When AI meets Big Data...
Zbigniew Michalewicz
Background
An interesting problem (2001)

- General Motors sells 1.2 million off-lease cars each year on various auction sites.

- Each day, a remarketing team uses business intelligence tools and reports to decide where to ship 4,000 – 7,000 off lease cars.

- The problem is impacted by demand, depreciation, transportation schedules, cost of capital, risk, changes in market conditions, recent decisions, and the volume effect.
Car Distribution System
Adaptive Business Intelligence (ABI)
Two books
Wine Supply Chain - 2009

- Predicting maturity
- Harvesting and Transporting
- Crushing
- Processing
- Storing
- Delivering
- Bottling
Global Optimisation

Local Optimisation: What’s best for a business silo

Global Optimisation: What’s best for the entire business
From Mine to Port Operations

- Mine Planning
- Ore Processing
- Mine Stockpile
- Rail Logistics
- Port Stockpile
- Port Logistics
Important article:

Key question for any company

How to sell more, at a higher margin?
The Problem...

Data

Requires people, tools, and time

More “answers” = more people

I need “answers”
The Solution

Data

I need “answers”

What do you need?

Decisions

Digital Analyst – Real Time
Meet **Larry**, a Digital Analyst that can help you make **better** and **faster** decisions
What is “Larry”? A collection of smart algorithms for:

- Data capture, checking, cleaning
- Data analysis
- Prediction
- Optimisation
- Learning
- Etc.

...configured to answer complex questions
<table>
<thead>
<tr>
<th>Sales Objective</th>
<th>Questions to Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimise the structure</td>
<td>How many reps? with what skills? structure? territories? segments to call on? call frequency?</td>
</tr>
<tr>
<td>Optimise each visit</td>
<td>Who to call/visit? what route plan? What conversation to have?</td>
</tr>
<tr>
<td>Optimise each transaction</td>
<td>What to offer? at what price?</td>
</tr>
</tbody>
</table>
Applications

Computational Engine
Larry, the Digital Analyst®

What-if Simulator

Optimise sales structure and answer “what-if” questions

COP

Optimise sales activities and “next best conversation”

OMS

Optimise transactions for revenue and margin
Applications

What-if Simulator
- Optimise sales structure and answer "what-if" questions

COP
- Optimise sales activities and "next best conversation"

Computational Engine
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OMS
- Optimise transactions for revenue and margin
Answering “What-if” Questions

**Question:** What will happen to my performance, if I change:
- Number of sales reps? and skillset?
- Allocation of sales reps to different territories or regions?
- Structure of the areas/territories?
- Call cycles? and call frequency?
- Type of target customers?
- Etc.

**Typical process:**
What-if Simulator
Computational Engine
Larry, the Digital Analyst®

Applications

What-if Simulator
Optimise sales structure
and answer “what-if” questions

COP
Optimise sales activities
and “next best conversation”

OMS
Optimise transactions
for revenue and margin
Creating Call Plans and “Best” Conversations

Typical process (es)?
Customer Opportunity Profiler (COP)
Applications

- Computational Engine
  - Larry, the Digital Analyst®

- What-if Simulator
  - Optimise sales structure and answer “what-if” questions

- COP
  - Optimise sales activities and “next best conversation”

- OMS
  - Optimise transactions for revenue and margin
Quoting and Ordering

**Question:** “How can I maximise the value of each order?”

**Typical process:**

![System i Home screen shot](image)
Order Management System (OMS)
Rewards

And if you address important (for the real-world) issues, there are some great academic rewards, e.g. you get a nice recognition within your research community...😊

But also your personal life may change forever...😊
THANK YOU!