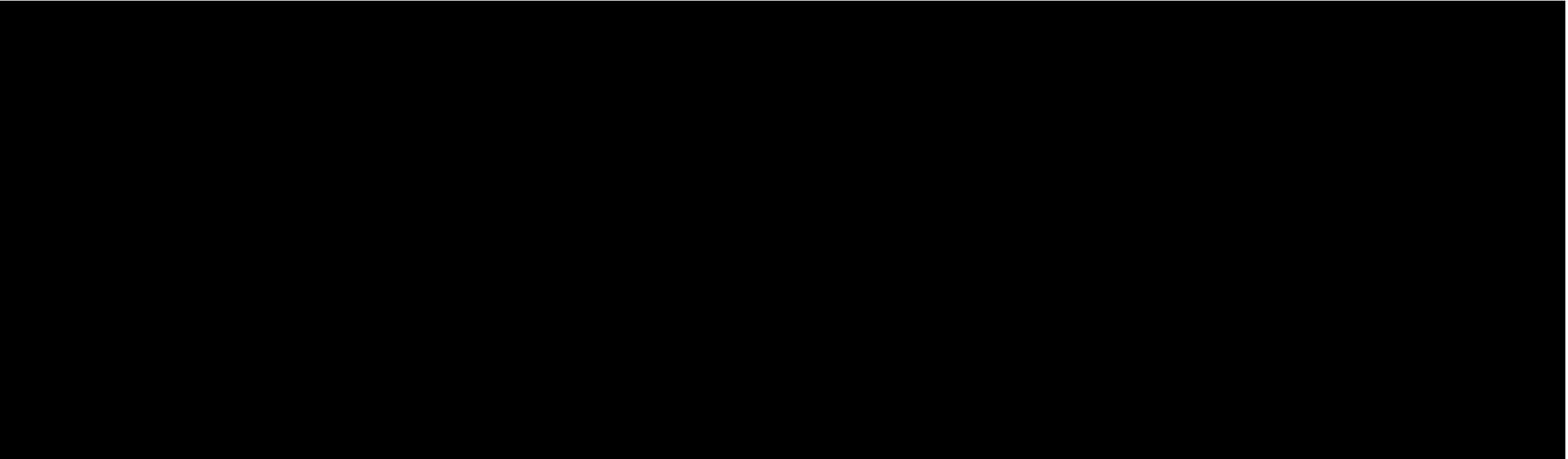# ORIENTATION AND INTRODUCTION

CT ACADEMY | DATA ACTION LAB

HELLO!

Welcome to the CT Academy – **Data Track**!

The CT Academy model is a **multi-step**, **multi-modal**, **cohort-based** approach to learning that puts cohorts of 10-16 people through 40 hours of training across an 8-10 week timeline.

In the data track, we will work with financial analysts and auditors seeking to improve their skills in:

- data foundations

- data analysis and data science

- business intelligence

- visual storytelling

- decision-making and evaluation

FIRST THINGS FIRST

The training material is available at:
https://data-action-lab.com/ct-academy

Supplementary data training course notes:
https://idlewyldanalytics.com/dudads

LEARNING OUTCOMES

This course is addressed to members of the CT Community and aims to introduce them to the **fundamentals of data literacy**, to empower them to become **effective data stewards**, and to present them with a path towards **insightful data analysis**.

It could be useful to think of it as *An Appreciation of Data Science*.

Participants are expected to have some Power BI proficiency (other analytical tools are also acceptable) prior to the start of the training.

OUTLINE

Duration	Modules	Submodules
3 hours	**Orientation and Introduction**	
9 hours	**I. Data Foundations**	1. Data Awareness
		2. Data Ethics
		3. Data Governance
		4. Data Collection
8 hours	**II. Introduction to Data Analysis, Data Science, and Business Intelligence**	5. Data Quality
		6. Asking Questions
		7. Data Analytics
15 hours	**III. Data Analysis and Visual Storytelling**	8. Data Analysis
		9. Storytelling and Visualization
4 hours	**IV. Decision-Making and Evaluation**	10. Evidence-Informed Decision-Making
		11. Evaluating Outcomes
1 hour	**Conclusion and Goal Setting**	

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INSTRUCTOR – PATRICK BOILY

Employment

- Professor Math/Stat ['19 – now, uOttawa]
- President ['16 – now, Idlewyld Analytics]
- Manager and Senior Consultant ['12 – '19, CQADS, Carleton]
- Public Service ['08 – '12, ASFC | StatCan | TC | TPSGC]
- 60+ uni course; 250+ workshop days

Projects

- GAC; NWMO; CATSA; etc.
- 40+ projects

Specialization

- Data visualization; data cleaning (… unfortunately)
- Application of wide breadth of techniques to all kinds of data
- Mathematical/statistical modeling
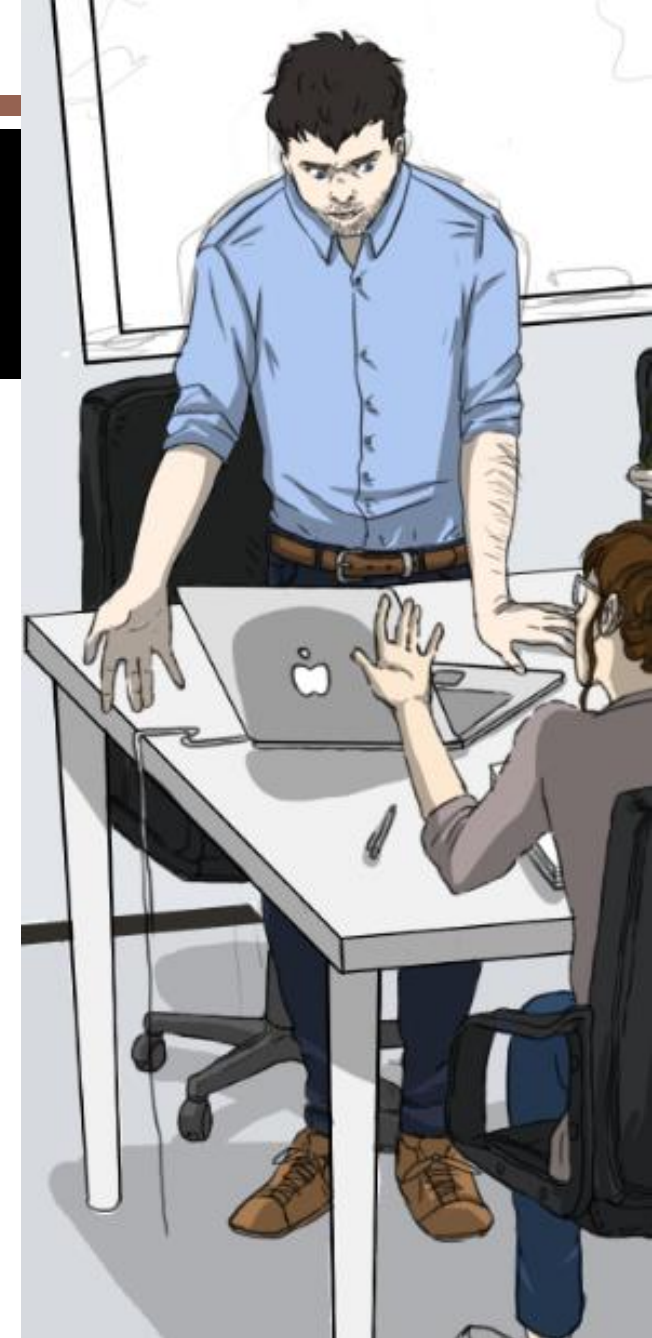
INSTRUCTOR – STEPHEN DAVIES

Employment

- CEO [DAVHILL Group | GoC & Aviation]
- M. Sc. [Systems Engineering]
- Lecturer [Sprott School of Business, Carleton]
- Former executive in High Tech & Manufacturing
- 20+ years consulting and training

Projects

- All major GoC departments
- Pearson Airport, Porter, Sunwing, Flightstar, First Air, ICAO

Specialization

- Data visualization, business intelligence, data engineering
- Process transformation, risk management

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COURSE COMPONENTS

Live Training: follow along with the instructors

***Asynchronous Training:** viewing/reading list

In-Class Exercises: a selection of exercises to reinforce the concepts discussed

***Asynchronous Exercises:** more exercises

Data Labs: the main event!

*: optional

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LET'S HEAR ABOUT YOU

We will be working in teams throughout the training – what are your data interests and skill sets? Your data needs at work/for your career?

Are there things you want to focus on, specifically?

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SCHEDULE

Course Schedule

20 x 2-hour online sessions (organized in 10 weeks) will take place from 10am to noon on:

- Week 1: Aug 28-29
- Week 2: Sep 4-5
- Week 3: Sep 11-12
- Week 4: Sep 18-19
- Week 5: Sep 25-26

- Week 6: Oct 16-17
- Week 7: Oct 23-24
- Week 8: Nov 6-7
- Week 9: Nov 13-14
- Week 10: Nov 27-28

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SCHEDULE

Week	Session 1 [Lecture/Exercises]	Session 2 [Data Lab]
1	Orientation and Introduction	Orientation and Introduction
2	1. Data Awareness; 2. Data Ethics	1. Data Awareness; 2. Data Ethics
3	3. Data Governance; 4. Data Collection	3. Data Governance; 4. Data Collection; Waypoint #1
4	5. Data Quality; 6. Asking Questions	5. Data Quality; 6. Asking Questions
5	7. Data Analytics	7. Data Analytics; Waypoint #2
6	8. Data Analysis (part 1)	8. Data Analysis (part 1)
7	8. Data Analysis (part 2)	8. Data Analysis (part 2)
8	9. Storytelling and Visualization (part 1)	9. Storytelling and Visualization (part 1)
9	9. Storytelling and Visualization (part 2)	9. Storytelling and Visualization (part 2); Waypoint #3
10	10. Evidence-Informed Decision-Making; 11. Evaluating Outcomes	10. Evidence-Informed Decision-Making; 11. Evaluating Outcomes; Conclusion and Goal Setting

Borealis LLC is a standard company.

It does business, it transacts with consultants, it has employees, it pays them, it delivers products, it records its transactions.

It also has projects (Major Capital MC, Minor Capital MIC, Operations and Management O&M, and Salary SA), and departments.

DATA LABS: BOREALIS LLC

Let's take a look at one dataset that we are going to use:

- Data Set - Accounting.xlsx

Download it to your hard drive (you may need to rename the file).

Code	Description
O&M	Operations and Maintenance
MC	Major Capital
MIC	Minor Capital
SA	Salary

Tab – Journal Voucher Type Code

Accounting Control Number	Journal Voucher Type Code	Accounting Effective Date	Journal Voucher Item Amount	Project Identifier
5000085	MC	01-Mar-18	$173,516.11	PR007
5000086	SA	02-Mar-18	$54,298.15	PR009
5000087	O&M	03-Mar-18	$49,584.50	PR010
5000088	MIC	04-Mar-18	$89,293.40	PR011
5000089	SA	05-Mar-18	$93,866.67	PR012
5000090	O&M	06-Mar-18	$47,942.67	PR013
5000091	MC	02-Apr-18	$177,734.54	PR007
5000093	SA	03-Apr-18	$84,391.34	PR009
5000094	O&M	04-Apr-18	$21,520.07	PR010

Tab – Accounting Transactions

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DATA LABS: BOREALIS TERRAFORMERS

Let's take a look at the other dataset that we are going to use:

- Data Set - Projects.xlsx

Download this one to your hard drive too, in the same location (you may also need to rename the file).

Project Identifier	Director	Project Name	O&M Budget	Salary Budget	Major Cap Budget	Minor Cap Budget	FTE Budget
PR001	A. Thakur	Parks	$2,500,000	$2,000,000	$5,000,000	$1,000,000	9.00
PR002	G. Bertrand	Buildings	$5,000,000	$4,000,000	$5,000,000	$5,000,000	6.00
PR003	C. Power	Emergency Response	$3,000,000	$7,000,000	$800,000	$3,000,000	6.00
PR004	H. Schlivofszky	Office	$4,000,000	$4,000,000	$8,000,000	$200,000	12.00
PR005	G. Bertrand	Roads	$5,000,000	$2,000,000	$2,500,000	$1,000,000	7.00
PR006	B. Bouraoui	Science	$5,000,000	$10,000,000	$8,000,000	$2,000,000	7.00
PR007	A. Thakur	Heritage	$1,500,000	$5,000,000	$3,000,000	$1,700,000	9.00
PR008	A. Thakur	Celebration	$2,000,000	$4,000,000	$0	$0	7.00
PR009	B. Bouraoui	Research	$5,000,000	$1,200,000	$10,000,000	$500,000	6.50
PR010	G. Bertrand	Upgrades	$4,000,000	$2,000,000	$10,000,000	$500,000	10.00

Tab – Project Tombstone

Project Code	Date	FTE (- out +	Group-Level
PR001	01-Apr-18	2	AS-04
PR002	01-May-18	2	AS-05
PR003	01-Jun-18	2	ENG-01
PR004	01-Jul-18	4	PR-01
PR005	01-Aug-18	3	PA-03
PR006	01-Sep-18	2	AS-02
PR007	01-Oct-18	1	CR-03
PR008	01-Nov-18	3	FI-02
PR009	01-Dec-18	4	FO-03
PR010	01-Jan-19	2	CR-01
PR011	01-Feb-19	3	AS-03

Tab – Project FTE Count

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