

## Creative Collisions: Hands On! at Ecsite 2018



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## About our session:

Hands On! International Association of Children in Museums actively participated in this year's edition of Ecsite's (<https://www.ecsite.eu/>) annual science communication conference hosted by the Natural History Museum Geneva, Switzerland, 7-9 June 2018. Our aim was to heighten the awareness and the visibility of children in museums and science centers in a wider professional community.

As researches show, today's children are significantly lacking possibilities for free play and similar open settings for physical activities. Science Centres and museums are challenged to fill these gaps with hands-on exhibits and encouraging environments, which allow children to practice and develop their motor skills. Inviting people of all ages and capabilities to actively engage with exhibits and tools of course entails a number of legal and ethical issues, like liability, which have the potential to threaten the organizations as a whole. In most countries, we experience an increasing tendency to pass off the individual responsibility of visitors to the hosts. This development forces institutions of informal learning to adopt detailed safety policies, causing the repression of innovative participatory formats.

### Reconciling creative exhibit design and the demands of today's compensation culture

Inspired by the conference theme creative collisions, this year's Hands On! International session was dedicated to the difficulties curators and exhibit designers face, when trying to implement innovative hands-on concepts. Especially when working with families and schools, institutions are usually understood to be fully liable for any incidents and are frequently confronted with claims for compensation. The fear of law sue also effects the exhibit planning process, especially when it comes to activities involving real tools or other highly participatory formats. We encountered a variety of innovative formats, which encourage visitors to get physically active beyond the normal extent. Hands On! president Jörg Ehtreiber and three international speakers shared their experiences, real-life incidents and their approach on risk management in their Brave practice presentations.

Together, four speakers and over 50 session participants explored how the implementation of highly participatory formats is threatened by the urge of institutions to legally protect themselves. Questions like, 'How can science centers and museums provide visitors with hands-on activities within highly standardized legal structures?', 'How far do we dare to push our luck in terms of safety?', 'Is it possible to find the right balance between safety policies and free play?', 'What would exhibit makers and curators like to offer, but do not dare to tackle given the current situation?' and 'Is there a way out?', were raised and discussed during this panel sessions.

## **Speakers:**

### **Convenor:**

*Jörg Ehtreiber* Hands On! president and director of FRida & freD children's museum Graz, Austria.

### **Panelists:**

*Ian Simmons* –Consultant Science Centres International, museum and science communication consultancy, Newcastle upon Tyne, United Kingdom

*Pilvi Kolk* - Member of the Management Board AHHA Science Centre, Tartu, Estonia

*Sarai Lenzberger* – Hands On! executive assistant and project assistant Frida & freD children's museum, Graz, Austria

## **Session Summary:**

After welcoming about 50 participants to our session on 7 June 2018, Jörg Ehtreiber introduced the session's topic with an incident from his own museum, which perfectly illustrated the difficulties of reconciling safety and stimulating exhibition formats.

The accident involving a child occurred on the wavy, padded seating area linking two floors alongside a staircase. Initially, the architects intended it to serve as a mere sitting and lingering area, but the children immediately adapted it as an exercise and climbing area, giving its resemblance with a slide.

A child fell onto the floor after climbing the end section of the area several times.

The accident happened in full sight of the mother, who was sitting next to her children and watched them climb. Unfortunately, the fall resulted in a severe head-injury, but luckily the child fully recovered without any secondary damages. The parents considered the museum responsible for the accident. At the court hearing the parents stated that they always encourage their children to climb and do not interfere as they believe it is very important for their development.

And here lies the absurdity of this case: The children's museum shares the parents' opinion, that climbing is an essential part of child development. This is why FRida & freD offers opportunities for physical play. At the same time, in case of an accident, parents are immediately looking for someone to blame, regardless of their chosen approach to parenting.

This results into a problematic collision and leads right into the session's topic, raising the question of where does the responsibility of museums and science centers stop? Should we cut down all the trees in the park surrounding our museums, because parents might allow their children to climb on them? And, in case of an accident they then blame the gardeners because they let the trees grow?

### Ian Simmons – Free play vs. litigation

Despite the strong hands on- movement amongst the science center and museum community, many exhibitions offer ‘button pressing’ solutions rather than real opportunities for interaction. This also dramatically reduces the educational effect of the exhibits, as pushing a button usually does not provide enough tactile impulses for triggering learning.

This leads to the questions of ‘Why are we so afraid of risk in museums/Science Centers?’

Ian Simmons offered a very enlightening explanation for this risk-averse exhibit culture: The general perception of risk varies from environment to environment.

Even though statistics prove most accidents happen at home (such as falling down the stairs), the tolerance for risk at home is very high. People do not regard their homes as dangerous places, whatsoever.

Ian Simmons illustrated the alternating perception of risk by using the example of an ice rink.

Parents visiting an ice rink with their children are very aware of the risks connected to this leisure activity. Accidents and injuries are no surprise and are tolerated as part of the game. “Child broke wrist while playing ice hockey” is not a very likely headline for a news article in any media.

However, when visiting a museum or science center, the opposite is the case: Even if exhibits are physically demanding and similar to activities familiar to visitors from another context, the collective perception of potential risks is much lower. Visitors lure themselves into a false sense of security by assuming places of knowledge are risk-free environments. Despite the fact that the overall risk of getting injured in a museum or science center is much lower than at the ice rink or at home, incidents of any kind are poorly tolerated. This of course also leads to carefree and risky behavior of visitors in exhibition spaces.

The answer of course cannot be to cut down interactive exhibits to pushing buttons from a safe distance. Ian Simmons suggests institutions should instead establish a universal risk management strategy, which applies to all stages of exhibit(ion) development, from concept phase to day-to-day business.

#### How to manage risk: suggested measures

- Risk assessment

*“For every size of gap, there is a corresponding body part.” (Ian Simmons)*

Each exhibit is rated and assessed in different categories. This setting ensures that all relevant factors are taken into consideration and provides the team with a transparent overview on the expected level of risk. It also clearly shows where adjustments are necessary.

[Draft risk assessment sheet available for members /member area website soon!](#)

- Weighing learning value and potential risk

As it is impossible to give a universally applicable piece of advice concerning the tolerable level of risk in an exhibit, it is recommended to have a look at the learning value of the activity to see whether the given level of risk is acceptable or not. Ian Simmons brought up

the example of a maze-like mirror hall in an exhibition he did a few years ago. Children played high pace chasing and catching games in the exhibit and this led to numerous incidents with children crashing to each other and into mirrors. Given the fact that the learning value of the mirror hall was rather low compared to other exhibits in the exhibition, he concluded to have it removed, as the educational benefit did not at all justify or weight out the rate of incidents.

- Preventive exhibit design

Some risks can be easily lowered by smart exhibit design, especially when it comes to tripping hazards. For instance, round activity tables and exhibits significantly reduce the risk of falling and bumping.

- Well trained staff

Aware, attentive and proactive staff is one of the key elements in successful risk management. If they know how to react in case of an incident, they are a powerful tool for accident prevention. This of course is only possible, if they are well briefed and the visitor-staff ratio is adapted to the needs of every area.

- Good insurance and lawyer

*“You cannot prevent the most advanced forms of stupidity.”*, stated Ian Simmons when outlining the importance of high quality legal advisory for museums and science centers. Regardless of the most careful and advanced risk assessment and incident prevention strategies and measures, one should never underestimate the creativity of visitors when it comes to risky behavior and misuse of learning facilities.

At the end of his presentation, Ian Simmons presented the session participants, with two brave practice exhibition projects he created.

1) Curiosity – An open-ended exhibition with many loose parts that encouraged personal exploration to build science capital. This required us to place a lot of trust in our visitors providing them with many things that could be potentially dangerous, but which turned out to be safe throughout the whole running time of the exhibition. Out of 20 exhibits built, only one was eventually removed partly due to safety concerns.

2) Experiment Zone – This was a live laboratory where visitors could carry out experiments in a simulated lab environment using real lab equipment and reagents on the open exhibition floor. This again raised H&S challenges that have been successfully met. Furthermore, a similar concept was also successfully implemented for client as the result of a consulting partnership.

### Pilvi Kolk – Ski jumping exhibit

In 2017 AHHA opened its self-produced exhibition about winter sports. They showed all the main categories of the winter Olympics, including ski-jumping. When creating the concept for the exhibition the team tested the normal ski-jump exhibits in other Nordic countries and was not satisfied with the low level of participation they offered. None of the exhibits provided the real feeling of going down a ramp and jumping. Visitors could just jump on the spot in front of a screen with a game software doing everything for them. These settings are not very interactive or remotely close to the sport of ski jumping, therefore, the team of the AHHA Science Center decided to take another approach on their ski jumping exhibit. The only way to get visitors to experience the actual feeling of ski jumping was to offer the real thing.

Therefore, a 4-meter-high indoor ski jumping hill, fully equipped with a ramp, take-off table and landing hill, was developed with the help and expertise of an Estonian ski jumping club. The advisors from the ski jumping association have years of experience with training children and building small jumping ramps suitable for beginners.

After a long period of building, testing and rebuilding, this is what the final version of the exhibit looked like: <https://www.youtube.com/watch?v=un7Ah6leQpE>

Visitors strap short ski-like extension to their shoes, put on helmets and climb the steps up the ski jumping hill. Before they can jump they have to wait for an enabling signal. To make the whole environment feel more wintery, artificial snow falls down on them from the ceiling. Then they place the skis in the track of the ramp and off they go. The exhibit allows them to make jumps up to three meter of length. From the very start of the opening it has been the most popular exhibit in the history of the Science Center. However, referring to the rate and severity of injuries, it also turned out to be the most dangerous exhibit ever on display. Ambulance was called to the Science Center at least once a day, some visitors even suffered broken bones in legs or arms. Luckily, nobody suffered of secondary damages or head injuries. What made the situation even tougher was the fact that the exhibit could not be easily closed off or taken out of the exhibition altogether, due to it being the center of a nation-wide marketing campaign for the exhibition. The clip with the child in ski gear riding in the bus to the Science Center to go down the ski jumping hill was featured in national television before every winter sport related programme.

These were the issues connected to the safety of the exhibition.

#### Issues:

- “We take bigger risks in science centres than we would in our daily life because we perceive SC as safe places.” Even people, who would never jump in a sport environment were tempted to go. Parents were much more carefree.
- Clearly: falling, higher risk due to the skis (prying effect)
- Even though visitors had to transit a zone with safety and jumping instructions and staff members were present all the time, people kept ignoring rules and signals.
- In order to jump successfully and safely, specific movements/steps have to be done/followed, too complex for the setting
- Different weight/age of the visitors, but the ramp was not adjustable
- Artificial snow made the jumping hill more slippery -> faster

- Artificial snow caused health issues for staff standing next to the exhibit for long periods of time (cough)
- Perceived as the major attraction due to the campaign, people did not want to miss out on it. Became a “must do”
- Bystanders sitting on the ramp, or getting to close, underestimating the speed and force of the jumper and ignoring staff and safety instructions.

Obviously, some adjustments had to be made to increase the safety of the exhibit in the course of the exhibition being on display. The following changes and measure were introduced:

- No more artificial snow
- Even more staff present, one at the bottom, one taking the visitor through the safety instructions
- Inserting material to lower the overall speed
- Area better separated from the rest of the exhibition, only one way to approach

Factors which led to the exhibit not being as safe as predicted:

- Expert group sport environment ( only experienced with well-trained children with very good gross motor skills and coordination)
- Staff who tested it were all hobby skiers and very sporty, always the same people tested it, also “test children” became used to the setting/to jumping
- Tartu is not a winter sport destination, many people cannot ski
- Exhibit was the main testimonial for exhibition, focus of huge campaign in all national media. (TV spot before every programme connected to winter sport), not possible to simply take it out of the exhibition/close it down
- In need of a certain speed to jump safely, if people are scared and try to slow down, or are too afraid to jump, the exhibit becomes much more dangerous. Not designed to stop in the middle. Risk of falling sideways, tumble over when not jumping off properly.

As a conclusion, Pilvi Kolk advised everyone do not do a similar exhibit. Whenever there are so many second thoughts in the concept phase of an exhibit, the exhibit better stays a draft. There are so many unpredictable factors adding up, that the whole thing is likely to get out of hand.

Nevertheless, she still strongly vouches for including some risk into the exhibitions and daring to allow real visitor participation, rather than making them mere bystanders.

Sarai Lenzberger – Inventor mice: a participatory maker-inspired exhibition by Frida & freD

The inventor mice project is designed for children between the ages of 3 and 7 and explores the rich field of inventions. It was on display in Graz in 2016 and now tours Europe as a travelling exhibition. The format itself is a creative collision par excellence, as the format is a hybrid of a maker space and an exhibition. The idea of offering a maker-inspired setting for such a young target group might seem strange at first. The initial thought here is that young children basically spend their whole day inventing and constructing. To them life is a series of puzzles ready to be solved. Hence, in an open maker setting they have the freedom to work on their own ideas.

However, inventions need an impetus. And here is where the exhibition setting becomes handy: children are presented with specific challenges to provide them with new learning impulses addressing their problem solving skills. Therefore, a setting combining exhibition and maker elements helps us reach the educational aims of the programme.

When entering the exhibition, we find ourselves in the stimulating atmosphere of an attic, which is home to the inventor mice. With the help of the visitor, they build wondrous machines. This higher-level story of 5 inventor mice, each having their very own character, serves as the framework and guiding system of the exhibition.

The exhibition is made up of three main zones, each offering a variety of different activities.

- Free play and maker section: free boards, drives, belts, magnetic cogwheels and maker materials are on free disposal
- Guided inventive zones, where inventor mice introduce specific tasks and challenges, such as setting a merry-go-round or disc cinema into motion. There are also tinkering stations with specific assignments, such as making a paper windmill, by following step-by-step instructions.
- The third activity zone are the gross motor areas, the climbing tower and tunnel, balance boards and climbing ropes.

<http://kimus.at/en/activities/die-tueftelmaeuse/> (till minute 1:43)

*What does such a setting mean in terms of safety and liability issues?*

First, we need to emphasize, that FRida&freD has a very pragmatic, (some might call it bold) approach on risk in general. At its base lies the personal responsibility of parents. The overall aim is to offer informal learning through first-hand experiences and allowing children to experience and foster a great variety of skills. Hence, this requires allowing children to get active themselves.

However, keeping visitors safe and minimizing the risk of severe injuries is and always was a number one priority for the children's museum team.

In order to provide a safe environment for little visitors, a clear distinction between risk and hazard/threat has to be made. Little injuries are often part of a learning process, whereas severe hazards should be totally eliminated from the learning environment.

*e.g.: Exhibition Villa Munter G'sund : – climbing area with real trees, no great falling height, but bark not smooth, so the possibility of splinters was there. The museum's reaction to this risk was providing free tweezers at the information desk.*

The main focus lies on being aware of true hazards, but putting up with risk of minor injuries (like occurring in a natural play environment or at home)

Nevertheless, the museum is also facing the demands of a risk-averse society and a growing compensation culture, where visitors expect to leave their responsibility at the cloakroom.

*Why can Frida & Fred dare to follow such an open approach on risk?*

The answer lies in the legal and cultural framework of the institution:

- Law (in Austria it is only possible to prosecute a claim on actual damage/punitive damage)
- Culture/societies perception  
International comparisons show Austrian parents are far less concerned about child safety than the international average: teaching how to light matches at a young age, using public transport alone, etc.) – even though increasing tendency of risk aversion, still very different from situation in other countries.

Obviously, keeping visitors safe and minimizing the risk of severe injuries was also a number one priority in the developing process of the inventor mice exhibition.

The initial idea of offering an exhibition setting of a huge machine, where all activities are linked to each other and each visitor's interaction has an impact on the whole exhibition was no longer pursued. Small children might not be able to grasp the consequences of their actions, especially when it is not in their plain sight. This setting is most likely too complex, hence unsuitable for this cause.

Therefore, the inventor mice concept was created instead.

In terms of accident prevention the following safety measures were introduced:

Measures:

- Overalls and anti-slip shoes are offered at the entrance of the exhibition
- Every adult/accompanying person is handed a brochure containing guidelines and important information about the exhibitions
- Big, appealing illustrations (do not put rimes around your neck, tie hair) on display when entering exhibition
- Heavy tools such as electrical saws and drills are only operated by staff in a separate area, where visitors are not permitted.
- Tools like scissors are tied to the stations, so visitors cannot carry them to other areas of the exhibition.
- Climbing tower and tunnel are secured with safety nets.
- Children advisory board for new exhibitions: A group of child-volunteers test and give their feedback on the exhibition.

And believe it or not, incidents statistics are on FRIda & freD's side.

So far, there are no reports of any injuries connected to the inventor mice exhibition.

Only one minor accident was reported, but it occurred when the exhibition was rented out to another museum. There, an adult visitor reported to staff she was hit near the eye by a pulley, which jumped out of a board. It turned out, a small rime was so worn out making it appear like a big one. When using it to connect two pulleys over a longer distance, there was too much tension on it, so it pulled out the pulley. Since then all rimes are regularly examined. Luckily, the blow did not have any

visible impact and the visitor could stay on to enjoy her visit without requiring first aid or any medical treatment.

## Discussion/questions

The presentations were very well perceived and participants seemed to really dive into the topic. They showed strong reactions when hearing about the incidents and reports of the speakers.

This also resulted in many questions and comments after the end of the last presentation:

- Use of icons pro/con
- Relevant guidelines
- Testing exhibits (different stages, possibilities involving groups of test visitors)
- Limits of exhibit safety (e.g.: visitor hid in dark sensory tunnel and took the opportunity to fondle and physically harass female visitors)

Due to the limited time of the session, we were only able to brush some of the topics and questions brought up by the panellists and participants. However, many participants engaged into deeper conversations about the topic throughout the following coffee break.

## Conclusion:

The unusual choice of topic was highly appreciated by the Ecsite programme committee and the session participants. Visitor safety is a very complex, yet universal topic applicable to all institutions of informal learning, regardless of their main visitor target group or their thematic orientation. Many professionals of the field feel insecure or left alone when it comes to exhibit safety, as most standards and laws are not designed for this sector. In many cases, safety regulations or standards are not applicable, as every exhibit is different. Nevertheless, the threat of serious incidents and lawsuits is real. There are many more factors and issues left to be discussed and Hands On! would be happy to see more sessions, papers and research dedicated to this very topic in the future.

*How can we ensure to offer our visitors stimulating, yet safe learning environments?*

Obviously, due to its complexity, this question is very open-ended and a one-hour-session cannot deliver an universal answer. Nevertheless, we have detected some crucial measures, which can help institutions to find individual safety solutions for every project:

- Developing a risk assessment strategy/protocol
- Take into account the special conditions and requirements of the museum/science center setting (visitors' perception of risk)
- Learn from others/network
- Test with various testing groups
- Think of accident management/prepare your staff well
- Distinguish between risk of minor injury and hazard

Studies about playground accidents show that more accidents happen on playgrounds with very strong safety measures, such as protective padding and rubber floors, as they lure children into a false sense of security.

Therefore, when talking about children and risk, the true risk is that we take away all the risks.

For as Albert Einstein once said: ***“Learning is experience, everything else is just information.”***

## Reading List

- Playing it safe? – A global white paper on risk, liability and children’s play in public space  
Free access: <https://bernardvanleer.org/publications-reports/playing-it-safe-a-global-white-paper-on-risk-liability-and-childrens-play-in-public-space/>
- Resources for exhibit safety  
Free access: <http://www.astc.org/about/pdf/SafetyResources.pdf>
- Public Playground Safety Handbook (U.S. consumer product safety commission)  
Free access: <https://www.cpsc.gov/PageFiles/122149/325.pdf> Managing Risk in Play
- Provision: Implementation Guide (Play safety forum UK)  
Free access: <http://www.playengland.org.uk/media/172644/managing-risk-in-play-provision.pdf>
- The Power of Play: A research summary on play and learning  
Free access: <https://www.childrensmuseums.org/images/MCMResearchSummary.pdf>
- British Standard BS EN 71: toys and playgrounds & BS EN 13814:2004: Fairground rides  
Pay to access: <https://shop.bsigroup.com/> or check the online databases of your library

## About Ecsite 2018 – Creative Collisions

Ecsite is the European network of science centers and museums. Annually they organize Europe's biggest science communication conference, attracting more than 1000 international participants.

This year, the Natural History Museum Geneva hosted the conference in cooperation with CERN, University of Geneva Scienscope, and Campus Biotech in Switzerland. The conference theme was chosen in reference to the reknown particle collider project of CERN.

'In a society where thoughts, words and deeds are increasingly standardised, placing different worldviews on a collision course can be a source of innovation and creativity. Collisions are not necessarily destructive: they can produce new elements, forms, knowledge and energies. Science engagement offers a unique space to experiment with new creative collisions between science and society, experts and amateurs, science and politics, art and science, nature and culture, science and faith, real and virtual, old and new. "Creative collisions" was a stimulating concept that helped us reinvent communication, teaching, learning, and thinking!' (taken from: <https://www.ecsite.eu/activities-and-services/ecsite-events/annual-conferences/ecsite-annual-conference-2018> )

Two inspiring keynotes (James Beacham – a physicist at CERN and Giulia & Gill Enders – author and illustrator of the best selling book *Gut: The Inside Story of Our Body's Most Underrated Organ*) along with numerous sessions dedicated to science communication, and study trips to CERN and the National History Museum offered participants valuable insights in the latest developments of the sector.

Check out the video summary of the 3-day conference:

<https://www.youtube.com/watch?v=QMf7Wh6EJBQ&feature=youtu.be>

## Imprint

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