

# SPARKY

## A Chatbot for Cognitive Behavioral Therapy Management Chatbot

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### What is Cognitive Behavioral Therapy?

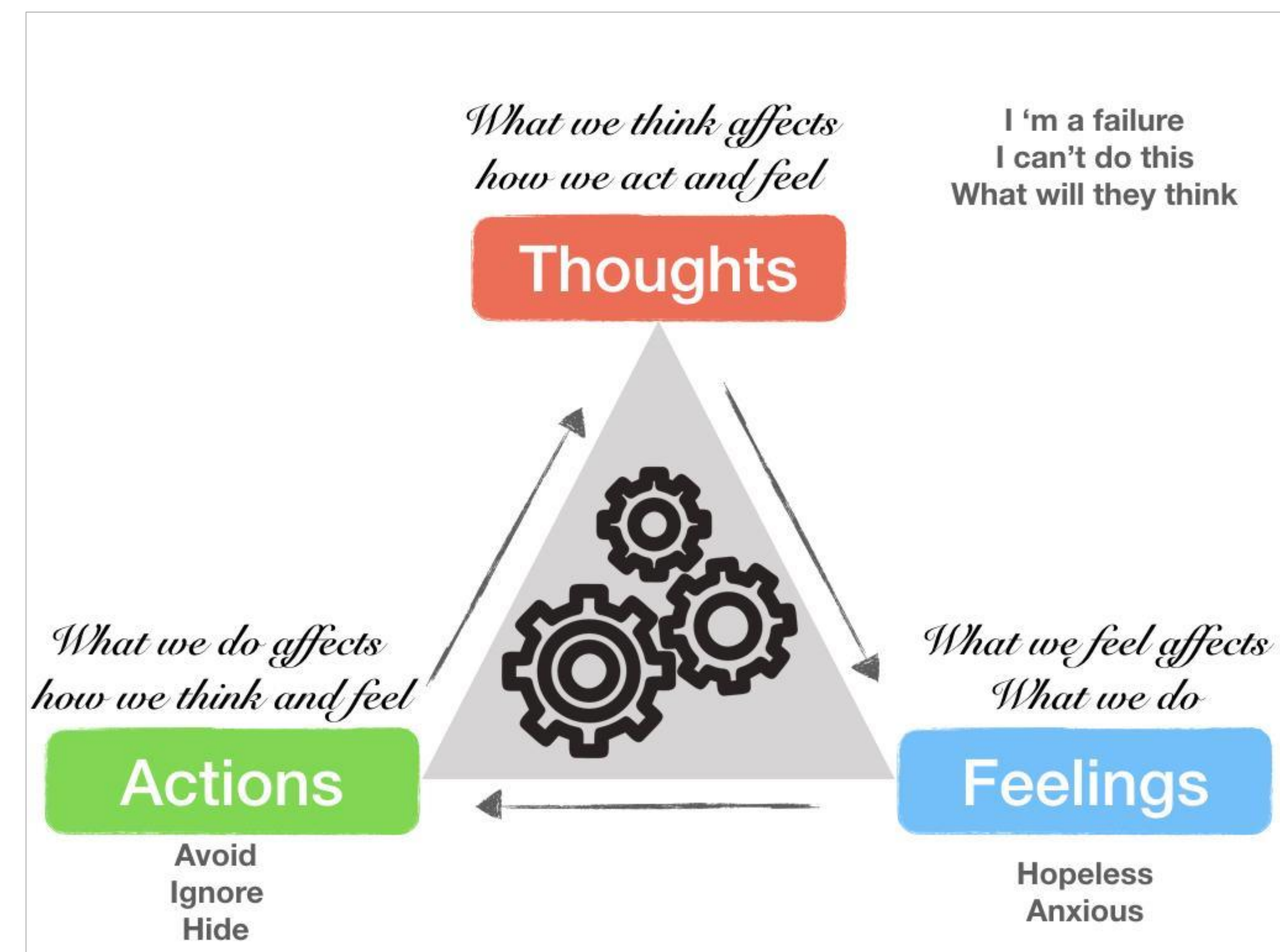
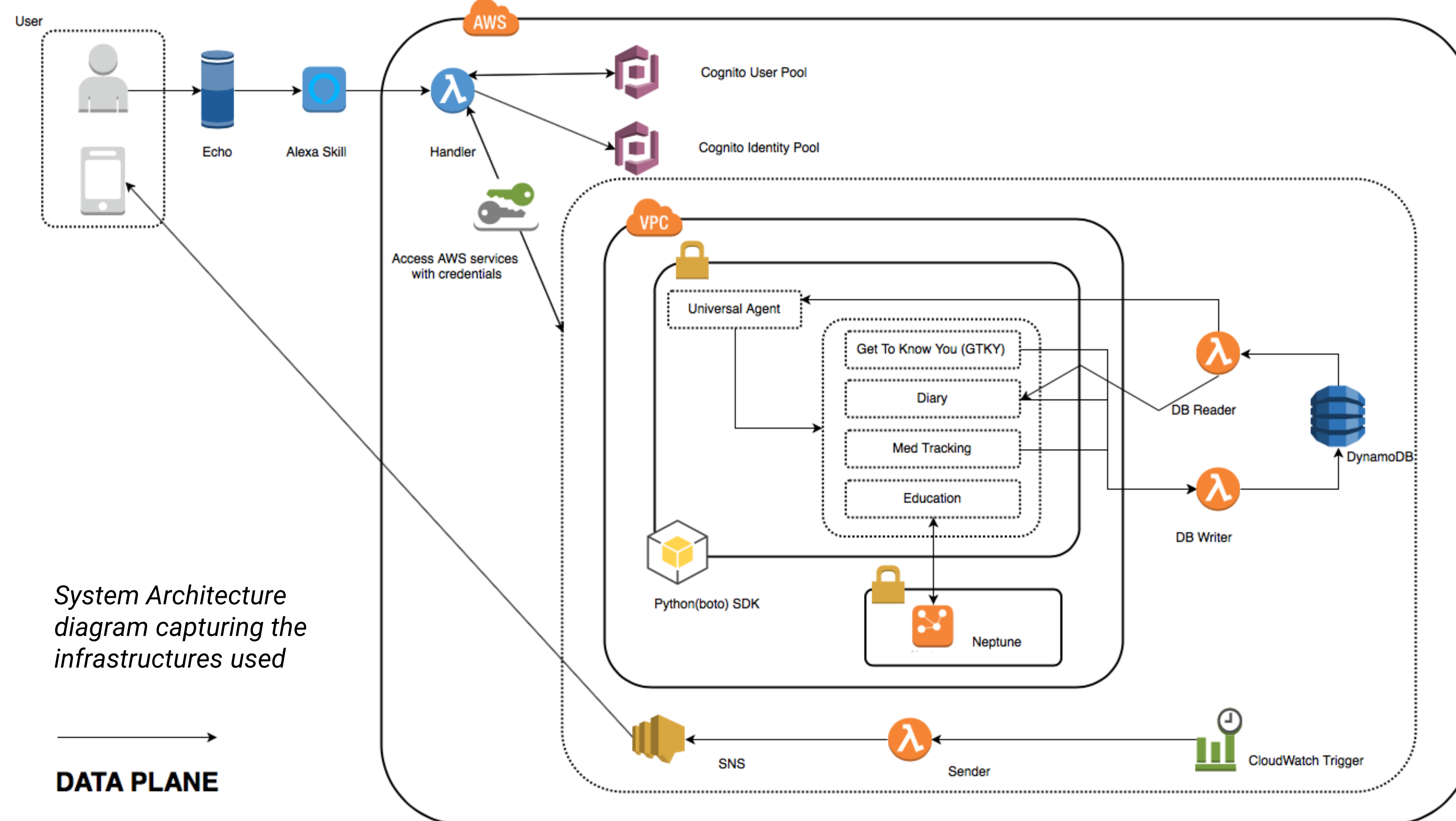


Figure 1: Cognitive Triangle diagram depicting the relationship between our thoughts, feelings, and actions.

- Set of 'talk' psychotherapies to treat psychiatric conditions
- Evidence based ( > 500 studies, 50 years)
- As effective as psychiatric medications
- Recommended when medications are ineffective
- Short-term focused treatment

### System Architecture



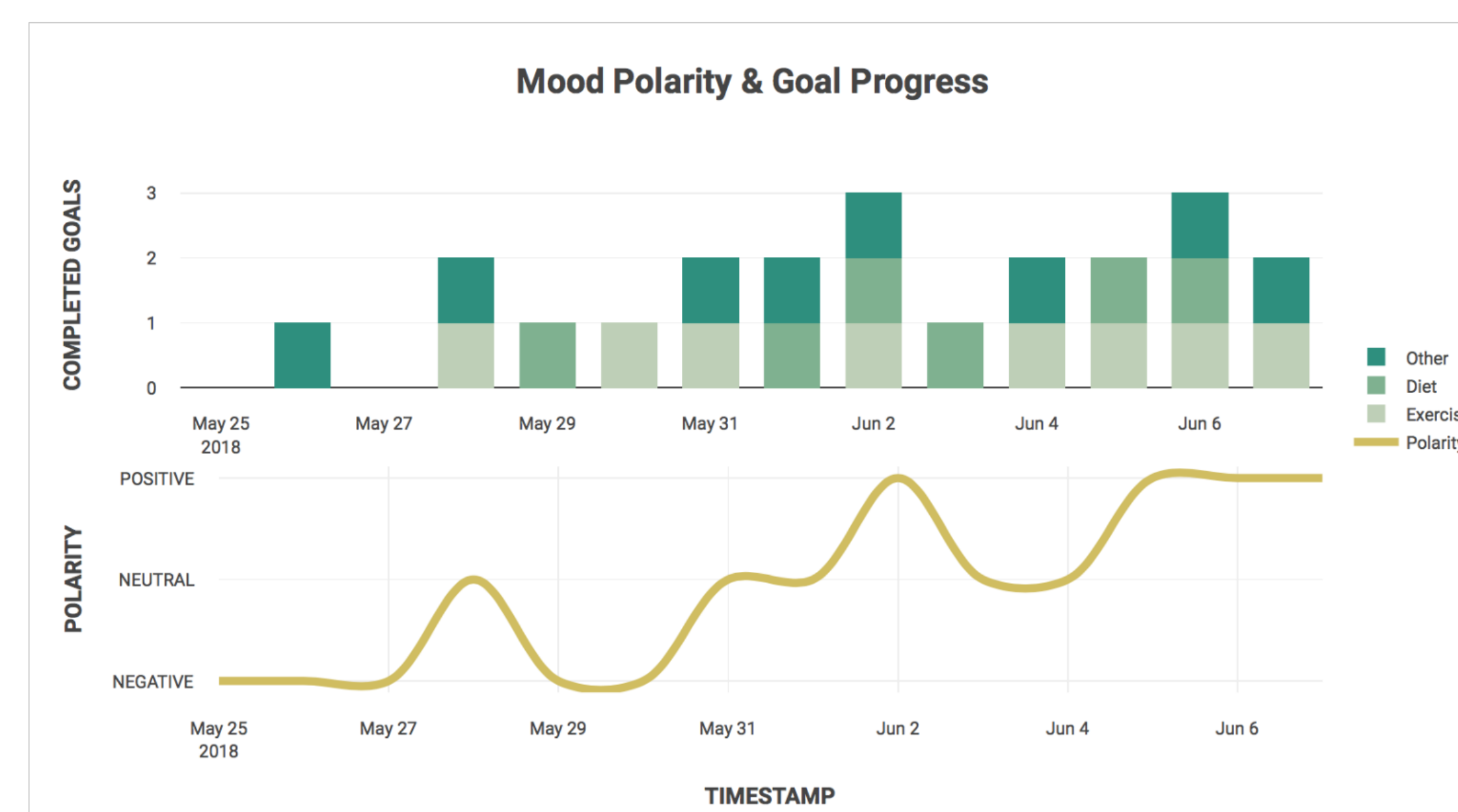
- Amazon Cognito controls user access to personal AWS services
- Amazon EC2 hosts different running agents
- Amazon DynamoDB stores user profile information, med tracking etc.
- Amazon CloudWatch triggers a Lambda sender to send an SNS every day as the medicine taking reminder for the user
- Amazon Neptune stores the knowledge graph for CBT education
- AWS Lambda used in need for better connecting different services
- Python is the main coding language and Python (Boto) SDK is used

### Sparky Features

- Mood Tracking
- Thought Tracking
- Set and update goals
- PHQ Depression Assessment
- Medication Tracking
- Visualize data over time

#### SMART Goal Setting

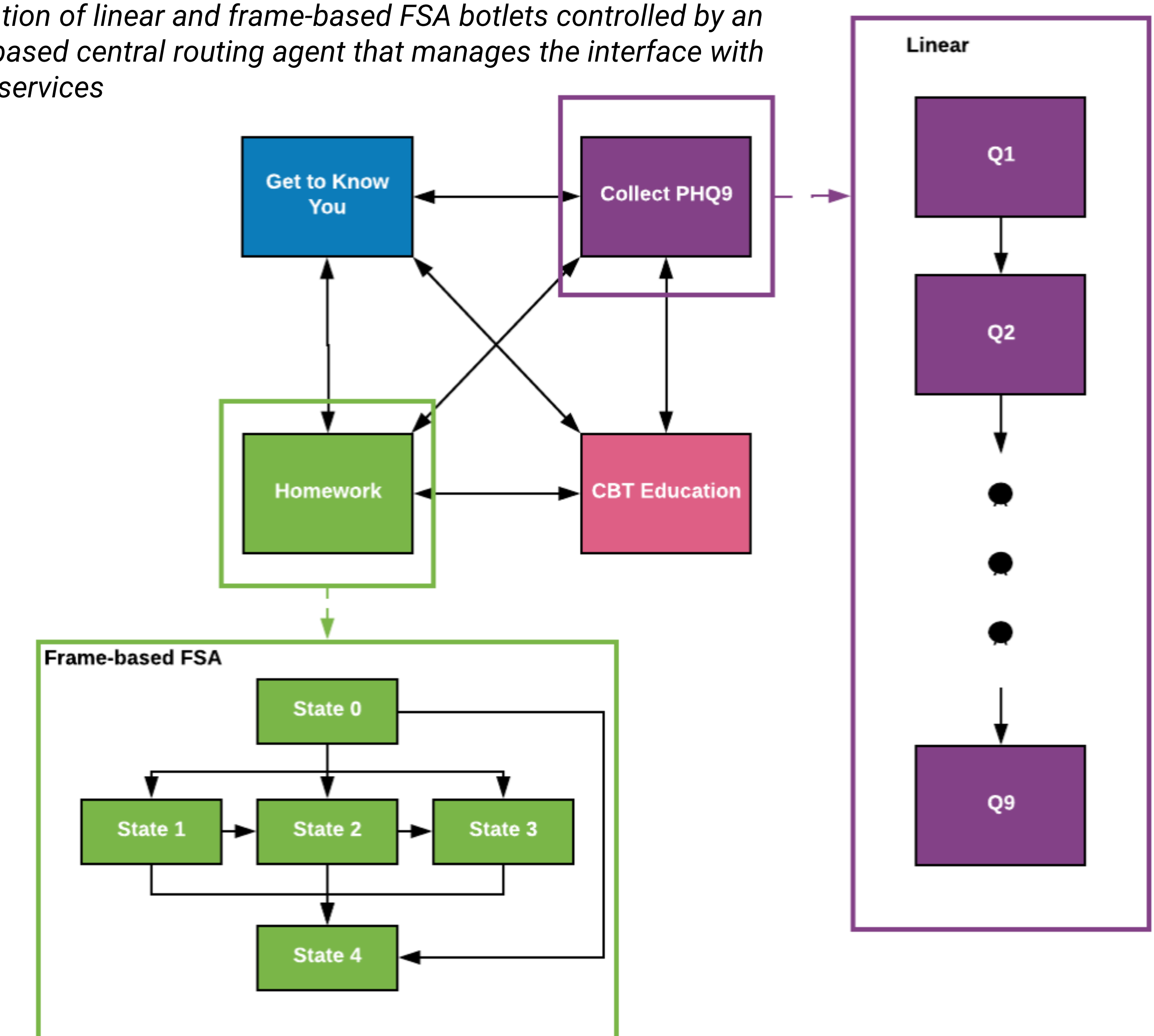
Specific  
Measurable  
Achievable  
Realistic  
Time Bound



Example Sparky data visualization graph of user goal progress and mood polarity over a two-week period.

### Interaction Model

Combination of linear and frame-based FSA botlets controlled by an agenda-based central routing agent that manages the interface with external services



### Motivation

Lack of information  
Stigma

Language  
Cultural Barriers

Privacy Concerns

Lack Of Health Insurance / Cost

Typical CBT treatment requires 5-15 sessions with each session Costing around \$70-\$300

Access

Lack of trained professionals, long waiting times

Compliance

People unable to follow up on CBT homework

Patient Education

Understanding the therapy and rationale of why/what they are doing