Speech Technology Center

2022

GridID: Multimodal Biometric Media Processing System

Designed to collect, process and analyze large volumes of audio and video data

speechpro.com

GLOBAL PRESENCE

Our Customers

Our products are used
all around the world

75+

markets

150+

partners around
the world

5K+

implementations

TECHNOLOGIES

Best Technologies

Up-to-date biometric technologies by STC and partners are used to create modern solutions for government agencies and business

Voice Biometrics

Face Biometrics

Finger & Palm Biometrics

Speech Recognition

Voice Biometrics

The world leading technology
NIST SRE 2021:

- 6th generation of Voice ID DNN-based top-notch algorithms;
- Renowned technologies that lead the world market;
- Deep neural networks trained on 1 bln+ recordings language and gender identification;
- Text-independent voice recognition without constraint on the speech content;
- Speaker diarization in dialogs/polylogs (up to 5 speakers).

Face Biometrics

State-of-the-art technology based
on Deep Neural Network trained models:

- Model build time less than 300 ms; Search time less than 50 ms;*
- Facial Anti-spoofing Technology;
- Efficient biometric search even for people in masks;
- Search scope for 1 model per second = 3 mln samples;
- Search engine is capable of automatically detecting multiple faces (up to 20) in a video stream from crowded places;
- Different angles of face detection and recognition (head turn, inclination, movement, etc.);
- Stable result regardless of age-related changes and emotions;
- Gender and age detection.

*in a 12 million model database

Finger & Palm Biometrics

BY PARTNERS

World Top 5 biometric ID technology:

- Connection to the server via WEB-interface.
  No special software required;
- Identification time from 1 to 3 sec;
- In the SlapSeg testing conducted by NIST, the used algorithm showed the best results (1-3 places) on the database of fingerprints and palm prints of low quality;
- In FVC testing, the used algorithm ranked first in various tests.

Speech Recognition

The best speech recognition technology:

- High accuracy is guaranteed by training on thousands of hours of natural speech;
- Custom language models built with ASR constructor based on target texts;
- AVOCADO adaptive speech recognition tool to improve the target vocabulary using the system dictionary update function;
- Brand-new speech recognition engine for 18 languages (including English, Spanish and Arabic), which covers up to 2/3 of the world population.

AWARDS

List of Awards

- NIST SRE 2021
- CHiME Challenge 2020
- VOiCES 2019
- VOiCES 2019
- NIST FRWT 2018
- CHiME Challenge 2018
- DFW 2018
- ASVspoof 2017
- NIST OpenKWS 2016
- NIST i-vector 2014

We are Top

1

of the world biometric technologies*

*Voice Biometrics and Speech Recognition

PROBLEMS

Increasing Volumes of Raw Data

- Low efficiency of data search and handling
- High scalability costs of data processing
- Reduced speed of analysis and decision-making
- Loss of important and valuable information

SOLUTIONS

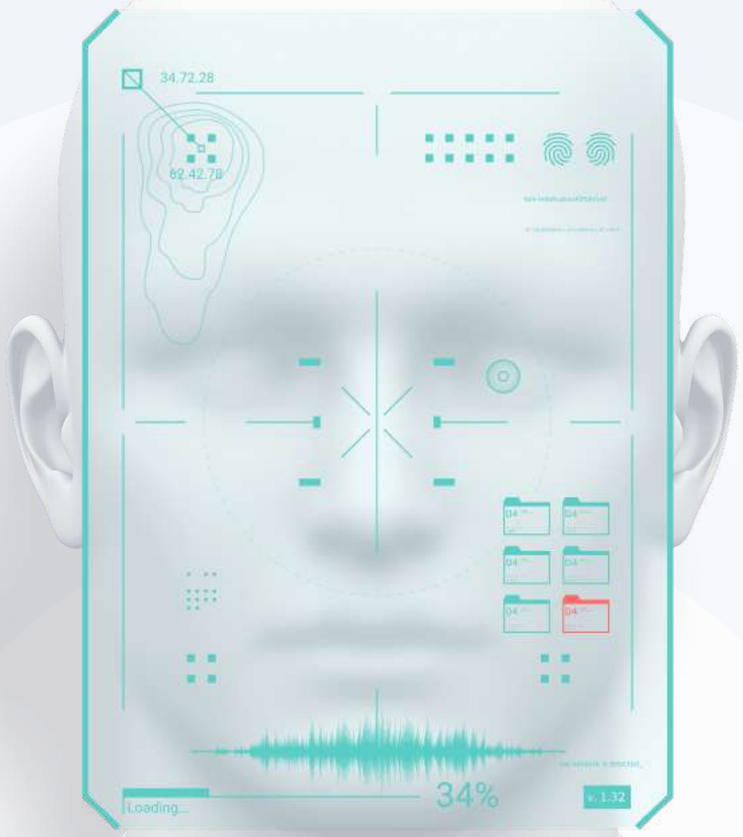
Solution

01

Turn the data stream into
a structured data array

02

Search and
analysis system



03

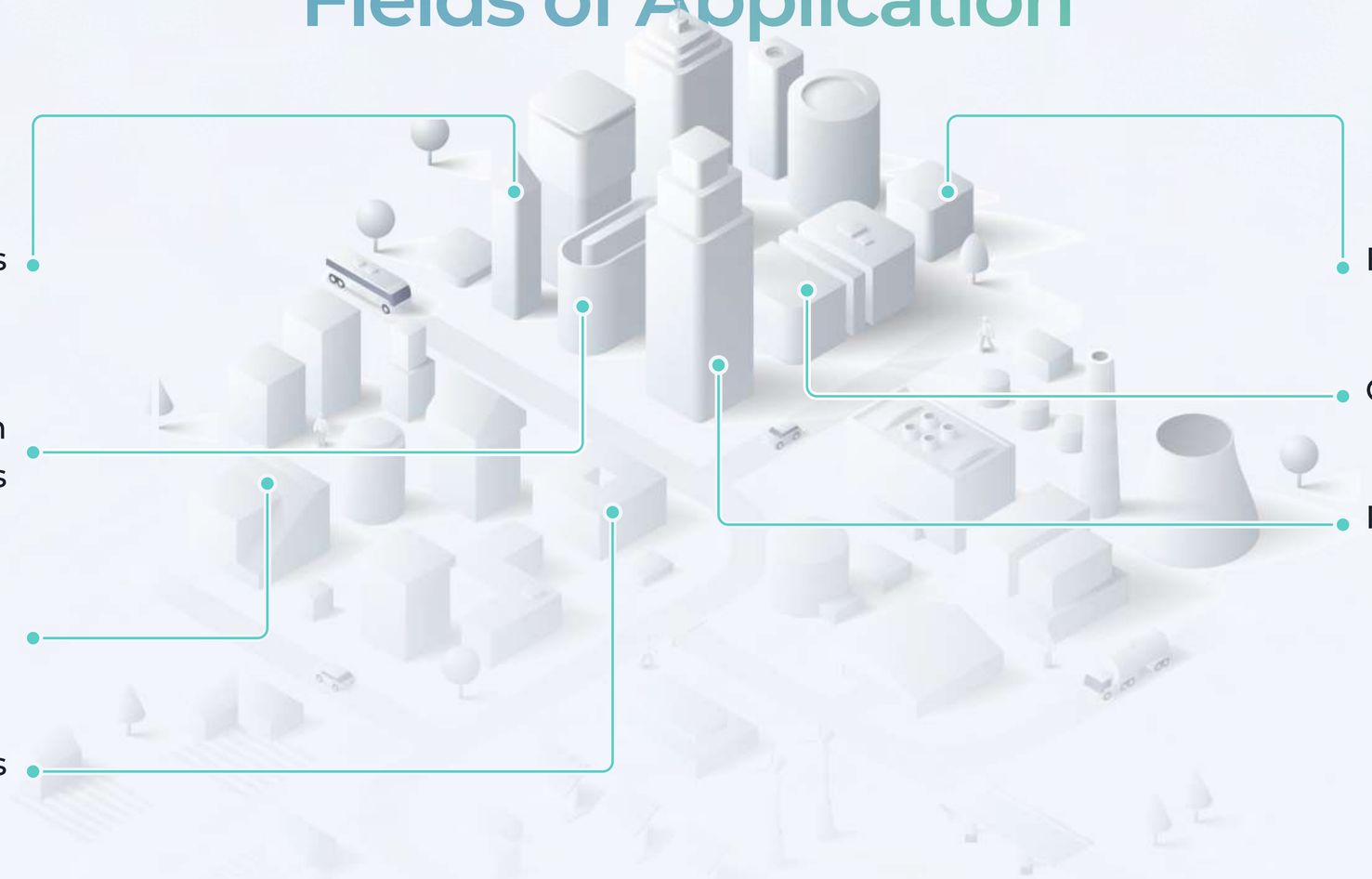
Multimodal
Biometric System

04

Automated data
analysis system

SOLUTIONS

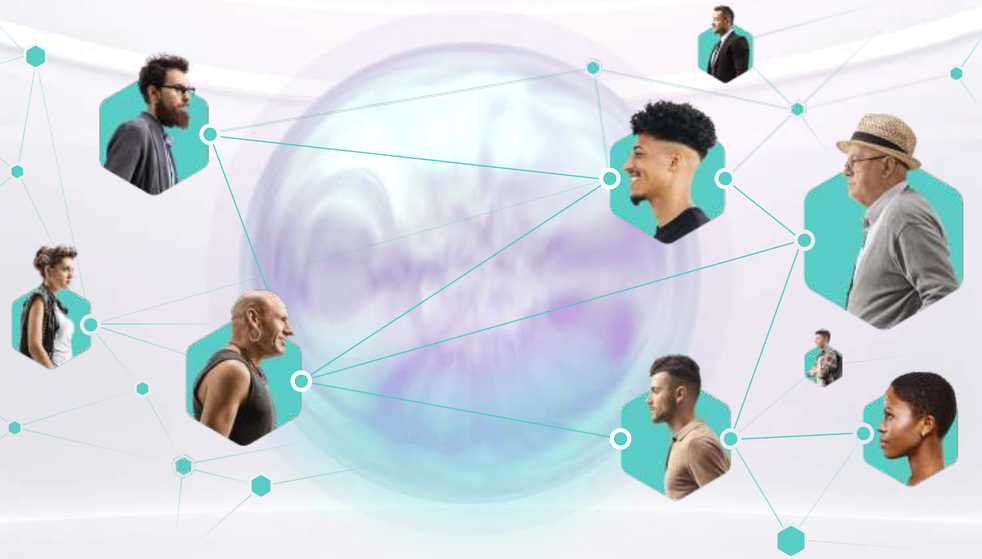
Fields of Application



- Migration Agencies
- Telecommunication Services
- Emergency Contact Centers
- Call Centers
- Banks
- Government services
- Points of inspection

• SOLUTIONS •

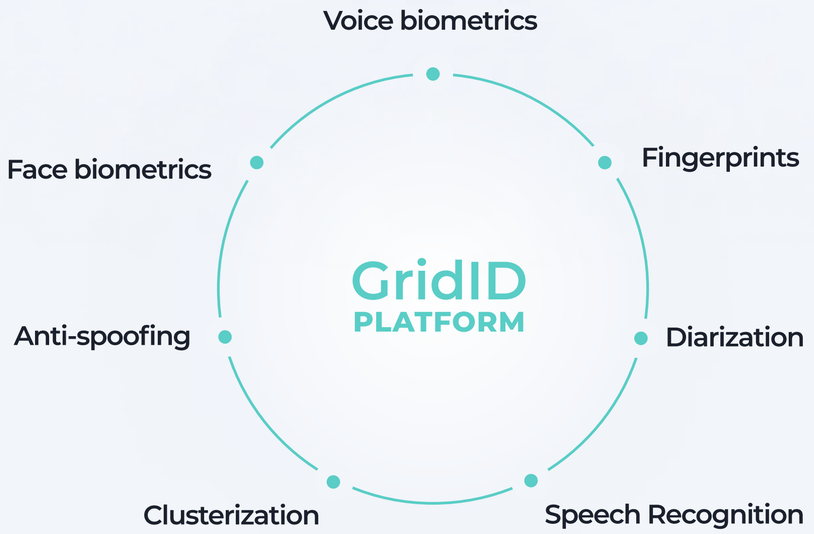
Recover Implicit Links in Raw Data



GridID
PLATFORM

ECOSYSTEM

GridID Technologies



GridID BioDB

National-scale biometric database

GridID Voice

Automated data handling in streams from various sources and data search in the archive

GridID CC

Biometric control via hotlists of telephone lines

GridID Sampler

Accumulation of credentials and biometric data

GridID Analytics

Multivariate analysis of structured and large amounts of raw data

IKAR Lab 3 (GridID Lab)

Software and hardware suite for audio forensic experts

SmartTracker FRS (GridID Face)

Facial recognition in high-traffic places

GridID VMS

GridID FaceControl

ECOSYSTEM

Advantages of GridID Platform

01

Full cycle of biometric analysis: from sample collection to an expert report generation

02

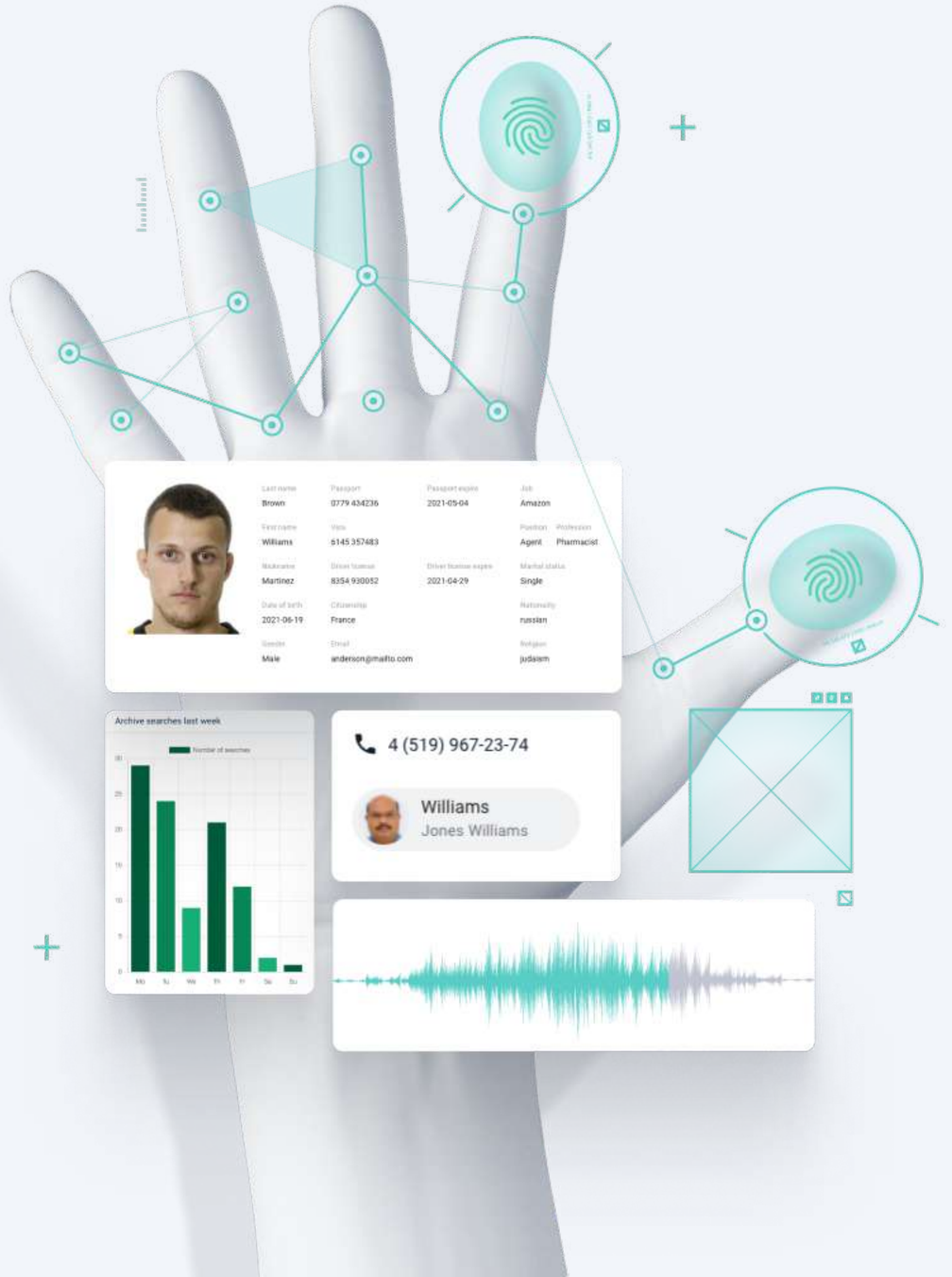
Automatic biometric model processing, indexing and quality control

03

Ready for integration with external systems or additional biometric modalities

04

Flexible modular structure that can be tailored to each client’s needs



ECOSYSTEM

GridID Products

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GRIDID BIODB

GridID BioDB

National-scale biometric database

01

Data collection

Creating a nation-wide biometric model database with a dedicated processing and control system

02

Multimodal search

Search by voice, face, etc. in a single database of biometric samples

03

Data security

Closed circuit of access rights and privileges distributed among roles, groups and units provides multi-level data protection system

04

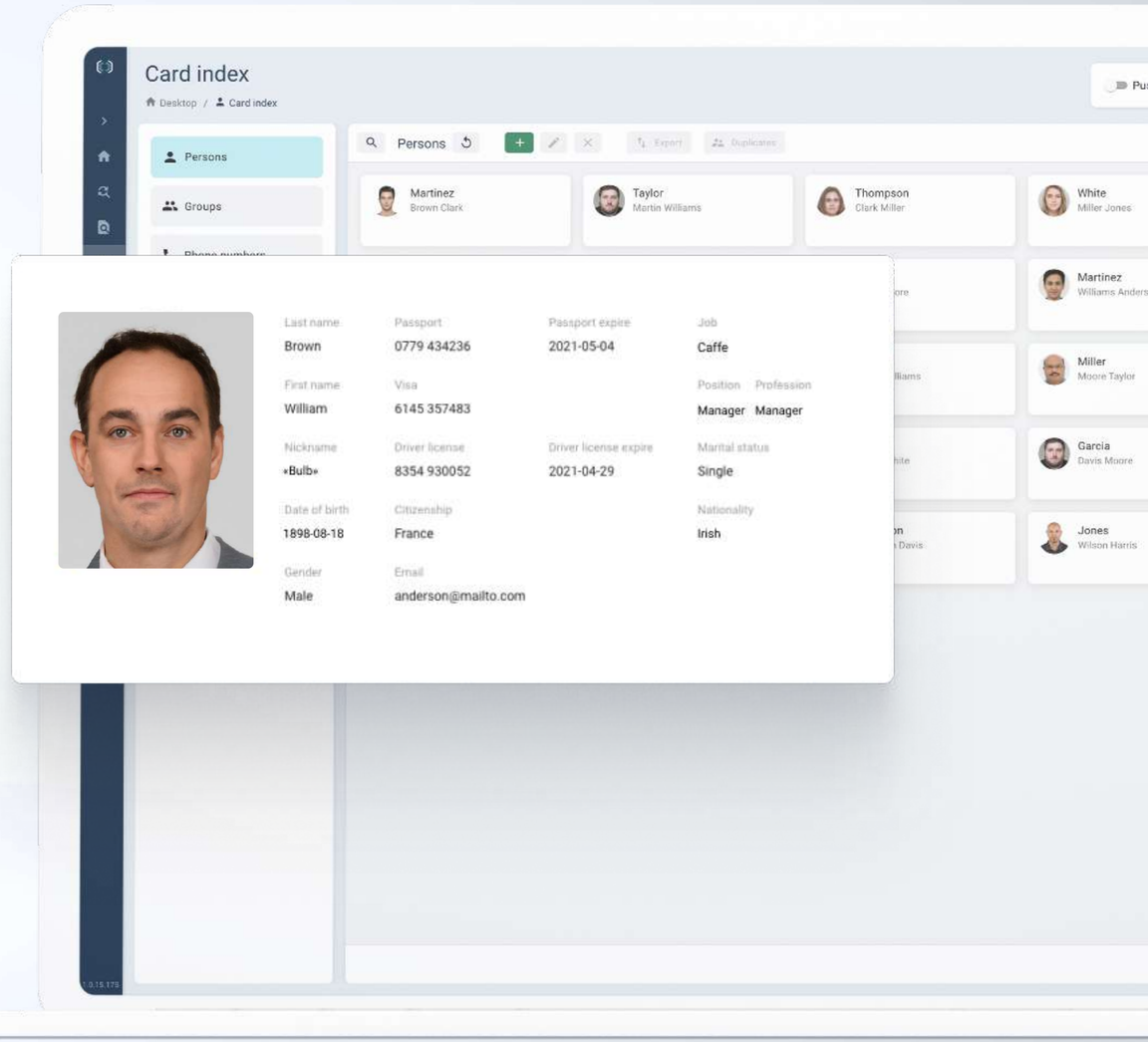
Seamless integration

Regular database updates incorporating all necessary data from any source ensure high accuracy and enhanced search speed rate

GRIDID BIODB

Index of Individuals' Data Entries

- The Database Index contains entries of personal information and biometric models for individuals whose biometric data are registered in the system;
- Individuals and their voices and contacts are linked by means of graphs with the possibility to view the links for each entry;
- Search can be performed by biometric parameters or by auxiliary details contained in the Index;
- Quick report generation thanks to the flawless database structure;
- User accounts and data protection are managed through a system of roles and privileges.



GridID Voice

Automated processing, incoming data handling
and search for data from various sources

01

Intelligent data processing

Automatic speech recognition, language and gender identification, diarizaition and voice model tracing

02

Multivariate search

Automated search for recordings by voice, key words and conversation topics

03

Hot control

Automatic monitoring of the entire audio data flow with user notification of target voices being detected

04

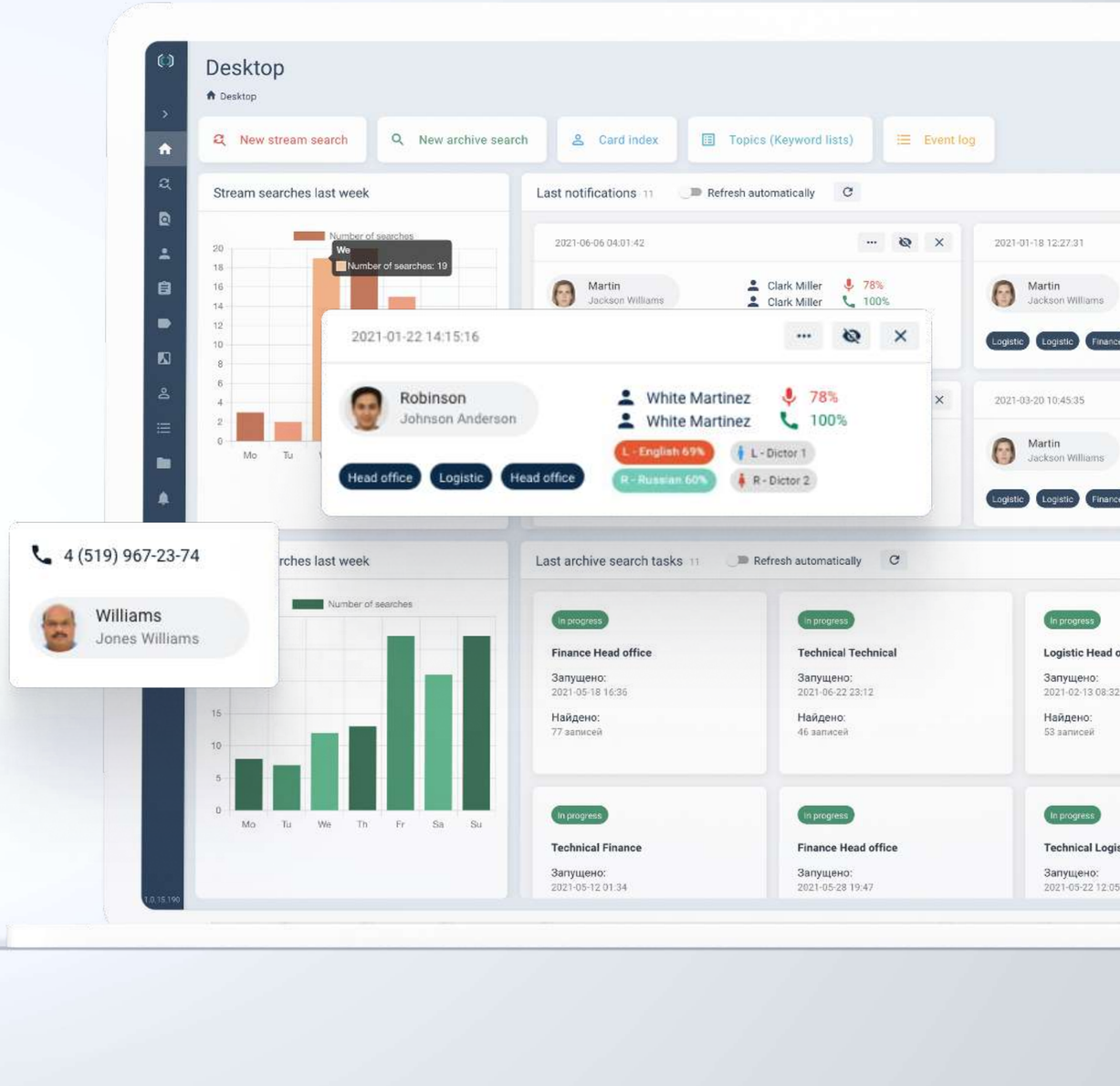
Automation and streamlining

Automatic clusterization and creation of new entries in the Index for unknown speakers' voices in the incoming data

GRIDID VOICE

GridID User Dashboard

- Search for target speakers in incoming audio files;
- As soon as the conversation ends, the audio files are processed and corresponding voice models are built;
- Automatic creation of new database entries for unknown speaker's voiceprints built using the incoming audio flow;
- Speaker diarization to compare the caller voices in distinct conversations;
- Anti-spoofing methods ensure that the collected voice sample is not a previously recorded fragment or synthesized speech;
- The voice model is automatically updated in the database when a better voice sample is obtained.



GridID CC

Biometric control of telephone lines via hotlists

01

Real-time control

Instant detection and automatic notification when the target voice enters the audio stream

02

Quick identification

Speaker recognition during the call by voice only, regardless of the caller ID used for the contact establishing

03

Keywords and themes

Detecting various keywords and defining conversation topics based on the keyword hotlist

04

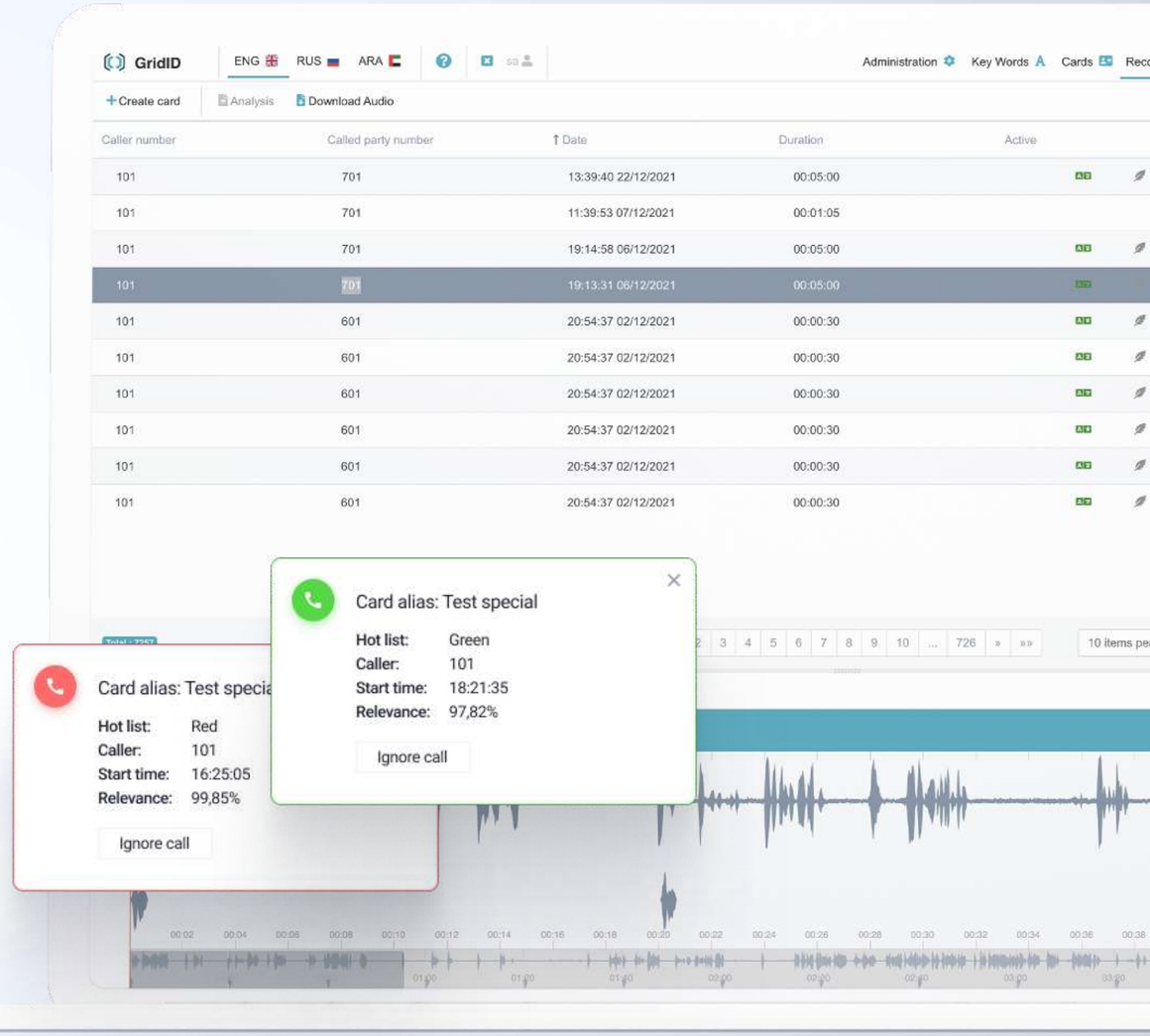
Immediate notification

It takes up to 7 seconds to recognize a person in a conversation basing on their voice model, with the operator immediately informed about this event

GRIDID CC

GridID CC Dashboard

- Monitoring online conversations to determine whether the speakers belong to one of the hotlists;
- Tracking of the assigned task completion;
- The operator can view latest notifications linked to their user account;
- Analysis of the workload and assigned task statistics;
- Quick access to the most commonly used sections of the Platform;
- Anti-spoofing voice biometrics to detect authenticity breaches when recorded or synthesized speech is used to simulate live conversation.



GRIDID FACE

GridID Face

Real-time facial recognition

01

Face recognition

The faces from the database are matched with the faces in downloaded photo/videoclips. The video data is used to build new face models.

02

Real-time detection

Search by biometric face model in videostream and by photo in a video archive containing face biometric models

03

Notifications

The operator gets a notification the moment a match with the database is found

04

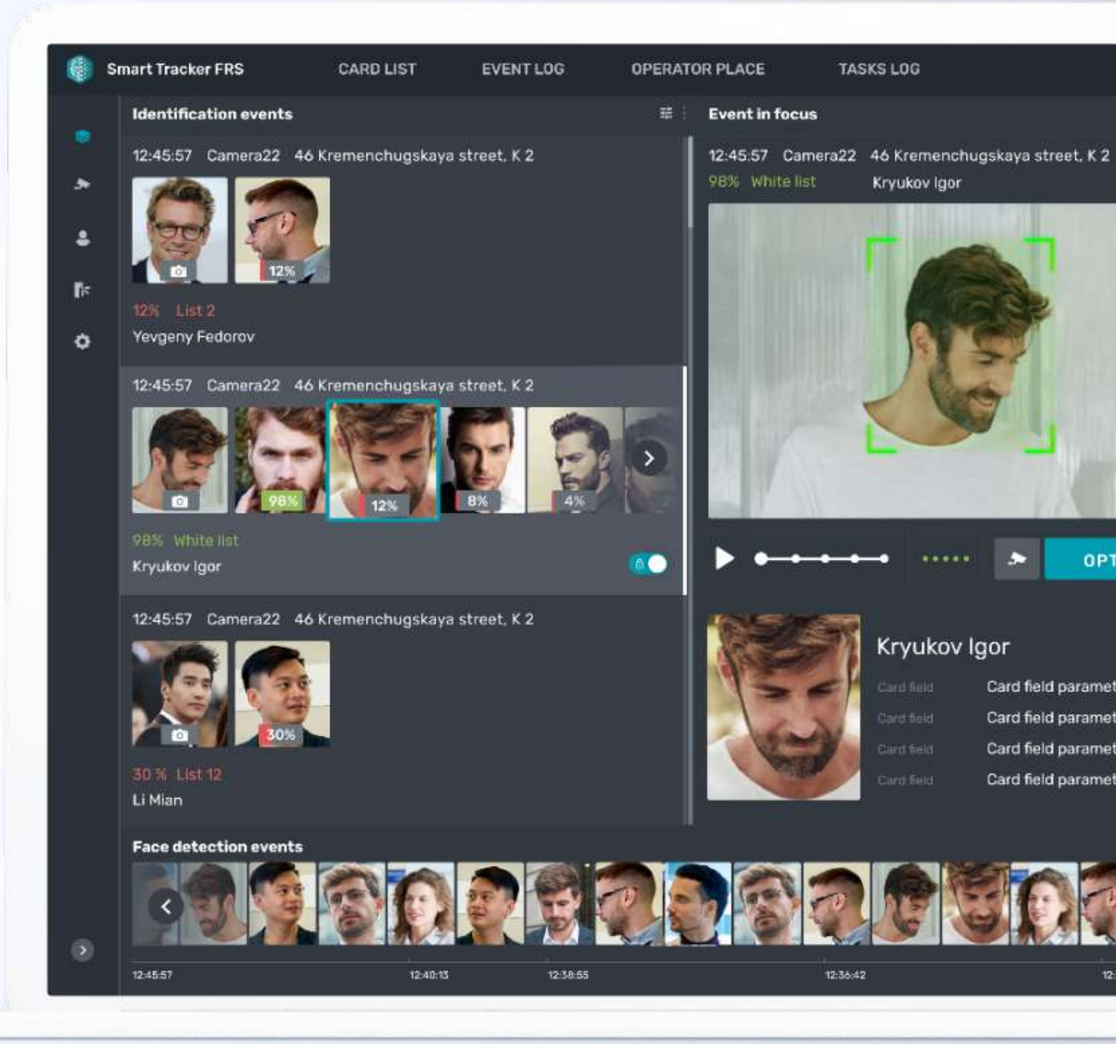
Route mapping

The video stream and video archive are used to trace the route made by the individual by detecting their face. GIS maps and bitmaps are supported.

GRIDID FACE

Online Response

- The operator receives real-time notifications when a person of interest is detected and identified in a specific place, which makes it possible to react to the event promptly;
- The same happens when the system detects a stranger in a restricted zone;
- The notifications can be customized for specific cameras and search category so that the operator can better focus on their tasks;
- The operator can view detailed information about events and the people identified by means of sound notification and mobile apps' notifications.



GRIDID ANALYTICS

GridID Analytics

Multi-factor analysis of structured
and unstructured large amounts of data

01

Multilevel filtering

Search for hidden interdata connections, which are impossible to be found manually

02

Visualization of links

Analysis of links and objects in different display modes: relation graphs and maps

03

Cluster analysis

"Five handshakes" diagram plotting basing on all available data

04

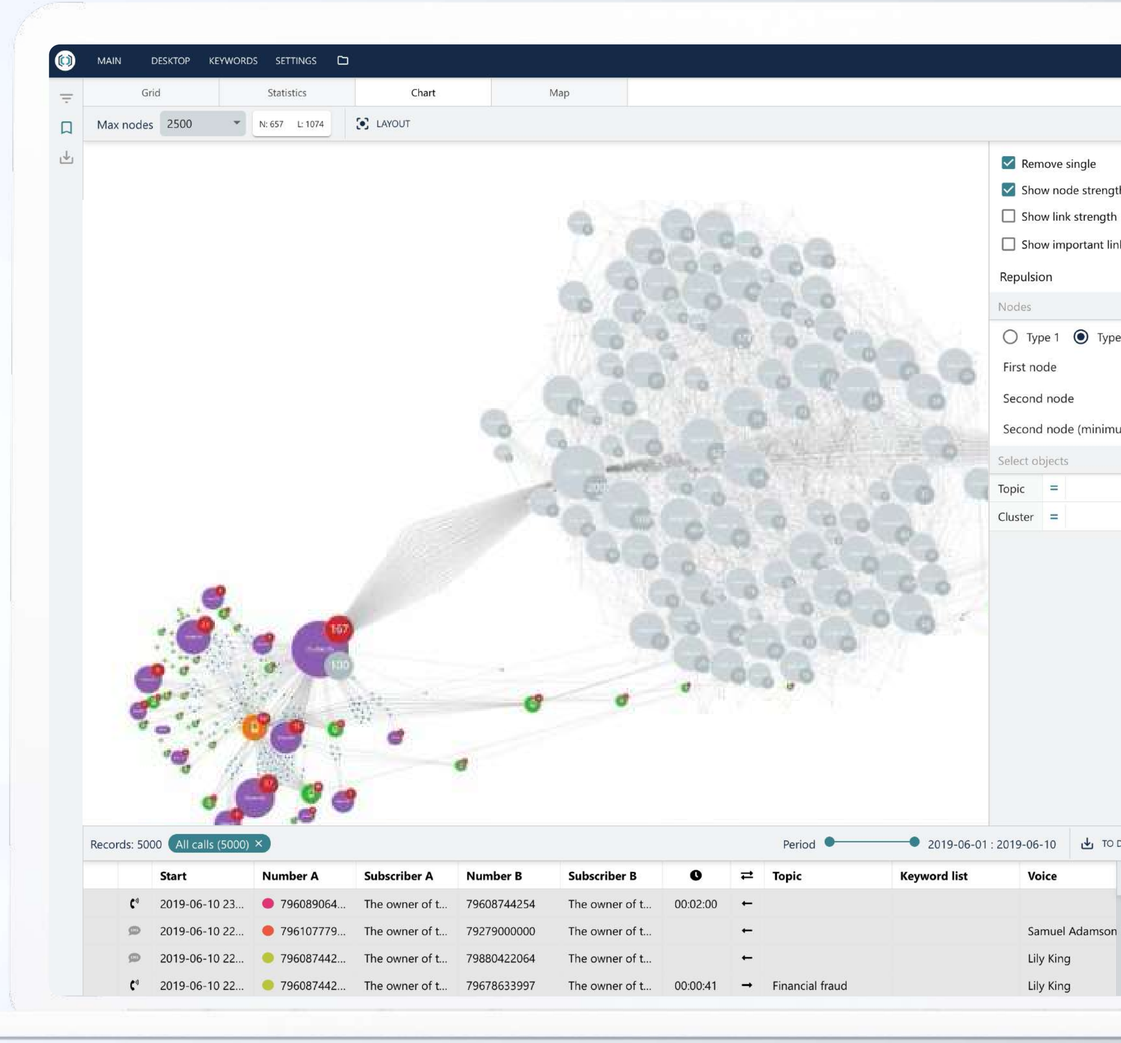
Flexible customization

Data is presented
in a user-friendly format

GRIDID ANALYTICS

Tool for Visual Analysis of Records

- Overview of the links between target records in the corpus of incoming data;
- The ability to group data and data sources according to certain criteria and build a hierarchy with an unlimited number of levels;
- Detection of implicit links with the help of biometric search parameters;
- Clusterization of audio recordings using the speech recognition results;
- Clusters based on similarity of voice models and display of connections between speakers.



IKAR Lab 3

Software and hardware suite for audio forensic experts

01

Forensic workstation

A single workstation for the whole range of tasks of a forensic expert

02

Expert tool kit

Authenticity diagnostics, Anti-spoofing, EdiTracker, DNN filter and Sound Cleaner

03

Expert algorithms

High accuracy of automatic and expert voice identification

03

Video analytics

Neural network technologies provide automatic video indexing and image quality improvement

IKAR LAB 3

Audio Forensic Examination Process

- Full pack of expert comparison methods: formant, pitch and auditory analysis;
- Four automatic comparison methods; Speech and noise detection; Editing and processing of sound recordings;
- Video player with editable audio and video tracks;
- Automatic text transcription* and segmentation by speakers (up to five participants) in a dialog/polylog.

* List of languages is available upon request

GridID Sampler

Accumulation of credentials and biometric data

01

Data collection

Collecting biometric data of individuals (voice, face, etc.) in manual mode

02

Speaker separation

Improving the readability of automatic speech transcription by structuring the audio data

03

Portable workstation

Portable and remote workstations with deployment in 15 minutes

04

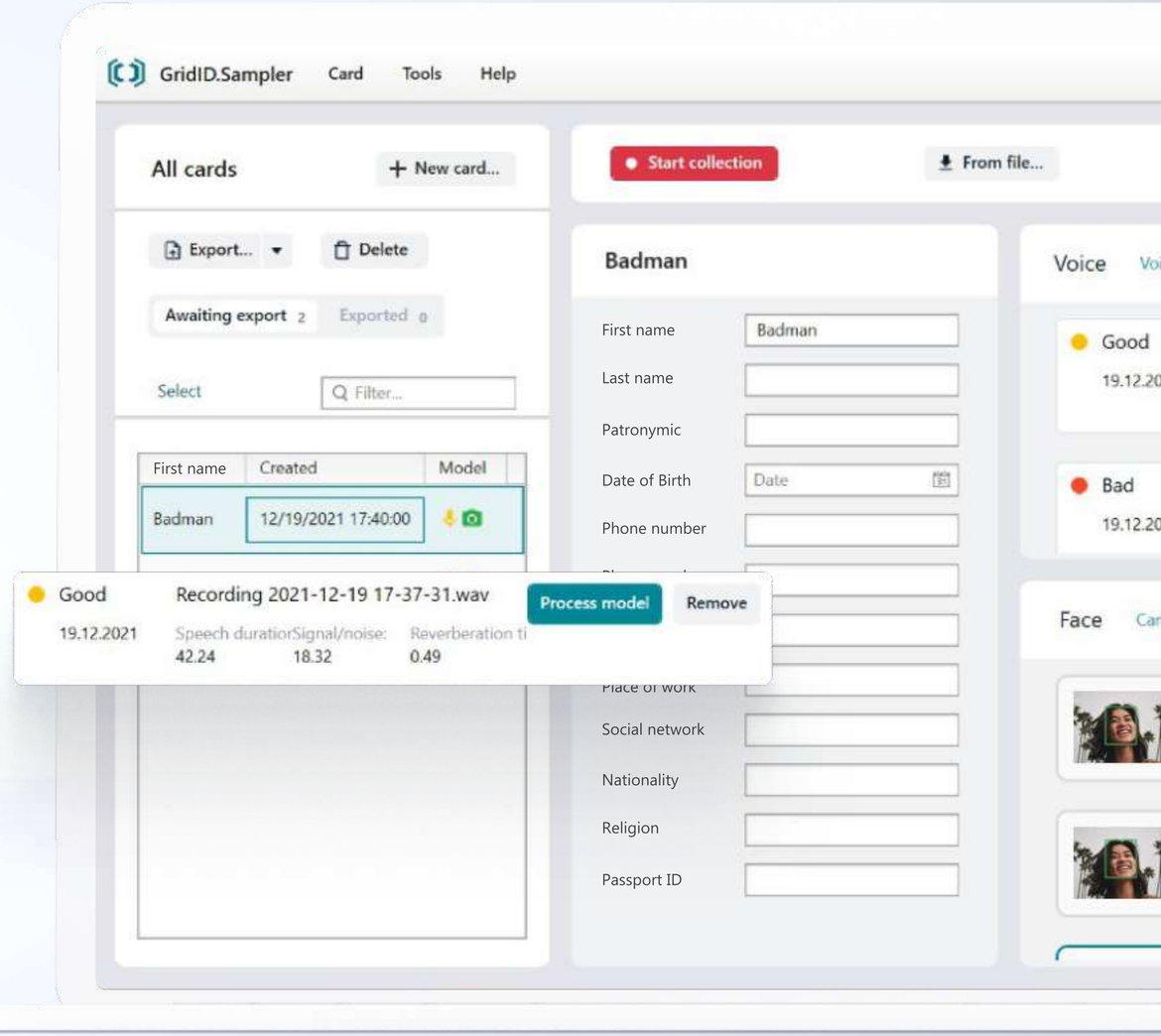
Easy to use

Easy-to-learn interface, no special training required

GRIDID SAMPLER

GridID Sampler Dashboard

- Offline biometric data collection in the field; Individuals' biometric samples (voice, face, etc.) can be gathered in manual mode;
- Photos and voice recordings can be uploaded from external files;
- Automatic quality assessment of biometric models;
- Automatic data import into the GridID BioDB subsystem.



ECOSYSTEM

GridID Ecosystem

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National-scale
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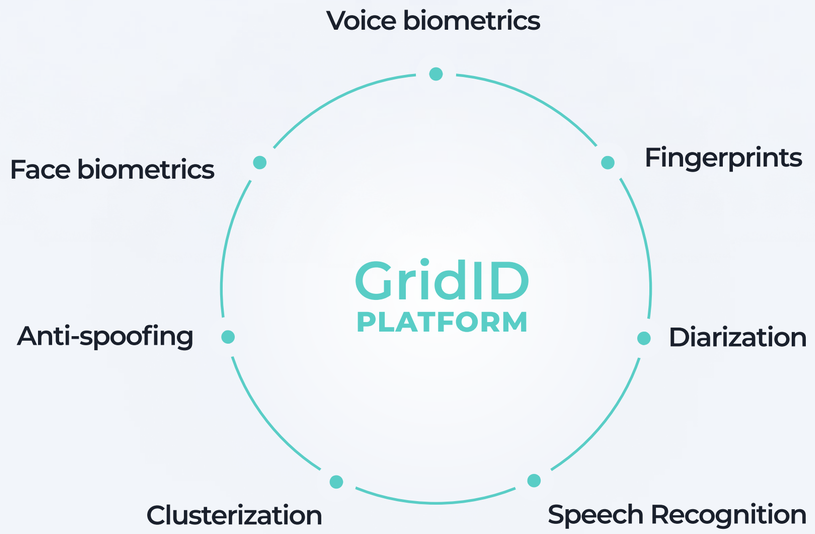

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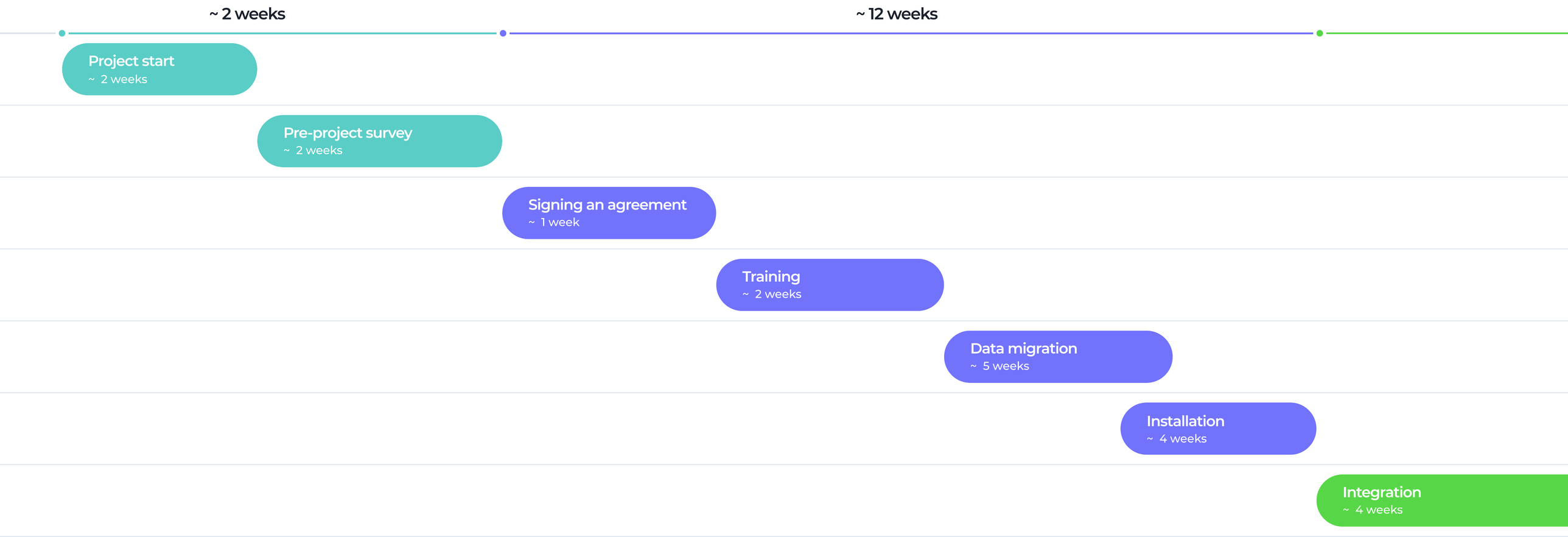
GridID Implementation

IMPLEMENTATIONS

Key Stages of Implementation



IMPLEMENTATIONS

GridID Development Steps

01

Forensic Tool-Kit

IKAR Lab 3

Building a system to analyze all available biometric and auxiliary data

02

Biometric Data Management

GridID BioDB

GridID Sampler

Creation of a unified database of biometric samples and its integration with the existing sources.

Deployment of a distributed sampling network based on the GridID Sampler

03

Stream Processing

GridID CC

GridID Voice

GridID Face

Deployment of a central storage node and implementation of the system in contact centers.

Integration with the existing monitoring infrastructure

04

National Scaling

Scaling the system to collect, store and process biometric data at the level of a city, region, and nation

05

Data Analysis

GridID Analytics

Expert community development: implementation and training

Speech Technology Center

2022

Contact us for more information and calculation of your project

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