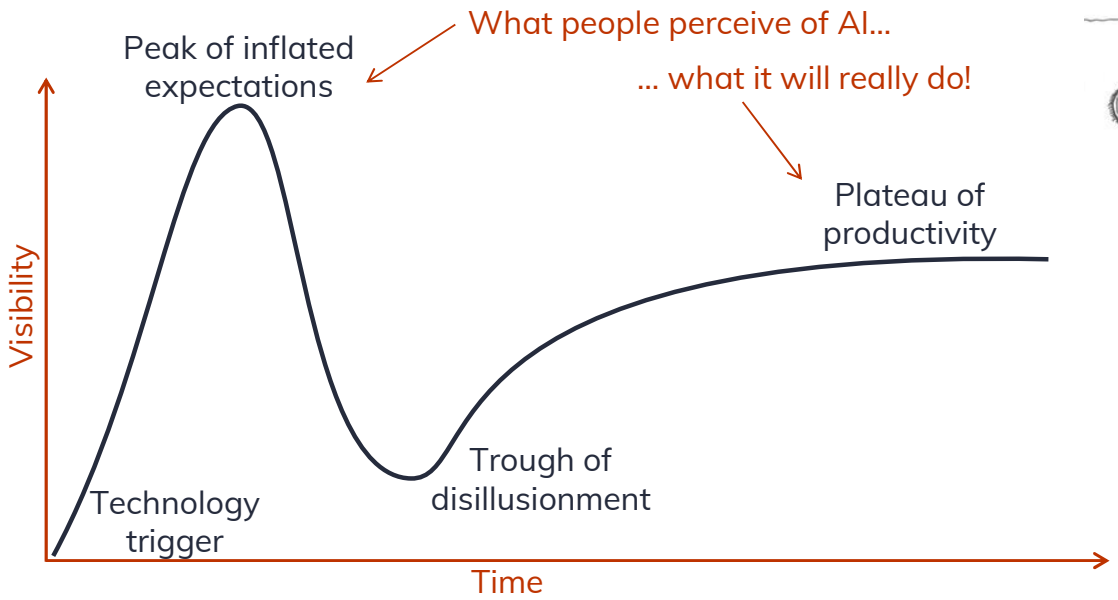
Successful Path to Artificial Intelligence

Common terms explained

Artificial intelligence	Any technique enabling computers to “decide by themselves” and to mimic human intelligence. Data science, simulation, optimization, etc.
Data science	Using modern computer capabilities and algorithms to apply manage, clean, analyze, model and predict using data; extension of traditional statistic
Machine learning	Subset of data science tools aiming at automatically discovering features and predicting from data
Deep learning	Specialized machine learning technique (neural networks with “lots” of layers = deep); natural language processing, image recognition
Data engineering	Set of techniques making possible to capture, retrieve, store in warehouses and extract data
Internet-of-things	Interconnections between data generators, warehouses, analyzers and users; all the above would be boring without it

From mysticism to productivity

≡ Technology hype cycle (from Gartner)



Reality check before starting!

- Before deploying complex things:

  - Do we have the right data vs expected information?
  - Do we have the accurate data?
  - What is the appropriate data volume to consider?
  - How will data “flow” from generators to final display?
  - Is the pipeline there or will humans be the pipeline?

  - Do we have subject matter experts to ensure the success?
  - Just ask: why do we want AI, ML, DS, etc.? What is the need for it?

First-things-first roadmap to AI

Descriptive Analytics

Current state assessment

- How does it work today?
- What is the performance?
- What data is available?
- What data is missing?
- What is the future state?

Process mapping
Exploratory data analysis
Gage R&R and process capability
Performance metrics deployment
Design functional specifications

Predictive Analytics

Computerized scenario evaluation

- Forecast what, where and when
- Dig performance data from DB
- Extrapolate from orders & status
- Predict future system status
- Assess predictions uncertainty

Statistical programming
Datamining and algorithms
Machine learning
Forecasting techniques
Monte Carlo simulation

Prescriptive Analytics

Integrated advisory systems

- Repeated scenario evaluations
- Automated “what if” processors
- Reduce resources idle time
- Reduce delivery times
- Recommend lowest cost solution

Discrete event simulation
Knowledge-based heuristics
Production planning and scheduling
Optimization under constraints

People-driven decision process → Data-driven decision tools → Model-driven intelligent systems

Key points of our approach

≡ Sequential (iterative) transformation steps

- Avoid jumping from nothing to full-scale AI, this always fail
- Prevent from disruptive interventions that will break the system
- Define progressive changes, let people adapt to new systems

≡ Ensure productivity and efficiency gains at all stages

- Promote auto-financing as much as possible
- Split project in targeted bite-size high ROI phases
- Put it place the proper KPIs to quantity benefits

≡ Fully customized approach

- Generic solutions exist on the market, but generic clients do not exist!
- We adapt existing solutions in collaboration with the client

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Adapted approach 

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For more information, you can contact:

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