Cloud Intelligence: What is REALLY New?

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ABSTRACT

This panel paper aims at initiating discussion at the first International Workshop on Cloud Intelligence (Cloud-I 2012), about what is new and not so new in cloud business intelligence "as a service".

Categories and Subject Descriptors

H. [**Information Systems**]

General Terms

Design, Economics, Experimentation, Human Factors, Languages, Legal Aspects, Management, Performance, Reliability, Security

Keywords

Elasticity, Data sources, User-centered, Pay-as-you-go, Collaborative, Privacy, Availability, Data analytics

1. THREE NEW THINGS IN CLOUD INTELLIGENCE

Three things are *really* new for cloud intelligence [2] compared to traditional business intelligence.

The first thing is *elasticity*, the dynamic on-demand provisioning of resources. For cloud computing, this term has mostly been used in relation to scaling up/down the performance, e.g., the number of processing nodes. While this form of elasticity is obviously also relevant for cloud intelligence, an even more important type of elasticity is the ability to dynamically bring in *new data sources* to meet emerging needs for new analyses.

The second thing is that cloud intelligence, as opposed to traditional business intelligence, will be much more bottom-up and user-driven as opposed to the top-down enterprise-driven approach of traditional BI. The users will increasingly be private citizens or other types of more independent ac-

tors collaborating in ever-changing constellations to achieve a temporary common goal.

The third, and perhaps most important, thing is the fundamentally new economic model needed for cloud intelligence. In traditional BI, the (large) cost of building a BI system is initially covered by an enterprise investment which must later the paid back through savings or new earnings in the enterprise. In cloud intelligence, there will typically no longer be such a central entity paying the bill. Instead, pay-as-you-go models that allow users to pay (a small amount) per use, e.g., of a data set, in return for a one-time advantage, will become the norm in combination with open source inspired models. Cloud intelligence systems will then be *grown* over time (rather than built) through a collaborative community effort.

2. PRIVACY ISSUES, STILL

Although cloud computing is currently booming, security remains one of the top concerns for cloud users and would-be users. Some security issues in the cloud are inherited from classical distributed architecture (e.g., authentication, network attacks, vulnerability exploitation...), but some directly relate to the new framework of the cloud (e.g., cloud provider or subcontractor espionage, cost-effective defense of availability, uncontrolled mashups...) [1].

In the particular context of cloud intelligence, privacy is of course of critical importance. Anonymizing data is a difficult problem, and the growing adoption of cloud computing will provide cheap computing power and many more data sources to cross-analyze and achieve deanonymization. Cryptography shall be a suitable solution, for it now allows searching for and performing computations on encrypted data, but current possibilities are still a step back from on-line analysis and data mining requirements.

Finally, cloud intelligence bears a collaborative aspect. For instance, a group of people (companies, producers' cooperatives, NGOs or even citizens) might want to share analysis results, either among them or publicly, without disclosing source data. Cryptography can again help, with approaches such as multi-party computation, but these methods are not yet mature enough for cloud-scale processing.

3. THE TRUTH BEHIND THE CHART

The flexibility of cloud intelligence allows businesses to deploy analytics much faster than ever before. This flexibility drives a trend, that more and more business decisions can be supported by analytics. The trend includes that analytics with data that would earlier be too costly in time,

money, or human resources can suddenly be analyzed fast and at low(er) costs. The new data sources that are becoming subject to cloud intelligence, in addition to the classic data warehouse, are typically sources of an external, typically Web based origin. Therefore, challenges arise about interpretation, bias, and completeness of data. Cloud intelligence presents an entirely new era of analytically founded strategic thinking, but on the other hand, it elevates the need for user understanding of the "truth behind the chart".

4. PANELIST BIOS

Prof. Dr. Jérôme Darmont is a full professor of computer science at the University of Lyon 2, France, and the director of the ERIC lab. He received his Ph.D. in 1999. His main current interests relate to cloud business intelligence, and especially performance and security issues. He has published more than 90 peer-reviewed papers. He is a member of several editorial boards, has served in numerous program committees, and has reviewed numerous journal papers (including for IEEE TKDE). Along with Torben Bach Pedersen, he initiated the Cloud-I workshop series in 2012.

Prof. Dr. Torben Bach Pedersen is a full professor of computer science at Aalborg University, Denmark. He received his Ph.D. in 2000. His research interests span business intelligence topics such as data warehousing, OLAP, and data mining, with a focus on non-traditional and complex types of data. He has published more than 110 peer-reviewed papers on these topics. He has served as PC Chair for DaWaK 2009+10, DOLAP 2007, EnDM 2012, General Chair for SSTD 2009, and on numerous program committees, including VLDB, ICDE, and EDBT. He has worked on cloud intelligence for several years, and gave the keynote "Research Challenges for Cloud Intelligence" at BEWEB 2010. Along with Jérôme Darmont, he initiated the Cloud-I workshop series in 2012.

Dr. Morten Middelfart established the business intelligence company, Morton Systems in 1996. In 1997, his company was acquired and he became the technological founder and CTO of TARGIT. Today, TARGIT is recognized as one of the top 15 international BI and analytics vendors by industry analysts and has over 4,500 customers with more than 307,000 named users. Morten has a Ph.D. in Computer Science from Aalborg University in Denmark. In addition, he has a Ph.D. in Computer Aided Leadership and Management (CALM) from Rushmore University in USA, and an MBA from Henley Management College in UK.

5. REFERENCES

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