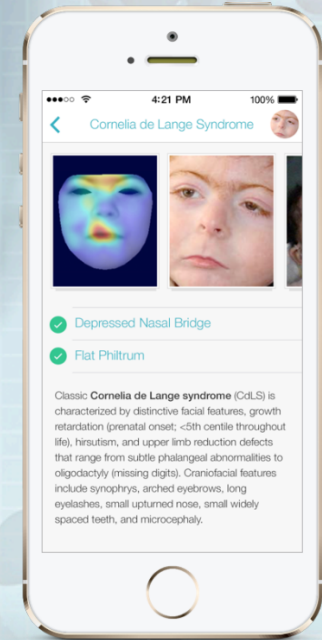




FDNA
Accessible Genetics



FaceBase – FDNA Collaboration Proposal

www.fdna.com

FaceBase-FDNA: Collaboration Highlights

- **Purpose of Application:** FDNA will use de-identified data, continuously extracted from the 3D facial images library curated and hosted on the NIDCR FaceBase Hub, solely for research and development of the FDNA technology.
- **Clinical Applications:** The technology will be incorporate in Face2Gene, a fully functional, automated tool that is capable of simultaneously distinguishing a large number of syndromes, assisting clinicians in the real-time diagnosis of syndromes and offered free of charge to clinical geneticists.
- **Research Applications:** The technology (and related analysis services, based on data from FaceBase and FDNA's repositories) will be made accessible to non-commercial researchers, through the FaceBase Hub, free of charge.
- **Authorship rights:** Any publication resulting from research using shared data will include authorship/ acknowledgement of NIH and/or FDNA, as applicable.
- **Intellectual Property Rights:** Each party shall retain ownership of its respective rights and no IP will be shared between the parties.
- **Financing:** In-kind; No funding is required by either party.

About FDNA

Revolutionizing Digital Health

Transforming facial photos into meaningful and actionable genetic information in real-time

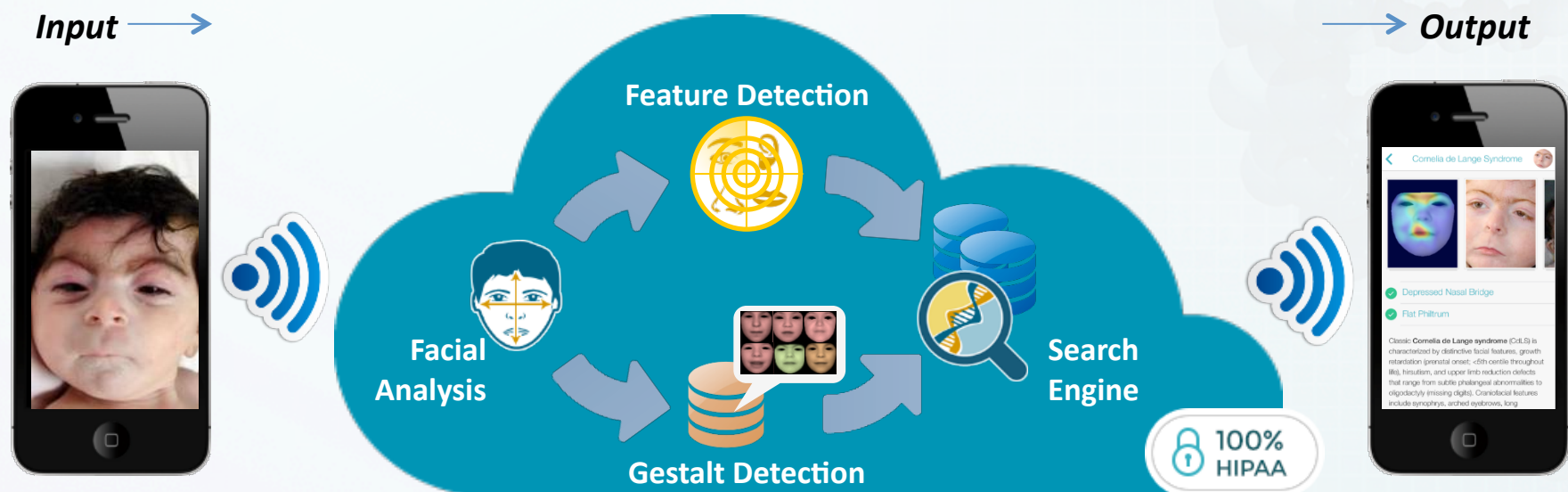


- **Mission:** To save lives and improve the quality of life of hundreds of millions of undiagnosed and misdiagnosed patients worldwide.
- **Technology:** Proprietary Facial Dysmorphology Novel Analysis technology uses facial image analysis to identify symptoms of rare genetic diseases.
- **Solution:** FDNA enables early detection of medical conditions, facilitating effective triage, management and treatment for undiagnosed or misdiagnosed patient population.

Our Technology

FDNA[®] technology employs two complementary analytical techniques to match syndrome phenotype from a facial image

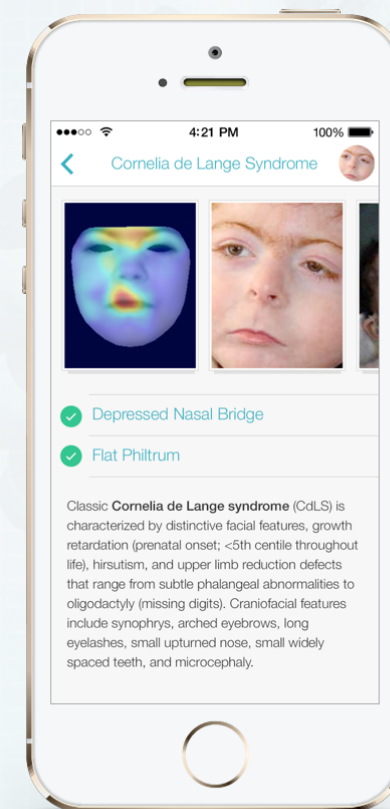
- **Feature detection:** Matches subtle cranio-facial malformations to public content databases
- **Gestalt detection:** Matches disease-specific facial patterns (*gestalt*) to multiple private databases
- **Process:** Clinician takes photo; Image is uploaded to a private and secured repository; De-identified data is extracted from image, processed and compared to multiple databases in real time; List of phenotype matches to genetic disorders is displayed in real time



Our Clinical Tools

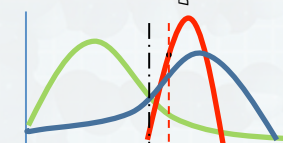
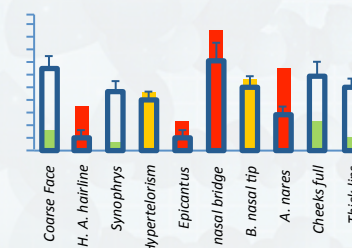
Product Description	<ul style="list-style-type: none">• Online platform for real-time search and reference powered by core technology, empowers HCPs to accelerate their diagnosis of genetic syndromes
Target	<ul style="list-style-type: none">• Clinical geneticists
Value Proposition	<ul style="list-style-type: none">• Supplements clinical evaluation and aggregates resources to support accurate diagnosis• Supports peer communication• Free, easy-to-use, integrated into workflow
Scope	<ul style="list-style-type: none">• Searches thousands of syndromes, using full HPO annotations and hundreds of syndrome gestalt matches
Output Provided	<ul style="list-style-type: none">• List of phenotype matches to genetic disorders with complete visual analysis and references• Expert communication forum

FACE2GENE™



Our Research Tools

Product Description	<ul style="list-style-type: none"> • Online platform for research & investigation generating computer-aided analyses to distinguish dysmorphic syndromes from control groups and describe syndrome phenotypes.
Target	<ul style="list-style-type: none"> • Genetics researchers
Value Proposition	<ul style="list-style-type: none"> • New model to describe phenotypes, which supplements genomics findings with useful clinical information • Leverages, data curated by researchers, FaceBase and FDNA • Free access to technology, computation, analytics & statistics services
Scope	<ul style="list-style-type: none"> • Over 1,000 different syndromes
Output Provided	<ul style="list-style-type: none"> • Descriptive masks • Histogram of dysmorphic features • Sensitivity/specificity score range • Threshold dysmorphic score



— Control
— Syndrome A
— Syndrome B

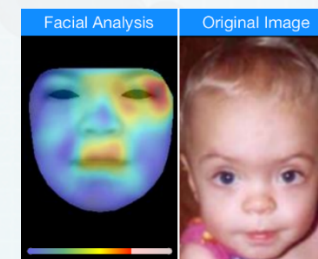
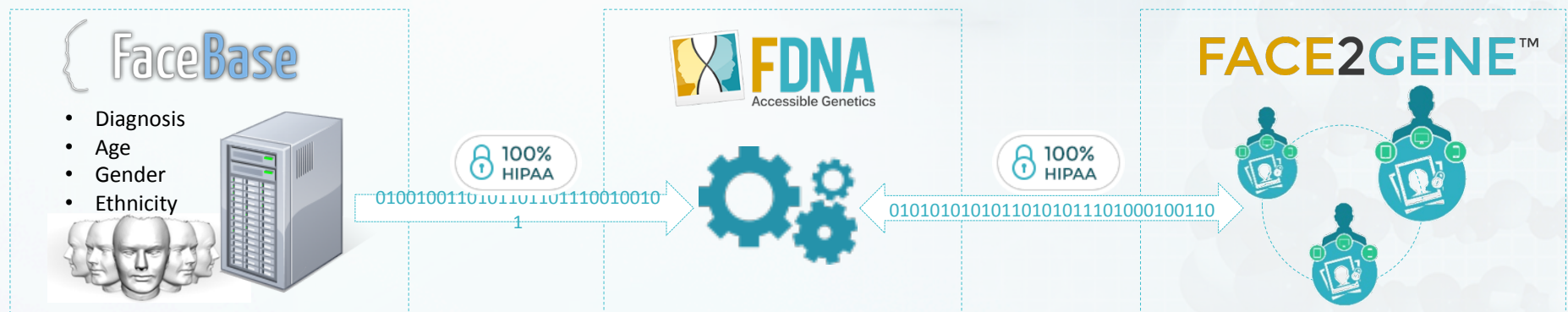


Image Score: 2.61
Syndrome Threshold: 1.64

Our Architecture

We continuously connect to a network of private image databases, from which we extract only de-identified data to train and improve the technology



- FDNA's compiled software will be installed on FaceBase Hub Server.
- The software will process facial images contained in local repository, to convert 3D images to 2D images, derive measures and encoded data (such as pixel statistics and spatial relations, which cannot be used to reconstructed images).
- Only de-identified data will be transmitted to FDNA's servers to assist in training our technology further.
- Connectivity will be continuous to ensure access to source data for deployment of new modalities.