the ezHub API

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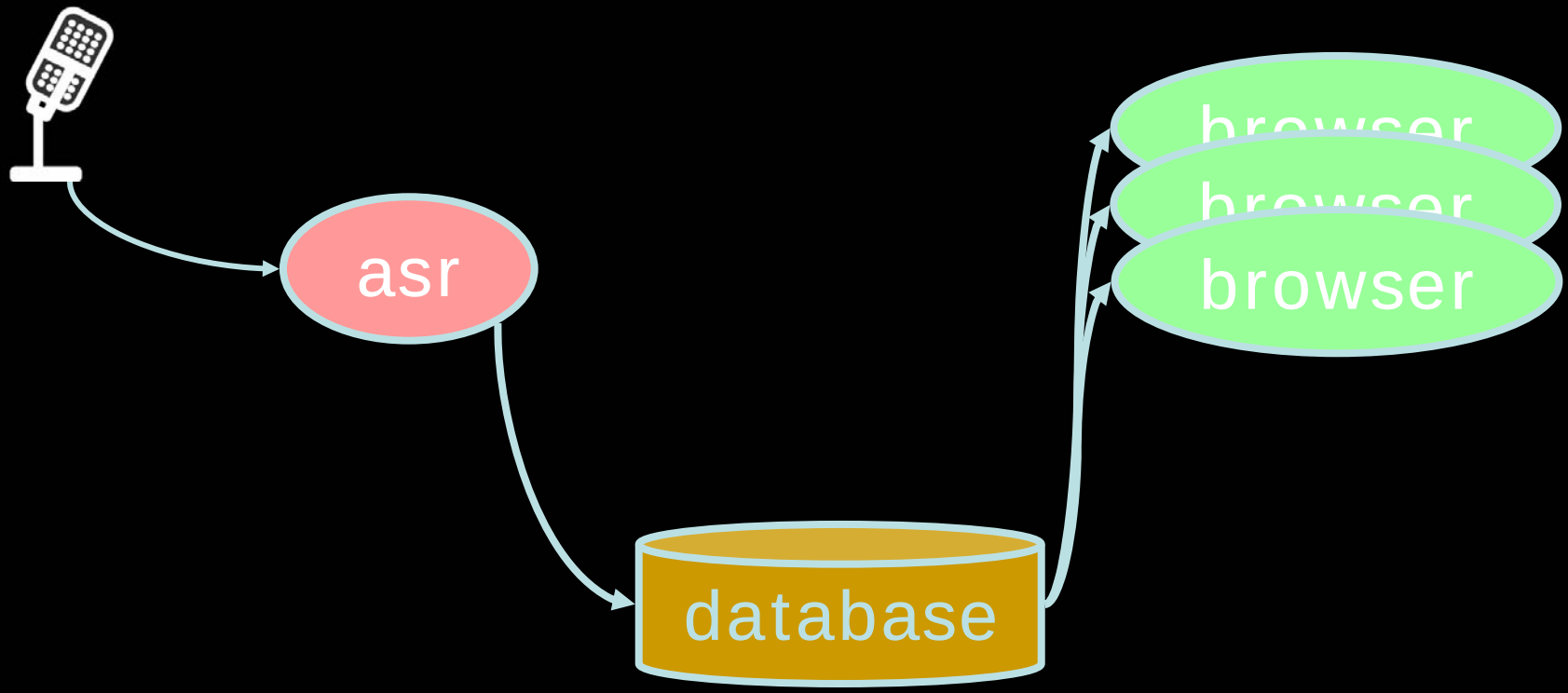
overview

- hub recap
  - traditional architecture
  - hub architecture
- ezHub
  - data model
  - producers & consumers
  - using HubObjects

hub basics

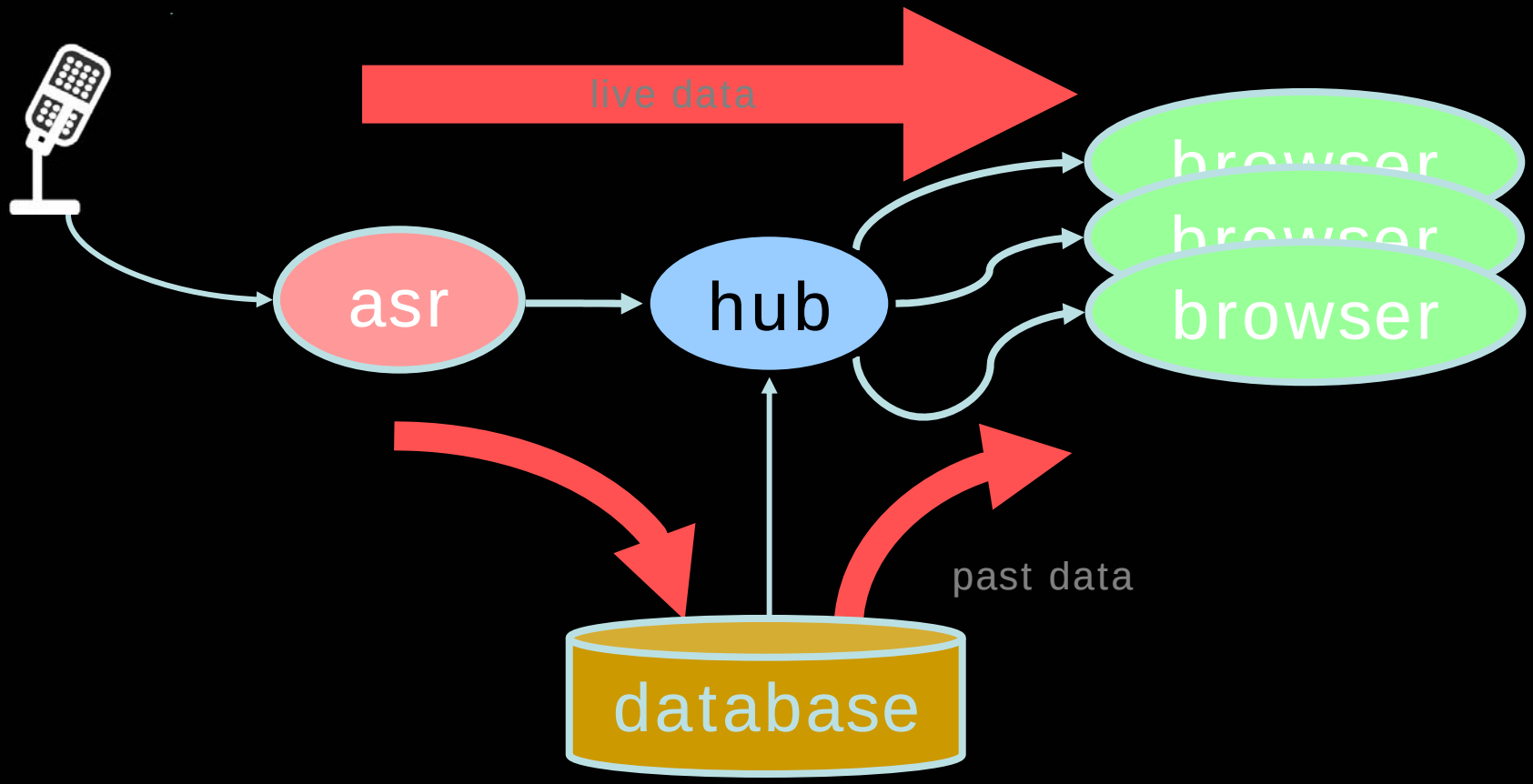
- data distribution & storage
  - live meeting support
    - requires real-time distribution of data
    - historic data still required
- data: metadata & annotations
  - who, where, when…
    - people join late, change seats, leave early…
  - video/audio stream addresses
  - speech data
  - slides, focus of attention, gestures…

traditional architecture



problem: consumers must poll for updates, latency, database schema complicated

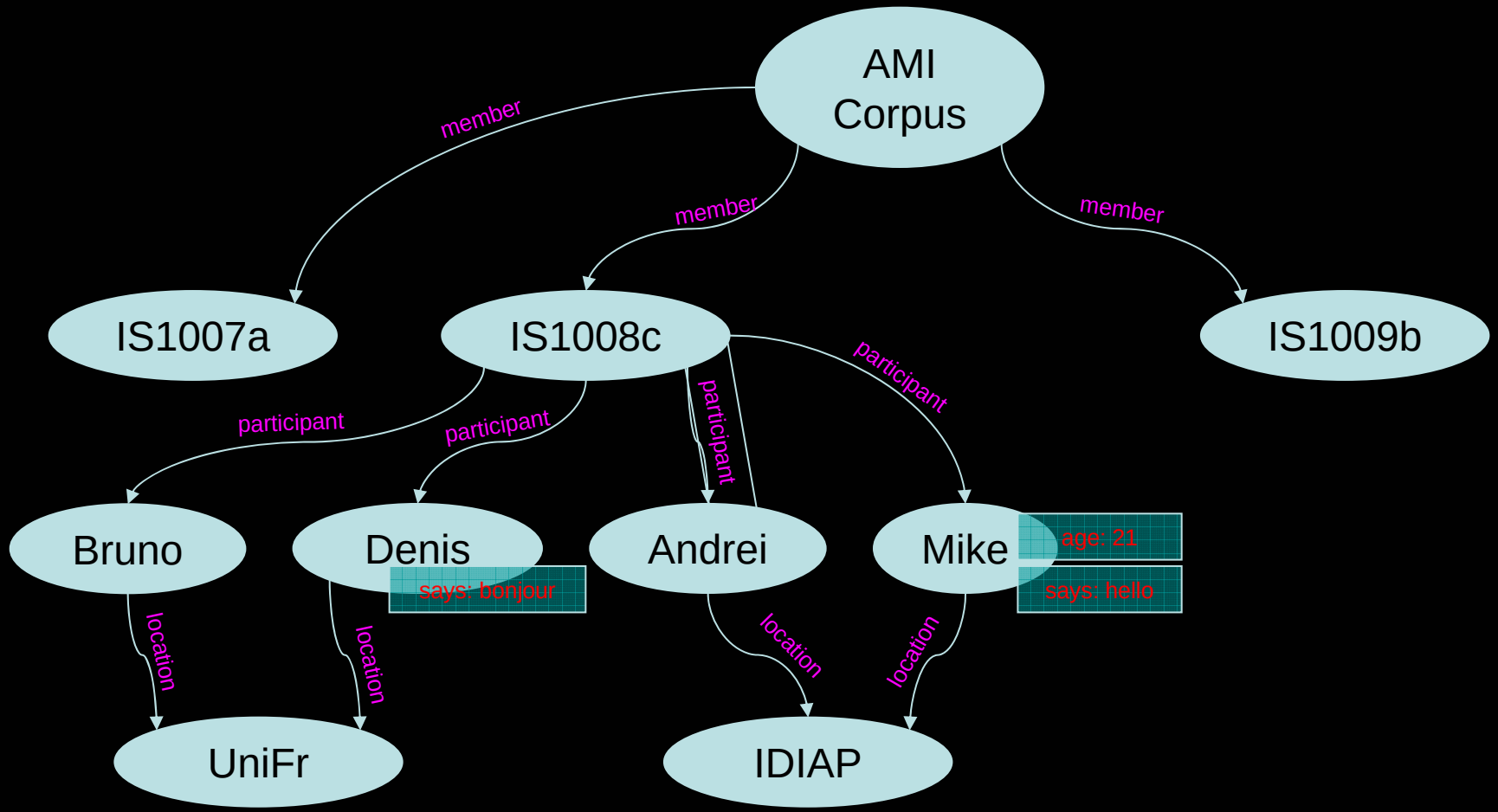
hub architecture



levels of abstraction

- TCP/IP
- XML
- triples
- ezHub object model

ezHub data model



producers & consumers

- distributed object model…
  - producers set attributes & relationships
  - consumers get attributes & relationships
- …with temporal access
  - arbitrary past time
  - latest
  - monitor future changes
- simple API but very efficient
  - object data is cached locally
  - temporally indexed
  - sequential or random access

using HubObjects

```
HubObject.open();
HubObject meeting = HubObject.find("IS1008c");
HubObject location = meeting.getObject("Location");
Set<HubObject> attendees = meeting.getInverseObjects(“Attended");
for(HubObject person : attendees) {
        String name = person.getValue(“name");
        …
        Collection<String> speech = person.getValues("says");
        …
        person.getValues("says", myHandler, "myquery");
}
…
myHandler.update(TimedTriple tt, String value, String ref) { ... }

myHandler.upToDate(String ref) { ... }
…
HubObject.close();
```

ezHub summary

- distributed object model
- data distributed in real time
  - also held in database
  - producers set attributes/relationships
  - consumers get attributes/relationships
- past & present data in same API
  - ask for attributes/relationships
  - now or in the past
  - continuously in the future
- abstract data model
  - data model independent of the Hub
  - extensible

ezHub tutorial & downloads

http://www.idiap.ch/~flynn/Hub