Modernization of Scanner App

Introduction:

This platform enables users to seamlessly scan, process, and manage documents, ID cards, and business cards across Windows and macOS. Built on .NET MAUI, it modernizes an existing WinForms application by reusing proven business logic while delivering a cross-platform desktop experience.

Users can scan files via TWAIN-supported devices, extract data using barcode recognition (ID cards) or OCR (business cards), and securely store results either locally or in the cloud with services like Google Drive, SharePoint, and Dropbox. Business card information can also be synced directly into Google Contacts and Microsoft Outlook Contacts.

The solution combines the stability of legacy workflows with modern cross-platform technology, providing a reliable, efficient, and future-ready scanning experience.

Client Details:

Name: Confidential | **Industry**: Software | **Location**: USA

Technologies:

- **Platform:** .NET MAUI (Windows, macOS)
- **Legacy Codebase:** .NET Framework WinForms Application
- **Shared Business Logic:** Migrated to .NET MAUI class library
- **Database:** SQLite (for storing app/system settings)
- **Indexing & Search:** Lucene.NET (for file-related indexing and metadata search)
- **Scanner Integration:** TWAIN Library, VintaSoft Barcode SDK, EMGU CV (OCR)
- **File & Cloud Integration:** Google Drive, SharePoint, Dropbox (Windows/macOS only)
- **Contacts Integration:** Google Contacts, Microsoft Contacts (New Outlook)

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Project Description:

The project set out to modernize scanning workflows and extend them into a .NET MAUI desktop application for Windows and macOS. The application provides centralized settings to manage system configurations, including profile setup, import/export of scan profiles, and license management for Business Card Scan and Driver License Scan. Security and access controls allow users to activate or deactivate licenses. Scanner-related options include selecting the connected scanner, changing language preferences, calibrating, or cleaning the scanner. Cloud integration capabilities enable resetting all saved cloud credentials. Additionally, the solution includes ID Card and Contacts management, allowing users to search and manage records efficiently within the app.

Scanner Workflows:

1. **Document Scan**

   - Acquire image via TWAIN.
   - Save locally in JPG, PNG, TIFF, or PDF formats.
   - Index file metadata into Lucene.NET for fast search/retrieval.
   - Upload files into Google Drive, SharePoint, or Dropbox (Windows/macOS)..

2. **ID Card Scan**

   - Acquire image via TWAIN.
   - Use VintaSoft Barcode SDK to extract barcodes (e.g., MRZ, QR).
   - Save the scanned file locally (no cloud upload for ID cards).
   - Store extracted values in the Lucene index for search.

3. **Business Card Scan**

   - Acquire image via TWAIN.
   - Process with EMGU CV OCR to extract text.
   - Parse into fields (Name, Company, Email, Phone, Address).
   - Save the scanned image locally.
   - Upload parsed contact details into:
     1. Google Contacts
     2. Microsoft Contacts (Outlook)

   - Index both file and extracted text into Lucene.NET for searching.

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Licensing & Access Model :

The application uses a flexible licensing strategy to balance free accessibility with premium features:

Free Features
- Document scanning with TWAIN devices.
- Multi-format export (JPG, PNG, TIFF, PDF).
- Local storage and Lucene.NET indexing for metadata search.
- Basic cloud uploads (Google Drive, SharePoint, Dropbox).

Licensed Features

- ID Card Scan:
  - Includes barcode extraction via VintaSoft SDK.
  - Securely stores sensitive ID data locally (no cloud upload).
  - Indexed values for fast search and retrieval.
- Business Card Scan:
  - OCR processing with Emgu CV.
  - Automatic parsing of fields (Name, Company, Email, Phone, Address).
  - Sync with Google Contacts & Microsoft Outlook Contacts.

Storage & Indexing Strategy :

- **SQLite Database**:
  - Used only for application-level settings, user preferences, and system configurations.

- **Lucene.NET Indexing**:
  - Handles all file-related metadata, OCR text, and barcode values.
  - Enables fast search and retrieval across scanned documents, IDs, and business cards.

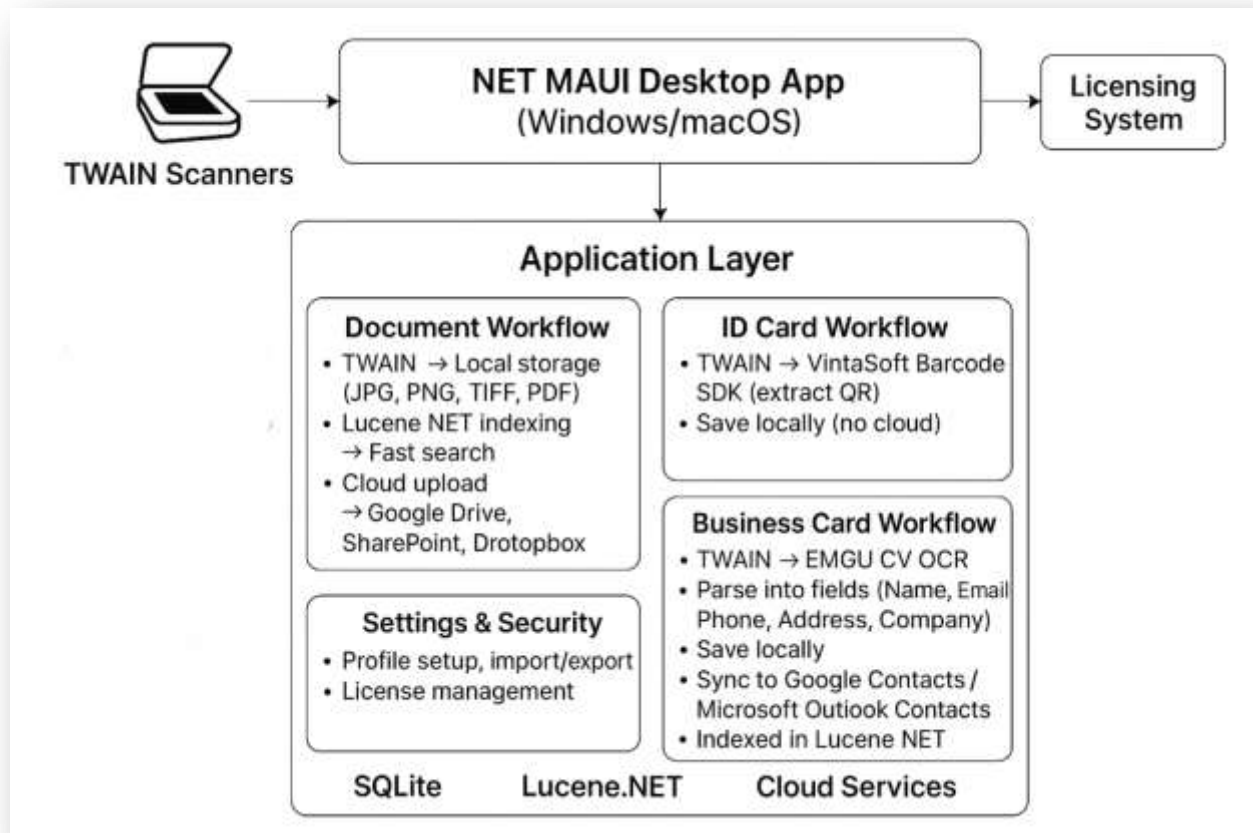# Modernization of Scanner App

Key Migration Steps:

1. Extract and refactor reusable business logic from WinForms.
2. Build cross-platform desktop UI with MAUI XAML.
3. Integrate TWAIN for scanning workflows.
4. Add specialized post-processing: OCR for business cards, barcode for ID cards.
5. Implement local storage, cloud uploads, and Lucene-based indexing.
6. Enable contacts integration with Google & Microsoft.

Key Features of the .NET MAUI Scanner App:

- Scanning Workflows: Document (free), ID Card (licensed), and Business Card (licensed).
- Cross-Platform Support: Seamless operation on Windows and macOS.
- Smart Data Capture: Barcode recognition for ID cards and OCR for business cards.
- Multi-Format Export: Save scans as JPG, PNG, TIFF, or PDF.
- Cloud Integration: Direct upload to Google Drive, SharePoint, and Dropbox.
- Contact Management: Sync business card details directly into Google Contacts and Microsoft Outlook.
- Fast Search & Retrieval: Powered by Lucene.NET indexing for instant access to scanned files and extracted data.
- Personalization & Settings: Store preferences, themes, and configurations in a lightweight SQLite database.
- Modern Experience: Intuitive, responsive UI/UX built with .NET MAUI and MVVM pattern.
- Secure Access: Licensed features ensure compliance and controlled use of premium scanning capabilities.

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Architecture Diagram:

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Screenshots: