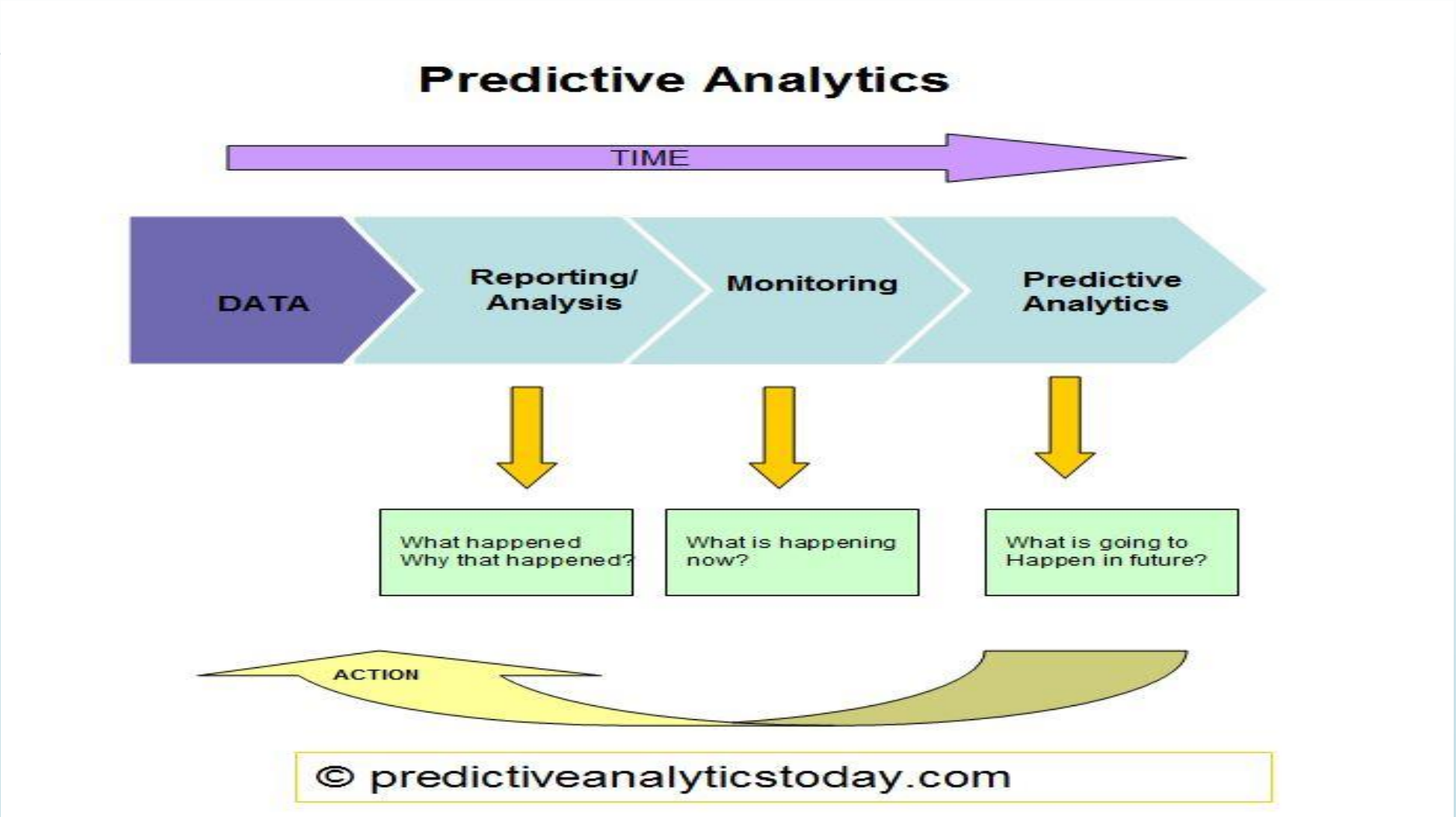
Predictive Analytics
&
Predictive Modelling

What is Predictive Modelling

- **Predictive analytics** is the branch of the advanced **analytics** which is used to make predictions about unknown future events. **Predictive analytics** uses many techniques from data mining, statistics, modeling, machine learning, and artificial intelligence to analyze current data to make predictions about future.

- **Predictive modeling** is a process used in **predictive** analytics to create a statistical **model** of future behavior. **Predictive** analytics is the area of data mining concerned with forecasting probabilities and trends.

Predictive Analytics Process



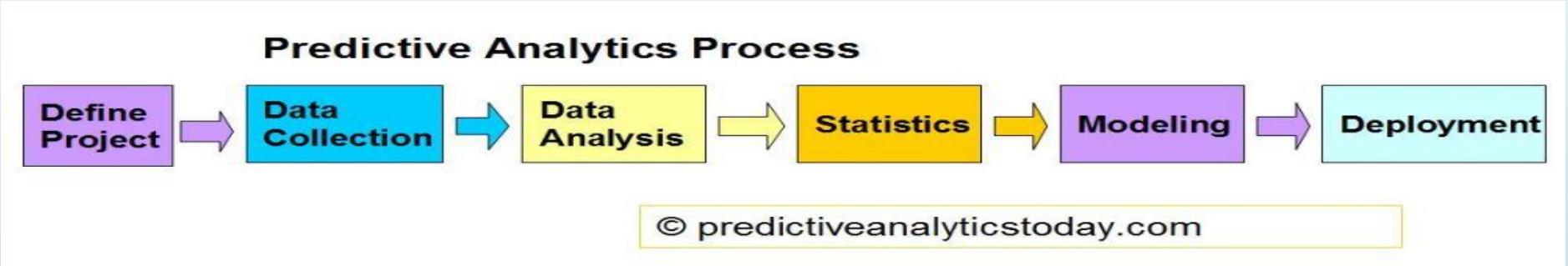
Business process and features on Predictive Modelling

- **Business process on Predicting modelling**
  - Creating the model
  - Testing the model
  - Validating the model
  - Evaluating the model

- **Features in Predicting modelling**
  - Data analysis and manipulation
  - Visualization
  - Statistics
  - Hypothesis testing

How the model work

- In predictive modeling, data is collected for the relevant predictors, a statistical model is formulated, predictions are made and the model is validated (or revised) as additional data becomes available. The model may employ a simple linear equation or a complex neural network, mapped out by sophisticated software.



How the model work(cont.)

- Here you will learn what a predictive model is, and how, by actively guiding marketing campaigns, it constitutes a key form of business intelligence. we'll take a look inside to see how a model works-

1. **Predictors Rank Your Customers to Guide Your Marketing**
2. **Combined Predictors Means Smarter Rankings**
3. **The Computer Makes Your Model from Your Customer Data**
4. **A Simple Curve Shows How Well Your Model Works**
5. **Conclusions**

Why Predictive Modelling

Nearly every business in competitive markets will eventually need to do predictive modeling to remain ahead of the curve. Predicting Modeling (also known as Predictive Analytics) is the process of automatically detecting patterns in data, then using those patterns to foretell some event. Predictive models are commonly built to predict:

- **Customer Relationship Management**
- **the chance a prospect will respond to an ad**
- **Mail recipients likely to buy**
- **when a customer is likely to churn**
- **if a person is likely to get sick**
- **Portfolio or Product Prediction**
- **Risk Management & Pricing**

Some Predictive Models

Ideally, these techniques are widely used:

- Linear regression
- Logistic regression
- Regression with regularization
- Neural networks
- Support vector machines
- Naive Bayes models
- K-nearest-neighbors classification
- Decision trees
- Ensembles of trees
- Gradient boosting

Applications of Predictive Modelling

- Analytical customer relationship management (CRM)
- Health Care
- Collection Analytics
- Cross-cell
- Fraud detection
- Risk management

❖ **Industry Applications**

Predictive modelling are used in insurance, banking, marketing, financial services, telecommunications, retail, travel, healthcare, oil & gas and other industries.

Predictive Models in Retail industry

- **Campaign Response Model** – this model predicts the likelihood that a customer responds to a specific campaign by purchasing a products solicited in the campaign. The model also predicts the amount of the purchase given response.

- Regression models
- Customer Segmentation
- Cross-Sell and Upsell
- New Product Recommendation
- Customer Retention/Loyalty/Churn
- Inventory Management

Predictive Models in Telecom industry

- Campaign analytics
- Churn modeling
- Cross-selling and up-selling
- Customer lifetime value analytics
- Customer segmentation
- Fraud analytics
- Marketing spend optimization
- Network optimization
- Price optimization
- Sales territory optimization

Predictive Analytics Software

- SAS Analytics
- R
- STATISTICA
- IBM Predictive Analytics
- MATLAB
- Minitab

Thank you