

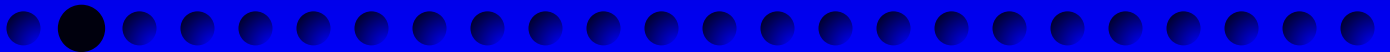
TANSU

A Workflow for Cabinet Layout

Pavneet Arora

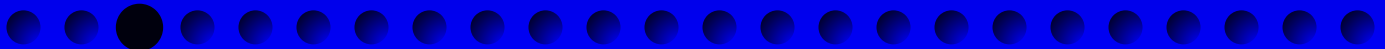
PART I

WHAT?



Tansu

Tansu is the Japanese word for storage unit.

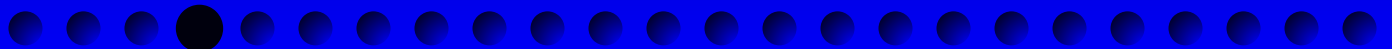


What problem does it try to solve?

The need to **quickly explore** different cabinet layouts and costing options.



Frank Lloyd Wright designed version of the Imperial Hotel, Tokyo.



TANSU

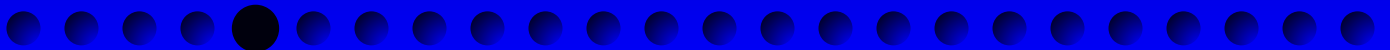
T_EX and

Aymptote driven

Nomenclature for

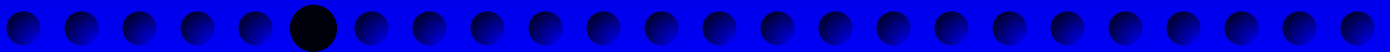
Storage

Unit layout.



PART II

WHERE?



From TUG 2012 presentation:

YAWN—Sleep De(p)rived Typesetting

YAML

Algebra

Words

Numbers

A L^AT_EX enabled workflow that decoupled the data, its processing, and subsequent typesetting by using YAML to store specification and catalogue data and Ruby to do the processing.

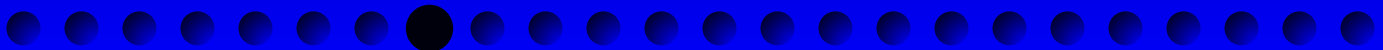


From TUG 2012 presentation:

A perfectly good framework already exists:

MODEL–VIEW–CONTROLLER

MODEL	YAML representations of the specification and price catalogue
VIEW	L ^A T _E X enabled shell script
CONTROLLER	Ruby program that contains the business logic



A historical interlude...

Niklaus Wirth:

Algorithms + Data Structures = Programs

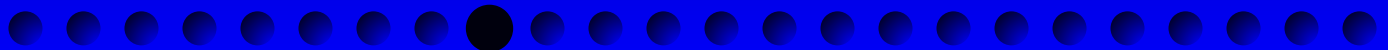
As told to K.V. Nori, his student:

RoW Pronounced *Veert*, i.e., call-by-name

NA Pronounced *Worth*, i.e., call-by-value

Algorithms + Data Structures = Documents

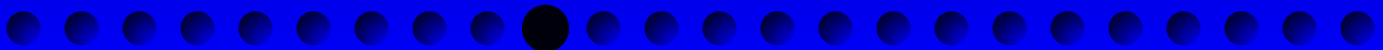
Wirth's Law: *“Software is getting slower more rapidly than hardware becomes faster.”*



From TUG 2012 presentation:

Summary

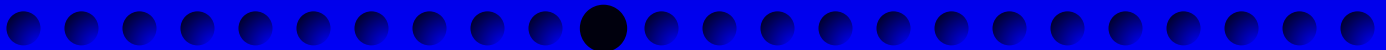
- It can be helpful to think of \TeX as the “View” in an MVC framework.
- YAML (and other markup forms) affords an easy to edit, human-readable specification file format that interfaces well with Ruby.
- YAML also allows one to simulate pivot table aggregation.



TANSU is an implementation of YAWN

So YAWN introduced a framework or “design pattern” which is part of the effort to expand the notion of what constitutes a document and how to process such documents. Its use was demonstrated in the configuration of lighting control systems.

TANSU is another implementation of the same pattern; this time used to assist in cabinet layout design.



PART III

DEMONSTRATION I



PART IV

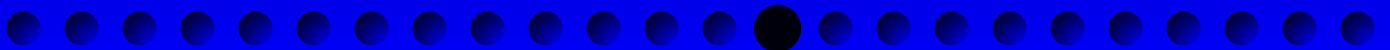
WHY?



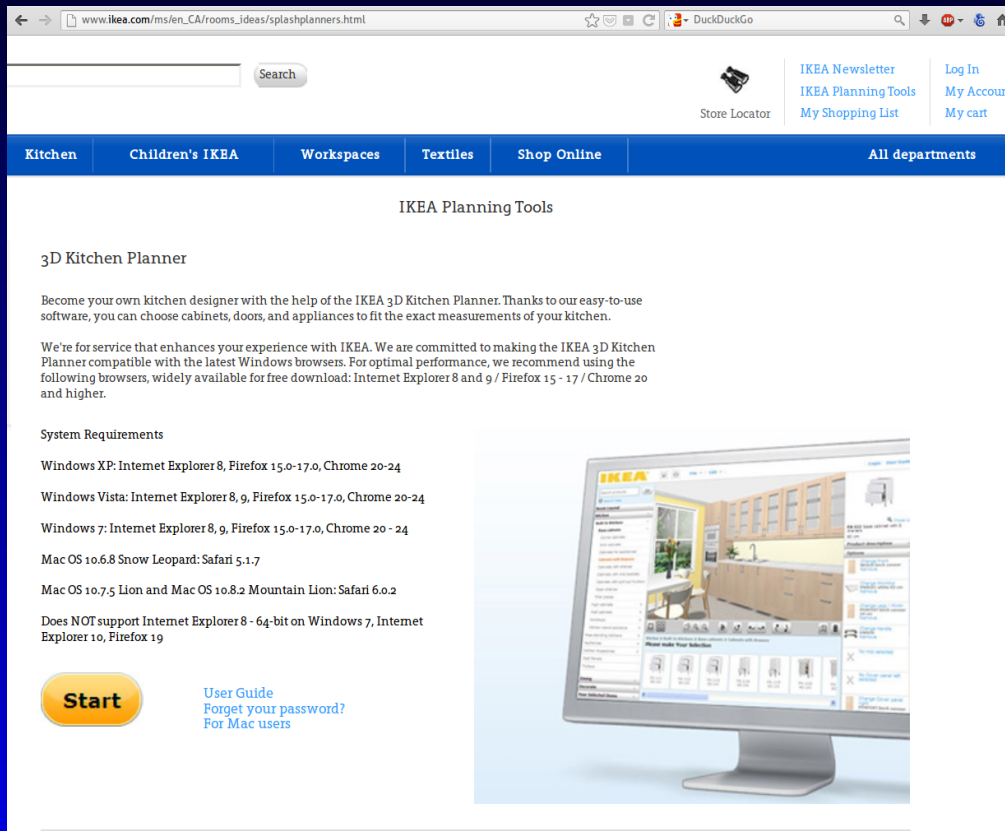
Requirements:

- Need to explore different layout options and their impact to space and cost constraints.
- Need to be able to explore different series of products from the same manufacturer.
- Need to be able to explore products from different manufacturers for the same configuration.

What we need is **rapid estimating** akin to **rapid prototyping**.



Why not use one of the online tools?



The screenshot shows the IKEA website's 'IKEA Planning Tools' section. At the top, there is a search bar and navigation links for 'IKEA Newsletter', 'IKEA Planning Tools', 'My Shopping List', 'Log In', 'My Account', and 'My cart'. Below this is a blue navigation bar with categories: 'Kitchen', 'Children's IKEA', 'Workspaces', 'Textiles', 'Shop Online', and 'All departments'. The main content area is titled 'IKEA Planning Tools' and features a section for the '3D Kitchen Planner'. The text describes the tool as an easy-to-use software for designing kitchens, compatible with various browsers. It lists system requirements for Windows XP, Vista, 7, and Mac OS, and notes that it does not support Internet Explorer 8 on Windows 7 or Internet Explorer 10, Firefox 19. A 'Start' button is prominently displayed, along with links for 'User Guide', 'Forgot your password?', and 'For Mac users'. To the right, a computer monitor displays a 3D rendering of a kitchen interior with wooden cabinets and a sink.

www.ikea.com/ms/en_CA/rooms_ideas/splashplanners.html

Search

Store Locator

IKEA Newsletter
IKEA Planning Tools
My Shopping List

Log In
My Account
My cart

Kitchen Children's IKEA Workspaces Textiles Shop Online All departments

IKEA Planning Tools

3D Kitchen Planner

Become your own kitchen designer with the help of the IKEA 3D Kitchen Planner. Thanks to our easy-to-use software, you can choose cabinets, doors, and appliances to fit the exact measurements of your kitchen.

We're for service that enhances your experience with IKEA. We are committed to making the IKEA 3D Kitchen Planner compatible with the latest Windows browsers. For optimal performance, we recommend using the following browsers, widely available for free download: Internet Explorer 8 and 9 / Firefox 15 - 17 / Chrome 20 and higher.

System Requirements

Windows XP: Internet Explorer 8, Firefox 15.0-17.0, Chrome 20-24

Windows Vista: Internet Explorer 8, 9, Firefox 15.0-17.0, Chrome 20-24

Windows 7: Internet Explorer 8, 9, Firefox 15.0-17.0, Chrome 20 - 24


Mac OS 10.6.8 Snow Leopard: Safari 5.1.7

Mac OS 10.7.5 Lion and Mac OS 10.8.2 Mountain Lion: Safari 6.0.2

Does NOT support Internet Explorer 8 - 64-bit on Windows 7, Internet Explorer 10, Firefox 19

Start

[User Guide](#)
[Forgot your password?](#)
[For Mac users](#)

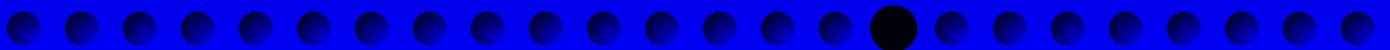


Why use YAML and not XML?

Two contrasting design patterns:

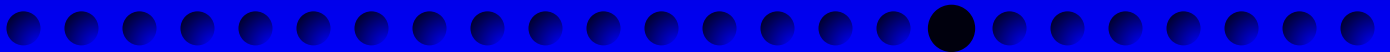
Singleton: HH, et al.

Simpleton: PA



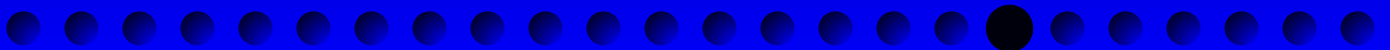
PART V

How?



Cabinet layout specification:

```
:projectID: 1923IMPHOT
:projectAddress:
  Imperial Hotel Apartments
  Frank Lloyd Wright Edition (1923)
  Tokyo, Japan
:clientName: Okura Kihachiro
:cabinetSpec:
  :manufacturer: Fabritec
  :series: EuroStyle
  :walls:
    -
      :wall:
        :name: East
        :baseCabinets:
          - B24
          - B2D24
          - BSD30
          - HD1584-R
        :wallCabinets:
          - W1230
          - W2430
          - W1230-R
          - W3015HZ
          - HD1584-R
```









Cabinet catalogues often have common pieces:

They may have different part numbers, but many cabinet configurations from various manufacturers share **common** standard dimensions.

Even if they have a particular **special** configuration, TANSU can still handle these “exceptions” through the catalogue data representation.

Base Cabinet Combinations / Combinaisons des armoires de bas

Select the cabinets you will require and pick-up the items from the shopping list below
Sélectionnez les armoires que vous aurez besoin et ramassez les éléments de la liste d'achats ci-dessous

B12 12" x 30 1/4" x 23 5/8" Cabinet / Coisson: 1 x B12 <input type="checkbox"/> Door / Porte: 1 x B <input type="checkbox"/>		<input type="checkbox"/>
BD12 12" x 30 1/4" x 23 5/8" Cabinet / Coisson: 1 x B12 <input type="checkbox"/> Door / Porte: 1 x A <input type="checkbox"/> Drawer Box / Tiroir: 1 x D12 <input type="checkbox"/> Drawer front / Faceplate: 1 x D1 <input type="checkbox"/>		<input type="checkbox"/>
B4D12 12" x 30 1/4" x 23 5/8"		<input type="checkbox"/>
B3D15 15 1/8" x 30 1/4" x 23 5/8" Cabinet / Coisson: 1 x B15 <input type="checkbox"/> Drawer Box / Tiroir: 2 x D15 <input type="checkbox"/> 1 x D15D <input type="checkbox"/> Drawer front / Faceplate: 2 x D2 <input type="checkbox"/> 1 x D3 <input type="checkbox"/>		<input type="checkbox"/>
B4D15 15 1/8" x 30 1/4" x 23 5/8" Cabinet / Coisson: 1 x B15 <input type="checkbox"/> Drawer Box / Tiroir: 4 x D15 <input type="checkbox"/> Drawer front / Faceplate: 4 x D2 <input type="checkbox"/>		<input type="checkbox"/>
B18 18" x 30 1/4" x 23 5/8"		<input type="checkbox"/>

Catalogue data file:

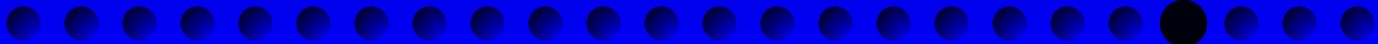
```
:name: Eurostyle
:manufacturer: Fabritec
:vendor: Home Depot
:models:
  :baseCabinets:
    :category: Base Cabinets
    :subcategories:
      :cabinets:
        :subcategory: Cabinets
        :items:
          -
            :model: B12
            :width: 12"
            :height: 30 1/4"
            :depth: 23 5/8"
            :desc: 12"W base cabinet
            :doors:
              -
                :swing: :default
                :width: 12"
                :height: 30 1/4"
            :price: 160.66
```



Parsing customary units of length

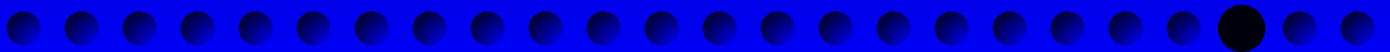
A **stunning** piece of regexp that parses fractional architectural units:

The screenshot shows the RegExLib.com website interface. At the top, the site logo "RegExLib.com Regular Expression Library" is visible. A navigation bar includes links for Home, Search, RegEx Tester, Browse Expressions, Add Regex, and Login. A search bar on the right contains the regular expression `^[a-zA-Z]+&`. The main content area is titled "Regular Expression Details" and features a green header with the title "Feet-inch to Decimal". Below the title are "Find" and "Test" buttons. The "Expression" field contains the following regular expression: `(?:(?:<Feet>(d+)['](?:<ft>)(o,i)[](?:<Inches>(d*)(?!(^w|)))(o,i)(?:[-.\/]|o,i)(?:<Fraction>(?:<FracNum>(d*)(?:<FracDem>(d*)))(o,i)?<Decimal>)\d*)`. The "Description" field explains that the expression is designed to parse measurements like "12' 2-15/16\"", breaking them down into feet, inches, and fractional inches. It notes that this is a modified version of Trevor Braun's original regex, with "ft" and "in" suffixes added to the fraction's numerator and denominator groups. The "Matches" field shows "1ft 2-3/4 in, 2' 3 4/5", "3ft, 4', 5 in, 6", "7.125 in, 3ft 4-5 in". The "Non-Matches" field shows "1ft 2-3/4in, 4in". The "Author" is listed as "Normand Frechette" with a "Rating" of 5 stars. The "Source" is "RegExLib.com". A "Your Rating" section includes a star rating interface with buttons for "Bad", "1", "2", "3", "4", "5", and "Good", along with a "Submit Rating" button. Below the rating is a "Enter New Comment" section with input fields for "Title", "Name", and "Comment". On the left side, there are sections for "Subscribe" (with "191 readers" and "BY FEEDBURNER"), "Site Links" (including "RegEx Cheat Sheet", "Search", "RegEx Tester", "Browse Expressions", "Add Regex", "Manage My Expressions", "Contributors", "RegEx Resources", "Web Services", "Advertise", "Contact Us", "Register", "Recent Expressions", "Recent Comments"), and "Community" (including "RegEx Forums", "RegEx Blogs", "RegEx Mailing List"). On the right side, there is a "Sponsors" section.



PART VI

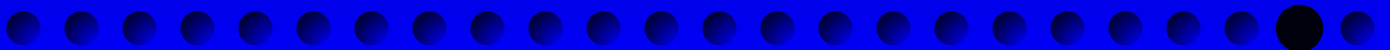
DEMONSTRATION II



Summary

- TANSU allows you to quickly and easily explore different cabinet layout and costing options.
- TANSU demonstrates that the YAWN workflow design pattern can be easily adapted to other problems.
- TANSU shows that we can/should expand the idea of our notion of what type of documents that the \TeX toolset can handle.

Algorithms + Data Structures = Documents



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