



FrictionFreeAgent

Agentic AI to Reduce Operational Friction

Brady Augedahl, Abdullahi Muse, Niranjana Nayak, Alisha Verma

Introductions



Brady Augedahl

*Senior at UW-La Crosse
Computer Engineering*



Abdullahi Muse

*Senior at UMN
Computer Science*



Niranjan Nayak

*Senior at UMN
Computer Science*



Alisha Verma

*Junior at UIC
Computer Science*

Agenda

1

Prior Authorization and UHCP PAAN Team

2

Provider Portal Friction

3

FrictionFreeAgent

4

Proofs of Concept

5

Current Progress

6

Next Steps and Roadmap

7

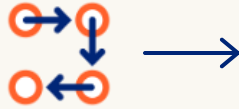
Questions

What is Prior Authorization?



Physician orders treatment, test, or drug for patient

Information is sent in the form of a variety of codes (CPT, CMS, POS, NPI).



Staff begins prior auth process, checking PA requirements for the patient's health plans

All healthcare plans have different, complex, and constantly changing rules regarding prior authorization.



Contact health insurance for forms and complete necessary steps.

Each healthcare plan has different documents required for different procedures.



The documents are then sent for approval. A clean approval can take anywhere from 1-10 days.

Certain providers can bypass this approval through UHC's Gold Card program.



In some cases, the procedure can be rejected, or an alternative drug or treatment is recommended.

Rejection reasons can range from improper procedure to a generic alternative to an expensive drug. Regardless, it is a lengthy process.

UHCP PAAN Team

UnitedHealthcare Provider Prior Authorization and Notification



UHCP PAAN Application

Internal tool designed to streamline the **prior authorization** process for UHC provider users

Business Requirements

Cost Control

Preventing unnecessary or overly expensive treatments

Patient Safety

Ensures treatments are clinically appropriate

Regulatory Compliance and Provider Accountability

Aligns with state guidelines and encourages adherence to evidence-based procedures

Operational Efficiency

Reduces downstream costs from inappropriate or unnecessary care

Provider Portal Friction

Problem Statement: Provider Portal Application Downtime/Issues



**Increased call
volume**



**Decreased digital
task completion**



**Provider & member
dissatisfaction**



**Diminished user
trust**

FrictionFreeAgent



Proposed Solution:

Leveraging agentic AI to proactively minimize operational friction

Proposed Capabilities:

Outage Notifications

- Automated and proactive
- Clear communication, next steps

Backpressure

- Preventing known interruptions

Re-submission

- Intelligent re-submission of affected tasks
- Duplicate checks

Empathetic Messaging

- Maintaining user trust and satisfaction

Early-Stage Proof of Concept



Objective: Smaller Scale Agents

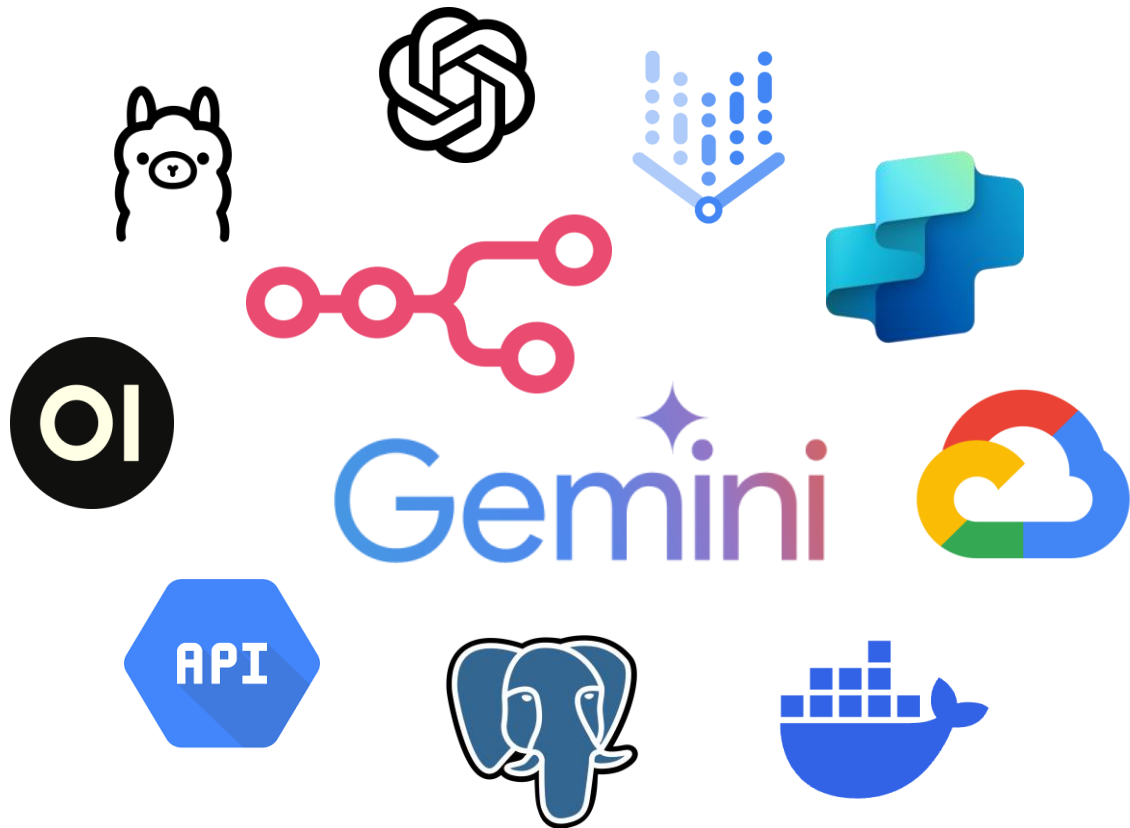
In our first few weeks our goal has been to build up to the final FrictionFreeAgent product through development of smaller agents tackling more specific tasks



Prior Authorization Assistant

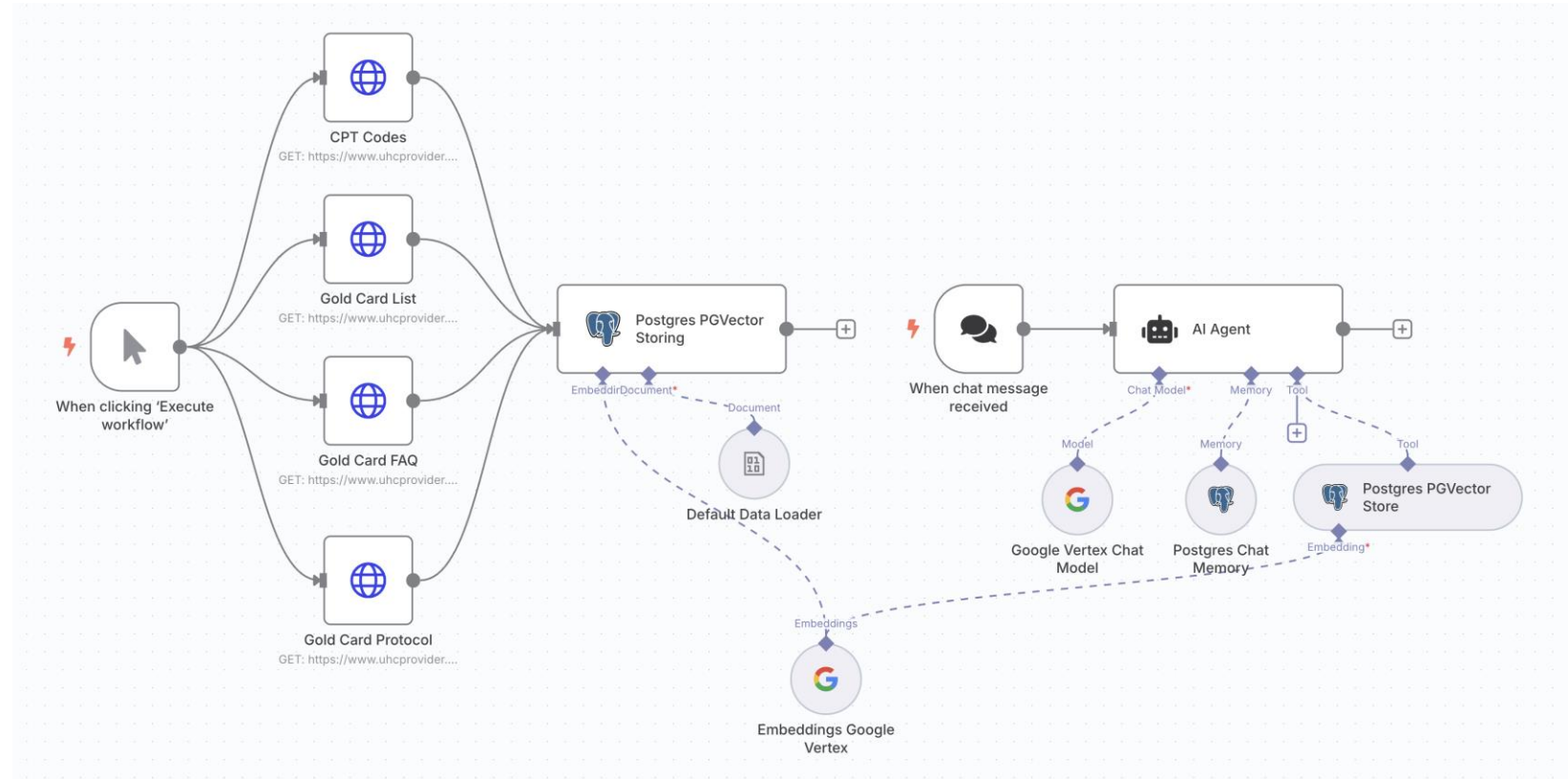
When given a CPT code, this agent will be able to return procedure details, prior auth designation, and any state-by-state differences for the prior auth process

Current Progress and Experimentation



- **Tried Ollama + OpenWebUI** to run local LLMs (e.g., LLaMA, DeepSeek)
 - ☒ Easy to set up and test locally
 - ☒ Models were not large or accurate enough to handle complex CPT code data
- **Explored Copilot Studio (Microsoft)**
 - ☒ Chatbot worked well with uploaded PDF data
 - ☒ Could not generate or use an API key to connect with n8n for automation
- **Integrated Gemini via Google Cloud API**
 - ☒ Enabled access to powerful, customizable LLMs
 - ☒ Good chat memory and UI integration with OpenWebUI
 - ☒ Struggled with data accuracy and structured outputs
- **Leveraging Vertex AI** to host and manage Gemini models
 - ☒ High accuracy with CPT/ICD/POS/NPI code data
 - ☒ Supports memory (via Postgres vector store), fine-tuning, and scalable deployment
 - Efficiently connects to n8n workflow, seamless automation, and user-friendly chatbot

- Workflows to integrate many different application types
- Precise like coding, but the speed of drag and drop
- Integrate tools into AI in thousands of different configurations



CPT Recall Chat Example

Procedure: Arthroscopy

Prior authorization is required for all states.

29826 29843 29871

Prior authorization is required for all states. In addition, **site of service** will be reviewed as part of the prior authorization process for the following codes **except** in **Alaska**, Massachusetts, Puerto Rico, Rhode Island, Texas, Utah, the Virgin Islands and Wisconsin

29805	29806	29807	29819
29820	29821	29822	29823
29824	29825	29827	29828



Now what procedure does code 29825 correspond to. Does it require prior auth?

CPT code 29825 corresponds to the procedure "Arthroscopy, shoulder, surgical; with lysis and resection of adhesions, with or without manipulation".

Yes, according to UnitedHealthcare's policy, prior authorization is required for CPT code 29825 in all states. Additionally, the site of service will be reviewed as part of the prior authorization process for this code in most states.

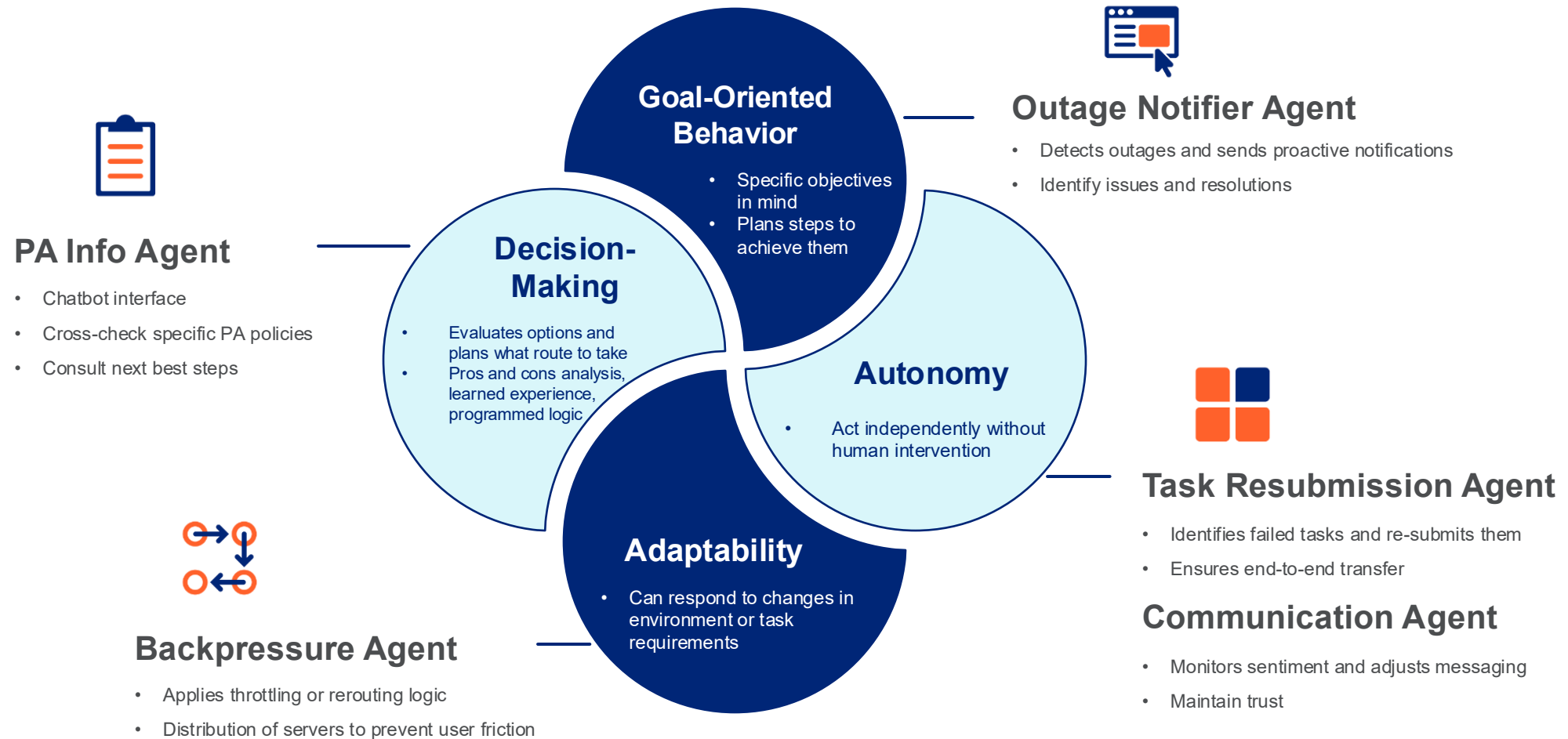
You can submit a prior authorization request through the UnitedHealthcare Provider Portal at UHCprovider.com.

I am in Alaska. Will site of service still be reviewed for that procedure here?

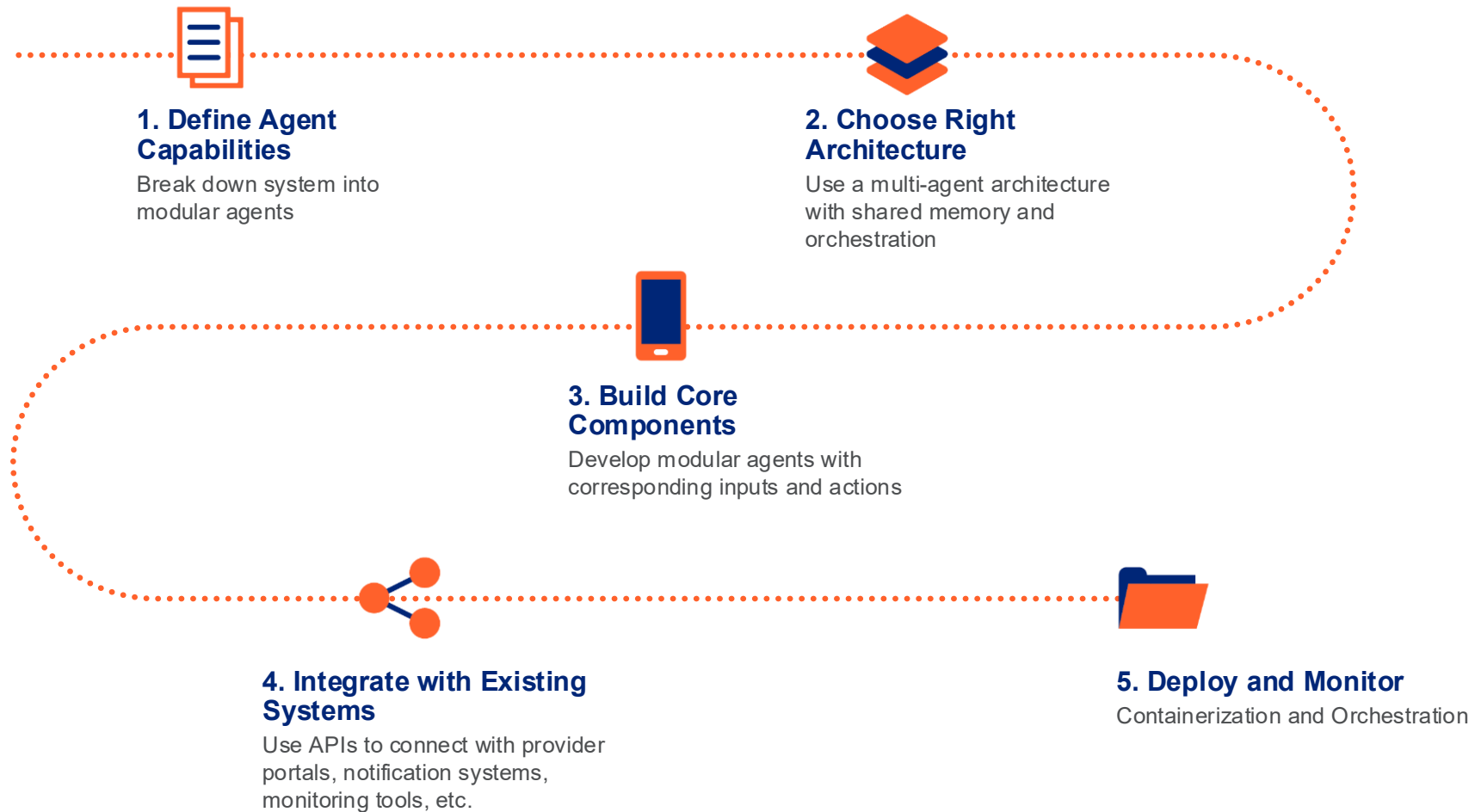
You are correct to ask for that clarification. For CPT code 29825, the site of service review is **not** required in Alaska.

UnitedHealthcare's policy states that while prior authorization is necessary for this procedure in all states, the site of service review is waived for Alaska, Massachusetts, Puerto Rico, Rhode Island, Texas, Utah, the Virgin Islands, and Wisconsin.

Next Steps – Building Modular Agents



Roadmap





Questions?

Thank You!

Optum

Optum is a registered trademark of Optum, Inc. in the U.S. and other jurisdictions. All other brand or product names are the property of their respective owners. Because we are continuously improving our products and services, Optum reserves the right to change specifications without prior notice. Optum is an equal opportunity employer.

© 2025 Optum, Inc. All rights reserved.