Dottorato in Intelligenza Artificiale in Medicina e Innovazione nella Ricerca Clinica e Metodologica

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WHY

AI supported project for multidisciplinary meetings

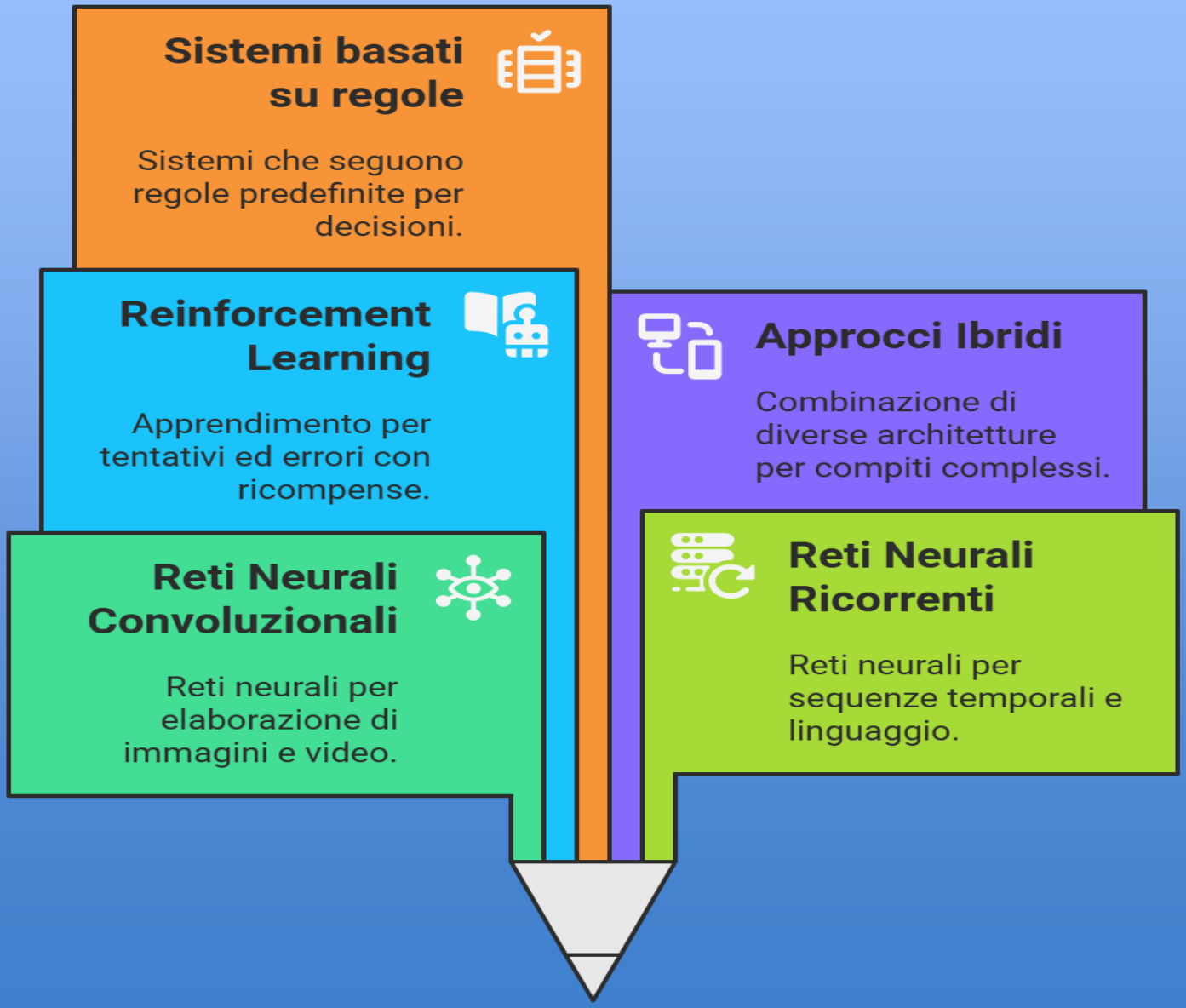
Share a scientific pilot study framework

Explore the impact on clinical collaboration

From Chatbots to Agents

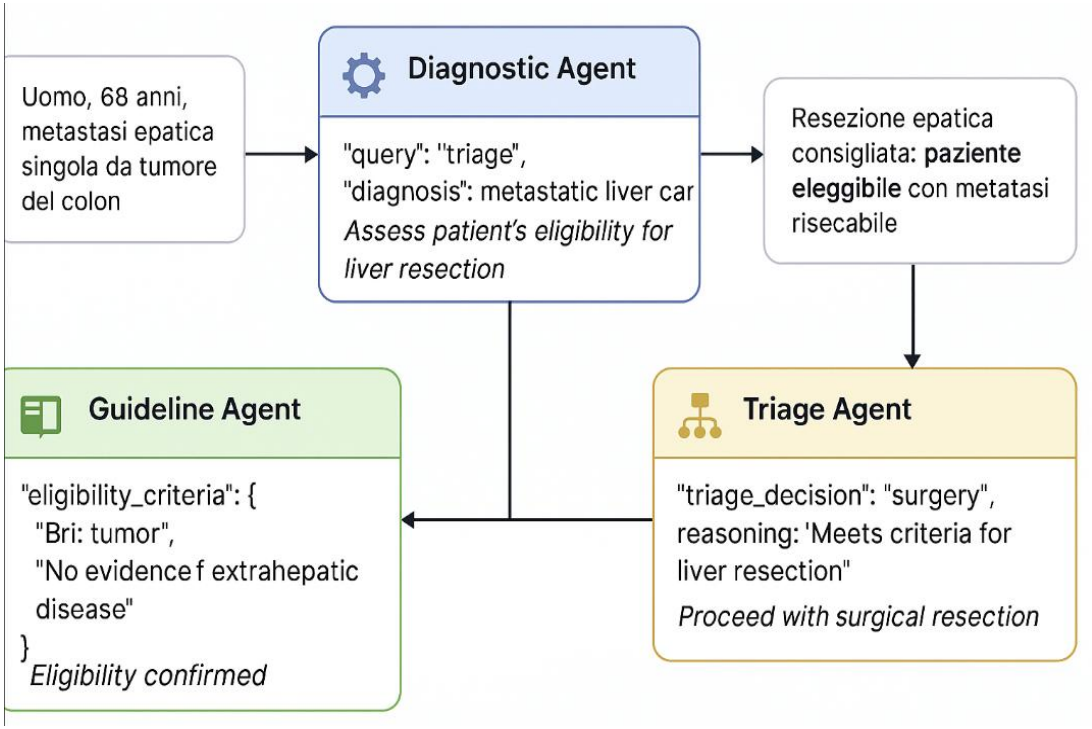
Aspect	Chatbot	Agent
Purpose & Focus	Reactive; waits for user input- Frequently used for FAQs and basic Q&A	Proactive; can initiate tasks- Used for complex problem-solving and workflow automation
Capabilities	Often rule-based or limited NLP- Narrow or scripted knowledge base	Advanced AI (ML, LLMs, knowledge graphs)- Maintains context and adapts over time
Interaction Style	Primarily text/voice- Responds with short, direct answers	More dynamic channels (text, voice, apps)- Can integrate with other tools and services
Autonomy	Minimal autonomy; needs explicit prompts	High autonomy; can handle multi-step tasks and subgoals independently
Examples	FAQ chatbot, customer support bot	Personal assistant, task/goal-oriented system

Architetture Diverse per Agenti AI



Comunicazione tra Agenti

- Gli LLM comunicano meglio in linguaggio naturale perché è ciò per cui sono stati allenati.
- Nei sistemi AI agentici, si usano strutture **semiformalizzate** (come JSON) che **simulano il ragionamento** ma restano un'interfaccia testuale.
- Il "linguaggio macchina" tra agenti **non è nativo**, ma un'astrazione utile per l'interoperabilità.
- **Non lo "inventano"**, lo **imitano** grazie al pre-training su dati che contenevano quelle strutture



Input dell'utente

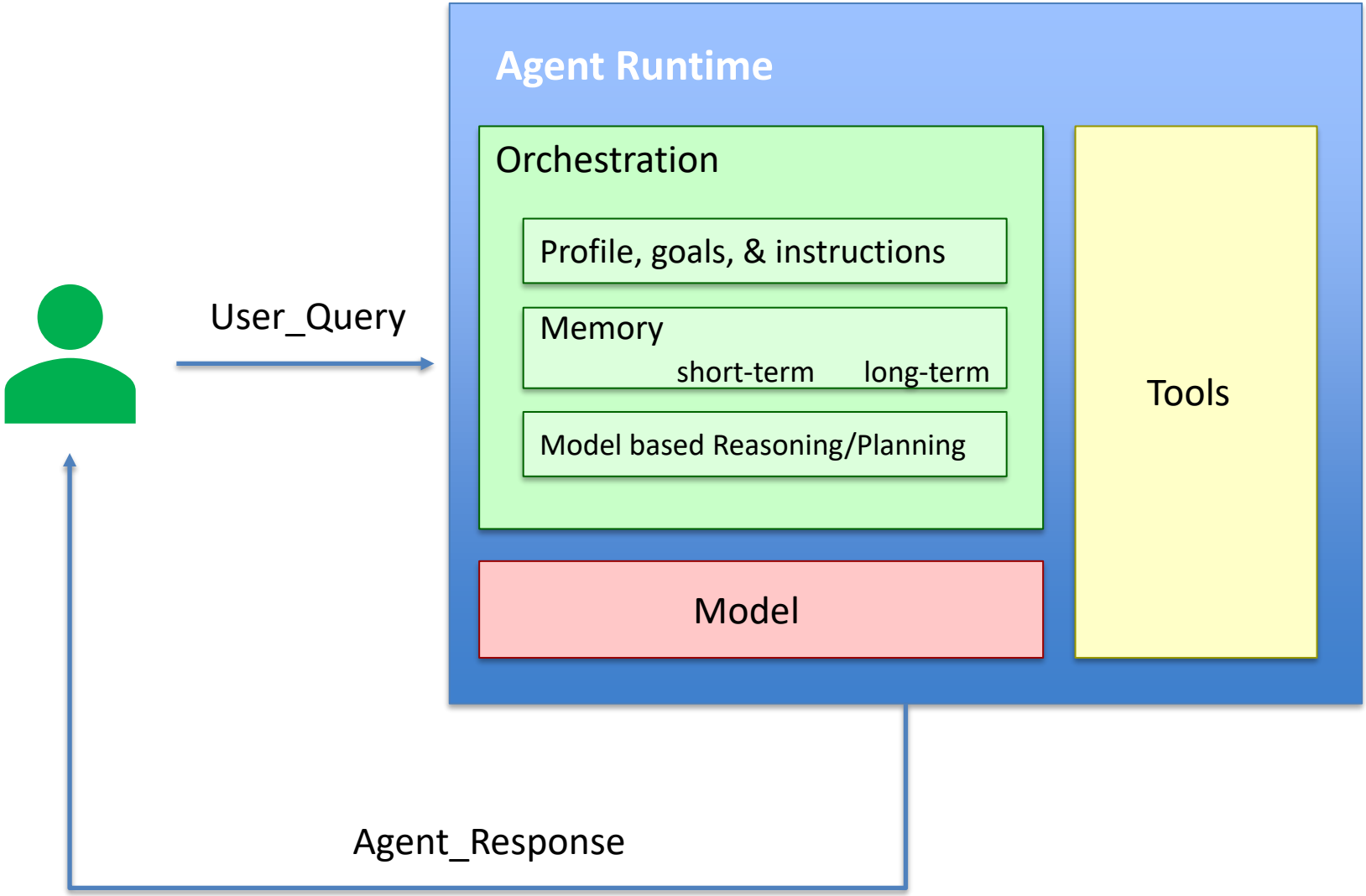
plaintext Copy Edit

```
Uomo, 54 anni, dolore epigastrico irradiato alla schiena, lipasi 3 volte superiore al limite, nau
```

Step 1 – Il Diagnostic Agent elabora i dati e chiede conferma

json Copy Edit

```json
{
  "query": "diagnosis_support",
  "suspected_condition": "pancreatitis",
  "clinical_criteria": {
    "abdominal_pain": "epigastric, radiating to back",
    "lipase": "elevated x3",
    "symptoms": ["nausea", "vomiting"]
  },
  "confirmation_request": "Check if diagnostic criteria for acute pancreatitis are met according t
}
```

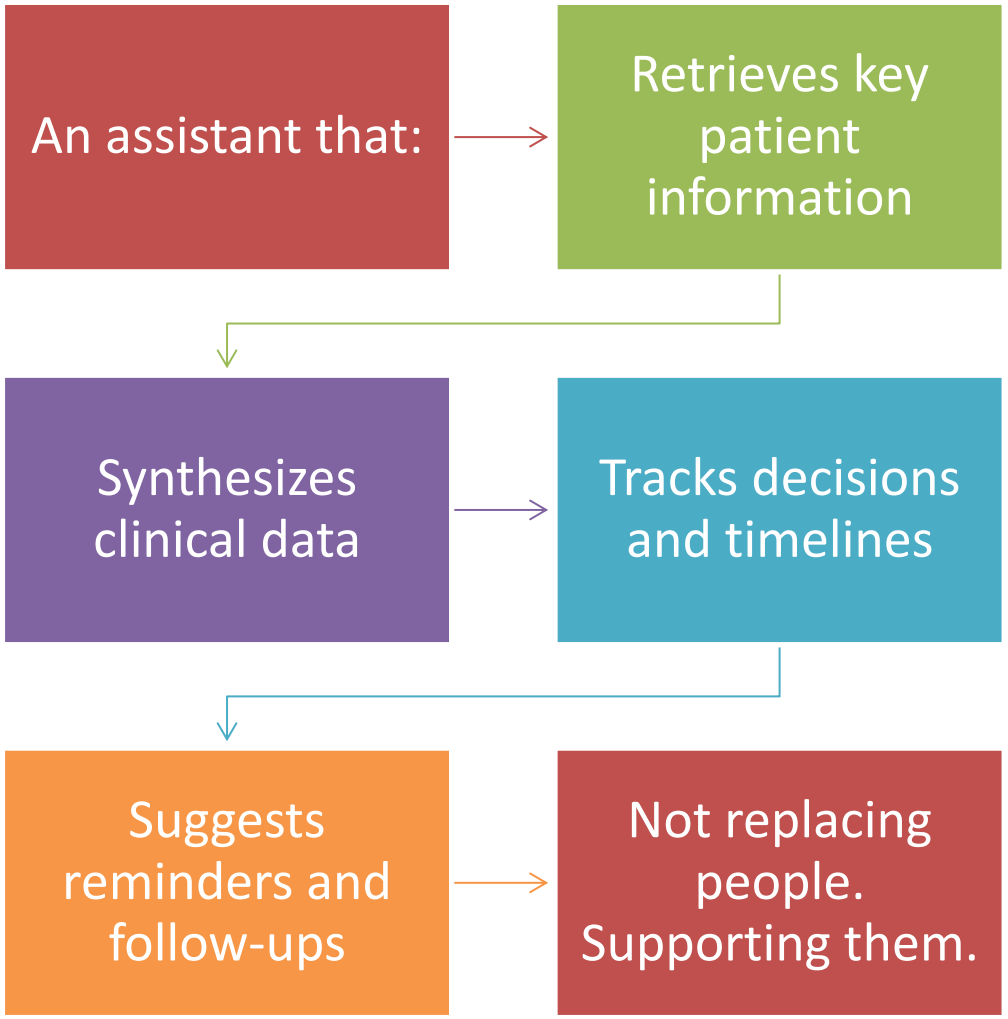

Agent Runtime
Orchestration
Profile, goals, & instructions
Memory
short-term
long-term
Model based Reasoning/Planning
Tools
Model
User_Query
Agent_Response

The Current Problem

Multidisciplinary meetings today face:

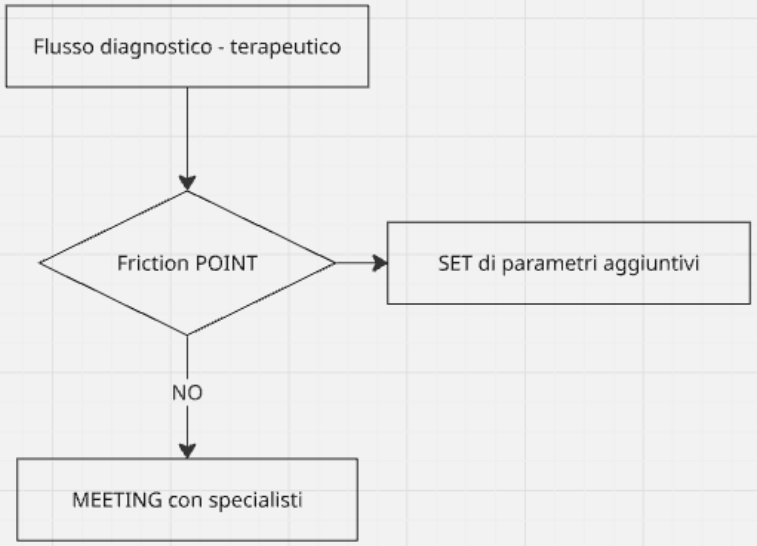
- Information/task overload
- Lack of continuity
- Delays in decision-making
- Cognitive burden on experts
- Lack of retrievable common knowledge

The Proposal: An AI Assistant



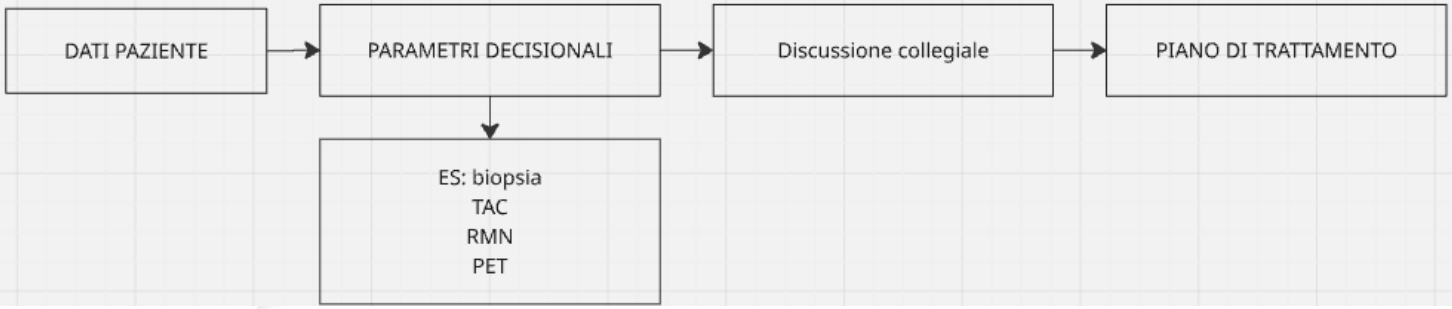
Knowledge base o insegnabile

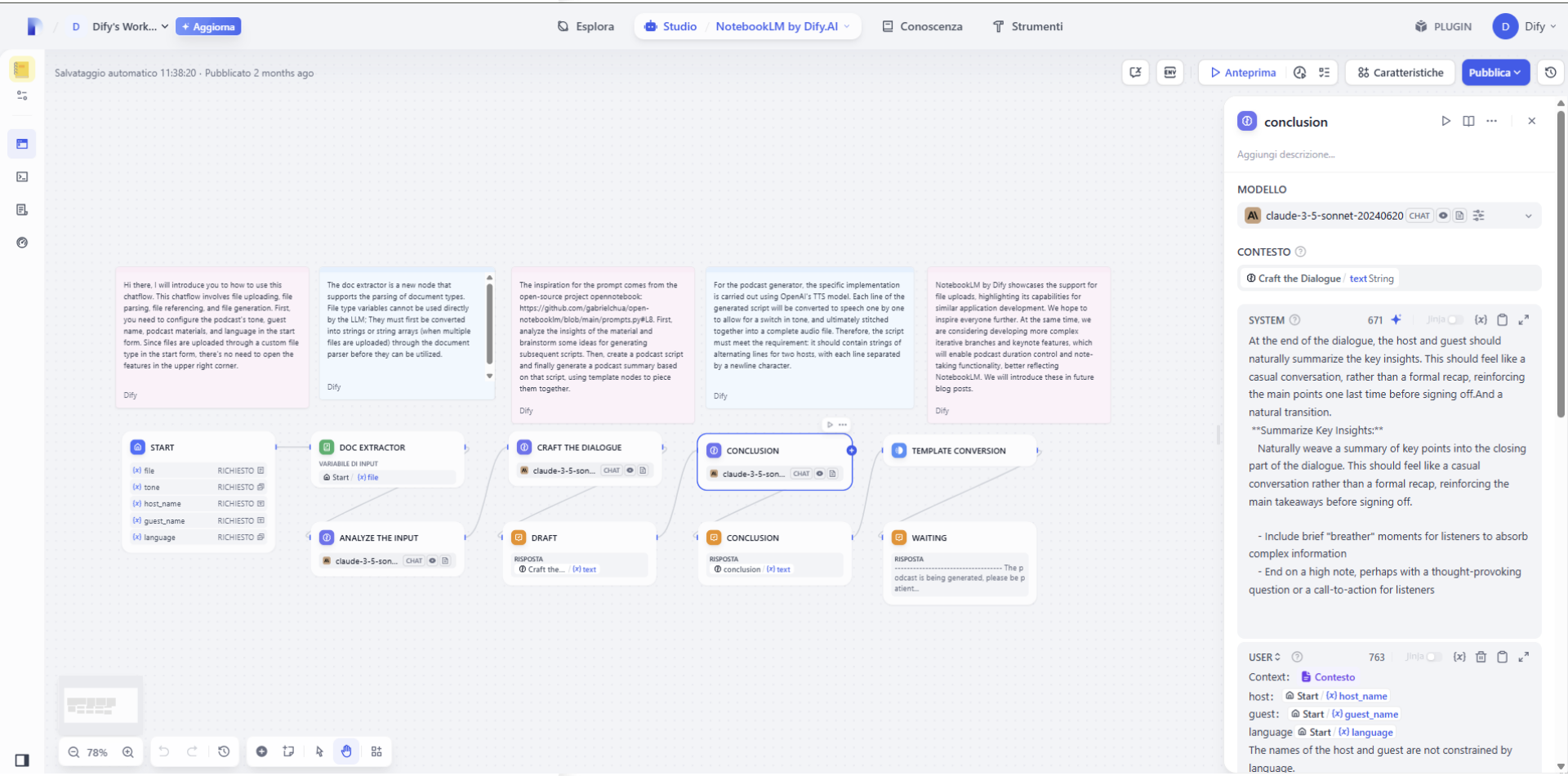
- TNM
- Classificazioni
- Linee guida
- Parametri di intervento chirurgico
- Letteratura scientifica inerente
- ARCHIVIO DI CASI
- Set di dati introduttivo



Obiettivi del chatbot

- Assistente alla validazione dei dati introduttivi
- Riassunto sui dati introduttivi (diagnostica, clinica, laboratoristica, anatomopatologica)
- Posto che la biopsia sia possibile, individuare i parametri che rendono fattibile la biopsia (anse interposte, capacità di trattenere il respiro, ...)
- Riferimento alla linea guida che parla di quella particolare terapia
- Stesura del verbale
- Supporto alla comunicazione al paziente una volta raggiunta la conclusione




Dify's Work...
Aggiorna
Esplora
Studio
NotebookLM by Dify.AI
Conoscenza
Strumenti
PLUGIN
Dify
Salvataggio automatico 11:38:20 · Pubblicato 2 months ago
Anteprima
Caratteristiche
Pubblica
Hi there, I will introduce you to how to use this chatflow. This chatflow involves file uploading, file parsing, file referencing, and file generation. First, you need to configure the podcast's tone, guest name, podcast materials, and language in the start form. Since files are uploaded through a custom file type in the start form, there's no need to open the features in the upper right corner.
Dify
The doc extractor is a new node that supports the parsing of document types. File type variables cannot be used directly by the LLM; They must first be converted into strings or string arrays (when multiple files are uploaded) through the document parser before they can be utilized.
Dify
The inspiration for the prompt comes from the open-source project opennotebook: https://github.com/gabrielchua/open-notebooklm/blob/main/prompts.py#L8. First, analyze the insights of the material and brainstorm some ideas for generating subsequent scripts. Then, create a podcast script and finally generate a podcast summary based on that script, using template nodes to piece them together.
Dify
For the podcast generator, the specific implementation is carried out using OpenAI's TTS model. Each line of the generated script will be converted to speech one by one to allow for a switch in tone, and ultimately stitched together into a complete audio file. Therefore, the script must meet the requirement: it should contain strings of alternating lines for two hosts, with each line separated by a newline character.
Dify
NotebookLM by Dify showcases the support for file uploads, highlighting its capabilities for similar application development. We hope to inspire everyone further. At the same time, we are considering developing more complex iterative branches and keynote features, which will enable podcast duration control and note-taking functionality, better reflecting NotebookLM. We will introduce these in future blog posts.
Dify
START
file RICHIESTO
tone RICHIESTO
host_name RICHIESTO
guest_name RICHIESTO
language RICHIESTO
DOC EXTRACTOR
VARIABILE DI INPUT
Start / file
CRAFT THE DIALOGUE
claude-3-5-son... CHAT
CONCLUSION
claude-3-5-son... CHAT
TEMPLATE CONVERSION
ANALYZE THE INPUT
claude-3-5-son... CHAT
DRAFT
RISPOSTA
Craft the... / text
CONCLUSION
RISPOSTA
conclusion / text
WAITING
RISPOSTA
The podcast is being generated, please be patient...
78%
conclusion
Aggiungi descrizione...
MODELLO
claude-3-5-sonnet-20240620 CHAT
CONTESTO
Craft the Dialogue / text String
SYSTEM 671
At the end of the dialogue, the host and guest should naturally summarize the key insights. This should feel like a casual conversation, rather than a formal recap, reinforcing the main points one last time before signing off.And a natural transition.
Summarize Key Insights:
Naturally weave a summary of key points into the closing part of the dialogue. This should feel like a casual conversation rather than a formal recap, reinforcing the main takeaways before signing off.
- Include brief "breather" moments for listeners to absorb complex information
- End on a high note, perhaps with a thought-provoking question or a call-to-action for listeners
USER 763
Context: Contesto
host: Start / host_name
guest: Start / guest_name
language Start / language
The names of the host and guest are not constrained by language.

Orchestra

ISTRUZIONI
Automatico

Scrivi qui il tuo prompt, inserisci '{' per inserire una variabile, inserisci '/' per inseri...

0

Variabili
+ Aggiungi

Le variabili consentono agli utenti di introdurre parole del prompt o osservazioni di apertura quando compilano i moduli. Puoi provare a inserire `{{input}}` nelle parole del prompt.

Contesto
Impostazioni di recupero
+ Aggiungi

Puoi importare Conoscenza come contesto

METADATA FILTERING
Disabled

Debug e Anteprima

#1
Selezi

Parla con il bot

v 1.1 test

Conoscenza

Strumenti

PLUGIN

D Dify

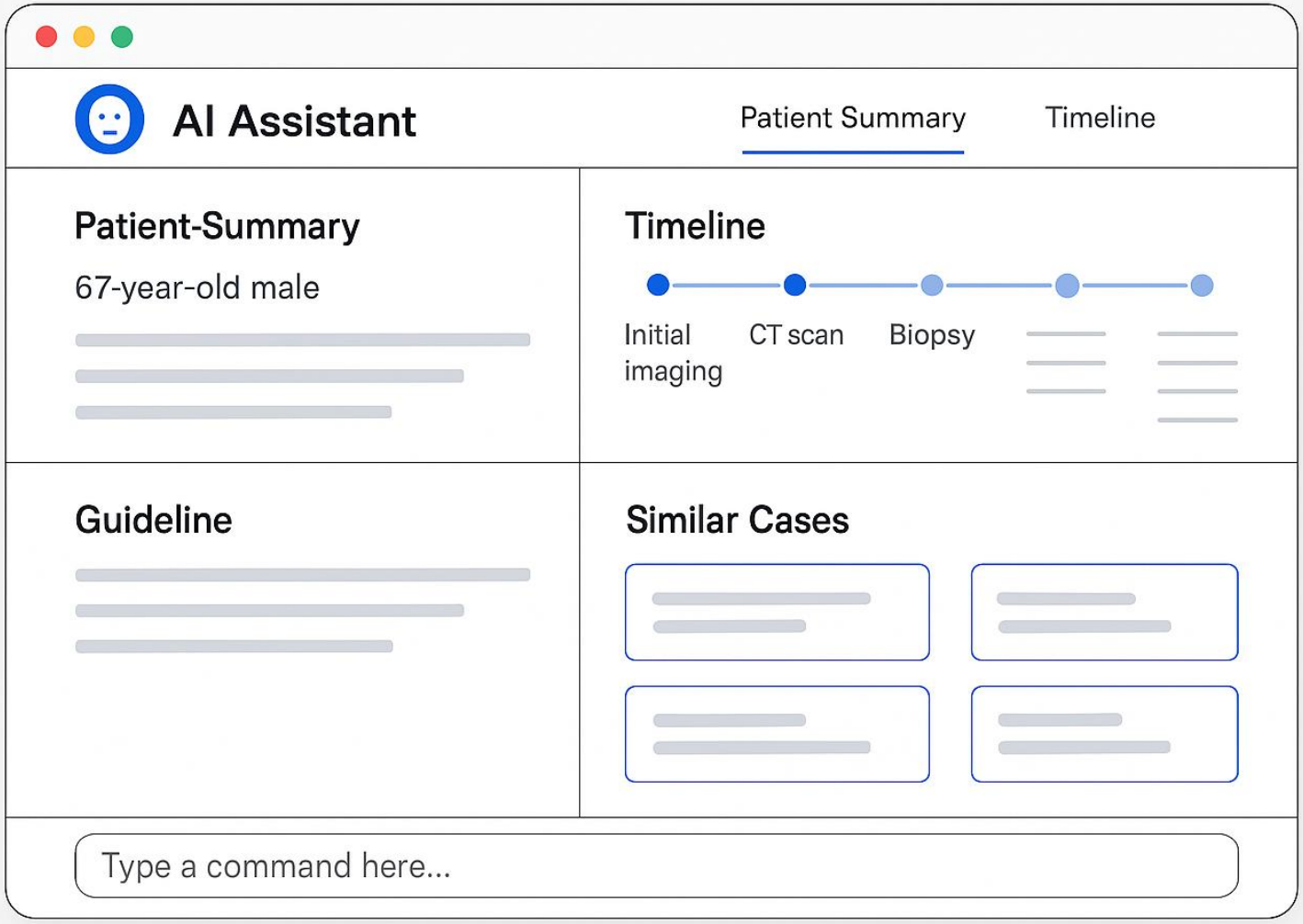
Pubblica

+ Aggiungi Modello(2/4)

eziona il tuo modello

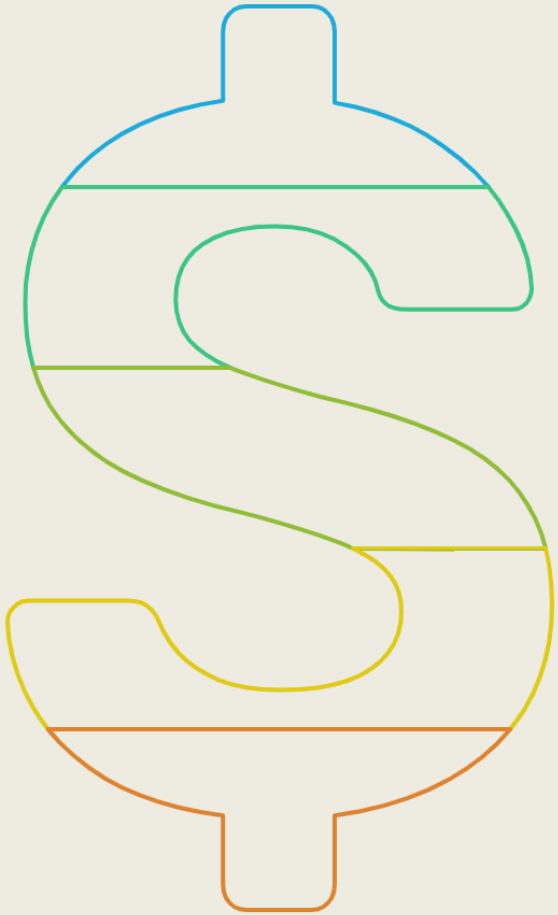
#2

Seleziona il tuo modello


AI Assistant
Patient Summary
Timeline
Patient-Summary
67-year-old male
Timeline
Initial imaging
CT scan
Biopsy
Guideline
Similar Cases
Type a command here...

What we are Building

Project Support Overview



Coding and Development

All coding and developers' work will be provided by our company.

Computational Power and Storage

The computational power, storage, and maintenance will be covered by us.

LLM Token Costs

The LLM token used from developing to deploying the MVP will be paid by us.

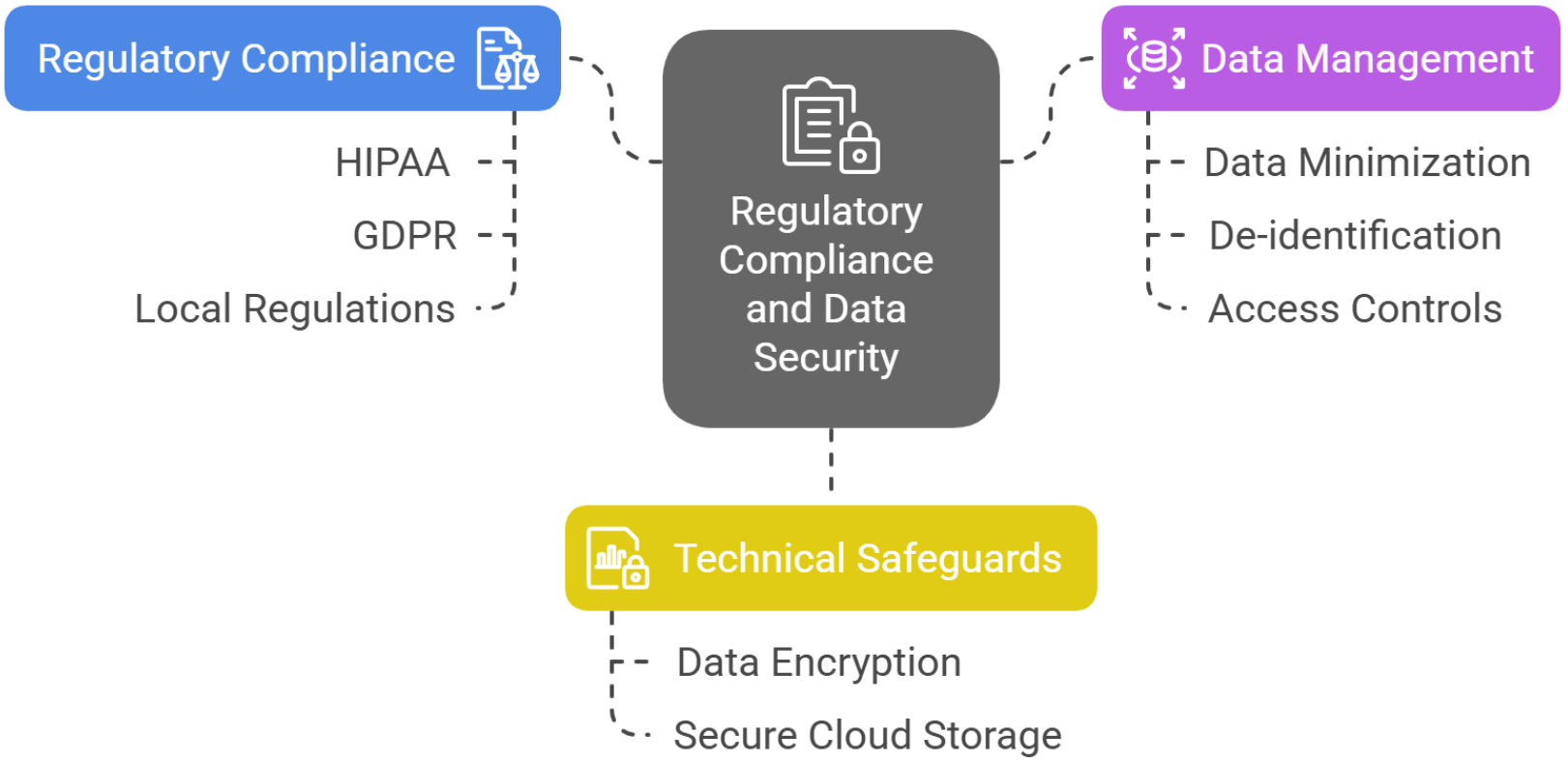
Training for Independence

We can train others to run the agent even without us.

Non-Profit Intentions

We do not want to make a profit from this project.

Ensuring Compliance and Security in AI Systems



Implementing Security Measures

Agent Design

- Restrict data retention periods
- Monitor for unauthorized access
- Embed policy compliance checks

User Training

- Educate staff on secure data handling
- Emphasize safe login and communication practices

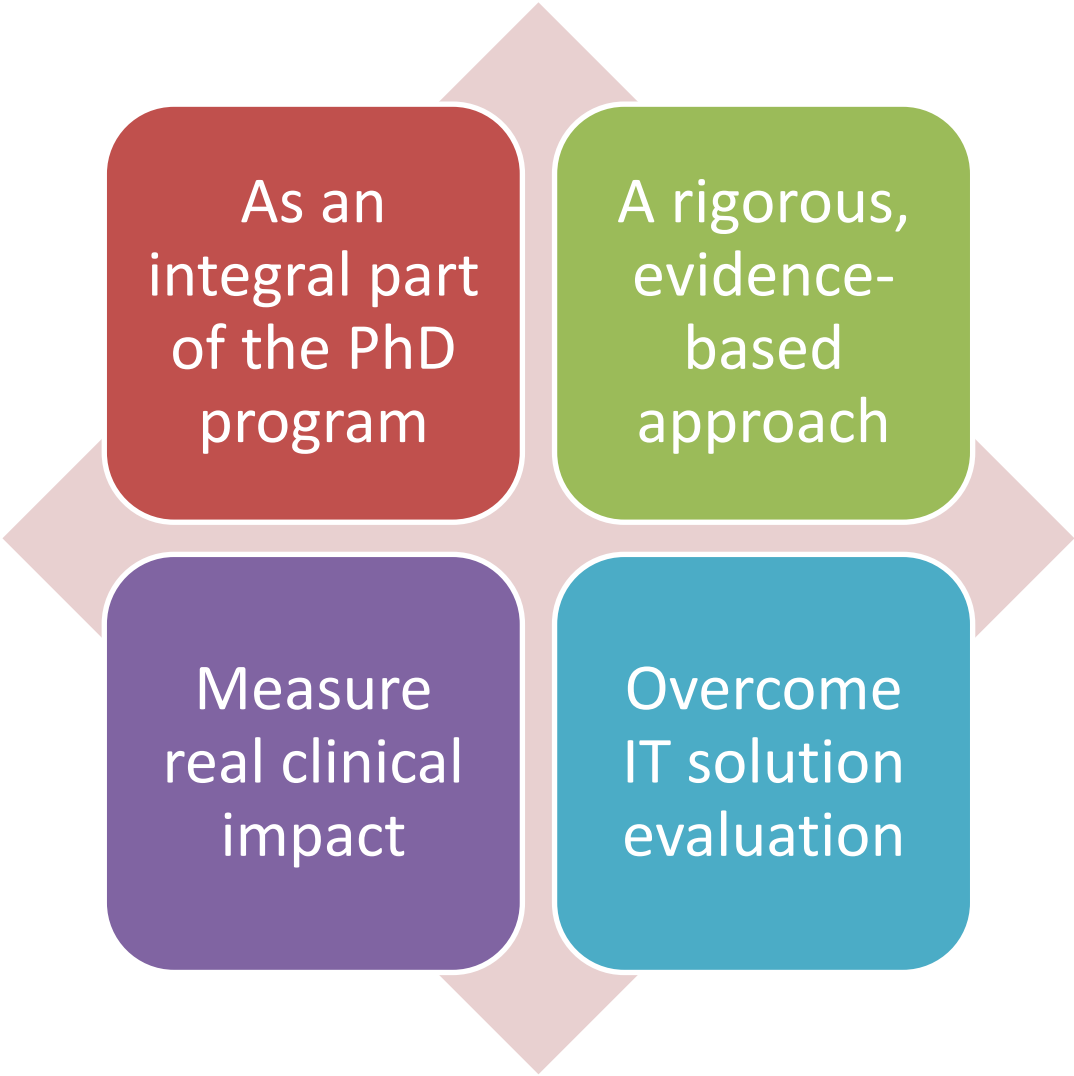
Ongoing Validation

- Conduct privacy/security audits
- Update policies for new threats or rules

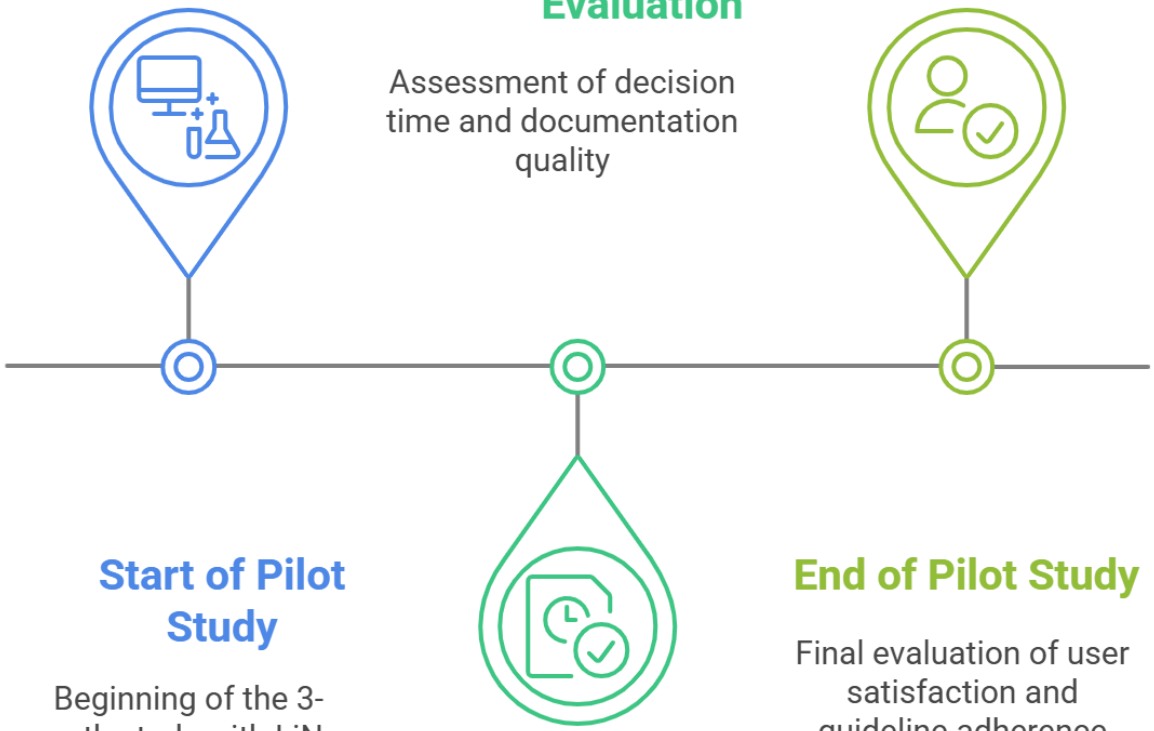
Agent naming

1. ***SAMuEL*** **–** Smart Agent for Multidisciplinary Evaluation Lineup
2. **LINA** Lineo Intelligent Navigation Assistant
3. **LION** Lineo Intelligent Oncological Navigator
4. **LINDA** Lineo Intelligent Navigator & Decision Assistant
5. **LIN-Care** Lineo Intelligent Navigator for Care

Why a Scientific Pilot?



Pilot Study Timeline for AI Agent Implementation



Midpoint Evaluation

Assessment of decision time and documentation quality

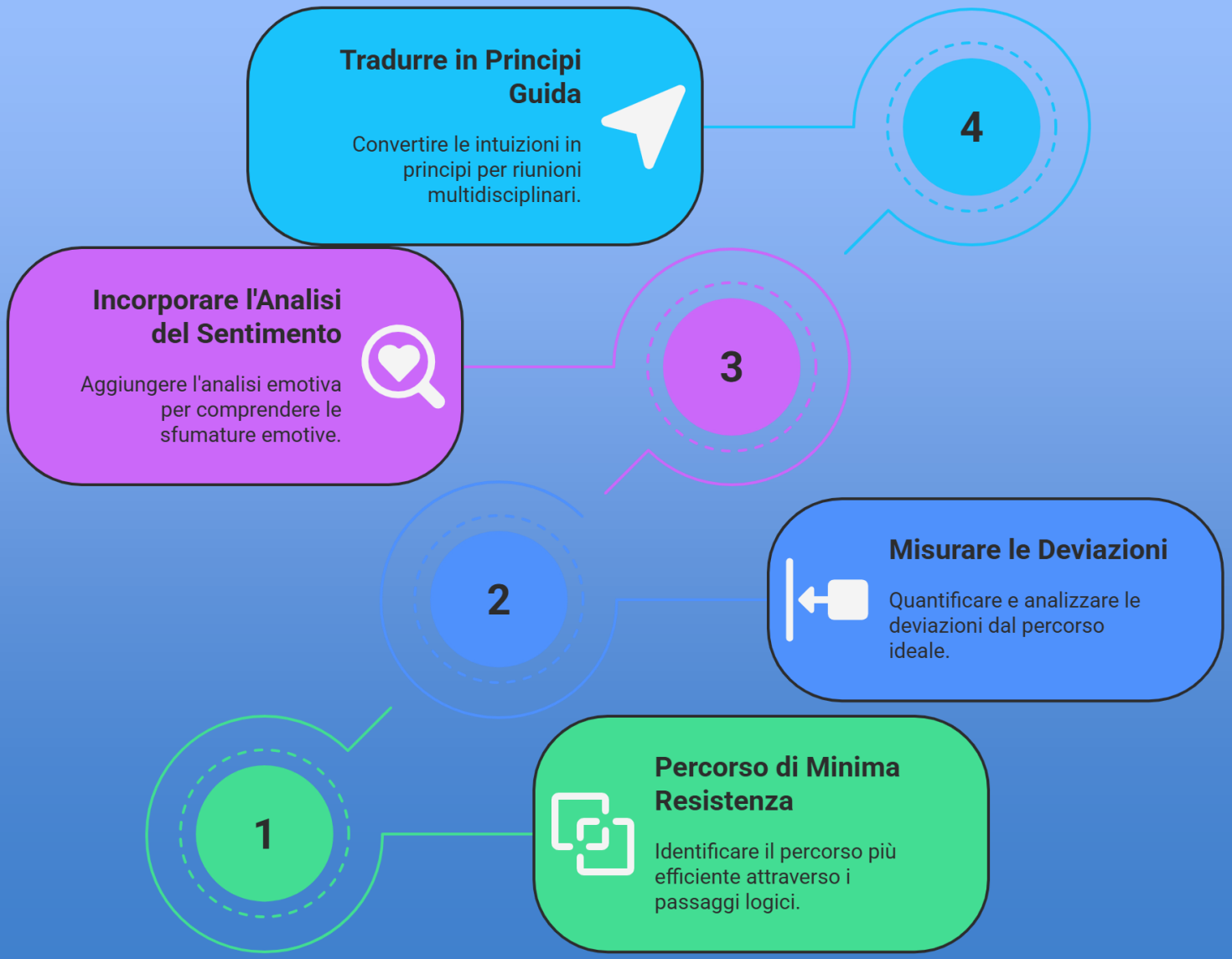
Start of Pilot Study

Beginning of the 3-month study with LiNeo

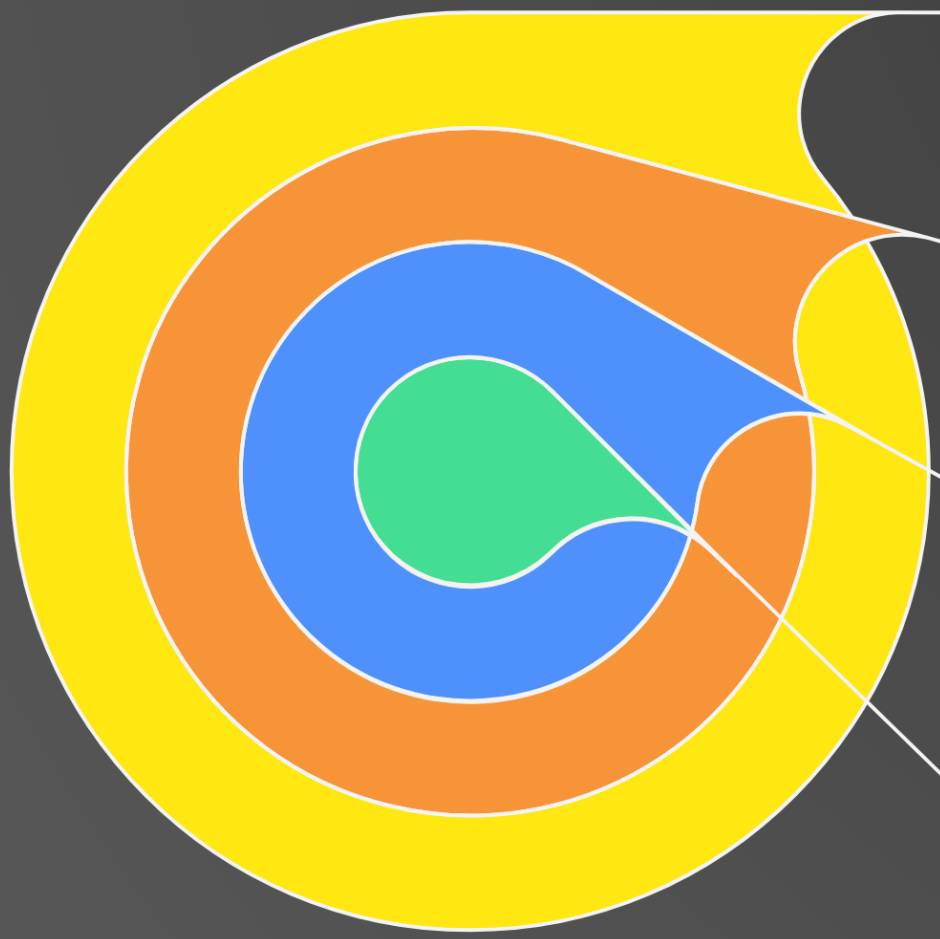
End of Pilot Study

Final evaluation of user satisfaction and guideline adherence

Mappare il Ragionamento Clinico



Modello di Interazione Paziente



Relazioni

Connessioni tra il paziente e gli attori

Attori

Entità che esercitano influenza

Caratteristiche

Tratti che influenzano il posizionamento

Paziente

Il punto focale dell'interazione

Dualità dell'Informazione

Come la luce, l'informazione è simultaneamente onda e particella

Modalità Onda | Modalità Particella | Dualità

Interpretazione

Natura Ondulatoria:
L'informazione si diffonde come emozione, atmosfera, influenza culturale - pervade lo spazio sociale

Natura Particellare:
L'informazione come messaggio discreto, contenuto specifico, dato trasferibile tra individui

Come per la luce, la "modalità di osservazione" determina quale aspetto percepiamo.

What's Next?

To move forward:

- Leadership support
- Team selection
- Protocol design
- Pilot kickoff