INDRA'S SOLUTION SUCCESSFULLY COMPLETES FIRST SIMULATION TEST TO CONTROL THREE AIRPORTS SIMULTANEOUSLY FROM A REMOTE POSITION

- **This is the first step within SESAR towards a remote tower solution for controlling multiple airports, improving regional mobility in Europe**

- **While single remote tower control revolutionary concept has already been deployed, the greater impact in terms of cost-effectiveness will be generated by controlling multiple airports**

- **Three experienced air traffic controllers were individually exposed to different scenarios with increasing traffic load and complexity to assess their capacity to manage multiple airports**

- **Indra provided for this test its InNOVA controller working positions fully integrated with its 3D simulation environment**

Oslo, May 28, 2018.- Norwegian air service provider AVINOR with Indra and its Norwegian subsidiary, Indra Navia, as technology provider have successfully completed the first test in a series of validations within SESAR 2020 Programme to simultaneously manage traffic in multiple airports from a single remote position.

While single remote tower control has already been deployed and has been considered a revolutionary concept of Air Traffic Management, the most significant impact in terms of meeting business case objectives, operational cost-effectiveness and the lowest possible total cost of ownership is expected to be generated from multiple tower operations and/or remote centre applications.

Late March, Indra Navia hosted in their facilities at Asker the first validation exercise to assess the air traffic controller officers (ATCOs) capability when providing simultaneous air traffic services to three aerodromes from an integrated controller working position.

The testing platform, based on Indra air traffic management systems, provided a fully integrated 3D tower environment recreation of three Norwegian airports, Røst, Haugesund and Bodø with simulated traffic. All relevant information and controls were available through InNOVA, the integrated controller working position which included radar traffic views, meteorological information, relevant airport monitoring and control, and electronic flight strips for the three airports. The validation platform also composed of other tools such as voice communication system to the ATCOs.

A new short-term planning and management tool was developed specifically for the validation. This includes a time-line that provides the controller officers with an intuitive graphical indication of the imminent traffic load based on up-to-date estimations of arrival and departure times.

Three experienced ATCOs were individually exposed to three different scenarios with increasing traffic load and complexity. The exercises where followed by interviews and questionnaires on subjects such as situational awareness, human factors, workload, operational constraints, feasibility and tool support for further analysing.

The validation brings valuable information and results and will form an important base for the work towards the next maturity level of the multiple remote tower concept. Initial results clearly indicate that it is possible for a single air traffic controller to operate traffic at more than one airport simultaneously.

Avinor's Remote Tower Program will establish Remote Towers at 15 airports and control them from a Remote Tower Centre, and Multiple Operations is a vital part of our concept. "We are very happy that this validation shows we are on the right track", said Jan Østby, Director Remote Services, Avinor ANS.

El Programa de Torres Remotas de AVINOR contempla el despliegue de 15 de esta tecnología para gestionar 15 aeropuertos desde una Centro de Torre Remota. "Estamos muy contentos de que esta

validación haya mostrado que nos encontramos en el camino apropiado", afirmó Jan Østby, director de Servicios Remotos de AVINOR ANS.

About Sesar

As the technological pillar of the Single European Sky initiative, SESAR aims to modernise and harmonise air traffic management in Europe. The SESAR Joint Undertaking (SESAR JU) was established in 2007 as a public-private partnership to support this endeavour. It does so by pooling the knowledge and resources of the entire ATM community in order to define, research, develop and validate innovative technological and operational solutions. The SESAR JU is also responsible for the execution of the European ATM Master Plan which defines the EU priorities for R&D and implementation. Founded by the European Union and Eurocontrol, the SESAR JU has 19 members, who together with their partners and affiliate associations represent over 100 companies working in Europe and beyond. The SESAR JU also works closely with staff associations, regulators, airport operators and the scientific community.

Find out more about SESAR

About Indra

Indra is one of the world's top consulting and technology companies, the leader in IT in Spain, and the advanced technology partner for core business operations of its customers everywhere. It offers a comprehensive range of proprietary solutions and cutting-edge services with a high added value in technology, which adds to a unique culture that is reliable, flexible and adaptable to its clients' needs. Indra is a world leader in the development of end-to-end technology solutions in fields such as Defense and Security; Transport and Traffic, Energy and Industry, Telecommunications and Media, Financial Services, Electoral Processes, and Public Administrations and Healthcare. Through its Minsait unit, it addresses the challenges of digital transformation. In 2016 Indra posted revenues of €2,709m and had a workforce of 34,000 professionals, a local presence in 46 countries, and sales operations in more than 140 countries. Following its acquisition of Tecnocom, Indra's combined revenues amounted to more than €3,200m in 2016 with a team of nearly 40,000 professionals.