

Simple Software is Hard

Tales from the Trenches

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APACHECON
EUROPE

CORINTHIA HOTEL
BUDAPEST, HUNGARY
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looking for answers?

wrong place!

I'm more about questions today...



could we
invent
this
today?



beautiful simplicity

as simple as possible, but not simpler

(to be precise, it's a Victorinox skipper knife)

a
story
of
simplicity

(two stories, actually)

26 lines of code

3 months of

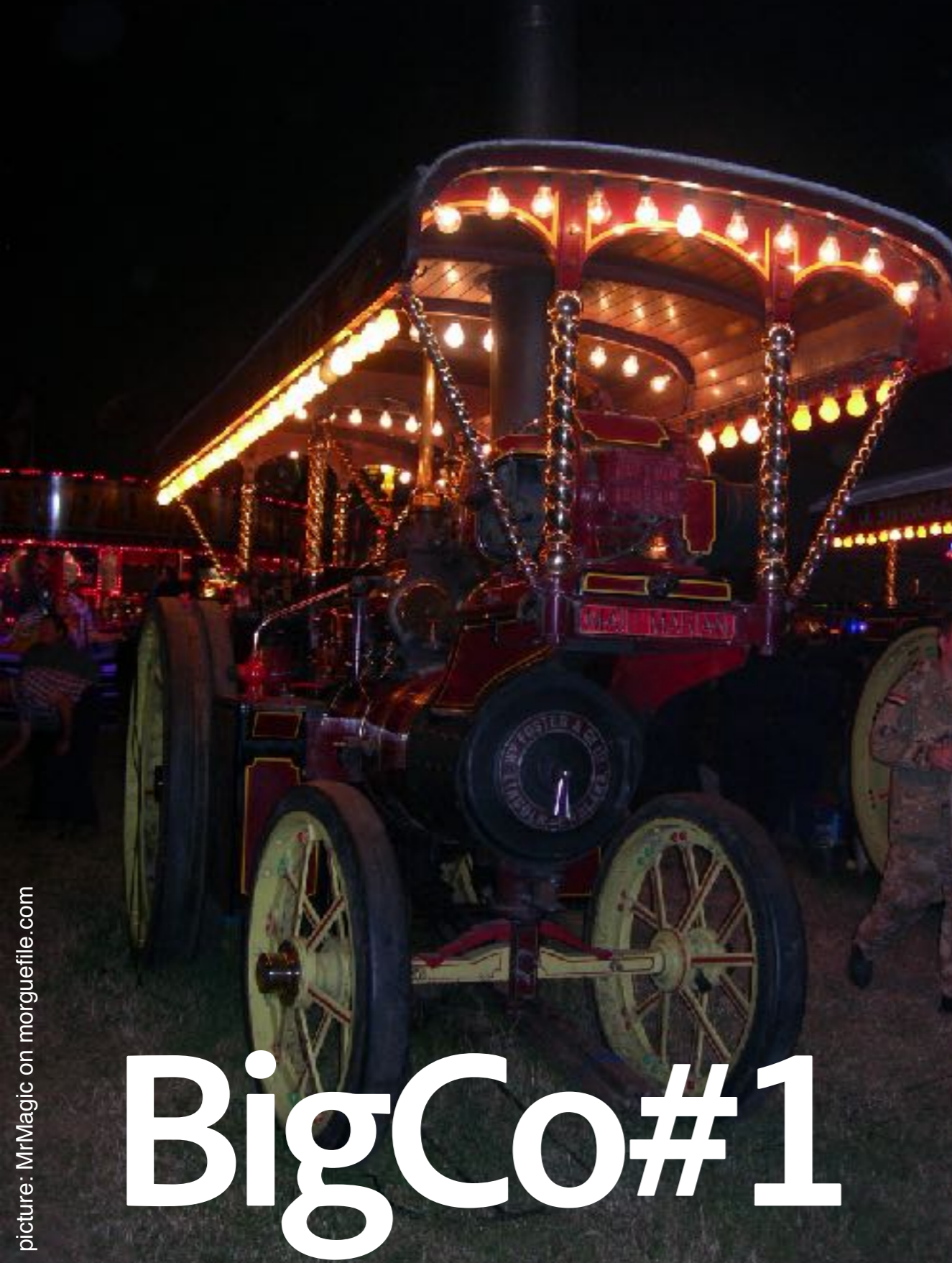
work

(happily chugging along since 1999)

**record digital
audio
continuously**

**cannot lose more
than 15 seconds**

(remember - 1999)



picture: MrMagic on morguefile.com

BigCo#1

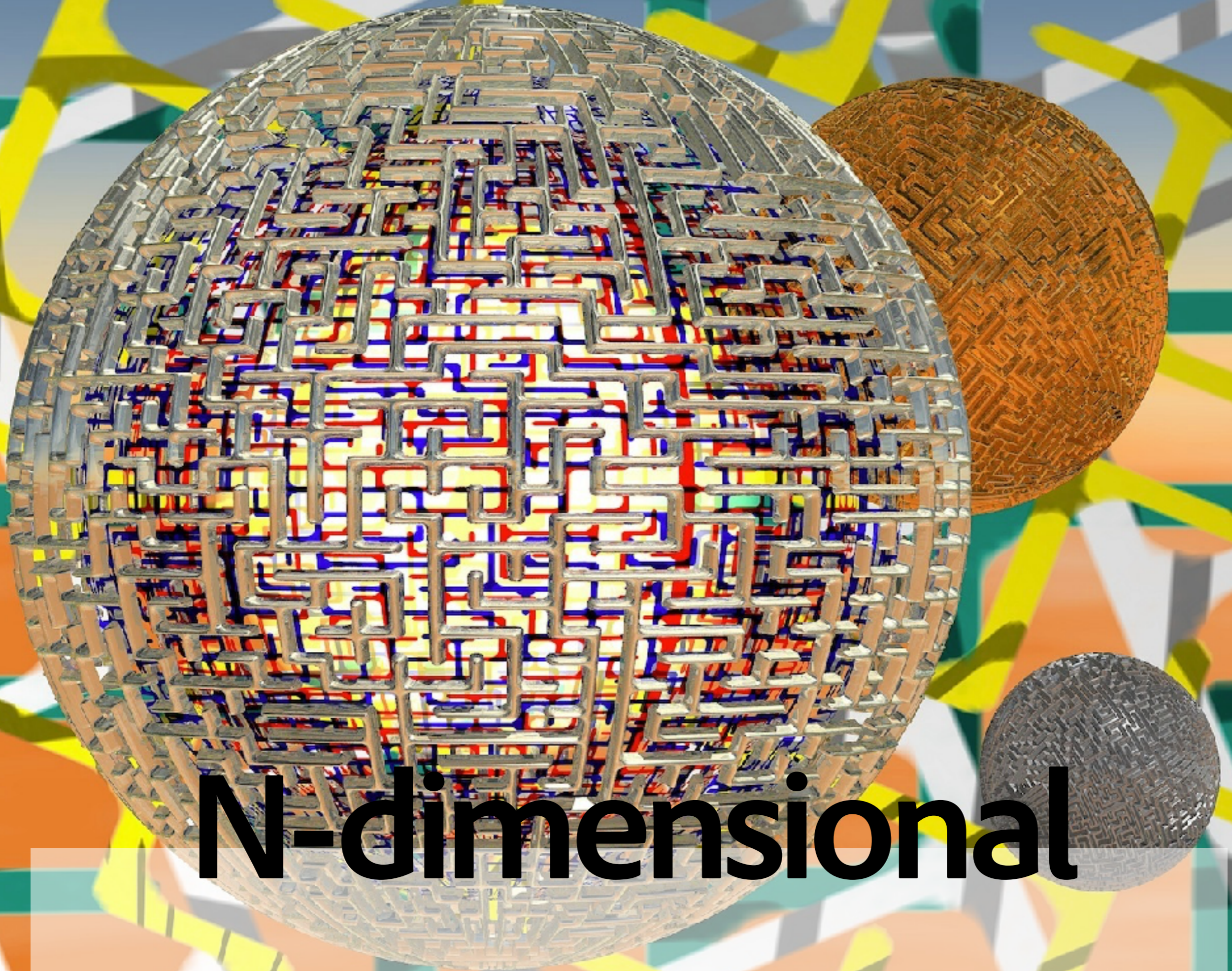


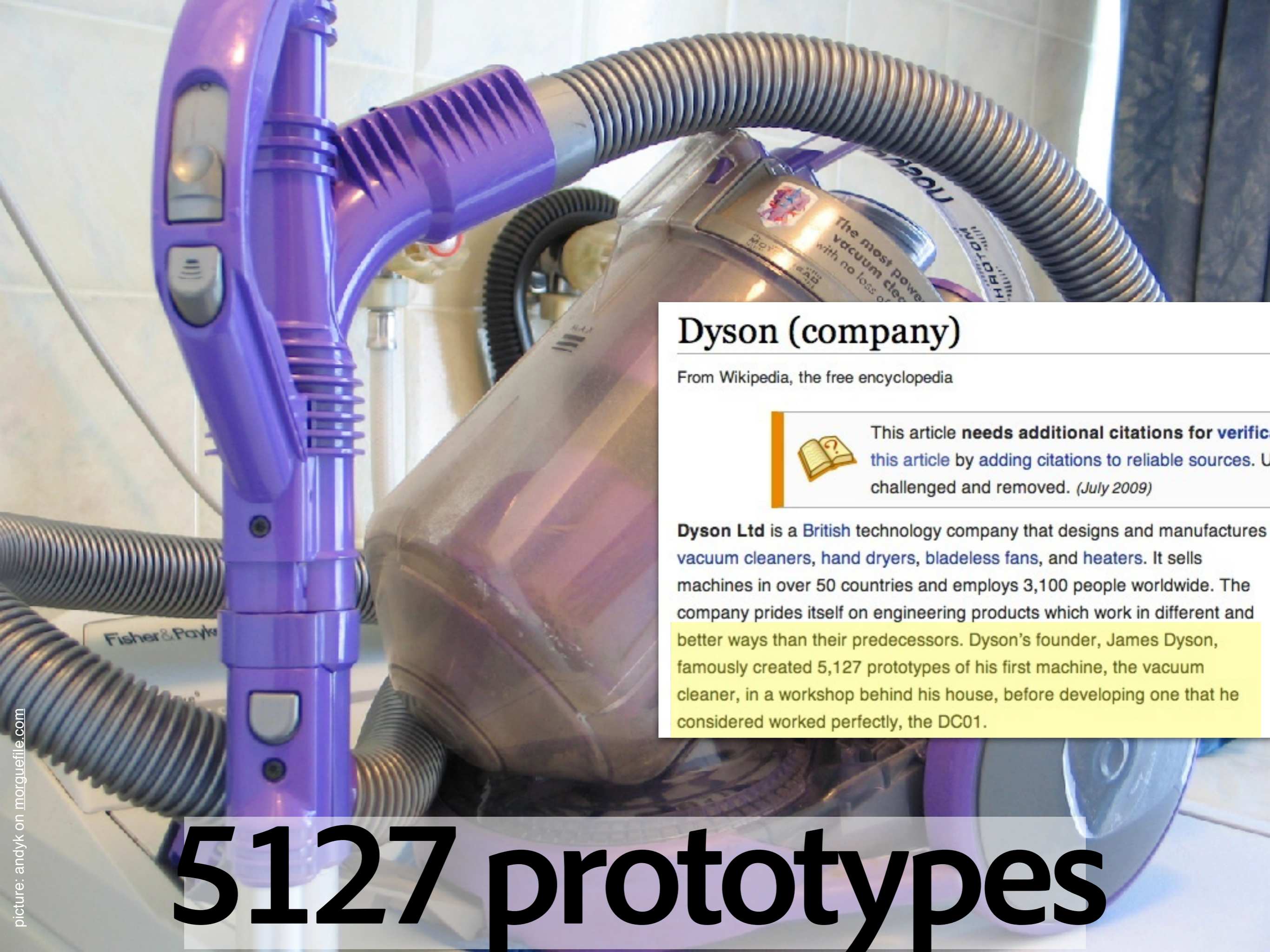
picture: RoganJosh on morguefile.com

BigCo#2

options?

N-dimensional





Dyson (company)

From Wikipedia, the free encyclopedia



This article **needs additional citations for verification**. Please help improve **this article** by adding citations to reliable sources. Unreviewed and challenged content is *marked for removal*. (July 2009)

Dyson Ltd is a **British** technology company that designs and manufactures vacuum cleaners, hand dryers, bladeless fans, and heaters. It sells machines in over 50 countries and employs 3,100 people worldwide. The company prides itself on engineering products which work in different and better ways than their predecessors. Dyson's founder, James Dyson, famously created 5,127 prototypes of his first machine, the vacuum cleaner, in a workshop behind his house, before developing one that he considered worked perfectly, the DC01.

5127 prototypes



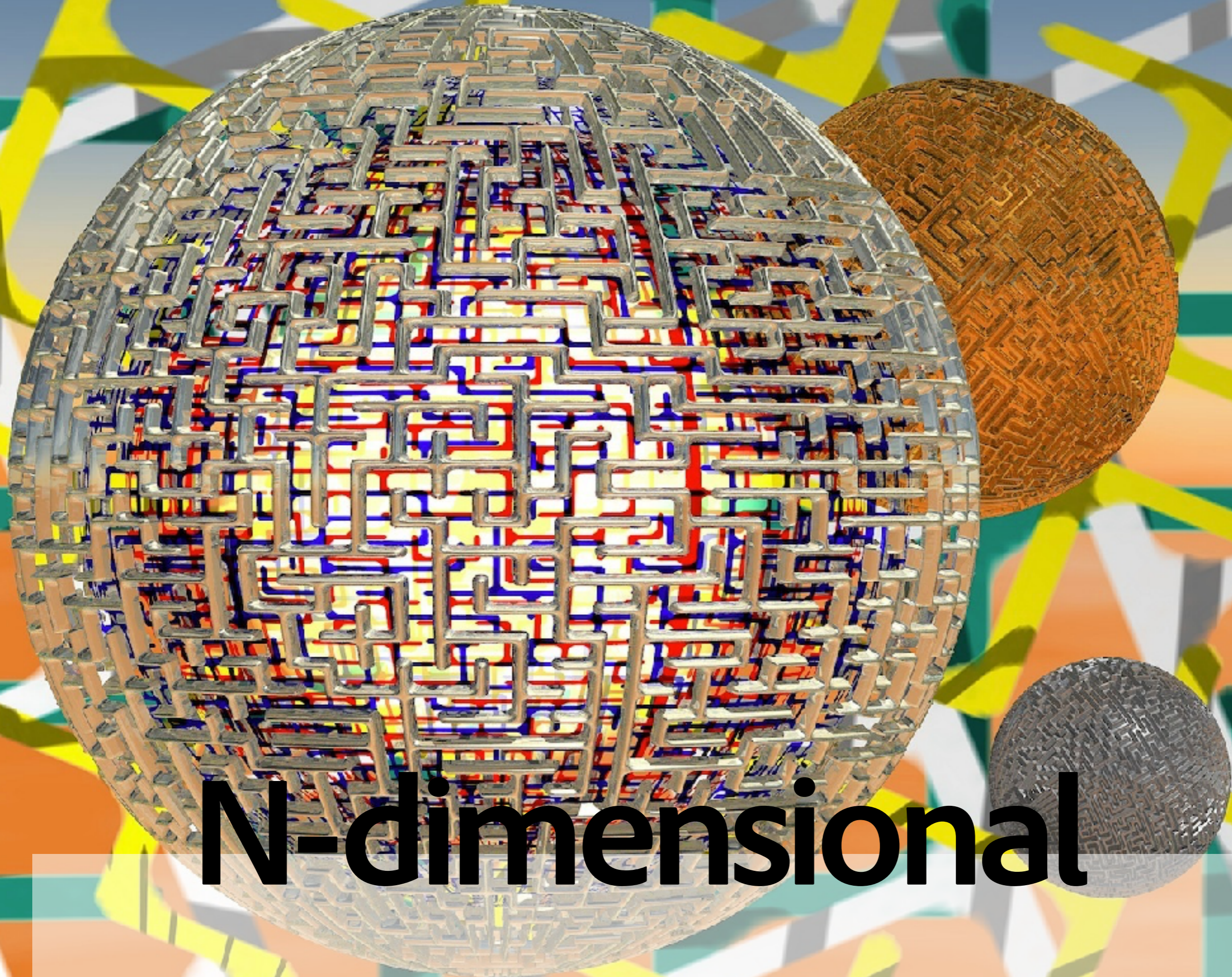
Both Heds know the value of patience: the overnight success of *Angry Birds* took eight years. Mikael and Niklas had b

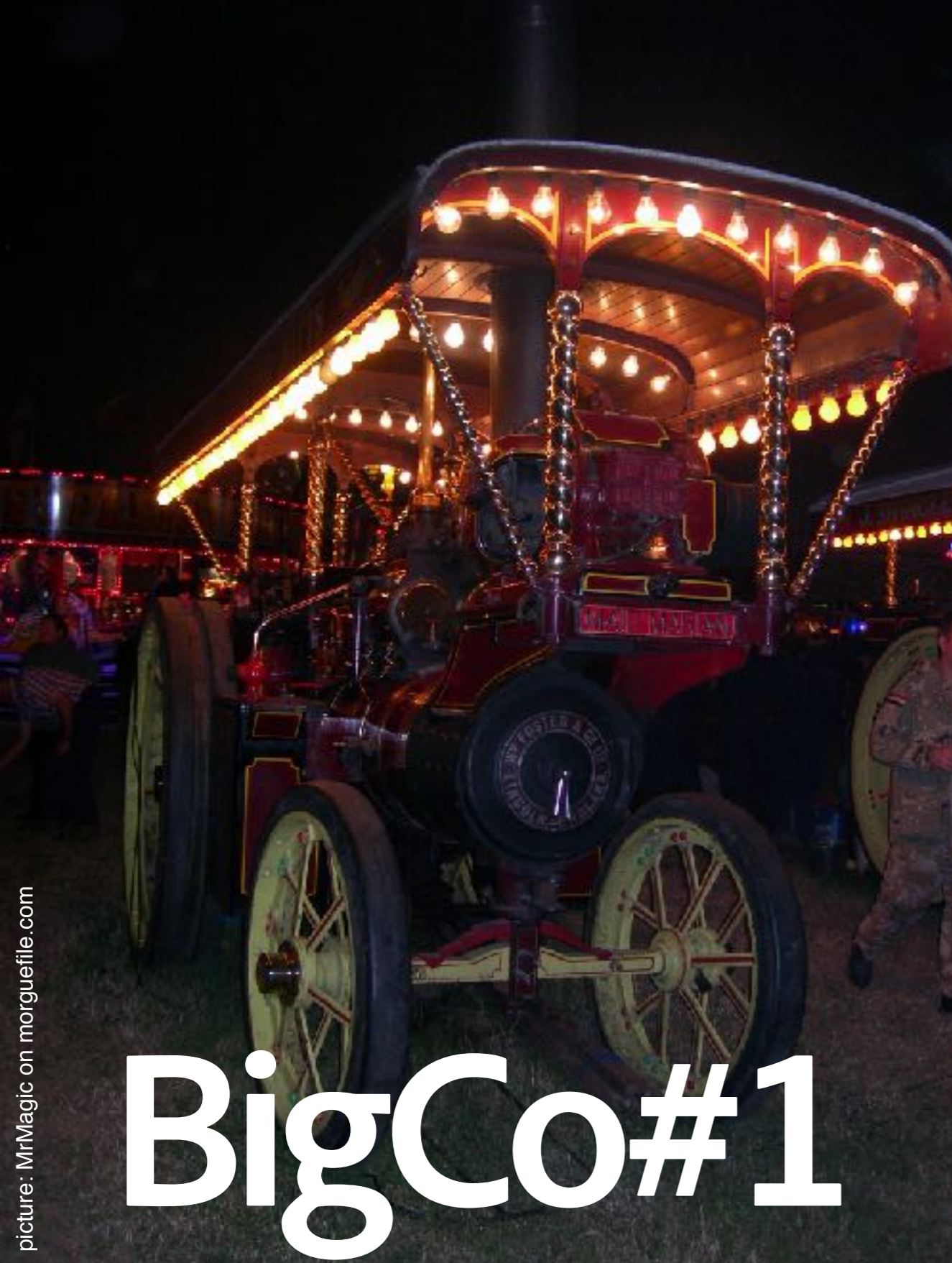
overnight? no - 8

W/RED April 2011

years

N-dimensional





picture: MrMagic on morguefile.com

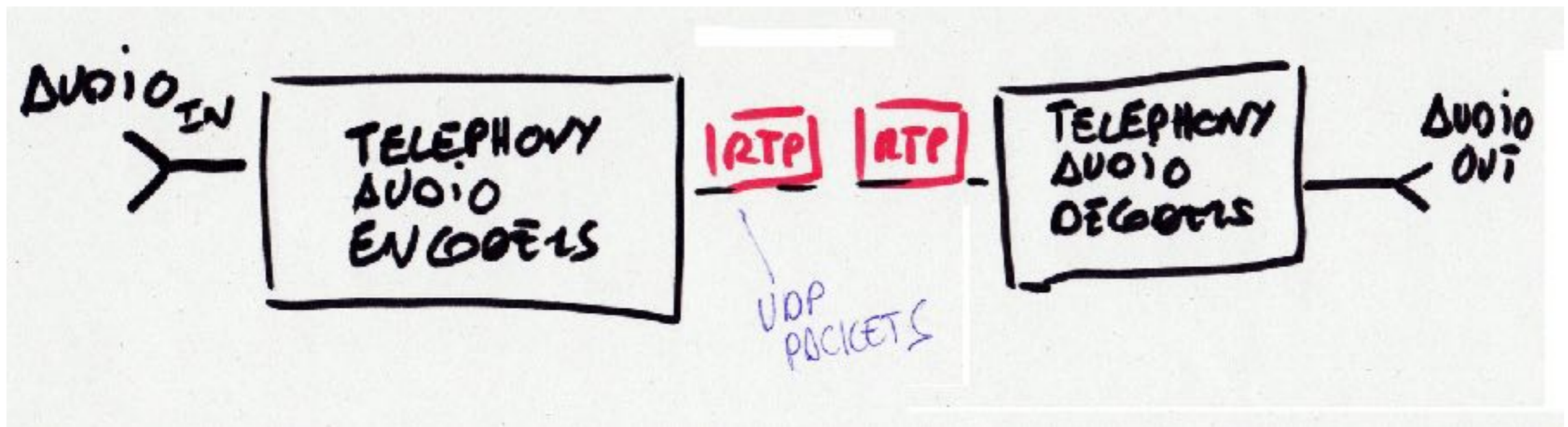
BigCo#1



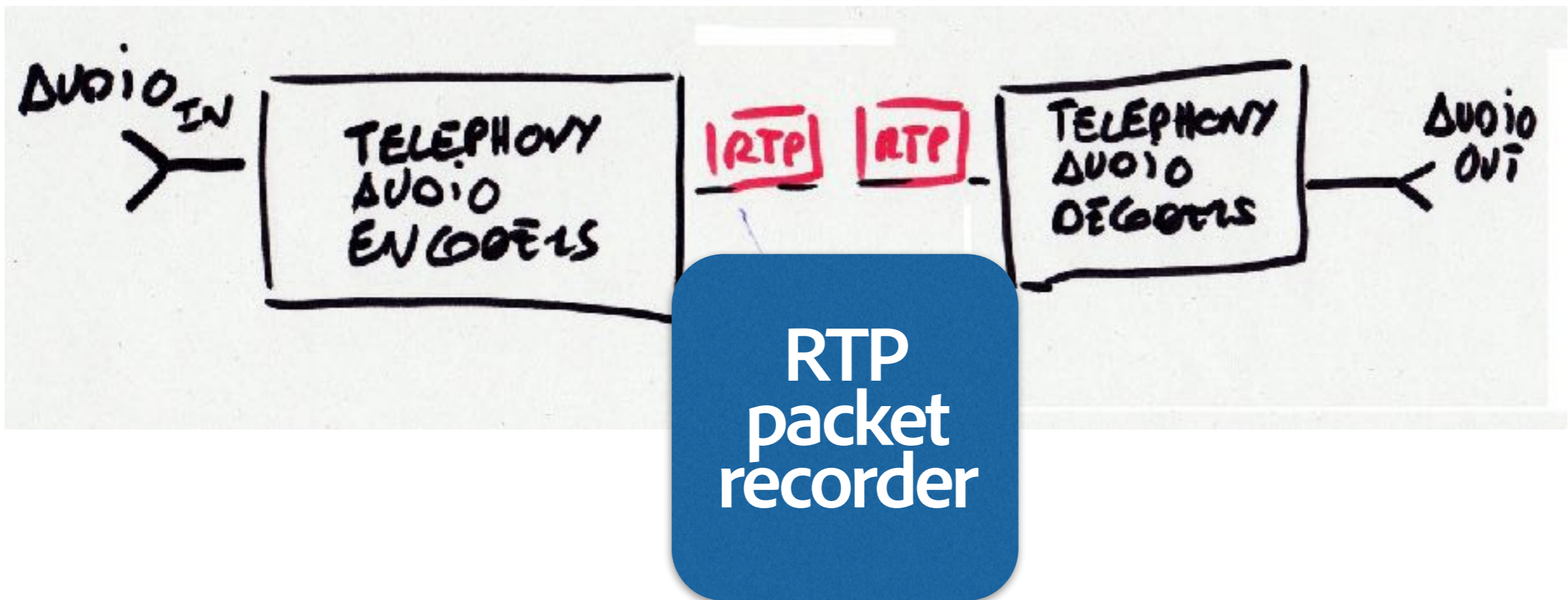
picture: RoganJosh on morguefile.com

BigCo#2

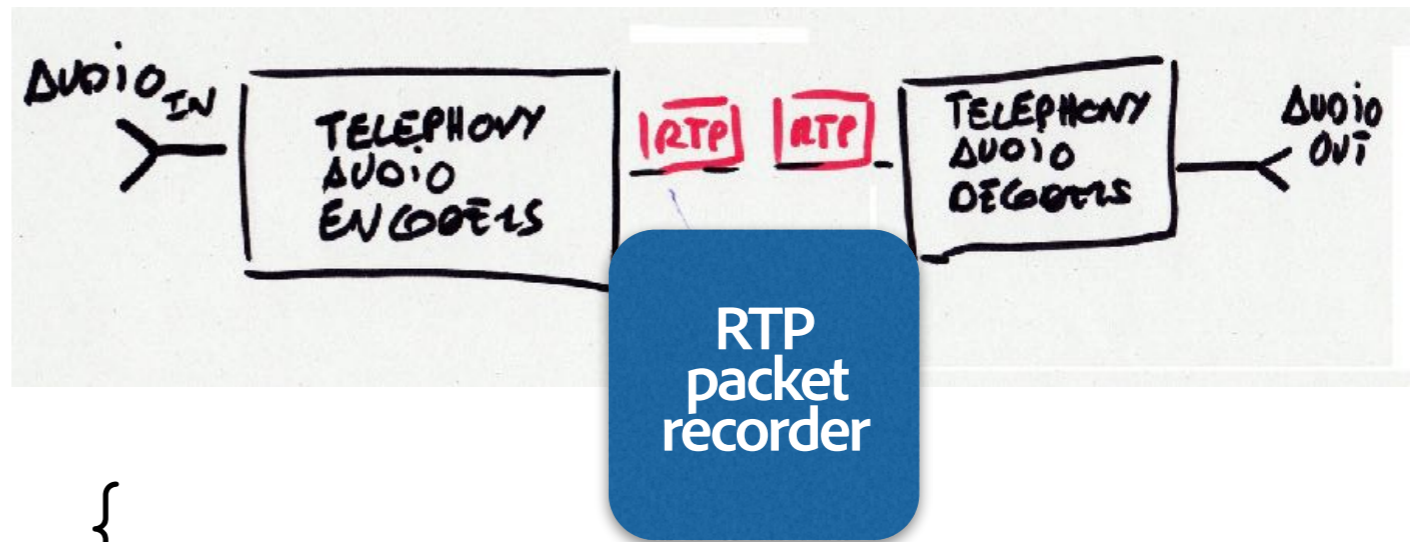
that's your options...



simpler?



yes!



```
s = UDP socket
```

```
While (s is open) {
```

```
    Wait for packet
```

```
    Packet matches our filter?
```

```
    If not -> continue
```

```
    If yes:
```

```
        Compute storage path from T
```

```
        Append packet to storage file
```

```
}
```

26 lines of code
3 months

if it's not simple enough yet

**do not give
up**



RTP
packet
recorder

storage?

**continuous storage
seek by timestamp
variable speed replay
100% robust**

storage?



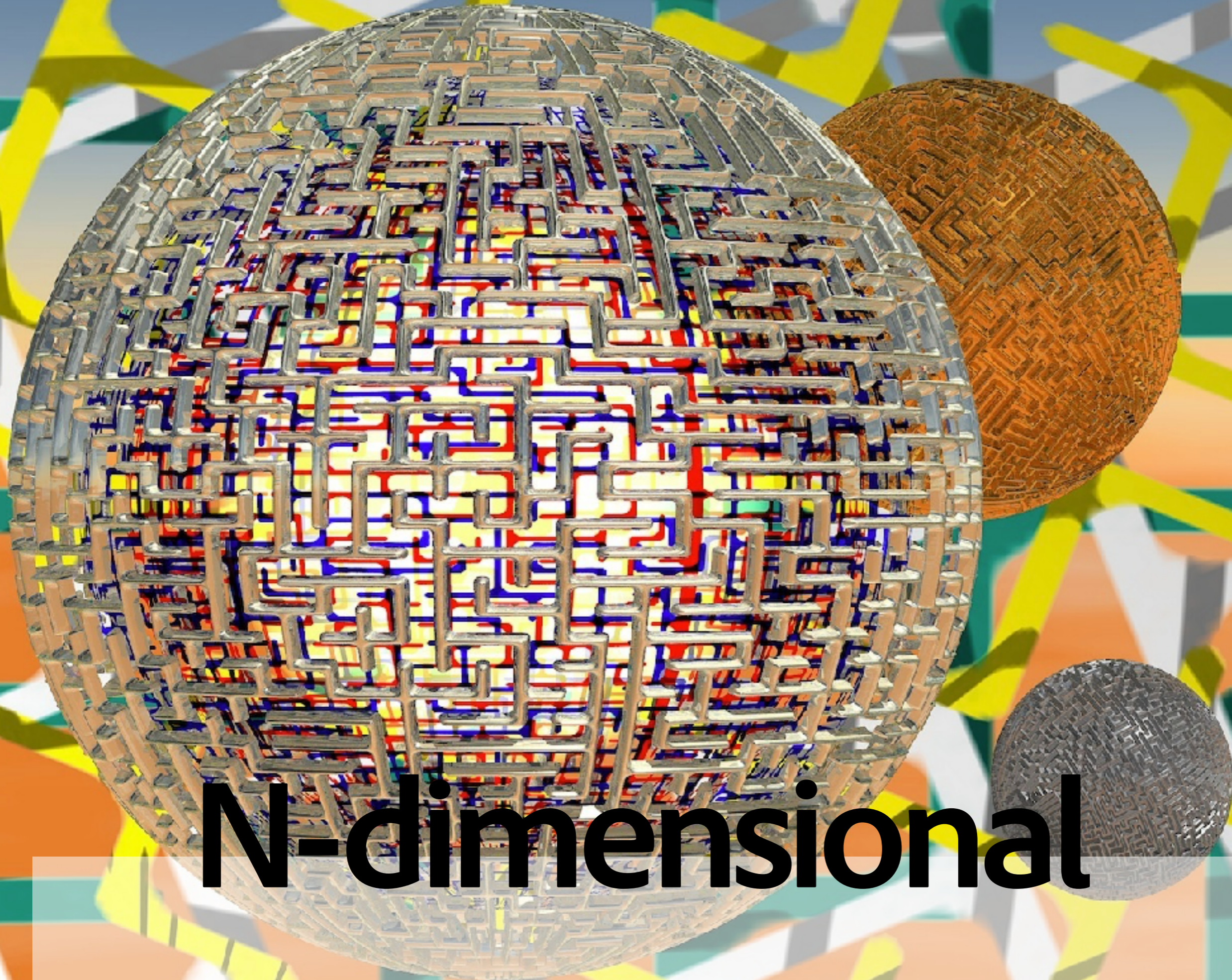
picture: jusben on morguefile.com

enterprise DB!

2323666
NIJMEC

CHOICE

N-dimensional



2014/06/25/1402.rtp



Audio > [RTP] [RTP] [RTP] [RTP] [RTP] [RTP] < Audio OUT

chronological hierarchy of
timestamp-addressed files
stores 15 seconds of RTP packets

unbreakable
storage!



RTP
packet
recorder

storage

|RTP| |RTP| |RTP| |RTP| |RTP| |RTP|
2014/06/25/1402.rtp

```
s = UDP socket
While(s is open) {
  Wait for packet
  Packet matches our filter?
  If not -> continue
  If yes:
  Compute storage path from T
  Append packet to storage file
}
```

continuous recording
continuous storage
seek by timestamp
variable speed replay



beautiful simplicity

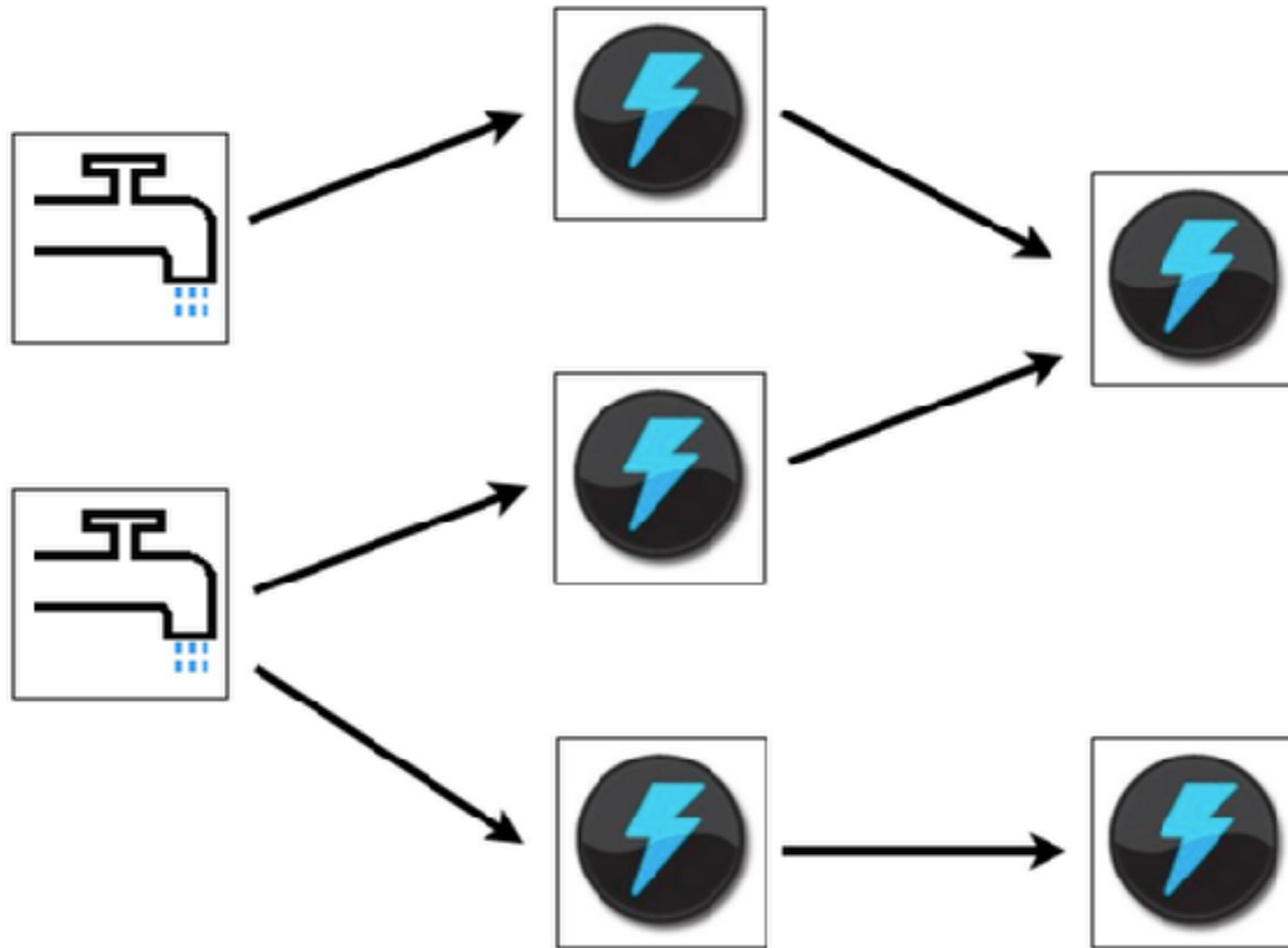
as simple as possible, but not simpler



pipeline metaphor
simple modules
simple assembly model
transparent, robust, powerful

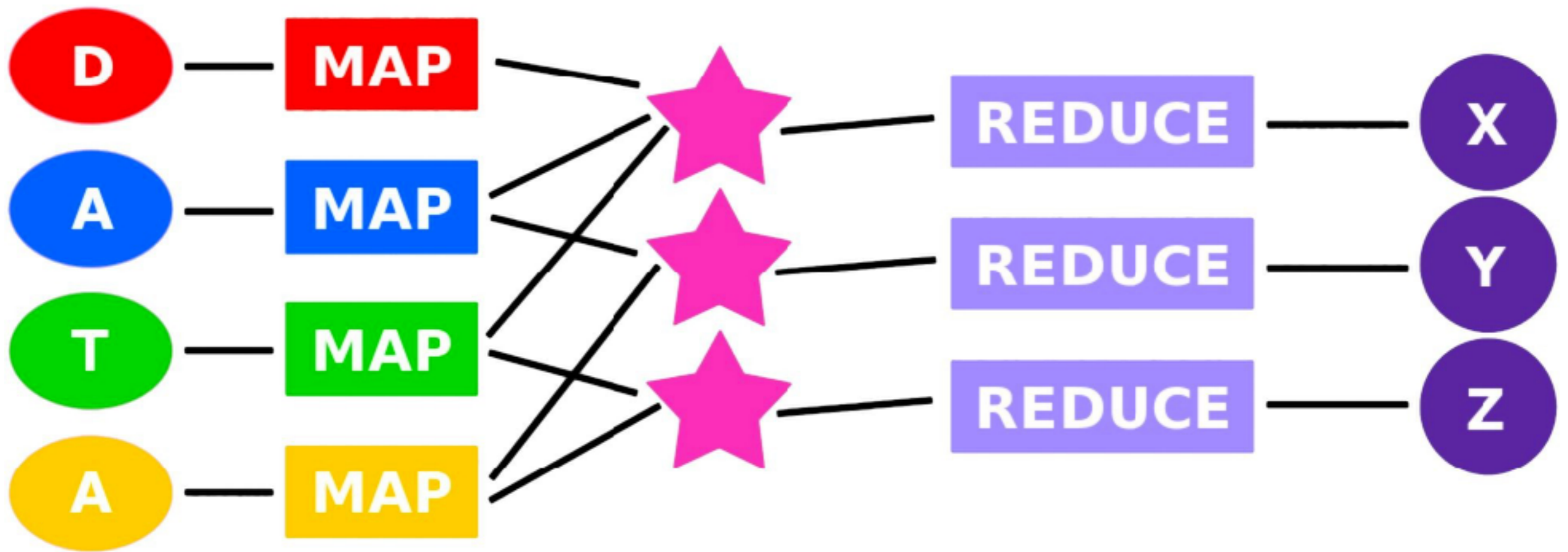
A powerful metaphor

“There are just three abstractions in Apache Storm: spouts, bolts, and topologies.”



Picture from Apache Storm: distributed stream processing

A simple universe



picture from <http://de.wikipedia.org/wiki/MapReduce>

A simple model

```
@Override
public Result execute() {
    FormattingResultLog resultLog = new FormattingResultLog();
    try {
        long randomDelay = (long)(Math.random() * (42));
        long toSleep = minExecutionTime + randomDelay;
        resultLog.debug("Executing {} will last {} msec", this, toSleep);
        Thread.sleep(toSleep);
    } catch(InterruptedException iex) {
        resultLog.warn("{} during execution", iex.getClass().getSimpleName());
    }
    final String execMsg = "Done executing";
    resultLog.debug("{}:done executing", this, execMsg);
    log.debug("{}:{}", this, execMsg);
    return new Result(resultLog);
}
```

Sling Health Checks

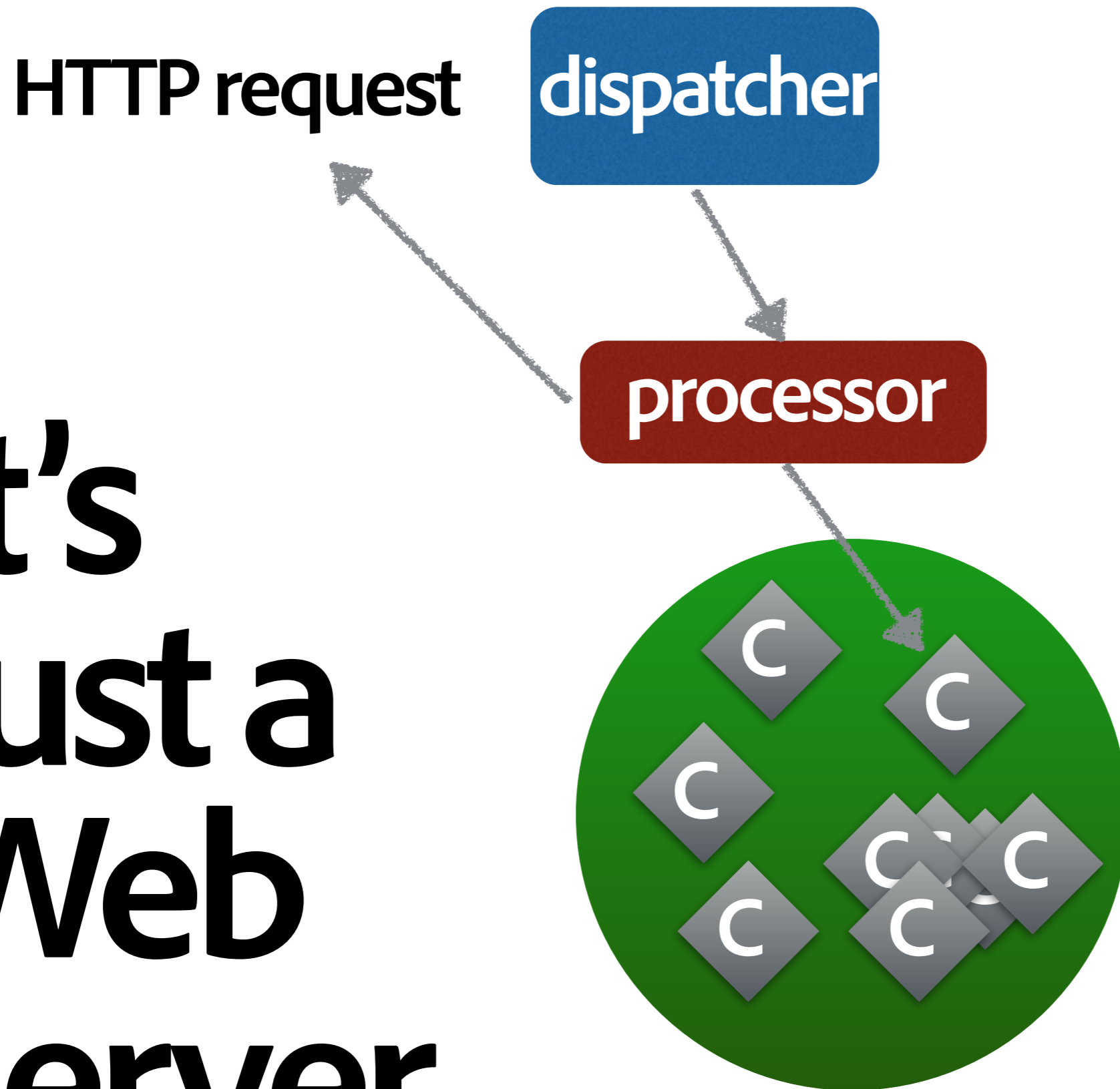
**do not reinvent
the metaphor!**

what does my problem look like?

ok, but

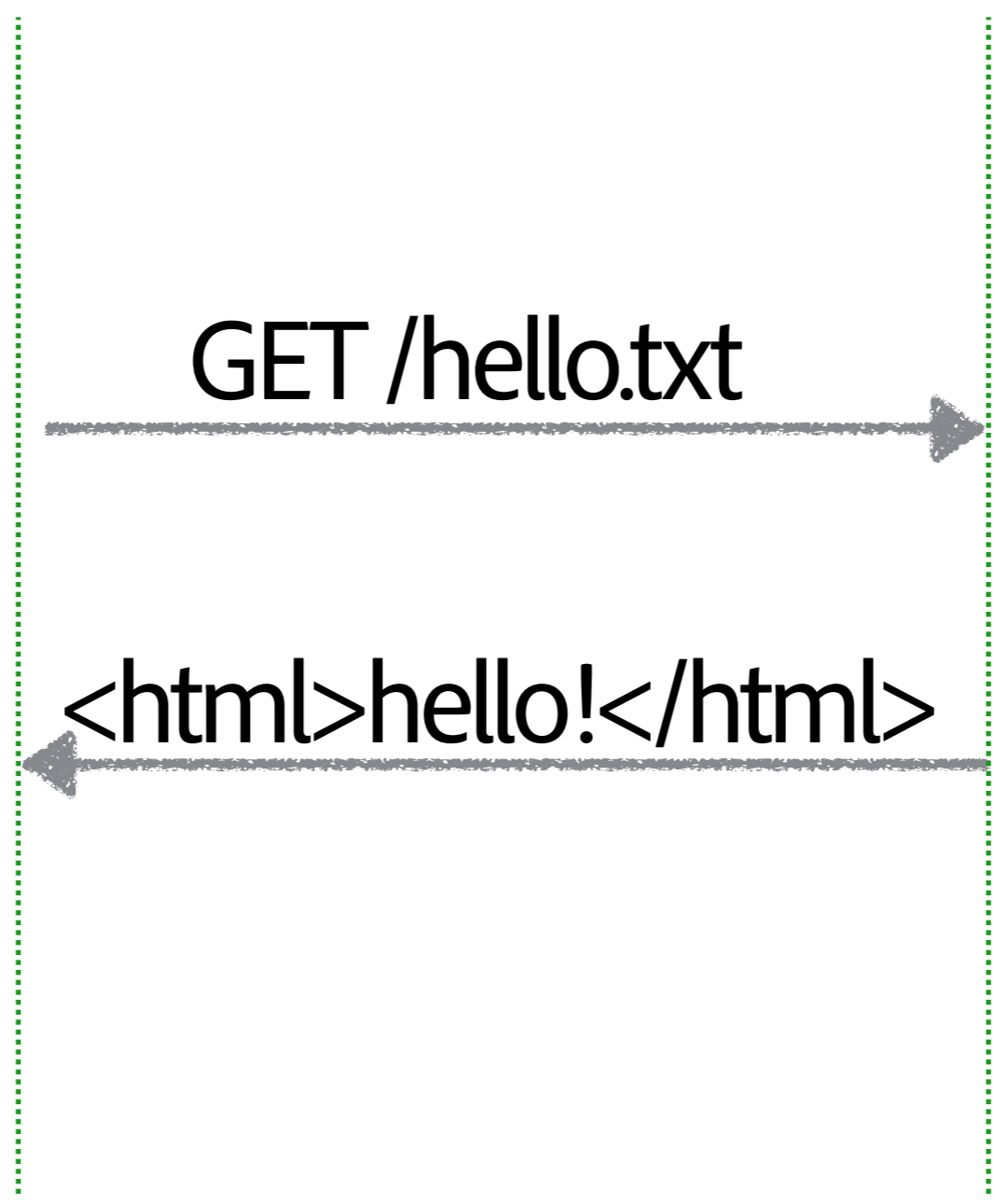
high-end
EMIS?

it's
just a
Web
server...



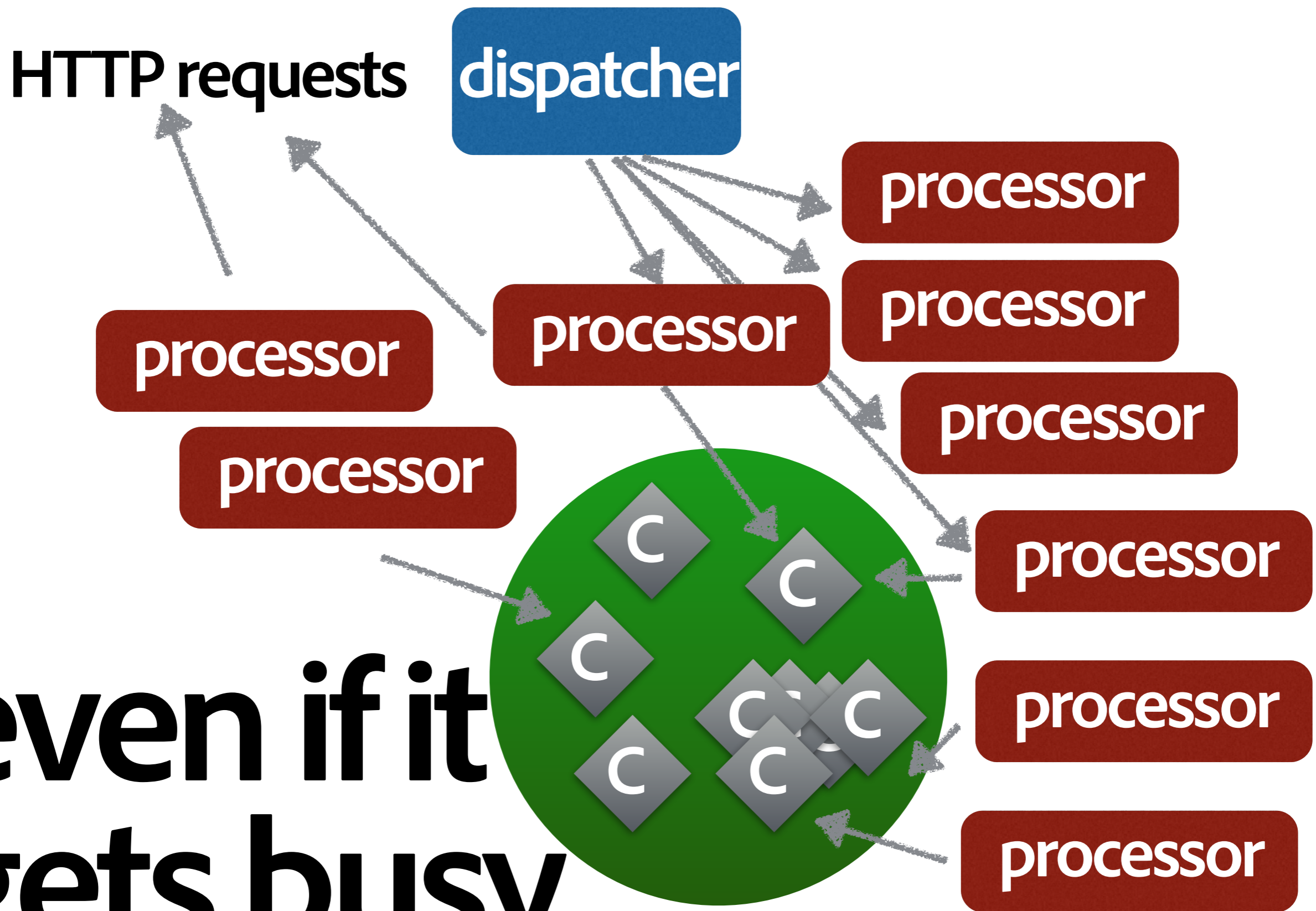
client

server



HTTP 0.9

(start simple)



even if it
gets busy...



picture: kakisky on morguefile.com

**inspired by nature...
multiple workers with
specific roles**

SO,

how?

put the bar

high

do not accept extra complexity

i
invest
in simplicity

can be expensive...and worth it

chase the right

**metapho
r**

“a network packets recorder and player”

simplicity is a

process

you usually know when you're there



beautiful simplicity

as simple as possible, but not simpler

what are the

enablers?

Adobe Experience Manager Web Console Components



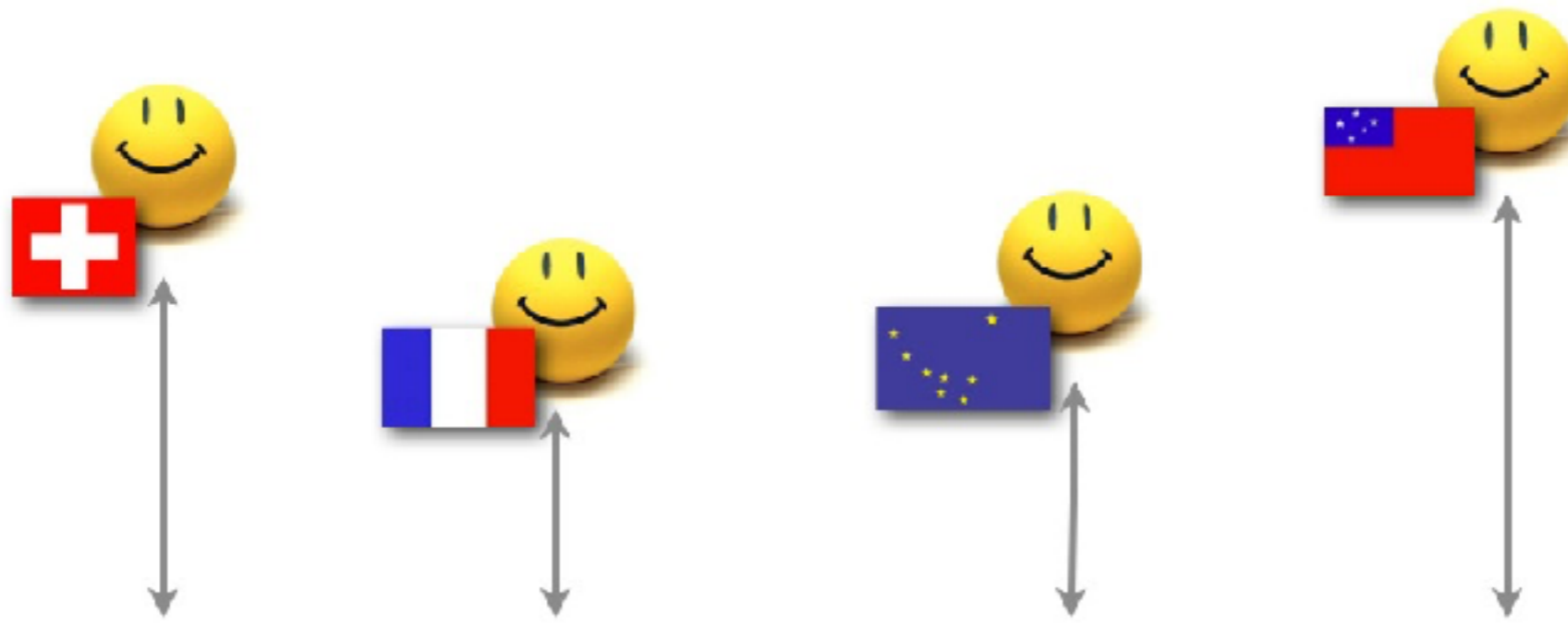
Main OSGi Sling Status Web Console

Number of installed components: 1810

| | | | | Reload |
|------|--|------------|---------|--------|
| Id | Name | Status | Actions | |
| 1152 | com.adobe.aem.formsdocuments.bootstrap.Bootstrapper | active | | |
| 1151 | com.adobe.aem.formsdocuments.events.AssetUpdateListener | registered | | |
| 1160 | com.adobe.aem.formsdocuments.listeners.RnCEventsListener | active | | |
| 1150 | com.adobe.aem.formsdocuments.predicateevaluator.DateComparisonPredicateEvaluator | factory | | |
| 1149 | com.adobe.aem.formsdocuments.publish.AssetReferenceProvider | active | | |
| 1153 | com.adobe.aem.formsdocuments.publish.impl.PublishServiceImpl | active | | |
| 1158 | com.adobe.aem.formsdocuments.rnc.ReviewManagementServiceImpl | active | | |
| 1155 | com.adobe.aem.formsdocuments.rnc.ReviewManagerServlet | active | | |
| 1159 | com.adobe.aem.formsdocuments.rnc.RnCDeletePreprocessor | active | | |
| 1161 | com.adobe.aem.formsdocuments.rnc.RnCJcrPathBuilder | active | | |
| 1157 | com.adobe.aem.formsdocuments.rnc.RnCPublishPreprocessor | active | | |
| 1156 | com.adobe.aem.formsdocuments.scheduler.FormActivationScheduler | active | | |
| 1154 | com.adobe.aem.formsdocuments.service.impl.FMCP...Impl | active | | |

modularit

enablers



“centralized open collaboration bus”

discussions,
decisions,
votes:
mailing lists
& archives

tasks:
issue tracker

code: shared
code repository

open development

enablers

Jackrabbit Oak

the next generation content repository

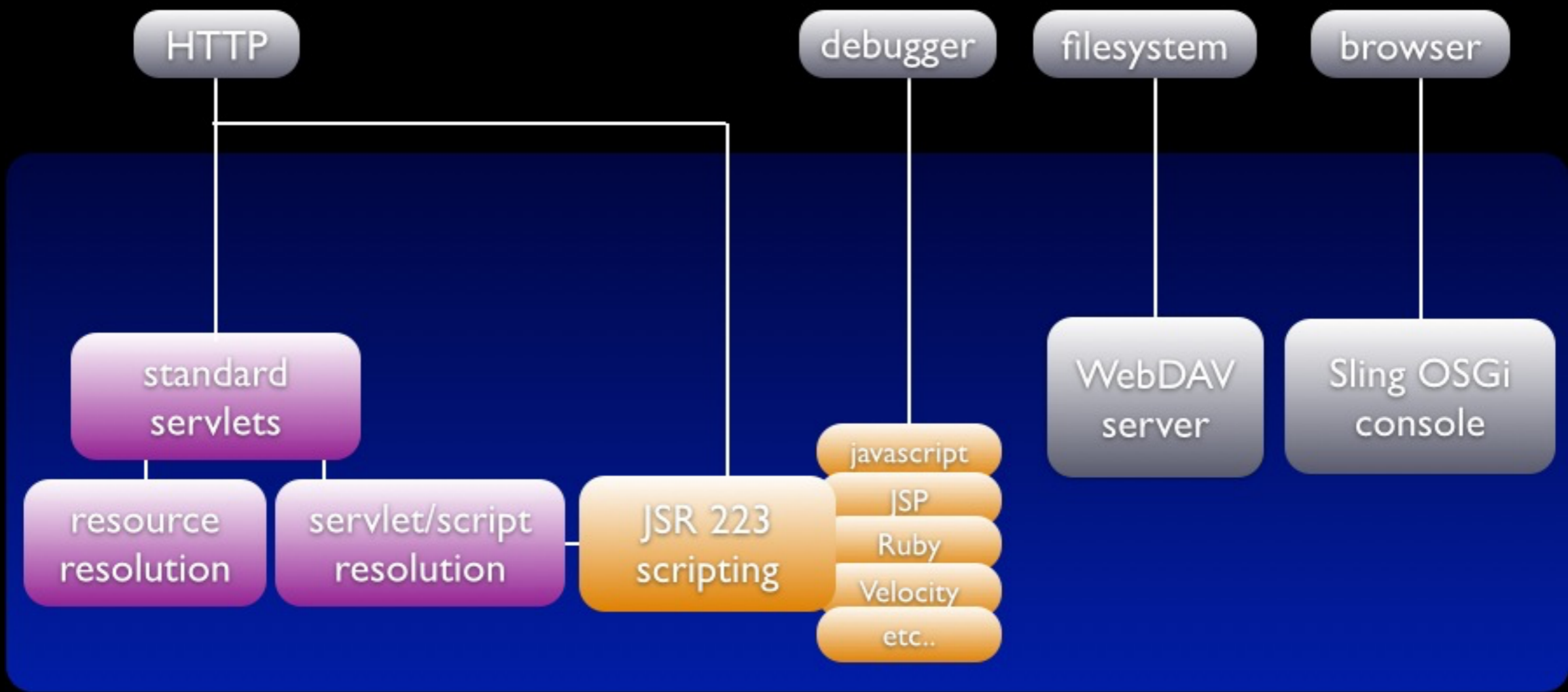
Jackrabbit Oak is an effort to implement a scalable and performant hierarchical content repository for use as the foundation of modern world-class web sites and other demanding content applications.

The Oak effort is a part of the [Apache Jackrabbit](#) project. Jackrabbit is a project of the [Apache Software Foundation](#).



**JCR's big tree with low coupling
promotes "local" simplicity**

enablers



OSGi framework (Apache Felix)

JSR-170 API

Apache Sling

enablers

BTW...we are hiring!



not simple enough?

don't give up!