Ministry of Finance of Georgia

State Treasury

TECHNOLOGY DEVELOPMENT AND **BIG DATA ANALYSIS**

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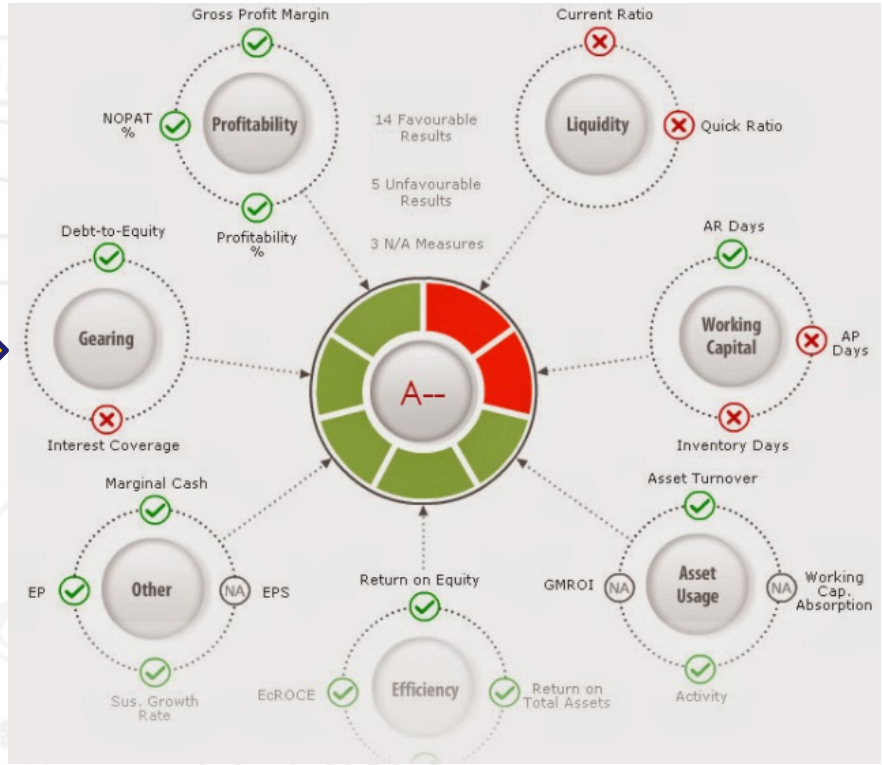
WHAT IS AN ULTIMATE GOAL?



Why Do We Need All This Stuff?

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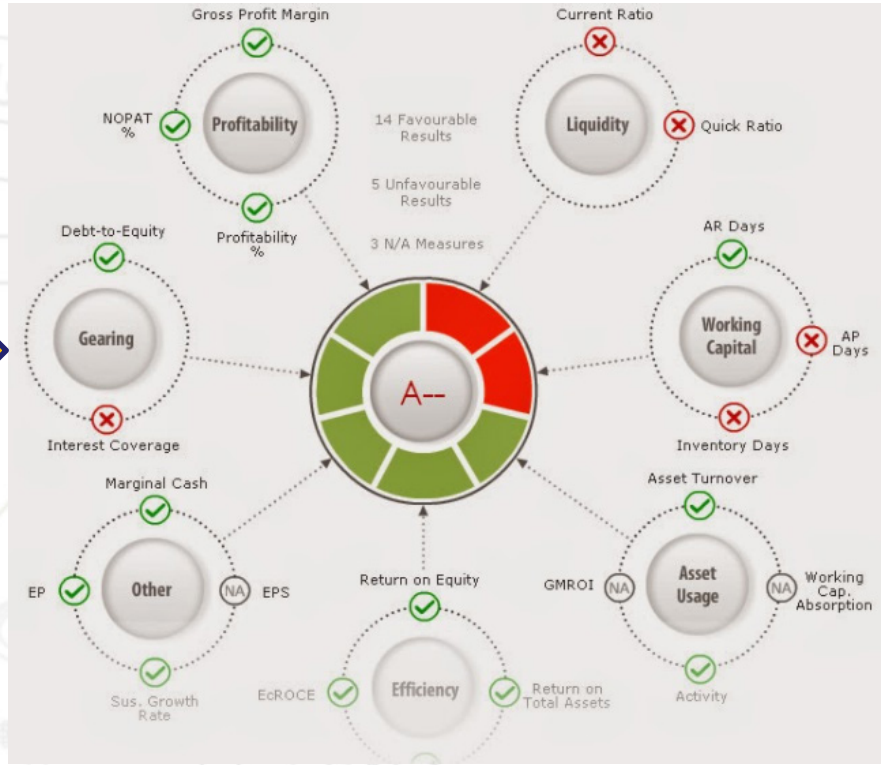


Why Do We Need All This Stuff?

For Better Decision Making !!!

WHAT IS “BIG DATA”?

Common Characteristics:

- Volume - Collect data from a variety of sources
- Velocity - Unprecedented speed of data stream
- Variety - Data comes in all types of formats
- Variability - Cyclical, inconsistent
- Complexity - Difficult to match, link, clean and transform

DATA GROWTH POTENTIAL

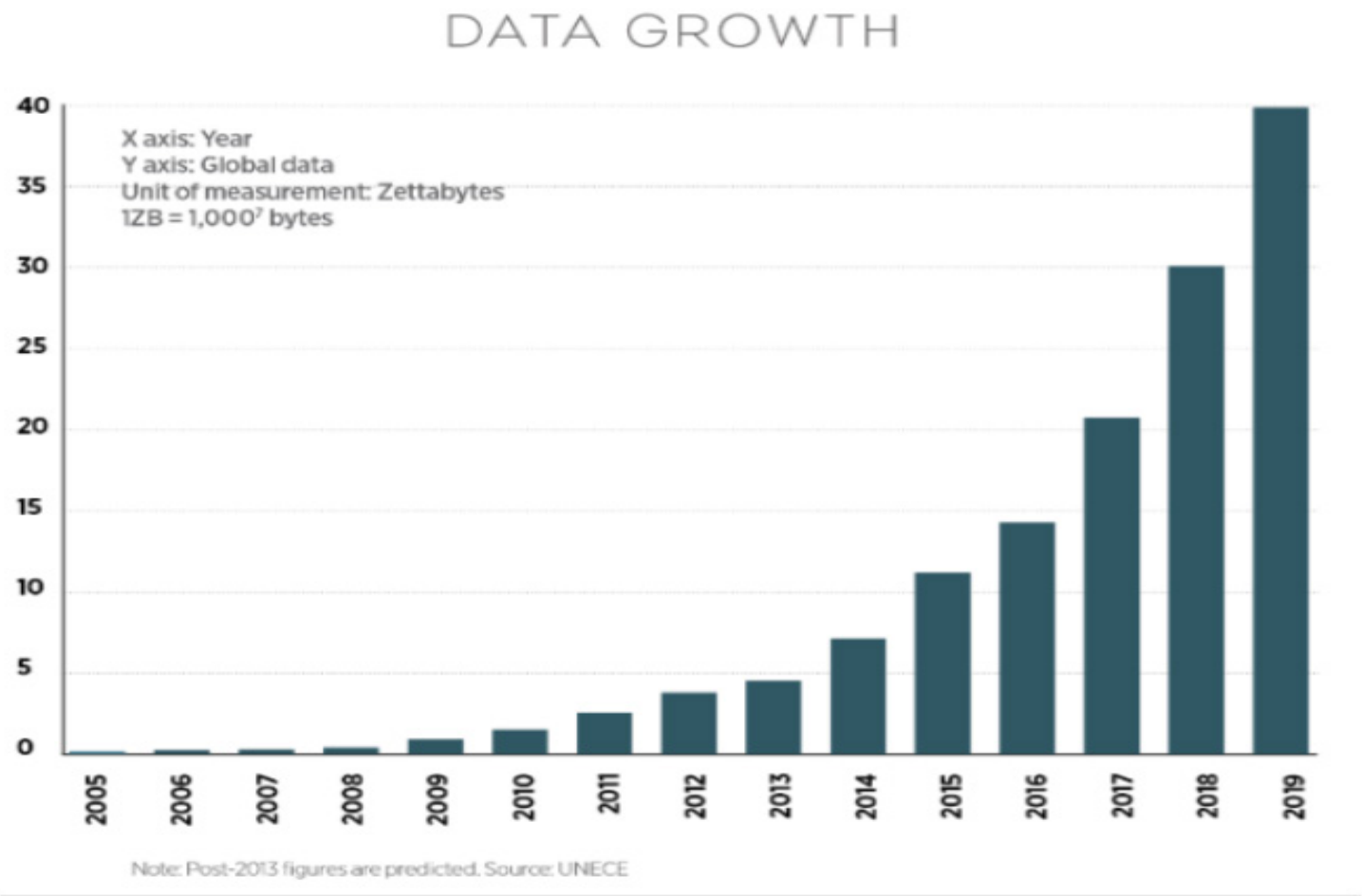


Chart is from the United Nations Economic Commission for Europe (UNECE)

Source:www.nojitter.com

DATA VISUALIZATION ROADMAP
GEORGIAN EXPERIENCE

Data storage

Formatting& Cleaning

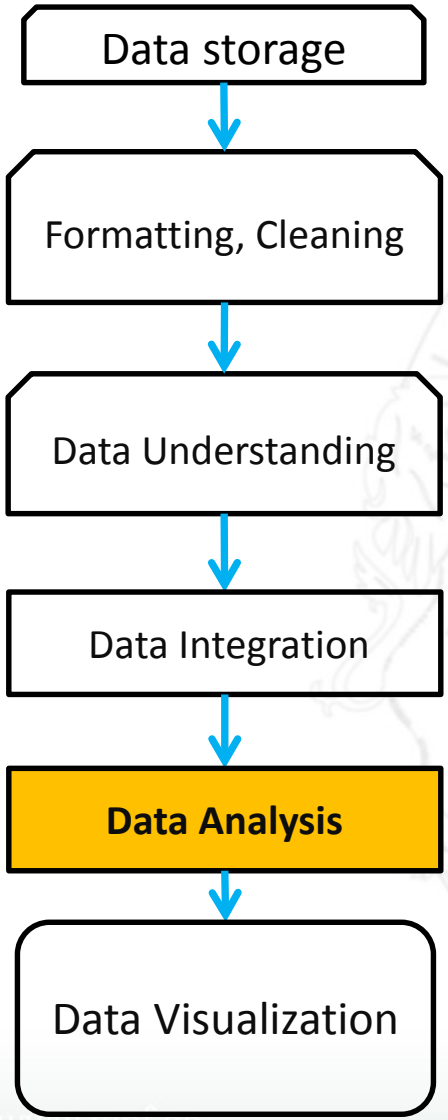
Data Understanding

Data Integration

Data Analysis

Data Visualization

DATA VISUALIZATION ROADMAP
GEORGIAN EXPERIENCE



Descriptive, Predictive, Prescriptive Analytics	What has happened What could happen What should we do
Indications & Warning	Generally, indications of warfare and potential conflict and other crises, based on quantitative information found in open source datasets
Dynamical Systems	Differential or difference equations of low dimensionality representing competing actors (incl. *system dynamics*)
(Hidden) Markov Models	Time-phased data aggregated at fixed intervals with scaled values. Separate from underlying events input to set of discrete states w/ associated probabilities.
Event Data Analysis	Analysis of abstracted and coded streams of short-term interactions among competing or cooperating actors
Econometric Models	Large-scale aggregate models of social actors, states or organizations in economic and social systems – regional, national, international.
Probabilistic Models	Regression and statistical models estimating the probability of how variables will affect a specified outcome.
Principal Components Analysis	Techniques for the reduction of high-dimensionality models to a few Critical dimensions to facilitate prediction and visualization.
Game Theory Models	Application of 2-person and N-person game theory to competitive and collaborative situations involving strategic interdependence.
Logic Systems	Use of logical formulae and systems to represent and solve qualitative Problems, including deductive, abductive, and inductive techniques.

Ref: Kaisler and Cioffi-Revilla 2007; Kaisler, Armour, Espinosa, and Money 2014

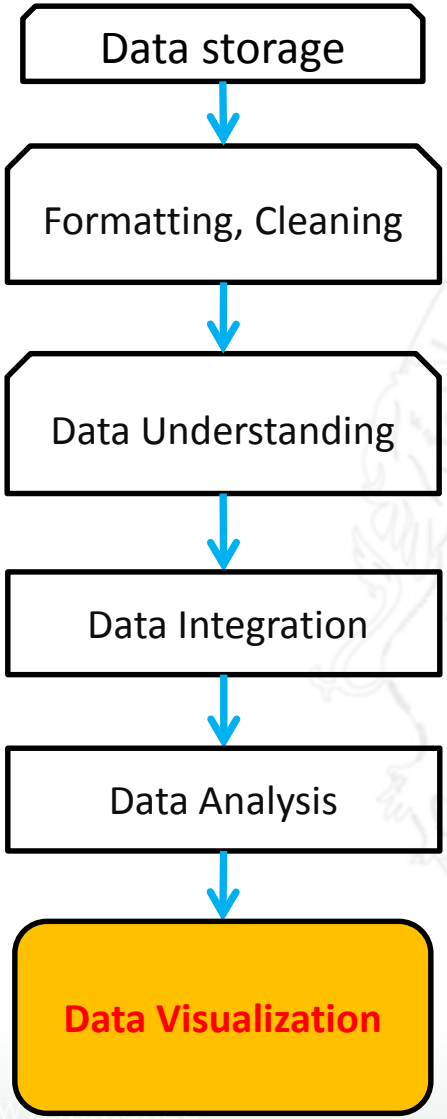
RISK OF LOOSING GLOBAL PICTURE

Financial Ratio Analysis and "Simpson's Reversal Paradox"

	Quarter 1			Quarter 2			Quarter 3			Quarter 4		
	All shots	Exact shots	%	All shots	Exact shots	%	All shots	Exact shots	%	All shots	Exact shots	%
Player 1	10	7	**70%**	4	1	**25%**	9	7	**78%**	5	2	**40%**
Player 2	4	3	**75%**	10	3	**30%**	5	4	**80%**	9	4	**44%**

Is Anything Paradoxical here?

DATA VISUALIZATION ROADMAP
GEORGIAN EXPERIENCE



Data Visualization Tools

- Dashboards
- Graphs&Charts: Line charts; Pie charts; Area charts; Scatter chart
- Data Visualization software

Data Visualization Software

- Tableau
- Qlikview
- Spotfire
- IBM
- SAS
- **Microsoft Power Business Intelligence**

MICROSOFT POWER BI

Where we use “Microsoft Power BI”

- Budget Execution Reports
- Accounting and Reporting
- Investment Projection and Management

Microsoft Power BI

LIVE DEMONSTRATION

Thank you for your attention!

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