TCS helps INCOIS develop and deploy a sound tsunami early warning system

Customer
Indian National Centre for Ocean Information Services (INCOIS)

Industry
Government

Offering
Geospatial Solutions

In one of the deadliest natural disasters in recent times, the Indian Ocean tsunami, formed from an undersea earthquake on 26 December 2004 in the Indian Ocean, affected almost all the countries surrounding Bay of Bengal.

It is difficult to predict tsunamigenic earthquakes, but with latest technologies, early tsunami warning is possible. An early warning to administrators and the public can help 400 million people living in India's coastal regions save themselves. India can also share the information with neighbouring countries.

Shortly, after the disastrous December 2004 event, the Ministry of Earth Sciences, Government of India, commissioned a tsunami early warning system development and chose the Indian National Centre for Ocean Information Services (INCOIS) to set up the 'National Tsunami Early Warning Centre'. INOCIS had chosen TCS to develop the system.

TCS developed the tsunami early warning system using state-of-the-art IT and geospatial technologies. This first-of-its-kind implementation in the Indian Ocean region, provides real-time information to INCOIS scientists, helping them detect, assess and monitor tsunamigenic earthquakes and issue tsunami alerts.

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INCOIS provides ocean information and advisory services to the society, industry, government, and scientific community through sustained ocean observations and systematic and focused research. INCOIS, a knowledge and information technology enterprise for the oceanic realm, is pursuing focused programmes in the areas of Ocean Observation, Ocean Modeling and Ocean Information & Advisory services.

Business Situation

The Sumatra earthquake of December 2004 was the second largest earthquake in recorded magnitude. The earthquake caused a tsunami in the Indian Ocean causing massive destruction of life and property in the coastal regions of India, Sri Lanka, Indonesia, and Thailand.

Soon after the 2004 tsunami, the Ministry of Earth Sciences, Government of India, commissioned the development of a tsunami early warning system and chose INCOIS to set up the National Tsunami Early Warning Centre.

In order to create a sound early warning system, INCOIS needed an integrated system for N2 modelling, real-time monitoring of seismic data, tide gauge and Bottom Pressure Recorders (BPRs) data and decision support. The system needed to generate accurate tsunami alerts and disseminate tsunami information to scientists, researchers, administrators and the public through website, emails and SMS.

Looking for a partner to develop the system, INCOIS selected TCS. TCS was the first choice given the company's skills in software development, geospatial technologies, web technologies, hardware, and networking solutions.

TCS Solution

TCS developed a tsunami early warning system that provides scientists with necessary information for tsunami alerts, through access to real-time seismic data, monitoring of tide gauge data, and BPRs to assess the tsunamigenic potentiality of an earthquake. The system allows INCOIS scientists and decision makers to disseminate accurate tsunami alerts to the administrators and public.

Key features of the system include -

- N2Model application with the state-of-the-art geospatial technology to display the model output as layers on the maps with right symbols

- Real-time seismic data monitoring subsystem with GIS interface

- Tide gauge data monitoring subsystem with GIS interface

- BPRs data monitoring subsystem and Decision Support System (DSS) with GIS interface

- Web GIS-based website with state-of-the-art GIS web services

- Application for information dissemination through emails and SMS alerts

- Hardware and networking support

- Highly scalable solution with 24x7 availability

N2Modelling allows scientists to generate travel time contours and directivity maps and load the correct scenario from the pre-run scenario database. This makes it easy to predict the tsunami's travel time and assess the tsunamigenic potentiality of an earthquake.

TCS leveraged its quality framework and project management methodologies and experience in designing geospatial solutions to operationalise the system in a record time of eleven months.

INCOIS, with this new tsunami early warning system, has achieved recognition in the ocean services industry and is today helping other coastal countries formalise processes for establishing tsunami early warning systems.

The implementation has been successful and has been appreciated by many national and international technical forums with coverage in various GIS magazines, journals, and newsletters. This solution also received the "Geospatial solution of the year award" from Geospatial Today, a premier geospatial technology magazine.

Benefits

TCS provided INCOIS with the right technology skills at the right cost. Tsunami Early Warning Solution helps in –

- Accurately detecting tsunami 's in the Indian Ocean
- Alerting effected countries surrounding Indian Ocean
- Predicting the travel times for the Tsunami to reach a particular location along the coast
- Disseminating tsunami alerts to scientists, administrators and the people, helping reduce the damage to life and property

"It was great pleasure working with TCS on this project and this joint application development can be a role model for all government projects. It is not like TCS has been given the job and they do it or not, it is their problem, instead everything was treated as 'OUR' job and TCS has taken extra effort to get involved and resolved all the issues."

- Director, INCOIS

About TCS Engineering and Industrial Services

Engineering and Industrial Services (EIS) is a strategic business unit of TCS that offers a wide spectrum of engineering services and solutions, covering new product development, product lifecycle management, plant solutions and geospatial technology solutions. These services & solutions cater to different industry verticals such as Aerospace & Defense, Automotive, Hi Tech, Telecom, Energy & Utilities, Government, Industrial Machinery and Medical Devices.

About Tata Consultancy Services

Tata Consultancy Services is an IT services, business solutions and outsourcing organization that delivers real results to global businesses, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled services delivered through its unique Global Network Delivery Model™ recognized as the benchmark of excellence in software development.

A part of the Tata Group, India's largest industrial conglomerate, TCS has over 100,000 of the world's best trained IT consultants in 50 countries. The company generated consolidated revenues of US $5.7 billion for fiscal year ended 31 March 2008 and is listed on the National Stock Exchange and Bombay Stock Exchange in India.
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