

Panorama des formats et des outils de la datavisualisation

Samuel Goëta
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IAU, le 26 janvier 2017

Objectifs

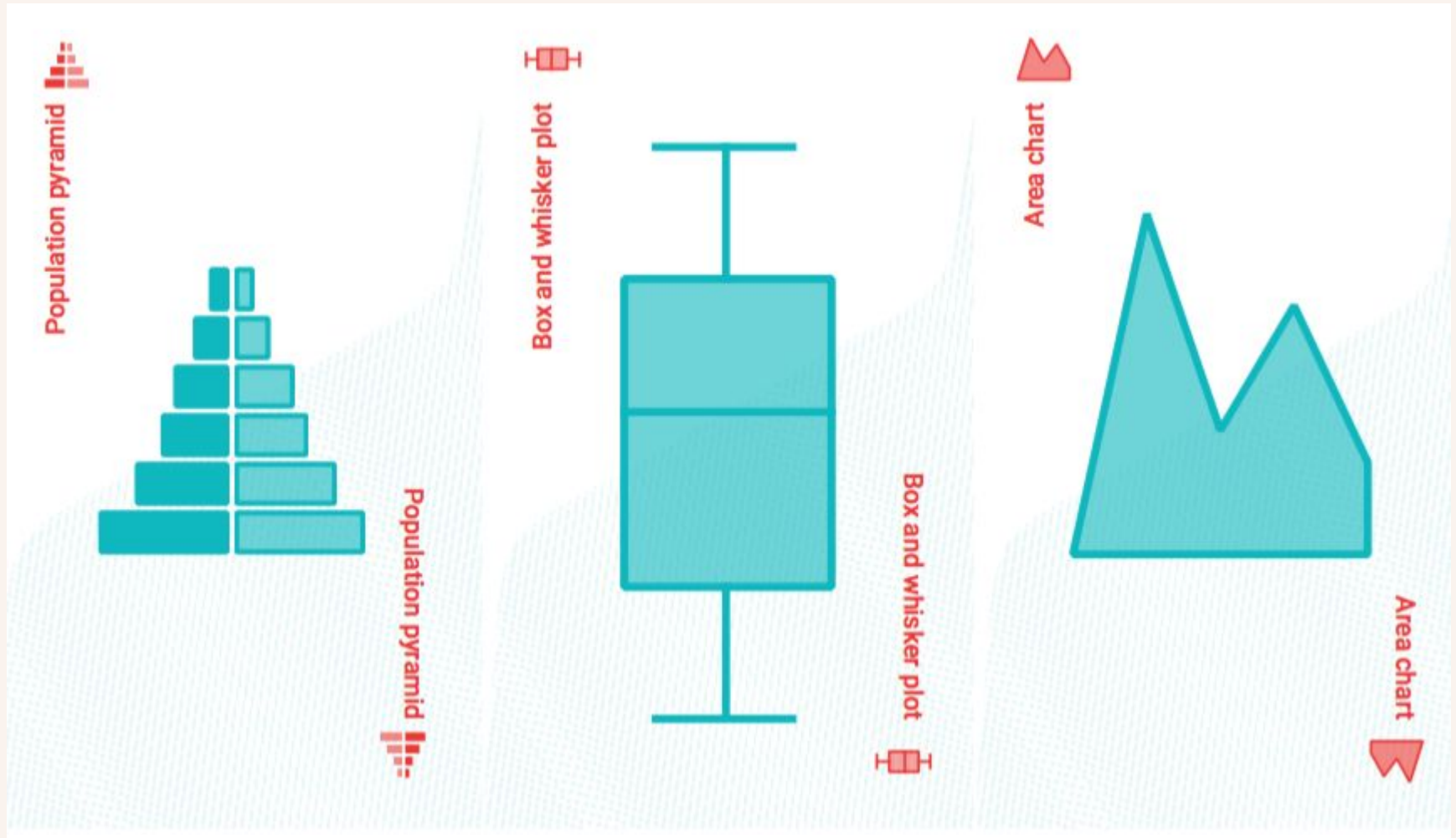
- Présenter les différentes fonctions de la data visualisation
- Apprendre à choisir un format de data visualisation selon la situation
- Connaitre les principaux outils de visualisation
- Tester quelques outils grand public

Panorama de la data visualisation

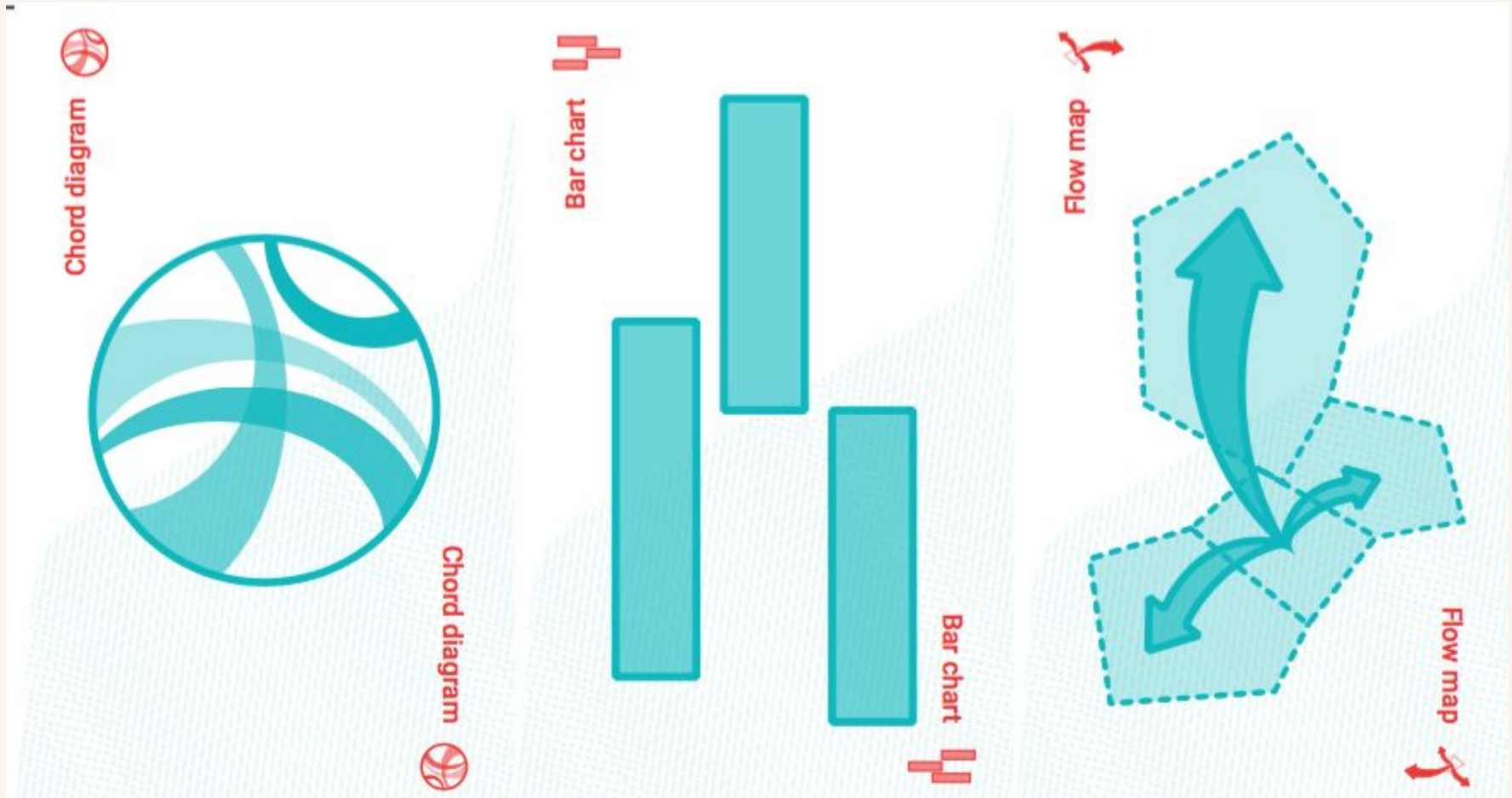
Panorama des fonctions de visualisation



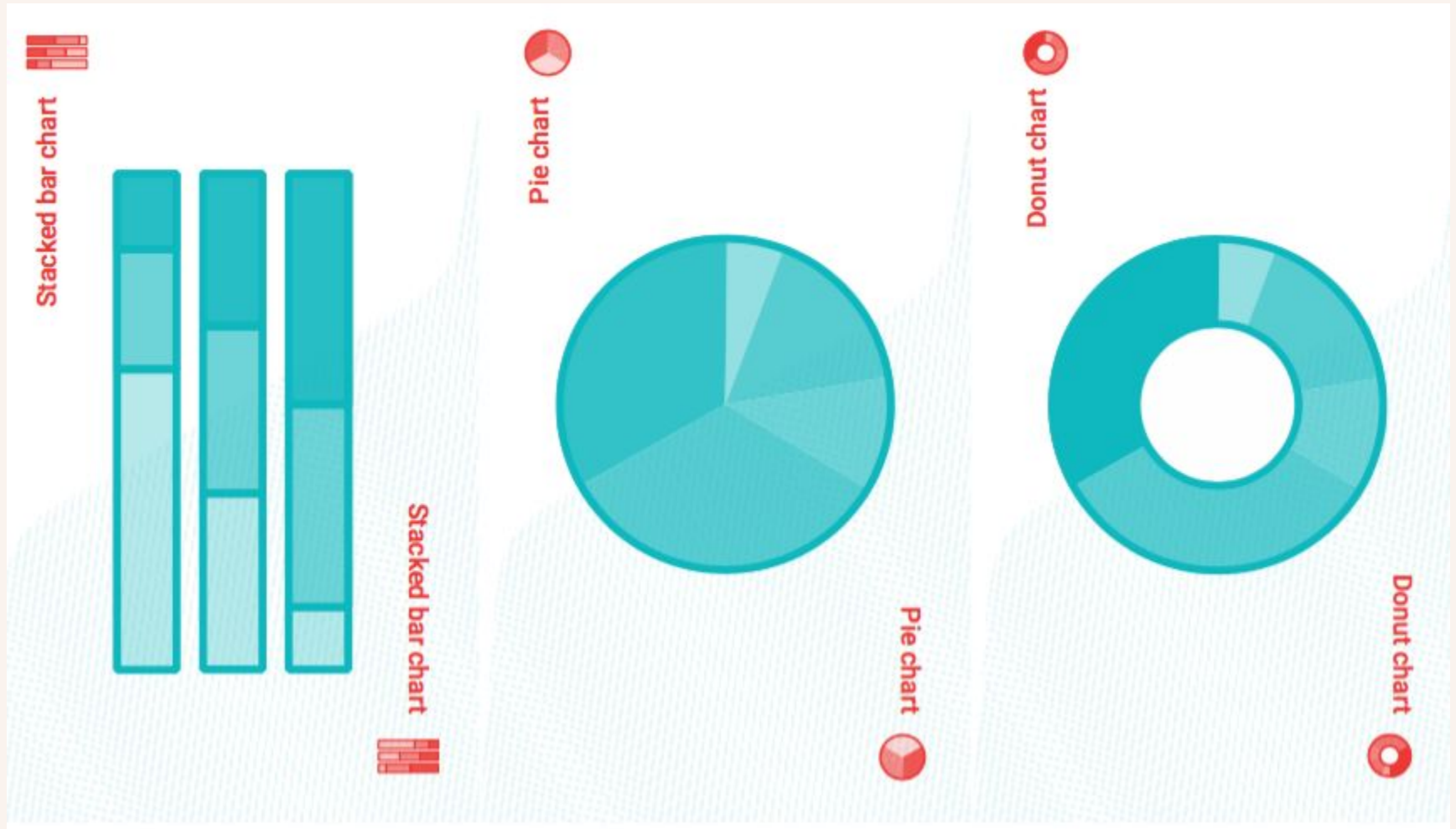
Panorama des formats de visualisation



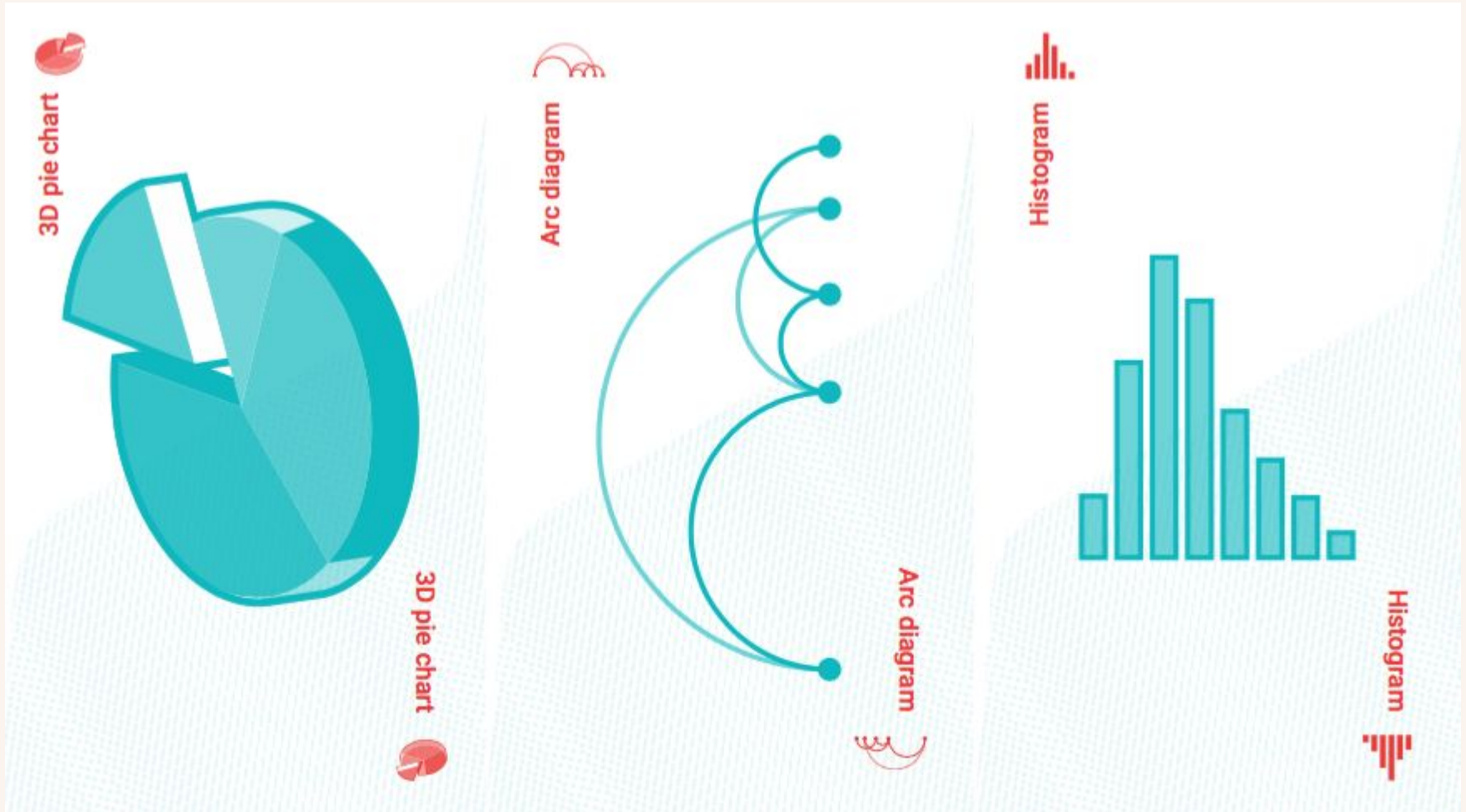
Panorama des formats de visualisation



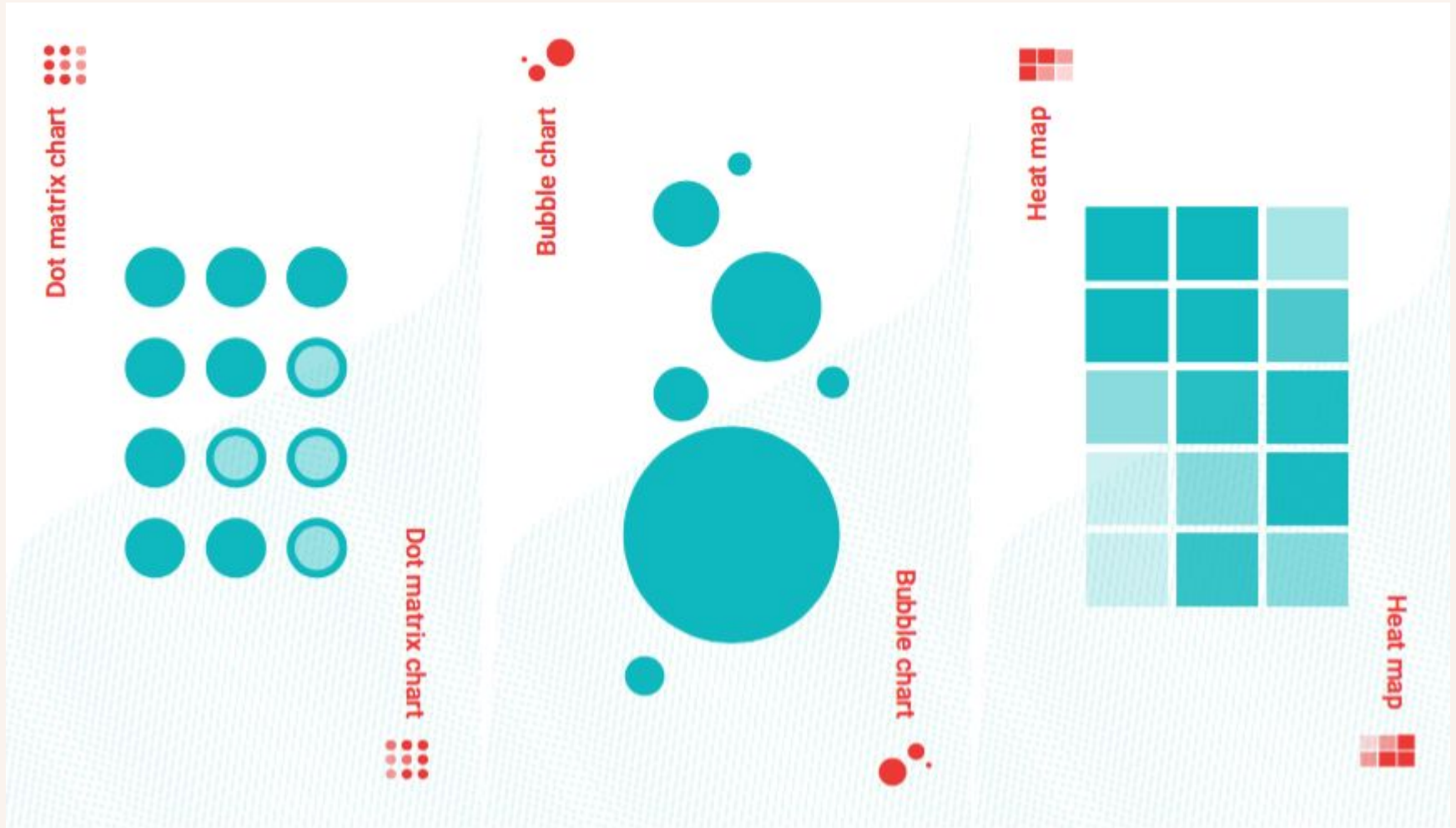
Panorama des formats de visualisation



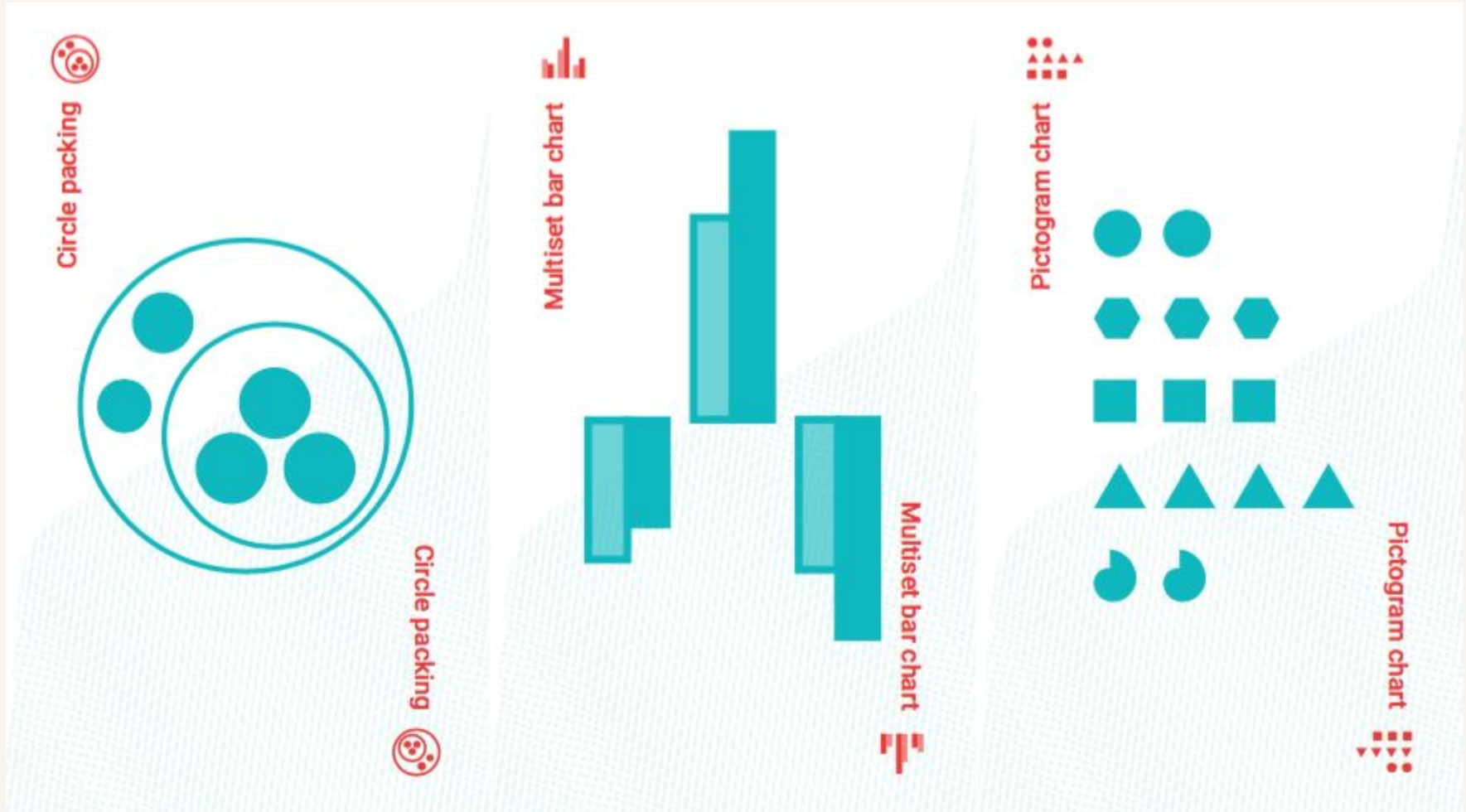
Panorama des formats de visualisation



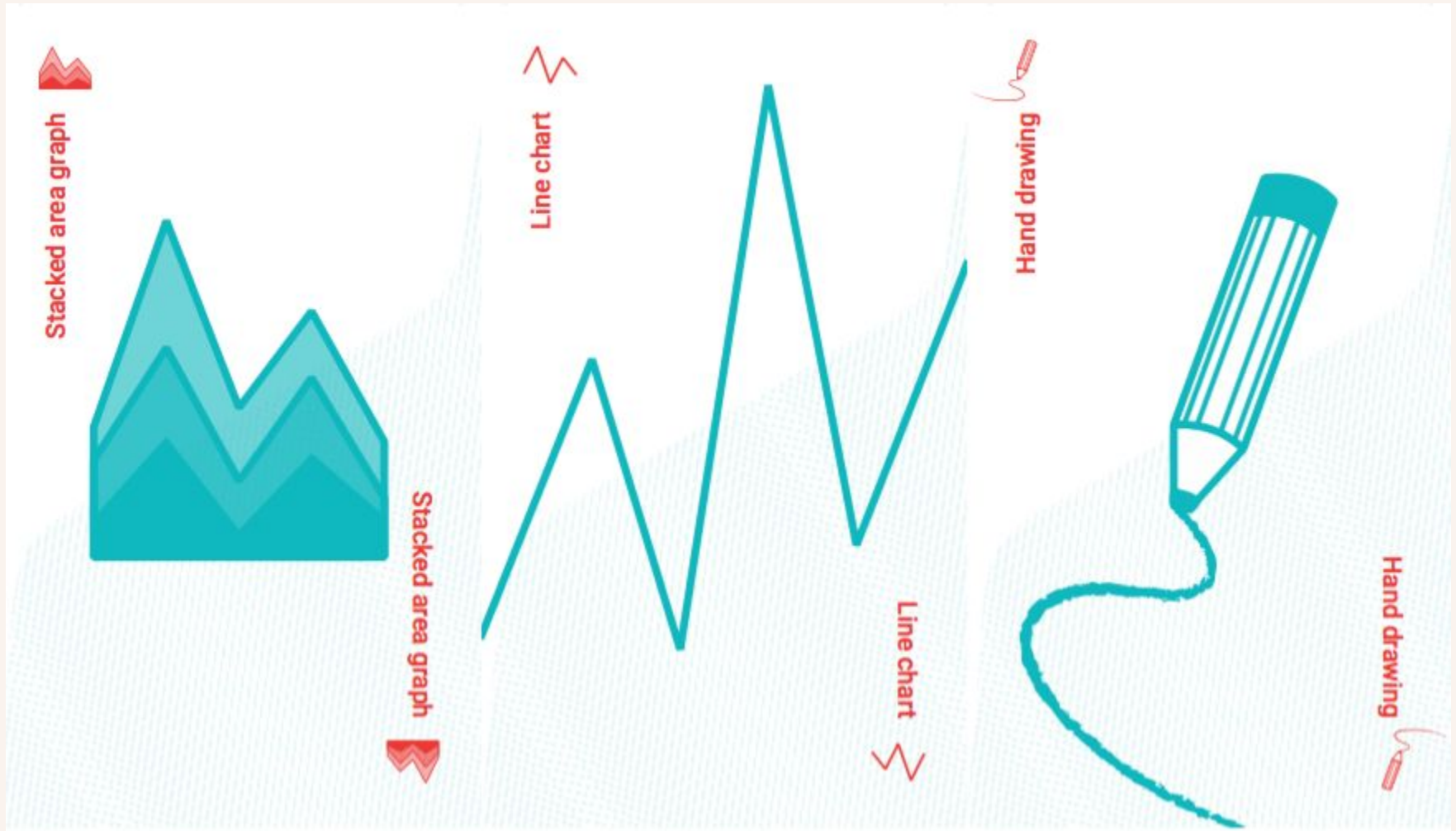
Panorama des formats de visualisation



Panorama des formats de visualisation














































































Panorama des formats de visualisation








La table périodique de la data visualisation

A PERIODIC TABLE OF VISUALIZATION METHODS

 C continuum	<div><div>Data Visualization <i>Visual representations of quantitative data in schematic form (either with or without axes)</i></div><div>Information Visualization <i>The use of interactive visual representations of data to amplify cognition. This means that the data is transformed into an image, it is mapped to screen space. The image can be changed by users as they proceed working with it</i></div><div>Concept Visualization <i>Methods to elaborate (mostly) qualitative concepts, ideas, plans, and analyses.</i></div></div> <div><div>Strategy Visualization <i>The systematic use of complementary visual representations in the analysis, development, formulation, communication, and implementation of strategies in organizations.</i></div><div>Metaphor Visualization <i>Visual Metaphors position information graphically to organize and structure information. They also convey an insight about the represented information through the key characteristics of the metaphor that is employed</i></div><div>Compound Visualization <i>The complementary use of different graphic representation formats in one single schema or frame</i></div></div>										 G graphic facilitation						
 Tb table	 Ca cartesian coordinates											 Me meeting trace	 Mm metro map	 Tm temple	 St story template	 Tr tree	 Ct cartoon
 Pi pie chart	 L line chart											 Co communication diagram	 Fp flight plan	 Cs concept skeleton	 Br bridge	 Fu funnel	 Ri rich picture
 B bar chart	 Ac area chart	 R radar chart	 Pa parallel coordinates	 Hy hyperbolic tree	 Cy cycle diagram	 T timeline	 Ve venn diagram	 Mi mindmap	 Sq square of opposition	 Cc concentric circles	 Ar argument slide	 Sw swim lane diagram	 Gc gantt chart	 Pm perspectives diagram	 D dilemma diagram	 Pr parameter ruler	Kn knowledge map
 Hi histogram	 Sc scatterplot	 Sa sankey diagram	 In information fence	 E entity relationship diagram	 Pt petri net	 Fl flow chart	 Cl clustering	 Le layer chart	 Py minsky pyramid technique	 Ce cause-effect chain	 Tl toulmin map	 Dt decision tree	 Cp cpm critical path method	 Cf concept fun	 Co concept map	 Ic iceberg	Lm learning map
 Tk tapey box plot	 Sp spectrogram	 Da data map	 Tp treemap	 Cn case tree	 Sy system dyn / simulation	 Df data flow diagram	 Se semantic network	 So soft system modeling	 Sn synergy map	 Fo force field diagram	 Ib ili argumentation map	 Pr process event chain	 Pe pert chart	 Ev evocative knowledge map	 V vee diagram	 Hh heaven's hell chart	I informal

Cy Process Visualization





























Hy Structure Visualization

-  **Overview**
-  **Detail**
-  **Detail AND Overview**
-  **Divergent thinking**
-  **Convergent thinking**

Note: Depending on your location and connection speed it can take some time to load a pop-up picture.

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version 1.5

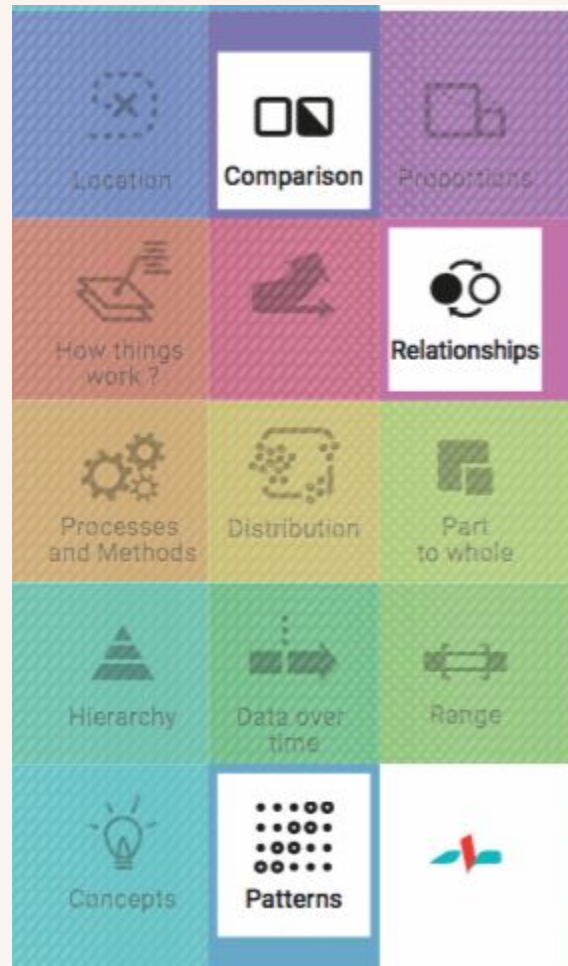
 Su supply demand curve	 Pc performance charting	 St strategy map	 Oc organisation chart	 Ho house of quality	 Fd feedback diagram	 Ft failure tree	 Mq magic quadrant	 Ld life-cycle diagram	 Po porter's five forces	 S s-cycle	 Sm stakeholder map	 Is ishikawa diagram	 Tc technology roadmap
 Ed edgeworth box	 Pf portfolio diagram	 Sg strategic game board	 Mz mintberg's organigram	 Z zwicky's morphological box	 Ad affinity diagram	 De decision discovery diagram	 Bm bcg matrix	 Stc strategy canvas	 Vc value chain	 Hy type-cycle	 Sr stakeholder rating map	 Ta taps	 Sd spray diagram

Dataviz blindtest

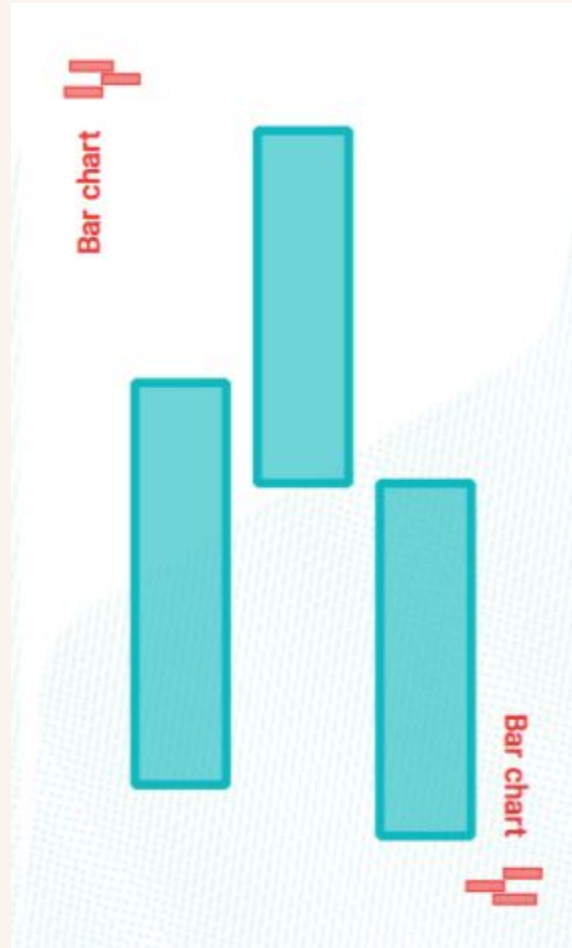
Un petit jeu

- Faites deux groupes de taille égale
- Chaque groupe a un jeu de cartes. Vérifiez qu'ils sont identiques.
- Je vais monter le dos d'une carte (fonctions), vous devez deviner à quelle visualisation ça correspond en regardant seulement la face (visualisation).
- Vous gagnez chaque point à chaque carte bien identifiée. Notez vos points.
- Pas de triche, il n'y a rien à gagner à part ma considération infinie.

Devinez quelle carte correspond



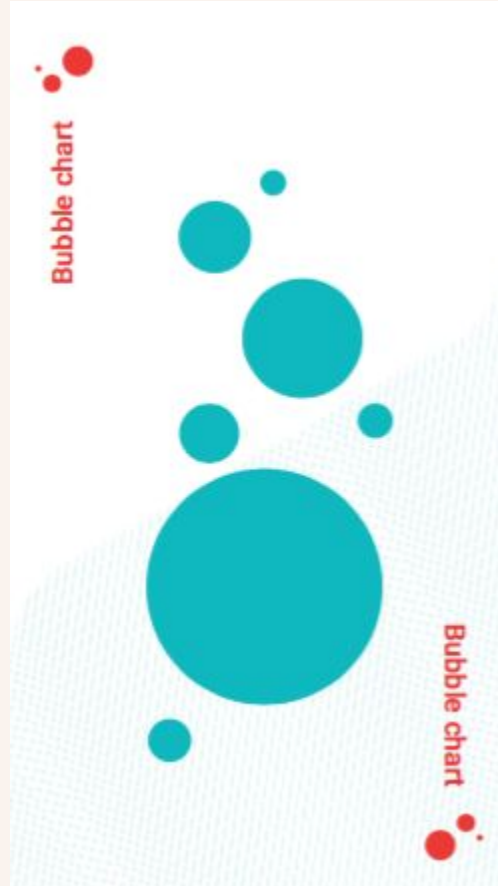
Solution



Devinez quelle carte correspond



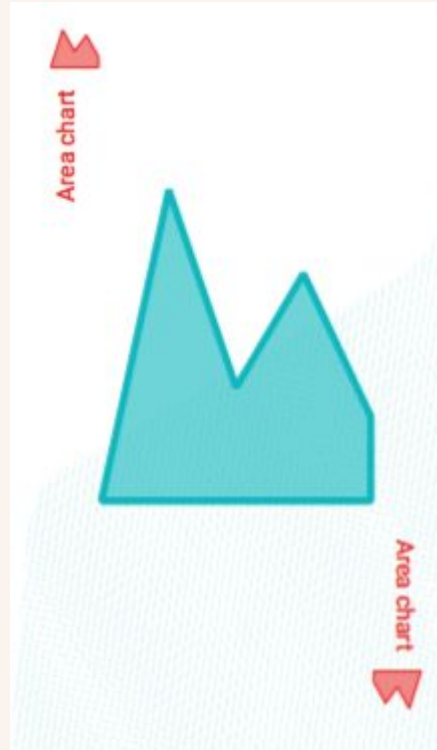
Solution



Devinez quelle carte correspond



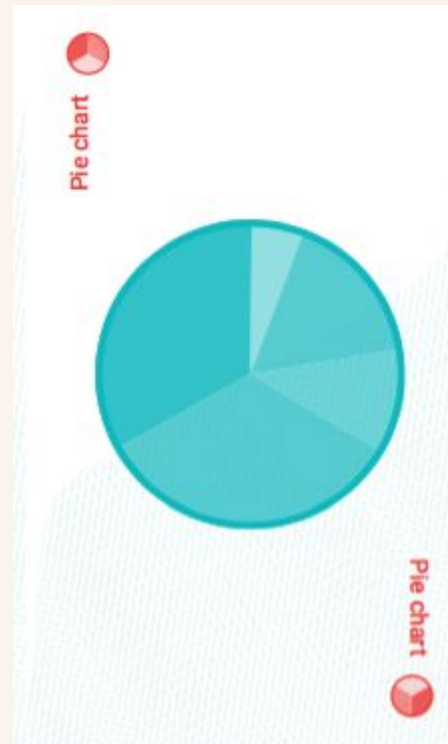
Solution



Devinez quelle carte correspond

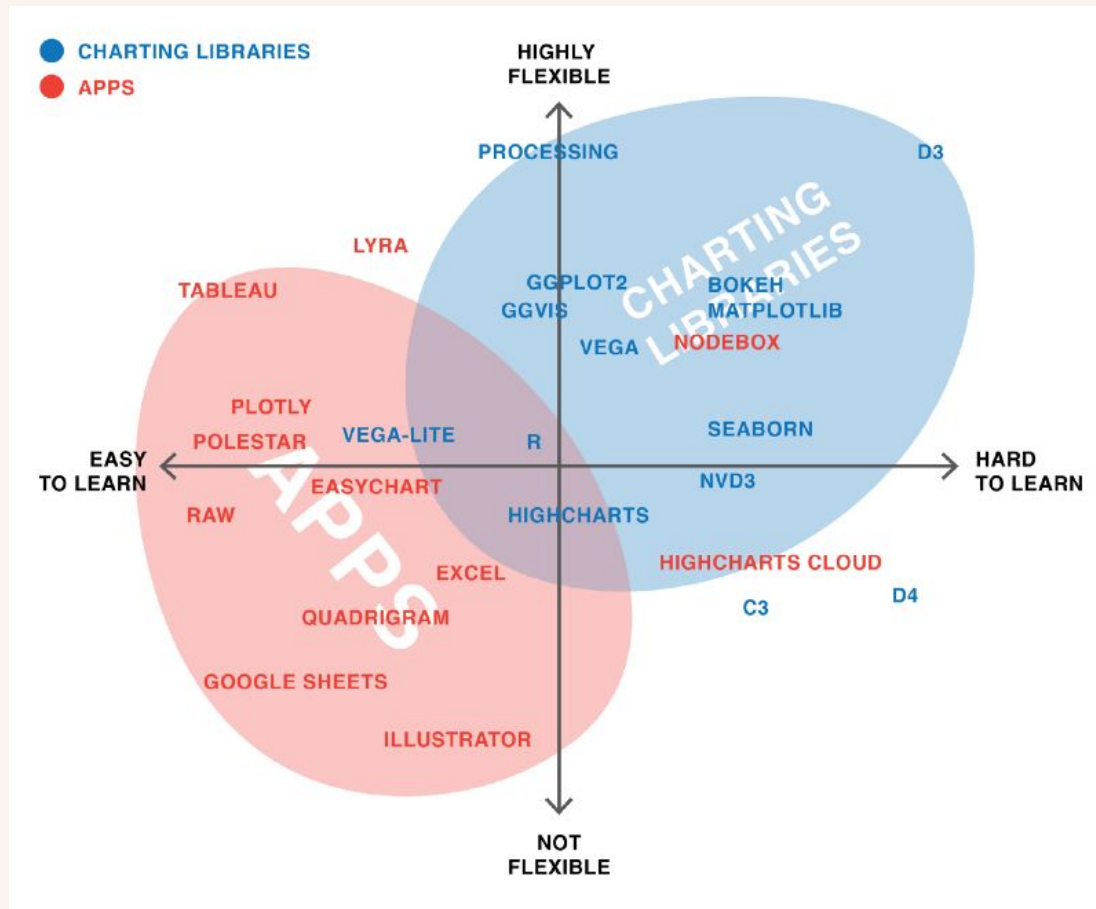


Solution



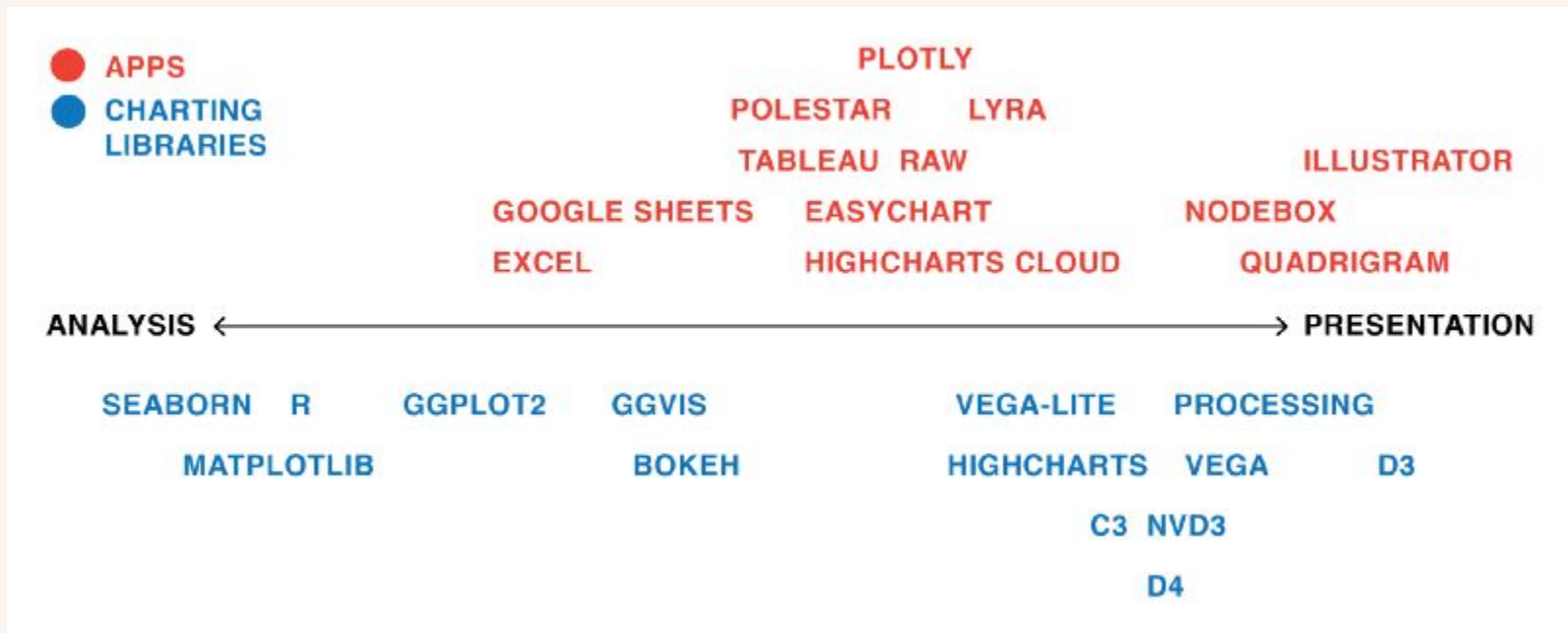
Panorama des outils de visualisation

To code or not to code? That is the question



Source : Open News, “what I learned recreating one chart using 24 tools”

Analyse vs présentation



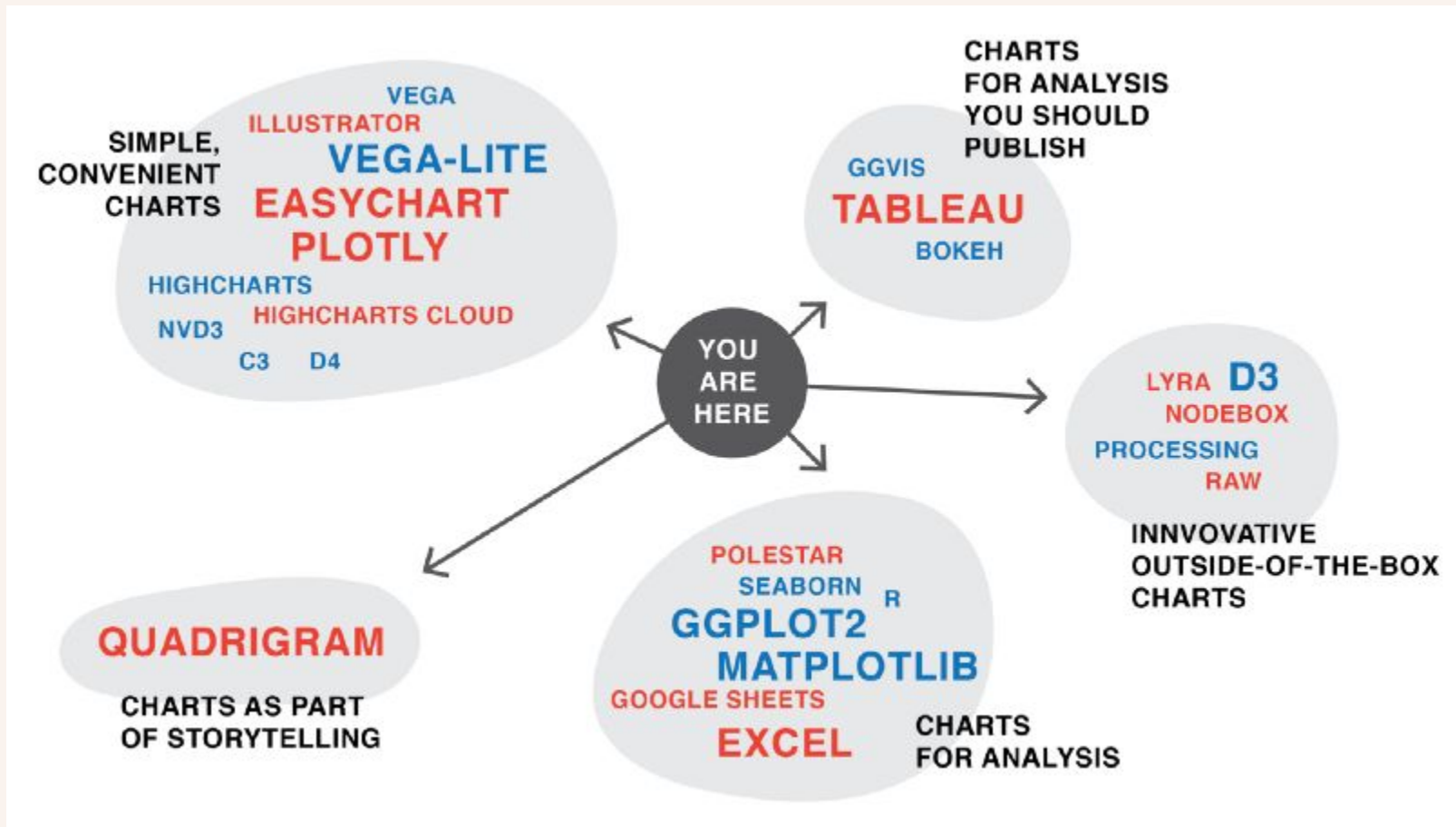
[Source](#) : Open News, “what I learned recreating one chart using 24 tools”

Statique ou interactif

	STATIC	WEB - INTERACTIVE
APPS	ILLUSTRATOR, NODEBOX, EXCEL, POLESTAR, RAW	HIGHCHARTS CLOUD, QUADRIGRAM, EASYCHRT, DATAWRAPPER, TABLEAU, PLOTLY, GOOGLE SHEETS
CHARTING LIBRARIES	GGPLOT2, MATPLOTLIB, R, SEABORN, BOKEH, PROCESSING	D3, D4, C3, NVD3, GGVIS, HIGHCHARTS, SHINY, VEGA, VEGA-LITE

[Source](#) : Open News, “what I learned recreating one chart using 24 tools”

Tous les outils ne correspondent pas à tous les usages



Une visualisation dans plusieurs applications

	A	B	C	D	E	F	
1	country	income	health	population			
2	Afghanistan	1925	57.63	32526562			
3	Albania	10620	76	2896679			
4	Algeria	13434	76.5	39666519			
5	Andorra	46577	84.1	70473			
6	Angola	7615	61	25021974			
7	Antigua and Barb	21049	75.2	91818			
8	Argentina	17344	76.2	43416755			
9	Armenia	7763	74.4	3017712			
10	Australia	44056	81.8	23968973			

Lisa Charlotte Ross a utilisé le même jeu de données pour recréer une visualisation en nuage de points dans une dizaine d'applications.

Excel

data.csv

Search in Sheet

Home Layout Tables Charts SmartArt Formulas Data Review

Insert Chart Insert Sparklines Data Chart Quick Layouts Chart Styles

Column Line Pie Bar Other Line Column Win/Loss Select Switch Plot

A1 fx country

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	country	income	health	population												
2	Afghanistan	1925	57.63	32526562												
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11	Austria	44401	81	8544586												
12	Azerbaijan	16986	72.9	9753968												
13	Bahamas	22818	72.3	388019												
14	Bahrain	44138	79.2	1377237												
15	Bangladesh	3161	70.1	160995642												
16	Barbados	12984	75.8	284215												
17	Belarus	17415	70.4	9495826												
18	Belgium	41240	80.4	11299192												
19	Belize	8501	70	359287												
20	Benin	1830	65.5	10879829												
21	Bhutan	7983	70.2	774830												
22	Bolivia	6295	72.3	10724705												
23	Bosnia and H	9833	77.9	3810416												
24	Botswana	17196	66.4	2262485												
25	Brazil	15441	75.6	207847528												
26	Brunei	73003	78.7	423188												
27	Bulgaria	16371	74.9	7149787												
28	Burkina Faso	1654	62.8	18105570												
29	Burundi	777	60.4	11178921												
30	Cambodia	3267	68.4	15577899												

data.csv

Normal View Ready

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Google Spreadsheet

lisacharlotterost_onechart ☆

File Edit View Insert Format Data Tools Add-ons Help All changes saved in Drive

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	country	B	C	D	E	F	G	H	I
1	country	income	health	population					
2	Afghanistan	1925	57.63	32526562					
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17	Belarus	17415	70.4	9495826					
18	Belgium	41240	80.4	11299192					
19	Belize	8501	70	359287					
20	Benin	1830	65.5	10879829					

Raw

RAW

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[FAQS](#)

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RAW

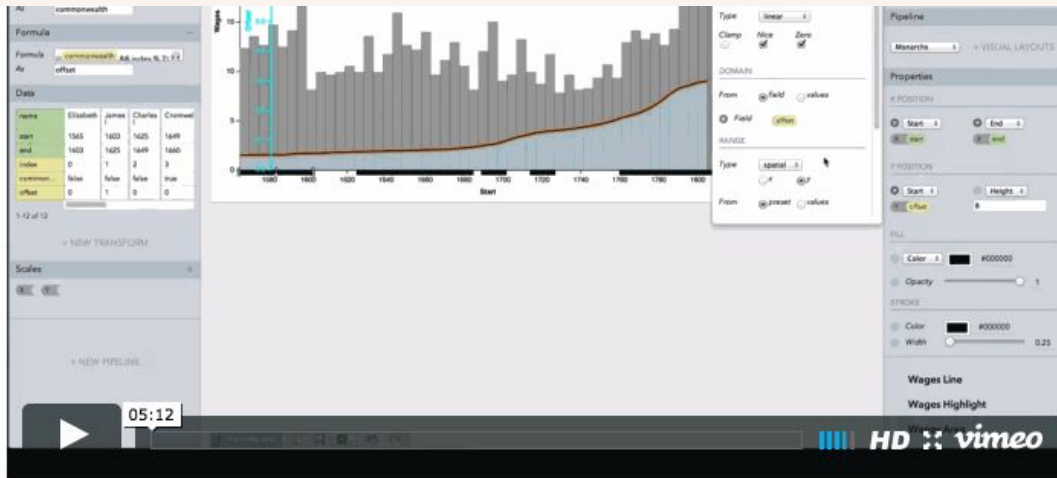
The missing link between
spreadsheets and vector graphics.

USE IT NOW! 

FEATURES



Lyra



ABSTRACT

Lyra is an interactive environment that enables custom visualization design without writing any code. Graphical "marks" can be bound to data fields using property drop zones; dynamically positioned using connectors; and directly moved, rotated, and resized using handles. Lyra also provides a data pipeline interface for iterative visual specification of data transformations and layout algorithms. Lyra is more expressive than interactive systems like Tableau, allowing designers to create custom visualizations comparable to hand-coded visualizations built with D3 or Processing. These visualizations can then be easily published and reused on the Web.

[Try It Now »](#)

Lyra is available as free and open source software. **Try it out** or **fork it on GitHub**.

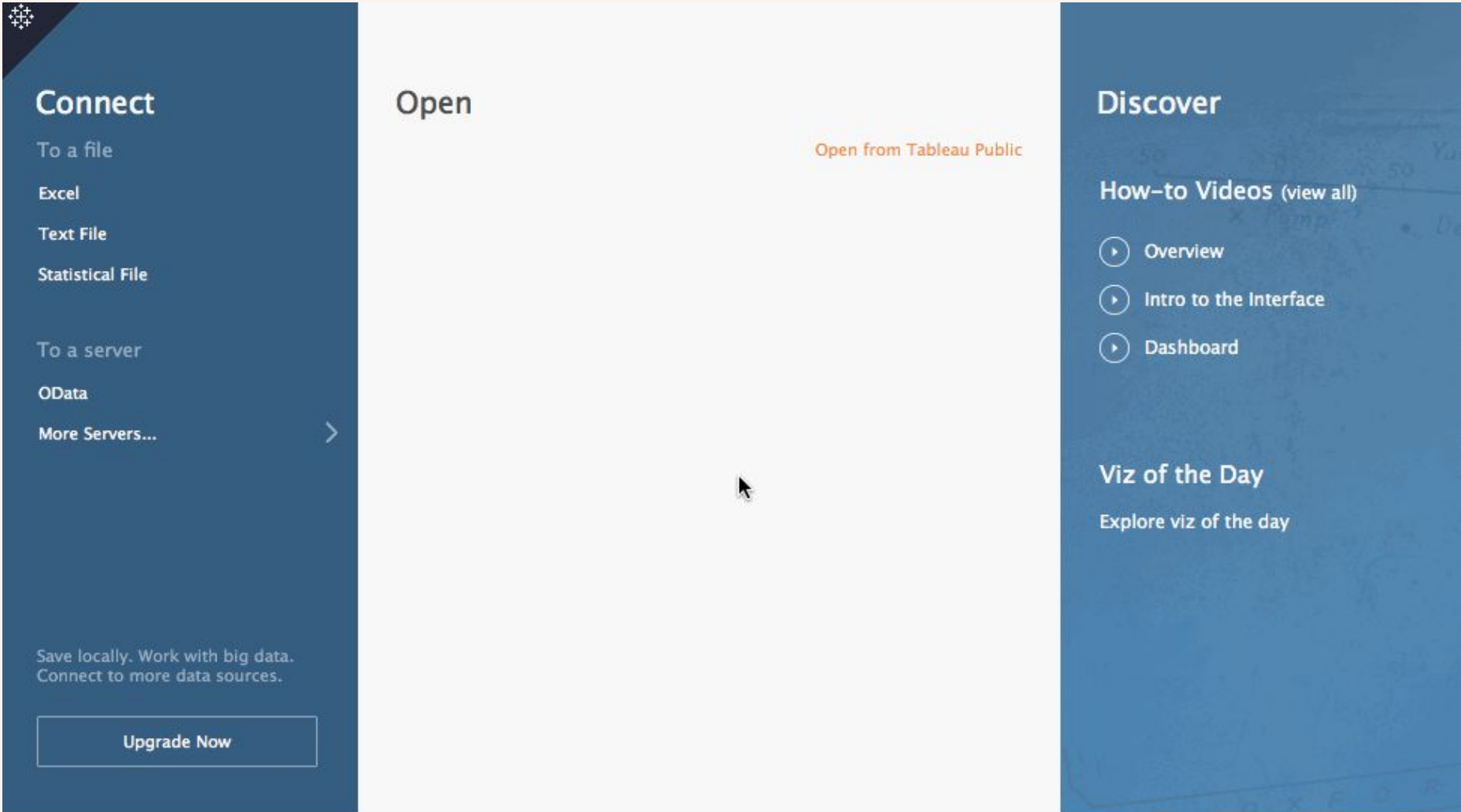
Note: Lyra is currently **beta** software, so beware of bugs! If you experience a bug, please file a **bug report**.

DOCUMENTATION AND TUTORIALS

Visit the **wiki** for documentation and tutorials that walk through the process of building visualizations in Lyra.



Tableau



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Plotly is the collaboration platform for modern data science.

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Fig 3.1b: Hans Rosling's Bubble Chart for the year 2007

Data source: GapMinder 2007

80

Waiting for extension Adblock Plus...

Démonstration de Datawrapper

Démonstration de Raw