as newspapers articles and organizational documents contributed to draw a preliminary perception of VM2011, and also cross-validate and support data from the interviews (Creswell, 2007). The two sources of data provided a diversity of perceptions and multiple realities, and therefore clarified meaning by different ways the
case was seen. This is called triangulation (Stake, 2005). Descriptions of the two methods follow.

**Interview**

Interviews are highly used within qualitative research, because one often explores the way people experience and understand their world (Kvale, 2007). In an interview process, two or more people are involved. According to Fontana and Frey (2005) "(...) Theirs exchanges lead to the creation of a collaborative effort called the interview" (p. 696). Understandable, the interview is a dynamic process between the interviewer and the interviewee(s) where all participate actively in the process. Kvale (1996) describes the interview as nothing mysterious, but as a conversation that has a structure and a purpose. Interviews vary in purpose, style, and design (Kvale, 1996; Kvale, 2007; Fontana & Frey, 2005; Rubin & Rubin, 2005). Interviews may be for example structured, or unstructured. In structured interviewing, one aim to capture “precise data of a codable nature so as to explain behavior within pre-established categories” (Fontana & Frey, 2005, p. 706). The goal of unstructured interviewing is according to Fontana and Frey (2005), to understand “the complex behavior of members of society without imposing any priori categorization that may limit the field of inquiry” (p. 706). However, the unstructured interview is somewhat structured, as most often one have identified informants, there is as setting, and respondents are discernible (Fontana & Frey, 2005).

Because the research aimed to capture depth and details concerning sport event management and test events, I had to interpret the participants' meanings, understandings and perceptions. Therefore, open-ended semi structured interviews were used. The interviews conducted before the NWSC11 (seven out of nine), were structured with seven main questions, or main teams; 1) personal, general background, 2) main risk issues and challenges related to NWSC11, 3) The role of the test event, 4) relations to external parties, 5) perceived effect of the test events, 6) leadership style, and 7) in what way contributed test events to the success of NWSC11? The purpose of the main questions is to encourage the participant to talk about what motivates the study, and should be well thought through in advance, so that they do not restrict or predetermine the answers (Rubin & Rubin, 2005; Kvale, 2009). See appendix 1 for the basic interview guide used in the pre event interviews. The interview guide was modified during the interviews, based on new information and interesting findings during the conversations. I followed up new and interesting matters relating related to
the research topic with follow-up questions, that are additional questions asked by the researcher to explore themes, ideas or concepts introduced by the participant (Rubin & Rubin, 2005). During the interviews, I sometimes desired to provide clarification when the respondents discussed something. Then I utilized probes, which stimulate the respondent to deliver more details, for example, I asked, “can you give me an example of that”, or “What happened next?” (Rubin & Rubin, 2005). The two interviews conducted after NWSC11 were less structured, compared to the ones before NWSC11. The participants reflected upon experience from NWSC11, as I aimed to capture their overall review and evaluations in retrospect. Appendix 2 and 3 provides the interview guides for the two interviews conducted after NWSC11.

Eight out of the nine interviews were conducted with one participant at the time, face-to-face; at VM2011’s headquarter in Oslo. The very first interview functioned more like a conversation, where my two supervisors also participated to map the direction of the study. The interviews lasted between 45-95 minutes, and all conversations were recorded with an audio tape recorder. The interviews were transcribed verbatim (i.e.: word by word) immediately after they were completed.

**Archival documents**

Data from organizational material, newspapers, and other media functioned as secondary data, and contributed to draw a preliminary perception of VM2011 in order to understand how the OC worked in the implementation phase. Organizational documents such as risk analysis, overall and detailed project plans, evaluations, reports and emergency plans were analysed. A search through Atekst provided access to all relevant information, regardless of whether it was written in newspapers, magazines or Internet (Retriever Norway, n.d). The material also supported, cross-validated and complemented the variety of issues discussed by the interviewees. In this case, the secondary data to a large extent supported what the researcher perceived from the interviews. I faced a large amount of data after the data collection, from which I analysed thoroughly to draw vivid meaning.

**9.3 Data analysis**

Huberman and Miles (1994) divide the data analysis into three processes, which they call data reduction, data display, and conclusion drawing and verification, while Dey (1993) describes data analysis as identifying and linking analytic categories. There are
many ways to undertake an analysis of qualitative data, and there is not a single right or most appropriate way. Every researcher has his or her interpretation and presentation of the findings (Coffey & Atkinson; Yin, 2009). Researchers may use computer software for the data analysis, to support a variety of analytical and representational tasks amongst other (Coffey & Atkinson, 1996). In this case, the data analysis was done manually due to the manageable size of the data collection.

To manage systematically coding and interpretation of the data, transcriptions were read several times. In order to draw meaning from the interviews and documents, I reduced the amount of data first (Huberman & Miles, 1994), by utilizing an inductive approach, where the empirical data was the prime referent (Grønmo, 2004). This allowed essential research themes emerge from the data material, without restrains by any structured approach. Four main themes (categories) emerged from the data: Organization and management, information and involvement, arena, transportation and logistics. A few example of emerging subcategories are: experience, actions, initiatives, and reflections. To understand how findings in the data matched up with the theory of high reliable organizations, a deductive approach was undertaken. In the deductive coding, concepts such as ‘reluctance to simplify’, ‘preoccupation with failure’, and ‘deference to expertise’ were used to manage and structure tables and matrix. A small segment of the inductive coding (appendix 6) and deductive coding (appendix 7) is provided to illustrate how the analysis was conducted. By utilizing bot inductive and deductive coding, I was able to analyse the data from various angles and perceptions.

9.4 Quality standards

Validity, reliability and generalization

One often analyzes the credibility of research through reliability, validity and generalization (e.g., Kvale, 1997: Yin, 1994). One has achieved high reliability in research if the findings and results are identical, even if another researcher conducts the same study, at another time. In qualitative research, this might be problematic, due to the difficulties of reconstructing a social phenomenon, such as the NWSC11. To provide reliable research, Yin (2009) emphasizes the need for sufficient documentation. The researcher wrote notes concerning the data collection process, before, during and after the interviews. For example, if there was an interruption, or if something unexpected happened it is now documented. This documentation is available if someone wants to repeat the study. The hermeneutic approach involves that the finings are
influenced by my personal interpretations. If another researcher conducts the same study his or her interpretations will differ from mine.

The validity in qualitative research is determined by the quality of the collected data and if it answers the given research question (Kvale, 2007). In this study I purposively chose participants who had special expertise and experience in the field of project management and believed to answer the research question through their knowledge base and position in the organization. The interview guide was evaluated and redefined to create open and neutral questions, providing rich descriptions, and answer the research question. I know that my role as a researcher may have lead to bias in the study. There is a possibility that the respondents’ answers have been affected knowing that their answers were written down and analysed after. For example, they may avoid telling details concerning activities in the executive group; portray themselves and colleagues in a more adequate way, and so on. However, I argue that the credibility in this study was not affected noteworthy, because the questions asked were not of personal dimension. At the end of each interview, I summarized what I interpreted as the main points and essential topics, so that he or she immediately had the opportunity to correct possible errors or misinterpretations. In addition, to reduce the potential bias of my self as a researcher, and the purposeful sample, I utilized two methods in the data collection (interview and document analysis). By using multiple sources of evidence, I provided triangulation (Yin, 2009).

Due to restricted timeline and resource restraints, the study was narrowed to investigate one major sporting event, NWSC11. When conducting intrinsic case studies, researchers do not avoid generalization – they cannot (Stake, 2005). Nevertheless, the aim was not to generalize, it was to gain in-depth valuable insight and understanding on event organizations and the practical work in the planning phase of major sport events. Hopefully, this study can be a driving force for further research of similar projects, to build up under, or contrast to the findings in the present study.

**Ethical considerations**

All studies concerning human beings are somehow related to ethical considerations. The Norwegian Social Science Data Services approved the research proposal (see appendix 4), before the researcher started the data collection and initiated the study. The utilization and knowledge creation based on experience and learning from test events within the planning and preparation phase in major sport events, cannot be directly
viewed as a sensitive topic. However, the organization VM2011 was of relatively small size, and it is easy for potential readers to identify respondents on the based on description of their positions (e.g. CEO, transportation and logistics manager). In that manner their personal statements and meanings are easily identified, and the researcher has to be conscious of the respondent’s positions and respect that they maybe avoid sharing all the information the researcher desired. Perhaps some details (e.g. personal relations, internal conflicts and agreements) in the conversations were too sensitive to share for respondents holding significant positions in the organization. In other words, the researcher must accept and take into account that it may be the case that useful information has been withheld.

Reflecting on ethical considerations, several issues need to be addressed for the participants in a qualitative study. Some important issues are: consent by the participants, participant confidentiality, consequences of participation, and the researchers role in the study (Kvale, 2007). All participants were informed about the purpose of the study, confidentiality, which persons having access to the data, the possibility of going through the material before it was published, and the participants’ rights to withdraw from the study at any time. The above-mentioned information was collected in a consent form, (see Appendix 5). Both parties (the contributors and the researcher) signed the consent form before the interview started, and got one copy each, to keep. In addition, is appropriate to mention the importance of providing participants with transcribed interviews and drafts, in order to minimize perceived and potential risks related to the study (Stake, 2005). All respondents were given the opportunity to review and comment.

As a researcher, I aimed to create a safe and warm atmosphere for the participants, by acting open and friendly. At the same time, it was important to act with a professional distance to the participants (Kvale, 2007). I felt I performed professional in the interview setting. If the research concerned more sensitive areas, such as ethnicity, religion and so on, I think it would be a greater challenge to act professionally.
References


Appendices

Appendix 1: Interview Guide, Pre Event

Intervjuguide

Tema for samtalen: Generell bakgrunn, Risiko faktorer/utfordringer/problemområder, Prøve VM, Beslutningsprosesser/strategisk ledelse, Rolle som leder, Læring og nyttig gjøring av læring, oppnådd effekt av prøve VM.

- Generell bakgrunn om intervjuobjekt
  - ID
  - Tidligere prosjekt erfaring/kompetanse?
  - Deltakerens rolle i prosjektet (for eksempel transport, frivillig/rekruttering, crowd management)

- Hvilke problemområder/muligheter ser du på som spesielt utfordrende med tanke på prosjektet Ski-VM 2011?
  - Overordnet nivå Ski-VM
  - Spesielt for din seksjon?
  - Endret seg nå, mot slutten?

- Hvilke rolle spilte/spiller prøve-VM for deg og din gruppe/team?
  - Hvilke type utfordringer møtte dere under prøve VM? Spesielle typer som går igjen?
  - Hvilke vesentlige endringer (direkte/konkrete) blir nå gjort pga. erfaringer fra prøve VM? (organisatorisk / praktisk?)
  - Fremgangsmåter: Hvordan har dere kommet frem til endringene som er gjort, og som evt. skal gjøres?
  - Struktur?
  - Hvordan er endringene i deres arbeids/fremgangsmåter, for før, under og etter Prøve-VM?
    (På tvers av team/team, individuelt, i forhold til eksterne aktører?)
  - Hvilke erfaringer fra prøve-VM er nyttige å dra med videre i prosjektet?
  - Hvordan utnyttes lærdommen?

- Eksterne aktørers rolle i, og etter prøve VM
  - Involtvert i prosessen?
  - Innflytelse? Mer/mindre?
  - Påvirkningskraft?

- Hvordan kan/vil dere måle lærdommen og effekten av prøve VM med tanke på gjennomføringen av Ski VM 2011?
  - Kunne noe vært gjort bedre eller annetledes, med tanke på læringsutbytte?
- Nyttige erfaringer
- Kan en eventuell effekt dokumenteres?

**Som leder, hvordan:**

- Ble/blir beslutninger tatt?
- Påvirker du og de andre lederne til læring gjennom erfaring?
- Hvilke personlige egenskaper tror du er sentrale i stillingen du innehar?
- Hva etterstreber du som leder for å være forbilde for ditt team?
- Påvirke til å dra nytte av erfaringene?

**Hvilken rolle spiller prøve VM for suksessen i VM 2011, etter din mening?**

- Umiddelbare tanker
- Den reelle nytteverdien av et prøve-VM
Appendix 2: Interview Guide, Post Event no. 1

Tema for samtalen: En veldig åpen samtale hvor intervjuobjektet deler sine tanker i etterkant av mesterskapet. Samtalen bygges på grunnlag av analyse av informasjonen jeg innhentet i de foregående intervjuene. Jeg nevner det jeg oppfattet som de største utfordringene, og de viktigste erfaringene fra prøve-VM. Jeg forteller også hva jeg først så som de mest sentrale handlingene og prosessene som ble satt i gang på grunnlag av det. Intervjuobjektet snakker fritt mens intervjuer leder an tematikken, og stiller oppfølgingsspørsmål til sentrale og viktige problemstillinger eller episoder som dukker opp underveis i samtalen. Intervjuer hadde også med en mer detaljert liste over utfordringer, erfaringer og i verksatte prosesser etter prøve-VM.


Erfaringer: Systemet fungerte under prøve vm. Det som er viktig er rutiner, erfaringer og system.

Appendix 3: Interview Guide, Post Event no. 2

Tema for samtalen: En veldig åpen samtale hvor intervjuobjektet deler sine tanker i etterkant av mesterskapet. Samtalen bygges på grunnlag av analyse av informasjonen jeg innhentet i de foregående intervjuene. Jeg nevner det jeg oppfattet som de største utfordringene, og de viktigste erfaringene fra prøve-VM. Jeg forteller også hva jeg først som de mest sentrale handlingene og prosessene som ble satt i gang på grunnlag av det. Intervjuobjektet snakker fritt mens intervjuer leder an tematikken, og stiller oppfølgingsspørsmål til sentrale og viktige problemstillinger eller episoder som dukker opp underveis i samtalen. Intervjuer hadde også med en mer detaljert liste over utfordringer, erfaringer og iverksatte prosesser etter prøve-VM.


Erfaringer: Et annet suksesskriteria er vår evne til å gjøre noe med dette. Tror vi er sånn ca. midt på treet til å gjøre noe med de problemstillingene som oppstår. Teste organisasjonens samspill,lederskap, manglende lederskap. Folk i organisasjonen har vært åpne for endring, og forbedring. Tenke på hva som er best for arrangementet.

Appendix 4: Approved Application, NSD

Norsk samfunnsvitenskapelig datatjeneste AS
NORWEGIAN SOCIAL SCIENCE DATA SERVICES

Dag Vidar Hansstad
Seksjon for kultur og samfunn
Norges idretts-høyskole
Postboks 4014 Ullevål stadion
0806 OSLO

Vår dato: 13.08.2010
Vår ref: 24549 / THS
Deres dato:
Deres ref:

KVITTERING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER
Vi viser til melding om behandling av personopplysninger, mottatt 11.06.2010. All nødvendig informasjon om prosjektet forelå i sin helhet 12.08.2010. Meldingen gjelder prosjektet:

24549 How does the Test Event in 2010 affect the Quality of the FIS Nordic Ski Championship 2011. How does the Organizers use the Experiences and Learning from the Test Event to reduce potential Risk Issues?
Behandlingsansvarlig Norges idretts-høyskole, ved institusjonens øvrste leder
Dataansvarlig Dag Vidar Hansstad
Student Karl Pleijdrup Steffensrud

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepålatt i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering fortsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korespondanse med ombudet, vedlagte prosjektvurdering - kommentarer samt personopplysningsloven/helseregisterloven med foreskrifter. Behandlingen av personopplysninger kan settes i gang.


Vennlig hilsen

Bjørn Hennichsen

Tore Njølstad Slotsvik

Kontaktperson: Tone Njølstad Slotsvik tlf: 55 58 24 10
 Vedlegg: Prosjektvurdering
 Kopi: Kari Pleijdrup Steffensrud, Bogata 30 B, 0655 OSLO

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OSLO: NSD, Universitetet i Oslo, Postboks 1019 Blindern, 0314 Oslo. Tlf. +47-22 85 52 11, nsd@nsu.no
TRONDHEIM: NSD, Norges teknisk-naturvitenskapelige universitet, 9017 Trondheim. Tlf. +47-73 59 19 37, kirsebryl@ntnu.no
Bergen: NSD, USF, Universitetet i Bergen, 5020 Bergen. Tlf. +47-72 49 33 00, nsd@usf.no

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Utvalget består av 6-10 sentrale nøkkelpersoner, prosjektledere og ansatte i ledelsen/organisasjonskomiteen i Oslo 2011.

Data samles inn gjennom personlige intervjuer uten lydopptak.


Det registreres direkte personidentifiserende opplysninger som kobles til det øvrige datamaterialet ved hjelp av en koblingsnøkkel. Koblingsnøkkelen oppbevares atskilt fra det øvrige datamaterialet.

Appendix 5: Consent form (in Norwegian)

Masterprosjekt - Norges Idrettshøgskole 2009/2011

Forespørsel om deltakelse i forskningsprosjektet

"How does leaders within the organization Ski-VM2011 utilize experience-based learning from the test event in 2010 (World Cup 2010), and how do they plan and implement new ideas based on experiences from the test event to improve the quality of the main event, with emphasis on related risk issues?"

Bakgrunn
Dette er en forespørsel om du ønsker å delta i en forskningsstudie for å forstå hvordan man benytter test arrangementer for å forbedre kvaliteten i store idrettsarrangement. Du er forespurt om å være med i studien fordi du jobber med et aktuelt idrettsarrangement, og har mye innsikt, kunnskap og erfaring om det vi ønsker å undersøke i vårt studie. Formålet med studien er å klargjøre hvordan et prøve arrangement blir brukt i praksis, og hvilken effekt det har på hovedarrangementets suksess. Jeg, Kari Plejdrup Steffensrud, student ved Norges Idrettshøgskole skal gjennomføre intervjuene og gjøre studieprosjektet i forbindelse med mitt Masterstudium i Sport Management. Veileder i prosjektet er Dag Vidar Hanstad, førsteamanuensis på Norges Idrettshøgskole og Svein Andersen, professor på BI Oslo.

Hva innebærer studien?


Samtykkeerklæring: Jeg er villig til å delta i studien

------------------------------------------------------------------------------------------(Signert av prosjektdeltaker, dato)

Jeg bekrefter å ha gitt informasjon om prosjektet/studien

------------------------------------------------------------------------------------------(Signert av student og intervjuer, dato)

---

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### Appendix 6: Example of inductive coding

<table>
<thead>
<tr>
<th>Jørgen Aas/ publikumsansvarlig</th>
<th>Roy Evensen/ Event Coordinator</th>
<th>Bjørn Morten Vold/ Transport og logistikkansvarlig</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Størrelsen.</td>
<td>* P.4: Første store arrangement i det nye anlegget.</td>
<td>* P.3: The accessibility in Midstuen is a central challenge. To get the crowd of spectators to flow, by foot, and athletes and so on with car.</td>
</tr>
<tr>
<td>* Lite arrangementskompetanse innad i organisasjonen.</td>
<td>* P.3: noe som jeg opplever hele tiden. At vi ikke har større tilgang på anlegget.</td>
<td>* P.3: Complicated road, huge crowds need to be transported from one arena to the other. Few resources to use the road.</td>
</tr>
<tr>
<td>* Dårlige arkitekturiske løsninger.</td>
<td>* At det ikke er ferdig</td>
<td>* P.3: To coordinate the different arenas in the event. Challenging to organize one successful event with two separated arenas. Long distance, different focus. No experience or test event with happenings in the city arena.</td>
</tr>
<tr>
<td>* For liten arena.</td>
<td>* At vi ikke har et helt klart bilde av hvordan anlegget er, som vi skal inn å arrangere i.</td>
<td>* P.3: Uncertainty in everything! Especially with the transportation system. We do not know how many people that need transportation from time to time. Hard to calculate. Challenging both to have a high budget and many cars. Also wrong be short on cars and stuff….</td>
</tr>
<tr>
<td>* Mye ressurser må brukes for å lage en funksjonell arena.</td>
<td>* Logistikutfdr.</td>
<td>* P.4: Media and press groups are more challenging. Know approximately the number of athletes that need transportation. Not the same knowledge about press/media.</td>
</tr>
<tr>
<td></td>
<td>* Alle interessenter og bidragsytere, som skal spille på lag med oss i en retning.</td>
<td>* P.8: Logistics: Float of information is challenging. To get info to all it concerns (a lot of stakeholders).</td>
</tr>
<tr>
<td></td>
<td>* P.4: Involvere og integrere ressurser som vi ikke besitter i våre organisasjoner.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Sildre verdiene, visjonen til organisasjonen for å påvirke til reelle handlinger der ute.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* P.6: Får vi ut nok info til alle de berørte gruppene</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 7: Example of deductive coding

<table>
<thead>
<tr>
<th>Preoccupation with failure</th>
<th>Resist</th>
<th>Sensitivity to operations (Open communication/relations involvement)</th>
<th>Maintain capabilities for resilience (preparedness training)</th>
<th>Deference to expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Reorganize roles and responsibilities. “We gathered together documents, called it experiences of 2010. We read them, see what we did in 2010, what we have to look into, and so on. Many of these things are now integrated in the new organization. One can clearly see that the organization has changed, based on feedback from C2010”</td>
<td>- Contingency training</td>
<td>“Much of what has been done, especially what was in the Ski Association is much comparable, in terms of leadership, and using experience-based knowledge and learning into the next operation”</td>
<td>- Geographically divided organization. Table top exercises. “We looked at different elements, similar to our roles. Our security chief talked to their security manager, and so on. In order to see how they arranged it. It is to gain experience from others, just to learn”</td>
<td>“Experience, formal qualifications, and flexibility is required to be a part of this dynamic environment” “The organization work better now. Clearer reporting lines, responsibilities, and organization was able to meet the new challenges that appeared”</td>
</tr>
<tr>
<td>“Concretely, we have developed a new signage-plan. To ensure better information to spectators, it was not satisfying in the WC2010” “We’re working on it daily… Things we see that we are not very good at. For example information”</td>
<td>- Contingency training</td>
<td></td>
<td></td>
<td>OK clear responsibility and guidelines.</td>
</tr>
<tr>
<td>- Early deadlines, force us to make decisions.</td>
<td>- Contingency training</td>
<td>- Contingency</td>
<td>- Intentionally involve too much staff during tests. To ensure more people are familiar with the arena.</td>
<td>- What-if thoughts and discussions</td>
</tr>
<tr>
<td>- Study trip to WC in Liberec,</td>
<td>- Contingency</td>
<td>- Contingency</td>
<td>- Delegate responsibilities</td>
<td>- Worst case scenarios</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Org. cap. and resources</th>
<th>Info and Involvement</th>
<th>Arena</th>
<th>Transp. and logistics</th>
</tr>
</thead>
</table>
