

# **SecureGas: D1.4 KPIs Inventory**

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***This is only the executive summary.  
The full deliverable will be available once approved by the EC/REA***



# SecureGas

## D1.4 – KPIS INVENTORY

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## REVISION TABLE

Version	Date	Comments
V0.1	25/09/2019	First draft of D1.1 with ToC
V0.2	15/10/2019	Integration of end-users feedback
V0.3	6/11/2019	Integration of component KPIs and draft version of SecureGas – Cross Requirements
V0.4	18/11/2019	Update of KPIs based on additional feedback received (validated after the dedicated telco on the same day)
V0.5	22/10/2019	Final draft by GAP
V0.6	27/11/2019	Internal review by FGH (WP1-Lead)
V0.7	01.12.2019	Scientific Review (Scientific Coordinator, FHG)
FINAL	16/12/2019	Final review by RINA-C

### Disclaimer

The work described in this document has been conducted within the SecureGas project.

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## SecureGas – PUBLISHABLE EXTENDED ABSTRACT

SecureGas focuses on the 140.000 km of the European Gas network covering the entire value chain from Production to Distribution to the users, providing methodologies, tools and guidelines to secure existing and incoming installations and to make them resilient to cyber-physical threats. Three business cases, addressing relevant issues for the Gas sector and beyond (e.g. oil) have been identified in order to ensure that the delivery of the solutions and services are in line with the clear needs and requirements of the project.

These needs and requirements are focused on risk-based security asset management of gas transmission and distribution networks, impacts (economics, environmental and social) and cascading effects of cyber-physical attacks on European Gas grids (both cascading and interconnected). It is aimed to achieve better risk control and resilience through the operationalization of resilience guidelines and strategic installations across the EU gas network.

SecureGas tackles these issues by implementing, updating, and incrementally improving extended components, integrated and federated according to an High-Level Reference Architecture built upon the SecureGas Conceptual Model, a blue print on how to design, build, operate and maintain the EU gas network to make it secure and resilient against cyber-physical threats. The components are contextualized, customized, deployed, demonstrated and validated in each business case, according to the scenarios defined by the end-users. Related services provided by SecureGas will be offered to the end-users via a Platform as a Service (PaaS), that allows modularity, flexibility, cooperation and third-party interoperability, thus securing a long-lasting impact, supporting the project exploitation strategy.

A multidisciplinary consortium (Gas operators, technology providers, research institutions, sector-related associations), supports the project implementation across Construction, Demonstration and Validation phases, as well as a Stakeholder Platform ensures inputs, advise, and a wider Diffusion of the project outcomes.

The present Deliverable 1.4 focuses on the identification of Key Performance Indicators (KPIs) for the SecureGas platform, its components and related services developed according to the operational and regulatory requirements as identified in Deliverable 1.1, the technical requirements as specified in Deliverable 1.2 and countering the potential threat landscape as described in Deliverable 1.3. The deliverable describes how the KPIs are developed along with the roles of the partners in this process. The structure of the rich KPI listing is explained based on the technical solution provision and the expectation of the end users. The main body of the deliverable are the listing of KPIs on solution component level and cross-sectorial KPIs. Finally the KPI list is discussed regarding its implications for the concept model and the high level reference architecture of Task 2.1 and its further versions as well as the technical solution specification of Task 2.2 and related interfacing tasks of WP2. It is shown how the KPIs are expected to be used for further development and testing in WP3, and more specifically within the business cases in WP4 to WP6.

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## ABBREVIATIONS AND ACRONYMS

<b>AD</b>	Active Directory
<b>BC</b>	Business Case
<b>BCH</b>	Blockchain for Data Transmission and Integrity Verification Mechanisms
<b>CI</b>	Critical Infrastructure
<b>CM</b>	Conceptual Model
<b>CONOPS</b>	Concept of Operations
<b>CRS</b>	Cross-Requirements
<b>CROP</b>	Common Relevant Operational Picture
<b>DET</b>	Biometrics and Video Analytics
<b>DoA</b>	Description of Action
<b>DSS</b>	Decision Support System
<b>ECI</b>	European Critical Infrastructure
<b>GEO</b>	Geohazards Assessment
<b>GNS</b>	Gas Network Advanced Modeling and Fast-Dynamics Simulations
<b>HLRA</b>	High Level Reference Architecture
<b>IDD</b>	Intrusion and Defects Detection
<b>IDEA</b>	Intrusion Detection Extensible Alert
<b>IDMEF</b>	Intrusion detection message exchange format
<b>INT</b>	Integration and Interoperability Layer
<b>IPM</b>	Data Analytics and Machine learning for cyber-physical security
<b>JSON</b>	JavaScript Object Notation
<b>KPI</b>	Key Performance Indicator
<b>KSI</b>	Keyless Signature Infrastructure
<b>LDAP</b>	Lightweight Directory Access Protocol
<b>LP</b>	License Plate
<b>MB</b>	Megabyte
<b>MM</b>	Multi-mode
<b>OCR</b>	Optical Character Recognition
<b>OSP</b>	Operator Security Plan
<b>OT</b>	Operational Technology
<b>OTS</b>	Cyber Security for IT and OT network weaknesses
<b>PIMS</b>	Pipeline Integrity Management System
<b>PTZ</b>	Pan-Tilt-Zoom
<b>RAW</b>	Risk-Aware Information to the Population
<b>RBAC</b>	Role Based Access Control
<b>RMG</b>	Joint Cyber-Physical Risk and Resilience Management
<b>SeMS</b>	Security Management System
<b>STIX</b>	Structured Threat Information Expression
<b>SM</b>	Single-mode
<b>SMS</b>	Safety Management System
<b>TRL</b>	Technology Readiness Level
<b>UAV</b>	UAV-based Asset Management
<b>UR</b>	User Requirements
<b>WP</b>	Works Package





## EXECUTIVE SUMMARY

The present deliverable D1.4 is the final deliverable of WP1 “SecureGas requirements, risks and threats identification” and the main outcome of task T1.4 “Key Performance Indicators (KPIs)”. Deliverable D1.4 targets the definition of the SecureGas KPIs, which are regarded as a measurable way to assess the SecureGas project’s efficiency in reaching its key objectives and also to track the progress of system development while evaluating its performance. Through the KPIs, the main areas to be tested, measured and validated are being defined.

The ultimate goal of D1.4 is to define two sets of KPIs, the *SecureGas component KPIs* and the *SecureGas Cross-KPIs*. Following a bottom-up rationale, the SecureGas component KPIs were firstly defined by the component providers (technical partners), reflecting the most important performance characteristics offered by each SecureGas component, and specifically by the eleven SecureGas extended components and the Integration and Interoperability layer (twelve components in total). The SecureGas component KPIs provided then the basis for the definition of the SecureGas Cross-KPIs, which reflect the expected key functionalities of the entire SecureGas solution (all components integrated into one system).

Considering that the KPIs depend, amongst others, on the end-users interested in the SecureGas system, their active engagement to the KPIs’ development activities enabled the definition of meaningful and tangible metrics. Indeed, the SecureGas end-users (AMBER, DEPA, EDAA, ENI) provided a list of KPIs they apply to assess the effectiveness of their management systems (such as Safety Management System, Security Management System, Pipeline Integrity Management System, Asset Management System) and to ensure the secure and safe operation of their Gas CI network. That list, along with the already defined User Requirements (URs), the Technical Requirements of each component and the Cross-Requirements (CRS), the Conceptual Model (CM) and Concept of Operations (CONOPS) as well as the High Level Reference Architecture (HLRA) were instrumental for development of the KPIs inventory. In addition, special emphasis was given on the feedback received by the external stakeholders, during the dedicated workshop held in Freiburg in M4.

The KPIs inventory developed within the present deliverable comprises 70 SecureGas component KPIs and eleven SecureGas Cross-KPIs. The KPIs are classified in distinct Dimensions and/or Fields, which reflect the general areas where the impacts are going to exert their effect, and are also linked to detailed descriptions and target values that set specific goals for the development and implementation phase. In addition, the SecureGas Cross-KPIs manage to address all the seven Risk and Resilience Phases, i.e. Prepare, Detect, Prevent, Absorb, Respond, Recover, Learn and Adapt, showcasing that the SecureGas solution do have the potential to add value and foster the implementation of all panarchy loop steps and thus to further enhance the security of the Gas CI network before, during and after an incident occurrence.

The KPIs of D1.4 will be further customized, at a later stage, to address the specific requirements and needs of each Business Case, formulating the so-called BC-KPIs. The BC-KPIs, will be extracted upon the definition of the Business Case scenarios and will be reported in D7.1. Those KPIs are the ones that will be finally measured at the three pilot demonstrations (WP4, WP5 and WP6).

The KPIs of D1.4 are envisaged to support the targeted development and realization of the SecureGas components towards well defined and tangible goals and to ensure that project objectives are being met throughout its entire lifespan.