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Dear reader,

Welcome to this new 2019 Blueprint edition. We have made more progress in our transformation and we continue to position skyguide as an innovator in air traffic management (ATM).

In this 2019 edition, we will report from our flagship, the Virtual Centre, again but also extend the update to a few other strategic programmes which will lead us towards our vision of future ATM.

Our CEO Alex Bristol will talk about skyguide’s 2035 vision and we will then take a tour d’horizon, from the upper airspace programmes to the lower airspace and airport technology. Member of the Board of Directors Anne Bobillier will give her insight on how skyguide can successfully drive its transformation through and beyond technology.

This year we want to tie the different technology programmes more into the overall vision of skyguide. The Virtual Centre and its first virtualization achievement are evidence that the Virtual Centre is currently the critical change enabler, influencing and guiding other strategic activities. Considerable operational benefits can now be harvested from the first delivered tranche of the Virtual Centre and it enabled us to provide the required capacity despite record traffic numbers this year. It also includes the agile delivery methodology and the progress we made in the complex Zurich runway safety project ARSI. The change in surveillance services was triggered by the transformation and rationalization mindset. And of course, one cannot talk about innovation and strategy in the ATM world without mentioning the true disruptive technology: drones and skyguide’s answer to these, with the Swiss UTM solution.

Thank you for taking the time and joining us on our path towards the future. I appreciate your continuous support in this endeavour.

Sincerely,
Klaus Meier
Skyguide CEO Alex Bristol and his executive team have elaborated an outlook on the future of the company and the journey to get there. The paper, addressed to employees and other stakeholders, is called “Vision 2035”. Why the year 2035? “It is far enough in the future so that we do not just see the problems of today, but not too far so that we can only fantasize,” says Alex Bristol. And what are the key findings? “We believe there will be strong competition in 20 years,” he says. “To keep our raison d’être, we have to be lean and flexible, apply advanced technology and deliver effectively and efficiently the services our customers need.”

“ALEX BRISTOL CHIEF EXECUTIVE OFFICER

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“SKYGUIDE Alex Bristol, what was your motivation to write this fundamental paper and to set it 17 years from now?”

ALEX BRISTOL The question of what gives us the right to exist in the future became an important topic in the management and board of directors. We wanted to clarify a few questions: where are we going? And with what purpose? What is the strategy of skyguide? Many employees are unsure about the direction in which management and the board of directors intend to steer the company. This causes a certain lack of confidence.

So please, share with us your vision of what skyguide will look like in 2035.

AB While always giving due priority to safety, I see skyguide as a company which is respected and recognized worldwide for its customer focus, innovation capacity and business mindset. We will be able to operate successfully not because we are a monopoly, but precisely because we have learned not to think and act as monopolists. We will have developed into a company close to its customers, which knows how to deliver effectively and efficiently the services that they need, offering a quality at a price with which they are happy.

It is hard to imagine competitors taking over the services skyguide provides today. Whom could you think of?

AB Competition is imaginable, for example, at regional airports: if the federal government decides to open them up for competition, someone else could provide these services. This is already partially happening in Germany, Spain and Scandinavia. Britain is even com-
“WE WILL INSTALL SYSTEMS THAT RELY ON ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING TO SUPPORT THE AIR TRAFFIC MANAGERS”

 completamente liberalized. Then the next question is: what about the international airports? Or: what happens above 25,000 feet? Germany, France, Italy or Austria could watch our airspace as well as we do. Although I do not see any radical change in the foreseeable future, a repositioning is theoretically possible. Or consider the drones: they have a disruptive impact on our traditional procedures. It would be possible that someone else would manage the U-Space, maybe Google or Amazon, who knows. Today there is little overlap between drones and manned aircraft, except at airports or no-fly zones. However, that will change.

Nevertheless, with the Swiss cost of living, skyguide will never be the cheapest provider of ATM services.

A B Although I think that the price differences to neighbouring countries will level out to a certain extent, we will not be the cheapest competitor in the market. But we will be a lean organization, and we will be able to keep up with our international competitors in all segments of the (quasi-) market. This, by the way, is a market, which we are helping to create, because with “virtualization”, modern air traffic management will become location-independent and the supporting systems will no longer be monolithic and locked, but rather service-orientated and open. These principles, together with the drones as a strong disruptor from the outside, are creating the foundations for competition. The political and commercial environment is beginning to change.

What are the critical success factors?

A B We will implement the main part of the Virtual Centre within the company early in the 2020s. By 2024, at the latest, the enterprise architecture and the flexible technological platform will be operational. The rest of Europe will realize that it needs to respond faster to customer expectations and disruptors. We are able to shape and influence the technological environment so that we can offer to take on airspace for others, which we are already doing, as well as redundancy solutions for other air traffic management companies. Our Unique Selling Proposition lies in combining these elements with a primary focus on the management of data, rather than the management of aircraft.

You predict that a significant amount of skyguide’s revenues will stem from non-Swiss airspace management. From where?

A B Thanks to the Virtual Centre, it will soon be technically possible to work independently of geography. As a result, our potential sphere of influence will no longer be confined to neighbouring countries. Skyguide already maintains long lasting strategic partnerships with a small number of well selected other air traffic management and industry providers.
In your document, you are talking about a new, complementary system called “System Switzerland”. Can you tell us more about it?

AB We are speaking of manned and unmanned civil aircraft in the commercial and non-commercial aviation segments, third parties, and the Swiss Air Force. Between military and civilian aviation there are duplications, but also gaps. In certain cases, between Zurich and Geneva the same data is generated four times. That is inefficient. We want to design something that is good for the whole of Switzerland; we want to create synergies, avoid duplication and thus reduce costs. This complementary system, while still maintaining national sovereignty and the capability to manage the whole of the airspace from within Switzerland if necessary, will ensure that we have the best and most efficient system. This we call “System Switzerland”.

With virtualization, ATM will become location-independent, communication will be digital, links to and from the aircraft and unmanned air vehicles will be standardized and automated: therefore, you predict that skyguide will transform into a full service company, owning much fewer fixed assets than today. Which assets will skyguide still possess?

AB We will not own installations that we maintain locally for others any more, such as instrument landing systems at airports. In Geneva and Zurich we currently work in a separate and physical tower. A digital “remote” system would be better and cheaper. We will need multilateration antennas, as we will no longer use radars for civil aviation. Our assets, other than a couple of buildings housing our Virtual Centre, will be our staff. Our ability to use technology as a base for efficient and effective services; our knowledge of how to exploit the data we manage; our ability to implement innovation; and our intellectual property rights – all will increase in value.

The job profile of an air traffic controller will encounter profound changes. You are even talking about air traffic managers instead of controllers. What will be their role?

AB We will install systems that rely on artificial intelligence and machine learning to support the air traffic managers. Jobs will therefore require much more technological understanding. Today, a controller must be able to make quick decisions, respond instantly to exceptional situations, and invent immediate creative solutions. In the future, we will need people who can manage the system with much less intervention. We want to move away from the notion of controlling air traffic and spend our time managing the flows of traffic. In all but the most urgent cases, we will rely on the datalink interface and communicate with the cockpit only by exception.
“SUCCESSFUL AIR TRAFFIC MANAGEMENT WILL EVOLVE OUT OF UNMANNED AIR VEHICLES TRAFFIC MANAGEMENT PRINCIPLES, AND THE HANDLING OF A MIXED MANNED AND UNMANNED AIRSPACE WILL BE BASED ON A VERY HIGH DEGREE OF AUTOMATION WITH THE HUMAN AIR TRAFFIC MANAGER AT ITS CORE”
CRYSTAL ON SOI
FROM VIRTUALITY TO REALITY

Virtualization is one of the foundations on which skyguide is building its future. And the Virtual Centre is the cornerstone of virtualization. Currently, Joël Jordan and his team are developing and delivering Tranche 2 of the Virtual Centre (VCT2). And within VCT2, CRYSTAL, the tool to forecast the air traffic volume, plays an important role: its migration is a milestone in the deployment of the Virtual Centre and has, as Joël Jordan states, helped “to kick off the learning curve in an area in which the risk was limited, but which nonetheless touched the heart of the business.”

SKYGUIDE  Joël Jordan, could you please explain in terms understandable for non-technicians what CRYSTAL is and why it had to be migrated to a service-oriented infrastructure (SOI)?

JOËL JORDAN  CRYSTAL is a tool to forecast the air traffic volume at any given time – in a certain way like a crystal ball, but of course much more reliable! Using CRYSTAL’s traffic predictions, the staff’s workload and peaks, as well as the organization of the control room, can be managed better while ensuring a smooth and efficient traffic flow. We have now migrated the CRYSTAL solution that already existed at GVA Airport since 2010 and at ZRH since 2011 to SOI with the purpose of serving the two centres from one place in Dübendorf. We have also changed the internal structure of the solution.

In that context, what has been the role of CRYSTAL on SOI for Virtual Centre and its Tranche 2?

JJ  For VCT2 it has been a way to give the programme a leg up and to learn with a concrete goal. VCT2 not only brings changes for ATM operations: with Service-Oriented Architecture (SOA), Agility and DevOps (Development and IT Operations), we introduce new ways of engineering and delivering capabilities, which will result in many changes. VCT2 is like a child learning to walk. We decided to start with a critical ATM function, but not right at the sharp end. It has been a learning instrument and a measure to develop trust.

“CRYSTAL ON SOI HAS NOT ONLY PLAYED ITS TEACHING ROLE BUT HAS ALSO BECOME A MILESTONE”

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“CRYSTAL ON SOI HAS NOT ONLY PLAYED ITS TEACHING ROLE BUT HAS ALSO BECOME A MILESTONE”
What are the key findings?
JJ CRYSTAL on SOI has been the flagship. On the operational side, we learned that we can be confident in such a Swiss-wide and service-enabled solution. On the engineering front, we have built experience on how to “service enable” a solution. In order to better master our core ATM data, we want to adopt a “data centric” driven approach of service enablement. We learned that we do not have to rewrite all our software. Regarding IT operations, we have gained knowledge on how to set up the solutions and acquired the basic competences to run them. Such a transversal and Swiss-wide approach also triggers new challenges: its “nodal role” creates dependencies between products, and we need more discipline and automation in order to keep it running. On the human side, we have noticed how much it takes to mobilize our positive energies in order to fight against the inertia of past habits. We had to start learning how to change. It was difficult but the findings were worth the effort.

So obviously you appraise CRYSTAL on SOI as a success?
JJ It is operational and running in a very stable way. A single system now serves two locations from our data centre in Dübendorf. We have demonstrated that something new can be delivered. We have experienced and learned with reasonable and controlled disturbances. CRYSTAL on SOI has not only played its teaching role but has also become a milestone. This experience has brought us together and has established a positive mindset and a solid team spirit, creating trust in each other. We still have a long way to go, especially in order to increase our change speed and our efficiency. We need to keep the pressure, but in the same time learn to be patient.

What are the next steps?
JJ The next key step is “to touch the sharp end” in the operations with one of our next milestones called New Route Handling (NRH). With this modernized operational concept for Flight Data Management (FDM), we will bring into operation the first function at the sectors delivered from a single system in Dübendorf and serving the ATCO positions in Geneva and Dübendorf. Our focus will also be to continue the system convergence, especially in the Flight Data Processing area. This requires further harmonization based on a new way to consider the path towards New Route Handling. With this, we are laying the foundations for Free Route Airspace and a simpler way to operate.
**U-SPACE**

**THE DISRUPTIVE POWER OF DRONES**

Drones open up new opportunities for professional and leisure purposes and are a major disruptive force to air traffic management. An entire ecosystem of new companies is developing and generating jobs. However, airspace is limited and all its users have to be integrated. For that purpose, skyguide is developing a system called U-Space. Robert Fraefel, a design engineer, is the head of Swiss U-Space since October 2017. Before, he worked for the Sauber Formula 1 Racing Team and, for 11 years, at Solar Impulse and its first successful solar powered flight around the world.

**SKYGUIDE Robert Fraefel, why is skyguide interested in the drone topic?**

**ROBERT FRAEFEL** Drones are of skyguide interest because of safety questions around airports and because they provide a look into the future of ATM. However, they also represent an attractive business opportunity for skyguide as they will create a huge market with significant volumes. It is to be expected that this new market will be much less regulated and highly competitive. This market will likely attract new powerful “non ATM” global players like Amazon or Google. Skyguide’s strategic intention is to play a leading role in this new market and to incorporate the new business very early into the Swiss aviation system. It is to be expected that the new business will be less people-dependent and thus significantly different from the currently known ATM processes and it will require a set of players, such as regulators and high-tech companies, to cooperate.

**Why is skyguide well positioned to participate in this new market?**

**RF** In Switzerland there is a unique relationship with the Swiss government, the regulator (FOCA), the national ANSP, the industry as well as spin-offs from the universities, which all recognize the great benefit of this technology and work together on innovative solutions. Due to its complexity and currently restricted capacity, Swiss airspace requires innovative solutions. A pure separation of manned and unmanned vehicles is not possible and there is a need for a common solution. Skyguide has many assets in terms of technology and processes that can be leveraged for this new market.

**The airspace is already heavily frequented. Where does U-Space find space for the increasing drone traffic?**

**RF** Actually, the term U-Space suggests somehow that there is a separate space for unmanned aircraft. This of course is wrong; the airspace is already very limited. This means that drones have to be integrated in the existing space. I therefore prefer the term Unmanned Aircraft System Traffic Management (UTM) in contrast to Air Traffic Management (ATM) that deals with manned aircraft. In order to make full use of the potential of
drones and to minimize possible risk, we have to establish the necessary facilities for the cooperation and communication between UTM and ATM. That is the reason why skyguide is introducing U-Space, a system that gives drones easy access to the airspace.

Why does skyguide want to control the traffic of drones?

**RF** This question wrongly implies that skyguide intends to control the U-space as it controls the airspace. We want to enable the use of drones, not control it. Today, certain technologies are still grounded not for technical reasons, but because they have difficulties to get the necessary approval. This is a killer criterion for many potential users and it is a pity since drones can bring great benefits. Because drones are a disruptive element to the previous way airspace was managed, they require a different and radically new thinking within skyguide.

In which manner do you intend to prevent drones from colliding with each other or with manned aircraft?

**RF** Many drones are already equipped with a Detect and Avoid System. However, nobody can judge its reliability. Currently, the airspace for drones is still very limited: they may exceed a height of 150 meters above ground only with a special permit. The industry on the other hand reports an increasing demand for autonomous flights, i.e. flights beyond the visual line of sight (BVLOS). That’s why we have to aim for an integrated solution. For simple flights, there will be a low-cost and rapid automatic approval process. Manual approval for more complex operations will be more expensive. For specific BVLOS operations such as those conducted by Swiss Post for packet delivery trials in Lugano, Zurich and Berne, a limited prototype of U-Space is already available and is providing real time air traffic data to mitigate collision risks with manned aviation.

To identify the drones and their position and to communicate with them, they have to be registered. Will this affect all drones?

**RF** The pressure on FOCA to issue appropriate regulations is high. In the commercial sector, many established businesses expect to use drones in the near future to offer new services to their customers while we believe that the number of drones in the leisure sector will not grow that much. There are many new interesting applications: for example, REGA could launch unmanned search flights and thus reduce the risk for pilots, especially in bad weather. The Zurich Protection and Rescue Services are considering bringing defibrillators to the scene of accidents by drones. With the current setup, those businesses can hardly implement their new services in an economical way.

When will U-Space be available?

**RF** We are working hard to provide a first set of services by the end of 2019: registration, a messaging system for traffic awareness (e.g. to inform drone users automatically when a REGA helicopter is operating in their area). If today drone users make mistakes, they usually happen out of ignorance. For example, drones today do not automatically register temporary no-fly zones, such as during the annual meeting of the World Economic Forum in Davos or the Zurich Street Parade. With the first services, the users will be assured to operate their drones according to regulations. It is therefore imperative that we also get the manufacturers on board to equip their aircraft adequately. This process will be accelerated once the regulatory body acts accordingly and stipulates, for example, mandatory registration of drones. This is a fascinating new area for skyguide and we see that responsiveness in strategy, alliances and operating models are key aspects to foster a new culture decisive for the future success.
**WIDE AREA MULTILATERATION**

**A MULTITUDE OF ANTENNAS INSTEAD OF RADAR DISHES**

Götz Ardey is an engineer with a doctorate in aerospace sciences from the University of Braunschweig, Germany, and an MBA from Cranfield UK. He joined skyguide in 2012 and is currently head of the Communication, Navigation and Surveillance division (CNS Services). As such, he is responsible for implementing the Wide Area Multilateration technology (WAM), which will replace the conventional secondary Radar technology in civil aviation. As Ardey explains, “WAM constitutes a surveillance solution superior to Radar in respect of cost and performance.”

**SKYGUIDE First, could you explain what Multilateration is?**

GÖTZ ARDEY Multilateration is a proven surveillance technology consisting of a network of antennas connected to a central processing and tracking system that can determine positions of aircraft equipped with a transponder. Widely adopted for airport ground surveillance, a number of implementations for coverage of larger airspaces have been achieved in the last years across several ANSPs, to complete but also to replace conventional secondary Radar.

**Why is the WAMS.CH programme needed to introduce WAM technology?**

GA This transformation of technologies will take some years and will have to follow and adapt to possibly changing targets and constraints. A single project setup embracing such dimensions and uncertainties would be very difficult to manage. The WAMS.CH programme is suitable for supporting the WAM implementation and related projects and ensuring that at the end, these will deliver the expected results.

**What are the main steps of this programme?**

GA The deployments will have to be completed before the legacy Radars come to their end of life, including a period of parallel operation to ensure accuracy and stability of the WAM system. First, we will deploy WAM for the need of the coverage of the terminal control areas of Zurich and Geneva until 2020. The rest of Switzerland will follow until 2022. Other projects may then be considered to exploit the WAM capabilities for new functionalities and demands. Apart from the Multilateration, the programme will also facilitate the use of Automatic Dependent Surveillance - Broadcast (ADS-B).
**Why invest in WAM instead of jumping directly to the more advanced ADS-B?**

**GA.** The ADS-B system is expected to become a major surveillance technology for civil use worldwide. This technology relies essentially on satellite based navigation systems, which allow aircraft equipped with dedicated transponders to broadcast their position and other data. This means that the determination of the aircraft’s position depends on the aircraft’s own avionics. Although ADS-B will become mandatory in Europe and the US by June 2020, exemptions and exceptions (e.g., military aircraft, old and ferry flights) will limit the use of ADS-B. In order to ensure coverage of all traffic, the need for surveillance systems will still exist. WAM is a suitable solution to prepare for ADS-B: every single Multilateration sensor is de-facto an ADS-B receiver. By implementing WAM, a network of ADS-B coverage stations will be available, creating the opportunity to implement ADS-B in parallel.

**What will be the main challenges?**

**GA.** WAM will have to be ready to ensure continuity of the surveillance service before our ageing Radars will arrive at the end of life. There is a certain urgency to get the first WAM projects implemented to ensure a seamless transition while minimizing the risks and bringing the expected operational and financial benefits. The transition from a Radar-centric to a more holistic view will demand a review of the business and operational requirements to define for which ATM services the surveillance picture is needed.

**Are there any risks linked to WAM? And how do you mitigate them?**

**GA.** While we are pushing forward to implement Multilateration, we need to ensure a flawless performance of this new surveillance system. That’s why we are planning to have a longer phase of parallel operation to compare the output of the new technology with the previous one. Moreover, our neighbours at Austro Control have already been operating a WAM system for the last four years. We are very fortunate and proud to extend our close relations with Austro Control into our WAM deployment where they will be supporting us with their expertise in the planning and roll-out phases.

"WAM CONSTITUTES A SURVEILLANCE SOLUTION FOR SKYGUIDE SUPERIOR TO RADAR IN RESPECT OF COST AND PERFORMANCE"
**ADVANCED RUNWAY SAFETY IMPROVEMENT (ARSI)**

**MANAGING ZURICH’S COMPLEX RUNWAY SYSTEM**

Jörn Winkler is the project manager of Advanced Runway Safety Improvement (ARSI) at Zurich Airport; Mathias Burtscher, being head of Operations International Airports at skyguide, is the project owner. ARSI is a software solution to generate alerts if necessary, in order to enhance safety and efficiency of the runway system of airports. After the introduction of ARSI at Zurich airport, skyguide is planning to bring its functionalities into operation in Geneva too.

**SKYGUIDE**  

Why was the ARSI project started?  
**MATHIAS BURTSCHER**  
The runway system in Zurich is complex, arrivals and departures are made even more difficult because of additional constraints such as conflicts with residents, involvement of politics and agreements with neighbouring Germany. ARSI allows us to map clearances and instructions in the software solution to generate alerts if necessary. Since we pursue the same safety and efficiency objectives as our partners, we launched the project together with Zurich Airport and Swiss International Airlines.

**JÖRN WINKLER**  
The cooperation with end users, engineers and Zurich Airport was tight and software suppliers – such as Sita, Indra Navia SA and SkySoft-ATM – were closely involved. The Federal Office of Aviation (FOCA) supported the project financially since we intend to improve the overall safety.

What were the challenges and how did you tackle them?  
**JW**  
The ARSI project is a Research & Development project whose target could only be formulated imprecisely at the beginning. That was and still is our challenge. How can we design these inputs, taking advantage of the technical possibilities? How can we automate and thereby reduce the number of necessary clicks? How can we support the workflow of the air traffic controllers efficiently? On top of several existing applications, we had to re-develop a new software which we call TRACE (Tower Approach Coordination Equipment) and extend the software architecture of our Swiss Airport Movement Area Control System (SAMAX) equipment.

**Did you, as with other skyguide projects, proceed according to the agile method?**  
**JW**  
Yes, indeed. The agile method with two weeks cycles has helped a lot. With this method, we were able to deliver results efficiently and quickly and to correct them immediately if necessary. We also could review many features and functions before finalizing the design. The most positive aspect of the agile development method is to quickly get first results: it keeps people’s motivation high, fosters the collaboration and creates an important buy-in on the user’s side.

How did the implementation of Iteration 1 perform in live operation?  
**JW**  
During the first two days of operations, the implementation and stabilization phases encountered a complicated start. A small non-expected software bug caused important disturbances: a problem in the ground radar system SAMAX affected the TRACE system. Thanks to the system design, the preventive measure of reducing the capacity during the stabilization phase as well as the trained procedures of air traffic controllers rapidly
reduced the impact. Within a few hours, the software bug was identified and corrected.

**M B** The implementation of a new software and additional tools will always be a great challenge for the entire company. The team has to constantly evaluate, weigh and decide. One cannot test those complex software solutions connected to numerous systems one hundred percent in advance but must be aware that in live operation, certain side effects might occur. Such undertakings are only possible because of the professional cooperation and the trustworthy work of all involved.

**What are the key success factors from the project management perspective?**

**J W** The success is largely based on excellent cooperation. The project team efficiently worked together independently of the employer. The team constantly challenged itself to make sure that the design would provide the expected benefits to the end users. The involved ATCOs contributed substantially to the success and acceptance of the system. A further positive aspect was that the integration into the Tower Simulator (TOSIM) to prepare the ATCO training was started simultaneously with the Software development. This allowed integrating the feedback of the involved ATCOs into the system before its implementation.

**What are the next steps?**

**M B** After Zurich, skyguide is planning to bring the ARSI functionalities into operation in Geneva. This solution is at the forefront in terms of system support. It creates the foundation for further development. Due to the limited space available on the ground and in the air, the company has to continuously innovate on customer-oriented, intuitive and efficient solutions.

**“THE COMPANY HAS TO CONTINUOUSLY INNOVATE ON CUSTOMER-ORIENTED, INTUITIVE AND EFFICIENT SOLUTIONS”**
Anne Bobillier, born in Geneva of Swiss and French origins, has a Masters in computer science from Geneva University and is working for Bechtle Group. She is a member of the board of directors at Romande Energie, SkySoft and skyguide. For Anne Bobillier, the major question is how skyguide can improve its ability to change and how it can capitalize on artificial intelligence and business intelligence in the near future as the logical continuation of the existing technology roadmap.

Skyguide In a paper called “Vision 2035”, skyguide CEO Alex Bristol develops his ideas about the company’s future. Is it, in your opinion, possible to foresee what the world and air navigation will look like 17 years from now?

Anne Bobillier The vision was elaborated with the board of directors. It states that skyguide will be a small but leading air navigation service provider, setting the pace within the European industry by its service quality and innovation capability. Alex talks about a frame, a vision, not a precise goal, and not everything in his vision will become true, but it will not be too far away from that either. Today technology – generally digitalization and in the future, the impact of artificial intelligence – has reached a level of maturity that makes it easier to imagine its significant impact on the business than 20 years ago.

What are the key success factors for the future of skyguide?

A B Skyguide has a good reputation within Europe and has received some important recognition and prices. Other ANSP are watching closely what we are doing, in particular around our technology programmes. The question is how can we improve our ability to change, because it is clearly our survival which is at stake. Switzerland is a small expensive country, and we therefore have to offer added value and a unique selling proposition (USP) to all our stakeholders.

“The question is how can we improve our ability to change, because it is clearly our survival which is at stake”
What is skyguide’s USP?

A B We want to be a leading provider of highly efficient and effective services for ANSPs based on distinctive technological competencies in clearly defined areas. Together with our sister company SkySoft we have very strong and recognized capabilities in developing solutions in the ATM space. Human-machine interface is a major strength in our portfolio. We are well positioned to capitalize on artificial intelligence and business intelligence in the near future. Both are the logical continuation of the existing technology roadmap.

Technology, which is at the core of transformation, is particularly complex at skyguide. Which guidelines are the BoD following in view of the future development?

A B As in many industries, we are very often taking technology as the aim of change. Nevertheless, technology for technology’s sake is worthless. Technology allows us to enter new businesses, like the U-Space, or to evolve with new, more effective and efficient business models to achieve better results. But it is not technology itself that carries out the transformation; technology only makes the change possible. Standardization and integration of service-oriented architecture are important. We want to buy things off the shelf where it’s possible while in the past we developed everything ourselves. It is important to have a clear separation between business and operations on the one hand and technology that will enable them on the other hand.

Air traffic is increasing rapidly, and the sky will soon be considered overcrowded. Do you see technical possibilities to master this situation?

A B It is not primarily the airspace that is confined, but the handling capacity of the airports. In GVA for example, the number of passengers increased much more than the number of planes. Concerning airspace, we have safety rules that define limits between flying objects. It becomes obvious, that in order to increase capacity, we will have to reduce these distances while maintaining the same level of safety, and here technology plays an important role.

What does it take for skyguide to successfully drive its transformation beyond technology?

A B We will go through a cultural change which will happen quicker than many might think, and I feel a certain sense of urgency. We should shift from a rather conservative “does not work here” attitude into a more agile “we will find a way to make it work” attitude. The existing monopoly will have to give way to increasing competition with continued pressure on margins, as is already the case in other sectors. Our market will dramatically change and we will see new competitors emerging from unexpected areas, but that will also open up new opportunities for us. Skyguide’s right to exist is not God-given. We also have to become more consistent and disciplined: quite a few projects have been started and then abandoned or radically changed. That means we have to improve decision-making processes, analyses and the capability of sticking to decisions and executing them. As in all other aspects of life, it is always the people that make a difference, and we all are fully committed to making our contribution to this fascinating journey into skyguide’s new future.
“WE WILL BE ABLE TO OPERATE SUCCESSFULLY NOT BECAUSE WE ARE A MONOPOLY, BUT PRECISELY BECAUSE WE HAVE LEARNED NOT TO THINK AND ACT AS MONOPOLISTS. WE WILL HAVE DEVELOPED INTO A COMPANY CLOSE TO ITS CUSTOMERS, WHICH KNOWS HOW TO DELIVER EFFECTIVELY AND EFFICIENTLY THE SERVICES THAT THEY NEED”

— ALEX BRISTOL