

# The current status and new challenges of vocational training in aeronautical transport

*El estado actual y los nuevos desafíos de la formación profesional en el transporte aeronáutico*

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(interviewee)

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## Abstract

The RSO Magazine interview team interviewed Carlos Alejandro Di Bernardi, professor of Aeronautical/Aerospace Engineering at the University of La Plata (UNLP) and director of the Research, Development, Extension and Transfer Unit (UIDET). Di Bernardi is one of the experts who are part of the Technical Cooperation Program of the International Civil Aviation Organization (ICAO), and has a professional background in more than 130 airports in 19 countries in America, Europe, Africa and Asia. The current state and new challenges of professional training in aeronautical transport.

## Resumen

Entrevistamos a Carlos Alejandro Di Bernardi, profesor de la carrera de Ingeniería Aeronáutica/Aeroespacial de la Universidad de La Plata (UNLP) y director de la Unidad de Investigación, Desarrollo, Extensión y Transferencia (UIDET). Di Bernardi es uno de los expertos que forman parte del Programa de Cooperación Técnica de la Organización de Aviación Civil Internacional (OACI), y cuenta con antecedentes profesionales en más de 130 aeropuertos de 19 países de América, Europa, África y Asia. El estado actual y los nuevos desafíos de la formación profesional en el transporte aeronáutico.



**Considering your professional career, what is your opinion on the trainings and qualifications that are given for aviation transport in Argentina in relation to other countries of the world?**

There are some very good ones and others not so much. We find areas of knowledge that are repeated with different levels of success and others that are not mentioned, are not updated or are not perfected. Air transport is characterized by its technological and regulatory dynamism, its permanent transformation and evolution: those who do not update are almost sure to fail.

Argentina is, in general, relatively good in certain respects. For example, the Air Transport Group of the UIDET, which is part of the Faculty of Engineering of the UNLP, prepares and teaches more than 80 courses in different areas of knowledge, aimed at different aviation authorities abroad. In addition, it actively participates as a speaker in the international seminars organized annually by the Spanish

Agency for International Development Cooperation (AECID), ICAO and Spanish Airports and Air Navigation (AENA). Similarly, we should mention graduates of the Aeronautics/Aerospace Engineering Career of the UNLP, since the professionals who enter the labor market are highly required by the national and international industry.

In any case, naturally, it is necessary to undergo continuous processes of review, diagnosis and action through internal and external audits that allow assessing and evaluating quality indicators. With a clear diagnosis, action plans conducive to maintaining and enhancing assets can be generated, while neutralizing or mitigating the negative aspects.

**What are the strengths and points of improvement in the training currently provided in aviation transport in Argentina?**

The main strength lies in having different stages of differentiated but complementary training pro-

cesses. An example of this can be seen in the various schools of aviation technical education, in the flight technical institutes, in the training centers for mechanics, in the technicians, in the university degrees of aviation trajectory and, of course, in the various centers of instruction in civil aviation found throughout the national territory. This situation allows us to have a wide offer with multiple and diverse approaches.

Within the points to be improved we could mention the curricular contents themselves, the methodological processes of instruction and evaluation, the facilities and the conformation of the teaching staff. It is necessary to focus on strengthening the processes of each institution, within a framework of national strategic development that is in accordance with State policies. By the way, the latter, at the national level, are yet to be established.

***"It is necessary to undergo continuous processes of review, diagnosis and action through internal and external audits that allow assessing and evaluating quality indicators."***



Taking that in account, we must try to generate multifocal teams with convergent systemic approaches, but differentiated according to training and professional skills specific to each activity. This will allow us to have complementary and enriching views when implementing the pedagogical actions that are necessary to carry out specific and robust training programs.

On the other hand, I believe that we should think about education locally, but without losing sight of the fact that we are part of a globalized, highly competitive world in permanent demand for innovative knowledge. In this context, our training systems should be the result of bottom-up evolutionary processes based on strategic training planning and the generation of skilled resources.

Another aspect to work on is related to the development of instruction manuals, whether they are from service providers, airline or airport operators or from the state aviation action bodies themselves. Each institution should make known its organizational chart, as well as the missions and functions of each job. With this in mind, we would have a map of training requirements according to the specificity required by each area of action.

### **How could different institutions and organizations partner to generate training content according to the needs of the current aviation market?**

Training processes are long-term and the programs we generate today will have an impact not only in the short term, but also in a future full of innovation and transformation. Visions must be strategic, with clear goals in the short, medium and long term. Specific action plans and programs are required to allow the periodic review and updating of curricular content. It is important to establish dynamic, flexible and innovative training profiles. We live in a world where everything changes, and curricular content should not be the exception. We are facing a very challenging scenario, so we could ask ourselves: are we really aware of it?

In this historical moment, where change is permanent and the only certainty is uncertainty, we must work hard on actions that allow, in some cases, to deepen and, in others, to generate mechanisms conducive to the construction of robust institutional ties, long-term, seeking at all times the rapprochement, without pettiness, of the entire national aeronautical sector. It is necessary that industry, the State and academia find points of convergence in a permanent dialogue table.

### **What pedagogical or practical tools do you consider essential for the delivery of training in the aviation field? Which ones could be implemented to improve quality and reach more stakeholders and students?**

It is necessary to consider pedagogical tools as instruments of information and training. We must continue to work on the skills of the teaching staff and on the attitudes of the student body (whatever it may be). It is not only about knowing, but also about knowing how to do it. Attitude and aptitude are two different qualities, but twinned in intention when we talk about training. The meeting point is the classroom, whatever it may be. Likewise, we must try to generate spaces for doubt, interrogation, and debate, encouraging discussion and assertive exchange of ideas through knowledge-based argumentation. To do this, we must be clear about what, how, when, where, who and why, among other basic questions.

Finally, the pandemic has shown us that we are able to reach many through the internet. Virtuality is convenient, but there is nothing like entering a classroom, looking and observing the students, listening to their concerns and, also, reading their various languages: gestures, attitudinal, corporeal.

### **The Transportation Safety Board (Junta de Seguridad en el Transporte, JST) and the UNLP conducted a certification in "Safety in the Investigation of Ac-**

**idents and Incidents in Civil Aviation". Do you think that this type of training contributes to the improvement in safety?**

Anything that involves the generation of content through multiple systemic approaches— provided that it has the multifocal views of the professionals involved—will be a surpassing product. We do not understand a training process in safety without knowledge of the context, full discussion of the applicable regulations, systematic vision, critical look, lateral thinking, questioning the status quo and reflection on paradigms, among others.

**Given that participants occupy different positions in different areas of the aviation system, would it be convenient to segment the formations according to making learning more specific?**

It is clear that training must be staggered and segmented. An example of this could be seen in airport emergency plans. Faced with the question of who must know the emergency plan of an airport, the answer should always be: "all actors in the airport system, without exception." But this response brings us different levels, some will have to know it to be aware of the response mechanisms that exist and how to act in those cases, while those who are not part of the process will have to know it and understand that they should NOT do anything, that they are not part of the response and that their presence on the scene will only affect the capabilities of the emergency systems.

***"The main strength lies in having different stages of differentiated but complementary training processes.***



**Is multimodal safety training necessary and feasible?**

Yes, of course. When you look at the aviation of the future, it's easy to see that new trends will have a direct impact on the way we move today. The way we move in urban and suburban plots will be modified, we will go from 2D to 3D and automation will be the order of the day. The concepts of urban air mobility and advanced air mobility will become more impor-

tant, which will require piloted vehicles (on board or remote) and others controlled and guided by automatic systems.

All this will demand big data processing procedures, where the Internet of Things (IOT) and 5G technology will be the order of the day. Airports 4.0 and smart cities will be a reality. At this juncture, the scenarios for 2050 establish the need for control and management systems for multimodal transport of the integral type. But let's not think about those futuristic scenarios, let's go to the reality of nowadays. We live in a context of multimodality, complementarity and interconnectivity, and that is why safety must be analyzed from the multimodal perspective, beyond the particularities that each means of transport deserves and requires.

**Finally, what book would you recommend to a person interested in getting started in the field of aviation transport?**

Rather than recommending a particular book, I would advise each reader to read the Chicago Convention of 1944, since this document and its 19 annexes make up the reference framework on which the work of international civil aviation is based and substantiated. There are more than 5000 pages of specific technical content, where you can see aspects that make licenses, accident investigation, aerodrome design, safety, airworthiness, among many others.

In addition to this, you can also find the catalogue of documents that ICAO publishes and updates every year. The simple reading of the titles will help the construction of knowledge, it will give you an idea of the diversity of topics in which the air transport system is working. In turn, you could advise to read across the strategic objectives of ICAO and the strategic objectives of sustainable development (SDG) of the United Nations (UN).

With this suggested material, they will have background information to build their general frame of reference. With this in mind, it'll be a question of choosing a topic and delve into it. Finally, it only remains to continue on the path, fulfilling what Lao-Tzu once said: "a journey of a thousand miles begins with the first step."