

MARKET NEED

With the rise of **service customisation**, data analytics is becoming increasingly **important** so as to **understand** the needs of a company's **customers**. In order for the potential of data analytics to be fully realised, analytics tools must be developed for use by the widest user-base possible. Under the CeADAR Intelligent Analytic Interfaces: Ease of Interaction theme, **smart analytics tools** are being developed to aid **non-analytics specialist users in exploring datasets and performing analytics tasks**. The first task selected for focus under this theme is **customer segmentation**, an especially common data analytics task and one that organisations tend to perform when they first start to use data analytics.

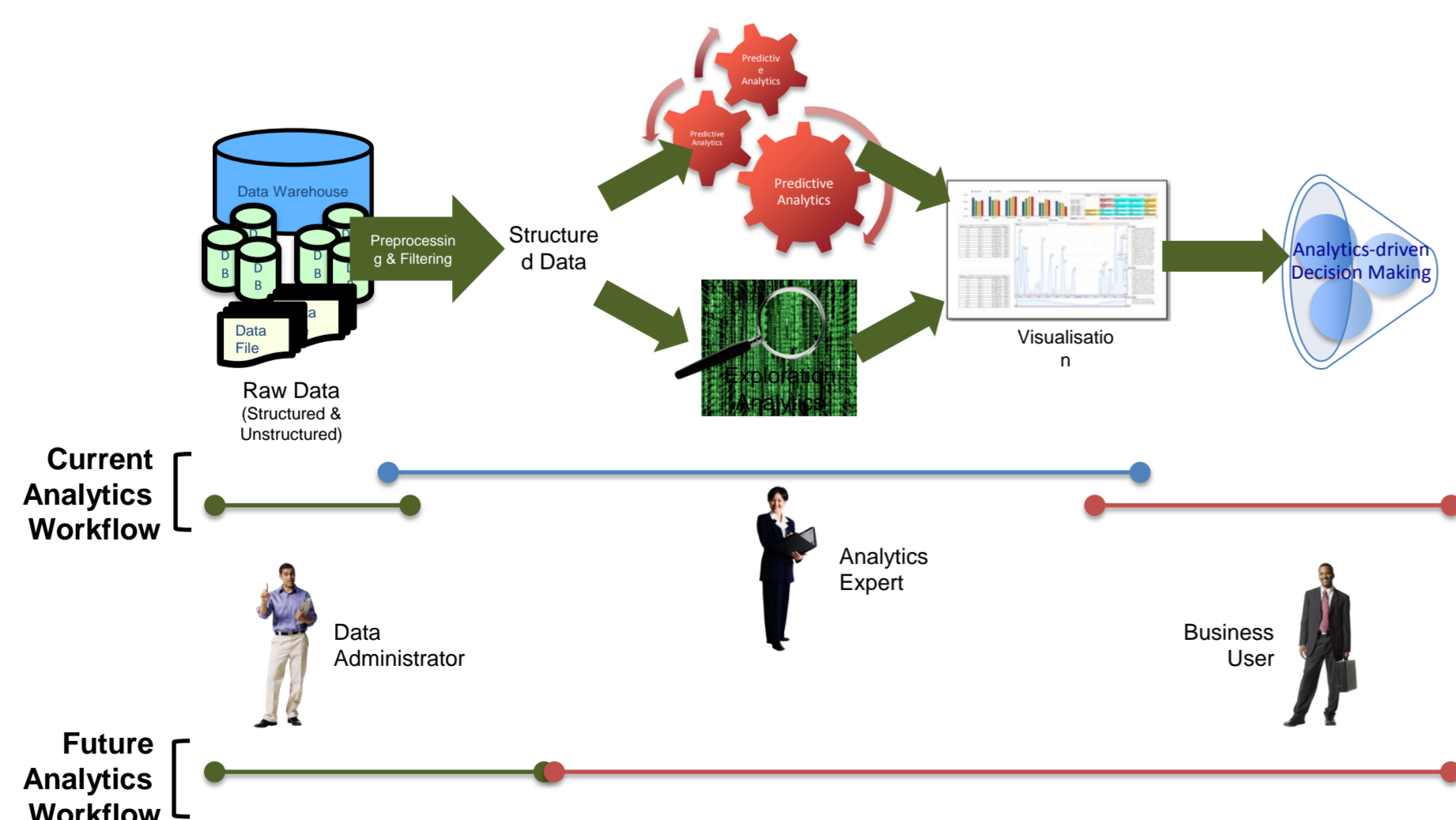
Presenting **segmentation results** to the user in a way that is **interpretable** is the key to the success of SmartSeg. To understand customer segmentations analytics practitioners compare the distributions of features within a segment to the distributions of the same features in the underlying full population. While major **existing analytics tools** have enabled widespread adoption of data analytics, they remain mostly **targeted at expert analytics users**. At **CeADAR** we are developing **smart analytics tools for non-analytics experts** - the so called next billion users.

TECHNOLOGY SOLUTION

SmartSeg is a **customer segmentation** tool designed to be **accessible to a broad user base**. It is designed as a **web application** that can be easily accessed from **any browser and platform**, with an easy-to-use interface that enables non-analytics experts to make the most of the tool without need of an expert. This tool:

- (1) requires **minimal manual data manipulation**.
- (2) performs a range of customer segmentations focused on **different perspectives useful to companies** (e.g. demographics, value, transactions).
- (3) operates in **near real-time**.

The first step is to **identify the key variables** that will be used in the segmentation process. This is performed automatically, through an analysis of the columns in the database. Furthermore, the user interface allows the user to select the features of their interest from a predefined list. The data is then clustered using a number of different pre-determined combinations of features.



An illustration of the typical current data analytics workflow with the key members or staff involved and the future analytics workflow that will be enabled through smart analytics tools.

APPLICABILITY

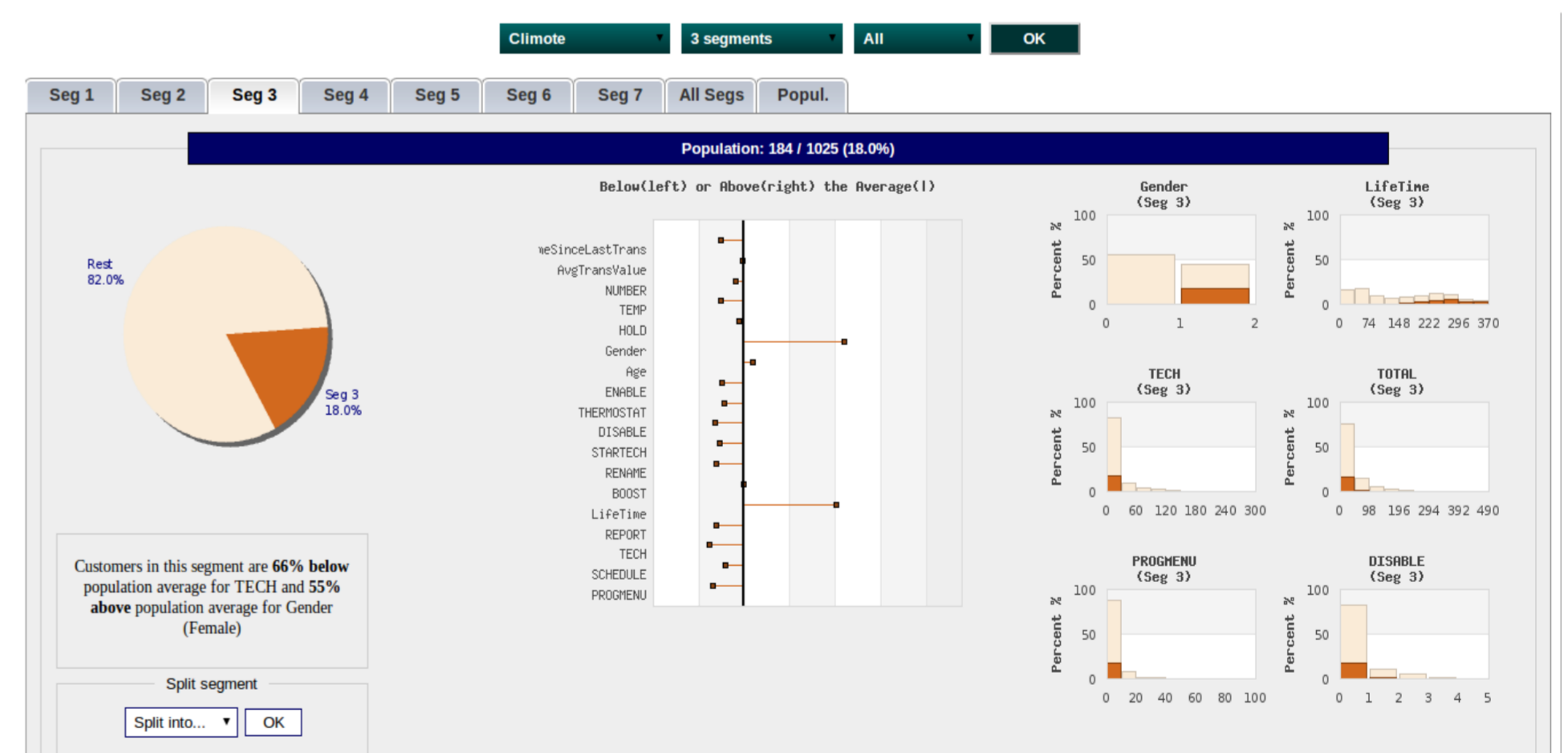
SmartSeg only needs a database of customers and their transactions as an input. Having that, SmartSeg is able to automatically identify the suitable number of segments to be created. The user will only have to select the settings of their choice from a form with the following 3 drop-down lists:

- (1) **Database of customers:** the user can choose from the different customer databases they own.
- (2) **Number of segments:** the system will automatically look for a suitable number of segments by default, but the user can also choose to create a different number of segments.
- (3) **Features:** the system analyses a set of features based on customers' most recent transaction, frequency of transactions, and monetary value by default. Alternatively, the user can choose from a list of different types of features.

From an **infrastructural** point of view, SmartSeg is designed to be easily used from a **web browser, running from a single web server**. This avoids the need of having the tool installed in every computer that will be using it, which also **guarantees 100% performance** across all computers.

SmartSeg is also flexible in terms of the kinds of customers it can deal with. Therefore, it can be applied to a **variety of industries**, including any company with logs of transactions performed by their customers.

SmartSeg **has been tested** with several databases of customers, ranging from actions performed by **electricity customers**, to reading habits of **news customers**.



Visualisation of the key characteristics of a customer segment in *SmartSeg*.

RESEARCH TEAM

Dr. Brian McNamee, School of Computing, DIT Kevin St., Dublin

Dr. John Kelleher, School of Computing, DIT Kevin St., Dublin

Dr. Arkaitz Zubiaga, School of Computing, DIT Kevin St., Dublin

Follow **CeADAR Ireland**:



Data Analytics

AN ENTERPRISE IRELAND & IDA IRELAND INITIATIVE