

**TATA STEEL**



# Introducing KNIME at Tata Steel in Europe

The best way to start with data analytics is to  
start with data analytics

**Together we make the difference**

# Introduction to the Tata group

## One of the world's fastest-growing and most reputable corporations

- Spans seven major industry sectors
- Operations in more than 150 countries and has almost 720,000 employees
- Total revenues of more than US \$113 billion
- Tata Sons 66% owned by philanthropic trusts
- £170 million invested in community projects last year

## Global ranking of Tata Group companies

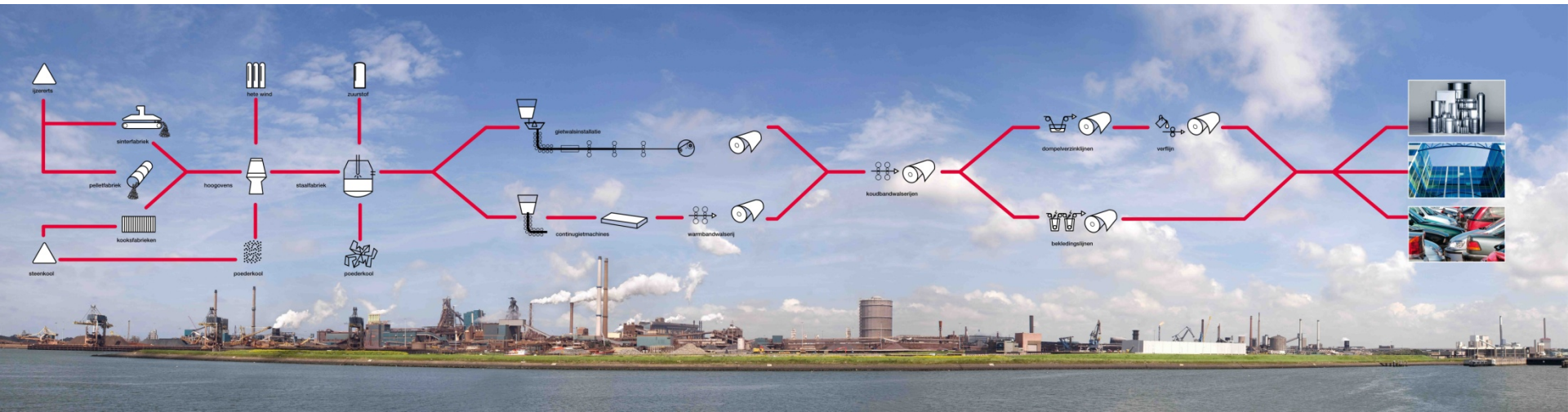
- **1<sup>st</sup> international wholesale voice provider**
  - Tata Communications
- **2<sup>nd</sup> largest tea company**
  - Tata Global Beverages
- **2<sup>nd</sup> largest producer of soda ash**
  - Tata Chemicals
- **Top 11<sup>th</sup> steelmaker\***
  - **Tata Steel**

(\*by World Steel Association)
- **Top 10 commercial vehicle manufacturer**
  - Tata Motors





# Manufacturing process – Data is Key



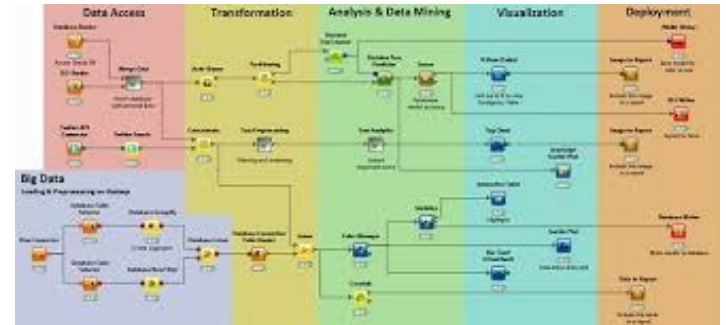
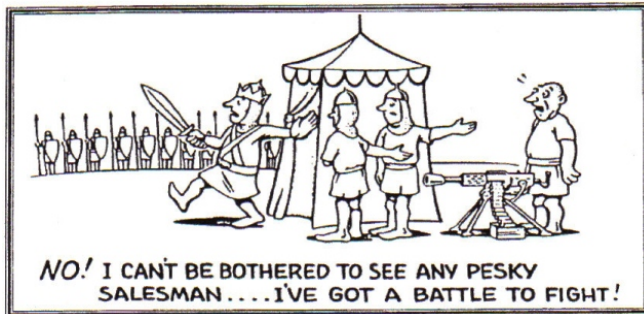
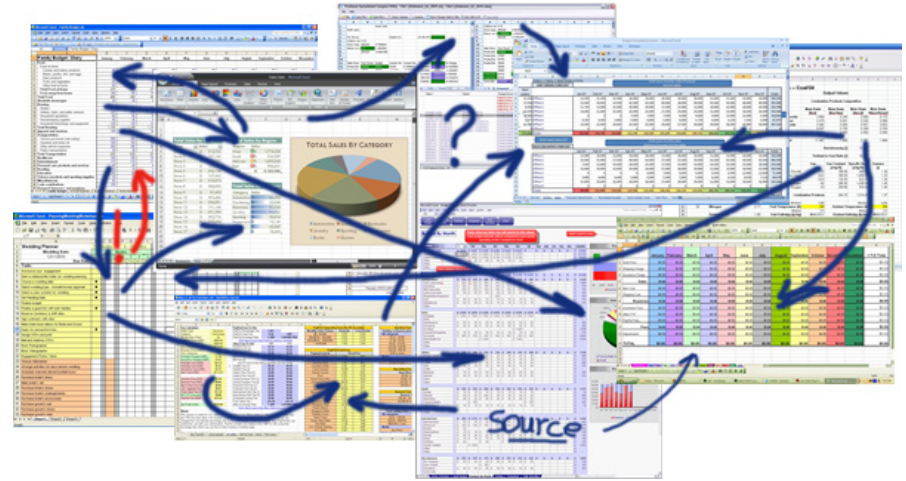
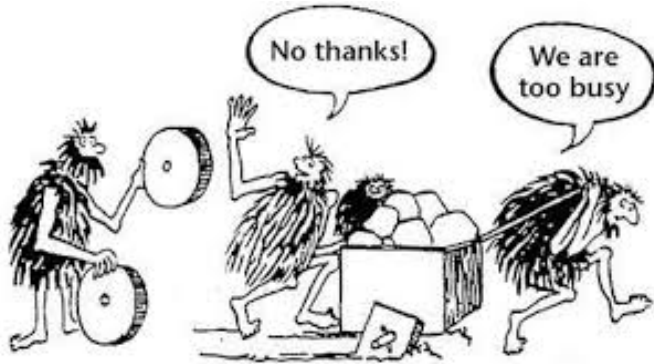
**Raw materials - Iron - Steelmaking - Casting - Rolling - Coating**



# Internal Audit & Assurance at Tata Steel Europe

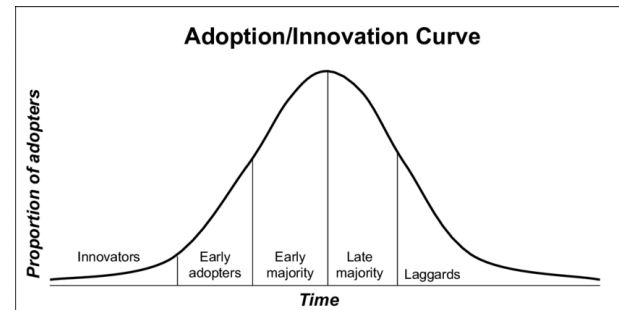
- Department with 22 auditors
- Located IJmuiden (NL) and Port Talbot (UK)
- Performing general, operational and IT audits
- Two main hubs and several smaller sites
  
- Data analysis is becoming much more important to:
  - Test and validate controls
  - Identify anomalies and trends
  - Quantify potential risks and savings
  
- KNIME has helped us to make our data analysis more repeatable and reusable
  
- Also support business to use the available data and enhance their control procedures

# Why KNIME for data analysis? We are happy with Excel



# How to get started with data analytics and KNIME

- After the introduction with KNIME I have:
    - Practiced with old Excel analysis as example
    - Experimented with staff from several departments
      - Replaced some labour intensive & error prone reports prepared with Excel
  - Held presentation and workshops for various departments
    - Steep learning curve
    - Takes time and effort
    - Pilots projects often successful
  - Supported colleagues to use data analytics and KNIME for their audits and other use-cases
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- Learned to focus on the Early adopters and accept that not everyone needs to become a data analyst and start using KNIME.



# Some examples of data analysis using KNIME

## Contract Management: Industrial Cleaning Services

- Employees with very long working hours and weeks breaching working time regulations
- Double charged services
- Incorrect tariffs and surcharges



## Sales Price Analysis

- Incorrect priced invoices and orders

## Product Master Data (e.g. dimensions, tolerances, mechanical & chemical properties)

Inconsistencies identified between:

- Customer orders
- Sale order data / order confirmations
- Product Master data
- Industry Norms
- Test Instructions
- Product Certificates

Steel Designation				Chemical Composition - weight % (cast analysis)									Mechanical properties			
Grade	Wr. N°	AISI - SAE	EN reference norm	C	Si	Mn	P max	S max	Cr	Mo max	V max	Ni	annealed (+A) or (+LC)	Rm (N/mm2)	A % min	HRB
75 Cr 1	1.2003		10132-4	0.70-0.80	0.25-0.50	0.60-0.80	0.025	0.025	0.30-0.40	-	-	-	880	13	94 max	
51Cr V 4	1.8159	6150	10132-4	0.47-0.55	0.40 max	0.70-1.10	0.025	0.025	0.90-1.20	0.10	0.10-0.25	0.40 max	700	13	94 max	
42 Cr Mo 4	1.7225	4142	10132-3	0.38-0.45	0.40 max	0.60-0.90	0.035	0.035	0.90-1.20	0.15-0.30	-	-	620	15	90 max	
80 Cr V 2	1.2235		10132-4	0.75-0.85	0.15-0.35	0.30-0.50	0.025	0.025	0.40-0.60	0.10	0.15-0.25	0.40 max	720	12	95 max	
75 Ni 8	1.5634		10132-4	0.72-0.78	0.15-0.35	0.30-0.50	0.025	0.025	< 0.15	0.10	-	1.80-2.10	680	13	93 max	
102 Cr 6	1.2067	52100	10132-4	0.95-1.10	0.15-0.35	0.20-0.40	0.025	0.025	1.35-1.60	0.10	-	0.40 max	750	11	97 max	
20 Mn B 5	1.5503		10083	0.17-0.23	0.40 max	1.10-1.40	0.035	0.04	-	-	-	<b>B 0.0008-0.0050</b>	460	22	76 max	



# Questions

