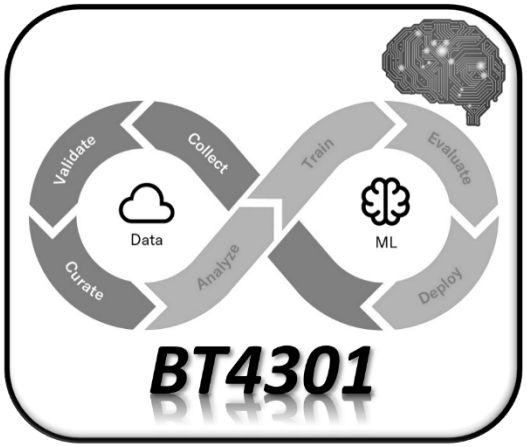


Lecture 0

Course Introduction

BT4301 – Business Analytics Solutions Development and Deployment
AY 2023/24 Semester 2

Lecturer: A/P TAN Wee Kek

Email: tanwk@comp.nus.edu.sg :: **Tel**: 6516 6731 :: **Office**: COM3-02-35

Consultation: Wednesday, 9:30 pm to 10:30 pm. Additional consultations by appointment are welcome.

Learning Objectives

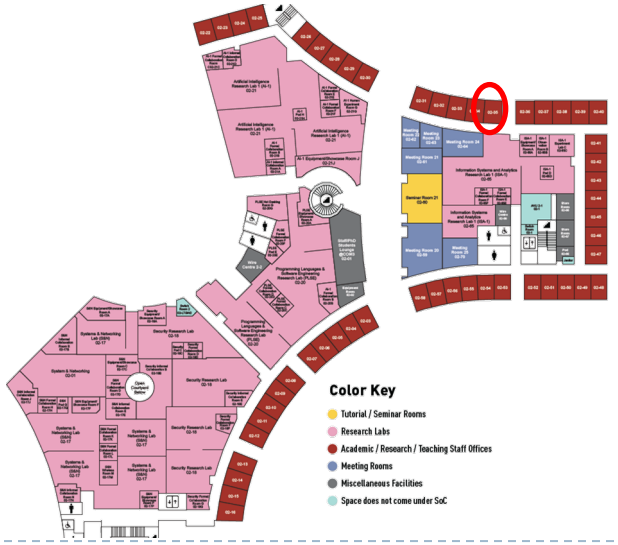
- At the end of this lecture, you should understand:
  - Course objectives.
  - Course syllabus, schedule and assessment criteria.
  - Other course administrative issues.

Readings

- Required readings:
  - None.
- Suggested readings:
  - None.

Teaching Team

- **Lecturer: A/P TAN Wee Kek**
  - **Office**: COM3-02-35
  - **Contact**: 6516 6731
  - **Email**: tanwk@comp.nus.edu.sg
  - **Weekly Scheduled Consultation**:
    - Wednesday, 9:30 pm to 10:30 pm.
    - Additional consultations are welcome.

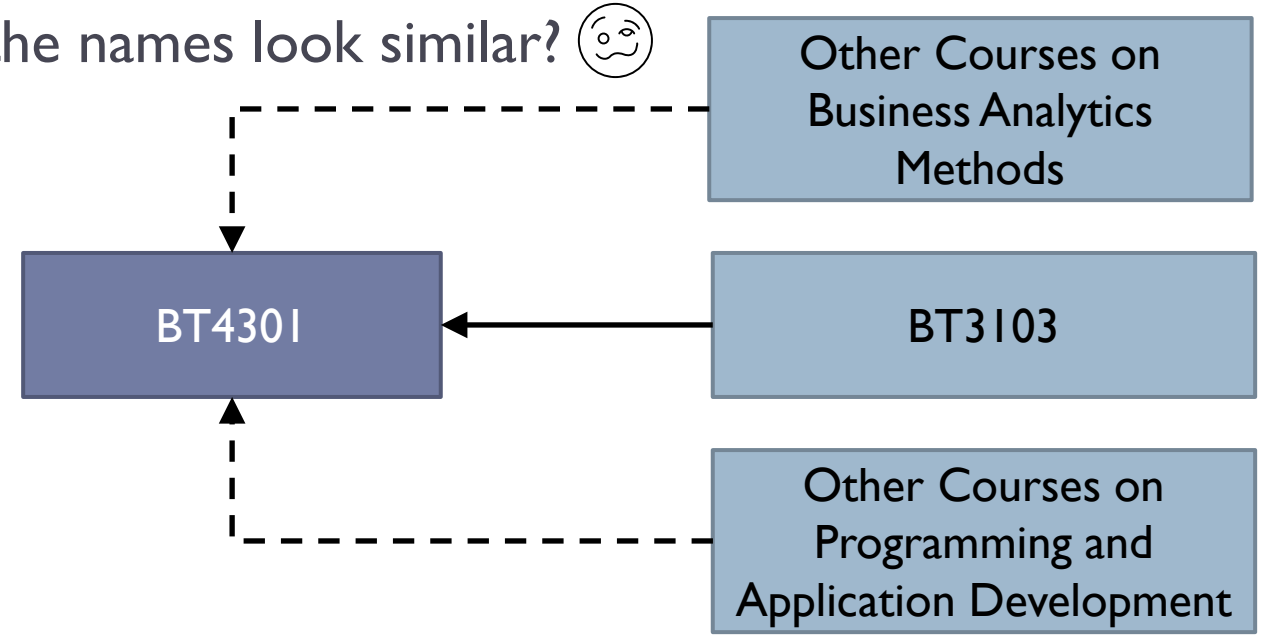


Teaching Team (cont.)

- You can also communicate with me via:
  - Microsoft Teams
  - Zoom
  - Telegram – @tanweekek

What is BT4301?

- BT4301 is the follow-on course to BT3103:
  - BT4301 – Business Analytics Solutions Development and Deployment
  - BT3103 – Application Systems Development for Business Analytics
  - Don't the names look similar?

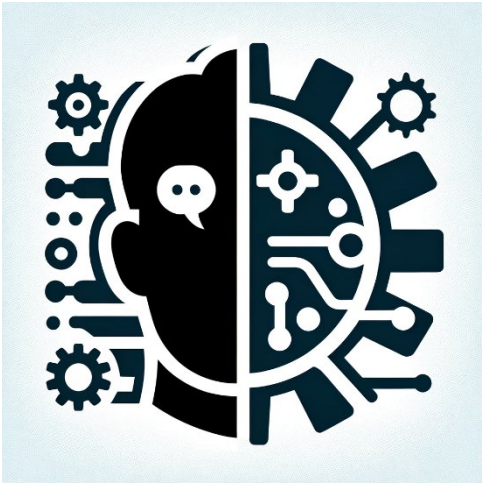


What is BT4301? (cont.)

- **BT3103**:
  - Focuses on developing IT applications incorporating embedded analytics:
    - Analytical capabilities and data visualisations are integrated into IT applications.
    - Conventional approach involves extracting data out from IT applications and applying analytics separately.
  - More micro-level issues.
- **BT4301**:
  - Focuses on a holistic solution including data, models, applications and more.
  - Focuses on complete solutioning process.
  - More macro-level issues.

What is BT4301? (cont.)

- BT4301 places a balanced emphasis between managerial concepts and technical skills:

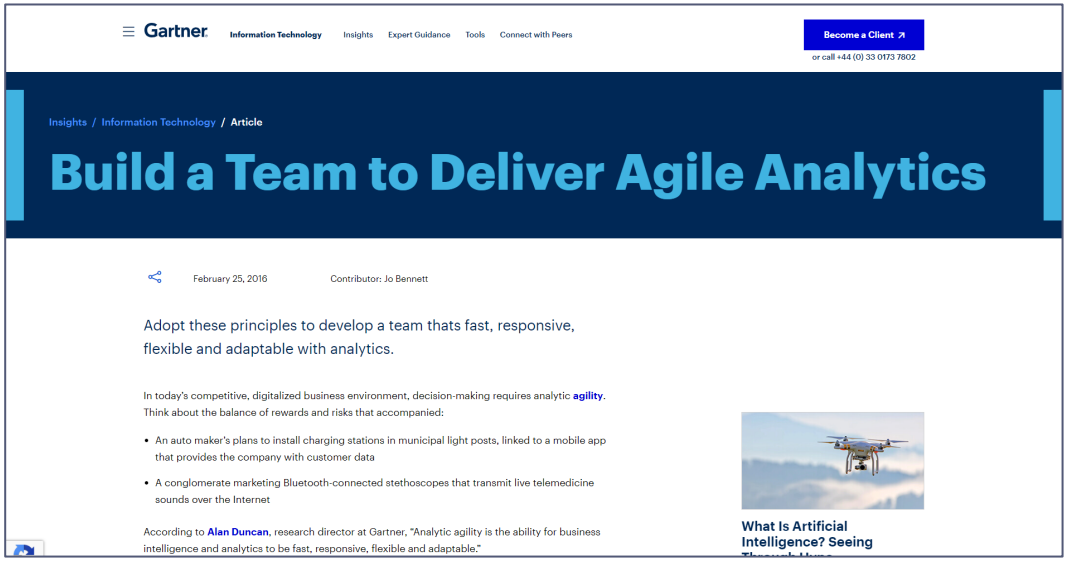


(A digital artwork generated by OpenAI's DALL-E)

  - For example, you will learn concepts on DataOps and MLOps.
  - Complement with hands-on of toolchains.
- So, hopefully, this course won't be too boring :)

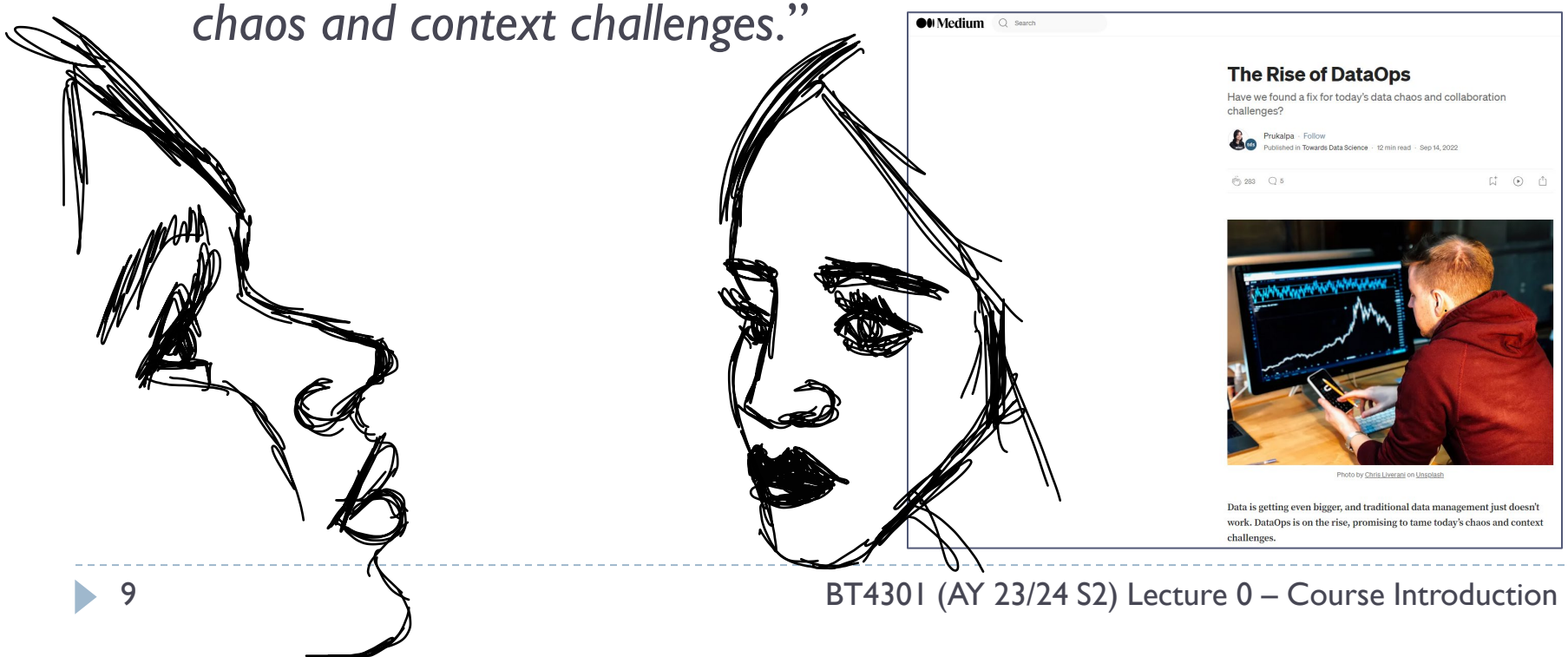
Why Is It Important to Read BT4301?

- **Project management**:
  - Business analytics projects fail due to many reasons that can be mitigated with appropriate project management process.
  - According to Gartner – "*today's competitive, digitalized business environment requires agile analytic, i.e., fast, responsive, flexible and adaptable business analytics.*"



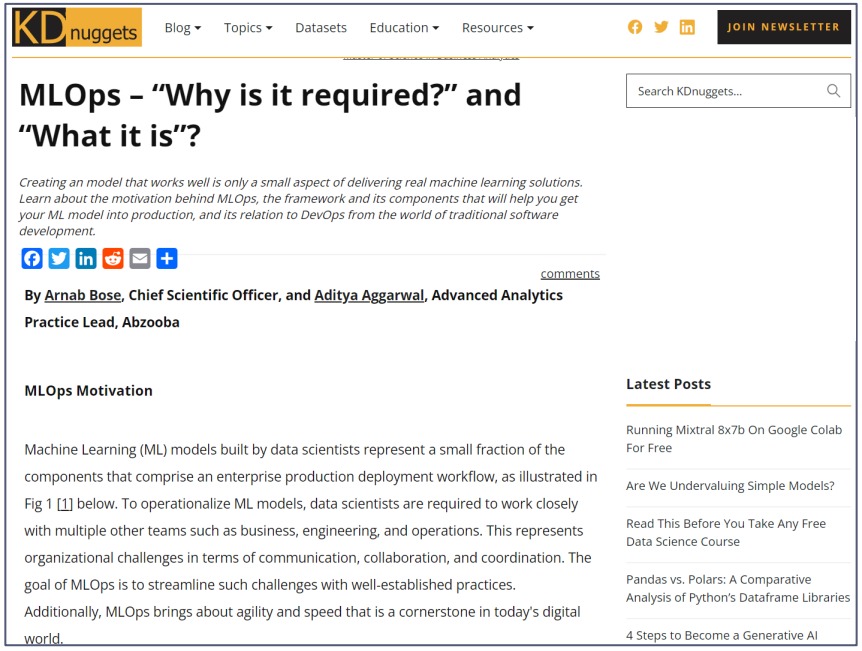
Why Is It Important to Read BT4301? (cont.)

- **DataOps**:
  - High quality data is a critical success factor of business analytics projects.
  - "*Data is getting even bigger, and traditional data management just doesn't work. DataOps is on the rise, promising to tame today's chaos and context challenges.*"



Why Is It Important to Read BT4301? (cont.)

- **MLOps**:
  - Creating predictive analytics or machine learning solutions is becoming increasingly complex.
  - "*Creating a model that works well is only a small aspect of delivering real machine learning solutions.*"



Course Objectives

- **Learn** Agile development and project management frameworks

- **Learn** and **understand** concepts on DevOps, DataOps, MLOps

- **Apply** Agile frameworks in analytics and DevOps/MLOps/DataOps processes

- **Understand** the different processes in a BA project lifecycle, and know the requirements and best practices to manage each process

Course Objectives

- **Apply** the tools and techniques to develop, deploy and continuously improve a productionized BA solution or system

- **Understand** compliance and regulatory requirements, policies and ethical issues for data and model governance

Course Schedule

Week	Date	Lecture Topics	Key Activities
1	17 Jan	0 – Course Introduction 1 – Overview of Business Analytics Project Lifecycle	
2	24 Jan	2 – Agile Methods and Analytics	
3	31 Jan	3 – Scrum, Kanban and Scrumban	
4	7 Feb	4 – Overview of DevOps, DataOps and MLOps	
5	14 Feb	5 – DataOps (I) - Concepts	
6	21 Feb	6 – DataOps (II) - Implementation and Toolchain	
Recess	28 Feb	No lecture	

Course Schedule (cont.)

Week	Date	Lecture Topics	Key Activities
7	6 Mar	7 – MLOps (I) - Designing and Developing Models	
8	13 Mar	8 – MLOps (II) - Preparing for Production	
9	20 Mar	9 – MLOps (III) - Deploying to Production	
10	27 Mar	10 – MLOps (IV) - Monitoring and Feedback Loop	
11	3 Apr	11 – Data and Model Governance	
12	10 Apr	No lecture	No Class - Hari Raya Puasa public holiday
13	17 Apr	-	Term Test Project Presentation Submission of Project Deliverables and Peer Review

- What other topics would you like to learn? Please tell me in the survey.

Prerequisite Knowledge

- It is assumed that you are familiar with:
  - Concepts of business analytics.
  - Predictive analytics and machine learning.
  - Python programming language.
- For instructional purposes, Python will be used for various technical topics:
  - Application development.
  - Data processing.
  - Model training.
  - DevOps, DataOps and MLOps.

Jenkins
Git

Airflow
Kafka
Spark

MLFlow

Supplementary Learning Activities

- The course is conducted as a weekly 3-hour session in a seminar-style:
  - About 1.5 to 2 hours will be used for lecture.
  - Remaining 1 to 1.5 hours will be used for various supplementary learning activities.
- Supplementary learning activities include:
  - Article discussions.
  - Case study analysis.
  - Practical hands-on.
  - Interim project sharing.
- Need to work within the constraint of the large class size.

Course Materials

- Lecture discussion on different topics will be based on selected reference books.
- References will be provided in the respective topic's lecture notes.
- As much as possible, e-books will be adopted.

Individual Assignments

- There will be a series of two to three individual assignments:
  - Will be distributed evenly throughout the semester.
  - You will have about 2 to 3 weeks to complete each assignment.
- The nature of each assignment may be either technical or non-technical.

Term Test

- Term test will be conducted in Week 13 during the last lecture.
- Duration is 1 hour.
- Format of the term test to be advised:
  - Mainly MCQs.

Group Project

- Group size:
  - Group size is 5 members.
  - 4 or 6 members will be allowed if the final cohort enrollment size is not a multiple of 5.
  - A group can have a mixture of UG and PG students.
- Project tasks require your group to:
  - Conceptualise a business analytics project with the final deliverable being a complete end-to-end solution.
  - Demonstrate agile project management practices.
  - Implement DevOps, DataOps and MLOps processes.
- Project briefing will be conducted.

Group Project (cont.)

- Groups will be invited to conduct interim project sharing:
  - Nature of sharing depends on the weekly topic.
  - This sharing is credited.
- Final project presentation will be conducted during the last lecture.
- Presentation format to be advised:
  - Live presentation.
  - Pre-recorded video.

Assessment Weightage

- The assessment consists of 100% continuous assessment:

Stage	Component	Weightage
Continuous Assessment	Individual Assignments	30%
	Term Test	20%
	Group Project	50%
Total		**100%**

- The assessment scheme is pending approval.

Summary

- You have understood what you will be learning and how you will be learning.
- You know everything that is in store for you – tasks, deliverables and schedules.

Q&A

Next Lecture…

- Learn about:
  - The business analytics project lifecycle.
  - Traditional lifecycle frameworks.
  - More modern lifecycle frameworks.
  - Agile lifecycle frameworks.
  - Issues beyond agility that are pertinent to the business analytics project lifecycle.