Clojure for Business Teams

Decomplecting Data Analysis

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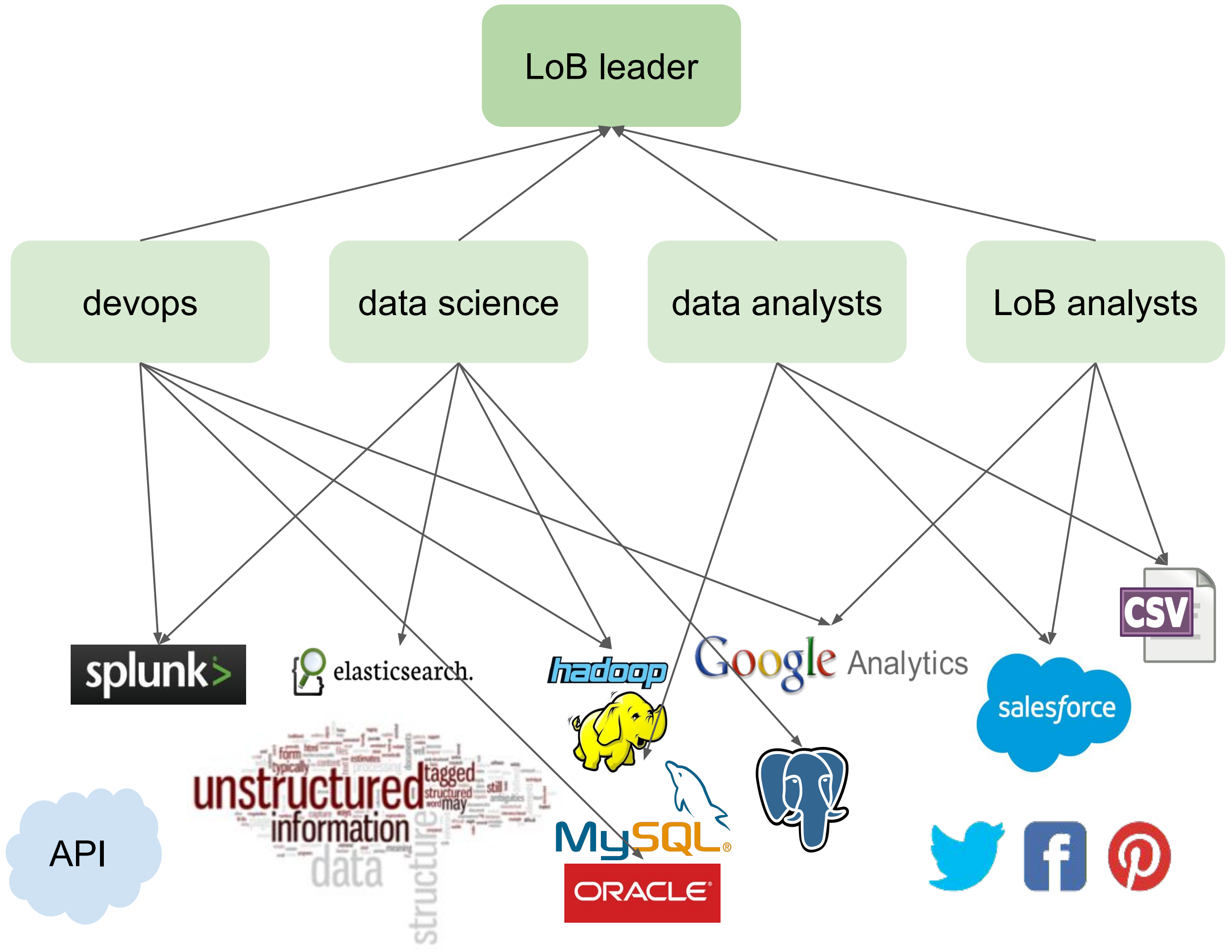
The Elephant and the Blind Men

Credit: https://en.wikipedia.org/wiki/File:Blind_men_and_elephant3.jpg

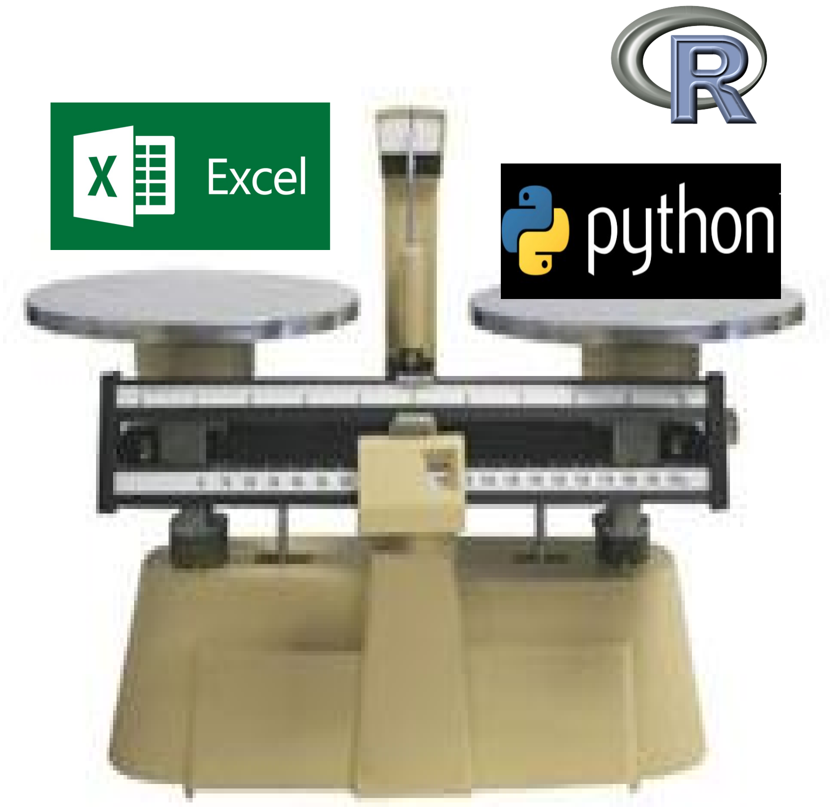
The Reality of Business Analytics



The Reality of Data Tools

Excel is User "friendly" but …

limits Abstraction and Composition



R/Python offer expressive power and rich libraries but …

pose high entry barrier to non-coders

Integration and Collaboration are critical
across developers, data scientists and analysts

The Opportunity

1

Self Service

Every participant is empowered to use the organizational data effectively

2

Abstraction

Each participant interacts with the data using the vocabulary of their organization layer, build abstractions to fit

3

Collaboration

Each participant is equally a producer and consumer. Reuse, extend, amplify!

Clojure for Business Teams - a clarification

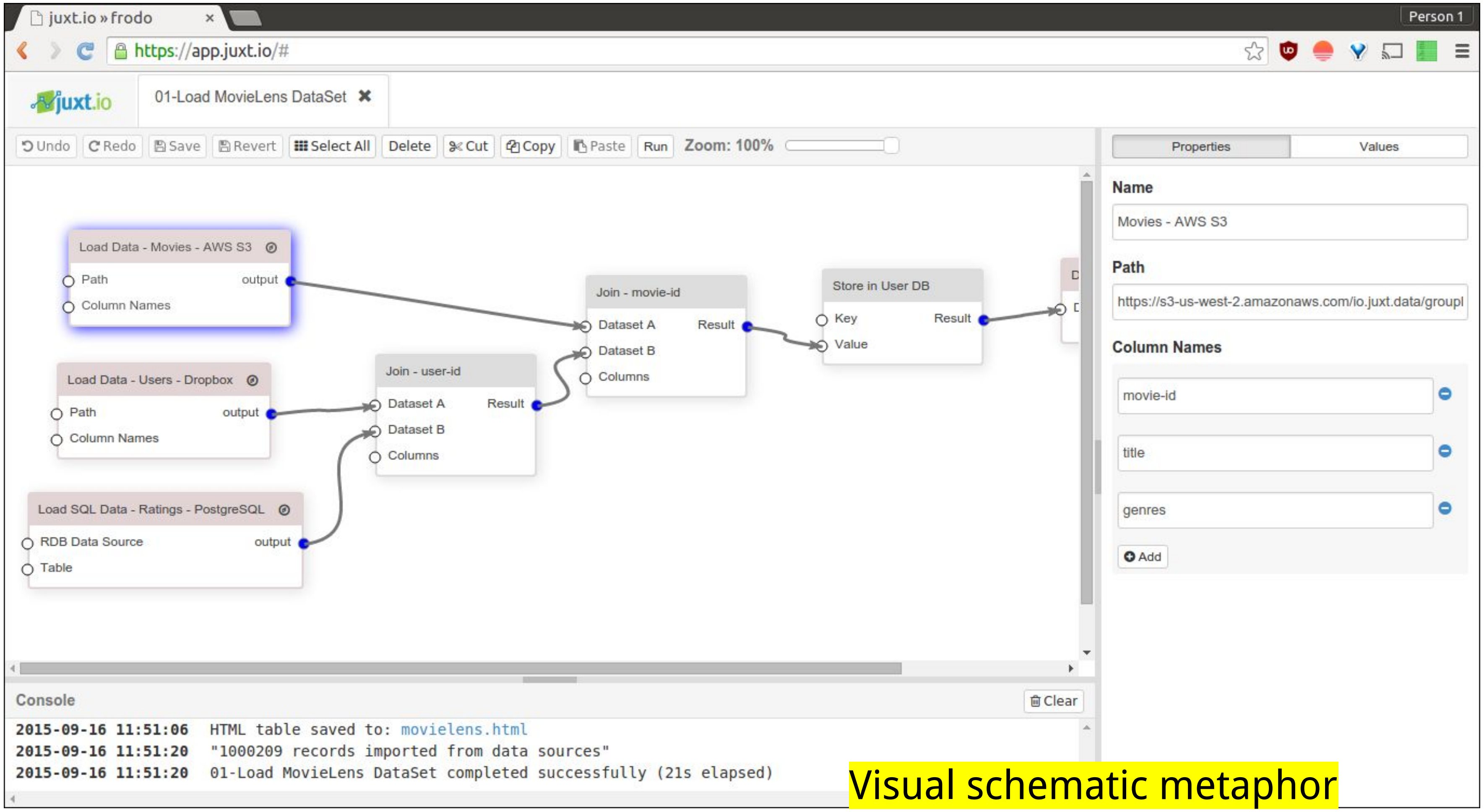
It’s not about ...

- substituting Clojure for R/Python
- Clojure IDE or DSL

It IS about …

- rethinking Data Tools with learnings from Clojure and its ecosystem
- function abstractions, composition and immutable data
- interactive, incremental development and testing

… for business users



Name: Movies - AWS S3

Path: https://s3-us-west-2.amazonaws.com/io.juxt.data/groupl

Column Names: movie-id, title, genres

Add

```
2015-09-16 11:51:06  HTML table saved to: movielens.html
2015-09-16 11:51:20  "1000209 records imported from data sources"
2015-09-16 11:51:20  01-Load MovieLens DataSet completed successfully (21s elapsed)
```

Visual schematic metaphor

Interactive and introspective UX

FP and Data Flow principles

Clojure as an extension language

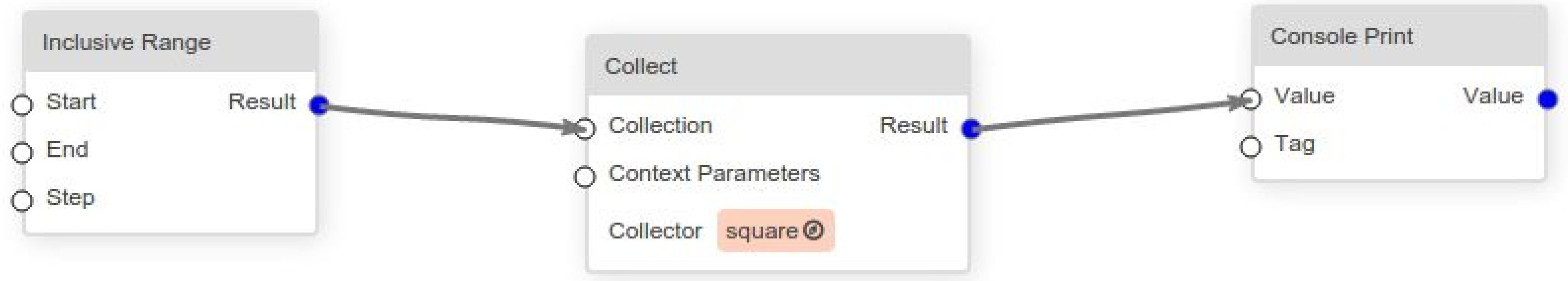
DEMO

Anatomy of a Component Graph

```
(defn Inclusive-Range
   [start end step] ...)
```

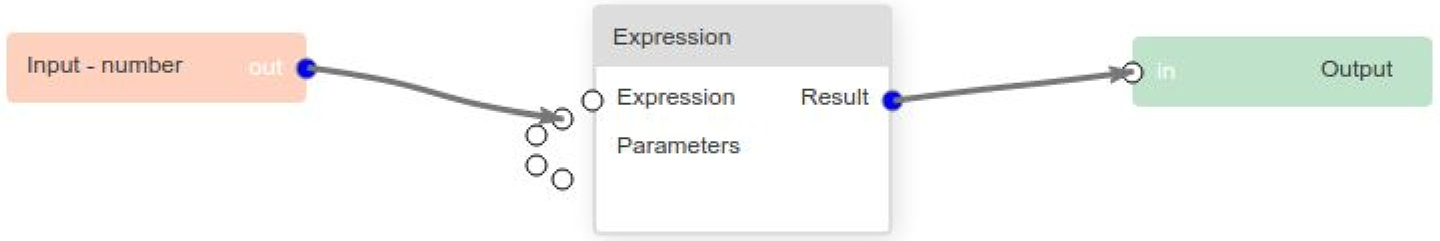
```
(defn Collect
   [collection context ...)
```

```
(defn Console-Print
   [value tag] ...)
```



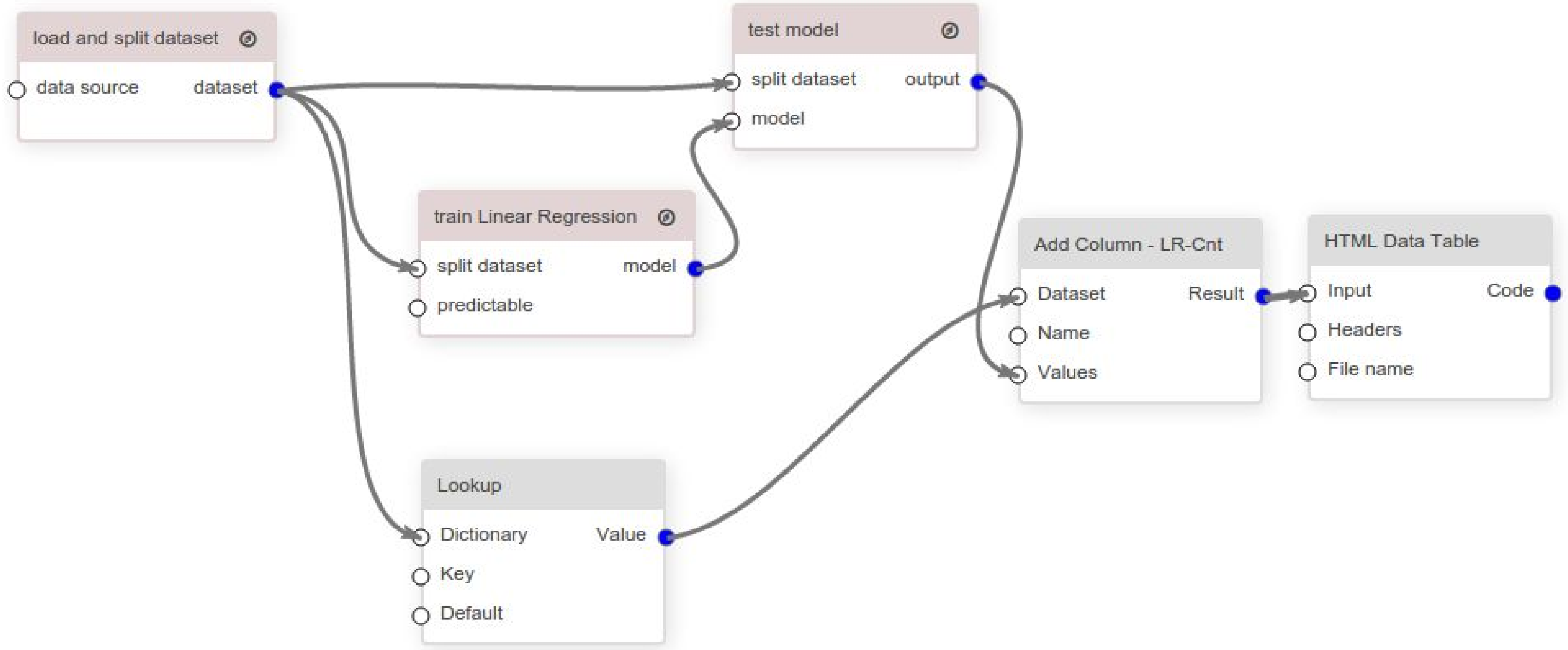
```
(-> (Inclusive-Range 1.0 10.0 1)
    (Collect nil #'square)
    (Console-Print))
```

Abstract Module - Square



```
(defn square [number]
  (Expression “$1 * $1” [number]))
```

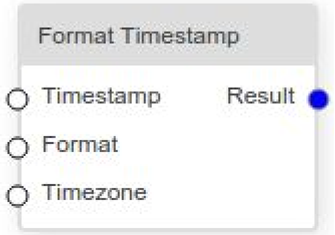
Complex Connections



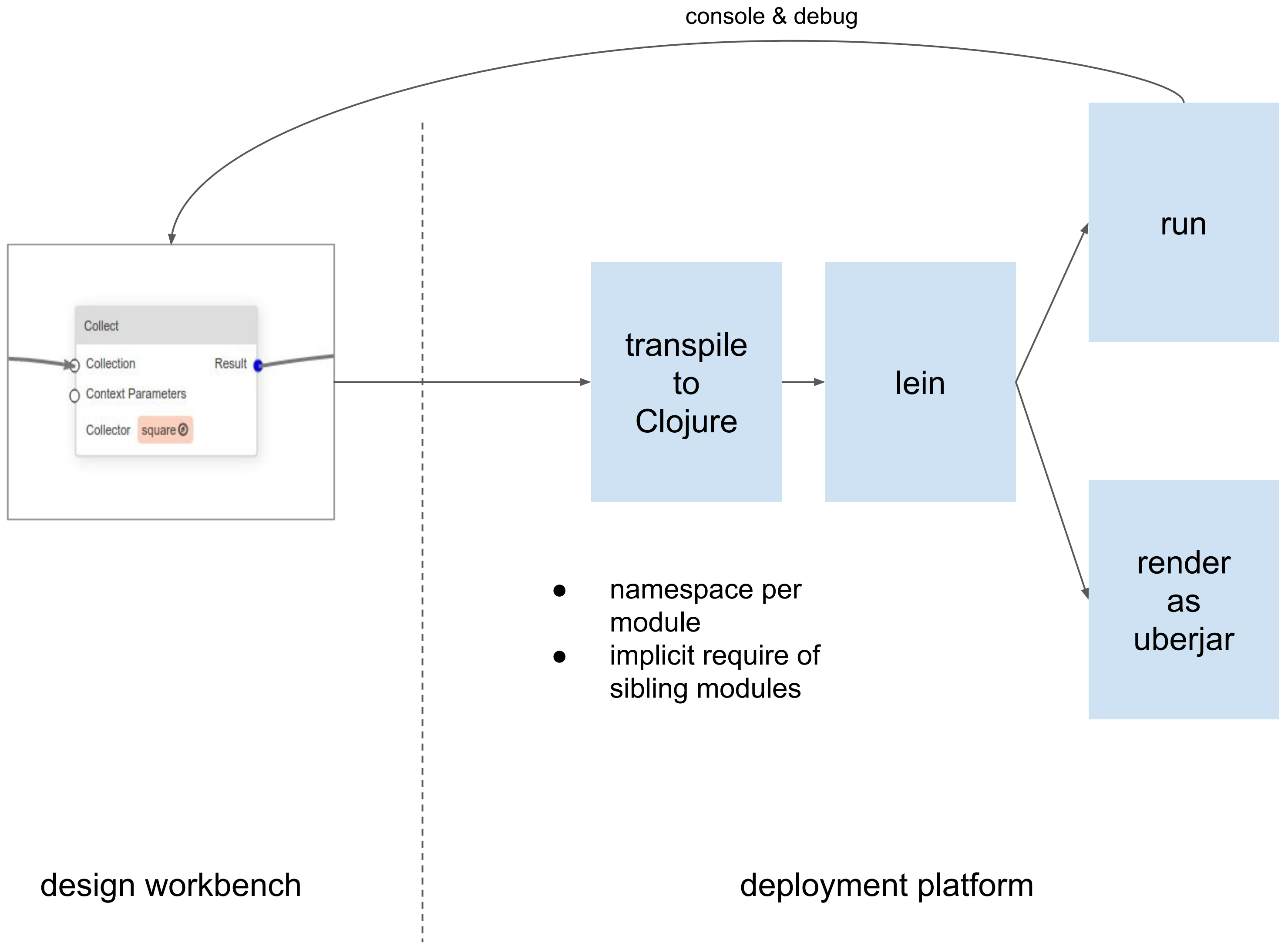
```
(let [ds (load-and-split-dataset src)]
  (-> (->> (train-Linear-Regression ds :cnt)
           (test-model ds)
           (Add-Column (:testset ds) :lr-cnt))
      (HTML-Data-Table [] "add-lr")))
```

Defining a Base Component

```
(defmodule Format-Timestamp
  {:id "b8104d76-5b4e-4e12-bf20-fd250d61344a"
   :name "Format Timestamp"
   :description "Convert a Timestamp value to Date and Time string"
   :tags [:foundation]
   :inputs [{:id "timestamp" :schema :any}
            {:id "format" :schema :string}
            {:id "timezone" :schema :string}]
   :output {:id "result" :schema :string}}
  [ts & [format timezone]]
  (-> (or (not-empty format) "yyyy-MM-dd'T'HH:mm:ss.SSSZ")
      (u/simple-date-format (or (not-empty timezone) "UTF"))
      (.format ts)))
```



Under the hood

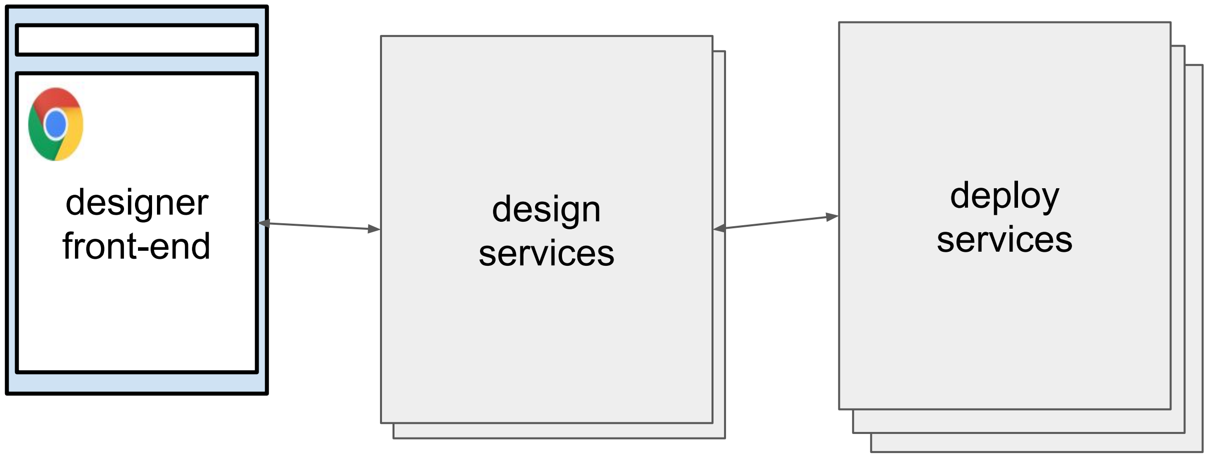


- namespace per module
- implicit require of sibling modules

design workbench

deployment platform

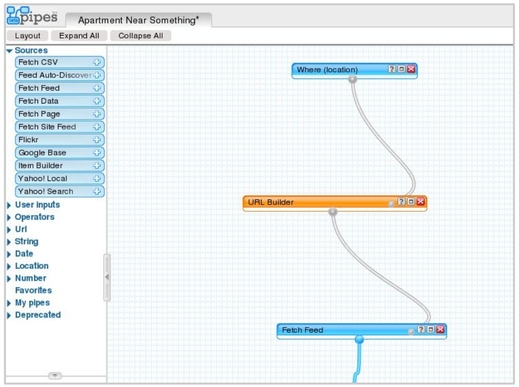
Our Technology Stack

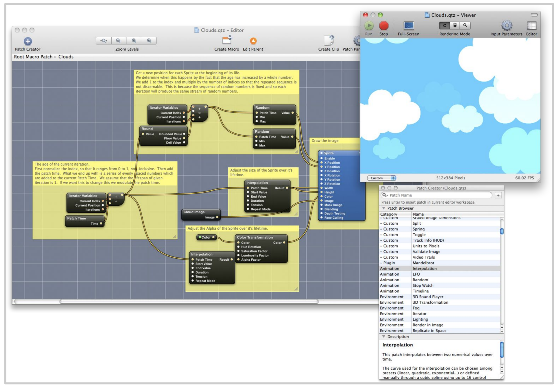


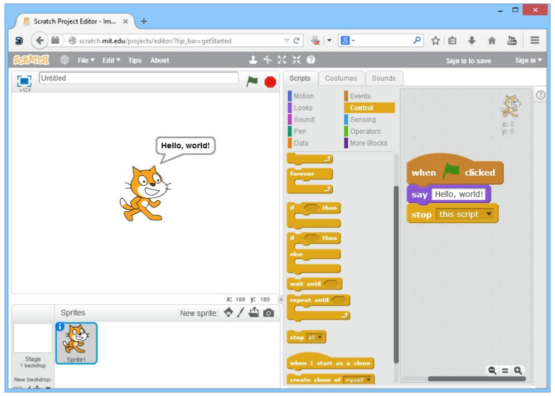
clojurescript
om
figwheel

clojure
clojure.data.*
clojure.java.jdbc
amazonica
http-kit
ring
incanter
instaparse
clj-hazelcast
clj-docker
clj-ml / weka

Acknowledgments


Yahoo Pipes


Apple Quartz Composer


MIT Scratch

… and many others

What’s next?

Nascent project, working Alpha release

Focused engagements building solutions for companies in Semiconductor, Pharma and IoT verticals

Technical roadmap

Clojure developer community engagement

Thanks

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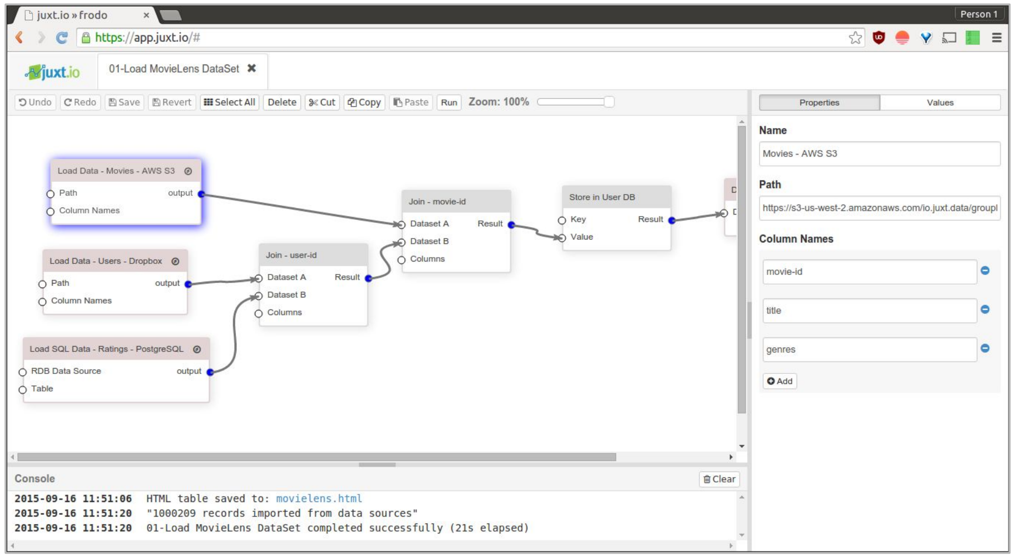

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Console

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