

“Listen to the Customers”

Free speech speaker verification system

First Direct Bank in Israel – Case Study

Josef Confino

VP First Direct Bank of Israel

confinoy@bll.co.il

PRESENTATION ABSTRACT

- First Direct Bank in Israel (FDBI) - Overview
- Need Assessment
- Pilot Project - Free Speech System
 - Basic Definitions
 - How it works
 - Pilot evaluation
- Implementation process
- Summary

FDBI - The Concept

Direct Bank Services via telephone 24 hours.

Low costs, no branches, high service orientation,
dynamic and flexible service.



The History

FDBI was founded in 1995 as a first experience of Direct Banking Services in Israel.

FDBI is a part of the Leumi Bank Group – one of the leading Israeli banks.

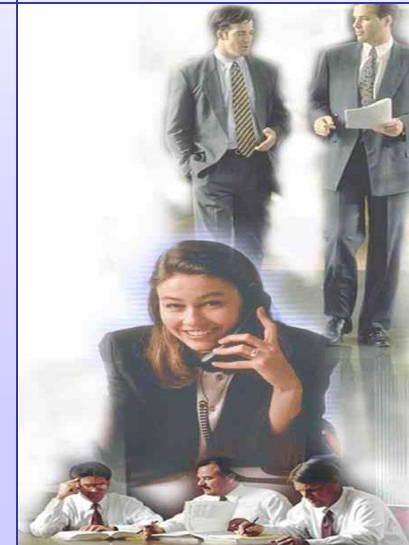
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The Customers

Customers characteristics:

- Private customers
- Mostly of medium and high Social - Economic sectors.
- Low Loyalty level
- High technical awareness
- High business awareness



Speaker Verification Need Assessment

The Need: Access Procedure Improvement
The Solution: Switch from “Password Environment” to “Voice Environment”

Key words:

“*PASSWORD ENVIROMENT*” – customer identification using passwords and specific questions.

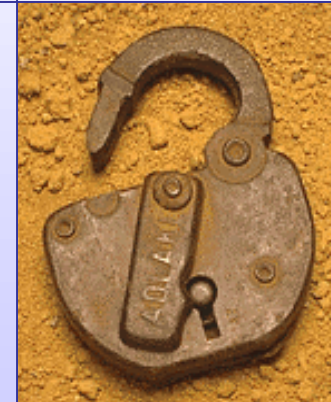
i.e. “What is the first letter of your grandmother’s name?”

“*VOICE ENVIROMENT*” – verification using Free speech technology



The Main Reasons for Free Speech Verification:

- Improves Customer Service
- Reduces Call Duration (saving costs/resources)
- Creates a Safer Verification Procedure
- Simplifies the Access Procedure



Pilot Project - Free Speech Verification System

Step 1: Voice signature collection

Step 2: Real-time verification during the conversation

Step 3: Simulations of imposter penetration attempts

Step 4: Results and Statistics

Step 5: Analysis of pilot project and operational scenario

Parameters for evaluation

Pilot Scope

- Customer base
 - Investment Campaign (5000 customers)
- Voice signature collection target
 - 500 Voice signatures
- Verification statistics
 - 3 verification calls on each voice signature
 - 3 impostor authentication attempts

Parameters for evaluation

Success Criteria

Time dependent system performance:

Accept\reject rate > 90% at 10 sec

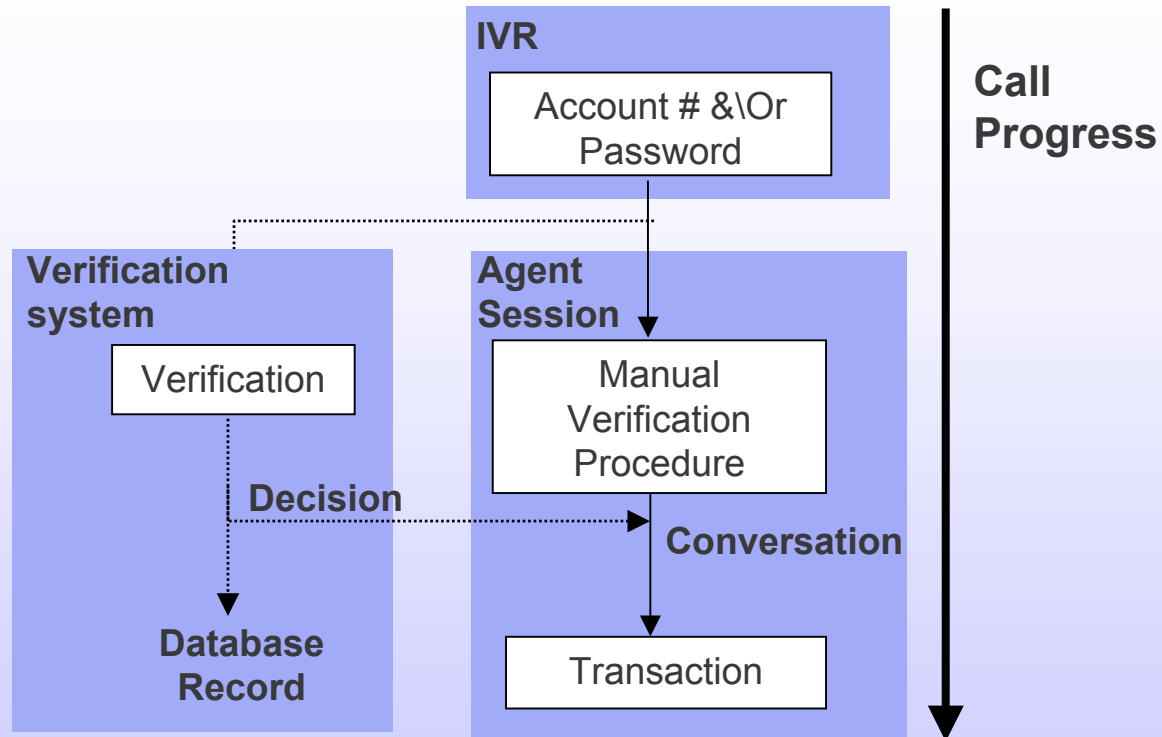
Accept\reject rate > 95% at 30 sec

System decision performance:

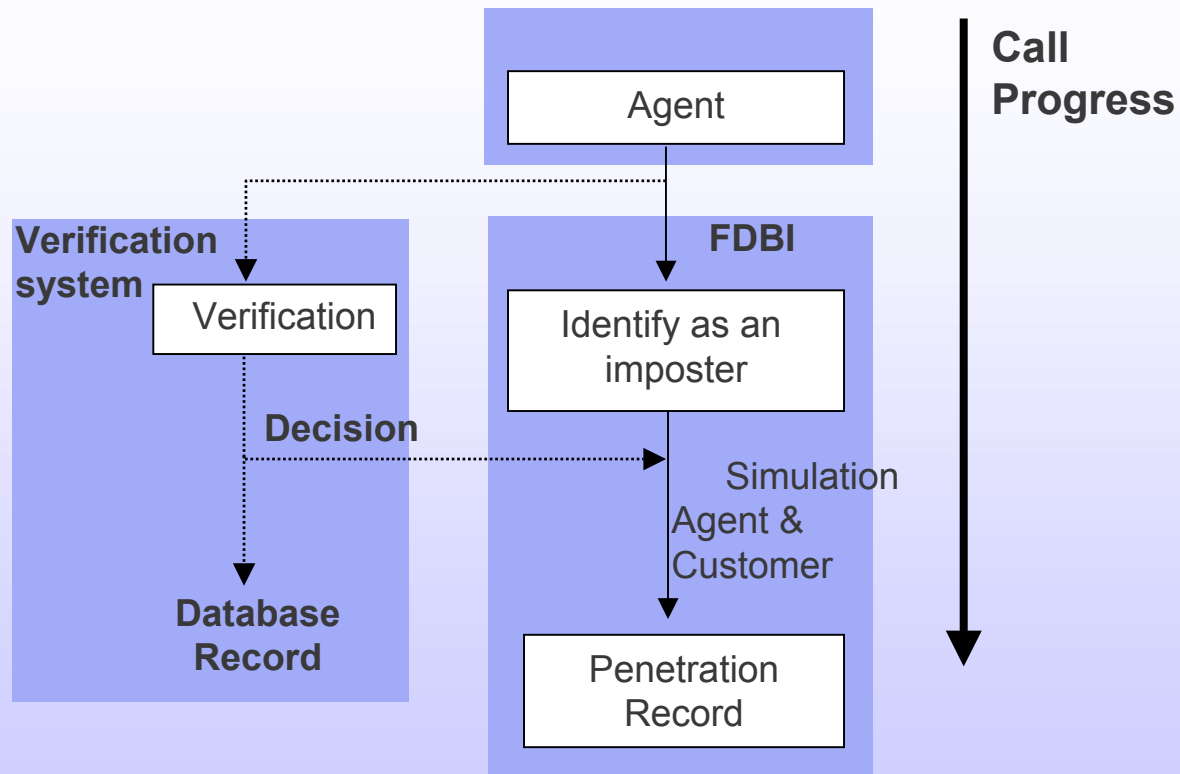
Accept\reject rate > 90%

Time to decision < 10 sec

Pilot Scenario



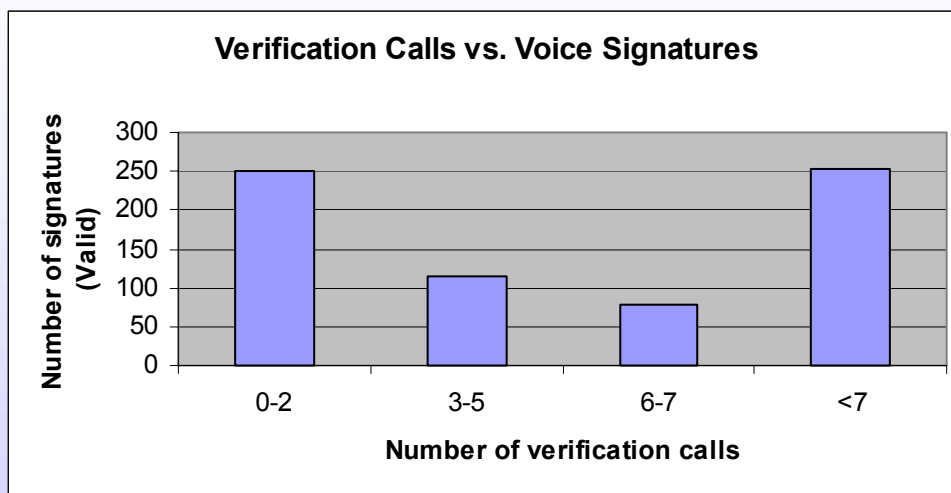
Scenario of Penetration Attempt Simulation



Experiment Procedure

Number of recorded calls - 23,741

Trained, valid voice signatures - 652



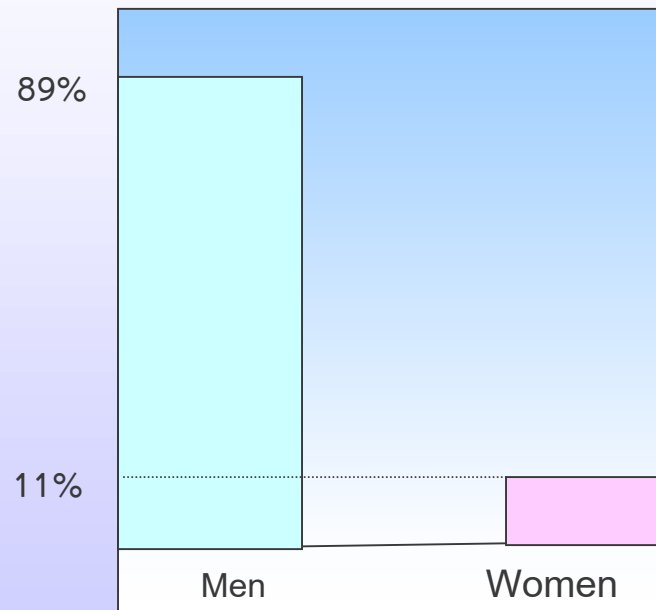
An average of 4 calls is required for voice signature training.

Voice Signature Characteristics

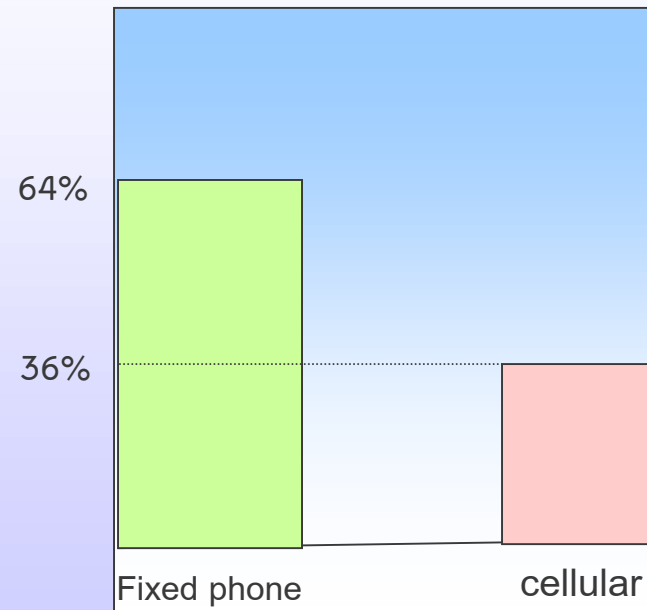
Distribution of calls for voice signature training

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Distribution of Men & Women



Media Distribution



Pilot Results

Performance when decision is made by system consideration

Type of speaker	% Accept	% Reject	% Inconclusive	Average conversation time until decision	Average speech time until decision
Real	92.4	6	1.6	24.4	6.15
Imposter	3.6	91.3	5.1		

Operational process in Production system

- Operational scenario
 - Deployment in phases
 - Eliminate the verification questions in the beginning of the call
 - Verification system decision - within first 20 second of the call
 - The question system always as a back up
- Internal organization implementation process:
 - Agent training
 - Internal campaign
 - Special scripts
- External actions
 - Mailing list to the customers
 - Press Release
- Implementation Issues
 - Customers adaptation
 - Agents adaptation

Summary - Added Values:

Overall:

- Friendlier Safer Cheaper



Customer

Friendlier access
Vocal interface = Natural
Increase Security

Image

Innovative
State-of-the-Art Technology
Invest in customer security

FDBI Organization

Shorten call duration
Fraud prevention
Agent efficiency