CitySCAPE Italian Web Conference 2021

Advanced approach to economic impact and cost-benefit analysis

Pietro De Vito, Project Manager in CitySCAPE

STAM S.r.l.

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Who are we?

CitySCAPE

STAM is an engineering company that supports its clients in addressing new business opportunities and technological challenges by leveraging multidisciplinary expertise and practical experience in four major industrial sectors.

Security & Logistics

Energy, circular and sustainable economy

Space & Defence

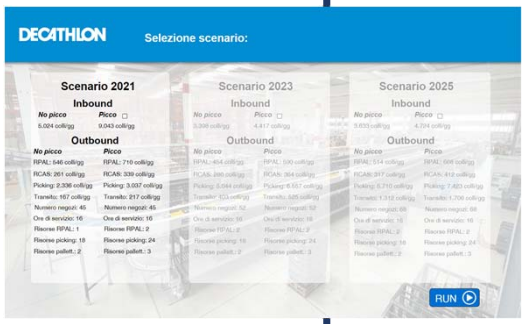
Industry & Automation

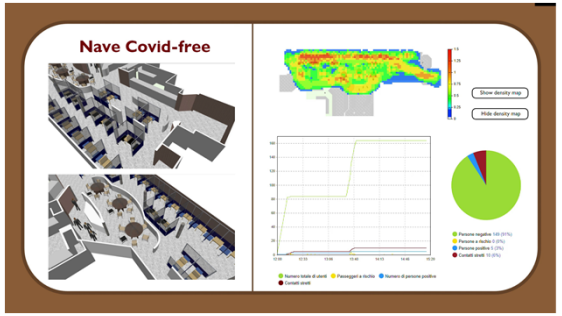
Modelling & Simulation Area

- **Modelling and simulation** of complex systems and processes
- **Assessment of the security risk** of critical infrastructures and soft targets
- **Cost benefit** analysis
- **Modelling & Simulation** of the crowd
- **Optimization and Simulation** of flows (logistics, traffic, processes, etc.)
- **Simulation of different scenarios** (e.g., terrorist attacks, pandemic, crisis, etc.)
- **Virtual assessment** of solutions and procedures

Key Assets of M&S Area

Stand-alone Simulators



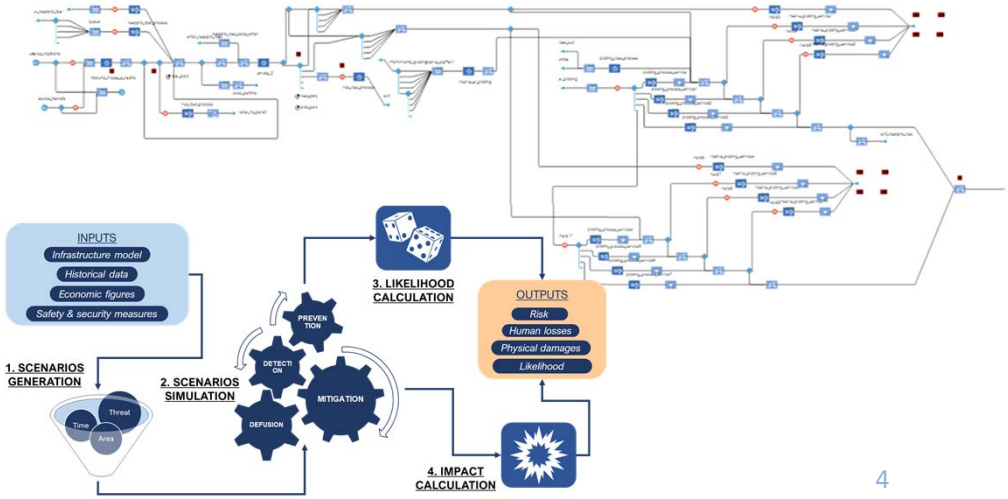


Software Licenses

ANSYS · MATLAB SIMULINK · python · anylogic · ANGULAR

Decision Support Tool

M&S Methodologies



Cost Benefit Analysis

What is a Cost-Benefit Analysis (CBA)?

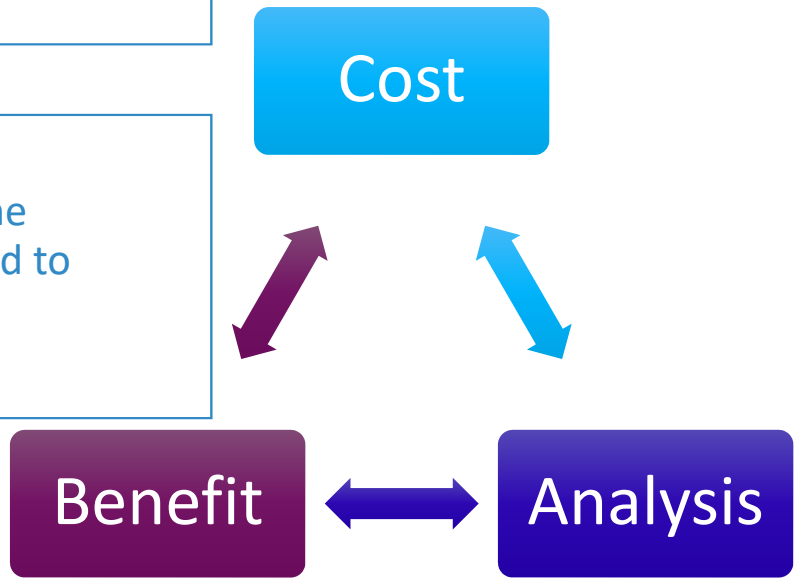
- CBA is a mathematical tool used in decision making to determine whether the perceived benefits exceed the projected costs of a project, providing information and estimates on the project's return on investment.

- Cost is the value of money that has been used to produce something, and is therefore no longer available.
  - Non-recurring costs: Costs for the project defined as one-off.
  - Recurring costs: Costs that are incurred periodically or for a specified period of time.

- Benefits are the monetary values of the desirable consequences of economic policies and decisions.
  - Quantitative benefits: reduction of dedicated administrative staff and storage space.
  - Qualitative benefits: improved response times and decision making.

Cost Benefit Analysis pillars

- There has to be a common unit of measure.
- The benefits are usually measured by market choices.
- Mainly based on Net Present Value (NPV):
  - It is the difference between the present value of a benefit and the present value of the cost after the rate of return has been applied to it.
  - The NPV to be acceptable must be> 0



Our approach

- The STAM approach for cost-benefit analysis is based on the results obtained from the risk assessments generated by Risk Assessment tools.
- Among the parameters taken into account in the analysis, the following are taken into account:
  - ✓ The economic value of the tangible asset.
  - ✓ The prolificacy of the services provided by the organization, and the percentage of revenues associated with each customization service.
  - ✓ The integrity of an asset, which provides an indication of the cost required for a particular asset intervention
  - ✓ The integrity of the service, which helps to estimate the downtime and the related economic losses.

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Our approach

- Subsequently, it is essential to consider the evaluation of the investment required for a new security measure. The latter is characterized by two economic indicators:
  - CAPEX, which includes the cost of acquiring a new (one-off) security measure.
  - OPEX, which includes the costs for maintenance and maintenance of the security measure. (Includes annual / monthly costs of licenses, or personnel involved in maintenance)
- It is also important to consider that costs can be of two types:
  - Proactive: for example related to information gathering and debugging the installation, as well as maintenance costs
  - Responsive: associated with a faster and more effective response to be applied in order not to incur an increase in downtime along with the resources needed to repair systems.

Our approach

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ENGINEERING

Intangible assets:
such as the reputation and brand value of the organization.

STAM
MASTERING EXCELLENCE

Tangible assets:
All those assets that can be physically damaged and that can cause disservices

FIMCA

Financial IMpaCt Assessment engine

Our approach

The main economic indicator that will be considered is the Return on Sustainability Investment, that is the ROSI:

$$ROSI = \frac{ALE - mALE - Cost\ of\ the\ solution}{Cost\ of\ the\ solution}$$

- Where ALE is the annual monetary loss associated with a specific risk.
- While mALE is the modified parameter to implement the security measure.

ROSI evaluates the return on investment, establishing in this sense how many losses have been avoided thanks to that particular investment.

CIS Controls

For the countermeasures we referred to the CIS Control (Center of Internet Security) which are 18 categories of security measures divided by activity and application target.

Each of them contains several specific security measures. In all there are 156 and refer for example to physical systems, data protection, or defence against malware attacks.

The security measures of the CIS Controls are in turn assigned to a particular implementation group:

- IG1, security measures based on minimum security standards
- IG2, more specific security measures than IG1
- IG3, includes all possible security measures

CIS Controls

Currently, there are ongoing activities to better adapt the CIS Controls to the context of CitySCAPE. In this sense, efforts are focusing on:

- Estimate the costs of implementing countermeasures (CAPEX and OPEX).
- Map the CIS Controls to the threats that will be considered in CitySCAPE.
- Business value attribution which will then be used by the Risk Assessment tool (RITA) to assess the residual risk. These business values refer to Confidentiality, Integrity and Availability (as per ISO 27001).

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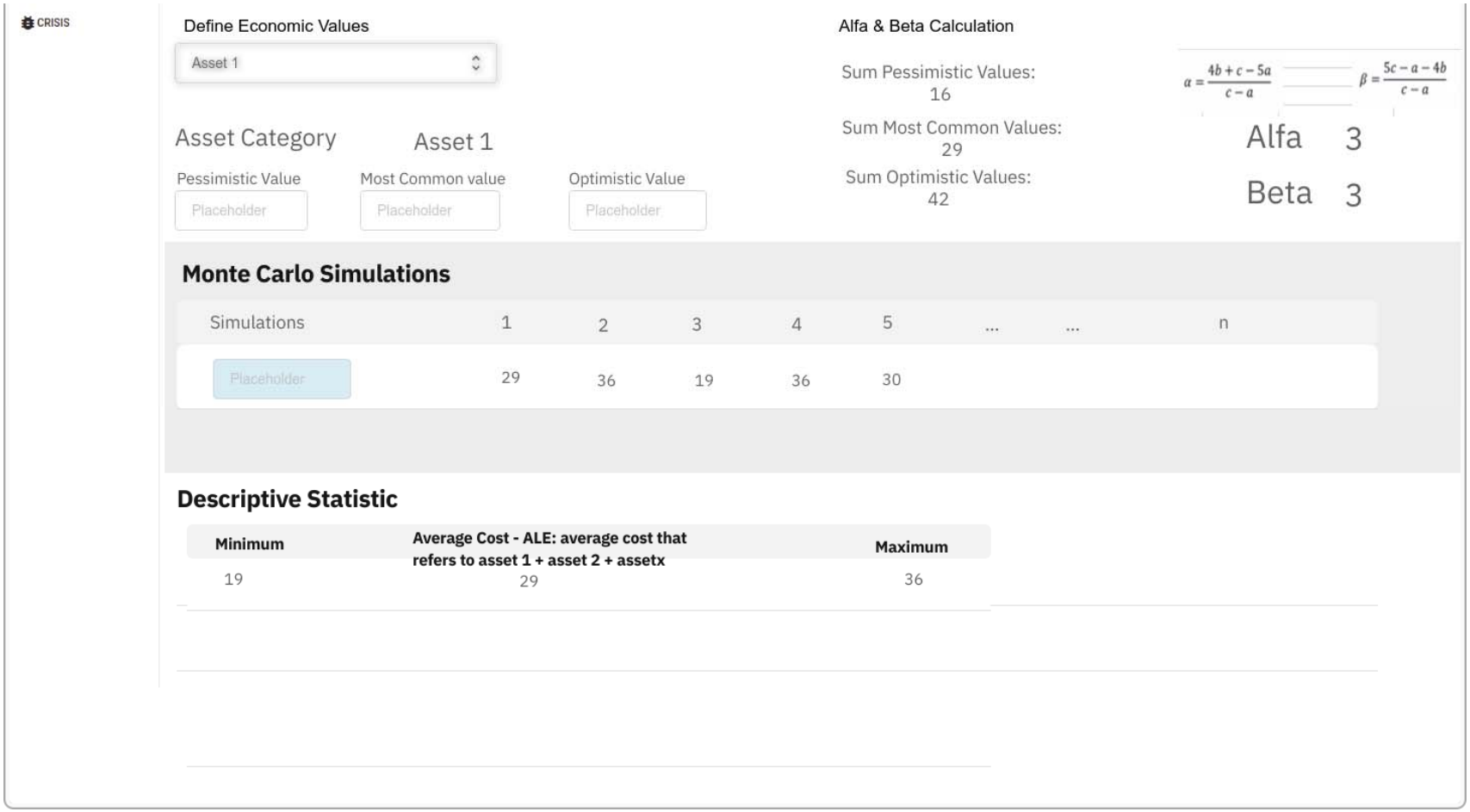
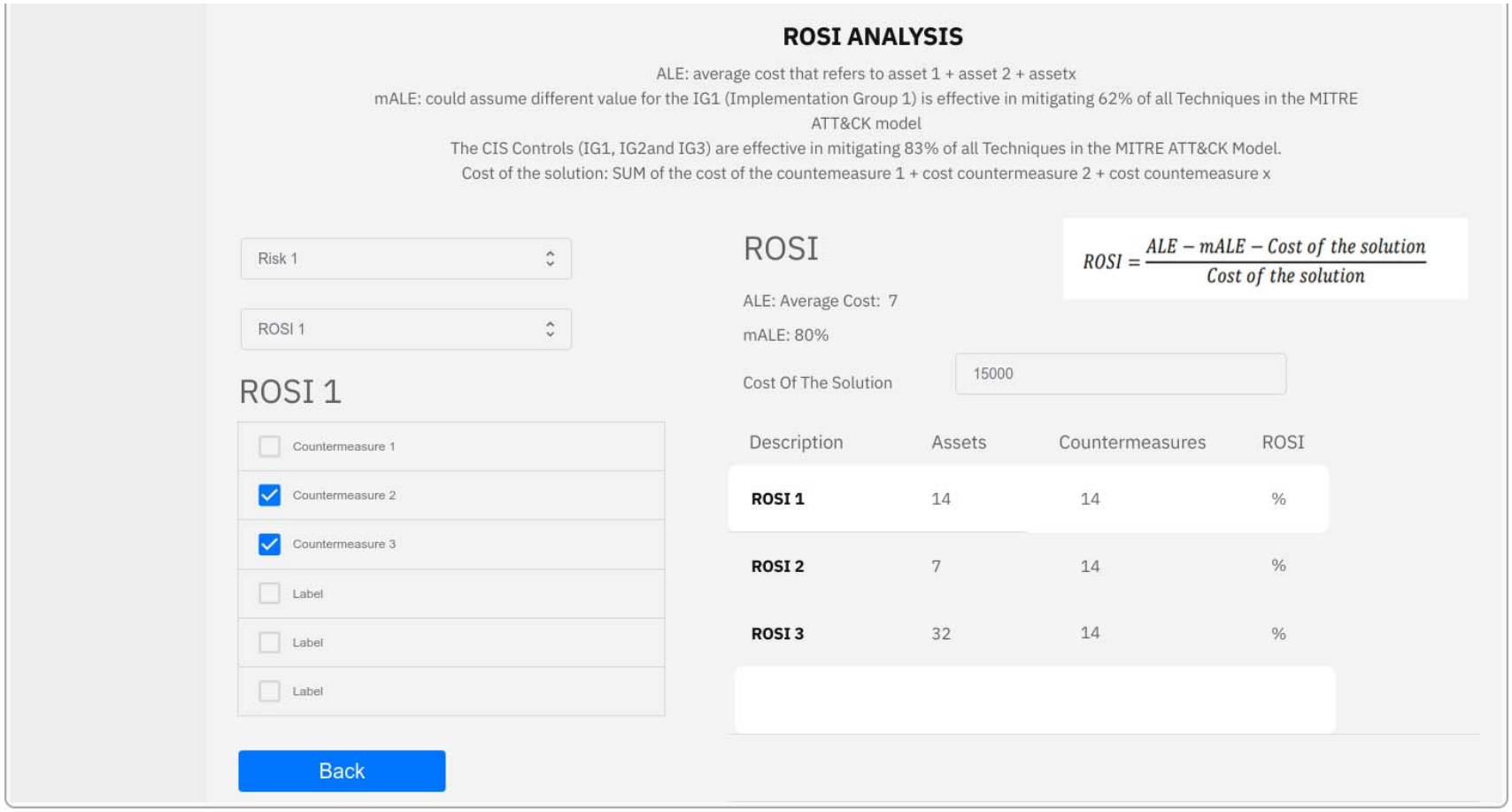
The 18 groups of CIS Control

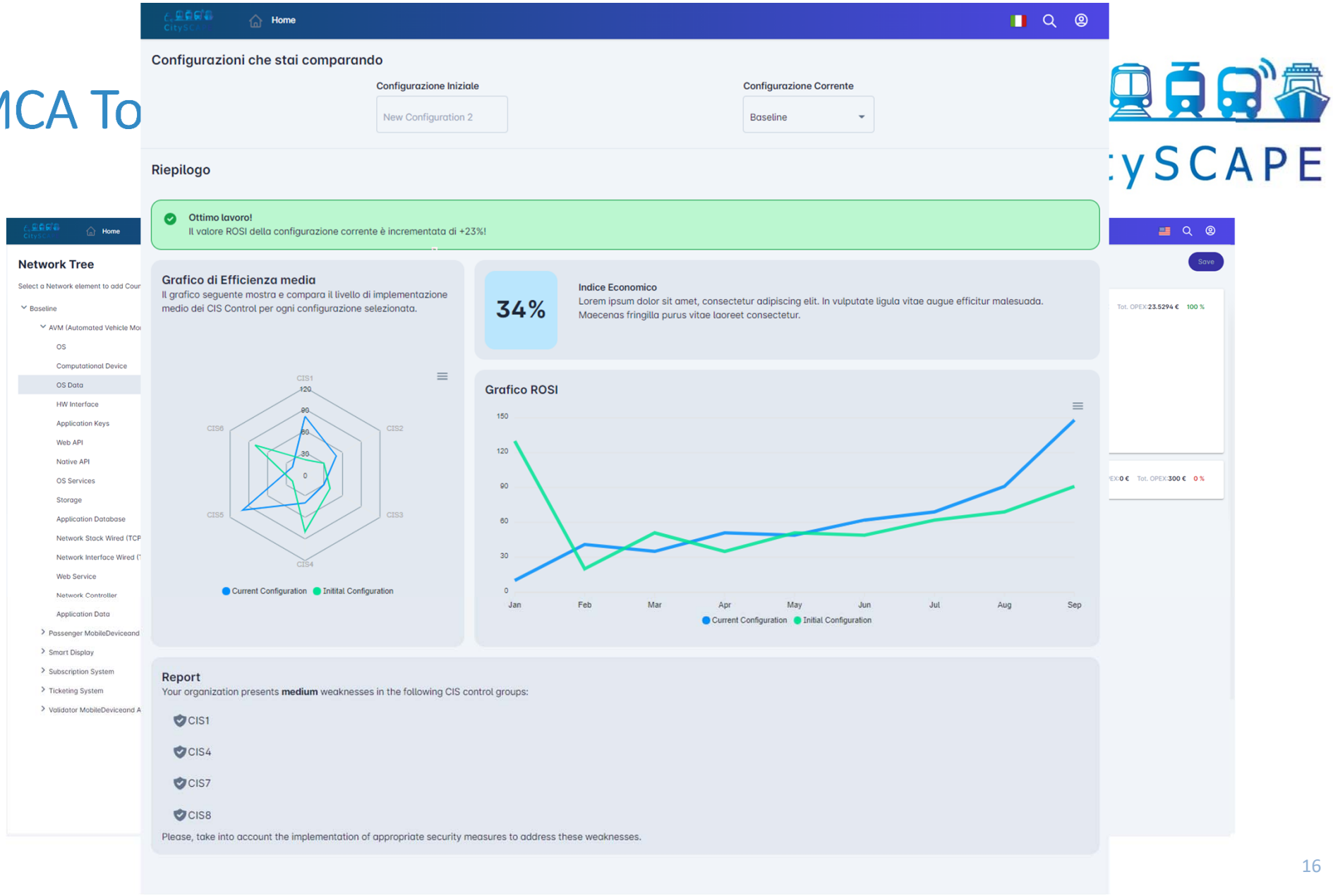
FIMCA Tool (ENG)



FIMCA Tool (ENG)



FIMCA To


Home
Configurazioni che stai comparando
Configurazione Iniziale
New Configuration 2
Configurazione Corrente
Baseline
Riepilogo
Ottimo lavoro!
Il valore ROSI della configurazione corrente è incrementata di +23%!
Grafico di Efficienza media
Il grafico seguente mostra e compara il livello di implementazione medio dei CIS Control per ogni configurazione selezionata.
CIS1
CIS2
CIS3
CIS4
CIS5
CIS6
Current Configuration
Initital Configuration
34%
Indice Economico
Lorem ipsum dolor sit amet, consectetur adipiscing elit. In vulputate ligula vitae augue efficitur malesuada. Maecenas fringilla purus vitae laoreet consectetur.
Grafico ROSI
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Current Configuration
Initial Configuration
Report
Your organization presents medium weaknesses in the following CIS control groups:
CIS1
CIS4
CIS7
CIS8
Please, take into account the implementation of appropriate security measures to address these weaknesses.
Network Tree
Baseline
OS
Computational Device
OS Data
HW Interface
Application Keys
Web API
Native API
OS Services
Storage
Application Database
Web Service
Application Data
Passenger MobileDeviceand
Smart Display
Subscription System
Ticketing System
Save

Any questions?

Thank you!

Pietro De Vito

p.devito@stamtech.com

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