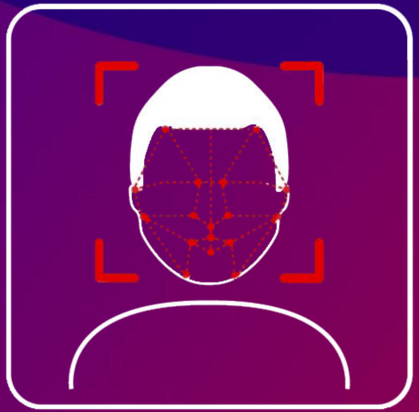
TRASSIR®

Face Recognition+ INT

Video analytics module for facial recognition



TRASSIR today

TRASSIR®

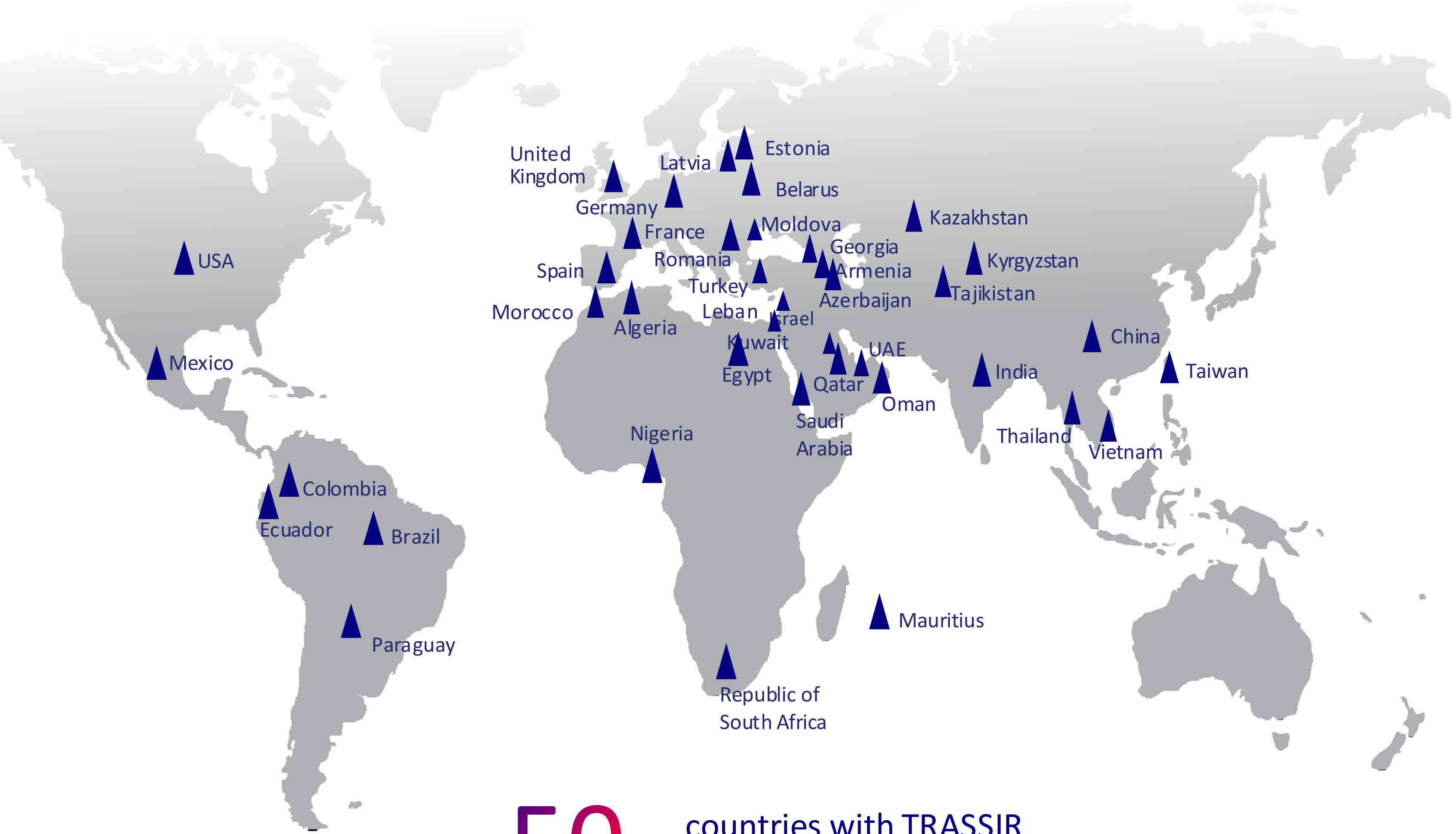
Experience in CCTV surveillance

SINCE 2002

15 000 +

loyal customers around the globe

3 R&D centers



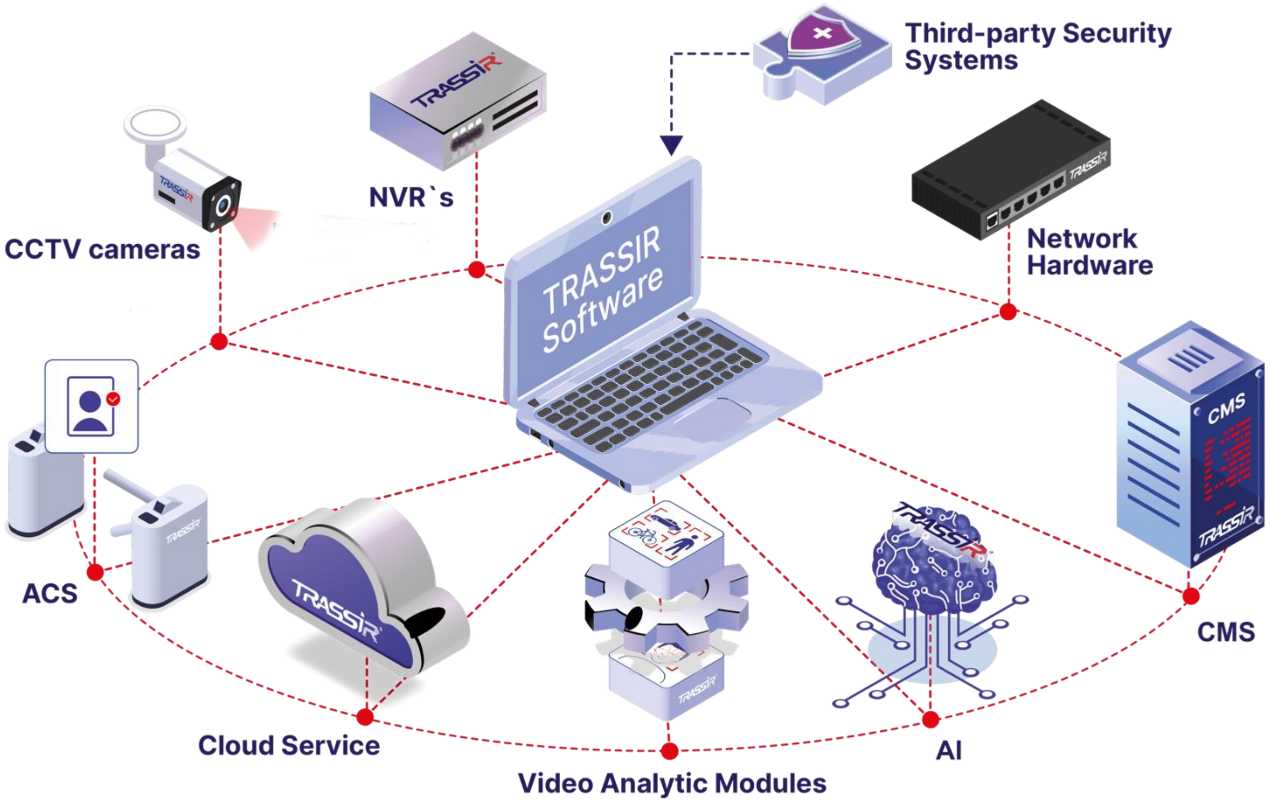
50 countries with TRASSIR installations

TRASSIR open digital platform includes

TRASSIR creates advance solutions in the field of security and automation

TRASSIR'S GOAL

to improve the security of society, sustainability and profitability of businesses using machine perception and event prediction technologies



Face Recognition+ INT Module Technology

Capable of Differentiating Real Faces from Photographs

Task:

When using facial recognition for dual-authorization ACS, you may encounter a situation where employees use badges and photos of their colleagues to simulate their presence in the workplace. As a result, the employee receives a salary without actually having been at work

Solution:

Such fraud can be eliminated thanks to the "facial vividness" detection function. This technology allows to distinguish a live person's face from a photo and deny access if there is a photo in the frame

Creating a Database of Unique Persons

The database of unique individuals stores reference photos for comparison purposes. All instances of a person recognized in the video are recorded in the face log

How the database of unique individuals is created

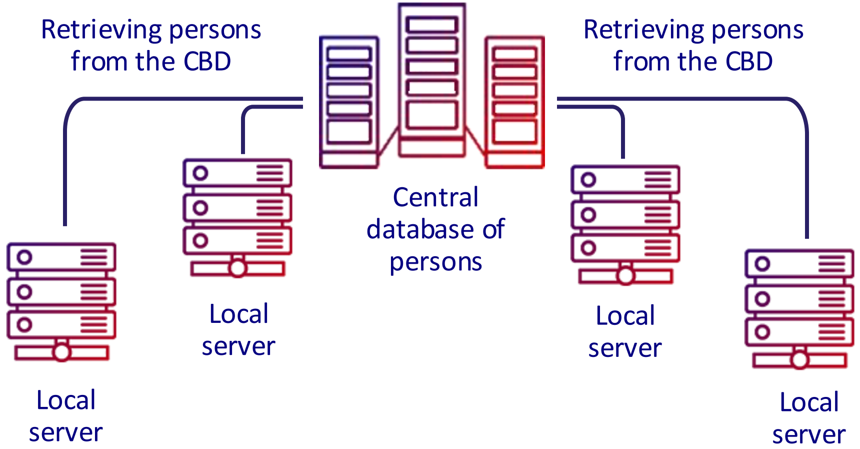
- Add photos of individuals through the operator interface.
- Create a new person and upload a facial photo using the face log.
- Import a database containing photos.

Additional

- You can copy and transfer databases of individuals from one server to another.
- When adding photos to the person database, the system performs the following verifications:
- It prevents the addition of duplicate entries for the same individual, even if different photos are used.
- It disallows the addition of photos that do not contain a recognizable face.
- These verifications streamline database administration and ensure the database remains current.

Using a Central Face Database

Face Recognition+ INT supports a multi-server system: it successfully operates as both part of a single server and in a multi-server system with a single Face Database, thereby there will be no need to create identical databases on each server.


Retrieving persons from the CBD
Retrieving persons from the CBD
Central database of persons
Local server
Local server
Local server
Local server

How does it work:

A central database of faces is stored on one of the servers. Other servers connected to the main one are using it for storing Face Recognition events.

Advantages:

Ease of administration: you can make changes to the face database on the central server only.

Face recognition works even when the connection between servers is unstable

Counting Unique Visitors

The visitor analytics function is integrated with the TRASSIR Face Recognition+ INT module with the TRASSIR Face Analytics module – a face recognition and analytics module.

Counting unique visitors

TRASSIR Face Recognition+ INT allows to count only unique visitors captured on cameras not taking in account the ones who were recognized before for a certain period of time.

Visitor analytics

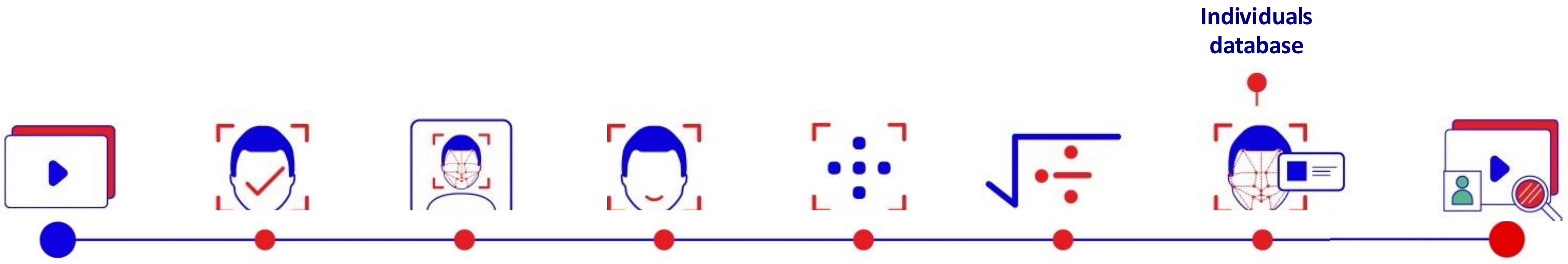
Utilizing data from the Facial Analytics module, you can access detailed reports that offer insights into audience composition based on the identified characteristics

Advantages:

With the information collected, you can create a visitor profile and leverage it to develop an effective marketing strategy.

Face Recognition+ INT Module Features

How Does Face Recognition+ INT Work?



Individuals database

Video stream

Detection

Detecting a face in a frame

Determination of key points

Finding anthropometric points on the face

Facial expression

Converting facial images to a single format

Determination of image quality

Assessing image quality for efficient recognition

Extraction of feature vector

Identifying characteristic features and translating them into a mathematical formula

Face recognition

Checking if there is a match of the face with a person from the database

Recognized faces log

False Detection Filtering Technology

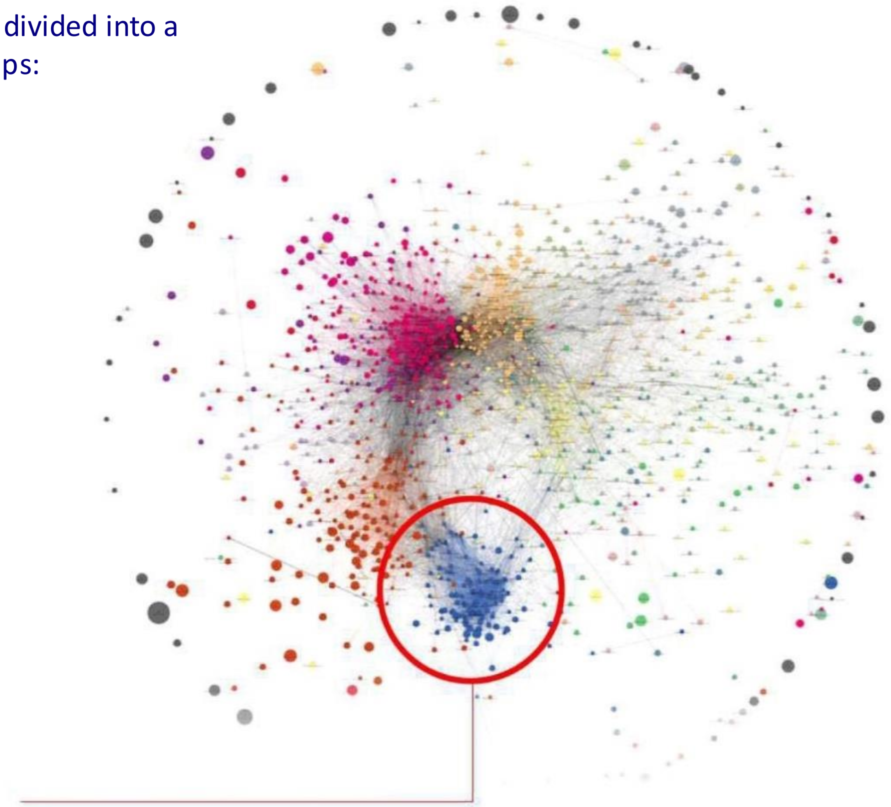
We implemented a false detection filtering technology based on clustering.

Faces are distributed into clusters by similarity
The neural network conditionally distributes faces into 400,000 clusters grouped by similarity and determines which cluster it belongs to.

A ‘garbage cluster’ is formed
The ‘garbage’ cluster includes low-quality facial images and images of objects that are not faces.

False detection is identified and discarded
After highlighting facial features, the face is checked if it falls in the ‘garbage cluster’. If it falls into this cluster, it is most likely a false detection and is discarded.

All faces can be divided into a plurality of groups:



If a face falls into this group, it is most likely a false detection!

Precision and Reliability in Facial Recognition

Face detection quality, even at difficult angles:	99.8%
Number of false face recognitions:	~0%
Number of false detections:	The number of false face detections (arms, legs, bags etc) drops to 0

Feature vector-based tracking introduced:

✓ If a face exits the frame and later reappears, the Face Recognition+ INT module will match it with the previously detected face by comparing unique facial features, ensuring continuous tracking

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Ready-made business and security solutions with Face Recognition+ INT

Banking Sector

Document Forgery Fraud

When a client presents a document for withdrawal, the manager compares the photo of the true account holder from the CRM database with that of the potential fraudster. If there is a discrepancy in appearance, the manager adds the fraudster's photo to a centralized fraud database accessible to all bank branches.

Preventing transactions with someone else's bank card

The system recognizes the face of the person making transactions with a card at an ATM and compares it with the photo of the genuine card owner from the CRM. If there is a discrepancy, the manager contacts the real owner or blocks the card.

Detecting bank card theft

A client forgot their card in the ATM, and the next client retrieved it before the ATM could withhold it, subsequently making unauthorized purchases. Thanks to the face recognition module, the incident was easily investigated as the module captured the thief's face, allowing for recognition and blacklisting.

Preventing unauthorized access to data

An access control system with dual authorization based on biometric features will help prevent intruders from entering the bank office and leaking information. Thus, the use of a stolen pass or someone else's pass in collusion with its owner is avoided.

Retail

Tackling theft

A special list, such as "Thieves," is created to include individuals who commit theft in the store. When a person from this list visits the retail location, the module promptly sends a notification to the staff. The staff member monitors the actions of the suspicious individual and, if necessary, detains them at the exit.

Tackling employee fraud

The facial recognition module is used to monitor compliance with staff workday regulations, including the duration of breaks and time spent outside the work area. It eliminates fraud related to the transfer of access passes to unauthorized individuals and generates a report with evidence detailing the actual hours worked by each employee.

Industry

Maintaining privacy

An access control system with dual authorization, using face as an additional identifier, will prevent unauthorized access incidents resulting from the theft or transfer of the identifier to third parties

Monitoring visits to the company

An access control system is deceived by presenting an identifier and a large photograph of its owner at the checkpoint rather than the actual person's face to simulate the person's arrival at the workplace. Face ‘aliveness’ recognition technology will detect such fraud.

Business Centers And Offices

Monitoring employee performance

The access control system is integrated with the face recognition module to determine the employee's arrival and departure time, actual working hours, time spent in the break room, and movement between rooms, and automatically generates an action report.

Restaurants And Hotels

Brand promotion on the internet, advertising effectiveness assessment

Face Recognition+ INT recognizes unique and returning visitors, performs demographic analytics. The analytics performed improve the effectiveness of targeted advertising.

Monitoring employee performance

Security personnel at large restaurants cannot remember the faces of every employee and therefore cannot recognize the person violating workplace rules. Face Recognition+ INT recognizes violators and automatically generates reports on hours worked and time spent away from the workplace, which form the basis for sanctions or disciplinary action.

Recommendations

Camera and Recorder Selection

Selecting a Camera

For optimal use of the module, it is recommended to use a camera with a varifocal lens, which allows you to adjust the viewing angle and zoom in or out on the shooting area without changing the camera's position.

For camera selection assistance, you can consult with pre-sales engineers.

More specific recommendations:

- It is not permissible to use cameras with fish-eye lenses.
- The sensor size should be at least 1/2.8".
- The lens aperture should be no less than F1.6.
- If there are high-contrast areas with varying degrees of illumination in the shooting zone, it is recommended to use cameras with hardware WDR.
- With an object distance of 5 meters and a field width view of 2 meters, the required resolution is 2MP
- With a width of 3 meters – 5MP
- With a width of 4 meters – 8MP

TRASSIR Recorders For Face Recognition+ INT Module

NeuroStation 8200R/16 INT

Support video analytic modules based on neural networks. The use of neural network technologies has significantly reduced the number of false positives.

IP-video recorder is designed for up to 16 IP cameras.

NeuroStation 8800R/128 INT

Server series IP video recorders support video analytic modules based on neural networks. The use of neural network technologies has significantly reduced the number of false positives.

IP-video recorder is designed for up to 128 IP cameras.

UltraStation 16

Supports RAID 5 disk array technology and hot swappable disks (HotSwap). A SAS interface is provided for connecting two disk shelves.

IP-video recorder is designed for 128 IP cameras

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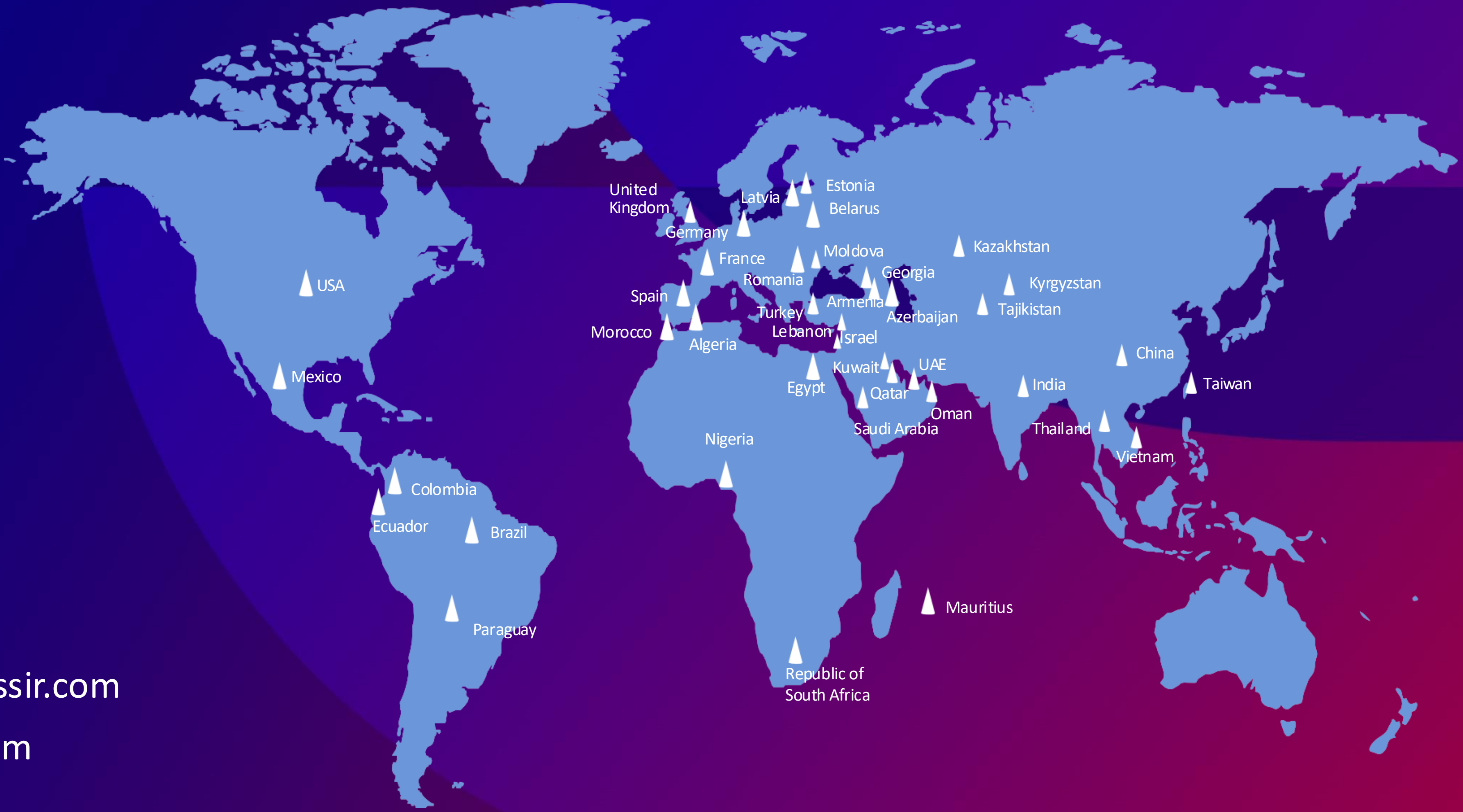

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