



# The workflow of a Business Intelligence Project

Strategic and technical planning

# How to plan a BI project strategically

- Implementation of a BI project requires several technical steps, that we will analyze throughout this course
- Beforehand, the project must be planned strategically
- Four steps:

## STEP 1

Translate strategic objectives into specific problem statements

## STEP 2

Conduct a high-level cost/benefit analysis of options

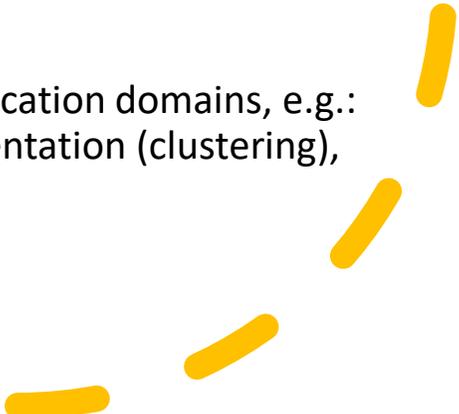
## STEP 3

Define SMART\* business intelligence goals where possible

## STEP 4

Define global practices, tools, roles, and responsibilities

# Step 1. Translate strategic objectives into specific problem statements

- Strategic objectives can be rather high level, e.g., «improve sales while reducing acquisition costs”
  - Need to be turned into more “quantitative” and specific statements, for example:
    - How can we utilize our customers’ data to ensure that they stay with us? Clearly, keeping a customer active for longer will reduce acquisition costs while increasing lifetime sales.
    - How can we use our marketing budgets more efficiently? Are we spending the optimal amount on each channel? Non-optimized spending can quickly deplete marketing budgets, especially in a highly competitive niche.
    - Can we focus on a particular segment of customers in order to maximize overall sales?
    - What about product pricing? Can we maximize sales by offering more dynamic pricing for specific customer segments?
  - NOTE: all these statements correspond to specific BI application domains, e.g.: churn prediction, spending optimization, customer segmentation (clustering), dynamic pricing.
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# Step 1. Translate strategic objectives into specific problem statements (2)

- Step 1 involves breaking down one high-level business objective into specific problem statements that make sense from a data perspective.
  - Every possible interpretation above will have different data requirements, modeling approaches, risks, and cost/benefit profiles, but these would be impossible to assess without dividing the larger objective into smaller data problems.
  - This approach not only allows the capturing of potential optimization options from all parts of the business, but also helps keep key stakeholders (including company departments) engaged.
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## Step 2. Conduct a high-level cost/benefit analysis of options

- We may end up with many possible analytical options that might deliver on the larger business objective. Marketing, product management, finance, customer service, and supply chain have all contributed, resulting in a bloated agenda. **How do you set priorities?**
- Example of c/b analysis:
  - (*Dynamic pricing*) Assume that catalog pricing was 100% dynamic and based on each individual customer's data. What is the best-case lift in sales given the total number of customers and average purchase frequency?
  - (*Customers' segmentation*) What is the estimated cost of implementing data infrastructure (e.g., a data management platform or advanced personalization engine) to create composite customer profiles (combining purchases, refunds, web analytics, customer service, etc.)?

## Step 3. Define SMART business intelligence goals where possible

- Once the prioritized list of implementation options is available, the next step is developing SMART goals for each one. For dynamic pricing, these could be:
  - Generate total sales in excess of \$X from the entire catalog
  - Average product margin must be greater than \$Y
  - Project must be completed within A months and business benefits must start showing within B months of project completion
- **NOTE:** as we will learn in (several) weeks, predictive analytics is based on OPTIMIZATION GOALS. Step 3 implies identifying these goals, which are later turned into mathematical formulations and incorporated into machine learning algorithms.

## Step 4. Define global practices, tools, roles, and responsibilities

- This is more of a managerial planning. It requires:
  - **Lining up roles and responsibilities.** Business intelligence requires business consultants, data specialists, statisticians, and project managers. Other roles may be necessary depending on specific contexts, but at minimum the key responsibilities for these roles should be clarified as part of global staffing strategy.
  - **Picking up the right data mining tool.** For data mining to be successful for business, models must be developed quickly and deployed cost-effectively within current operational systems and business processes. Various tools (SAS, SPSS, R, Watson, Tableaux, etc.) exist for automated model development, data integration, and model testing, and it is usually best to decide these at the global level, rather than let it be done differently for individual business intelligence projects.

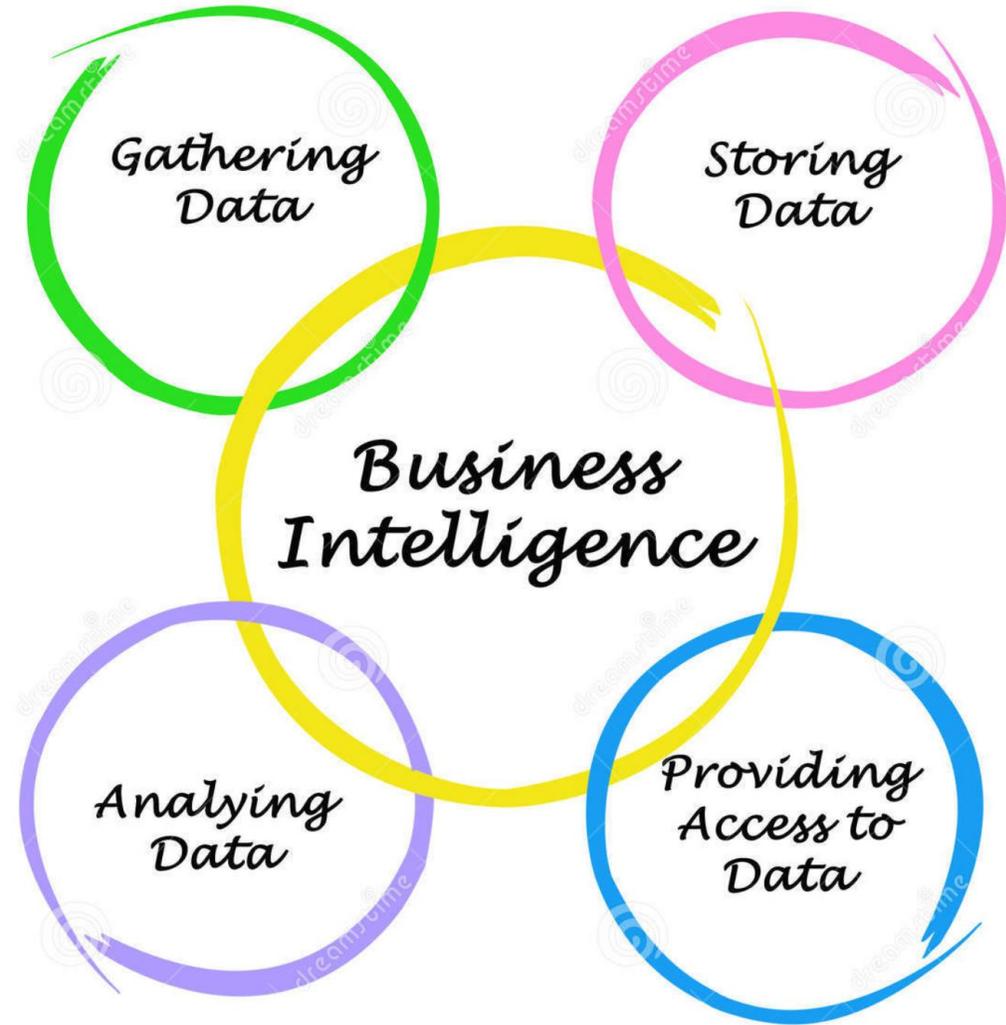


## In-class exercise

- Except for step 4, which requires competences that you will acquire later (to some extent), you should be able to work on steps 1-3
- Here is the use case: The days of having a fully stocked inventory all the time are quickly fading. Having too much of an item that isn't selling, or not enough of a popular product can be equally damaging to your bottom line. However, most companies still use the same standard method of basing future orders on historic patterns. ACE Electronics, a company selling domestic appliances, has the strategic objective of *“having the right products in the right place at the right time – as efficiently and cost-effectively as possible”*.
- Apply steps 1-3 to ACE Electronics.

# The implementation workflow of a BI project

1. **Gathering data:** what kind of data is useful for the stated objectives and how do we find these data?
2. **Storing data:** data are “dirty” and heterogeneous (images, texts, xcel tables, videos, ..), how do we process them and how do we store them?
3. **Analysing Data:** what are the right tools/algorithms to analyze the data and provide descriptive/predictive/prescriptive insight?
4. **Providing access to data:** how can users (from data analysts to top managers) access the results of the data analytic process, in a way that is useful to gain the desired insight?



# Business Intelligence Workflow

