Challenges for automatic dashboard generation systems in the context of novice users Praveen Soni¹, Cyril de Runz¹, Fatma Bouali²¹, Gilles Venturini¹ université AGENCE NATIONALE DE LA RECHERCHE 1. University of Tours, LIFAT, France 2. University of Lille, IUT C, France praveen.soni@univ-tours.fr **User types DBo generation** Visulization **Multi-view Single view** Manual Automatic Researchers Shopkeepers Students Street vendors **Business Analysts Bachelors / Masters Small businesses** Data scientist Maximum human Minimum (no) human Recent graduates Common people Professors intervention. intervention. **Experts** Novices Learners ÷ **Bar Chart Dashboard (DBo)** No use of any methods Certain methods for for recommendation recommendation **Some Methods Other miscellaneous** > Machine learning methods

 \succ Visualisation query language

- (direct matching, behavior
- Statistical properties of dataset

based, template, etc)





Dashbot VizDeck MultiVision Voyager2 DeepEye DynSpace

scientific tools

Power Bl Tableau Sisense QlikSense

Survey paper:		Record IdentifiedRecord(1032)(1032)	Record accessed (154)		Studies included (48)		DGS inclu (17)	Ided	Need of ADGS for Novices			
	ence		poq	s					What?	Why?	Where?	How?
	tefer	l vis.	met	ction		ack	ace		Multi-view	BI tool not exit for	Data	Automatic dashboard
	d B	ered	tion	fun		edb	Iterf		BI tool for	novices & small vendors	visualization	generation
	r ar	l	ges	lity	out	r fe	r In	ense	novices	Ц		
System	Yea	Co	Sug	Util	Lay	Use	Use	Lic				
ScagExplorer	2014 [10]	SP (1)	SPoD, GO	10, IN	OL, OS							
DashBot	2021 [9]	T, BC, SP, PC (4)	SPoD, ML	2, IN	OL, OS	DF	SM					
CC	2020 [7]	T, LC, BC, M, MV (14)	BB	1, IN	OL,OS / MS, ML	BF	DD, SM			Existing tools are	Data	Minimum users
Exploration View	2011 [12]	PC, BC, T, MV (NF)	T, S	1, IN	IS, IG / MS, ML		DD, SM	C		commercial	analysis	intervention
DynSpace	2018 [11]	HT, BC, SP (3)	SPoD, DM	2, IN	I-S, I-G		DD, SM					
VizDeck	2012 [22]	HT, BC, SP, LC, PC, TS, M (7)	SPoD	5, IN	I-S, I-G	DF						
Multi-vision	2021 [48]	SP, LC, BC, AC, PC (5)	ML		IS, IG		DD, SM					
Tableau(Show Me)	2007 [27]	T, BC, SP, GC, MV (14)			IS, IG / MS, ML		DD, SM	C				
Power BI	2014 [18]	LC, T, BC, PC, M, SP, MV (21)			IS, IG / MS, ML		DD, SM	C		No freeware tools	Decision	Suggestion methods
Deep Eye	2018 [25]	BC, LC, PC, SP (4)	ML	4, IN	OL, OS			F	BI4people		making	and algorithms
Draco	2018 [29]	MT (NF)	VQL		OL, OS			C				
Spago BI	2005 [17]	HT, KPI, M, PC, RC, T, MV (NF)			IS, IG / MS, ML		DD, SM	OS				
Qlik Sense	2014 [1]	LC, G, KPI, PC, PT, HT, MV (NF)			IS, IG / MS, ML		DD, SM	C				
Voyager2	2017 [47]	HT, SP, LC, MT, MV (NF)	VQL		IS, IG / MS, ML		DD, SM	C			shatteritics.com + 434527347	

System workflow

Upload data + user model

Questionnaire (select dimensions and measures to visualize)

Genetic algorithm will be used for data mapping and automatic visualization recommendation (bar, pie, etc)

1. Provide templates to the user (template is a predefined DBo) 2. Take into account the user behavior

System features

(history of previously generated dashboards, etc)

- 3. Take into account the user feedback
 - (ask the user about the current recommendation)
- 4. Perform a global optimization of the DBs
 - (selection of columns + visualizations + mapping with DA)
- 5. Form a global optimization of the dashboard layout













commercial tools



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Arabic-Chemistry-English-History-History-Math-Math-Math-Math-Science-Spanish-

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