**Copilot and AI Patterns**

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**Technical Capability Summary:** Use Copilot Studio as the Front-End App, a UI and Orchestration Layer, using a broad-based knowledge base (document storage, controlled Web Sites, SharePoint document libraries, Azure AI Search Knowledge base, Azure Open AI models, and other third-party models in Azure) to provide intelligence services, in combination of independent REST APIs that are hosted in Azure. REST APIs are invoked within Copilot Studio Action, implemented with Power Automate Flows.

**Business Applications (Use Cases):**

**Perspective**: The Web has revolutionized the business processes into self-services, improved speed, accuracy, security, and cost. Those services tend to be transactional and self-contained or stateless, such as online bill payment or online order which were well defined and deterministic. However, other more complex services are still very manual and laborious, error-prone, and not highly secure. These services tend to require user interactions, decision making, and produce varying outcomes based on the user input, business processes, and policies. In the age of Copilot and AI, we can help to simplify and automate these processes and make greater progress. Below are some examples that we can prototype/develop:

1. **Mortgage Loan Advisor**:

* **Problem**: Today, majority of the mortgage application processes are manual, time-consuming for both applicants and mortgage agents. Important information is exchanged through phone calls and emails. There is time wasted in the agent–applicant communications or miscommunications. Critical documents such as paystubs, W2s, and Passport, Driver Licenses are transmitted to Mortgage companies via applicants’ public emails such as Gmail or Outlook. Backend loan underwriting systems are expensive, rigid, and hard to maintain.
* **Solution**: Multi-modal Copilot as the UI to mortgage applicants, intelligent conversations with AI capability, incorporated with automated mortgage payment calculation, pre-approved loan amount, help with preliminary decision making. Copilot can provide educational information about the mortgage market rates, application process, required documents. Copilot can help to obtain current mortgage rates, can ask for preliminary information to help applicants to make informed decisions. Copilot can integrate with backend systems such as FICA score inquiry, bank inquiries, and provide integrated services. Copilot can help to submit loan applications with necessary documents for loan approval. Copilot can use programmed AI services such as Azure Document Intelligence to analyze loan application documents such as W2s, paystubs to extract key information, and provide insights into the incomes. Copilot can leverage AI infused risk assessment models, to help to draft loan underwriting documents (grounded with bank policies and templates), and to make preliminary decisions on loan approvals.
* **Values**: Value to the businesses are simplified and cost-effective processes. The value to consumers is better and faster services. Values to Microsoft are showcase technology in Azure and AI, so that customers can built upon this solution, or expand the solution to other use case.
* **Copilot Master Prompt / Instructions**

You are a mortgage advisor who helps consumer users to navigate through the mortgage application process and be ready to submit a mortgage loan in the end. You will also serve as a intake interface to submit loan applications that banks can use to determine the risks, make preliminary decisions on loan approvals. Your scope of services is as follows:

(1) Through friendly conversation, you provide helpful information such as the mortgage application process and current interest rates. If the user provides financial information such as income, liability, you could help user to get pre-approved loan amount. The user can use that information to determine the loan amount to take, and the best loan term for them.

(2) When the user has decided on the purchase price and downpayment, you can provide estimated monthly mortgage payment given purchase price, down payment, mortgage term (15-year or 30-year fixed mortgage), and mortgage rate. If the user provides estimated property tax amount and home insurance cost, you can help to estimate the total monthly payment.

(3) If the user has a property under contract, you can help user to prepare for the loan application. You can collect important documents to prepare for a loan application. For example, driver license, most recent pay stubs, most recent income statements such as W2s. You will use established services to submit the documentation and loan applications.

(4) You will utilize AI-infused risk assessment for each loan application, you will help the bank to create draft underwriting document, you can also provide preliminary decision on loan approval.

* **Basic Conversational Flow – Topics and levels**

Level 1 – Educational

Hello, I am your mortgage advisor. How can I help you?

Users can ask questions such as: What is the interest rate today? I need a home loan; how do I get a mortgage? What kind of mortgage should I get? Copilot provides answers based on the knowledge sources. Copilot provides advice based on the knowledge base (web urls and docs).

Level 2 – Preparation and estimation

Users ask questions such as:

How much can I afford? Can you help me to get a pre-approved loan amount? Can you give me an loan estimates?

Copilot agent responds to users by asking for additional information before helping user:

What stage of house search are you in?

Do you have a house under contract?

What is your household income? What are your current liabilities or expenses?

Would you like me to get you a pre-approved amount based on your income and liability?

Would you like me to give you an estimate on your monthly payment based on your input?

Then the copilot agent provides the information by invoking services hosted in Azure. Some of the services are programed (such as mortgage calculation, pre-approval letter), others can be mockups such as getting user’s FICA score tier, if the user does not know.

Level 3 – Loan Application Submission

At this stage, the user must have a house under the contract.

Copilot getting information on users’ income, personal information, driver license / passport, income statements, bank statements, and other documents that must be submitted to get a mortgage loan. Copilot will utilize Azure services such as Azure Document Intelligence to extract key information and provide insights about those documents. For these services to be in production, all security controls must be implemented.

Level 4 – Risk assessment and underwriting

After all the information for each loan application is received, the copilot utilized AI infused services (fraud detection services, risk assessment, draft loan underwriting documents).

Note: Below two use cases need to be further explored and developed with more details.

1. **Insurance Claims Processing Assistant**:

* **Problem**: In case of incidents such accidents or natural disaster, people call their agents if they have the document and phone numbers handy. It is a long and arduous manual process that is time consuming and emotional draining. In some cases, the person is incapacitated and not able to perform those functions. We need a multi-modal conversational agent that can use limited or incomplete information to perform the best course of action and help the users to carry through the process timely. The agent can also connect with the insurance company with quick assistance and claim processing.
* **Solution**: Multi-modal Copilot as the UI to claim requesters, can provide additional official and publicly available information on what assistance they can get, in addition to intelligent interactions with users, by providing information directly and timely,such astext or voice descriptions, pictures of the scenes, damages, to be routed appropriately to backend services that can be hosted anywhere if there are APIs accessible to Copilot. The backend services include verification of the user information, retrieve policies, and providing aid that are permitted by the insurance policies.

1. **Medical Care Coordination Assistant**

(Note: This one requires a great deal of compliance and regulations considerations, in addition to medical knowledge. It is harder to implement, and maybe a stretch. )

* **Problem**: Right now, if you need medical care, you are on hold waiting for someone to schedule an appointment. You are told “if you feel you need immediate care, please call 911”. That leaves a person to decide. Sometimes the patients can wait for an appointment to come up, other times it is life-threatening. As a patient it cannot be determined without medical procedures or triage process.
* **Solution**: An intelligent and friendly Copilot as a medical App on mobile devices can be used to help the patient to make an informed decision such as to call 911 immediately or get intelligent recommendations on other options. The copilot can contact the medical staff on the user’s behalf, if it can access user’s contact information.