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Each of the previous speakers touched on this, but I want to put some focus on the need for a systems approach and integration as we work to modernize our air transportation systems around the world. With modernization of our air transportation systems around the world, we have an unprecedented opportunity, one in which we all have a role and responsibility. It will be important to focus on a cooperative systems approach and integration as we enter into the ICAO assembly

We've made substantial progress over the years in the focused areas of both safety and environmental improvements. Ten years ago, we saw dramatic action was required in the safety arena if aviation was going to continue to grow. Some estimates predicted a major accident per week if we didn't make dramatic improvements.

The Commercial Aviation Safety Team (CAST) set a goal of reducing fatal commercial accidents by 80 percent in the U.S. and fostering international safety improvement, which led to several partner activities around the world. CAST has largely met these goals and is committed to continue moving forward both in the US and internationally.

Despite the setbacks of 9/11 and other disruptions, aviation has continued to grow. But as CAST went forward, it recognized the need to better integrate safety and efficiency enhancements. At the time, however, there was no means to do this. We have the means now with modernization at the forefront. Air traffic management technologies are huge enablers of safety improvement for the future.

Take a look at ADS-B, which will form the backbone of the system in the U.S. The full capabilities of ADS-B can bring about significant improvements in situational awareness that have demonstrated safety benefits. Implementation of ADS-B technology under the CAPSTONE program reduced general aviation accidents about 50 percent in Alaska, and implementation of an ADS-B network in the Gulf of Mexico will bring full radar-like capability, and more, for helicopter operations.

Application to commercial operations can lead to similar safety benefits. As an example, let's look at its application to runway safety, which is getting increasingly risky as traffic continues to grow. A Transport Canada study found a 20 percent increase in airport traffic increases risk of runway mishap by 140 percent. ADS-B offers the potential for providing crews and controllers full situational awareness for ground operations, particularly in bad weather and poor visibility. Allowing crews to not only see their aircraft's location on the airport, but also all other aircraft on the ground and flying near the runways as well, will give significant increases in situational awareness and alerting to prevent runway accidents.

If we look only at the air navigation benefits of ADS-B technology, we can miss these opportunities and their full benefits. We see similar benefits to fully implementing Required Navigation Performance (RNP) procedures and Constant Descent Angle (CDA) approaches, both of which were identified by CAST as key safety enhancements. These procedures will bring efficiency and environmental benefits, but will bring challenges as well.

Like safety improvement, we have made remarkable progress reducing aviation's environmental impact. Let me throw out a few numbers.

- Although air travel continues to grow around 5 to 6 percent per year, the growth in our carbon footprint is only about half that rate.
- Since 1960, fuel burn (and CO₂) per passenger mile has been reduced 70 percent.
- During that same time, aircraft noise has been reduced 75 percent.

These results have come largely through implementing new technology into aircraft and engines, and everyone has played their part in doing so. However, to get to the next level of environmental improvement, we really need to look at the entire system. That's where air traffic management comes in.

It is now recognized that environmental issues may be the single biggest barrier to continued aviation growth around the world. Again, that's where we need to look at the air traffic management system, and the aviation system as a whole.

The International Air Transport Association (IATA) reports that modernizing the European air transportation system will reduce emissions by 12 percent. Likewise, the FAA says that transformation to the Next Generation Air Transportation System, called NextGen, will reduce emissions a similar amount, saving 37 tons of CO₂ per day. Right now, the issue of the day is CO₂ – and rightfully so. However, we need to ensure we keep a balance to our approach as we move forward.

Remember, we discussed capabilities that will improve operational efficiency and, as a result, reduce emissions. However, some of these may lead to increased concern over aircraft noise, which can be equally damaging to aviation's growth. Over the years, we have seen the environmental focus shift between CO₂ to noise to NO_x and back again. We have to make sure we work in a comprehensive manner, with the full systems view, to remain effective as we go forward.

The same principle holds true for safety. We have to resist the temptation for point solutions and look at the whole. Safety, environmental and air navigation improvements are integrally linked. Building off the benefits modernization brings to each strengthens the case for modernization and, as a result, will make it more likely modernization will occur.

We need that modernization to occur. The framework created by the NextGen and SESAR modernization initiatives each give us the type of integrated framework we need to move forward with a systems approach.

Since aviation is global, we need to ensure we integrate on a global basis. We must recognize the critical role ICAO must play on the full range of these aviation issues as we move toward a consistent, interoperable aviation system around the globe. It is fitting, then, that we talk about following a systems approach to aviation issues as we enter into the ICAO assembly. If we move forward with cooperation and integration, the overall benefits across navigation, safety, and the environment will be astounding.