TECHNICAL MEMO

HOW TO INCREASE EFFECTIVENESS IN REPORTING SYSTEMS

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How to increase effectiveness in reporting systems

What problem do we have to address in incident reporting systems.

Incident reports can prevent accidents through organisational learning from incidents. However, many railway safety-related incidents go unreported. In this technical memo I investigated how stewards, control room dispatchers, maintenance technicians, and track technicians in the driverless Metro in Copenhagen complete incident reports and what problems arise during the process of filling in the report (design and interface), and what safety departments should do to address the problems.
According to EU legislation and Danish laws (Government order number 969, 08-10-09), railway operators must have a safety management system in place to be able to monitor and react to incoming reported incidents and accidents.
This is a way for the railway operator to attain high levels of safety and continuously improve work routines based on a robust safety regime, which should provide the organisation with data regarding a given sequence of events. Safety management systems will accomplish high level of safety if; one, a clear definition on what to report is present[1], two, clear guidance on when to fill in the incident report is available (internal procedure SIK-PR-S-122-07), and third clear guidance on how to use the incident reporting system is given.

Just Culture literature (Dekker, 2007; Snook, 2000) tells us that all employees inside the organisation are the ones with the information which gives a gap analysis between how things should be done, and how things are done. One example from the Copenhagen Metro shows this "Gap"; In connection with scheduled maintenance of high voltage breakers, the supplier manual tells people operating these breakers that the high voltage must be closed down in the whole area when performing the maintenance, as a consequence all traffic will be stopped. To avoid the traffic stopping the maintenance department, together with the supplier, agreed to bypass the "Interlocking key" (a key system which needs two keys to get access to the breaker) to be able to perform maintenance and in the meantime keep the traffic running. Organisations therefore install reporting systems because they expect them to provide them with information about the safety level, trends, reliability of the regulatory requirements and accidents which in the long term are supposed to improve safety, not only for the people working in the organisation but also for the user of the railway system.
We could question however if employees would really come forward with important safety information solely by installing a reporting system. After all, Culture beliefs (Different countries, laws) and aspects together with limited time resource and discipline will have an effect on what people report. Because of the differences in the multi-national society in many countries, it seems clear that what is reportable for one person, could mean the opposite for another, but at the same time it is important for the company to share examples of what is worth reporting to be able to start a learning process, to prevent the incident from happening again. Furthermore research shows that installing a reporting system alone is not enough as there is more to it, e.g. preparing guidance for the company in how to use the reporting forms which have to have easy accessibility and a user-friendly interface. Moreover the companies have to consider how the interface should look at the incident report level that people can fill in.

[1]An 'incident' is any incident where there has been injury to persons, damage to property or infrastructure, or where safety was at risk or could have been exposed to danger, and incidents involving dangerous goods.

BACKGROUND

Why is it important to have a reporting system?

Reporting systems are demonstrated to have contributed importantly to low accident rates in industries with huge catastrophic potential by enabling safety staff to take a proactive, preventive approach which can greatly influence the success or failure of reporting efforts. Incident reporting systems have evolved over the past three decades to emphasise near misses, in addition to adverse events, to encourage confidentiality over anonymity, and to move beyond traditional linear thinking about human error, to analyses of multiple causation at systems level. The central concept in this technical memo is what problems companies have to be aware of when implementing an incident reporting system. Creating an environment in which people see and understand the importance of reporting near misses, incidents and accidents, depends on how the organisation itself sees and deals with these reports. If the organisation looks at the "event" as trouble, and sees the people who report the events as unreliable "bad apples" (Dekker, 2006), people will have limited liability and willingness to report, because of the consequence in form of punishment and even more strict procedures (Dekker & Laursen, 2007). Instead research (Dekker, 2006), tells us that we should look at the "events" as inherent failures deeper inside the system and to explain the event and get people to create safety through practice at all levels in the organisation.

New view

The New View concept explains; Human error is not a cause of failure; human error is the effect, or symptom of deeper trouble (Dekker 2006). Furthermore human error is not random, it is systematically connected to features of people's tools, tasks and operating environment. Moreover human error is not the conclusion of an investigation but the starting point. To do so, the companies have to be able to adopt the "New View", which for many companies seams to be a huge challenge, because the companies blame "Human error", as they sees it as the only way to create meaningful counter measures. Instead the people inside the company should begin to see human error as the effect of problems deeper inside the system.

As Sidney Dekker (2006) reminds us, for those who run or regulate organisations, the incentive to have a just culture is very simple. Without it, you won't know what is going on (Sidney Dekker 2006). By this he means that that a just culture is necessary if you want to monitor safety, and people's capability to be able to meet the problems that they will encounter. Moreover to be able to adopt a just culture people inside the organisation have to be able to feel free to concentrate on the daily job instead of limiting peoples liability to contribute to safety. As mentioned in the above it is important the people can concentrate on the daily job therefore it is important that the company have a reporting system that is reliable, (Dekker and Laursen 2007) states that when the organisation shifted from line-management-based evaluations of reports to confidential safety staff dealing with reports, the number of reports increased.

People's reported willingness to send them in went up too, as did the relevance and resolution of their content. But even though the reports increased, the companies have to dedicate themselves to be able to constantly monitoring if the ability and the organisational resilience are still present. This involves updating the organisations model of risk to be able to monitor if they are up to date. To create a reliable reporting system, the company needs to make the reporting process as simple as possible. This means, that when an incident is reported, the timeframe between receiving the incident report to responding to it must be as short as reasonably practicable. To

create reliability in reporting, it is very important to give the informer feedback to the incident that was reported, furthermore the feedback has to be useful to the recipient, making it clear that the safety department is following up and trying to deal with the problems that created the incident. Similarly and more beneficially for the investigating manager, it creates reliability and accountability to let the involved in the incident report be a part of the review process.

Critical Incident Reporting

Research by (Dekker and Laursen 2007) doesn't mention how the incident reports were designed after the shift from line-management-based evaluation to confidential reporting, because the design of the incident reports will have an effect on what people experienced in the aftermath of an incident, as described in the research (Iedema, Flabouris,Grant, Jorm 2005), about critical reporting, that though sharing narratives in their (in this case doctor's) daily work, organisational spaces are transmuted into places where employees are faced with the opportunity to construct, confirm or contest the technical and ethical contours of who they are and what they do.
The risk in using Critical Incident Reporting (CIR) is in letting people use narrative explanations about what happened when people subconsciously will use hindsight bias.

Hindsight bias

Hindsight bias is one of the most documented biases in psychology, understanding the hindsight bias and the effect is important for moving you beyond your reaction to failure.
"The more you react to failure, the less you will understand" (Dekker 2006, page 22), because controlling the hindsight bias is critical for understanding human error.
Moreover we have to be aware that when we let people use narrative explanations and when people are telling or writing the sequence of events, hindsight causes them to oversimplify the history, relative to how people understood the event at the time it happened.
Sidney Dekker (2006) explains how this over-simplification becomes apparent and we think that a sequence of events inevitably led to an outcome. We underestimate the uncertainty people faced at the time, or do not understand how very unlikely the actual outcome would have seemed. Had we seen the same situation from inside[2], we would understand that the outcome was once an infinitesimal probability; one among many other possible outcomes.
Organisations see an event/sequence as linear and with the outcome that we now know about, if we had seen it from the inside, we would have been able to see the confusion and different pathways surrounding people, furthermore we over-simplify causality, when we look back on an event we easily couple "effects to preceding cause" without realising that causes are much more difficult to sort out, when someone is actually involved in an incident. But it is not only the poor design of reporting systems, hindsight bias and culture, that will have an influence on people's willingness to report, there is more to it than that.

Procedural Drift.

Scott A. Snook (2000) tells us in "Friendly Fire" how people in a big organisation such as the U.S military over time and across levels, has this slow, steady uncoupling of local practice from written procedure and that procedural drift describes a dynamic set of conditions that increases the likelihood of serious disconnects in complex system. This is demonstrated as the members of the Armed Forces give up freedoms and constitutional rights for the "Privilege" of being

[2] By inside I mean that we, as investigators, have to understand other people's assessments and actions and as such must try to attain the perspective of the people in the situation at the time, their decisions were based on what they saw on the inside of the tunnel and not what is known today.

entrusted with weapons of mass destruction, the personnel have to go through mandatory tests, background checks, unquestioned subordination to legal orders of superiors, numerous restrictions of appearance and freedom to speak, are just some examples of how the military controls members behaviour. The privileged can be abused in two ways.

First, granted unusual authority to control its members, leaders of such organisations are naturally tempted to extend such power into areas not even remotely related to the sustainment of reliability. Given extraordinary control, why not use it to ease the burdens of everyday managerial problems – even those not remotely tied to safety or national security (Snook 2000).
But does this have an influence on people's willingness to report?
Because of the strong safety culture beliefs and the overlap of layers of culture in the U.S military, the willingness to report even "near misses" is minimal.
However in the military, this is often tempered by an equally strong warrior culture summarized by the quote: "No blood, no harm, and no foul!" Don't sweat the small stuff (Snook 2000 page 215).

"Add to this the fact that no one felt deep ownership for the long-term performance of that unit -- it was the task force that, by definition is manned and equipped by rotating personnel for short periods of time. Reporting (and learning) mishaps is based on the fundamental assumption of a long-term orientation and commitment to that organisation. No one thought that Operation Provide Comfort would last more than a few months or years. . . and yet, it took another war to end it".(Snook, personal communication, December 8, 2009).

Normalisation of deviance

Others have uncovered mechanisms to account for organisational failures, according to Diane Vaughan (1997) "Normalisation of Deviance" is, when in years, engineers and managers together developed a definition of a situation, that allowed them to carry on as if nothing was wrong, even when they continually faced evidence that something was wrong. In connection with her investigation of the Challenger Space Shuttle Disaster, she reviles structural and individual secrecy as one of the factors as to why it went wrong with the "O-rings" (A seal in the right and left solid rocket booster) in the boosters. (The Space Shuttle Solid Rocket Boosters are the pair of large solid rockets used by the space shuttle during the first two minutes of powered flight).

To be able to control and also to reduce the amount of information into the system, NASA introduced rules to give assurance that only serious problems got attention. The rules specified what kind of problem needed attention, and the circumstances, but also the amount of information present.
"All problems, open items, and (Launch) constraints remaining to be resolved before the mission", were reported. For "Significant resolved problems" (i.e., lifted Launch Constraints), the presentation included a brief status summary with some supporting detail and readiness assessment (in NASA language, they were "statused") (Space Shuttle Flight Readiness Review, 1983 page 387-91)
This was NASA's policy of "management by exception" that governed Level II and I reporting, any chance or data from previous flights that fell outside the expected performance had to be reported.
If data from previous flights was within expectations, the technical rationale on which risk acceptability was based remained the same and thus was not repeated.
If no new technical problems were found in an already known area it was not discussed, because it was an acceptable (known) risk, and was therefore not addressed again, because "It is inside the system"(Boisjoly,1986.)

The same phenomenon "management by exception" is seen in the railway industry; one accident in particular is a good example of the above phenomenon, the Kings Cross Fire (1987 page 18-22.)

It is clear from the evidence that people continued to smoke in the Underground in spite of the ban in February 1985 following the fire at Oxford Circus station.
They did so in particular by lighting up on the escalator as they prepared to leave the station. The Court was provided with detailed information of 46 escalator fires between 1956 and 1988 and in 32 instances the cause was attributed to smoking materials.[3]

About two weeks before the disaster, gaps were observed between the treads and the skirting board on the Piccadilly Line escalator 4 at King's Cross. They were caused by the crabbing movement of the escalator.
Thus there were gaps through which a lighted match could pass. Moreover 30 per cent of fire cleats were missing, making it easier for a match to fall through the gap and for a fire to flourish. Beneath each side of the treads lay the running tracks of the escalator.
Those running tracks should have been cleaned and lubricated properly. They were not. There was an accumulation of grease and detritus (dust, fibre and debris) on the tracks which constituted a seed bed for a fire and it was into that bed that the match fell. When the forensic scientist inspected the scene after the disaster he recovered several matches from the running track underneath the lower part of the escalator. When the skirting board of the escalator was examined it was clear from the burn marks that fires had started on many previous occasions. Happily, they had gone out. On 18 November 1987 the fire bed ignited and the grease on the right-hand running track began to melt. The fire had started. (Department Of Transport Investigation 1988)

This shows that even though the ban on smoking in the underground was in place in 1985 nothing was done to prevent the fire emerging until it was too late. Every one did as they used to do (putting out small fires) because "Nothing happens" it became "Normal", that small fires emerged, but in the end it ended with a disaster which killed 31 people.

Individual secrecy

To explain individual secrecy we have to look at how people in an organisation reported things seen as a problem, first as The Presidential commission (Challenger accident) concludes about communication "There were problems following reporting procedures in the FRR process, and "procedurals inadequacies" in computerised problem reporting practices. (Presidential commission report 1986, page 152-55)
An example according to Marshall Engineer Keith Coates: "For year, there's been the expression `get under the umbrella`. If there was a problem with the obiter tiles, and you are pushing hard to make a schedule on something and it looks like it may be nip and tuck, and lo and behold, they are slowly getting their tiles put on, you are thankful because you can `get under the umbrella".

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[3]Statistics for fires on escalators between 1958 and 1987 were presented to the investigation by London Underground. Records were held of over 400 fires and so-called smoulderings some of which were serious enough to cause the evacuation of stations, serious delays and considerable damage to the escalators involved.
Until 1985 the only source of such statistics was the fire and confusing reports returned by station staff; more comprehensive records from station logs were only available only from 1985. The position on the keeping and analysis of statistics on fires by London Underground was quite unsatisfactory.(Investigation report into King Cross Fire 1988, page 44)

(Coates 1986)
Others in the organisation looked at it another way, they hoped that under the review, some one else would come up with a bigger problem, so that their problem wouldn't be the problem delaying the launch. "We project managers joked among ourselves about it. We called it ´being the long pole´, ´the lightning rod´, the one that absorbed all the attention and electricity, so to speak, by having the problem that delayed the launch".(Mully, personal interview 1992, Diane Vaughan, 1997, page 242). Another example of individual and structural secrecy comes from the railway industry, where a problem with cracks on wheel tyres was known by the workers, but no one reported it to the managers (Metro report international 2009) (As the final investigation report details are not currently available). This resulted in an accident, fortunately no-one was hurt.

Accountability

Virginia Sharpe (2004) raises an often-quoted problem with the new view or systems view and that is, that it would allow wrong-doers to take "refuge" in the system and deny those who have been harmed the right to compensation or retribution.(Sharpe 2004). One example is that The Institute of Medicine (IOM) recommends mandatory reporting of serious incidents and voluntary reports for lesser harms and near misses. This could have a great affect on safety improvements, on how the incident should be handled or on the likelihood of persons being harmed. To understand what is at stake we have to understand the report's emphasis on accountability. Furthermore Edmund Pellegrino (2004) writes about preventing error, he warns us that confidence has consciously moved from the individuals to the system. This is because the complexity of the system will make it more vulnerable, and human interaction is unavoidable in the system, this makes it even more vulnerable to failure. Edmund Pellegrino (2004 page 83-98) tells us that "Systems cannot make the professionals within them virtuous, but they can make it possible for virtuous professionals to be virtuous". By this he means, that "No system of error detection or prevention can confine these intricate relations within a set of preordained algorithms". (2004, page 84). This shows us that having a complex reporting system does not make the people using the system virtuous and accountable for what they have experienced. According to Edmund Pellegrino, "Both a system's approach and an approach that reinforces the traditional ethical obligations of individual practitioners are necessary. Individual patient-oriented medical ethics and the new domain of organisational ethics are required to act synergistically, if the welfare of the patients is to be optimised (2004, page 85).

E. Haavi Morreim (2004) talks about denying disclosure to patients, to be able to protect the ones who report and to shield against those who it wants to punish. Furthermore, "if error reports could be used to promote accountability for those who are blameworthy, then injured individuals should have access to this information"(Morreim 2004). As he continues, "Justice for those who are injured appears to be a trade off for the greater good of future patients". This does however not necessarily need to be so, argues (Morreim 2004) , because trial and error learning, learning from harmed people, does not have to be the only or the primary tool in a systems approach". In another he continues "Confession-free" approach means that institutional leaders can conduct executive patient safety walkrounds, making frequent regular inquiries among staff and asking them to indentify recent near-misses". To deal with the problem (Morreim 2004) agues that: "Courts and society should abjure the temptation to use the tort system to extract money for injured people simply because they need it and because providers have more of it". He also argues that tort liability should be limited to those people (organisations) who have made mistakes, and have fallen "below a standard of reasonable conduct" and thereby caused harm.

Charles Bosk (1979) describes in his book the ritual "Hair-shirt" that it is a part of the mortality and morbidity conference, which could be used as a hiding place for the offender, and it used to get the offender back into the group after confession and forgiveness.
To deal with this Charles Bosk argues (1979, p.145-146):
"First, there must be some hierarchy or a functional equivalent, that permits question – answer, that we call the competence quizzes of rounds, about the appropriateness of different treatments modalities.
"Second, some face-to-face interaction is necessary", this meaning that they (physicians) need to feel a part of the community, and answerable to others.
"Third there has to be a public forum for discussing problems and allocating blame".
"Fourth, the community needs some control of sanctions so that it is able to control malefactors within it own ranks" (Bosk 1979). Beyond that, the profession as a whole needs to raise its conscience about its public responsibilities, and the collectivity needs to promote the structural changes that will build stronger accounting mechanisms into everyday practice. To be able to understand these 4 explanations we have to look into what accountability is and how we can use it when we ask people in our organisation to report even the smallest deviation. A lot of research has been done on accountability in different areas, medicine, aviation, nuclear, power plants, and railways.

Virginia Sharp (Sharp 2004 page 13-16) reminds us about "Forward-looking and Backward-looking accountability". Backward-looking accountability is described as the sense that is linked to the practices of praising and blaming and is typically captured in expressions such as "She was responsible for harming the patient". When we speak about "Holding someone accountable" we tend to do so after the fact of some action that has gone awry.

This is what Sidney Dekker calls "Bad apple theory" (Dekker 2006) which tells us that human error is a cause of trouble, to be able to explain failure you must seek failures, and you must find peoples inaccurate assessments, wrong decisions and bad judgement. According to the "Bad Apple" theory the only way to make a human error right, is that complex systems are basically safe and that, unreliable, erratic humans undermine defences, rules and regulations, to make systems safer, restrict the human contribution by tighter procedures, automation and supervision. Forward-looking accountability is linked to theories and practices of goal-setting and moral deliberation. It is expressed in phrases such as "As parents, we are responsible for the welfare of our children". This refers to what Sidney Dekker calls "The New View/Just Culture" (Dekker 2006), which tells us that human error is a symptom of trouble deeper inside the system, to explain failure, do not try to find where people went wrong, instead, find how people assessments and actions made sense at the time, given the circumstances that surrounded them.

Predefined or storytelling reports!

One of the biggest efforts in companies is not to focus and moralise over non-reporting, instead they should focus on the reason why incidents are not reported. One of the reasons why people are not reporting is shame; another reason is ignorance about the use of incident reporting. The reason why some incidents are perceived as shameful and other reasons should be investigated and changed.
"Incident-reporting schemes and occupational storytelling are both similar to and different from each other. Both are means for organisational communication (Coan, 2004).They differ regarding accident understanding and ownership to the different schemes, and who seem to benefit from them. Johan M Sanne (2007, page 1218) agues:

The system-based accident etiology that underlies incident-reporting schemes usually conflicts with railway technicians' accident etiology in terms of the concepts of breakdown, lessons learned and what motivates organisational learning. Among the reasons incidents are not reported is that many are not articulated as events needing reporting: this group includes incidents that do not include injury, which don't seem to include new knowledge, or which are not even regarded as incidents. Non-reporting is also attributed to the social sanctions of reporting, which include shame, blame, and disciplinary actions. Storytelling may also have other purposes than system-wide organisational learning: learning for the local team and reproducing occupational culture and community, including accident etiology as well as organisational relations and recuperating a self in crisis after face-threatening incidents.
Storytelling is indeed an attractive practice for the technicians: for transferring learning from incidents, as a means to reproduce selves and occupational communities, as a means for apprenticeships. It provides valuable knowledge also for the researcher as it contextualizes technicians' practices and how they make sense of different events.
Unfortunately, technicians' accident etiology prevents them from recognising the benefits of incident reporting in terms of organisational learning and structural repair that might prevent similar future incidents. Stories are foremost a device for the occupational community in which they are told. They are told about events that seem memorable and worth telling, and they are structured according to the practitioners' own script.
Their distribution and the learning involved belong to the community. The learning is integrated into the participants' cultural frame and suited to their daily needs. By contrast, the incident-reporting schemes and the data in them are the property of the employer, structured by the employer, and available for use by the employer.
Moreover, the incident-reporting schemes are not integrated in the technicians' practices and are not trusted by them because of their experience of poor or inappropriate feedback. Thus technicians' storytelling has proved to be better integrated with their practice and seems to serve their interests better than the incident-reporting scheme. Unfortunately, however, storytelling is usually restricted to local practice and does not address the systemic or root causes behind accidents and incidents".

To make an incident-reporting scheme work, it must be integrated with existing practice in the user community such as storytelling, and it has to address the systemic causes of accidents. The first requirement can be achieved through using existing, occupationally-based schemes.

Possible solutions

Non-punitive, protected, voluntary incident reporting systems in high risk domains such as the railway systems have grown to produce large amounts of essential process information unobtainable by other means.
Confidential reporting systems are thought to help in organisational learning as they can reveal safety problems encountered by individual reporters that would otherwise never have become known to the rest (O'Leary & Chappel, 1996). An example is the confidential NASA ASRS in the United States (the National Aeronautics & Space Agency's Aviation Safety Reporting System), which is one of the largest safety reporting systems, with an annual average of 30.000 reports. A critical ingredient in "ASRS" success is its impartiality and independence from the regulator and enforcement agencies, as well as reporters' own employing organisations. (Reynard et al1986).
The Critical Incident Technique (or CIT) is a set of procedures used for collecting direct observations of human behaviour that have critical significance and meet methodically defined criteria. These observations are then kept track of as incidents, which are then used to solve practical problems and develop broad psychological principles. A critical incident can be described as one that makes a significant contribution - either positively or negatively - to an

activity or phenomenon. Critical incidents information can be gathered in various ways, but typically respondents are asked to tell a story about an experience they have had.
CIT is a flexible method that usually relies on five major areas. The first is determining and reviewing the incident, then fact-finding, which involves collecting the details of the incident from the participants. When all of the facts are collected, the next step is to identify the issues. Afterwards a decision can be made on how to resolve the issues based on various possible solutions. The final and most important aspect is the evaluation, which will determine if the solution that was selected will solve the root cause of the situation and will cause no further problems.
We have to have in mind that there are advantages and disadvantages in using CIT:

Advantages:

- Flexible method that can be used to improve multi-user systems.
- Data is collected from the respondent's perspective and in his or her own words.
- Does not force the respondents into any given framework.
- Identifies even rare events that might be missed by other methods which only focus on common and everyday events.
- Useful when problems occur but the cause and severity are not known.
- Inexpensive and provides rich information.
- Emphasises the features that will make a system particularly vulnerable and can bring major benefits (e.g. safety).
- Can be applied using questionnaires or interviews.

Disadvantages:

- A first problem comes from the type of the reported incidents.
- The critical incident technique will rely on events being remembered by users and will also requires the accurate and truthful reporting of them. Since critical incidents often rely on memory, incidents may be imprecise or may even go unreported.
- Hindsight bias, people start to build in experience from previous accidents.
- The method has a built-in bias towards incidents that happened recently, since these are easier to recall.
- Respondents may not be accustomed to or willing to take the time to tell (or write) a complete story when describing a critical incident.

In the Copenhagen Metro, the safety department discovered that the numbers of incident reports was decreasing in some areas. The safety department went to investigate why the number of incident reports was decreasing, and found out that the general impression was that "nothing was done" and subsequently in relation to the report, it was seen as being too difficult to fill in. The safety department then called technicians in the different areas to a meeting, to find out where to improve the incident reporting forms.
This discussion resulted in a restructuring of the form, where elements from the "real" world were incorporated together with some pre-defined standardised tick off boxes.
Moreover a "storytelling" box was inserted, to let people involved in an incident feel free to write anything they wanted. Before implementing the new reporting form it is important through information (bulletin board, company intranet) to let people know that there was a reporting system, and that the reporting system is able to catch and to report reactively on trends. Secondly it is important through education to let people understand why it is important to report even the smallest thing. To do so, it is important to let people be a part of the process, identifying what the problem is, to let them create ownership and responsibility and accountability so as to minimize the number of incidents, and to increase the numbers of incident reports. (a simple list outlining examples of incidents and non-incidents and why they are important can be

distributed). Furthermore, as a result of implementing a new incident report, the numbers of incident reports went up 45%, as did the relevance and resolution of their content.
Sidney Dekker and Tom Laursen (2007) argue that giving people a second chance to tell the stories again will have an effect on the learning process in the company, because the second story reveals the multiple attribution to why things went wrong i.e., conflicting goals, pressures, to be able to find the weakness and vulnerabilities beneath the "error", that could have an effect on the people inside the system. But we have to be very careful about using the possibility for people to give a "Second opinion on what happened, because people will start using "Hindsight bias" (Dekker 2007), which will have an effect on the contents from the first statement or incident.

Key points.

- *Just Culture/New view.*
  First the company has to change its view on how on accident reporting, they have to see incidents and accidents as problems deeper inside the system, to change this, people inside the organisation have to be able to feel free to concentrate on the daily job instead of limiting people's liability to contribute to safety.

- *Hindsight bias.*
  We have to be aware that when we let people use narrative explanations and when people are telling or writing the sequence of events, hindsight causes them to over-simplify the history, relative to how people understood the event at the time it happened. If we see the situation from inside, we would understand that the outcome was once an infinitesimal probability; one among many others possible outcomes.

- *Normalisation of deviance.*
  Normalisation of deviance is developed when a situation frequently arises over time which allowed people to carry on as if nothing was wrong. If data from previous incident reports is within expectations, the technical rationale on which risk acceptability was based will remain the same.
  If no new technical problems were found in an already known area it was not discussed, because it was an acceptable (known) risk, and was therefore not addressed again, because "It is inside the system"(Boisjoly,1986.)
- *Individual secrecy.*
  To explain individual secrecy we have to look on how people in an organisation reported things seen as a problem, people hope that some one in the company comes up with an even bigger problem, so that their problem wouldn't be the problem delaying maintenance.
- *Accountability.*
  Forward-looking accountability and backward-looking accountability is something that the company have to pay attention to when introducing "new view" and "blame-free" cultures, it is important that expressions like "If we'd just have known then this would not have happened" have to disappear from the "system" in order to be able to create accountability among the people inside the system when it comes to reporting things. We have to focus on "Forward accountability", or prospective sense of responsibility is oriented to the deliberative and practical processes involved in setting and meeting goals.
- *Predefined or storytelling reports.*
  When preparing an incident reporting system, the company has to consider how the systems interface and design should look like, below is shown what has to be considered:

    1. The reporting system should be electronic.

2. The accessibility to the system has to be easy for the people in the company.
3. Computers must be placed in different strategic places in the company.
4. A paper vision of the electronic incident report should be placed strategic places in the company if the system fails.
5. Automatic feedback loop.

Furthermore the design of the incident report plays an important factor in getting the information from near misses, incidents and accidents. The incident report has to contain a combination of narrative boxes and standard tick boxes (see appendix 1)

RECOMMENDATIONS TO ADDRESS HOW TO INCREASE EFFECTIVENESS IN REPORTING SYSTEMS.

- The incident reporting system has to be electronic.
  The purpose of this recommendation is to increase the usability of the reporting system for people in the company.
- The accessibility to the system has to be easy for the people in the company.
  The purpose of this recommendation is to create an environment where people don't have to be in a stated place to fill in an incident report.
- Computers must be placed in different strategic places in the company
  The purpose of this recommendation is to create an environment where people don't have to be in a stated place to fill in an incident report.
- A paper version of the incident report should be accessible to people in the company.
  The purpose of this recommendation it to have a backup system if the electronic system fails.
- The incident reporting system must have automatic feedback functionality.
  The purpose of this recommendation it to let people know that the incident report is taken care of.
- The incident report should contain a combination of narrative boxes and tick boxes.
  The purpose of this recommendation is for the company to get as much information about what went wrong during the incident, furthermore this recommendation should give the safety department enough data to be able to follow trends.
- Instruction manuals and procedures on how to use the reporting system must be prepared.
  The purpose of this recommendation is to insure that people inside the system have knowledge of how to fill in an incident report.
- The incident reporting system must be administered by a person outside management.
  The purpose of the recommendation is to create a non punitive and blame free culture and willingness to report among people in the system.
- The safety department must be proactive by attending and preparing railway safety-related campaigns about "why report"
  The purpose of this recommendation is to give people inside the system awareness of why to report.

CONCLUSION

It is in the day-to-day working environment that the organisation can find the seeds of organisational failure and success to people's willingness to report even the smallest things. The organisation must turn to a blame free and proactive risk management in order to find leverage for making further progress on how to create an effective reporting system. As Rasmussen and Svedung (2000, p. 14) put it:

"To plan for a proactive risk management strategy, we have to understand the mechanisms generating the actual behaviour of decision-makers at all levels… an approach to proactive risk management involves the following analyses:

- A study of normal activities of the actors who are preparing the landscape of accidents during their normal work, together with an analysis of the work features that shape their decision-making behaviour.
- A study of the present information environment of these actors and the information flow structure, analyzed from a control theoretic point of view."

Furthermore Rick Iedema (2005) points out in his work that "narrative confession and mutual scrutiny among clinicians need not always produce encouraging outcomes and may give rise to suspicion, resentment and contestation" (Iedema 2005). Moreover James Reason (2008) points out that a reporting culture is an essential prerequisite to managing safety effectively, this requires a climate of trust that encourages frontline operators to talk about near misses, incidents and accidents. Another important spectrum that the organisation has to have in mind is how the incident reporting system is designed, it has to be user-friendly, and most of all contain an automatic feedback loop.
A lot of companies invest a huge amount of money in reporting systems, but as shown in this memo a fancy reporting system doesn't do it alone, the organisation has to work hard on safety culture to create an environment where people report even the smallest things.
Even though we (organisations) get these entire processes in place and introduce a more effective reporting system, the area regarding how to create more effectiveness in incident reporting systems need more research.

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APPENDIX

Hændelsesrapport – formular.

Hændelsesrapport	
Dags dato	02-06-2010 10:44
Opretter	PEN
Hændelses afkrydsning	Hændelse
Fulde Navn	peter nordstrøm
Stilling	Undersøgelsesleder
Hændelsesdato	02-06-2010
Hændelsestidspunkt	1530
Hændelsessted	CMC
Beskriv Hændelse	Test
Andre implicerede	
Hvilke Tiltag	Test
Opkald til Kontrolrum	
Person i Kontrolrum	
Kategori	
Kollision	
Kørestrøm	
Kommunikation	
Information	
Afsporing	
Opsætning af rute	
Fejl/ulykke på infrastruktur	
Passageruheld	
Overfald på Passager	
Medarbejderuheld	
Overfald på Medarbejder	
Uautoriserede personer	
Hærværk/graffiti	
Ting på spor	
Personer på spor	
Arbejdsmiljø	
Miljø	
Beklædning	
Andet	
Hvor skete hændelsen	
Rulletrappe	
Elevator	
Perron	
Trappe	
Metrotog	

Område på CMC	
På spor	
Andet	
Indvolverede	
Indvolverede vælg	Alias ikke angivet - kunne ikke vise data
Kom personer til skade?	Nej
Vejrforhold	
Solskin	
Regn	
Sne	
Tåge	
Storm	
Andet	
Indblanding	
Indblanding vælg	Alias ikke angivet - kunne ikke vise data