La diffusion d'une culture de la gestion des risques auprès d'une communauté de sportifs amateurs. Le cas de la Fédération Française de Vol Libre (FFVL).

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Résumé

Cet article traite des efforts menés par la Fédération Française de Vol Libre (FFVL) pour diffuser une culture de la sécurité et de la gestion des risques parmi ses licenciés. Cette démarche découle d'une accidentologie toujours très présente et préoccupante dans la pratique du vol libre qui menace l'acceptabilité et l'assurabilité de cette activité dans la société française. Par ailleurs, du fait de la simplicité de mise en œuvre, de l'amélioration des performances et de la fiabilité du matériel, la communauté des pratiquants du vol libre, principalement amateur, ne présente pas une attention particulière pour les risques.
Les résultats de cette recherche, fondée sur une intervention au sein de la commission technique et sécurité de la FFVL, propose un cadre théorique propice à supporter la diffusion d'une culture de la gestion des risques, ainsi que la mise en œuvre d'une stratégie de gestion des risques par une fédération sportive. Il est pertinent pour renforcer et favoriser la mise en œuvre d'actions individuelles et collectives en gestion des risques dans une communauté qui se vit relativement éloignée des institutions fédérales. Il permettra enfin de décrire des dispositifs de gestion de la communauté du vol libre de manière à faire en sorte que la gestion des risques dans la pratique de l'activité devienne une préoccupation de tous à chaque instant.

Mots-clés : culture de la gestion des risques, fédération sportive, construction des représentations

Today, Icarus dream is possible with a minimum of equipment: a wing (paraglider, or hang-glider), a harness, a helmet and a rather short training, considering this crazy ability to fly. But, with a mean of 14,4 deaths and around 200 declared severe accidents per year in France since 2010, free flight and moreover paragliding is usually considered to be an actual risky sport. As an aeronautical leisure activity, we could think its practitioners should share a strong safety culture. But perhaps because of its recreational and fun characteristics and also, its easy access, practitioners usually live there passion mostly individually without being fully conscious of their risk exposure. In fact, what seems to be important for practitioners is mostly to enjoy the pleasure of flying freely whenever the weather conditions allow to do so. Apart of that, the gears and wings evolutions could make practitioners think that paragliding is becoming a banal activity, accessible to everyone, even without getting a real and serious training. Moreover, unlike other aeronautical activities, there is nearly no culture of safety in free flying neither any collective mindfulness. As manufacturers and designers are providing more and more passive safety features for flying equipment, practitioners usually fly without having a strong feeling of risk and danger and play as if any event can be dealt only with their gears.

In order to cope with this poor representation of risks in paragliding and to cope with the consequences in terms of insurance and acceptability of the free flight activity, Free Flight French Federation (Fédération Française de Vol Libre, FFVL) had tried these last years to impulse and spread, through its Safety and Technical Commission, a real safety culture among the free flight practitioners.

TOWARDS HIGH RELIABILITY ORGANIZATIONS IN FREE FLIGHT

To understand why it is so important for free flight practitioners to change their safety practices, it is necessary to review the specificities of this activity. First of all, free flight is an activity which takes place deep in a hostile and invisible environment. In fact, even if the pilot knows and understands the laws of aerodynamics, and the meteorological and aerological theory, the pilot operates in an environment that he does not see and movements of which he only feels. Indeed, while it is certain that he must manage risks in real time - i.e. events whose probabilities and consequences can be measured - he faces uncertainty most of the time - i.e. events whose probabilities of occurrence or consequences cannot be assessed (Knight, 1921). To enable the

pilot to carry out his activity, he must develop strategies to manage these risks and uncertainty. In order to go beyond this purely accidentological approach, which mainly concerns safety levels, i. e. stock levels (Gilbert, Journé, Laroche, & Bieder, 2018), it is necessary to give pilots back the ability to analyse, evaluate and act on risk management while they are conducting their activity. The idea is to avoid that pilots can hide themselves behind a safety barriers logic and consider that they will act *as if* they were in a situation of absolute safety. That is one of the main issues dealt in the "swiss cheese model" where actors put in place several barriers that are not perfect because of the impossibility of being exhaustive. Therefore, there are holes into each of defence barriers. Incidentally, this can lead to an alignment of the holes in each of the barriers that will then lead to the accident (Reason, 1990). Everything here relies on the event model. It has to be exhaustive into evaluation of events through their two variables: probability and consequences. This isomorphism between events and reality could lead to forget about the dynamic and interactions within risky situations and lead to a major crisis of representation (Szpirglas, 2006b). Moreover, complexity and tight coupling of technical, and organizational systems seem, for some authors, to lead those organizations towards inevitable accident (Perrow, 1984, 1999). This leads to the view that focusing on studying events or groups of events to enable pilots to act, while assessing their situation, is insufficient. This makes relevant the notion of "management situation" (Journé & Raulet-Croset, 2008). To go further in this direction, since the 1990s, researchers around Berkeley's University have first developed a particular focus on organizations that produce unequalled levels of safety, i.e. lethality or accident rates. They focused their studies on "normal life" of organizations and analysed the processes and culture of the actors in a holistic approach (Roberts, 1990; Roberts & Bea, 2001). In fact, Aeronautical commercial activities have developed, over time, routines, rules, and organizations that allow them to become High Reliability Organizations (HRO).

Those organizations rely on 6 main conditions that are the following and linked to our present subject (Boin & Schulman, 2008):

1. *High level of expertise and capabilities within the organisations*

It is first at all, a high level of expertise and capabilities that can be found deep throughout the organization (Weick & Sutcliffe, 2001). It is something you ought to find throughout the free

flight community. Nevertheless, the only thing you need to free fly is your aviation liability insurance. It is not mandatory, in France, to receive adequate training nor specific qualification.

2. *Careful and general attention to every dimensions of reliability*

To follow, those organizations provide a careful and general attention to many dimensions of reliability. In free flight, it seems to be one of the main conditions achieved by the community. In fact, pilots are paying attention to the meteorological changing conditions, their capabilities to be aware of their own state of mind. A constant attention is given also to preflight check-lists, equipment's condition and fatigue or physical conditions.

3. *Strong capability to forecast everything wrong from happening*

Third condition is a strong capability of analysis to forecast anything wrong from happening. It is also a way for actors to pay attention to weakened signals from their environment. Therefore, pilots have to train their capability to doubt (Eydieux, 2017), i. e. making salient those weakened signals (Szpirglas, 2006a). "The day I die is the day I forget to doubt" tells Thomas de Dorlodot, a professional paragliding pilot (De Dorlodot & Kahn, 2015).

4. *Complex and changing bunch of rules, processes and practices to avoid failure*

Fourth, those organizations present a complex and changing bunch of rules, processes and practices that are related to the sensemaking of the situation and focus on avoiding the situation to evolve into failure (Weick, 1985, 1990, 1993). Within the free flight community, we can find some choices and procedures that are freezing the pilots mind and that prevent them from acting in an evolving situation. Several explanations can be given such as the appeal of performance (Morel, 2002) or language or cognitive distortions (Canet, Roux-Morin, & Szpirglas, 2011; Szpirglas, 2006a, 2008).

5. *Reconfigurable formal structure of roles in case of emergency*

Fifth, HROs present a formal structure of roles, and are able to reconfigure it when emergency arises. They have capabilities to shift into decentralized and organic and innovative structure in order to cope with problem solving. Furthermore, relations between HROs actors are dominated by vigilant or heedful interrelating (Weick & Sutcliffe, 2001). This makes the structure of roles more flexible at risk. As we will see further, the free flight amateur practitioners have no obligation to practice their activity as a group. In fact, unlike other mountain sports, they have little awareness of the resilience provided by the group and more broadly by an organization.

6. *Occurrence of a culture of safety*

And last, actors in HRO share *"a culture of reliability that distributes and instils the values of care and caution, respect for procedures, attentiveness, and individual responsibility for the promotion of safety among members throughout the organization"* (Boin & Schulman, 2008). As the fact that freedom is considered as the first appeal for free flight, pilots usually think that safety is only an individual matter that has to be dealt for himself with himself.

Those conditions have been extended by the notion of organizational resilience where organizations and actors can recover or endure some external or internal shock (Hollnagel, Woods, & Leveson, 2006). Therefore, to implement organisational resilience in an organisation, presumes to build a shared safety culture, which have to be built on a common process of sensemaking (Weick, 1987, 1995). These processes are also known as a mean to increase organisational performance as well as safety results. In free flight, the sensemaking process is crucial because of the unknown and turbulent environment where pilots are evolving. That suggests to work both on the ability of pilots to increase their attention to weakened signals and environment in constant evolution and moreover, to foster their capabilities to take decisions in an unknown or uncertain environment (Mayer, 2017). Therefore, it raises the question about the identity or role of an hypothetical risk manager into this unorganized community (Mayer, 2015).

FIELD STUDY PRESENTATION

THE FFVL ORGANIZATION

As a sports federation, the FFVL has several official prerogatives such as organizing training, competition, insurance, and security of the practitioners. Formally, the FFVL delivers the free flight license for the practitioners, usually combined with air liability insurance which is mandatory to get the right to free fly in France. The FFVL is in charge of the 5 activities of free flight: paragliding, hang-gliding, kitesurfing, kite flying, and boomerang. It is represented respectively at regional, departmental and local level by regional free flight leagues, departmental free flight committees and practice clubs which may join one or more activities of the federation. The organization and roles of the federation are not fully known by the FFVL licensees. It appears that the federation seems to exist only to provide the free flight license for

the practitioners and the air liability insurance. The federation is seen also as the organizer of the "Coupe Fédérale de Distance" (CFD), i.e. a friendly distance flight competition opened to all licensees. The federal level best known by licensees is also the one closest to their activity and practice. These are the free flight clubs, an association of which they are members in the first place and through which they take their license.

To represent the specificities of certain activities such as hang gliding and paragliding, the federation has recently created a Hang-gliding National Committee (CND) and a National Paragliding Committee (CNP). At the same time, the federation is supported by a team of national technical managers employed by the French Ministry of Youth and Sport, whose role is to assist the work of elected officials. In addition, the FFVL has mandated 18 transversal or specific commissions, (insurance, competition, female, youth, finance, handisport, etc…) including the Technical and Safety Commission (CTS). The CTS is composed of 17 members, including 3 technical managers from the federation. The role of the CTS is to design, implement and spread the safety strategy of the FFVL, towards raising awareness of the need to implement a risk management strategy among practitioners.

THE COMMUNITY OF FREE FLIGHT PRACTITIONERS

To delve more deeply into the analysis of the community of amateur free flight practitioners, let us try to state its main characteristics (FFVL, 2018c). In 2017, the FFVL brings together 31424 licensed members including 69,19 of whom are paragliders, 2.22% hang gliders, 15,80% kite-surfers, 5,72 kites, 1,77% boomerangs. Those practitioners are men for 83,36% and women for 16,64%. The largest proportion of practitioners are between 31 and 50 years of age, with some variations related to the activity of the federation they exercise. Amateur pilots - i.e. those whose free flight is not their profession - represent 94.46% of the total number of licence holders.

Despite these few data, the FFVL finally knows little about its licensees. Some data provided by the FFVL shows that more of the half of the practitioners are highly educated, mostly managers or engineers if not higher intellectual professions. We do not know precisely their type of practice in free flight. However, we can say that licensees are mainly people who work in occupations that allow them organizational flexibility with respect to weather conditions. Even if we don't know exactly about it, their practice of free flight is very versatile from local

flights, to cross-country (distance flight), acrobatics, hike and fly, soaring by the sea, speed-flying or riding, etc... And moreover, we can't tell precisely the number of hours of practice of licensees. In fact, the data available are declarative and generally do not reflect very well the actual practice of licensees. An accurate analysis of the population and activities of the practitioners will be the purpose of another paper.

Nevertheless, more accurate and complete data are available on accidents, mainly serious or fatal accidents. But this is no longer the case when it comes to more minor accidents or incidents. In fact, an accident declaration is mandatory when occurs a fatal or severe accident. In other cases, and depending on the severity of the accident, the reports are not immediate and not systematic. The same trend can be observed in the industry, where incidents are usually inadequately reported to the hierarchy to the firm.

There is nearly no culture of feedbacks in the free flight community, to improve all together processes, assessments and actions in the situation. Moreover, the practice of free flight is mainly experienced as an individual expression that can scarcely be practiced in a group. However, the risk literature shows that the group is a source of organizational and individual resilience (Weick, 1993). This generalized individualism tends to create issues in the community.

RESEARCH QUESTION: HOW TO SPREAD IN THE FREE FLIGHT COMMUNITY AN ACTUAL SAFETY CULTURE?

With this lack of data about the actual activity of its community, The FFVL is trying to find other ways to raise awareness in the community about risk management. It has to deal with the aspiration to practice freely, without constraint and in a responsible manner. But also, with the problem of this aspiration to an individual practice when it would be much safer if it were collective. This is why the FFVL has the ambition to spread among the licensees an actual culture of safety that should rises security results with time. And to do so, we will have to determine what kind of devices, tools or organization do the practitioners need, to cope better with the risks?

What is clearly expressed in the literature, is, first of all, what pilots need to develop their abilities to assess the situations at the same time of piloting their glider. And second to design actions individually or collectively, in order to cope properly with their situation, i.e. to be able

to act in accordance with the situation and then with the actions of other practitioners. Therefore, what are the conditions that would lead the free flight community towards the standards of High Reliability Organizations (HRO) and share a common and efficient safety culture?

After having presented the methodology of the research and a candidate theoretical framework, we will analyse how the different projects lead by the FFVL would contribute to build and spread an actual safety culture in the French free flight community of practitioners.

METHODOLOGY

AN ACTION-RESEARCH PROJECT

This research is part of a field study drawn from the associative commitment of the author into the French Free Flight Federation (FFVL). This commitment relies on both the facts that the author is himself a paragliding pilot since 2008, and his will to work on the risk management issues risen by the FFVL's activity. The author presents two main interests for this research. First, to understand from the inside how risk management is dealt by the French free flight Community. And second, to contribute to the design of a more reliable organisation to make the free flight activity safer. To follow, the author has been elected in 2016, as a member of the Safety and Technical Commission (CTS) of the French Free Flight Federation (FFVL), and conducts two of its core projects. As a part of this organisation, the researcher has pull out an inductive inquiry about how the FFVL deals with the constant or increasing number of casualty and death among its practitioners. The author informed the other members of the CTS that he will work as a normal member of the commission but also as a researcher interested into risk management. Moreover, as part of his participation in the CTS, the author took over the management of one of the commission areas of work: "Icares de la Sécurité". In this capacity, he has organized and participated in a monthly telephone meeting and two annual face-to-face meetings with the other members of the commission over the past two years. Each meeting gave rise to a report validated by each of the CTS members. And each working group published the results for their actions during the year. The author is also involved into three other working groups which we will speak about later. Lately in 2018, he was also appointed by the board of

the FFVL, coordinator of the federal working group on the "safety club animator" because of his elected status and his expertise into risk and innovation management.

DATA COLLECTION AND INSIDER POSITIONING

The methodology of this study is related to both works on action research (Argyris, 1970) and intervention knowledge gathering (Hatchuel, 1994, 2000). The data collection for both operations and research process is organised as from two types of sources. First, massive stats are provided and measured by the federation about the practitioner's habits, situations or accidents, those data are mandatory for a national sport federation. These primary data are screened by the organisation of the federation, and is not exhaustive. Second, the data collection relies on data collected from other outdoors sports national or international federations. It allows to monitor the practices and benchmark the organisations of risk evaluation and management.

The author inside positioning presents two main interests for the research. First, as a paraglider pilot, the author is not considered as a layman of free flight, he understands well the odds and issues of risk management in such a context. That gives him also a legitimacy towards the community and the other members of the commissions or working groups of which he is a member. Second, the author could monitor from the inside the spread of a safety culture considering also the biases induced by the proximity with the field study. The purpose of this research is both to contribute for the design of a new organisation of risk management for the free flight community and monitor and analyse, from the inside, how could be spread a safety culture within this community. The researcher is deeply involved into the action process and capitalise data from his action into the organisation.

AVOIDING BIASES AND VALIDITY OF THE RESEARCH

As an insider researcher, it is important to build a research process to spot and manage biases risen from an extreme proximity to the field study. That's why each report from a meeting is shared and validated by the related participants. All the results of this study, as been discuss in the CTS and the FFVL. As a matter of fact, the paragliding risk management manual (Galan, 2019) is the result of discussions of these research results with each members of the CTS. All the CTS is also involved in a reflexive thinking about what risk management could bring to the

community and moreover what the establishment of a safety culture could change the practices of this community.

To spread and communicate this work among the international free flight community, this work has been disseminated to the European Free Flight Federation (FIVL) and to the World Airsports Federation (FAI). Feedbacks from those institutions on these research results will be soon available.

Finally, the insider researcher called on an external researcher to compare his vision of the field with a new vision of the field. The external researcher don't know anything about free flight and will act as a piloting committee of this action-research.

A THEORETICAL FRAMEWORK TO ASSESS AND MODEL THE FOSTERING AND SPREAD OF A SAFETY CULTURE IN THE FREE FLIGHT COMMUNITY.

To analyse the projects lead by the FFVL, we provide here a theoretical framework that allow to understand their odds among the community in order to foster their efficiency. It was proposed by Szpirglas (Szpirglas, 2006b), and has been used in the contexts of crisis management (Acquier, Gand, & Szpirglas, 2008) and psychosocial risk management (Attias-Delattre & Szpirglas, 2013). This framework allows to understand how actors can assess both the nature of the situations they are into and design the rules to cope with these situations. This can be done by crossing two reading grids of the actor in the situation. The first concerns the way in which actors can act in a given risk situation. The second concerns the assessment that actors make of the risk situation in which they find themselves.

COLLECTIVE ACTION SCHEMES IN RISK MANAGEMENT

The first way to act in a given situation is to follow the rules in place. Rule systems make it possible to ensure the conditions for action by all safety. Therefore, following the rules suggest that the situation will remain under control. The actors must then design actions that respect these rules and thus allow them to remain in the previously defined containment. This suggest the system of rules is based on the separation of actors into two categories: the actors who design the rules and those who apply them (Taylor, 1911). This is what Argyris and Schön are

calling a routine-based collective action plan, where the organizational learning is relatively poor and rely on only one iteration, i.e. single loop learning (Argyris & Schön, 1996).

A second way to act in a situation is to regenerate rule systems to adapt them to the changing situation. This capability of actors of revising the rules can be related to the notion of double loop learning where actors implement reflective collective action plan (Argyris & Schön, 2002). It suggests that actors in the situation can get designing capabilities of both rules and actions.

ASSESSING THE NATURE OF REPRESENTATIONS OF RISKY SITUATIONS

The second line of analysis concerns the assessment of risky situations. Risky situations could be known and stabilized or unknown and unstable. The assessment of the nature of the situation is important for actors because they won't put in place the same kind of actions in a well-known situation and in an uncertain situation. The analysis strategy will call upon some specific and well-known resources in the first kind of situations. And, it will launch a process of inquiry in the second type. Actors should have the tools to make sense of their situation, such as assessing ambiguity, or interruptions during the flow of the situation (Weick, 1995). In some uncertain situations, the salience of ambiguity is not obvious. In these situations, known as "quiproquo" or cognitive misattributions situations, actors must put in place different strategies to be attentive to weak signals from the situation (Szpirglas, 2006b, 2008).

By crossing these two reading grids, we can identify 4 risk management strategies, as shown in Table 1.

Representation of risk situations Collective action schemes	Known risk situations	Unknown risk situations
Reflexive	Strengthening skills	Strategic risk management
Routinized	Traditional risk management	Strategic intelligence

Table 1: 4 strategies for risk management, (Attias-Delattre & Szpirglas, 2013; Szpirglas, 2006b)

Let's start by resituating an action regime that we know well: that of traditional risk management. We are in a situation of a routine action regime, where it is a question of acting in accordance with the rules and a situation of stabilized risks. Therefore, we can find devices which can be specialized to carry out specific actions based on existing and stable events. For example, it is mandatory in free flight schools and in competition to wear homologated helmets, to cover most of the shock on the head of the pilot. To a known risk the rules provide a known device to cope with.

Let us now describe a second situation that is quite simple to understand. This includes what can be called strategic risk management, where it is possible both to regenerate existing rule systems and to consider emerging events in the situation. This situation only allows the actors to define very general actions to guide risk management. That's what the FFVL intends to do in wanting to spread a real culture of risk management among its members. As a result, strategic risk management is often translated into action by seeking to focus both on knowledge of events or on emerging issues raised by the situation while restricting one or other of these dimensions. By considering that the space for new risk situations is reduced, it is possible to regenerate learning about the representations of the situation in order to bring them into line with the means of action available to us. In a natural disaster, we know, in principle, what the major risks to be managed are going to be. What we do not know is the quality and quantity of the knowledge and therefore the means of action that will be needed to recover control of the situation. Therefore, in such a situation, actors are rather specialized and lead ruled-based actions in order to make possible to spot emergent events by adjustment of means.

Considering, finally, that there are situations where the appearance of emerging events is endemic, we therefore focus on organizations that cannot do otherwise than acknowledge their existence. As a result, these organizations like IT security companies will develop routines to capture and address these new threats. It is what we can call strategic intelligence where emergent situations or risks are collected automatically. These devices, known as "Honeypots", routinely capture new risks using decoys or traps. Some actors in these organizations will act as "anchorage points" in order to spread and collect risk management signals in these situations (Acquier et al., 2008).

RESULTS: FROM THE FAILURE OF TRADITIONAL RISK MANAGEMENT TO THE IMPLEMENTATION OF STRATEGIC RISK MANAGEMENT

The increase or at least the stagnation of a high accident rate in free flight practice is one of the symptoms of the limits of traditional risk management. It is also the symptom of the incompleteness of risk assessment in free flight. Therefore, it tends to increase the pressure of insurance on federal institutions, for which the financial burden in the event of serious accidents or death is found to be increasing for the whole community. This contributes for the FFVL, to communicate and act in favour of spreading a real risk management culture among its licensees. And therefore, to address this problem through its strategic dimension, while strengthening knowledge and know-how to ensure better traditional risk management.

ENHANCE TRADITIONAL RISK MANAGEMENT

The FFVL communicates through its newsletter some general safety precautions regarding gears, practice and technical issues (https://federation.ffvl.fr/pages/informations-et-alertes-s-curit). To spread knowledge on accidentology as it is advisable by the HRO's literature, the FFVL publishes ones a year general statistic on accidental rates and casualty on its web site (https://federation.ffvl.fr/pages/d-clarations-d-accidents). The technical managers of the FFVL provide some deep analysis of previous accidents in order to give useful feedbacks, share expertise and increase accident culture in the free flight community (https://federation.ffvl.fr/pages/fiches-p-dagogiques-et-documentation). At the same time, technical managers and CTS members hold conferences on risk management issues to highlight aspects on collective risk management.

In order to follow the implementation of this collective safety culture, the CTS has launched many projects at different levels of maturity. The first of those is meant to strengthen the pilot capabilities to know better himself. Its purpose is to generate a new and enhanced check-list to allow the pilots to auto-evaluate their physical and mental status before airborne. This check-list, developed by Mathieu Vershave, emergency doctor and researcher and Charlotte Roura, former psychologist of French "Pole Espoir" (promising young athlete formation center) at Font-Romeu, helps the pilot to build its representations and act in adequacy with the reality of his mental and physical status.

Another project launched by the FFVL is the production of didactical short videos about safety in paragliding (https://federation.ffvl.fr/pages/parapente-films-securite#PP) and hang-gliding (https://federation.ffvl.fr/pages/parapente-films-securite#delta). The idea is to gather pertinent and well-known risks the pilots should know and the tools useful to deal with them. The goal is to massively spread known issues and solutions among the community. For now, these short videos were well received and were considered useful by the amateur practitioners. It is interesting to note that every action in traditional risk management is mostly individual and concerns the practical aspects of the free flight activity. Therefore, the FFVL's safety policy implementation has to require other types of project in order to achieve its mission.

STRENGTHENING SKILLS:

To give the pilots more capabilities of coping with uncertain situations in free flight, the CTS has developed two projects that will contribute to strengthen skills: The Individual Risk Management Strategy (SIGR) and the "voler mieux" (fly better) operation. The SIGR is a device that contribute the pilot to think and build a real risk management strategy for his next year of practice. It is provided on the Intranet of the licensee and homed by the FFVL. The SIGR is proposed to the pilot so that he can review his own practice and his progress objectives in all areas of his activity. It is presented as a white grid of the pilot profile that gathers personal information on his practice, goals in terms of piloting, weather and aerologic forecast, mental status, gears and flying equipment, relation to the free flight community, accidentology and risk knowledge. The pilot can fill this grid every year when taking his license. The interest of this program is based on a process of self-training where the pilot enhances his capabilities, skills and gathers the resources he can take advantage of to progress. It should induce an incentive to continue training indefinitely (Galan, 2019) and is a mean to put in line the pilot and his forecasted environment. Therefore, it is not a way to foresee new events or situation but only to be able to cope with a situation with the right tool or device, that makes it necessary a reflexivity on the rules. The pilot's SIGR can be published at his request and seen by every licensee on the Intranet of the FFVL. Therefore, it plays a role in the diffusion and induces positive imitation towards the community. The SIGR should lead the community to a process of double loop learning, where the pilots have the ability to overhaul rules to keep their practice in control.

The “voler mieux” (fly better) operation is also a program whose objective is to strengthen the skills of free flight pilots. The operation has been launched in 2016 with these following 4 goals: restore the pilot capabilities to think about the adequacy between his level, his physical and mental condition, his wing and the current weather conditions, in order to know better his real level and limits and decide better in his given situation. And finally, being able to share his experience, and his practice among the community. We can see again a desire to improve the skills of free flight pilots and to enhance their integration into the community. It is a mean for the FFVL to teach the pilots how to practice free flight together and show them the opportunity to be in a group to foster their individual resilience. This operation leads the pilots to know better the rules and flying skills that would make them more resilient in a given situation.

STRATEGIC INTELLIGENCE:

The last component of this risk management strategy consists of the implementation of devices to capture events or emerging situations. First, the CTS launched a monitoring unit to study the unexpected interactions between the three parts of the free flight system: the pilot, his equipment and his environment. It happens often for example that some harness won’t fit with some specific wings or carabiners without these problematic interactions have been identified beforehand. It could also appear that the pilot equipment doesn’t fit with the situation. For an obvious example, it is not adequate to fly a competition wing in doing aerobatic. In other less obvious cases, weak signals will require tenfold attention to be highlighted. To do so, the CTS organizes information gathering from the professional and non-professional instructors or schools. In fact, as they can watch to lots of various mixtures of flying equipment and pilot’s abilities, they usually can spot those problematic interactions. After that, the CTS will provide a catalogue of situations and points of vigilance identified in the situations and make it available to the free flight community.

To go further into gathering information from the community, the CTS is about to implement an ergonomic and fast system to map sensitive areas of practice. The idea is to use the online flight logbook provided on the FFVL’s website to spot the area where the pilot felt in trouble or experienced flight incidents or control losses to implement a geographic information system. This project is for the moment only in an embryonic state but should provide to the free flight community (for flight preparation, for example) the mean to benefit more from the experience

of other pilots. It is therefore a crowdsourcing device that would allow practitioners to be attentive to emerging situations.

The same type of information collection from licensees has been organized by the CTS for the first time in 2018. It is shaped as a friendly contest on security and risk management issues. The idea here is to call on the crowd of practitioners for the identification or denunciation of virtuous risk management ideas. These can be individual, technical, material or organizational. And they can be in different states of realization. Throughout 2018, 36 ideas were reported through a dedicated google form. The CTS chose to mention them all at the last Coupe Icare (international meeting of free flight at Saint Hilaire du Touvet, near Grenoble) and to join them into a guide of good practices published on the FFVL's website (FFVL, 2018a). The FFVL has awarded an envelope of 3500 euros to reward 3 collective and innovative proposals in risk management. Even if this experiment was considered as a success, it experienced some difficulties to gather pertinent data from the casual practitioner. In fact, every pilot has his own tricks but could be reluctant to share if they are not well valorised. In a second phase it is planned to published some articles in the French and international specialized press (Parapente Mag, Parapente + (Fr), Thermik (Ger), Cross Country (UK)). To go further, this operation needs a renewal of FFVL's communication in order to reach more practitioners both for good ideas and to learn about those which were shared. Moreover, the community has to know how these good ideas are valorised.

The latest and most important project aims to improve, enrich and spread a culture of risk management in the world of free flight. In order to do so, the FFVL has recognized that each of its licensees is a resource for risk management both individually and collectively. To enhance and improve the consideration of these resources, it has designed, through the work of its National Paragliding Comity (CNP), the establishment of a "safety facilitator in clubs". In its letter of intent (FFVL, 2018b), published on the FFVL website and sent to each club presidents on the 21st of December 2018, the CNP and the CTS stressed out 4 goals for the "safety facilitator in clubs". First, to act as a relay for risk management issues so that each subject in the structure's life is systematically addressed from a safety perspective. In this way, to stimulate collective reflection and action and to ensure that risk management is an integral part of the free flight activity. Third, to keep the collective mind and action alive within the activities of the club. And finally, to mediate information and projects, both bottom-up (to let the free

flight community know what the club is doing) and top-down (to let the practitioners know what is happening elsewhere and what is recommended by the federation). This letter also specifies what the security facilitator is not. He is not responsible for dealing with safety issues inside the structure of his club. He can be a referent and a facilitator on safety issues without being an actual risk manager. Therefore, he will have a sensitivity to risks issues without being himself an expert in risk management. That is to say the safety facilitator should be a casual actor of the organisation and will act both as a relay and a catalyser of individual and collective risk management strategy. The goal is to institutionalized some regular "anchorage points" in order to foster the dissemination of a safety culture. The next step is to design how to help the club to appoint their own safety facilitator and design the network of these facilitators and its coordination. This is a transversal issue for which has been assigned a working group composed by elected members of the different commissions and technical advisors from the FFVL that will begin to work in mid-January and throughout 2019.

DISCUSSION: FFVL PROJECTS TO HELP PRACTITIONERS ACTING WHILE ASSESSING THEIR RISK SITUATION AND REMAINING IN CONTROL OF THEIR ACTIVITY

All the projects launched by the FFVL aim to cover all the fields of the risk management strategy. The theoretical framework presented in this paper helps to design a structured and coherent implementation of the FFVL's strategic intent. Nevertheless, it is a bit early to assess the efficiency of those actions among the practitioners. And it will take time before the safety results take a new downward trend. Moreover, it will be also difficult to follow whether these measures will have the expected effectiveness or whether the feared risk situations have not occurred. In fact, if the weather conditions are better to fly (as it has been during the whole year 2018 in France, for example), it induces naturally a decrease of fatality or casualty figures without being a symptom of a safety culture change. In theory, each action lead by the FFVL seems harmless and perhaps efficient to foster the diffusion of a safety culture among the amateur free flight practitioners.

Those actions are meant to fulfil most of the requirements of a High Reliability Organisation. First of all, it means to raise expertise and to improve the pilot's skills in order to cope better

with known risk situations and to be prepared to act adequately in case of the occurrence of unknown or uncertain situations. To follow, it also provides to free flight pilots a culture of failure and of feedbacks useful for the practice of their activity in given full attention to each dimension of reliability. Thirdly, the collective practice of free flight is promoted by showing that every pilot can appear as a resource of reliability. Therefore, each pilot will make to the community their risk management good practices and their capabilities to raise new questions of interest. These devices should provide to the community a way to source its reliability among the crowd of practitioners. And allows the whole community to take benefit of each free flight practitioners. Moreover, it fosters heedfully interactions between the practitioners in order to detect both salient, and emergent risky situations.

each project led by the FFVL is a source of legitimacy for the actors by giving them an institutional role (safety club leader) on the one hand, and on the other hand, by infusing a culture of risk management with everyone at every moment of practice. Finally, it gives the opportunity to each member of the free flight community to reconfigure and question the rules and the environment where they are evolving.

CONCLUSIONS:

To conclude, admitting that all these tools and devices should contribute to implement an actual risk culture among the amateur free flight practitioners, it remains an important amount of research to understand what would be the obstacles to the implementation of a risk management culture. Research could be pursued, for example, by studying the impact of the professions of free flight practitioners on their ability to assimilate such a risk culture in their leisure practice. Moreover, it seems interesting to analyze how their professional lives could induce specific or unspecific behavior in their free flight practice.

It seems interesting to go further in this research could allow to understand how the heterogeneous free flight practitioners' population could make "community". In order to explore this issue, works around of communities of practice could bring interesting insights to the discussion.

Another lead for further research could the Safety animator will be institutionalized by the French free flight community, how to build his legitimacy and organize an efficient network of safety facilitators to foster the spread of a safety culture in free flight activities.

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