

## **Air Sports Live Tracking – FAI GAC meeting 2024**

Norway presented the Air Sports Live Tracking system at the FAI-GAC-meeting in Lausanne 2023 and showed how it was used with live TV-broadcast. It is a tool that can be used to develop our sport and make it more attractive for the competitors, media, sponsors and spectators. Available to everyone and unique for recruiting new competitors without having to invest in special loggers.

At that same meeting secretary general Haggeny presented a reserve fund of 1 million Euros, which FAI wants to use to develop the airport.

Norway suggested that a fraction of that fund could be used to fund the Live Tracking system. The Live Tracking system can be used by several airports within FAI, and has also been presented to CIMA.

A prospect/business plan was sent to the GAC-board after the GAC-meeting last year, but the developers haven't heard anything back from FAI or the GAC-board. The system has been developed by 2 Norwegians on a voluntary basis and they have spent a huge amount of their spare time on this. But to keep the system running and available for all, they need funding, primarily for the hosting. The Norwegian and Spanish airport-federations are the only ones that have contributed financially until now.

The system is Open Source, which means it is not commercial, but accessible for everyone, and can be further developed by others (i.e. developers from other countries). For instance can FAI (or others) easily take over and run the system if the developers don't want to run it anymore.

The system is now rigged for a minimum and should function for smaller competition. There could be a freeze in the system for a few minutes due to switching of servers, but it will continue to log so it does not affect the results. For bigger competitions (World Championships), and especially for TV, there is a need for a dedicated server and this will cost more. There is also a need to follow up the system and make sure it runs as it should on a daily basis.

We would therefore like to submit this as an item to the agenda for the Plenary meeting this year. Attached are presentations and e-mails from the developers.

### **To be voted on in the Plenary meeting:**

*The GAC-board should approach the FAI to get funding from the Reserve Fund (or other financial support, like i.e. sponsors) for the Air Sports Live Tracking system. To secure a stable and carefree running of the system, the amount should be 10.000 Euros per year to make sure the system is up and running and available at all times.*

It is important to note that the system is not meant for GAC only. When FAI is funding the system, it will be available for all commissions in the FAI.

Sent to the GAC-board in June 2023:

Dear FAI representatives,

After discussing various solutions and the challenge of financial support, our proposal to FAI is to go for a medium solution. Based on the current usage, this solution should be sufficient. However, it is important that everyone is aware of its limitations. Should usage increase further, requiring additional capacity, we will do our best to provide advance notice. FAI can then decide if increased capacity is desired. We have the capability to manually increase capacity during important events, but this entails additional work on our part, including testing, and is not intended as a long-term solution. FAI can choose whether to cover these costs through member countries or partnerships.

A potential solution is to seek a joint sponsor. In this scenario, FAI would identify a sponsor willing to contribute, for example, 20,000 euros per year, in exchange for their logo being displayed on the global page of [airsports.no](http://airsports.no) and on the live map during competitions. As an FAI sponsor, FAI would retain half of the amount, while the other half would cover the operational expenses of Live Tracking. While this option requires significant implementation efforts on our part, if established as a long-term solution, it would be mutually beneficial. Additionally, the sponsorship funds allocated to FAI's share could be utilized for development or competition support.

Furthermore, I would like to inform you that the Norwegian Air Sports Association has sponsored us with 4,000 euros, ensuring a minimum solution for 2023. However, this amount does not cover additional capacity. In such cases, it will be up to FAI or individual countries to address the need. We have provided this information on [home.airsports.no](http://home.airsports.no).

Thank you for your attention.

Best Regards,  
**Espen Grønstad / Frank Olaf Sem-Jacobsen**  
Team Air Sports Live Tracking  
[support@airsports.no](mailto:support@airsports.no)  
[www.airsports.no](http://www.airsports.no)  
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***Flight Tracking and competition flying made easy!***  
*Air Sports Live Tracking gives you live tracking and live scoring of competitions like Precision Flying and Air Navigation Racing. We also provide an open GA flight tracking service. Using your mobile as a tracker and follow it live on [www.airsports.no](http://www.airsports.no).*

**About Air Sports Live Tracking**  
*Air Sports Live Tracking is based on voluntary work and is a non-profit organization. We depend on partners who support our work. If you want to become our partners, please get in touch, we need your support. Thanks!*

December 2023:

Dear FAI, CIMA & GAC

Please forward this email to those it may concern.

We wish to follow up our earlier correspondence on the subject of funding of the Air sports Live Tracking (ASLT) system. We have yet to hear back from you after our enquiries, but we hope you have the time to consider our request. The ASLT system has now been available at <https://airsports.no/> for free to anyone in the aviation community for two years. It has shown its value as a training tool, a recruitment tool, and as a promotional tool with high value as seen through both Norwegian and Spanish television broadcasts. During this time we have continued to support and improve the system using huge amounts of our spare time. Development of the system has been done through voluntary work, and funding for hosting ASLT and making it available publicly has primarily been provided by the Norwegian Arisports Federation (NLF).

We have spent significant effort on setting up a stable and cost efficient hosting solution. This autumn we migrated everything to Google Kubernetes Engine (GKE), and through the use of their best effort service level agreements (SLA) we have been able to get the hosting cost as low as \$4000 a year. This is the minimum required for an operational service that can be used both for training and competitions. Note that the best effort service level is subject to interruptions that causes the ASLT services to be moved around in the Google system and restarted. This has the unfortunate effect of the system being temporarily unavailable for up to 5 minutes while things are restarted and restored to the current state. Aside from these expected interruptions the system has proven stable after the migration.

GKE can provide reliable service that uses a guaranteed SLA, but this has a higher cost. It will make the platform better suited for large events such as publicly broadcasted competitions that do not tolerate such interruptions. In order to create stability and predictability for the service we have reached out both to the national organisations with active competition flyers in Europe and to FAI to help fund the hosting. Reliable public hosting is essential for ASLT to continue being a useful tool also in the future. Securing funding in this manner has proven difficult, and we are reaching a point where we need to land an agreement of a certain length or shut down the platform. Only NLF and the Spanish Federation have committed to supporting the system for the next few years, and this is not sufficient to cover our entire hosting cost.

We understand that providing financial support to a specific organisation can be difficult if it looks like a commercial enterprise. We want to be clear that such a payment does not constitute purchase of a commercial service from us, but is a direct coverage of expenses required to keep the platform operational and publicly available. To make this distinction even clearer we are planning to release the source code for the ASLT system as open source on GitHub under the GNU AGPLv3 licence, while continuing our search for funding of the existing hosting solution. This will make ASLT much more of a community effort:

- It provides transparency for how the scoring algorithms work.
- It allows others to contribute code (e.g. support for new tasks), documentation, translation, design, etc. to the common platform.
- It provides some guarantee that the platform can remain available even if the Air Sports Praktisk Flying organisation should be disbanded.
- It is even possible for others to set up their own air sports live tracking server, but our hope is that we can have one single public platform which everyone can use, funded by the community. A publicly available system with low entry cost is crucial for ASLT to work as a recruitment platform.

On a side note we wish to highlight that we are working with the community and have already created an integration with SafeSky to ensure that everyone flying in an ASLT competition is visible to other SafeSky users. This greatly increases safety of the flying competitions since competition flyers already have a high workload and there are a lot of them in a very small area.

We are giving the ASLT source code to the community for free. However, the source code by itself does not provide a service that can be used by pilots for training and competitions. Given that the source code is available, this service can in principle be provided by anyone, but we are offering to continue to provide and maintain the ASLT system as a hosted service at <https://airsports.no> provided we receive enough donations to cover our expenses. We will do this through our not-for-profit organisation Air Sports Praktisk Flying.

We strongly hope that the FAI sees the value in our contribution and the value of keeping it operational by pledging to donate the yearly hosting cost of \$4000. Please refer to the cost breakdown sheet we included in our initial proposal for details. This will ensure that ASLT remains available to the community as a training and competition platform. Having secured funding will give ASLT the necessary boost to achieve widespread use since we can rely on it being available. We can spend more time on training users, improving system documentation, and adding new features to the system (and help others to add features as part of the open source nature). Eventually we hope this will develop into a community supported project where the various flying communities (including paramotors, hot air balloons, and other aircraft categories) contribute to make the system support their specific competition types.

Please note that while the best effort hosting solution we are requesting funding for may be subject to interruptions, these interruptions are handled automatically by our software and normal operation is restored within a few minutes. We will include a warning label that is visible to competition creators that the system might experience short lived interruptions at any time and explain how this relates to the cost of hosting the system. While this is sufficient for training and small competitions, it is not suited for major events. It is possible to manually change the system to use the guaranteed service SLA for short intervals like a few weeks around major events to avoid interruptions in this period. This may be a useful technique while the platform is growing to keep the cost down, while aiming to transition to the guaranteed service SLA on a

permanent basis as the platform usage increases.

We have been very patiently waiting for a response from FAI, and we hope that this latest effort on our part shows our commitment to community and ASLT. We look forward to a quick response from FAI so that we can enter the 2024 season with a long-term reliable and free to use ASLT service.

We wish you a merry christmas and a happy new year!

Best Regards,

**Espen Grønstad / Frank Olaf Sem-Jacobsen**

**Team Air Sports Live Tracking**

[support@airsports.no](mailto:support@airsports.no)

[www.airsports.no](http://www.airsports.no)

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**PARTNERS:**

**Norges Luftsportforbund / Norwegian Air Sports Federation >>**

**IG - ~~TRADE WITH IG~~ >>**

**Erfa-Consult AS - Your accountant and advisor in Norway >>**

**Norwegian Flying Team >>**

Link to an older Youtube-presentation:

<https://youtu.be/jywBZyqcl1Q>

2023

AIR SPORTS



LIVE TRACKING

# Air Sports Live Tracking

- ❖ The best competition live tracking system available for pilots
- ❖ Easy to create competitions, routes and flight orders
- ❖ Easy to participate (Just an APP, no tracker/logger needed)
- ❖ Great for recruitment
- ❖ Make competitions more entertaining for the public
- ❖ Allows for live Television Broadcast
  
- ❖ Based on voluntary work
- ❖ Cost-effective
- ❖ Free to use
  
- ❖ Compatibility with Microsoft Flight Simulator makes e-Sports a possibility for the future.



Sportsfly

Sportsfly · 21:23 min

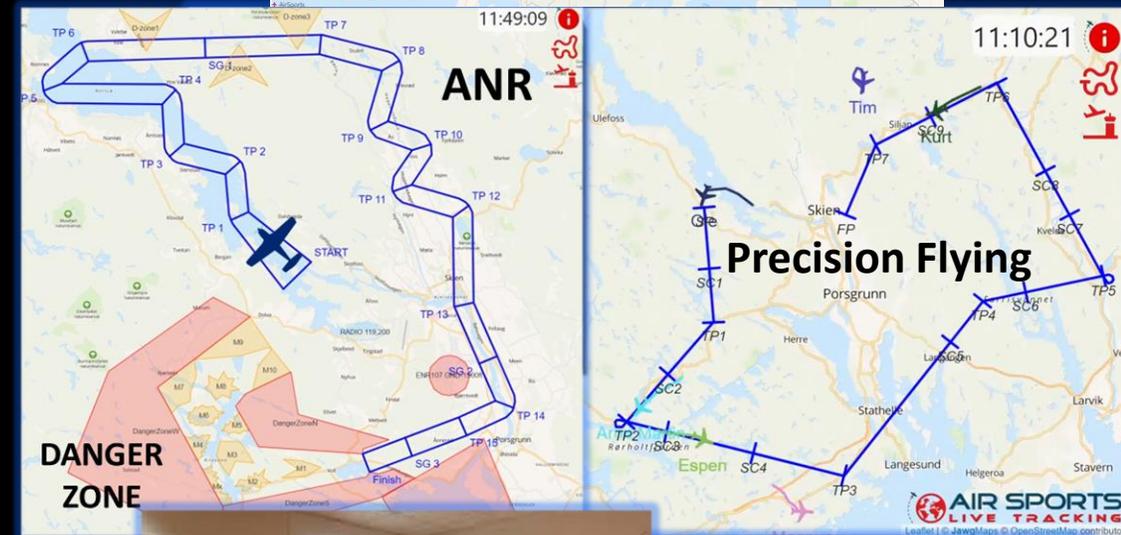
Direkte fra Rakkestad flyplass. Kommentatorer: Ole Kristian Stoltenberg og Tom Brien.

# Air Sports Live Tracking

Air Sports various competition forms:

- Precision Flying
  - Air Navigation Race ANR
  - Air Sports Race (NEW)
  - Danger Zone Race
  - Pilot Poker Run
- ✓ Includes automatic flight orders and maps
  - ✓ Live Scoring
  - ✓ Live map with crew profile
  - ✓ Built-in route editor
  - ✓ Open API for integration
  - ✓ Compatible with external trackers

Free to use! Everyone can gain access to create their own competitions. Participants only need to use the mobile app to go flying. No logger or complicated systems are needed.



# Air Sports Live Tracking **BUDGET**

Revenue 2023:	Smal, as is.	Medium	Best solution
Financial support	€ 4 500	€ 7 500	€ 15 000
APP	€ 2 000	€ 2 000	€ 2 000
Other sponsors	€ 2 000	€ 2 000	€ 2 000
Sum	€ 8 500	€ 11 500	€ 19 000
<b>Cost 2023</b>	<b>SERVERS:</b>	<b>1</b>	<b>2</b>
Server hosting Azure	-€ 4 600	-€ 7 000	-€ 14 200
Accounting	-€ 500	-€ 500	-€ 500
Server monitoring	-€ 900	-€ 1 500	-€ 2 000
App license	-€ 76	-€ 76	-€ 76
App subcontractor	-€ 1 900	-€ 1 900	-€ 1 900
Sum	-€ 7 976	-€ 10 976	-€ 18 676
<b><sup>1</sup> Reserve capacity</b>	€ 524	€ 524	€ 324
Estimate			
<b><sup>2</sup> Simultaneous aircraft capacity</b> approx	<b>20</b>	<b>100</b>	<b>340</b>

- <sup>\*1</sup> Reserve capacity for temporary server during important competitions.
- <sup>\*2</sup> Simultaneous aircrafts active in a competition on a global scale

# Air Sports Live Tracking

## Funding alternatives:

Each country pays a contribution to receive and secure server capacity in their own country. This is a fixed price and can be paid by the national association, a club or a private person. The payment is only paid once, for a given country, and provides increased capacity for a 12-month period. This contributes directly to the increased server cost of providing more reliable service.

The system is still available for all pilots worldwide, but the capacity may be limited in those countries that have not contributed.

In the medium solution, we still must vary the capacity between the paying countries, when the workload is peaking. The optimal solution is only when we reach enough capacity of 5 servers = best solution.

The payment contribution is only for increased server capacity and does not provide any further guarantees or support. It must be considered a joint contribution for access to the Air Sports Live Tracking system. See terms and conditions



## Solutions:

	OPTION START	->	BEST RESULT
Alt 1	<b>Medium solution:</b> ≥ 3 Countries € 2.000 each	→	<b>Best solution :</b> ≥ 8 Countries € 2.000 each
Alt 2	<b>Medium solution:</b> ≥ 5 Countries € 1.500 each	→	<b>Best solution:</b> ≥ 10 Countries € 1.500 each
Alt 3	<b>Medium solution:</b> > 8 Countries € 1.000 each	→	<b>Best solution :</b> ≥ 15 Countries € 1.000 each
Alt 4	<b>Small solution</b> <b>Suitable for training</b> (1 Country exclusively) € 4.500		<b>Best solution:</b> FAI steps in € 15.000

# Air Sports Live Tracking

## Funding options.

These four options are the possible starting points to keep airsports.no in service. FAI and the member countries need to consider these and decide what is a workable solution.

We are ready to allocate the capacity. How many countries want to join now given the price options of € 1500 or € 2000 per year? (Minimum start € 6-7.500)

The best solution makes it possible for additional training and competitions. With even more countries joining, there is room for more addons and use. Including MSFS as a marketing tool.

In 2021-2022 the Norwegian Air Sports association paid for server capacity. If we want to continue in 2023 this is the minimum cost, otherwise we are forced to shut down the server.

A choice must be made by start of April 2023 and be effective latest at the end of April 2023.

## Options:

Minimum options:

Alt 1

**Medium solution:**

≥ 3 Countries  
€ 2.000 each\*

Alt 2

**Medium solution:**

≥ 5 Countries  
€ 1.500 each

Alt 3

**Best solution :**

≥ 15 Countries  
€ 1.000 each

Alt 4

**Best solution:**

FAI steps in  
€ 15.000

\* For the next country its € 2.000/year



# Air Sports Live Tracking

## Terms and Conditions

Air Sports Live Tracking (ASLT) is a cost-effective live tracking solution, made solely on voluntary work by Espen Grønstad and Frank Olaf Sem-Jacobsen.

Although ASLT utilises professional and reputable subcontractors, ASLT cannot guarantee uptime or guarantee against errors on the site. ASLT will, however, do its best to have the highest possible service level for its services based on the conditions ASLT can offer.

Any financial contribution to ASLT goes directly to cover costs of operation and availability. Further development of the system must be agreed separately and is done on an hourly basis. Any financial contribution is just support and does not give ownership or additional guarantees when using the system.

Read the entire [Terms and Conditions](#)>>



Air Sports Live Tracking is intended to help the aviation community promote the sport to spectators and participants.



Everyone can easily create a competition in their club and turn it into a joint social activity that is fun for everyone.

# Air Sports Live Tracking

*Air Sports Live Tracking is a low-cost project based on voluntary work and has a non-profit purpose. Due to increased use and demand, there are higher requirements for server capacity. We are therefore more dependant on the aviation community to help us cover some of the direct costs, to keep the platform free and easily accessible for all pilots.*

*Thanks!*



As of today 2023, around 3,000++ hours have been put into Air Sports Live Tracking.



The Air Sports Live Tracking Team  
l/Frank Olaf Sem-Jacobsen & r/Espen Grønstad

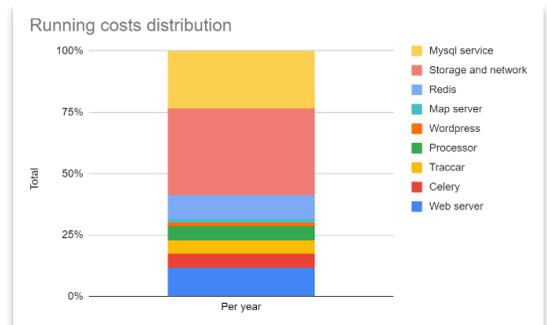
Thank you for your attention!



# Air Sports Live Tracking in GCloud

This document is intended to provide technical insight into the hosting of Air Sports Live Tracking (ASLT). ASLT is hosted in Google Kubernetes Engine (GKE), running in an autopilot cluster. Hosting ASLT in GKE offers several advantages, particularly providing better control over costs. Costs are now calculated per requested container resource using GKE autopilot, as opposed to per node, which is necessary for a standalone Kubernetes cluster. This cost optimization enables us to move the database out of the cluster and into a separate MySQL service, ensuring more secure and reliable database access. GKE also supports spot pricing, which allows us to utilize unused capacity in the autopilot cluster at a lower cost. However, it's important to note that spot server utilization may lead to interruptions, such as server restarts, resulting in occasional delays and irregularities in the service. These interruptions may cause the map or system to freeze for one to two minutes. Nevertheless, the data, results and tracking remain preserved and unaffected. The cost savings from using spot servers are significant enough to justify these occasional disruptions. All ASLT users must be aware of the spot server solution and be willing to accept any interruptions in exchange for a more cost-effective solution. We anticipate these interruptions to be infrequent and not a major issue for day-to-day use.

The cost of the GCloud solution includes not only the base hosting cost but also a smaller utilization cost that depends on the number of competitions and traffic on the site. This makes it challenging to provide an exact annual pricing, but the table below illustrates the additional cost. Assuming 4 active countries with approximately a total of 2500 contestants (flights) for the annual year 2024 (estimate for 2023 is 1500). Additionally, there are an expected increase in web server cost during competition periods. See the illustrative graph showing the distribution of different cost elements on the GKE platform. In addition to the GKE platform, there are normal operational costs, which must also be covered.



## Expected cost calculation and usage:

GKE PLATFORM COST	INSTANCES	SPOT	CPU	MEMORY	PER MONTH	PER YEAR
WEB SERVER	2	*	1	2	\$32.76	\$393.15
CELERY	1	*	1	2	\$16.38	\$196.57
TRACCAR	1	*	1	1.5	\$15.64	\$187.67
PROCESSOR	1	*	1	2	\$16.38	\$196.57
WORDPRESS	1	*	0.25	0.5	\$4.10	\$49.14
MAP SERVER	1	*	0.25	0.5	\$4.10	\$49.14
REDIS	1		0.5	1	\$27.30	\$327.63
STORAGE AND NETWORK					\$100.00	\$1,200.00
MYSQL SERVICE					\$66.25	\$795.00
GKE FEE					\$90.00	\$1,080.00
FREE TIER					-\$74.40	-\$892.80
<b>TOTAL BASE COST</b>					<b>\$298.51</b>	<b>\$3,582.08</b>

TRACKING VARIABLE COST	DURATION	CPU	MEMORY	PER FLIGHT
CALCULATOR	4	0.5	1	\$0.15
<b>CONTESTANTS IN 2024</b>			2500	<b>\$374.00</b>

## Estimated annual platform costs for 2024 is **\$3,956.09**.

\* All prices include Norwegian VAT and are based on estimated traffic from 4 active countries in 2024. Be aware that this is only an estimate. As more nations utilize ASLT, it will generate increased traffic, leading to higher costs. We reserve the right to make corrections or updates. Ps. [GKE can provide a reliable service with a guaranteed SLA](#), but this comes at a higher cost. Estimate \$6,500-\$7,000 per year, and it should be a long-term goal. V2. 2023-12-01