Appendix 1 - methodological note

To identify the potentials of DDS from the outcomes of the actualization activities, we employed an inductive multiple case study approach. This research approach is suitable for examining a contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. The multiple cases are synthesised in a taxonomy. Taxonomies are systems of groupings that are derived conceptually or empirically and they serve to understand and structure the knowledge (Nickerson, Varshney, & Muntermann, 2013). Taxonomies are particularly important when the domains are complex and difficult to analyse, as they offer the possibility to bring concepts, relationships among concepts and order, in general out of the intricacies of the contemporary phenomena, especially true for the big data phenomenon. Our objects of analysis were the DDS initiatives and we looked at the Technology affordances and the Affordance actualizations. Then we classified the Technology affordances and the Affordance actualizations in the taxonomy, following the methodology advanced by Nickerson et al. (Nickerson, Varshney, & Muntermann, 2013).

The adopted taxonomy building methodology is iterative and requires to define the objective and subjective ending conditions of each iteration. Our objective ending condition demands that: "All objects have been examined", while our subjective ending condition requires that our taxonomy is concise, robust, comprehensive, extendible, and explanatory (Nickerson, Varshney, & Muntermann, 2013). We performed three iterations before meeting the defined ending conditions.

The first iteration took place in 2012, when we formally launched this study. For this first iteration we analysed the 12 DDS initiatives we were already aware of. The second iteration took place between 2012 and 2014. We gathered data about all the DDS initiatives from multiple publicly available sources: prospectuses, annual reports, academic and professional articles, company web sites, press releases, initiative descriptions, white papers, web search engines. We analyse a total of 58 new DDS initiatives. We analysed both start-ups as well as established large corporations, spanning several countries. The third iteration took place at the end of the 2014. We downloaded all the articles available on the news aggregator Factiva1 starting from the first of January 2011 to the end of November 2014, containing as keyword "real-time data." Overall, we downloaded and read 1,839 articles and among these articles, we identified 101 DDS initiatives. We used the term "real-time data" instead of "digital data stream" to extent the search to all communications eventually referring to uses and exploitation of real-time data, thus configuring DDS initiatives.

Every iteration was characterized by three steps. In the first step, we identified the initiatives to consider for defining the new dimensions to include in the taxonomy. In the second step, we defined the dimensions to add in the taxonomy. In the third step, we verified whether our ending conditions were achieved.

Besides the results of the taxonomy development process, and with illustrative purpose, we further detail the application of the taxonomy to five distinct DDS initiatives.

Overall, we analyzed 177 initiatives, the majority of which being business solutions marketed by professional vendors. In terms of industry, Information Technology is the sector that includes the highest percentage of DDS initiatives of the total sample. The second most representative sector is transportation, followed by healthcare, while the less representative sectors are the aerospace, agriculture, construction and gaming.

Industrial Sector	Vendor	Number	Percentage	Total in the sample	Percentage
Information Technology	Yes	75	42.37%	80	45.20%
	No	5	2.82%		
Transportation	Yes	13	7.34%	26	14.69%
	No	13	7.34%		
Healthcare	Yes	14	7.91%	15	8.47%
	No	1	0.56%		
Manufacturing	Yes	11	6.21%	14	7.91%
	No	3	1.69%		
Energy	Yes	9	5.08%	10	5.65%
	No	1	0.56%		
Commerce	Yes	1	0.56%	4	2.26%
	No	3	1.69%		
Finance	Yes	4	2.26%	9	5.08%
	No	5	2.82%		
Tourism	Yes	0	0.00%	7	3.95%
	No	7	3.95%		
Other*	Yes	7	3.95%	12	6.78%
	No	5	2.82%		
Vendor all sample					
Yes				134	75.71%
No				43	24.29%
Total				177	100.00%

*Aerospace, agriculture, construction, gaming.
Sample composition