

NIKIFOR MINKOV

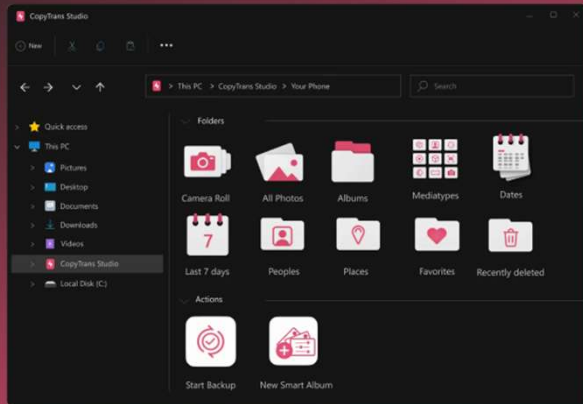
LEAD APPLICATION ARCHITECT AND DEVELOPER

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PORFOLIO 2007 - 2024



# CopyTrans Studio (2022 - 2024)



Easily view and back up iPhone/iPad photos and videos, organized directly in Windows Explorer.

**Role:** Lead R&D, Architect and full stack Developer.

## Key Features:

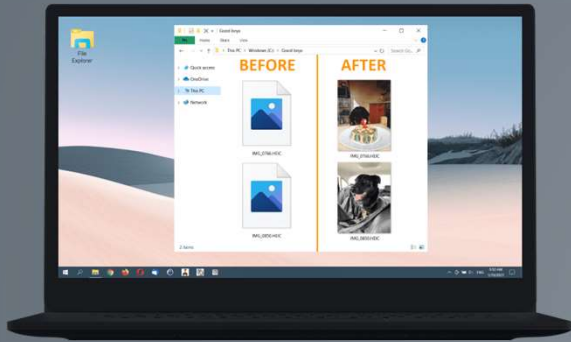
- ❖ View iPhone camera roll directly in Explorer, organized in a clear and structured format.
- ❖ Backup photos with drag-and-drop simplicity or an advanced backup engine.
- ❖ Create user-configurable directory structures based on image and video metadata.
- ❖ Supports Apple-specific features, including Live Photos and the HEIC image format.
- ❖ Support Wireless connection to iPhone

**Challenges and Solutions:** Limited Apple and Windows Shell API documentation. Clear architecture and modularity. Condenses years of technological knowhow.

**Key Technologies:** Modern C++, Windows Shell integration, SciterJS

HTML/CSS/JavaScript/React UI, RPC, Services, MVC, Cryptography, Digital Forensics, Reverse Engineering, Data Parsing and Serialization, File Format Analysis, Multi-threading.

# CopyTrans HEIC (2018 – 2024)



Windows plugin for Apple's HEIC format: View and convert HEIC to JPEG in any Windows API-compliant app.

The most widely used HEIC solution on Windows, simplifying photo management for millions.

**Role:** Original idea; Lead R&D, Architect and full stack Developer; Project Owner.

## Key Features:

- ❖ Windows image format Plugin.
- ❖ Preview HEIC images in Windows Explorer.
- ❖ Metadata support
- ❖ HEIC image support in any Windows API-compliant app
- ❖ Convert HEIC files to JPEG format with EXIF preservation.

**Challenges and Solutions:** Limited HEIC format and Windows API documentation, requiring fast R&D, dev and delivery.

**Key Technologies:** Modern C++, *Windows and Explorer integration as image codec*, Digital Forensics, *Reverse Engineering*, Data Parsing and Serialization, *File Format Analysis*, Multi-threading.

# CopyTrans Cloudly (2017 – 2024)



Manage iCloud photos: download, delete, and recover. A faster and more reliable alternative to iCloud for Windows.

**Role\*:** R&D; Full stack, Lead Architect and full stack Developer; Optimization Specialist.

## Key Features:

- ❖ Download, delete, undelete
- ❖ Using native iCloud protocol
- ❖ Unique features (undelete)
- ❖ Several times faster than iCloud for Windows

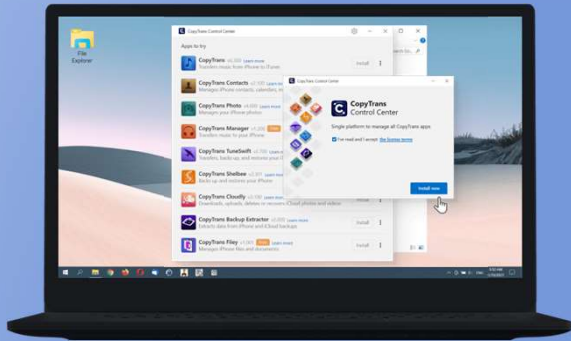
**Challenges and Solutions:** Reverse-engineering iCloud's undocumented, complex protocol took two developers over two years of intensive R&D. Achieved significant speed optimizations, making it the most complex project I've worked on.

**Key Technologies:** C++, Heavily extended VCL UI, Cryptography, Digital Forensics, Reverse Engineering, Network Forensics, Data Parsing and Serialization, Protocol Decoding, Multi-threading.

\*Decline any responsibility for UI color selection

<https://www.copytrans.net/copytranscloudly/>

# CopyTrans Control Center (2007 – 2024)



Centralized Windows app to manage and launch all CopyTrans software products, providing users with a seamless way to install, update, and access CopyTrans tools.

Simplified the user experience by consolidating multiple tools into a single, easy-to-use platform, enhancing product accessibility and support.

**Role:** Lead Architect\* and full stack Developer.

## Key Features:

- ❖ Unified interface for managing all\*\* CopyTrans applications.
- ❖ Automatic updates and installation for supported products.
- ❖ Lightweight with a focus on user convenience.
- ❖ Modern and responsive UI

**Challenges and Solutions:** Ensured a small, fast, and reliable application by carefully selecting the right UI framework and designing an efficient architecture.

**Key Technologies:** Modern C++, SciterJS **HTML/CSS/JavaScript/React UI**, MVC, Cryptography, Multi-threading.

<https://www.copytrans.net/download/>

\* Lead architect and developer since 2022 and migration to VisualStudio and SciterJS

\*\* Except CopyTrans Studio, CopyTrans Heic and CopyTrans Driver Installer

# CopyTrans Filey (2020 – 2024)



Windows File transfer app for iPhone and iPad, allowing seamless data exchange with a PC.

**Role:** Lead R&D, Architect and full stack Developer.

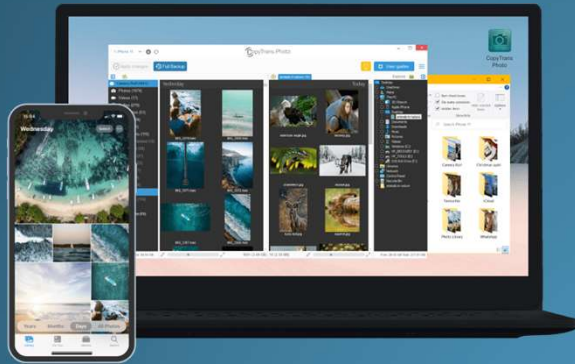
## Key Features:

- ❖ iOS app and native iOS file system support.
- ❖ Multi-device support
- ❖ Wireless connection support
- ❖ Modern and responsive UI
- ❖ Drag-and-drop functionality for easy file management.

**Challenges and Solutions:** Reverse-engineering undocumented and Apple APIs, protocols. Clear architecture and modularity. Condenses years of technological knowhow.

**Key Technologies:** Modern C++, QT/QML UI, MVC, Data Parsing and Serialization, Reverse Engineering, Multi-threading.

# CopyTrans Photo (2008 – 2024)



Windows app to transfer and manage photos/videos between iOS devices and PCs.

iTunes Photo management alternative with visual interface.

**Role:** Lead R&D, Architect and full stack Developer; Project Owner.

## Key Features:

- ❖ Transfer photos and videos between iPhone, iPad, and PC.
- ❖ Create and edit iPad photo albums.
- ❖ Organize pictures and videos in iPad and iPhone photo albums.
- ❖ Supports HEIC (inhouse) and ProRAW formats.

**Challenges and Solutions:** Reverse-engineering undocumented and frequently changing Apple APIs, encrypted file and database formats requiring continues R&D to ensure compatibility with various iOS versions and devices

**Key Technologies:** C++, Heavily extended VCL UI framework, Cryptography, Digital Forensics, Reverse Engineering, Data Parsing and Serialization, File Format Analysis.



# CopyTrans Manager (2007 – 2024)



One of the most popular free apps for managing music on your iPhone, iPad, and iPod without relying on iTunes

**Role\*:** Lead R&D, Architect and full stack Developer; Project Owner.

## Key Features:

- ❖ Add/delete music from PC to iPod/iPhone/iPad.
- ❖ Organize music in playlists.
- ❖ Audiobook support
- ❖ Metadata read and edit

**Challenges and Solutions:** Reverse-engineering undocumented and frequently changing Apple APIs, encrypted file and database formats requiring continues R&D to ensure compatibility with various iOS versions and devices.

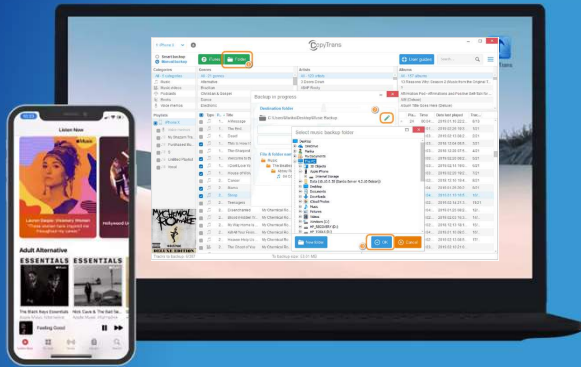
**Key Technologies:** C++, Heavily extended VCL UI framework, Cryptography, Digital Forensics, Reverse Engineering, Data Parsing and Serialization, File Format Analysis.

\*Decline any responsibility for UI color selection

<https://www.copytrans.net/copytransmanager/>



# CopyPod/CopyTrans (2007 – 2024)



The original and most popular Windows app for transferring music, videos, and playlists from iPod, iPhone, and iPad back to iTunes or a PC.

**Role:** Lead R&D\*, Architect\* and full stack Developer\*; Project Owner\*\*.

## Key Features:

- ❖ Transfer music, audiobooks, books from iDevices to iTunes
- ❖ Preserve playlists
- ❖ Automatic incremental backup

**Challenges and Solutions:** Reverse-engineering undocumented and frequently changing Apple APIs, encrypted file and database formats requiring continues R&D to ensure compatibility with various devices, iOS and iTunes versions. 24/7 support.

**Key Technologies:** C++, Heavily extended VCL UI framework, Cryptography, Digital Forensics, Reverse Engineering, Data Parsing and Serialization, File Format Analysis.

<https://www.copytrans.net/copytrans/>

\* Since CopyPod v3  
\*\* Since CopyPod v4

# CopyTrans Contacts (2012 – 2024)



Windows app to manage and back up iPhone contacts, calendars, messages, and notes.

**Role:** Lead R&D, Architect and full stack Developer; Project Owner.

## Key Features:

- ❖ Manage iPhone contacts and calendars.
- ❖ Export SMS, iMessages, WhatsApp, Viber, Line...
- ❖ Export notes with iCloud support
- ❖ vCard, vCal export/import
- ❖ PDF, HTML, Excel export

**Challenges and Solutions:** Reverse-engineering undocumented and frequently changing Apple APIs, protocols, encrypted file and database formats requiring continues R&D to ensure compatibility with various iOS versions and devices. Various import/export formats. Pushing UI to the limits. Managing technical debt.

**Key Technologies:** C++, VCL UI framework, Cryptography, Digital Forensics, Reverse Engineering, Data Parsing and Serialization, File Format Analysis, Uniscribe, PDF.

# CopyTrans Shelbee (2014 – 2024)



Windows app providing a reliable and user-friendly alternative to iTunes for backing up iPhones and iPads.

**Role\*:** Lead R&D, Architect and full stack Developer.

## Key Features:

- ❖ Incremental backups with history preservation.
- ❖ iOS App backup and restore support.
- ❖ Selective restores.

**Challenges and Solutions:** Reverse-engineering undocumented and frequently changing iOS backup protocol and file formats. Implementing virtual file system and other clever mechanics.

**Key Technologies:** C++, VCL UI framework, Cryptography, Digital Forensics, Reverse Engineering, Data Parsing and Serialization, File Format Analysis, Uniscribe, PDF.

\*Decline any responsibility for UI color selection

<https://www.copytrans.net/copytransshelbee/>

# Others...

## Apps No Longer Supported:

**Role:** Lead R&D, Architect and full stack Developer.

- ❖ **iLibs** - iTunes multiple library manager.
- ❖ **iCloud** - iPod disk cloner.
- ❖ **CopyTrans Doctor** - repair iPod file system disk errors and undelete.
- ❖ **CopyTrans TuneSwift** - iTunes backup.
- ❖ **CopyTrans Apps** - iOS apps manger (install/delete/rearrange from Windows).

## Misc...

- ❖ Bridge between 32bit apps and 64bit iOS drivers
- ❖ Definition and implementation of various Web server/client APIs for log, statistics, remote options and other app related services web services.
- ❖ Years of hardware and server web and database technology deployment and support.
- ❖ And so much more...