

# ETRONIKA NUI BANKING

Online banking application with natural user interface (NUI)

We often hear that we live in a world full of impossible things. It does not have to be that way. Creativity and passion for state of art innovations allowed us to create a cutting-edge approach to user experience in financial online services.

What is better than touching a screen? Your guess is right – speaking and gesturing. It is possible now to interact with technology in the same ways that we interact with each other. And if we can speak with our PCs, why do we even need to bother typing? Prepare to put away keyboard and mouse!

ETRONIKA was among the first companies in the world, which came up with NUI interface idea for online banking. Now you can use your voice or gestures to navigate through online banking, while simply sitting or standing in front of your TV screen. We can recognize each other by face or the sound of our voice, we do not require any passwords. So does our program, which mirrors human identification by analyzing user's face and voice with pure comfort and simplicity. It's like being a rock n'roll musician in the late sixties. Yeah, it's that easy!



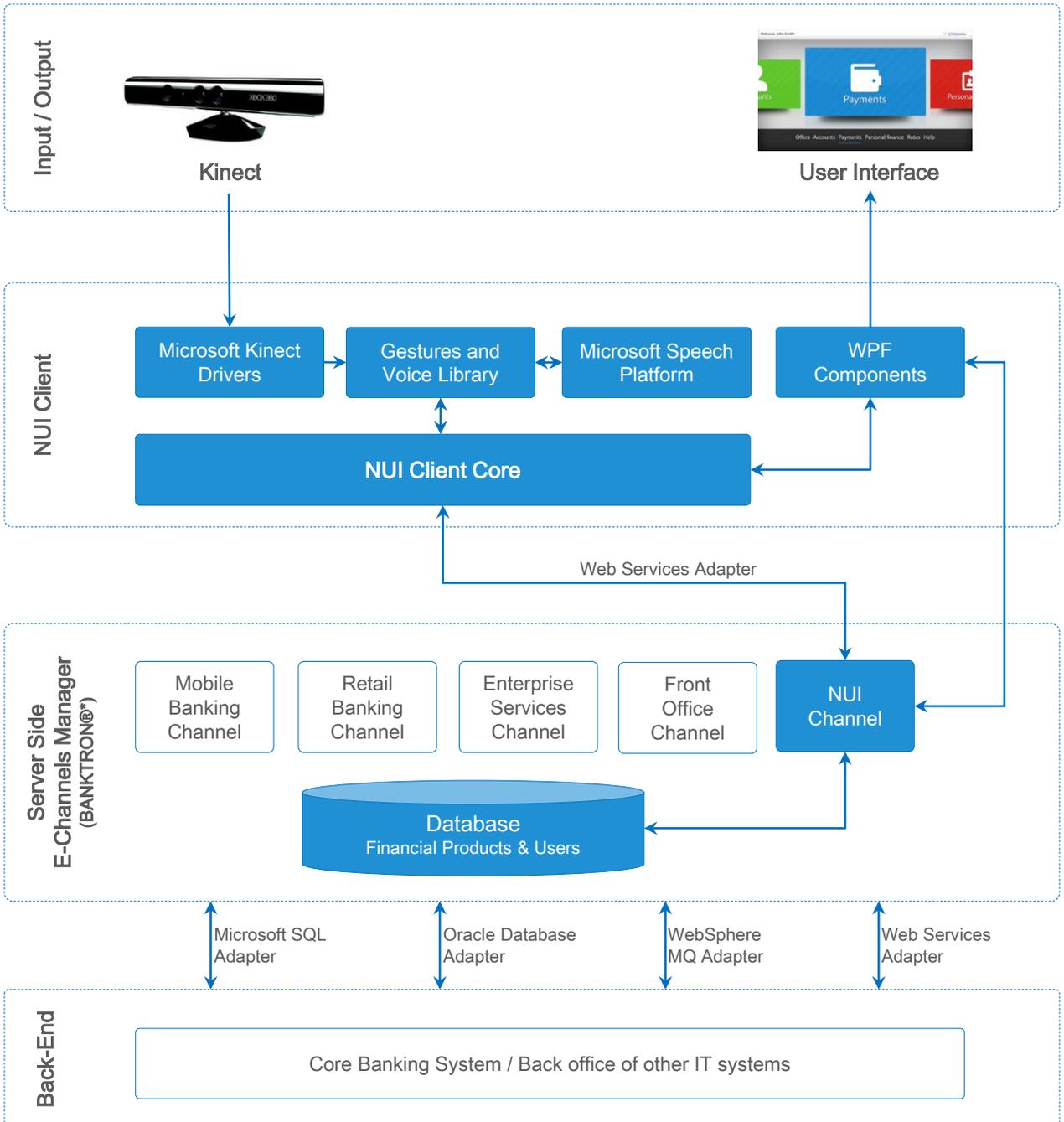
**VIEW VIDEO:**



ETRONIKA NUI Banking Demo  
<http://nui.etronika.com>

## SOLUTION ARCHITECTURE

The following diagram illustrates IT system components necessary for NUI interface. It consists of NUI channel management and banking services integration.



\* BANKTRON® a product created by ETRONIKA, centralizes channel management and offers private and business customers ability to use financial services via the Web, mobile devices, self-service terminals, call center, etc.

*Kinect* is a motion sensing input device by Microsoft, that captures audio, visual and motion information using RGB camera, 3D depth sensors and multi-array microphone.

Kinect does two things: generate a three-dimensional image of the objects in its field of view, and recognize human beings among those objects.

The collected raw data afterwards is processed by *Microsoft Kinect Drivers*, which act as translator between hardware device and the applications running on Windows 7 operating system.

*Gestures and Voice Library* is an essential component, which adds meaning to hardware collected data by comparing it with programmed gestures and spoken commands in the data base.

*Gestures and Voice Library* can be enlarged with additional gestures and voice commands according to the needs of a customer. As default the library is equipped with 3 groups of user-friendly paired gestures (explained in slide No. 6), including voice/phrase commands, which mirror labels of application navigation menu and etc.

*Microsoft Speech Platform* analyses and recognizes spoken commands from gathered audio data and supplies them back to *Gestures and Voice Library* for further use.

*NUI Client Core* coordinates all operational processes within *NUI Client*.

*NUI Channel* takes data from core banking system or other IT systems through integration adapters (Microsoft SQL, Oracle Database, WebSphere MQ, Web Services).

*NUI Channel* is a part of BANKTRON®\* e-channels management solution.

User interface is managed by *WPF\*\* Components*.

*User Interface* consists of navigation menu, as well as user specific screens, which are generated on server-side and loaded via *NUI Channel's Web Component*.

\* For more information about BANKTRON® please visit: <http://banktron.etrionika.com>

\*\* Microsoft Windows Presentation Foundation (or WPF) is a computer-software graphical subsystem for rendering user interfaces in Windows-based applications.

## NUI – WHAT IS THIS NEW THING?

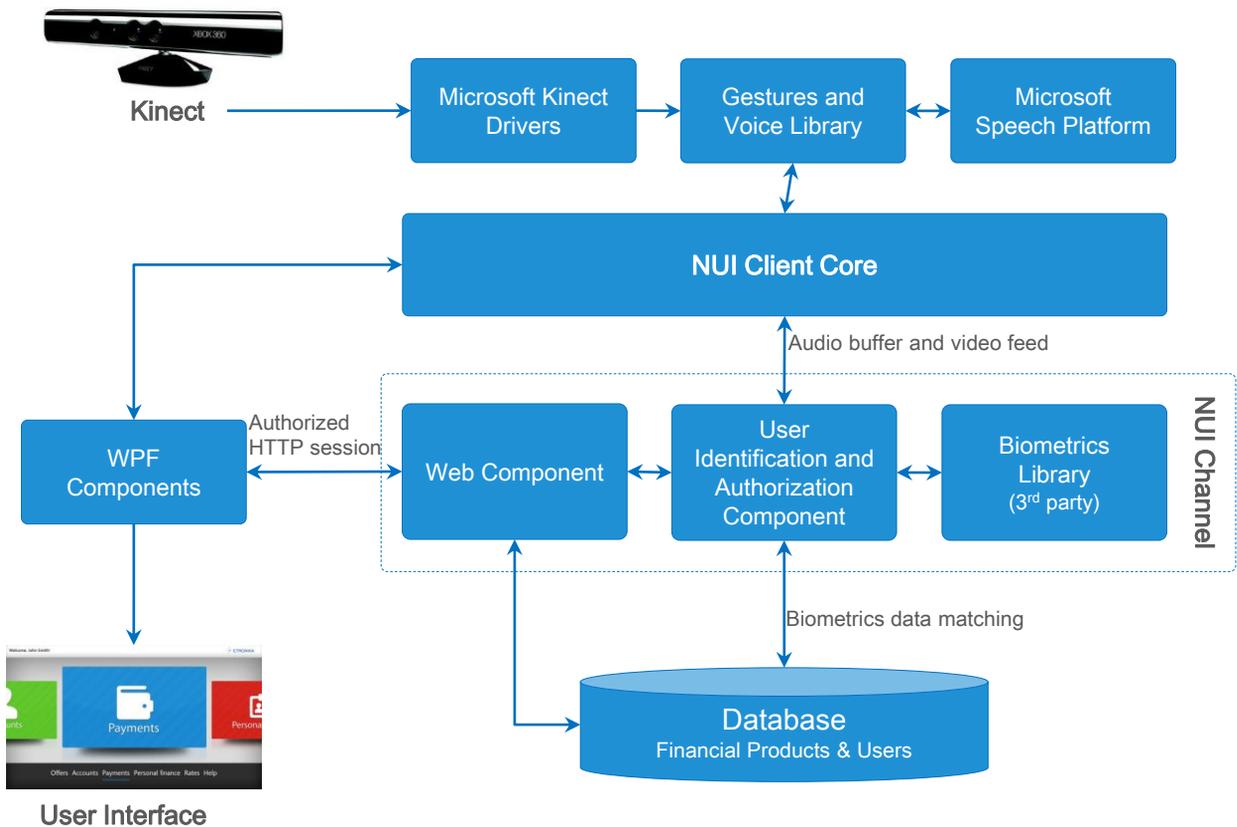
If you want to know what's next in the future of computing, you have to know NUI. Motion, face and voice recognition – all of them are parts of an emerging concept in human-computer interaction, called natural user interface (NUI).

For many people NUI is a new term, but it is one of the favorite *flavors du jour* in certain interaction design and user experience circles.

The aim of NUI is to make technology simple to use, accessible to people with minimal technical expertise, reliable and more intuitive. Of course NUI interface requires some learning, but just in a short while the user can quickly shift from novice to expert.

Term “natural” refers to intuitive actions related to natural, everyday human behavior.

## USER IDENTIFICATION AND AUTHORIZATION



The user is recognized by capturing his/her face and voice samples during logging in procedure, and comparing them with face samples and voiceprints stored in E-Channels Manager's database.

*Web Component, User Identification and Authorization Component, and Biometrics Library* – determines user identification and authorization processes.

*User Identification and Authorization Component* performs server-side biometric user identification.

In *Biometrics Library* biometrics samples are matched against a known collection of biometric data using specified algorithms.

ETRONIKA combines its own biometric data processing technology with 3<sup>rd</sup> party solution. The combined biometric data processing can work in various situations: different ambient light, alterations of face and voice expressions, temporary changes in user's appearance (for example, make-up, haircut, beard, eyeglasses, etc.).

If necessary, *User Identification and Authentication Component* can be used to integrate with other trusted and certified biometric systems through their API's.

After user is identified and authorized, Web Component opens an authorized and secure HTTP session.

## PHONE VERIFICATION

As additional security measure, NUI Chanel integrates authorization by Mobile Signature\* for sensitive operations.

Mobile Signature is based on wPKI (Wireless Public Key Infrastructure) technology, which is legal and substitute to e-signature, or handwritten signature in the real world.

From user experience point of view, this additional verification does not require any extra effort. The user simply needs to enter a random generated PIN code into his/her mobile phone.

*Authorization component*, which is a part of *NUI Channel* significantly and reliably, reduces the risk associated with usage of remote services.

## DEPLOYMENT AND INTEGRATION

ETRONIKA NUI banking has been designed for flexible and straight-forward integration with banks' IT systems and branding policies.

Its easy to change the look and feel, as well as integrate on the front-end in order to match your online bank's structure and branding policies, regardless of the underlying web technology or the desired level of integration.

\* For more information please visit:  
<http://identity.etronika.com>

## SERVICES INTERFACES

User navigation interface in based on Microsoft WPF. After a user is granted an access to banking services, the interface becomes filled with the required content through web-service API and HTML.

ETRONIKA NUI Banking's interface is highly adjustable, allowing the vast majority of banking services to be integrated within web services or ESB invocation.

At present the solution is equipped with basic online banking services:

- Account balances & statements
- Deposits
- Credit cards
- Payments
- Exchange rates
- Promotional offers
- Personal finance management (PFM)



## SOFTWARE CONTROL

After logging in, user can navigate the system and accomplish desired operations by using variety of spoken commands and hand gestures.

ETRONIKA R&D has performed usability tests in order to select the optimal set of hand gestures that feel natural to use, and does not require any additional efforts for learning or memorizing.

### Moving Left / Right

To move context left simply perform a right hand swipe towards to the left side, and do the opposite to move context to the right.

### Scroll-up / Scroll-down

Is performed by extending the right hand to the side and lowering or raising it to scroll current context up or down.

### Open / Close

Is performed by swiping both hands in and out. This gesture is intended for opening a window or navigating through hierarchical menu levels, also closing a window or terminating an operation.

## TECHNICAL REQUIREMENTS

### Hardware

- Microsoft Kinect Sensor for Windows
- Computer with 64-bit (x64) dual-core 2.66-GHz or faster processor
- Dedicated USB 2.0 bus
- 4 GB RAM
- Graphics Card ATI5670 equivalent or higher (1GB RAM, Engine Clock 775 MHz, Memory Interface 128-bit, Supports Full-HD resolution)
- Video device with Full-HD

### Software

- Windows 7 64-bit
- .NET Framework 4.0
- MS Kinect Drivers v1.0
- MS Kinect Runtime v1.0
- MS Kinect Speech Recognition Language Pack (en-US)
- MS Server Speech Platform Runtime (x86)
- MS Server Speech Platform Runtime (x64)

## ABOUT ETRONIKA

ETRONIKA is a leading Baltic IT company developing complex and innovative solutions for finance, banking and e-businesses, using the most advanced and secure technologies.

ETRONIKA's key products embrace a wide range of internet and mobile banking solutions, online identity applications based on digital signature usage, and systems for electronic retailing.

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