Good Practice #10 – Monitoring system of the viaduct on the Val Polcevera

Location of the organisation in charge:	Country	Italy
	Region	Liguria
	City	Genoa
Main institution in charge:	Seastema and Cetena (Fincantieri Group)	

Good practice general information		
Geographical scope of the practice:	Local	
Location of the practice	Country	Italy
	Region	Liguria
	City	Genoa

Practice image:	
Title of practice:	[53/100 characters] Monitoring system of the viaduct on the Val Polcevera

Good practice detailed information	
Short summary of the practice:	[147/160 characters] The Monitoring System is composed of a Supervision and Control System (SCADA), a Structural Monitoring System and an Inspection and Cleaning Robot.
Detailed information on the practice:	[1373/1000-1500 characters] The Supervision and Control System (SCADA) is highly safe and reliable, allowing to detect potential IT intrusions aimed at compromising the stability of the system. It is based on the proprietary Marine Portal Evolution platform, designed on a distributed architecture that includes operator stations and data acquisition servers. The system provides operators the possibility to monitor and manage the technological systems (e.g. dehumidification, street and decorative lights, telecommunications, cameras) in real time with the main summary synoptic panel and multiwindow graphics. The Structural Monitoring System – on the basis of design data from the bridge designer – can identify: - Physical quantities to be measured and the positions where to measure them - Optimal sensor typologies and installation methods - Measurement ranges and verification algorithms The robotics include four systems of two distinct types (Robot-Inspection and Robot-Wash) that travel on rails on the north and south sides of the viaduct. - Robot-Inspection is designed to inspect the lower surface of the viaduct through vision systems for irregularities or changes of the surface. - Robot-Wash is designed to remove particulate that settles on the surface of the glass of the noise barriers and the photovoltaic panels, using brush and air blow technology exploiting the moisture present.

Resources needed:	*[186/200-300 characters]* To make it possible in such a short period, a task force was formed by municipality staff and the mayor as special commissioner to ensure time and cost management. Resources: 1,280,108 €
Timescale (start/end date):	2019-2020
Evidence of success (results achieved):	*[480/300-500 characters]* Innovative elements: operation of the two robots, data collected by intelligent sensors, environmental sustainability ensured by photovoltaic panels The results of the first year of observation were satisfactory: the parameters of the viaduct fall within expectations – the analysis also suggested how to make small changes to them to optimize the readings. Based on the measurements, definitive warning and alarm thresholds will be set, driving the operating limits of the bridge.
Challenges encountered:	*[300 characters] Please specify any challenges encountered/lessons learned during the implementation of the practice.*
Potential for learning or transfer:	*[794/500-1000 characters]]* One of the best examples of transferability is the fruitful collaboration of the municipality with Cetena S.p.A. and SEASTEMA S.p.A. – companies of the Fincantieri Group – regarding the technology that revolves around the bridge. These two companies have developed innovative systems for structural monitoring, supervision and control, including robotic automation systems for the construction of a new technological and "smart" bridge. The integrated system is able to control and monitor the bridge structure, collect data for understanding the evolution of the infrastructure over time and inspect the deck. The high-tech structure of the bridge will ensure constant monitoring and collect data and information useful for its maintenance, reliability and sustainability in the years to come.
Further information:	*Link to where further information on the good practice can be found*
Keywords:	*Select from existing keywords* (something similar to *big data, data analysis*)