



GLOBAL THINKERS



**Drones, robotics,
and technological
development, led
by the Boards of
Directors.**

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**Pensar en el futuro. Cuestionar
los supuestos. ELEVAR EL NIVEL.**

#ConnectingIdeas

**Colombia has
all the
potential to
become a
mobile
robotics
center.**

Romeo Durscher

Senior Vice President, Strategy.



Romeo Durscher is the Senior Vice President of Strategy at Auterion, the leading end-to-end operating system for drones. Born and raised in Switzerland, Romeo has come to Auterion after 6 years at DJI, where he built the public safety drone vertical and has become one of the world's most trusted leaders in the integration and deployments of small unmanned aircraft systems. Prior to joining the drone industry, he spent 13 years at NASA's Solar Dynamics Observatory.

Commercial UAV News named Romeo "One of the 25 most influential people in the commercial drone industry," as well as "One of the top 7 visionaries for drones in emergency response and public safety." The global non-profit organization DRONE RESPONDERS awarded him its first "Public Safety Drone Leadership Award" and the Unmanned Tactical Applications Conference presented him with "The Supporting Those Who Serve" annual award in recognition of his exceptional leadership in implementing drone programs for public safety worldwide.

Romeo has been featured in media forums such as ABC's Good Morning America, the New York Times, Wired magazine and Forbes.

In recent years, drone technology has evolved systematically, greatly improving the capabilities of: stability, autonomy, precision, overflight altitude. However, it is still not as accessible as a computer or a smartphone. What are, in your opinion, the use cases (in Colombia) that will generalize the management of drones and the consequent reduction in their acquisition and operation prices?

Romeo: This is a great question and it is also very interesting that you state that drone technology is not as accessible as a computer or a smartphone. I wrote an article about this for Forbes titled "Are Drones the Flying Personal Computer of the 1980s?".

If we look at the history of personal computers (and smartphones) and compare them to the current state of drone technology, we see a strong resemblance: until very recently, drones were stand-alone units, much like computers were in the 1980s. Both had that "cool" factor and seemed experimental, despite needing a lot of manual interaction and being very slow.

Data transfer was done via large floppy disks (in computers) or SD cards (in drones). In the case of computers, everything changed when they were connected to each other and to the Internet; the power of networks became visible with the digital transfer of data through them. And that exchange of information gave rise to software solutions, applications and the cloud: suddenly we had a digital marketplace right in front of us.

We are seeing the same thing now with drones and mobile robotics. And this, precisely, is what we're focused on at Auterion: unifying a connected autonomous drone workforce to streamline operations, elevate integration and maximize automation, through a vendor-independent operating system running onboard a fleet.

So why does it make sense to use drones and mobile robotics in Colombia?

Colombia has many areas where drones and mobile robotics (terrestrial, aquatic, underwater and aerial) can contribute greatly. Colombia is the 25th largest country in land area and 28th in population, and also has a very diverse geography and climate.

Colombia's geography is perfect for autonomous technology; from the Andes mountain range region, the coastal areas, the rainforest region, to the urban regions of the cities, with large and congested cities. Colombia is a highly urbanized country, with more than 77% of the population living in large cities. There are four cities with more than one million inhabitants and a fifth may soon be added. This also means that cities suffer from heavy traffic jams and rural areas are not always easily accessible.

With all of the above in mind, let's look at some of the areas in Colombia that could benefit fairly quickly from proper drone integration and deployment: deliveries and shipping, public safety and disaster response, law enforcement, infrastructure inspection, agriculture, mining.



Drone deliveries or shipments:

Due to its geography, Colombia could benefit from drone delivery both in urban areas, mountain ranges or coastal regions. These drone deliveries could range from medical deliveries, such as hospital to hospital (delivery of tests, test results and even organs) or medical deliveries to remote villages, to deliveries of commercial goods. **Faster, cheaper and more cost-effective delivery methods are motivating factors behind the creation of drone delivery programs.**

Bogotá struggles with traffic congestion and is the eighth most congested city in the world. On average, Bogotans spend 94 hours a year sitting in traffic, compared to 71 hours a year in busy Berlin, 42 hours a year in Madrid or 87 hours in Singapore. Using a drone to deliver that organ from one hospital to another would take a few minutes versus an hour or more.

In addition, **the carbon savings as drones emit 80% less greenhouse gases than diesel trucks and consume up to 94% less energy than other vehicles**, contributing to an already very green Colombia.

Public safety and disaster response:

Because of the vast difference in terrain, public safety could benefit from the use of drones in search and rescue missions, disaster response, as well as law enforcement. **Around the world, the use of drones has not only helped save lives, but also mitigated risks for first responders by providing real-time information on the ground and also to incident command.** These lives and cost savings are the backbone of implementing and building drone public safety programs.

Urban areas, such as Medellin, can benefit from rapidly deployable drones. Using thermal cameras over a burning building can provide firefighters with a lot of actionable data and find hot spots more quickly and safely, guiding firefighting efforts more efficiently. When minutes count between saving a building and saving lives, this tool of having aerial views is very impactful.

Law enforcement:

Drones with thermal cameras can help law enforcement in rural areas find missing persons, protect civilians from armed groups and support border patrol operations.

Agriculture: Thanks to highly accurate and precise aerial sensors, drones have helped determine water stress, crop nutrient shortages, poor soil health and improve seed placement. With the ability to carry pesticides and fertilizers and to target only areas of crop stress, drones have become more economical and environmentally friendly. **Continuous crop monitoring allows immediate detection of problem areas, inspection of weather damage or finding rotten crops, enabling farmers to act more quickly and with more accurate data and models.**



Infrastructure inspection:

Colombia has more than 200,000 km of roads, of which approximately 15% are paved, operates more than 1,500 km of railways, has 4,000 km of gas pipelines and 5,000 km of oil pipelines, with another 3,000 km of refined product pipelines. Just such transportation infrastructure needs proper inspection and maintenance, and drones can be a valuable asset with their sensor to detect problems, predict problem areas and improve safety and operational efficiency. Add in dams, port facilities and airports, and there are many more areas where drones and mobile robotics can improve inspection workflows.

For example, using drones to inspect bridges allows engineers to get a thorough analysis and quickly identify structural failures and areas of increased wear and tear. Obtaining this data using a drone is not only much safer than having to physically inspect dangerous and difficult-to-access areas, but it is tremendously faster, with high accuracy.



Mining:

Given that Colombia is a major exporter of coal and is the world's largest producer of emerald, as well as a major producer of gold, applications of drone use in mining will bring safety benefits to a mine; surveyors using drones can eliminate human boots on the ground for inspection.

The use of drones can help get an important overview of material quantities, provide accurate measurements of stockpiles, maintain oversight of field movements of equipment and personnel.

This not only helps the efficiency of the mine, but also provides additional safety for the workers alongside.

What changes have the most developed countries implemented in these technologies and in their laws to support and properly regulate the use of drones?

Romeo: The reality is that most developed countries already have privacy laws that protect people and their rights, and those laws cover all technologies. For example, if you are sitting in your living room, and someone is outside your house taking pictures of you indoors, it doesn't matter whether that is done by cell phone, by a high-resolution camera or a drone, all three constitute a violation of expected privacy. Therefore, the law should not distinguish between the types of technologies used.

On the other hand, **a great deal of attention has been paid to educating drone operators on the proper use of drones.** Although it should be noted **that it is also lawmakers and regulators who need training and to see the large and immediate impact of drone technology, what these flying platforms can and cannot do.**

Regulation and acceptance have come a long way and will continue to improve as technology, knowledge and understanding does. Let's take a look at the "Red Flag Law" of 1865. It stipulated that self-propelled vehicles had to be preceded by a man walking 60 meters ahead carrying a red flag to warn other road users of the vehicle's approach. Today, reading about a law like this makes us smile, as it shows that initial laws and regulations often do not survive the change of technology and social integration.

If we were to talk in terms of a roadmap, to make use of drones in Colombia, what do you consider would be the main milestones to cover and in which industries do you see their implementation indispensable to accelerate our competitiveness as a country.

Romeo: From my experience and personal perspective, the basis of most drone applications is the academic world. Academic institutions are not only important for research, development and testing, but they are also a key component in driving and supplying the start-up world with talent and spin-off ideas and products.

A healthy, local drone ecosystem needs start-ups with the drive to create solutions. It is also important for these start-ups to define the right commercialization strategies for a region, such as Colombia, and then bring those solutions to market and test them.

There is also a need for partnerships with more established, and also global, entities that will bring existing solutions to Colombia and allow drone deployment to be scaled up more effectively.



Likewise, I believe that the risk of dependence on other countries and regions should be mitigated by encouraging local hardware and software developments. iNNpulsia is in a strong position to promote the development of mobile robotics, including software.

As noted, there are many sectors that can benefit very quickly from drones and mobile robotics. Rather than deploying multiple programs, my advice is to focus initially on two or three use cases, get them up and running and establish a process of deploying drones, collecting feedback and acting on that feedback to make improvements. If done well, you will gain a solid knowledge base, learn the market and community feedback and be able to successfully scale up in the future. **Colombia has the potential to become a mobile robotics hub.**

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