SKYFive®

AIRLINE DIGITALISATION

Dirk Lindemeier, Co-Founder and Chief Commercial Officer (CCO) at SkyFive, believes the digitalisation of the airline industry could be accelerated by providing real broadband connectivity in the skies, allowing airlines to affordably connect their entire fleets for improved operational efficiency, ancillary revenue generation and an enhanced travel experience.

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DIRK LINDEMEIER HAS A WEALTH OF EXPERIENCE IN BOTH AVIATION AND TELECOMMUNICATIONS, HAVING SPENT 19 YEARS AT NOKIA AND 10 YEARS IN MILITARY AVIATION PRIOR TO LAUNCHING SKYFIVE, A SPECIALIST PROVIDER OF BROADBAND SERVICES IN THE SKY, BASED ON AIR-TO-GROUND (A2G) TECHNOLOGY.

A2G

A2G IS THE ONLY TECHNOLOGY THAT CAN MEET THE EVER-INCREASING DEMAND FOR BROADBAND CONNECTIVITY IN THE SKY

He is passionate about digitalisation of the airline industry and believes that, in the wake of the Covid-19 crisis, it is now more important than ever before.

According to Dirk, Covid-19 not only causes economic damage, but it can also serve as a catalyst for change and transformation. He says, "The vast penetration of broadband connectivi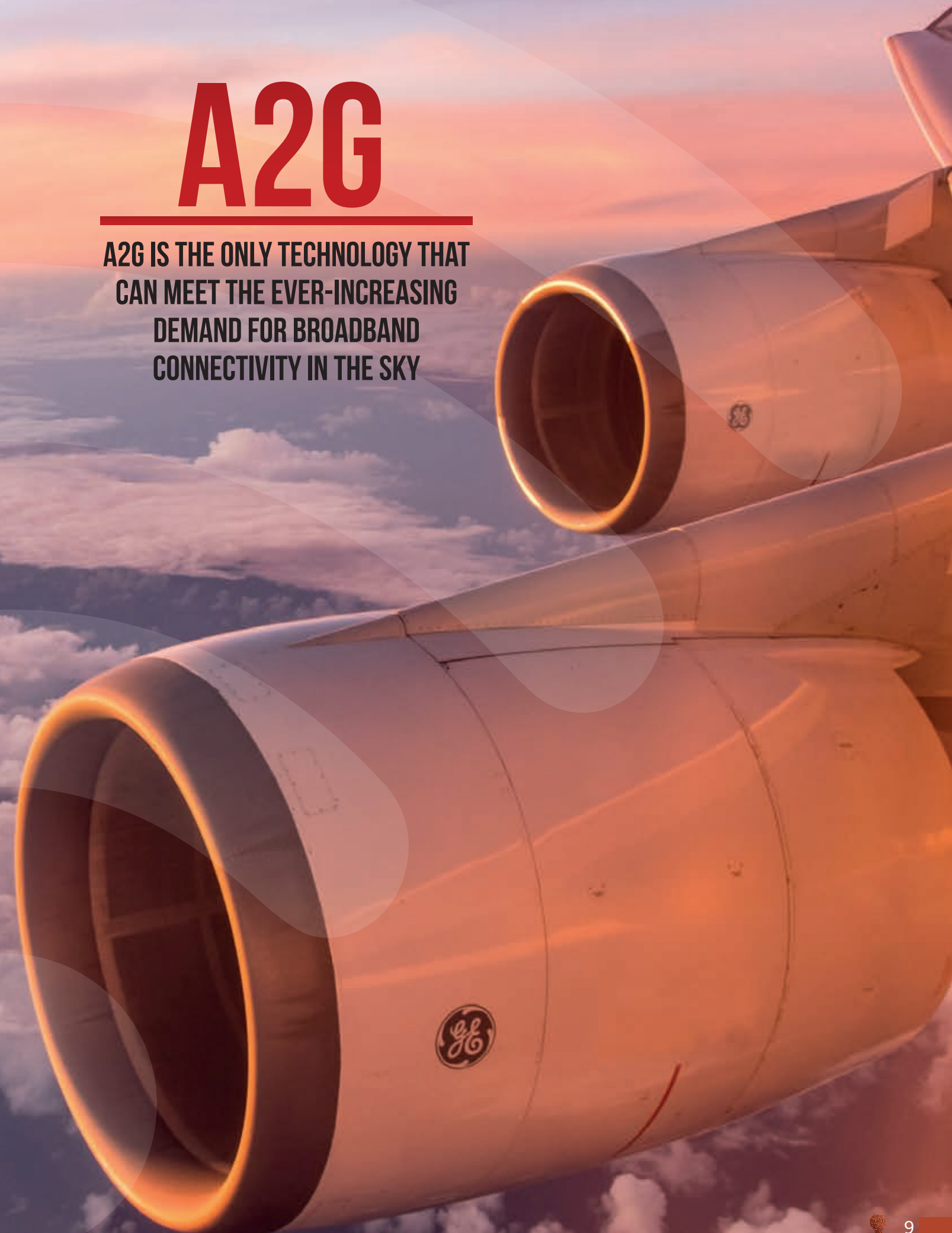ty has become a commodity that everyone now takes for granted on the ground, and Covid-19 has the potential to accelerate a similar adoption in the sky."

To make connectivity a true enabler of digitisation, Dirk believes it must be ubiquitous (in the air and on the ground),
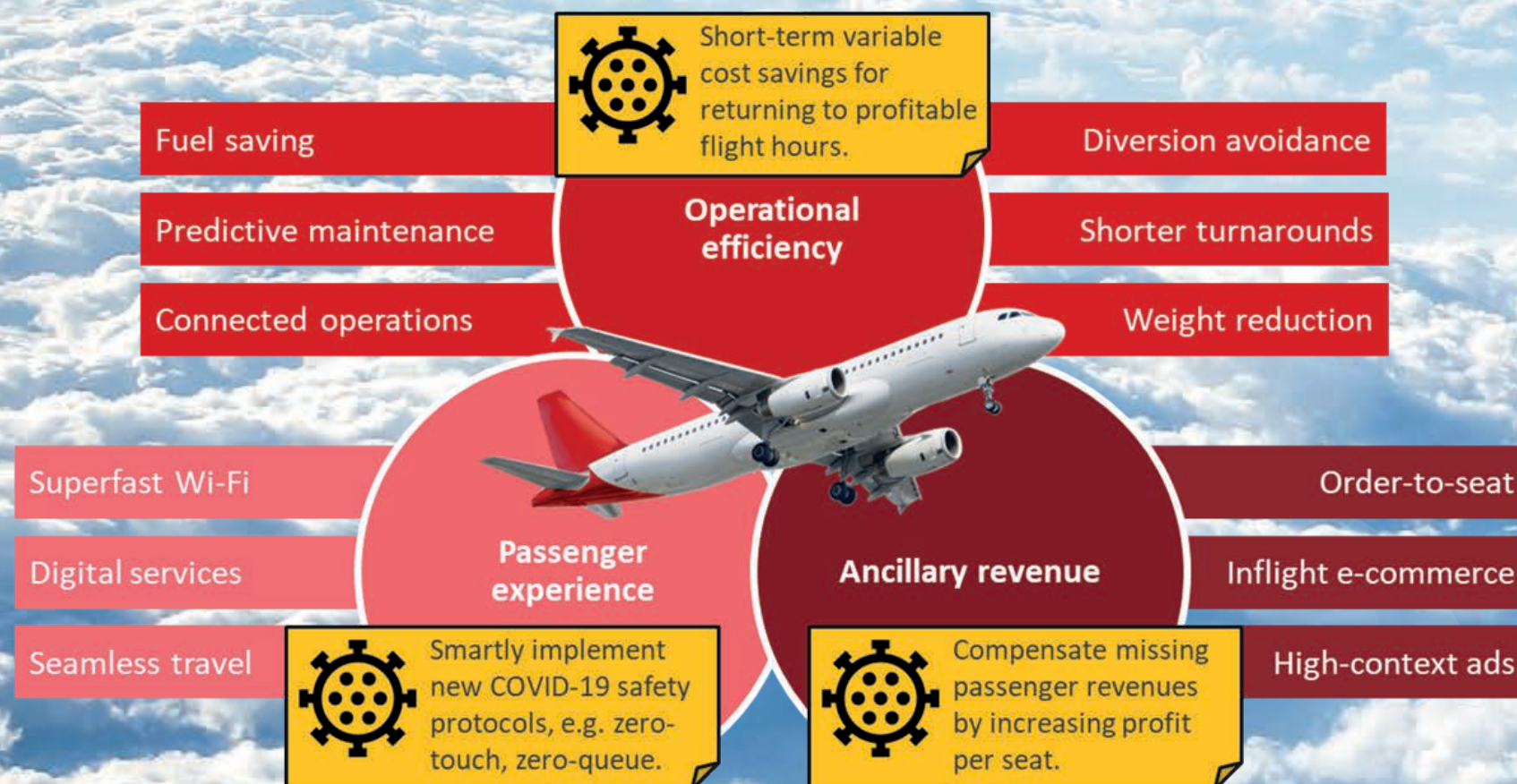
"BY ONCE MORE EXTENDING PROVEN BUSINESS PRINCIPLES AND TECHNOLOGIES OF MOBILE COMMUNICATIONS INTO THE CABIN, WE COULD REMOVE THE BARRIERS TO ADOPTION AND BOOST USAGE OF CABIN INTERNET SERVICES"

Dirk Lindemeier,
Co-Founder and Chief
Commercial Officer (CCO)

Operational efficiency

- Fuel saving
- Predictive maintenance
- Connected operations
- Diversion avoidance
- Shorter turnarounds
- Weight reduction

Short-term variable cost savings for returning to profitable flight hours.

Passenger experience

- Superfast Wi-Fi
- Digital services
- Seamless travel

Smartly implement new COVID-19 safety protocols, e.g. zero-touch, zero-queue.

Ancillary revenue

- Order-to-seat
- Inflight e-commerce
- High-context ads

Compensate missing passenger revenues by increasing profit per seat.

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available on every aircraft (including regional jets and turboprops), and so self-evident to passengers using it that it becomes the norm, not the exception.

SMARTLY FIGHTING COVID-19

Ubiquitous broadband connectivity can help with challenges in air travel in the phase following Covid-19. Dirk highlights four key examples:

Social distancing
Enforcing 1.5 metres of distance between two persons to reduce infection risk constitutes a real challenge for airports. With one person now occupying a square of 3 by 3 metres, the packing density is reduced by a factor of 18 (with two persons per square metre being a typical value for moving queues). Bringing all passengers online would enable walk-through airport transits and avoid queues building up. Departing passengers could be steered to arrive at the airport just in time, and airports could dynamically adapt their bottlenecks in arrival direction based on real-time data shared by inbound passengers – and all of this could be done perfectly anonymously.

Disruption management
It will take time for flight schedules to stabilise after the crisis, inevitably leading to disruptions. Passengers

> ## "WHEN WE LOOK BACK IN A YEAR FROM NOW, COULD IT BE POSSIBLE THAT WE MIGHT SEE COVID-19 AS AN INFLECTION POINT – TOWARDS REAL BROADBAND SERVICES IN THE SKY?"

that are always on can be contacted by airline service desks during the flight, and disruptions can be resolved in real time rather than queueing up people at transfer desks after landing.

Drinks or data

Several airlines have already suspended trolley services in order to protect cabin staff. How about passengers ordering online from their seats? When presenting them a 'drink or data' option, many would go for data (Wi-Fi) instead of a coffee served in a paper cup, at least on a short flight. As a side effect, trolleys get lighter or disappear completely, which saves weight and is better for everyone's elbows and knees altogether.

PARADIGM SHIFT REQUIRED

Dirk says, "To bring these scenarios to realisation, connectivity must become true broadband to airlines and passengers. And for that to happen, a change in the current business model and an advance in technology are required, to boost performance and cut airline total cost of ownership. This is where Air-to-Ground (A2G) technology comes into play: instead of connecting aircraft via satellites that are 36.000 km away, a grid

of cellular base stations with sky-pointing antennas is deployed, which connect aircraft at much higher data speeds, at a fraction of the cost of a traditional satellite service."

According to Dirk, airlines have so far largely failed to make Internet access in the cabin a profitable service for the following reasons:

• Most passengers reject the combination of high session prices and poor performance; thus, passenger take-up as

well as airline revenue from Wi-Fi sessions stay far below the cost of providing this service.

- Some airlines decided to make Wi-Fi free, whichincreases passenger adoption (although the performance remains poor). In the absence of revenues, however, the airline business case turns dark red, unless the cost can be offset by other operational benefits of the connectivity service.

- For those passengers who connect, airlines often throttle the throughput or cap the volume to reduce cost from excessive data charges of their satellite communications service provider.

As a result, passengers are frustrated, and aircraft are carrying along satellite communications systems with mediocre value creation at best.

NEW DIGITAL VALUE CREATION

Dirks says, "By relying on A2G for connecting aircraft, this vicious circle can be turned into a virtuous one. And once everyone in the cabin connects, marketeers can turn the aircraft into a value creation engine and apply an array of digital engagement means."

As such, Dirk outlines the following examples:

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White-label Wi-Fi
With Hotspot 2.0, passengers can automatically connect to Wi-Fi services through their standard mobile service providers, who compensate the airline in the form of roaming fees, without the airline having to invest into marketing the service.

Bits & Pretzels
Not only the name of a famous festival in Germany, but also a new way of selling inflight Wi-Fi alongside refreshments, ordered and paid online before the flight, or straight from the seat after boarding.

Advertisements
With a high take-up rate and the ability for everyone to browse the Internet as well as media-rich content, the number of ads that can be presented to passengers during a flight increases significantly. By adding the unique travel context, the value of an impression is further amplified.

Partner offers and vouchers
Airline partners (for example, touristic attractions and ground transportation companies at the destination) can sell special packages and vouchers with exclusive discounts or other benefits in the cabin.

E-commerce
The inflight shop can be converted into a digital mall, which not only

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includes airline products, but also the offering of shops at the arrival airport. Purchases can be collected at the arrival gate, or inside the airport shops.

SUBSTANTIAL COST SAVING POTENTIAL

Real broadband connectivity can also unlock operational efficiency savings. With A2G, such savings become inherently easier for airlines to realise, and the use case theatre for operational connectivity is ample. Dirk shares the following prominent examples:

- **Data offload:** as a quick win, an A2G system can offload most of the data traffic from legacy narrowband communication systems, to not only transfer it cheaper but also much more of it.

- **Predictive maintenance:** continuous aircraft health monitoring can reduce disruptions and save maintenance cost due to improved dispatch reliability, no-fault-found reduction, inventory reduction, and higher labour productivity.

- **Reduced fuel consumption:** flight paths can be optimised

with real-time weather and traffic information. On the ground, idling can be avoided through integrated operations with airports.

- **Weight reduction:** heavy onboard systems can be replaced with weightless cloud services, for example, streaming services instead of inflight entertainment systems, online shopping instead of trolley duty-free sales, and cloud storage instead of data recorders.

- **End-to-end process optimisation:** internal and external processes,

such as turnarounds, can be optimised significantly once being data-driven and partly or fully automated.

THE GIGABIT AGE IN AVIATION

The target must therefore be nothing less than to provide an affordable broadband connection for every aircraft and every passenger. To do so, Dirk believes that three things matter most:

- Airlines require real broadband data pipes between their aircraft and the ground.. Moreover, the full capacity needs to be

available for every aircraft, also in busy airspaces, thus network density directly drives performance as well.

- Airlines need data tariffs from their inflight connectivity providers that do not penalise usage by charging by data volume. Instead, tariffs should be based on throughput. Only when following this fundamental rule, mass adoption will happen and drive down the cost.

- Instead of today's vertically integrated solutions, the aircraft and the inflight connectivity service need to be fully unbundled, just like a smartphone can connect to any network.. One of the key achievements of mobile communications is a high degree of standardisation, which not only fuels technology evolution, but also assures affordable prices for end users.

Dirk concludes, "A2G is the technology that features the performance required by connected aircraft, supports flat data tariffs for airlines, and is built upon 4G and 5G standards for economies of scale and an open ecosystem. What's more, together with mobile network operators, we can also establish a business model that meets the

specific financial requirements of airlines post Covid-19.

For mobile network operators, unlike airlines, connecting people is the core business, and their capabilities to market, sell and take care of subscriptions are undisputed. By once more extending proven business principles and technologies of mobile communications into the cabin, we could remove the barriers to adoption and boost usage of cabin Internet services. The ingredients for making all of this happen are available today. I think that ubiquitous connectivity as a driver of cost reduction as well as for ancillary profit have never been more significant for airlines."

And when we look back in a year from now, could it be possible that we might see Covid-19 as an inflection point – towards real broadband services in the sky?

For further information on SkyFive, visit www.skyfive.world