Assoc.Prof.Dr.Tiranee Achalakul

BIG DATA @ KMUTT

Initial Goals

- Improve student performance and reduce drop-out rates
  - Identify the students in need of helps
  - Recommend helps
- Improve student's experiences
  - Engage students (relevant and targeted messages)
  - Create effective and seamless touch points
  - Create tools for service quality assurance
- Improve operational efficiencies and resource allocation.

KMUTT Initiatives

- MyLE (My Learning Environment)
- ACIS (Academic Information System)
- Student sentiment analysis (analyzing millions of social media messages)
- Research Information System
- Big Data Experience Center

MyLE

An Outcome-based Learning Environment

- Track what learners know or does not know
- Monitor student behaviors through level of engagement
- Track individual student performance in each class through opinions and scores
- Teachers evaluate students / students evaluate teachers
- Track course outcomes

We are at an early stage in defining
how to utilize “Big Data” on university services

We are designing and developing our
“KMUTT 3.0” platform.

In the mean time,
education on big data has been emphasized.

KMUTT g able

"A market place where everyone is exchanging idea and practice around Big data technology; to create a practical realization of Big data in Thailand."

BIG DATA EXPERIENCE

OUR GOAL
CREATING SHARED VALUE AND SOCIAL IMPACT

KMUTT g-able

BIG DATA EXPERIENCE

OUR MISSIONS
TALENT MOBILITY, EDUCATION, AND BIG DATA TREND

WANT TO BE A DATA SCIENTIST

Talk to our data scientists

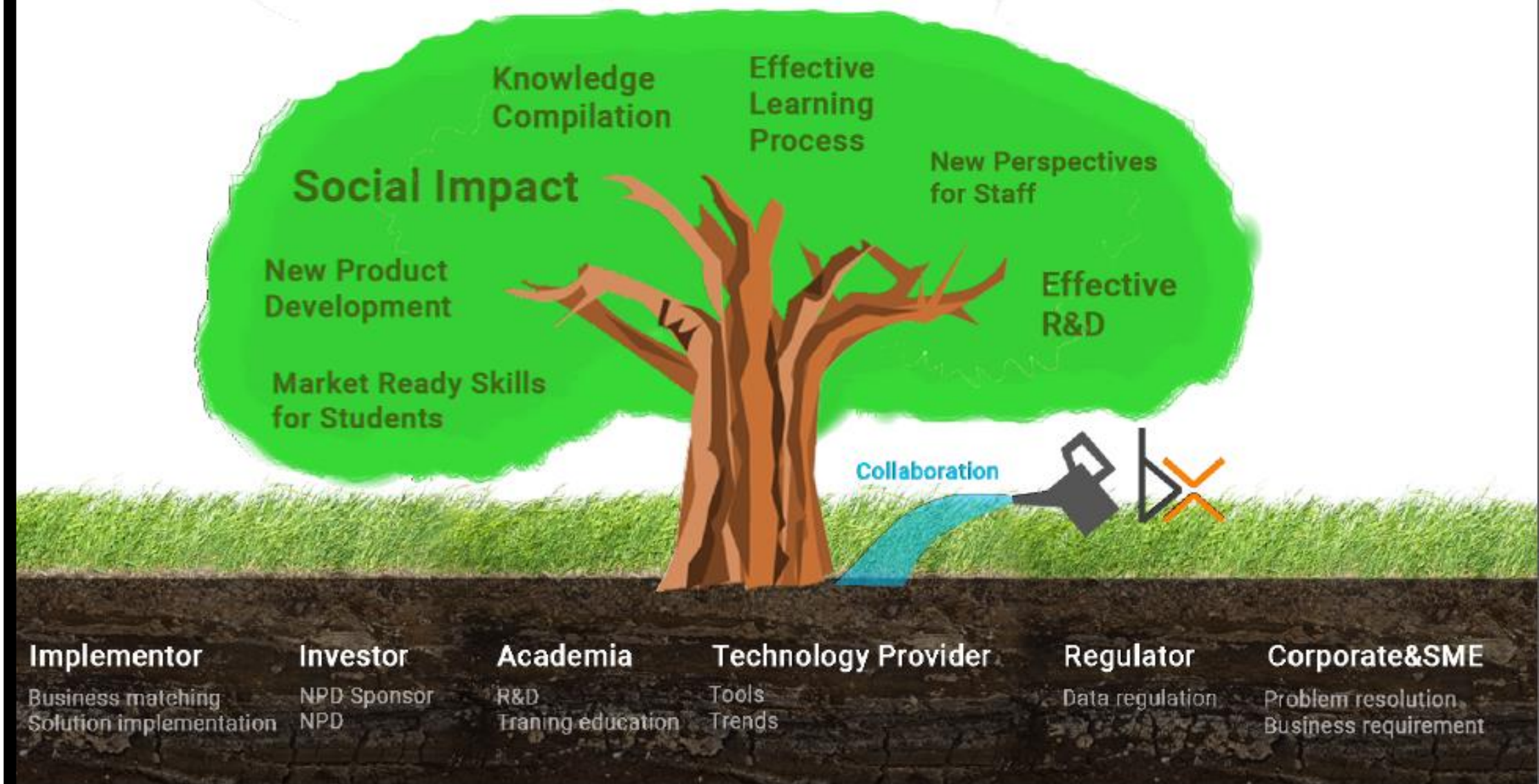
- ✓ 10+ data scientists (Ph.D. with data modeling expertise)
- ✓ 20+ business area of experiences
- ✓ 20+ specific areas of expertise
- ✓ Wide range of technical knowledge

Learn about data science

- ✓ Math & Statistics
- ✓ Machine Learning
- ✓ Optimization
- ✓ Programming & Database
- ✓ Visualization
- ✓ Soft Skills

BX ECOSYSTEM

Advantages of an ecosystem approach; it is goal driven and is based on a collaboratively developed vision of desired future conditions.



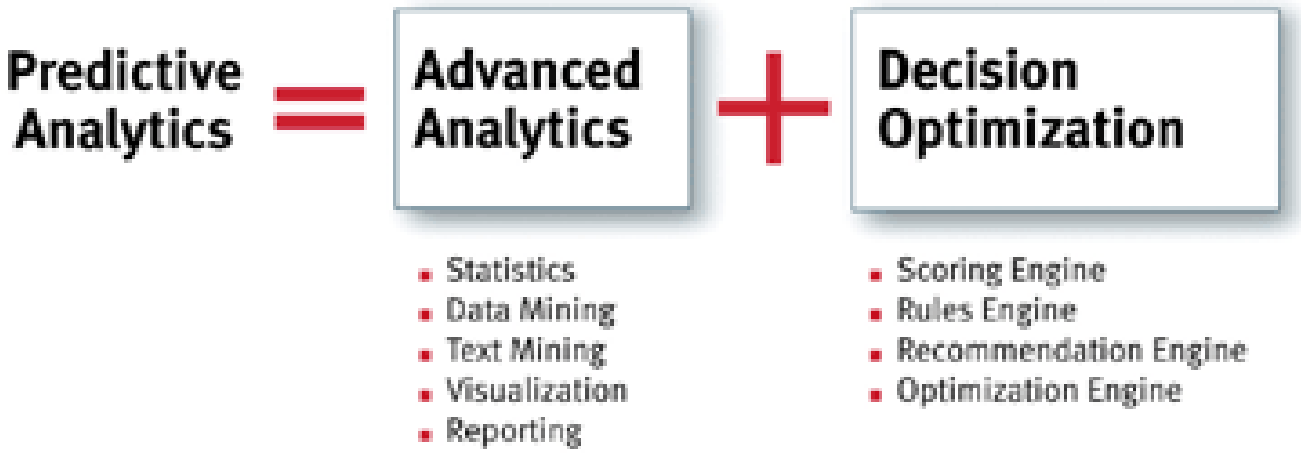
EXPLAIN (Education)
EXPLORE (Sharing ideas and best practices)
EXCHANGE (Cases and Prototypes)

- ✓ Course and short course
- ✓ Modeling & Prototyping
- ✓ Idea competition
- ✓ Research and development

- ✓ Technology workshop
- ✓ Seminar on case studies
- ✓ Consultation service
- ✓ Networking event
- ✓ Tech Talk

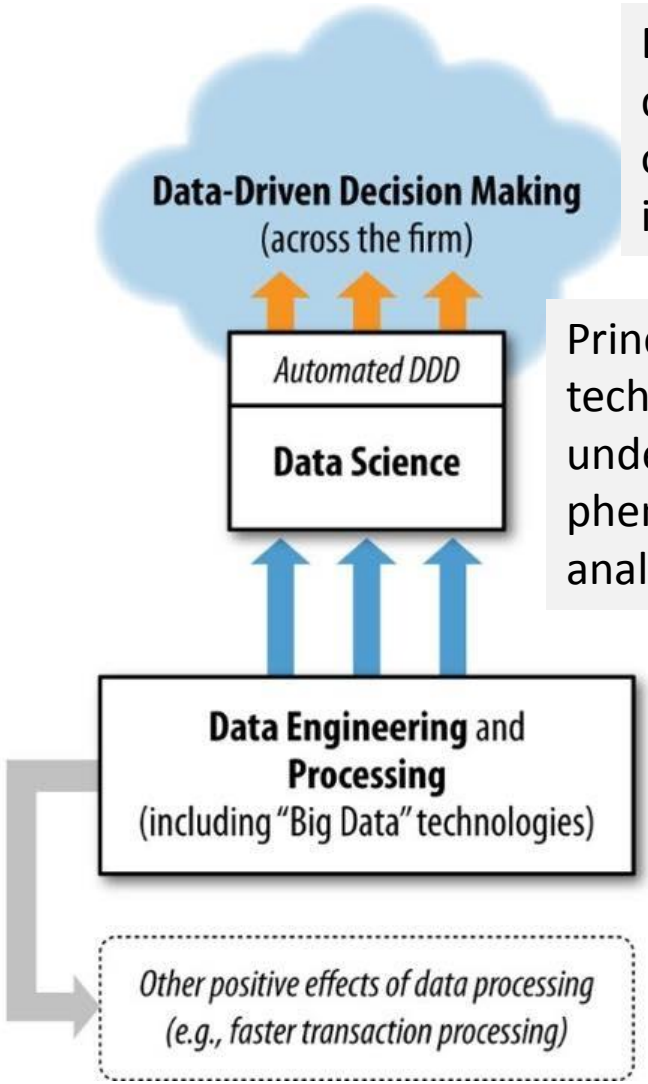
BIG DATA EXPERIENCE

Predictive Analytics *utilizes "a variety of statistical, modeling, data mining, and machine learning techniques to study recent and historical data, thereby allowing analysts to make predictions about the future."*, Forbe



KMUTT g-able

Data Engineering and Data Science



DDD = practice of basing decision on the analysis of data, rather than intuition

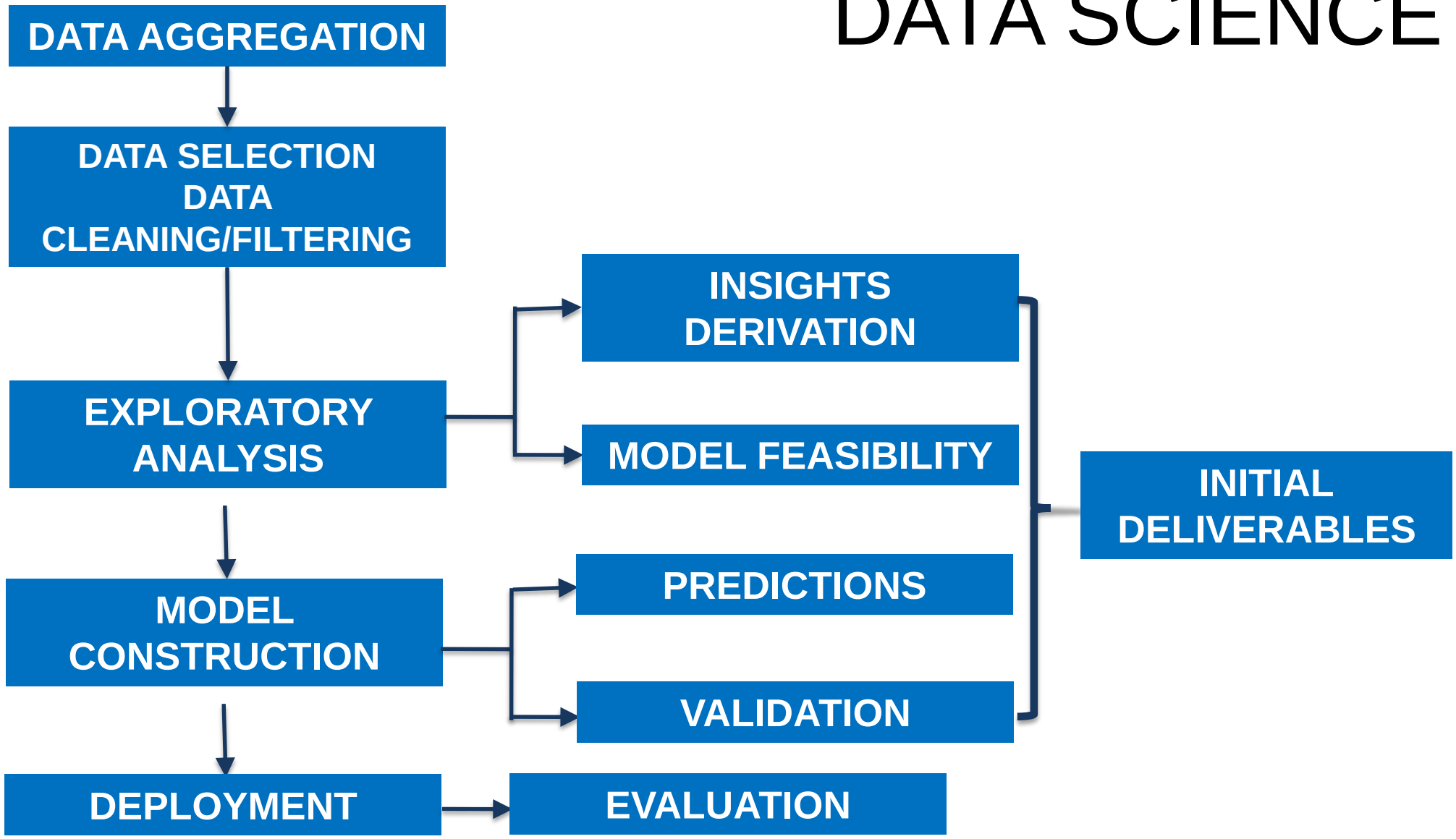
Principles and techniques for understanding phenomena via the analysis of data.

Accessing and processing of massive-scale data flexibly and efficiently with Big Data technologies

The data analysis is not testing a simple hypothesis, but the data are explored with the hope that something useful will be discovered.

BIG DATA EXPERIENCE

DATA SCIENCE



KMUTT g-able

Data Sciences

- Statistics
- Econometrics
- Machine Learning
- Data Mining
- Artificial Intelligence
- Operations Research
- Natural Language Processing

Additional Methods and Tools

- Linear/Non-linear programming,
- MCMC methods,
- Latent Class methods,
- Structural Equation models,
- Discrete Choice models,
- Dimensionality Reduction,
- Hierarchical Bayes models

Techniques

- Linear/Non-Linear Regressions
- Logistic Regression
- Time-Series models
- Optimization
- A/B Testing
- Clustering
- Factor Analysis
- Principal Component Analysis
- Neural Networks
- Support Vector Machines
- Bayesian Techniques
- Survival Analysis

Tools

- R, SAS
- Python, Java, C++
- SPSS, MATLAB, Minitab
- CPLEX, GAMS, Gauss
- Tableau, Spotfire
- VBA, Excel
- Javascript, Perl, PHP
- Open Source Databases
- MySQL
- AWS, Cloud Solutions

Vertical Applications

- Big Data Analytics
- Social Media Analytics
- Online Advertising
- Display Marketing
- Text Analytics
- Retail Analytics
- Customer Analytics
- Forecasting
- Pricing and Revenue Optimization
- Predictive Modeling
- Custom Insights
- Custom Reporting
- Custom Dashboards

Data Adapters

- Social Data Connectors (Facebook, Twitter, etc.)
- Extract-Transfer-Load (ETL) to ELT toolsets

Outreach/Hooks

- Hooks into Agent App
- Hooks into CRM platforms
- Hooks into Mobile devices

Ref: https://practicalanalytics.wordpress.com/2015/05/25/big-data-analytics-use-cases/

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BIG DATA
EXPERIENCE

EXPLORE
EXPLAIN
EXCHANGE
BIG DATA VALUE