Erasmus Centre for Data Analytics

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Hands-on preparation for a data-driven future

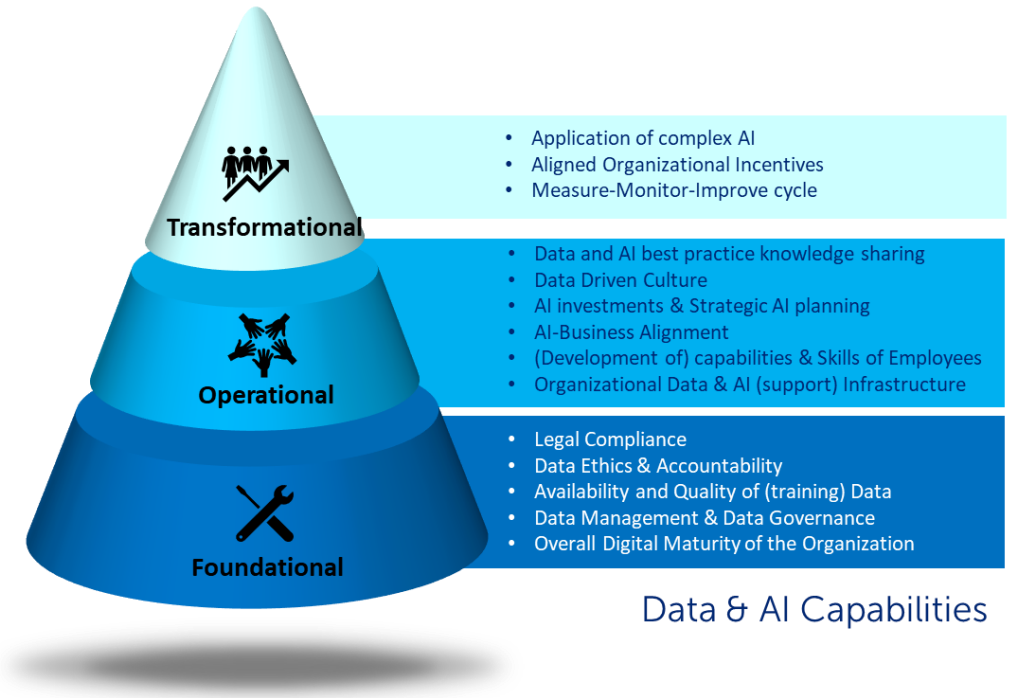
Leadership Challenge with Data Analytics

Edition Spring 2022

1. Introduction

The use of data and application of Artificial Intelligence (AI) will without any doubt change the way we will do business in the future. As a matter of fact, today it is already changing businesses, governmental organizations, and educational institutions. But what is needed to make Artificial Intelligence a valuable part of the way we do business ourselves? Many experts believe that successful Artificial Intelligence applications hinge on the so-called b-smact technologies (Blockchain, Social media, Mobile use, Analytics, Cloud and Things-on-the-internet or better known as IoT). The fuelling component of those technologies is Big Data. This insight will require a whole new set of skills and ways of working. Understanding and working with new technologies for big data collection, analysis and prediction will not create only huge societal and business opportunities, but also ethical, legal, privacy and technical issues concerning every part of the organization. It will influence customer relationships, redefines how organizations develop new products and services, changes how operations are organized and managed, and provides the basis for new business models and service offerings. It will demand a data driven focus of everyone involved in the organization.

This training programme combines the science of business, data, and societal perspectives. Participants – who usually join with a **team of 3 to 6 persons** - acquire a broad knowledge and diverse skills related to data analytics, which may lead to new insights that drive new value creation opportunities. Such learning by doing manifests itself along two dimensions: across multiple levels (individual, group, and corporate) and across multiple functions.



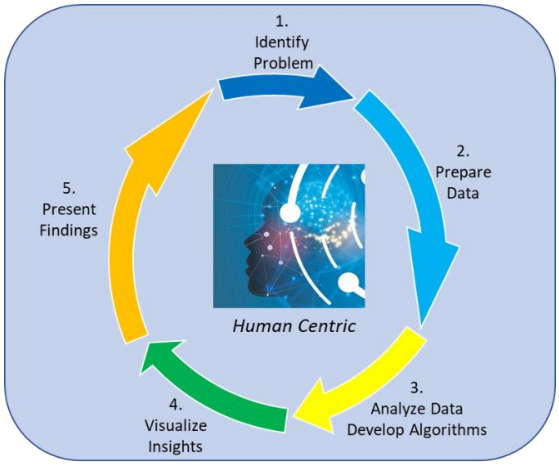
foundations for becoming a data-driven organization

2. Learning Objectives of the programme

The programme has five learning objectives:

1. To understand the foundations for becoming a data-driven organization, as a basis for exploiting insights from analytics and AI.

2. To learn the **complete data analytics lifecycle**, from data exploration, data engineering, data analysis, data visualization up to presenting the insights.
3. To discover new ways to apply data technologies to design and implement innovative and value creating business and societal applications.
4. To improve both the business skills of technically focused data scientists and the capabilities of applying quantitative methods by those in business. Hereby mutual understanding is created, which supports the collaboration.
5. To broaden data scientists' and business members understanding of psychological factors, privacy, security, ethics and accountability and to stimulate critical thinking.



the data science & analytics lifecycle

3. Unique elements of the programme

The programme offers six unique elements:

1. Holistic set-up with wide range of topics that will be covered
2. It plays a key role in the organisational transformation towards becoming a data driven organization, as organisations discover in teams how to approach this challenge by doing & experiencing.
3. It is action based with a hands-on approach, by developing and improving organization specific use cases as part of an action learning project.
4. It engages the participants in multidisciplinary teams with senior executives and supervisors to facilitate implementation of the business applications in the organization. This support team building.
5. It inspires participants through peer-learning and an outside-in perspective based on its cross-industry, cross-functional and international set-up.
6. It offers in-depth individual coaching of teams by both Academics and Business Consultants.

4. Participants

The programme is aimed at multi-disciplinary teams from companies, governmental organizations and/or educational institutes composed of 3 to 6 persons, with representatives coming ((ideally) from the following 3 domains in the organization:

- Data user / business (for example department managers, business analysts, financial controllers, policy makers)
- Information (for example CIOs, CDOs, information managers, architects, BI analysts, data officers, data engineers, data scientists)
- ICT (for example IT managers, BI developers, IT specialists)

A member from the executive board / sponsor joins the team during intake and in the final closure event of the programme.

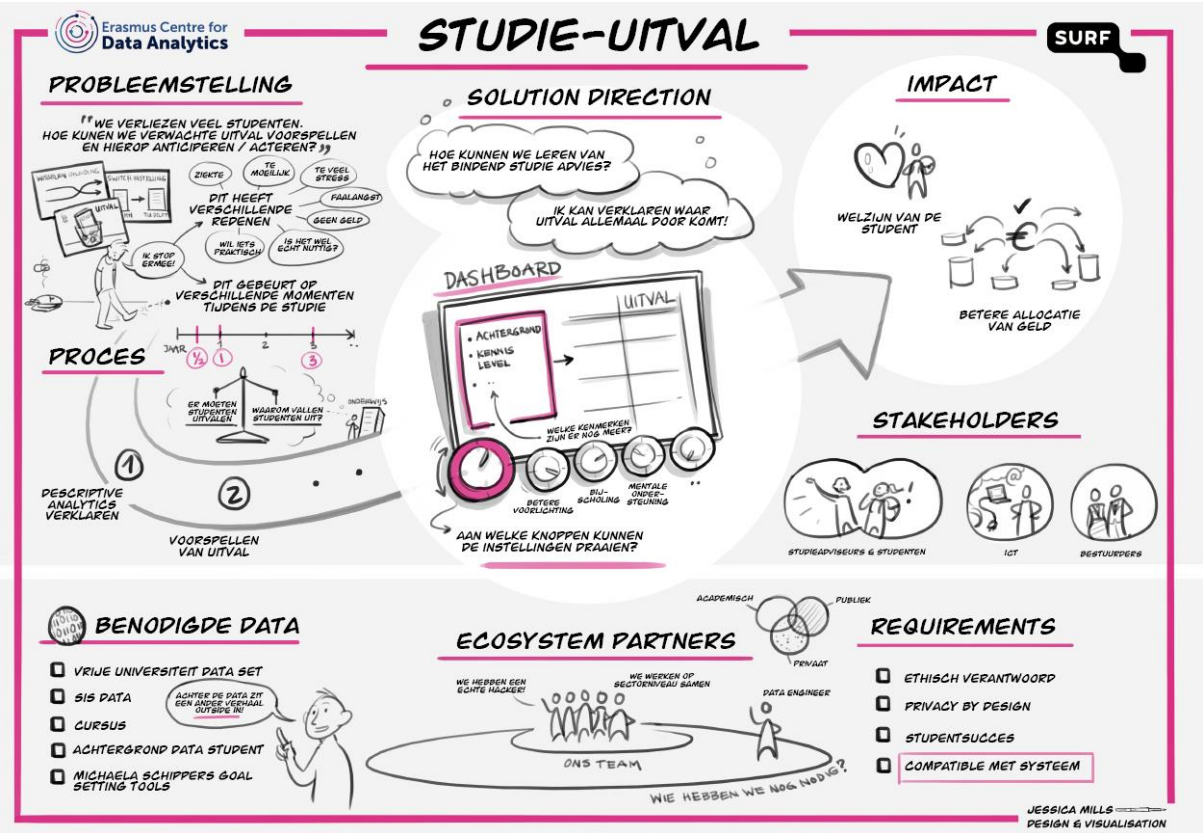
5. Action learning project

Participating teams bring their own use case (with data sets) to work on during the programme, as part of an action learning project. Here we apply the concept of ***think big, start small, scale fast.*** Previous alumni teams have worked on several interesting action learning projects towards a proof of concept, applying all the learnings of the programme. In many cases, these were followed up by implementation into the organization.

Alumni team	Use Case description and results
sanoma	Define website recommendation algorithms based on collaborative filtering, optimizing multi-channel revenues.
Lufthansa	Predict airplane loads through advanced weight calculations, optimizing fuel consumption of aircraft.
alliander	Predict outages in the grid and resolve these faster through asset health analytics (recommendations) using data generated via sensors in the existing cable infrastructure.
randstad	Increase the quality and satisfaction of the matching of candidates to job opportunities through a data driven matching approach.
Den Haag	Increase the effectiveness of the Haagse Pand Brigade (HPB) so that more abuses can be tackled in a targeted manner with less money and people. The result: advice and a prototype with which HPB can combine knowledge and human decision rules about practice with automated systems. Privacy by design and the optimal mix between humans and machines to properly weigh up ethical dilemmas were starting points of the solution.
DSM	Optimize and predict the accuracy of demand forecasts, creating value by reducing the operating working capital required.
kpn	Through improved call centre analytics, developed analytical models to better plan and predict the number of inbound calls. This optimizes capacity planning, allowing better scheduling of call centre agents and real-time detection of abnormalities.
ING	Improve detection of suspicious transactions. How to reduce false positives and increase false negatives as a compliancy measure.
SIEMENS Ingenuity for life	Development of an algorithm and dashboard to improve the matching of field force agents to customers' sites in the context of maintenance of equipment. This results in improved customer and employee satisfaction, reduction of costs and reduction of CO2 emissions.
Gemeente Rotterdam	Visualize topographically the energy transformation challenges policy makers face in the municipality of Rotterdam. Based on different data sources and a recommendation algorithm, building owners and policy makers are guided in transitioning from fossil fuels to sustainable alternatives

Alumni team	Use Case description and results
SURF	Developing a data driven approach towards analysing dropouts of students from a specific programme, towards creating a predictive model to anticipate expected dropouts. Such model can be used to take pro-active measures. Starting points of the solution were to combine different types of open data and institute specific data sets. Privacy by design and combining human decision making with machine suggestions to properly weigh up ethical dilemmas.

A use case workshop in the beginning of the programme provides a solid basis for the definition of the action learning project. During the programme four coaching sessions are organized to discuss the progress of the action learning project and one of our Professors and a dedicated business coach provide in depth coaching support.



Example of use case visualization (source team SURF, 2021)

6. Programme Design

Forthcoming edition starts in January 2022. This edition will be blended[1], with modules 1 till 4 and modules 17 and 18 delivered physically on the **campus of Erasmus University Rotterdam**, while the other modules 5 until 16 offered online via weekly interactive Zoom sessions. The programme is based on a combination of 14 modules with presentations, group activities and in class exercises and four use case coaching sessions. The programme features 3 lunches and a closing dinner.

[1] depending Covid measures

Module	Topic	Subtopics	Date	Time
1	Introduction & kick-off	Introduction programme & participants Management Game	2-2-2022	9.30-12.30
1	Lunch		2-2-2022	12.30-13.30
2	Data analytics strategy	Data driven strategy Data driven and platform business models Leadership in data analytics	2-2-2022	13.30-17.00
3	*Use case workshop*	Workshop Visual development for action learning project	3-2-2022	9.00-12.30
3	*Lunch*		3-2-2022	12.30-13.30
4	Stakeholder Engagement	Stakeholder analyses Engagement strategies Achieving commitment Communication styles	3-2-2022	13.30-17.00
5	*Use case coaching*		*10-2-2022*	*9.00-11.30*
6	Data Fundamentals	Problem definition Data engineering & data science methods Model building	17-2-2022	9.00-12.30
7	Data Architecture	Data architecture Data IT ecosystems Data governance	24-2-2022	9.00-12.30
8	Data Ethics & Accountability	Data biases and data ethics Fair AI Accountability framework Auditing of algorithms	3-3-2022	9.00-12.30
9	*Use case coaching*	*Coaching, pitch presentations & peer feedback*	10-3-2022	*9.00-11.30*
10	Artificial Intelligence	Introduction to AI AI fundamentals Examples of AI use cases & impact	17-3-2022	9.00-12.30
11	Data Governance	Legal responsibilities & liabilities Ownership rights Data privacy	24-3-2022	9.00-12.30
12	*Use case coaching*	*Coaching, pitch presentations & peer feedback*	*31-3-2022*	*9.00-11.30*
13	Psychology of AI	Human-AI collaboration & decision making Problem driven decision making	7-4-2022	9.00-12.30
14	Visualization & Presenting	Visualization techniques Dashboards Preparing a boardroom pitch	14-4-2022	9.00-12.30
15	Data-entrepreneurship	Building an entrepreneurial organization Creating a learning culture Building a data ecosystem	21-4-2022	9.00-12.30
16	*Use case coaching*	*Coaching, pitch presentations & peer feedback*	*12-5-2022*	*9.00-11.30*
17	Data driven transformation	Organizational transformation strategies Data science in the organizational structure Teams and skill sets	19-5-2022	9.30-12.30
17	Lunch	Lunch and group picture	19-5-2022	12.30-13.30
18	*Use case final pitches*	Final team pitches Judging & announcing winner	19-5-2022	13.30-17.00
18	*Closure*	Handout certificates & Dinner	19-5-2022	18.00-21.00

One of the winning teams with the Erasmus Data Leadership Challenge Statue

The beautiful and green campus of Erasmus University Rotterdam

7. Programme Fees

Programme fees for non ECDA members can be found here. Teams from public organizations and educational institutes are offered a discount on the programme fees.

8. Programme partnership & contributions

In the programme we combine research-based insights from leading Professors with industry best practices from leading tech companies, start-ups and inspiring examples of best practice applications of using data and AI. A selection of the key partnerships is shown below.