Creating value using "Risk Management"

Richard Cornielje - KYOS
cornielje@kyos.com

What have we seen thusfar….

- Clingendael (Marcel) : Geopolitics & markets

- BAVARIA (Han) : Combine gut feeling with analysis & experience

- TATA (Jaap)   : Procurement + Sales … Underlying Exposure

- KPMG (Frans)   : Hedging….Y/N

- RABO (Arjan)   : How to hedge

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Where does KYOS adds value to the chain?

Physical flows, contracts & market prices

Consistent approach on multiple raw materials & products sold

Financial impact of changed conditions
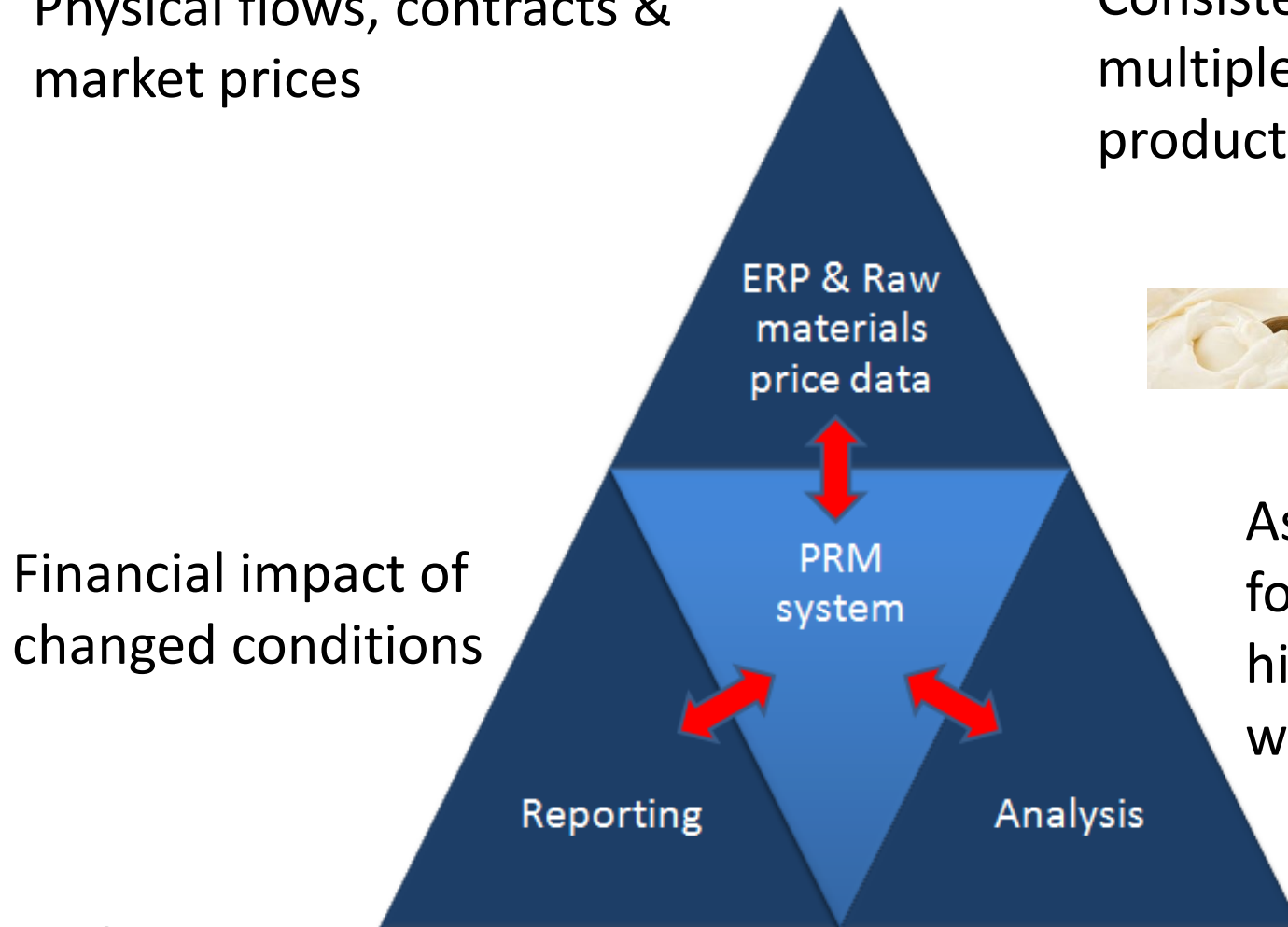
Assist you to look forward as …….. hindsight is a wonderfull thing

ERP & Raw materials price data

PRM system

Reporting

Analysis

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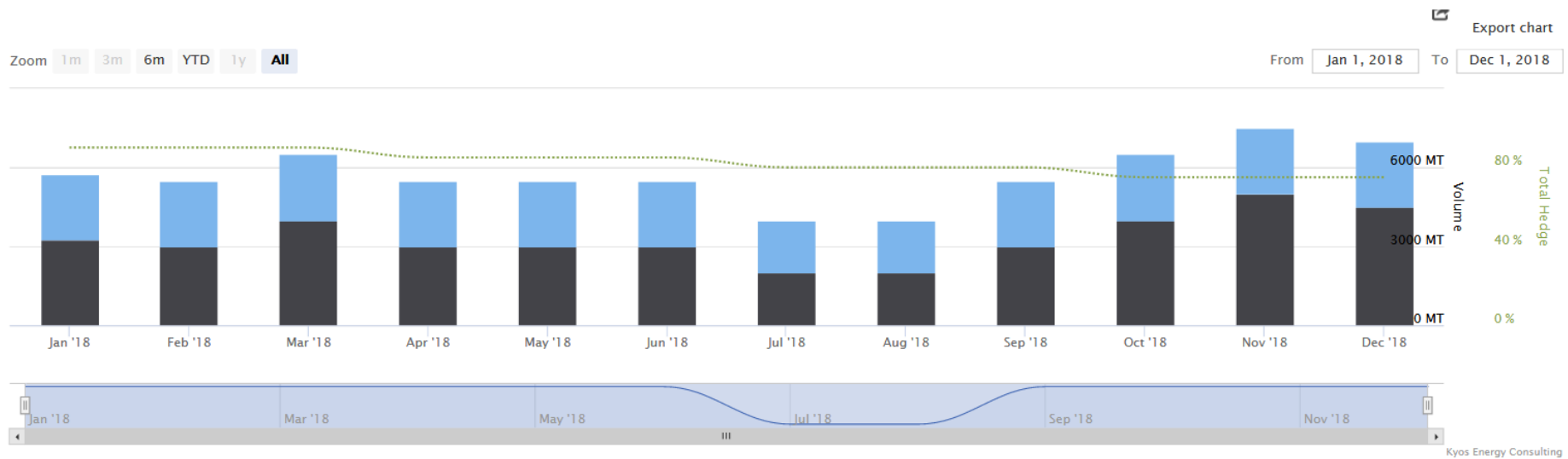# Portfolio & Risk Management in practice

- stay in "full" control

Manage budgets - consumption/production

- Forecasted consumption per Plant
- Hedging strategy per Commodity

		Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018
Plant Location K / BU 3	Expected [MT]	2 500	2 500	2 500	2 500	2 500	2 500	2 000	2 000	2 500	2 500	2 500	2 500
	Hedge [%]	90.00	90.00	90.00	85.00	85.00	85.00	80.00	80.00	80.00	75.00	75.00	75.00
Plant Location F / BU 1	Expected [MT]	3 250	3 000	4 000	3 000	3 000	3 000	2 000	2 000	3 000	4 000	5 000	4 500
	Hedge [%]	90.00	90.00	90.00	85.00	85.00	85.00	80.00	80.00	80.00	75.00	75.00	75.00
TOTAL	Expected [MT]	5 750	5 500	6 500	5 500	5 500	5 500	4 000	4 000	5 500	6 500	7 500	7 000
	Hedge [%]	90.00	90.00	90.00	85.00	85.00	85.00	80.00	80.00	80.00	75.00	75.00	75.00

Store contracts - buy & sell - physical/financial

Date	Legal entity	Counterparty	Period	Commodity	B/S	Volume	FX	Type
2017-01-03	Butter Cookies	RABOBANK	Mar'18 - Mar'18	Sugar (11)	sell	-17636976 Lbs	USD cent	fin | swap
2017-04-03	Dredging	Total	Jul'18 - Dec'20	Gasoil 0.1 percent CIF MED	buy	53850 MT	USD	phys | indexed
2017-03-29	Waste Nederland B.V.	Steam consumer	Jan'18 - Dec'18	Steam Formula NL	sell	-73000 MT	EUR	phys | fixed
2016-12-14	Butter Cookies	Sugar supplier I	Jan'18 - May'18	Sugar	buy	30000 MT	USD	phys | indexed
2017-02-01	Tyre Europe	Chemical Company	Jan'18 - Dec'18	TRS20 (USDcnt_KG)	buy	10200000 Kg	USD cent	phys | indexed
2017-03-13	Production BV (NL)	Uniper	Jan'17 - Dec'18	Dutch power	buy	87600 MWh	EUR	phys | fixed
2017-03-07	Chemical (NL)	Supplier I	Jan'17 - Dec'17	Naphtha - CIF NWE	buy	48000 MT	USD	phys | indexed
2017-02-17	Tyre Europe	Rod Wire Supplier	Feb'17 - Aug'17	Wire rod	buy	24500 MT	USD	phys | indexed
2017-02-08	Glass Company (DE)	European Brewery	Jan'17 - Dec'17	Bottle Amber 300gr	sell	-21600 MT	EUR	phys | indexed
2016-05-03	Brewery Holland	Ball Packaging	Jan'17 - Dec'17	Can 33cl	buy	500000 Pcs (1,000*)	EUR	phys | indexed

- Partially priced – fully priced
- Multiple indexes

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Store all market price components

Price formula

forward curve	settlement price	weight	constant	commodity		
				average	lag	validity
Dry Whey (Forward)	Dry Whey (Spot)	1.60	0.00	1	0	1
Class III Milk (Forward)	Class III Milk (Spot)	0.03	15	1	0	1
Corn (Forward)	Corn (Spot)	1.12	2.00	1	0	1
Sugar #11 (Forward)	Sugar #11 (Spot)	0.022	1.5	1	0	1

Add a formula term

"Weight" of "Underlying"

Fixed terms

⦿ constant
◯ monthly

fixed value	currency	
22.50	USD	Delete

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Automated analytics on all raw materials

TSR Rubber $cnt/kg	PRICE	Volatility	
Max (10 years)	575,00	Max	167,86%
Min (10 years)	102,00	Min	7,05%
AVG	231,83	AVG	28,76%
Current $cnt/KG	208,40	Current	35,84%

TSR Rubber EURcnt/kg	PRICE		Volatility	
Max (10 years)	427,83	Max	167,12%
Min (10 years)	76,46	Min	9,95%
AVG	176,51	AVG	26,97%
Current EURcnt/KG	196,44	Current	38,56%

KYOS analytics…..Your advantage

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Automated analytics on all raw materials
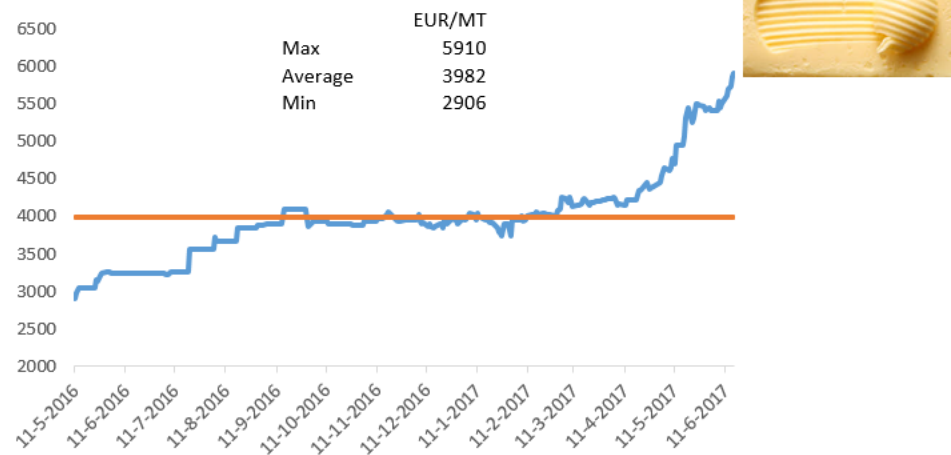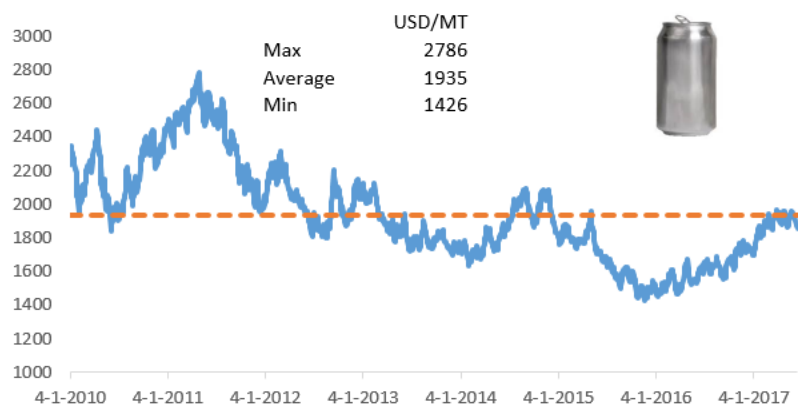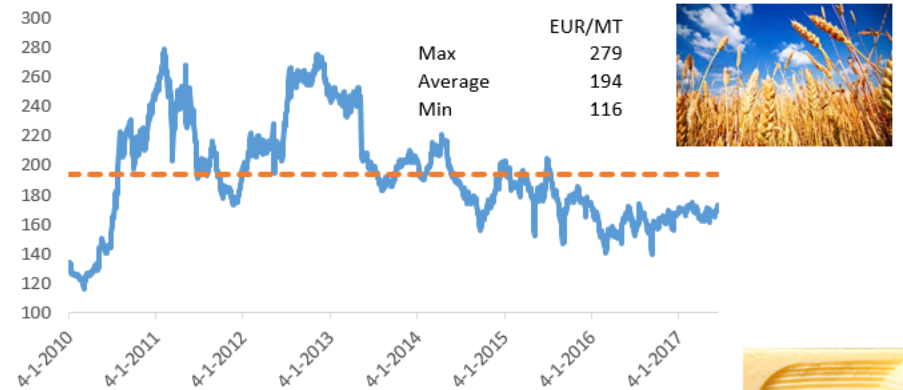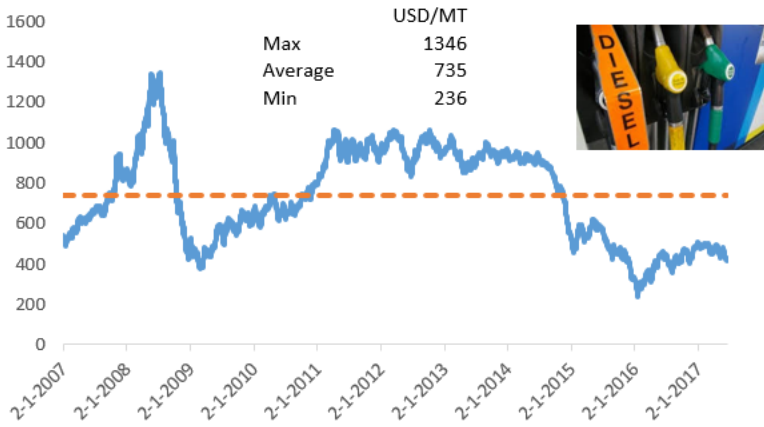
KYOS analytics…..Your advantage

Report : plan – act – SHARE – check

- **Daily – Monthly**
  - **Positions, underlying & cashflows**
  - **Mark-to-market (MtM = contracted prices vs "market")**
  - **Value-at-Risk (VaR)**

- Monthly
  - What-If "stress testing" (also ad hoc)
  - Budget versus actual / forecasts

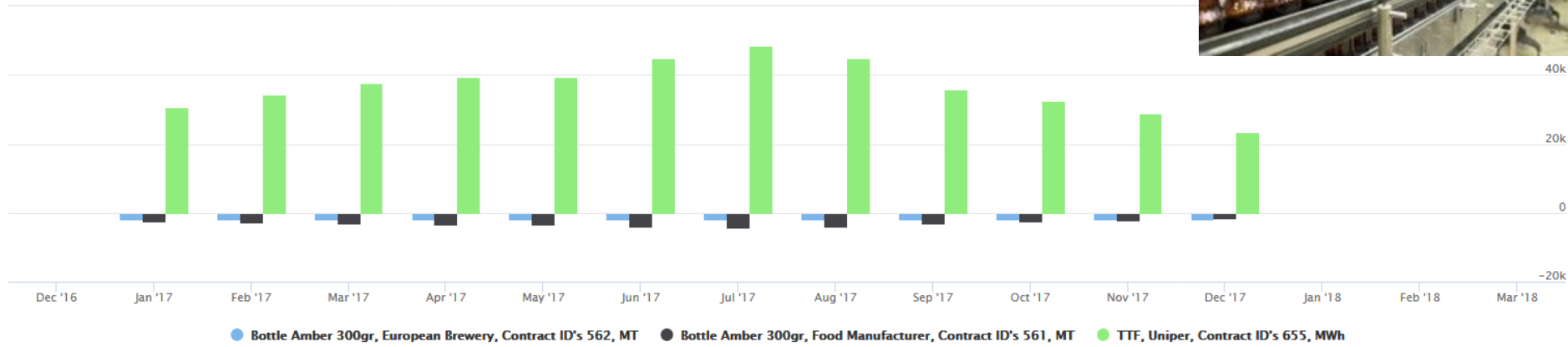- Quarterly
  - Cashflow-at-Risk

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Insight in contracted volumes (Glass producer)

| Positions | Positions + underlying | Cash flow | Average price | Cash flow + costs | Average price + costs | Mark to market |

Positions

Legend: ● Bottle Amber 300gr, European Brewery, Contract ID's 562, MT ● Bottle Amber 300gr, Food Manufacturer, Contract ID's 561, MT ● TTF, Uniper, Contract ID's 655, MWh

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Contracts

					2016	2017												2018		
				Tot	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Bottle Amber 300gr	European Brewery	Contract ID's 562	MT	-21 600	0	-1 800	-1 800	-1 800	-1 800	-1 800	-1 800	-1 800	-1 800	-1 800	-1 800	-1 800	-1 800	0	0	0
	Food Manufacturer	Contract ID's 561	MT	-37 000	0	-2 400	-2 800	-3 200	-3 400	-3 400	-4 000	-4 400	-4 000	-3 000	-2 600	-2 200	-1 600	0	0	0
TTF	Uniper	Contract ID's 655	MWh	441 000	0	30 600	34 200	37 800	39 600	39 600	45 000	48 600	45 000	36 000	32 400	28 800	23 400	0	0	0

Sold to →

European Brewery	Bottle Amber 300gr	MT	-21 600
Food Manufacturer	Bottle Amber 300gr	MT	-37 000
Uniper	TTF	MWh	441 000

Bought from….
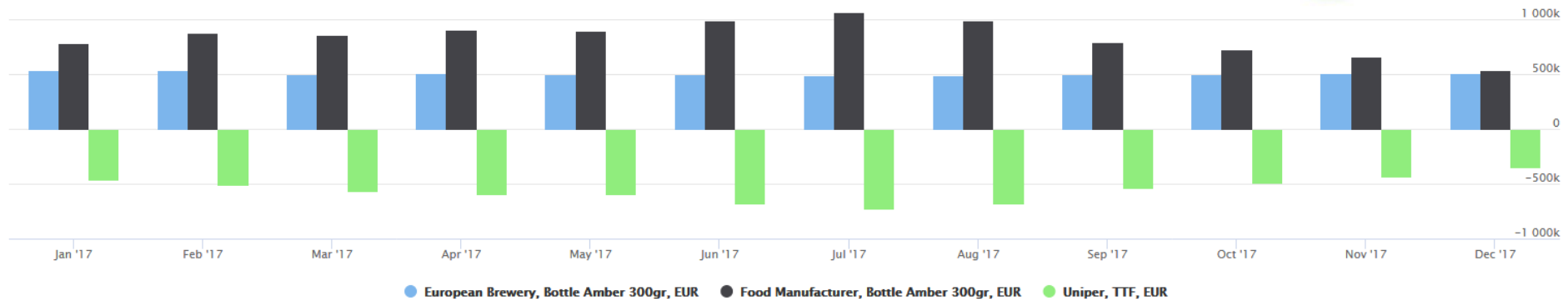
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Leading to insight in contracted cash flows

Positions   Positions + underlying   Cash flow   Average price   **Cash flow + costs**   Average price + costs   Mark to market

Cash flow incl. additional costs

Export chart

European Brewery, Bottle Amber 300gr, EUR   Food Manufacturer, Bottle Amber 300gr, EUR   Uniper, TTF, EUR

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			Tot	2017											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
European Brewery	Bottle Amber 300gr	EUR	6 094 399	541 397	539 514	504 654	505 891	502 611	496 763	494 295	494 880	496 770	500 235	507 615	509 775
Food Manufacturer	Bottle Amber 300gr	EUR	10 094 424	784 272	876 378	861 452	907 000	895 848	995 252	1 063 918	987 720	796 460	725 941	661 263	538 920
Uniper	TTF	EUR	-6 615 000	-459 000	-513 000	-567 000	-594 000	-594 000	-675 000	-729 000	-675 000	-540 000	-486 000	-432 000	-351 000
Total		EUR	9 573 823	866 668	902 892	799 106	818 891	804 460	817 016	829 213	807 600	753 230	740 176	736 878	697 695

Tender   Finance   Transparency

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Store all market price components

Can contract 33 cl

Price formula

Forward curve	settlement price	weight	constant	Commodity		
				Average	lag	validity
Aluminium LME (Forward)	Aluminium EUR spot	0.0099	0	1	0	1

Add a formula term

Multiple cans (15cl, 22cl…..)
Stoppers
Production choice: Steel or Aluminium

Exposure in 2018:   500 million 33cl cans

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Visualize "underlying" of Aluminium cans
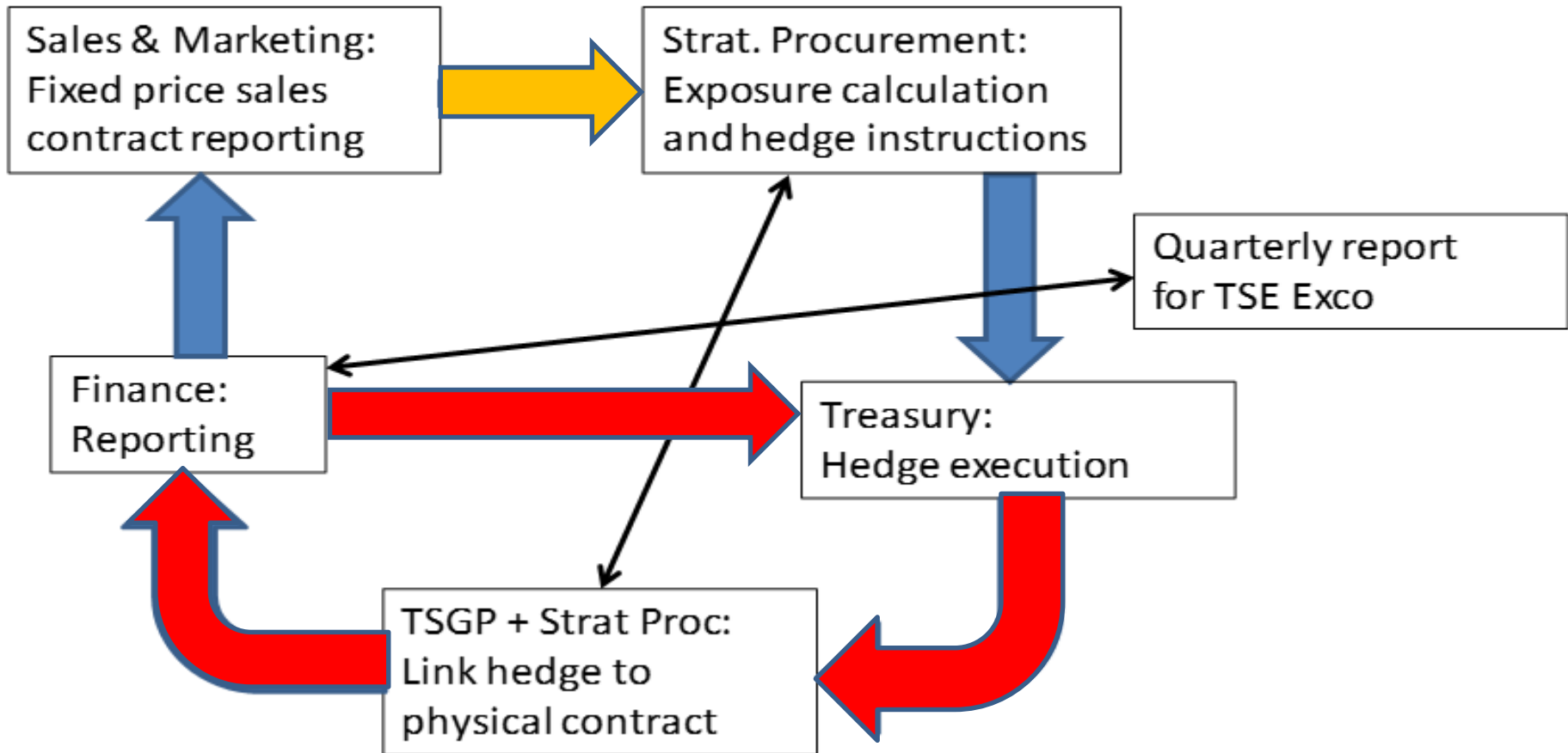

Positions   Positions + underlying   Cash flow   Average price   Cash flow + costs   Average price + costs   Mark to market

Contract comm		Underlying comm			Tot
Can 33cl	Contract	Can 33cl	Ball Packaging	Pcs (1,000*)	500 000
	Underlying	Aluminium	Ball Packaging	MT	-4 950

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Flow chart commodity hedging

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Connect hedges to physical contracts

| General | Volume | Pricing | Take-or-Pay | **Finance** | Price Fixing | Documentation |

Basic Contract Information

Edit this information Back to overview Save contract

legal entity	Brewery Holland	buy/sell	buy	price fixing	no
counterparty	RABOBANK	commodity	Aluminium	id/confirm	488 / unconfirmed
contract period	2018-07-01 — 2018-12-31	volume & unit	600 MT	currency	USD
book		physical/financial	financial	contract type	fixed

Settlement

Number of days	20
Before or after delivery?	after
Settlement frequency	monthly

Rabobank

Underlying exposure is now covered by financial hedge

Hedge Accounting

This contract is linked to physical contract:

| Entity	ID	Counterparty	Period	B/S	Commodity	Volume	Currency
Brewery Holland	656	Ball Packaging	2018-01-01 — 2018-12-31	buy	Can 33cl	500 000	EUR

Select another contract   Unlink contract

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Reporting : Mark-to-market (MtM)

MtM = contracted fixed price vs "current market price"

Positions	Positions + underlying	Cash flow	Average price	Cash flow + costs	Average price + costs	Mark to market

Mark to market
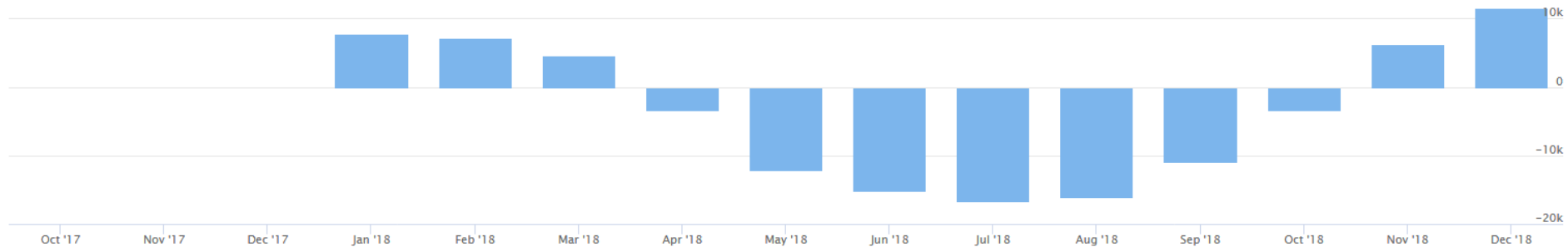
		2017			2018											
	Tot	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
EUR	-40 142	0	0	0	7 827	7 177	4 666	-3 326	-12 142	-15 134	-16 680	-16 070	-10 915	-3 323	6 293	11 487
EUR	-40 142	0	0	0	7 827	7 177	4 666	-3 326	-12 142	-15 134	-16 680	-16 070	-10 915	-3 323	6 293	11 487

Reporting a short risk …. using statistics

VaR :   5,000 MT   Aluminium

Annualized Volatility   13%

* Underlying Price   * 1,875 USD/MT

* Confidence-Level   * 1.645

95% certainty

* √ Holding Period   * √ days/220

10 day VaR   USD 425.000

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From aluminium to natural gas

VaR : 500,000 MWh   Natural Gas

Annualized Volatility   20%

* Underlying Price   * 15 EUR/MWh

* Confidence-Level   * 1.645

> 95% certainty

* √ Holding Period   * √ days/220

10 day VaR   EUR 525.000

- Daily - Monthly
  - Positions and cashflows
  - Mark-to-market (MtM = contracted prices vs "market")
  - Value-at-Risk (VaR)

- **Monthly**
  - **What-If   "stress testing" (also ad hoc)**
  - **Budget versus actual / forecasts**

- Quarterly
  - Cashflow-at-Risk

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Regular "stress tests" will help you to….

React **adequately** and well **prepared** if …

- sales will change …

- supplier cannot deliver …

- market prices move a "wrong" direction …

- you made a mistake (oops) …..

Commonly used = stress testing
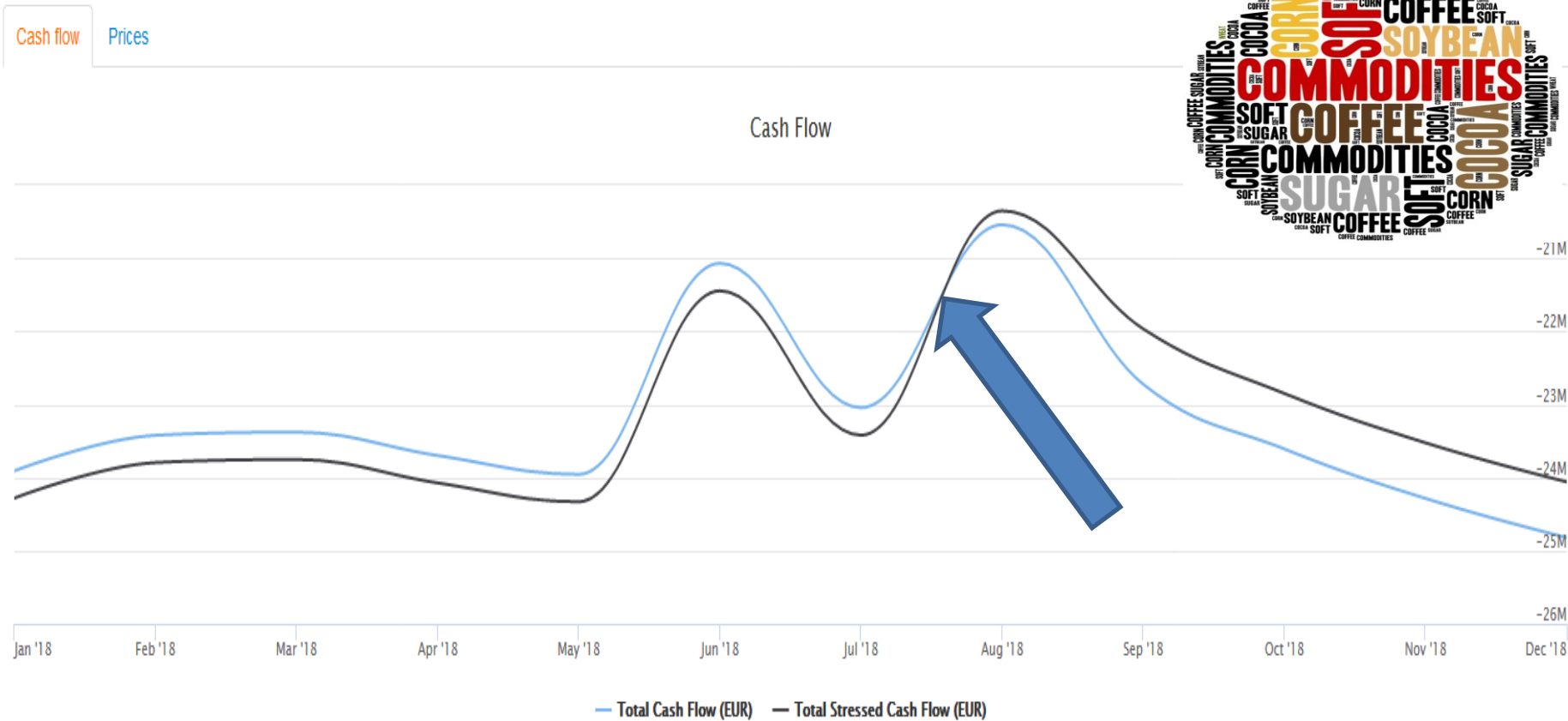
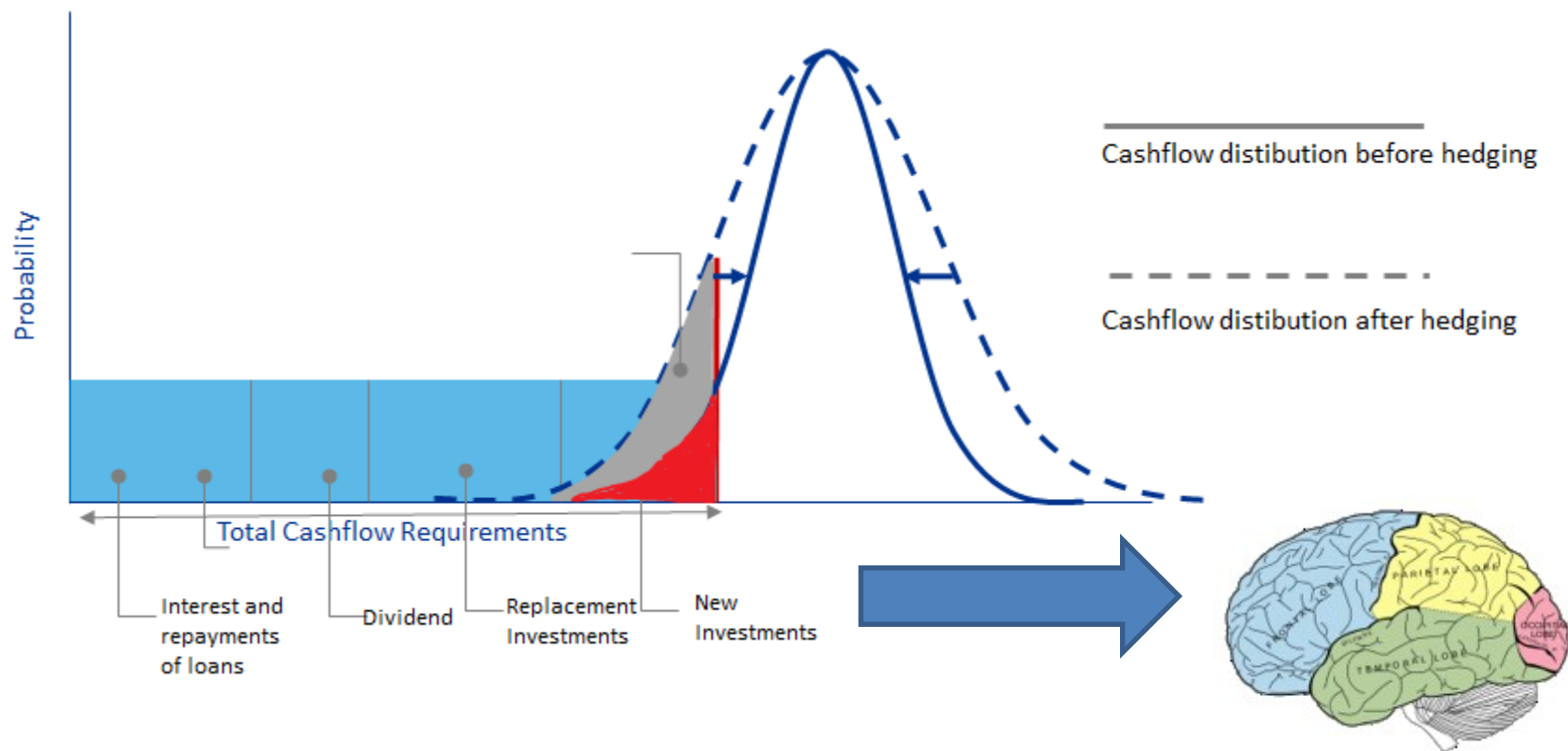
What happens if prices fall or rise

Test your strategy

Hedge strategy

Physical hedges   **Financial hedges**

Open position:

To be hedged
To be sourced

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Horizon & tools for risk management

- Daily - Monthly
  - Positions, underlying & cashflows
  - Mark-to-market (MtM = contracted prices vs "market")
  - Value-at-Risk (VaR)

- Monthly
  - What-If "stress testing" (also ad hoc)
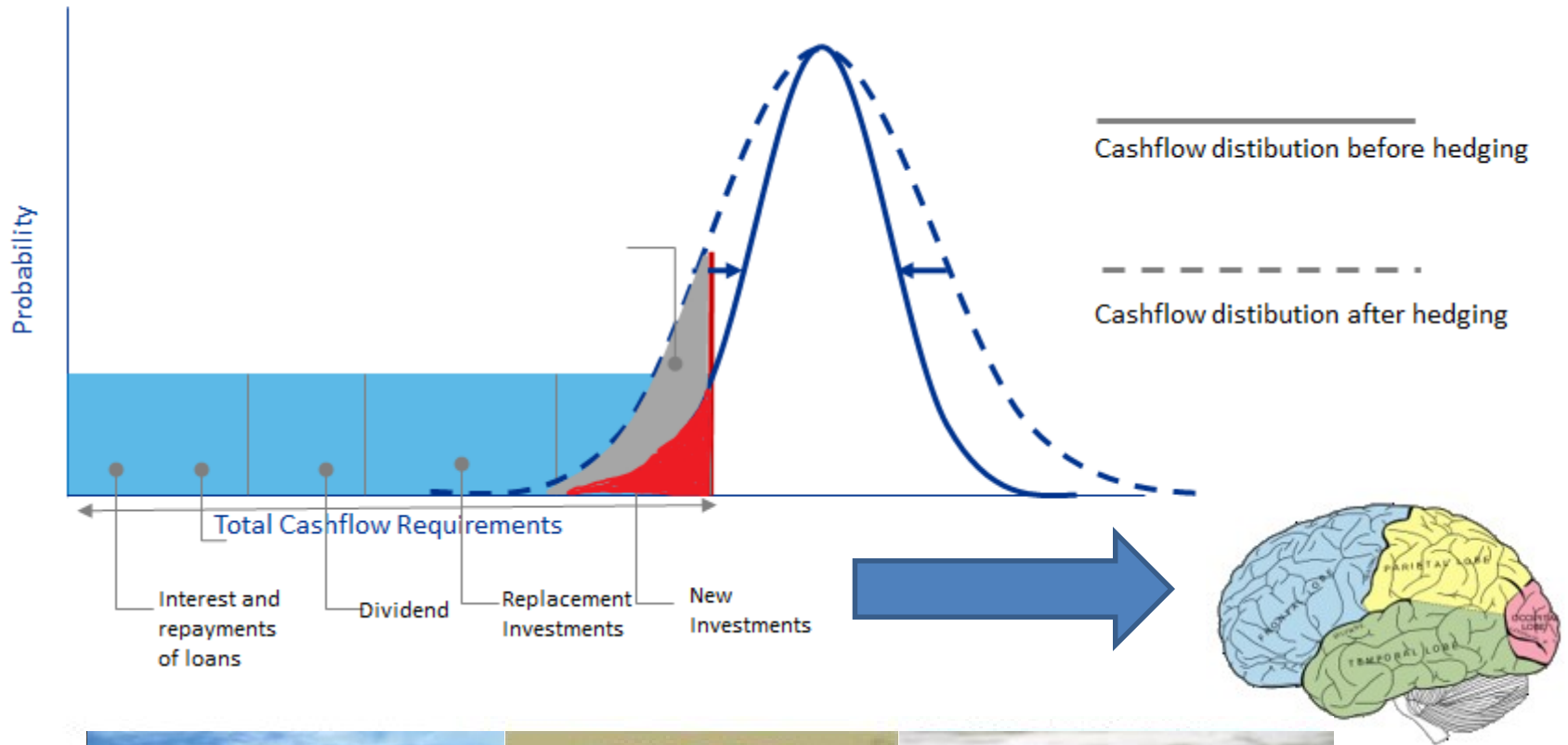 - Budget versus actual / forecasts

- **Quarterly**
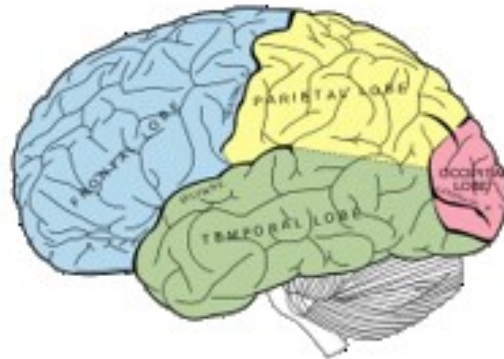 - **Cashflow-at-Risk**

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KPMG: Risks before & after hedging

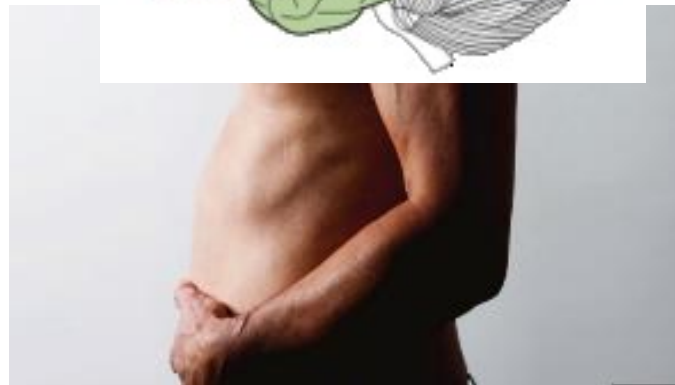Case: 5,000 MT Aluminium – Delivery during 2018

Cashflow distibution before hedging

Cashflow distibution after hedging

Probability

Total Cashflow Requirements

Interest and repayments of loans

Dividend

Replacement Investments

New Investments

Translate experience into trusted execution

Brains   **Experience**

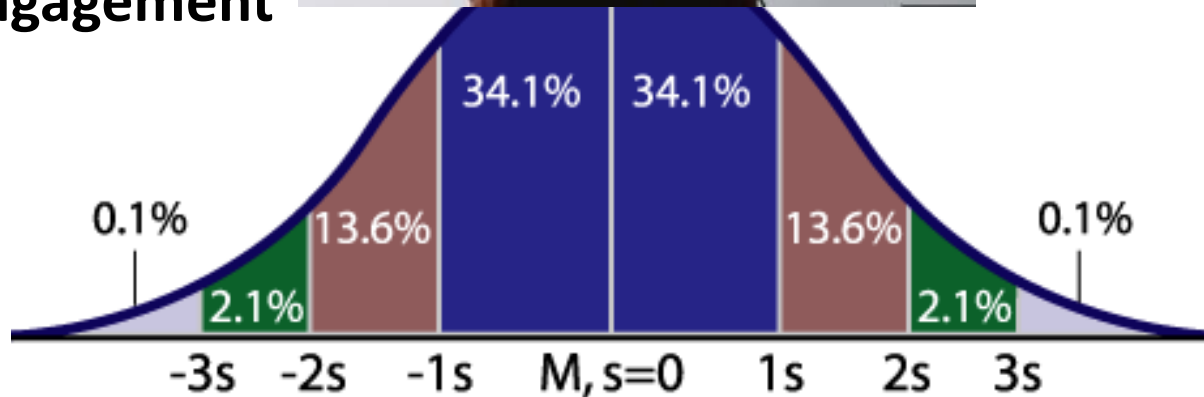**Ideas**   **Knowledge**

Engagement   **Execution**

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Translate risks in EUR

Contracts

Underlying comm			Tot
Aluminium	Underlying	MT	-4 950
Can 33cl	Contract	Pcs (1,000*)	500 000

We calculated that a 10 day VaR is approximately USD 425,000

What range can be expected for a longer period such as 2018 ?

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Earnings at Risk | Cash-flow at Risk | Volumes at Risk

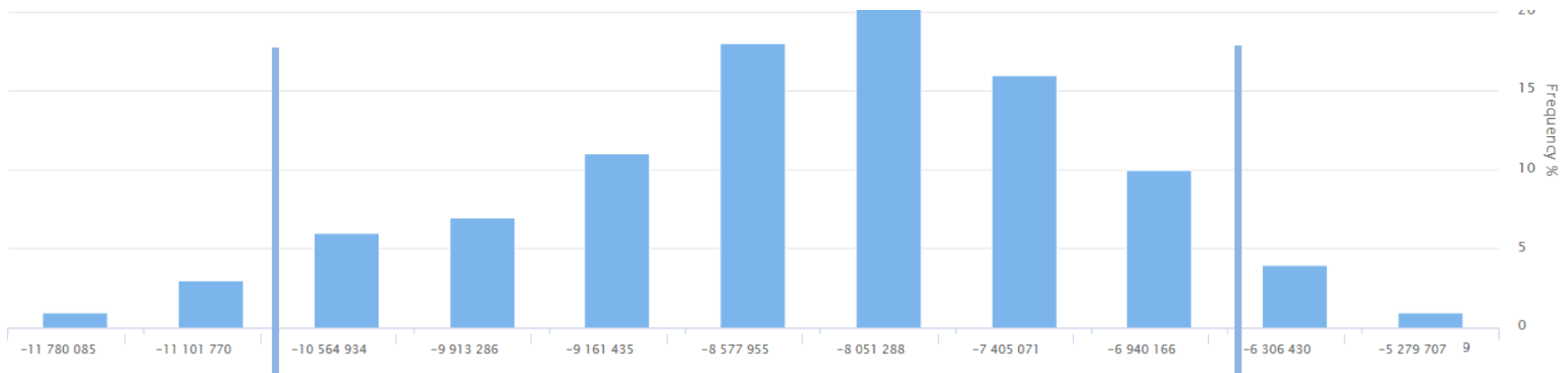| Cash-flow at Risk Summary	Currency	95% at Risk
Total	EUR	2 676 818

Result: Uncertainty is translated into a bandwith in **EUR**
Improved cash flow forecast

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Realized business values

- Up-to-date insight in positions, cashflows and risks

- Improved reliability, consistency & transparancy

- Procurement - Sales - Finance & Treasury

- Uncertainty translated into EUR

- Prepared for the future

THE KEY IS NOT TO PREDICT THE FUTURE, BUT TO BE PREPARED FOR THE FUTURE

PERICLES, 495 – 429 V.CHR.

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Cyriel de Jong - Hans van Dijken - Richard Cornielje

KYOS
Nieuwe gracht 49
2011 ND Haarlem   +31 (0)23 5510221
www.kyos.com   cornielje@kyos.com