MAKING IT EASY FOR PEOPLE TO DO THE RIGHT THING

Human performance has always been at the heart of aviation, and understanding human performance is critical. This remains true in the current situation, where demands are quite different for many. But what do we mean by human performance, and how can we best understand it? **Immanuel Barshi** outlines ICAO's newly-published human performance manual.

Regulators are often thought of as only rule makers and enforcers. ICAO, as the source of guidance to all civil aviation regulatory bodies, is adding a special perspective recognising the vital role humans have in all aspects of aviation. The new ICAO *Manual on Human Performance for Regulators* (Doc. 10151) focuses on how regulators can support people in contributing to the aviation system, and guides regulators worldwide to make it easy for people to do the right thing.

To develop the manual, ICAO assembled a human performance task force, bringing together a broad range of human performance expertise. Among the multinational experts participating in the task force were regulators in various roles (ranging from aircraft certification to safety oversight and everything in between). There were participants from airlines, air navigation service providers (ANSPs), aviation intergovernmental organisations (including EUROCONTROL), and aircraft manufacturers. And there were human factors researchers and practitioners. The product from these experts is a manual which speaks directly to our new reality.

The new reality of the COVID-19 pandemic makes the focus on human performance all the more critical. The machines around us are not affected by the pandemic other than not being used as much, if at all. It's people who are affected. And it's a minority which is directly affected by the virus and is very sick, while everybody is deeply affected by the new reality of social distancing, lockdowns, and tight restrictions on travel and entertainment. Many teleworkers feel that rather than "working from home" they are "living at work". Shining the spotlight on human performance in this new reality is very timely. And although the new ICAO manual is indeed "for regulators", since all of us in aviation are regulated it is good for us to be familiar with its content. What's more, because we are all human and we all perform, understanding human performance is necessary to make it easy for us to do the right thing.

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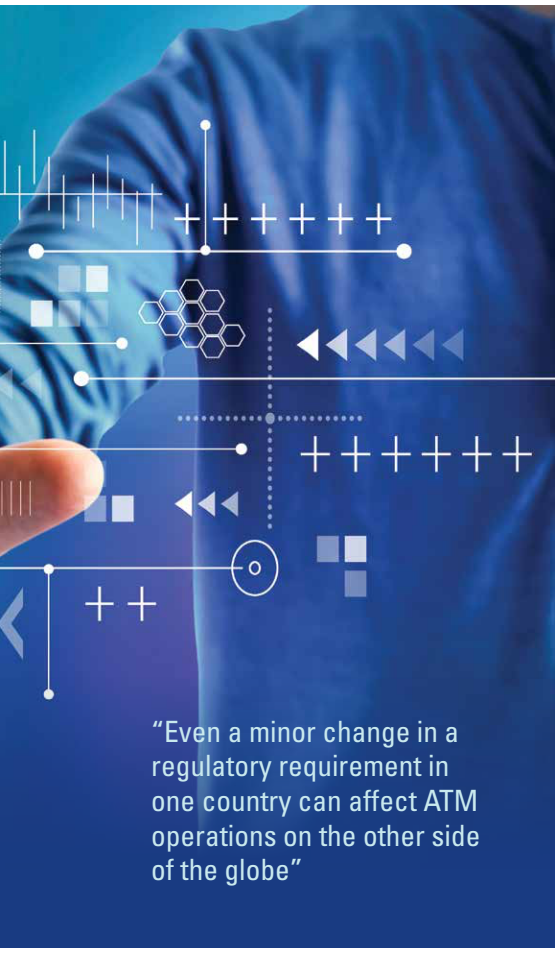
Human Performance, Systems Thinking and Human-Centred Design

The new ICAO Manual starts off with defining Human Performance (HP) as what people actually do, as the human contribution to system performance. It separates HP from the scientific discipline of Human Factors. From there, it goes on to present



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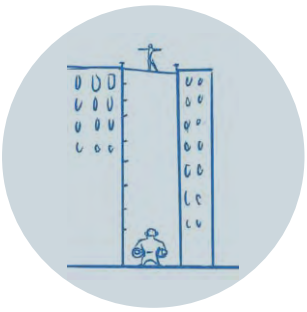
some foundational knowledge about the human contribution to system performance, and on to very specific details of how regulators can integrate an HP perspective in all their regulatory activities. Throughout the manual, the focus is on how to make it easy for people to do the right thing and how to support people so they can perform at their best.

Because HP is about the human contribution to system performance, and because the global aviation system is a complex socio-technical system of systems, the manual lays a foundation of systems thinking (see EUROCONTROL, 2014). It emphasises the need to understand the complexity of the human, the operational environment, and the global aviation system as a whole. Even a minor change in a regulatory requirement in one country, such as a new flight deck procedure, can affect ATM operations on the other side of the globe, as well as ground operations at airports far from home. And because the airspace and the airports are shared, that one minor change made by the regulator of one country can affect all of us. That is the nature of complex systems: a small change in one part of the system can lead to a large change somewhere else. It's that proverbial butterfly that flaps its wings in one corner of the world that triggers a thunderstorm on the other side of the world. And regulators must consider such effects every time they think of changing something.

Besides being people themselves, and thus equally subject to human capabilities and limitations, everything regulators do involves people. Even when regulatory requirements specify some technical aspects of equipment, the regulations have to be interpreted and implemented by people. Furthermore, safety in the system is created by people, either through their designs or through their actions. And since the goal of all regulatory activity is to enhance safety, putting people at the centre of regulatory considerations is key to safety. Because of that, the new ICAO HP manual introduces human-centred design as a key element in regulatory thinking.

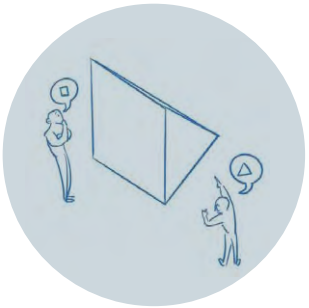
In addition to systems thinking and human-centred design, the new ICAO HP manual introduces five Human Performance Principles. These five principles provide ways to understand and thus support human performance and wellbeing. Understanding these principles and implementing that understanding in regulatory activity enables regulators to make it easy for people in the aviation system to do the right thing.

HP Principle 1. People's performance is shaped by their capabilities and limitations



The first Human Performance Principle states that people's performance is shaped by their capabilities and limitations. It discusses both physical and mental capabilities such as strength and creative thinking, and also some of the limitations. Again, there are physical limitations like the need for oxygen, food and sleep, and there are cognitive limitations such as forgetting. Human-Centred Design aims to support people's capabilities and compensate for their limitations. Regulatory requirements that are designed that way can do the same.

HP Principle 2. People interpret situations differently and perform in ways that make sense to them



Reminding regulators that people perform in ways that make sense to them and might interpret situations in different ways is the second HP Principle in the ICAO manual. This principle is particularly critical when trying to understand why people act the way they do, and is especially important in safety investigations. It is also central to the design of regulatory requirements that may be clear and unambiguous to the regulator who designed them, but may not be as clear and obvious to the person who has to implement them. Because people generally want to do a good job, it's important to remember that if somebody did something different to what the regulator (or the boss) intended, it's often because that different action made sense to them at the time that they did it.

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"Adaptation is key to system performance, because procedures are static, and work is dynamic"

HP Principle 3. People adapt to meet the demands of a complex and dynamic work environment

While interpreting situations, it is important to recognise that people continuously adapt to meet the demands of a complex and dynamic work environment. This is the third HP Principle of the ICAO manual. Adaptation is key to system performance, because procedures are static, and work is dynamic. It is key because task designers cannot foresee all possible situations in which the task may have to be performed (they too are human, and their imagination is also limited; see, Principle 1 above). This adaptation forms the basis of the now well-known difference between work-as-imagined and work-as-done (see *HindSight* 25).

HP Principle 4. People assess risks and make trade-offs

HindSight 17 focused on safety vs. cost. *HindSight* 29 dealt with goal conflicts and trade-offs. It's as if the Editorial Board of *HindSight* read an early draft of the fourth HP Principle which states that people assess risk and make trade-offs. This statement will come to you as no surprise, but it is an important reminder to us all that what we consider as risky may be different from what somebody else, for instance the regulator or the boss, would consider as risky. For some, the risk of modifying a procedure might be smaller than the risk of being late. Perhaps the threat of being judged by peers is greater than a disciplinary threat. And we are always faced with conflicting goals and so must negotiate trade-offs. This negotiation is the result of our risk assessment. There is no way around it.

HP Principle 5. People's performance is influenced by working with other people, with technology, and the environment

The fifth HP Principle in the ICAO manual deals with the ways in which people's performance is influenced by working with other people, by working with technology, and by working in a particular environment. Regulatory requirements have to be implemented in crews or teams, in working with technology, and always in the work environment. Understanding the ways in which these interactions influence human performance is key to establishing and enforcing good regulations that indeed support people in doing their best.

These five HP Principles, together with the concepts of systems thinking and human-centred design, form the foundation to integrating human performance considerations in regulatory action. The new ICAO *Manual on Human Performance for Regulators* lays that foundation and then details its implications for a variety of regulatory activities, including: the establishment of regulations and regulatory material; collecting and analysing data; evaluating and approving equipment, organisations, management systems, procedures and training programmes; and providing ongoing surveillance. In so doing, it enables regulators everywhere to make it easy for people to do the right thing. And the manual is relevant to us all, no matter what part we play in the global aviation system. Especially as we adapt to the new reality, we should keep human performance considerations in mind in everything that we do.

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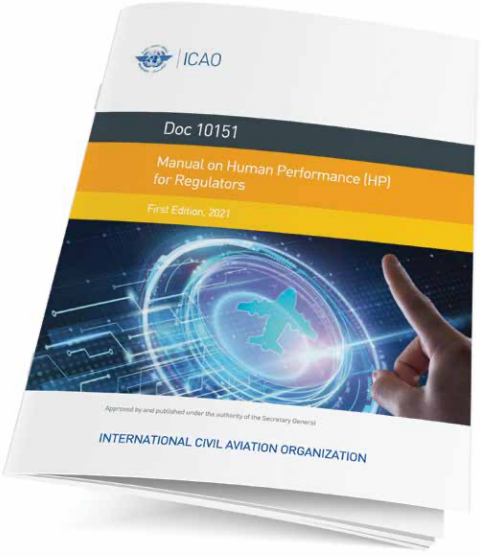

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