

# Improving Business Intelligence Speed and Quality through the OODA Concept

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## ABSTRACT

This article introduces the Observation-Orientation-Decision-Action (OODA) concept as a mean to identify three new desired technologies in business intelligence applications that improve the speed and quality in the decision making processes.

## Categories and Subject Descriptors

H.2.8 [Database Management]: Database Applications – *Data mining, Statistical databases.*

## General Terms

Management, Measurement, Design, Economics, Human Factors.

## Keywords

Business Intelligence, Leadership, Management, User Interface.

## 1. INTRODUCTION

For the past few decades, a lot of focus has been put on the immediate data warehousing challenges of obtaining and storing the data needed for business purposes, in a manner so that it can be accessed with a reasonable performance [1], and although a number of applications have emerged in the OLAP space, there has been little theorizing about the management challenge of turning stored data into meaningful and valuable decisions, with perhaps the exception of Kimball's "Analytical Cycle" that suggests a specific way to conduct a business analysis [2].

The framework proposed as part of the Computer Aided Leadership & Management (CALM) thesis [3] can assist with a heuristic approach to applying the technologies available at any given time, to the challenges faced by leaders and managers; moreover this framework can assist in uncovering new areas for future research that will benefit organizations in the years to come.

The idea is to take the Observation-Orientation-Decision-Action (OODA) loop, which was originally pioneered by Top Gun fighter pilot John Boyd in the 1950s [4], and group and categorize the available business intelligence technologies according to their role in the four processes in the OODA loop, namely:

*Observation* – in this phase we use technology to look at the data with an expectation of what it should be, e.g. through dashboards, reports and agents.

*Orientation* – in this phase we look at the data in different ways depending on what it shows, e.g. through analysis, data mining and simulation. Typically this phase is initiated after something in the observation phase has proven to be different from what we expected.

*Decision* – this phase is currently undertaken primarily by human intelligence, but the results found in the Data Warehouse can be evaluated against other external or internal -typically unstructured- data.

*Action* – based on the decision made, we seek to implement the course of action chosen, either through the IT infrastructure as a business process in a Service Oriented Architecture or as communication such as blog, email, phone, or plain face-to-face communication.

Any organization and its purpose can be described as a number of OODA loops that are continuously cycled by users and conform to one or more Key Performance Indicator's (KPI's) that define their success. However, it should be noted that the more OODA loops that exists, the more the organization is continuously adapting to its environment; and the faster the users are able to cycle through the OODA loop, the more competitive the organization will be in correcting problems and seizing opportunities to improve performance.

If we accept the business benefits for an organization of its users cycling through multiple OODA loops with as high speed as possible, we need to perform research into technologies that bridge all the technologies mentioned in the OODA technology breakdown above. Based on this, the suggestion for three new research directions in the business intelligence area is:

First, technologies that reduce the number of user interactions needed to cycle through an OODA loop. Perhaps we can learn from the specialist systems already existing in airline autopilots and Anti-lock Brake System (ABS) to create smart general systems, that in addition to be operated, can be customized by *business users* to allow computers to significantly reduce the number of human interactions, e.g. clicks, and thus the time spent cycling the OODA loop. In some cases such systems would ideally operate autonomously, and thereby allow users to focus on processes where computers are less advantageous. This would

create true human/computer synergy rather than simple collaboration.

Secondly, having established a number of OODA loops with a number of KPI's assigned, we might provide the users with technologies that can help them identify patterns that can act as "sentinels". These sentinels, causal or not, are ideally measures that can give early warnings about a later influence on a business critical measure. One can intuitively imagine that the number of actual sales visits at a given time might impact the revenue at some later time, or perhaps the company's footprint on a number of blogs might indicate something about product quality. The aim here should be to provide the business users with technologies that automatically identify measures that qualify for sentinels in order to find the best, perhaps less intuitive sentinels.

Finally, we could consider running Business Process Intelligence on the entire system of OODA loops. If we measure the time spent in an OODA cycle, and we can assess the "quality" in the sense of our ability to conform to the KPI's assigned to the OODA loop, we can begin to rank the OODA loops depending on their speed and quality. If for instance an OODA loop is improving in both speed and quality, we have most likely automatically identified an area in which the organization experiences "Flow" [5], in other words, the organization is doing something better and better with less and less effort. On the other hand, if an OODA loop is not improving in terms of speed, quality or both, the management can easily identify this area. On a broader scale, such an OODA assessment of an organization might be a valuable quantitative tool for talent and core competency management, and it might give upper management valuable information on where to invest or to divest. What is needed to give this kind of strategic advantage is technology, that can assess speed and quality of OODA loops in a general purpose business intelligence solution, but to get to a point where we can measure the OODA performance, we first need to manage our business intelligence technologies according to the OODA concept.

Hopefully, these three examples have illustrated the power of the OODA concept, which covers the idea to combine OODA loops with KPI's to render an organization agile and competitive using business intelligence. As new technologies are emerging, they can easily be categorized and evaluated for their business impact by measuring their effect on an OODA loop's speed and quality, and furthermore this framework can assist us identifying new areas for research simply by looking at the gaps and bottlenecks in the OODA loops.

## 2. BRIEF BIO

Morten Middelfart is CTO of TARGIT A/S, a Danish software company specialized in business intelligence, and he has been the architect of the TARGIT Business Intelligence Suite which is currently being used by more than 150.000 named business users worldwide. In parallel with his job, he is a Ph.D. candidate at Aalborg University's Center for Data-Intensive Systems (DAISY). He also holds a Ph.D. in management from Rushmore University and an MBA from Henley Management College.

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