

SPEECH PROCESSING

a redbooth lunch-and-learn



OVERVIEW

- Product motivation and demo
- Basic architecture
- Deep dive on switchboard

VISION

- Build reusable tools for machine learning
- Explore and inspire new product ideas

GOALS

- Create a searchable transcript of business meetings
- React intelligently to keywords in speech
 - “add this task to my project”
 - “I’ll do that tomorrow”

COMPETITIVE ANALYSIS

- Other companies already do something similar
 - Wrappup, GridSpace, Zoom, etc.
- But...
 - Their tech is early
 - Big focus on sales calls
 - Still value in having an internal solution





DEMO PIPELINE

snoop

switchboard

scribe

polyglot



Record audio



Forward audio
stream to multiple
outputs



Convert voice to
text



Translate

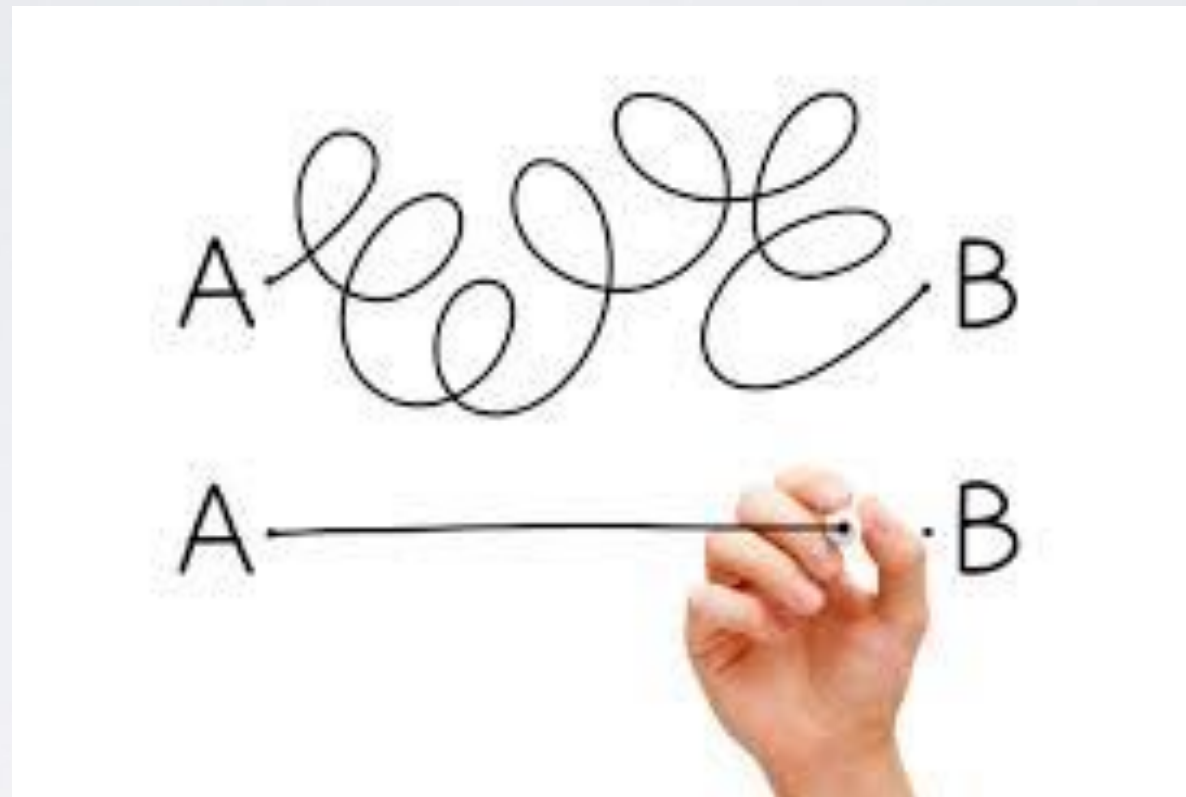
KEY IDEA

input **stream**

is **transformed in stages**

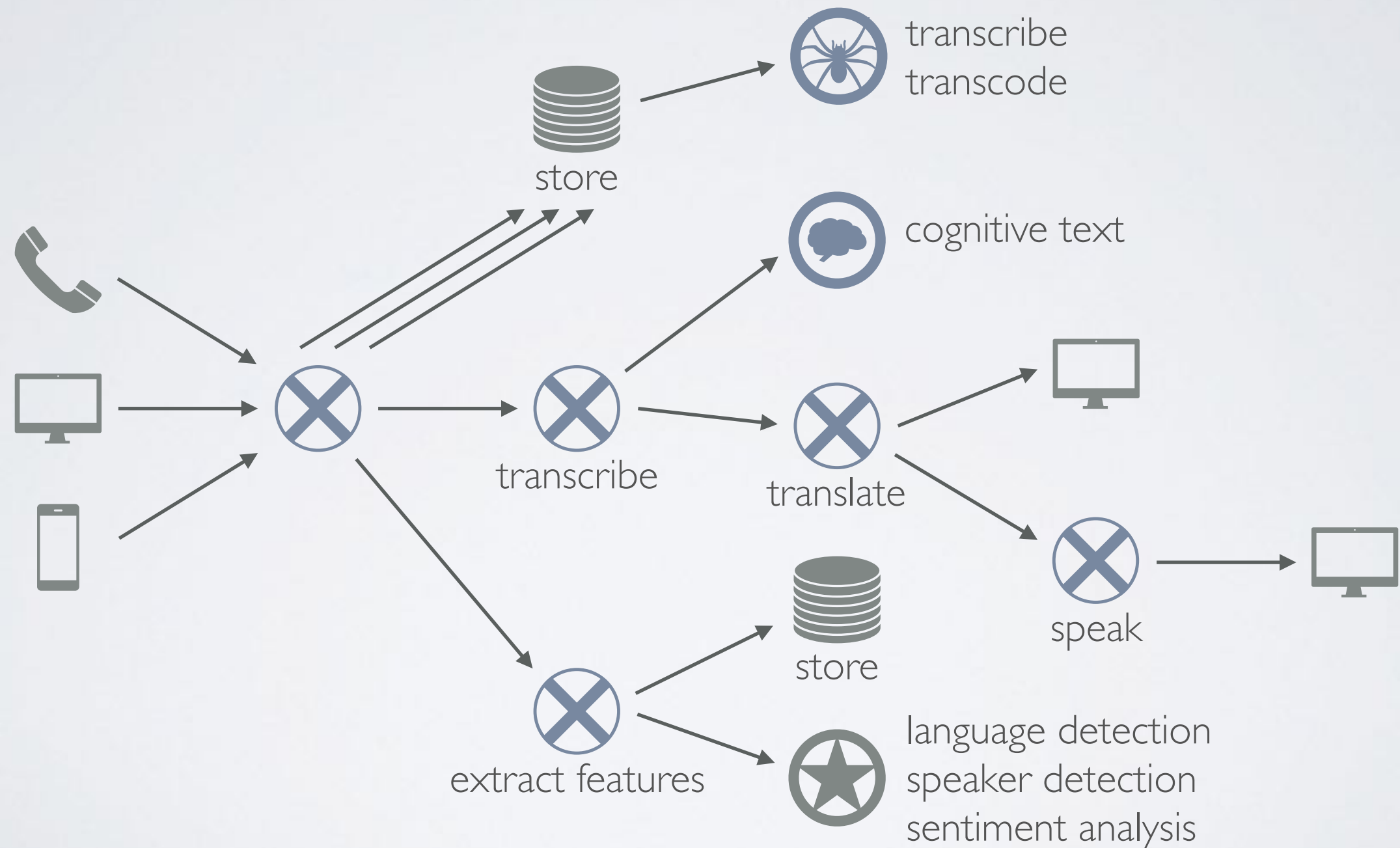
into **derivative streams**

MICROSERVICES?



Can't this all be done with a single server
and a few API calls?

STREAM PROCESSING GRAPH





SWITCHBOARD



SWITCHBOARD

Container for nodes

in the

stream processing graph

SWITCHBOARD

- Handles network communication
- Handles stream forwarding
- Allows microservices to focus on a single task

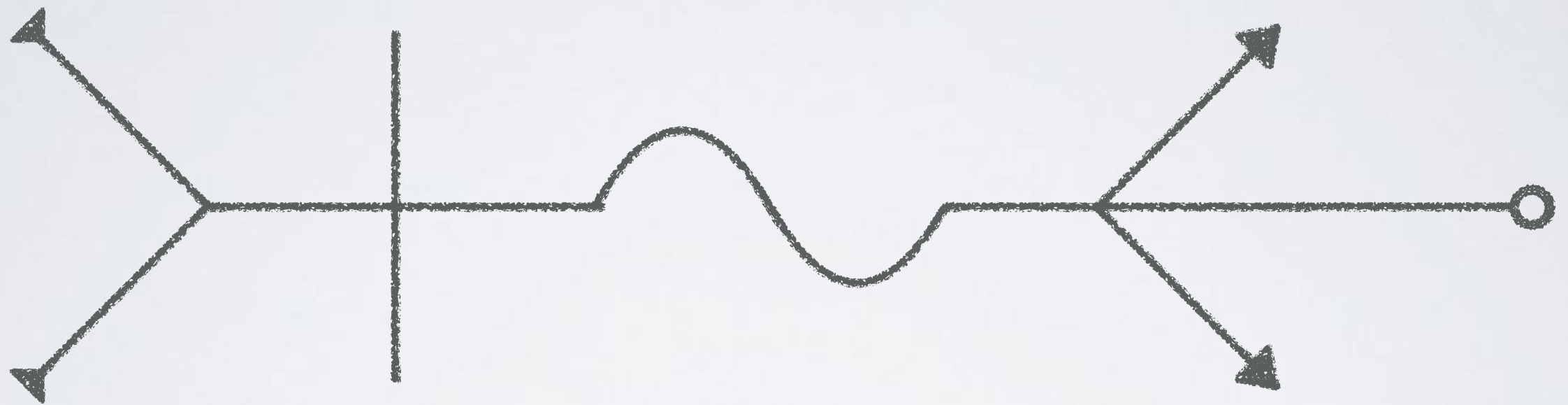
INSPIRATION

- Kafka/Samza
- Logstash (stages; configuration syntax)
- Spark (processing graph)
- Unix Pipes

HOW IS IT DIFFERENT?

- indivisible unit of other stream processing frameworks is the **message**
- indivisible unit of switchboard is the **stream**
- switchboard is horizontally scalable, but not distributed

DESIGN



input

filter

transformer

output

terminus

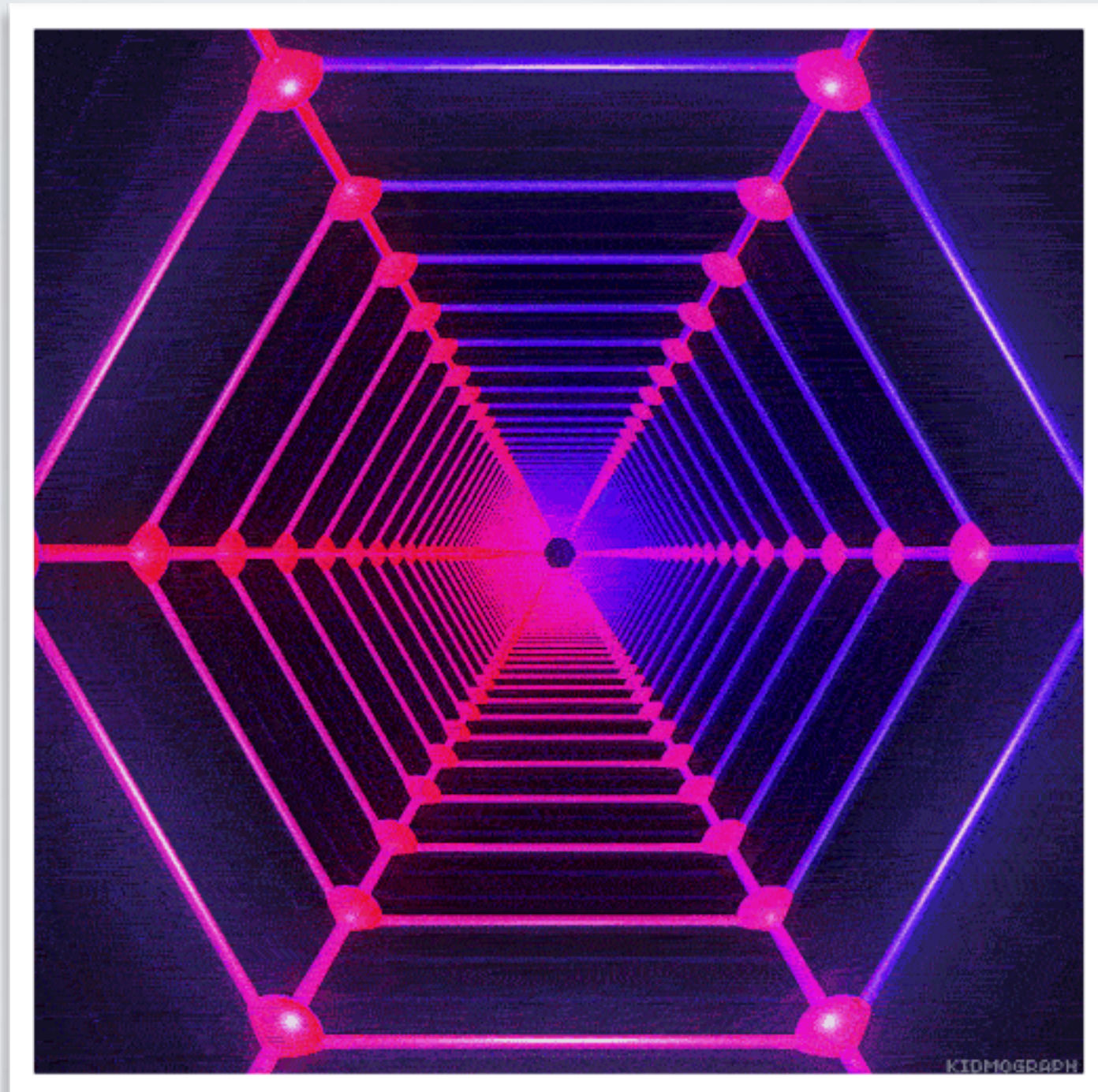
BUILT-INS

Input	Filter	Transformer	Output	Terminus
file http plugin s3 stdin tcp unix socket web socket	exec http plugin tcp unix socket	exec plugin tcp unix socket	exec file http plugin s3 stdout tcp unix socket web socket	exec file http kafka log plugin redis sqs stdout tcp unix socket web socket

DYNAMIC CONFIGURATION

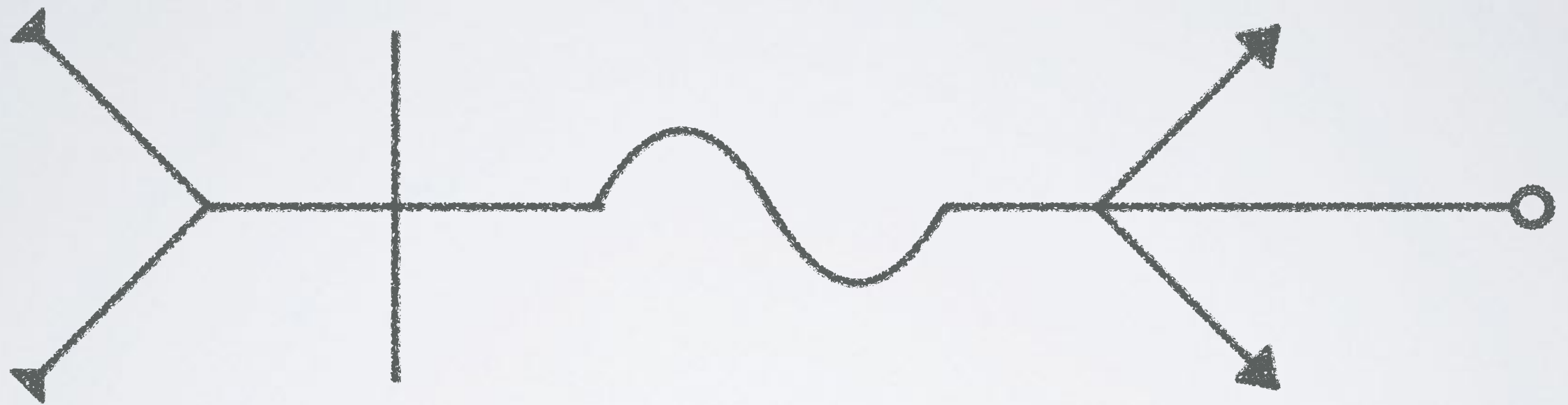
- specific stages are configured with a single YAML file
- multiple instances of each stage are permitted
- plugins can be used for local computation or complex transformations

COSMIC ZOOM



KIDMOGRAPH

DETAILS



input

filter

transformer

output

terminus

BLACK BOX



SINGLE PATH



snoop



switchboard

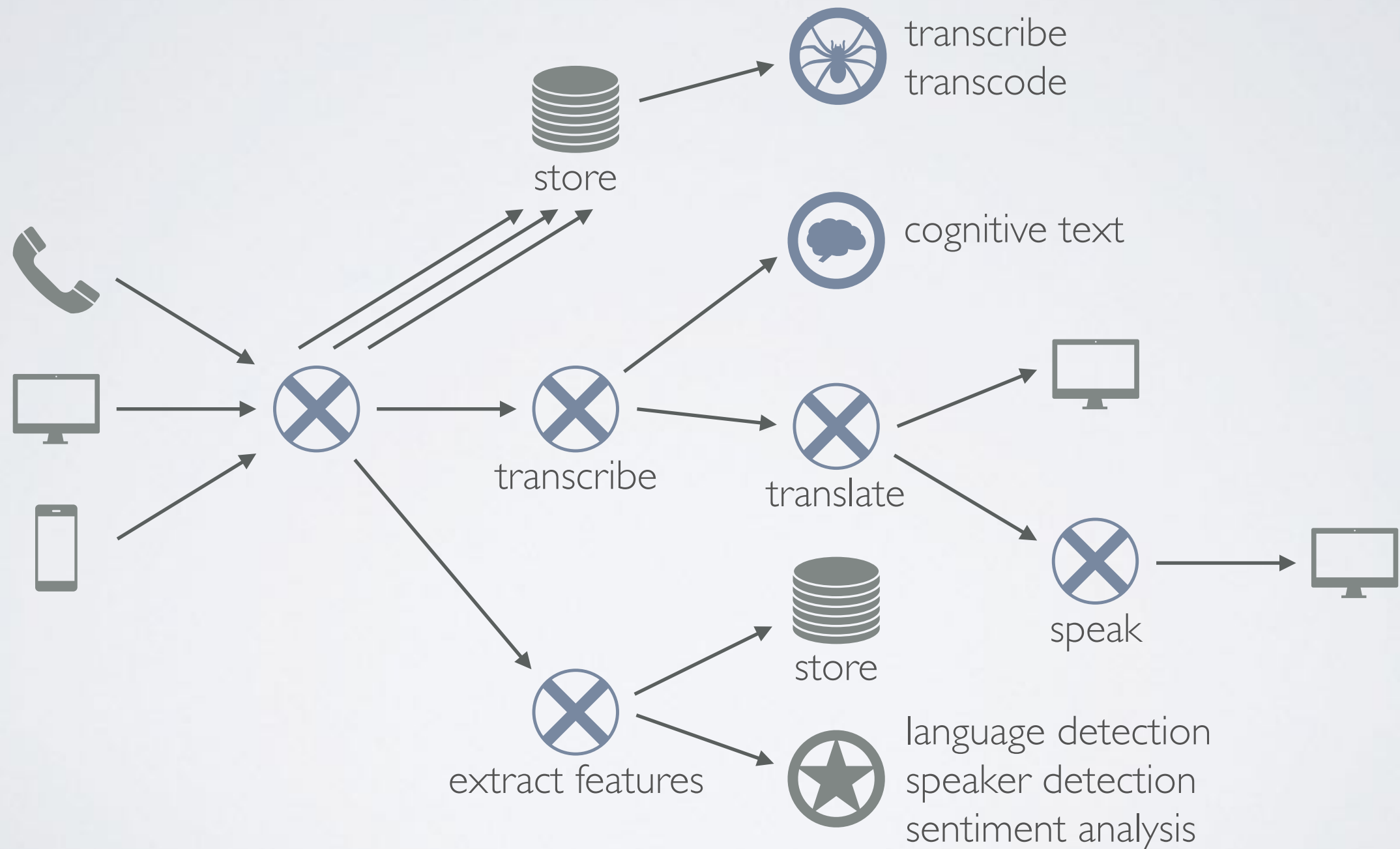


scribe



polyglot

FULL GRAPH





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FIN