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ABOUT UNIVERSITY TRADING CHALLENGE

The University Trading Challenge was originally envisioned in late 2010. We were aware of a few competitions targeting the graduating students seeking employment in the financial and capital markets. A couple of them were good, but targeted towards “the quant” or were so difficult as to what they were attempting to achieve that no one could understand them, the rest of the competitions were (at best) so-so.

We were asking each other: “so where are the competitions for the bulk of those seeking careers in the financial markets? Where are the competitions that would allow for graduating students to show-case their talents? Where are the programs that allowed for different universities to highlight their unique academic programs?”

In response to those questions, we created the University Trading Challenge.

UNIVERSITY TRADING CHALLENGE STRATEGY

Our goal is to be the preeminent provider of student based competitions for graduate and undergraduate University students seeking careers in the Financial and Wealth industries. Our overall strategy is to compete in each relevant geographic market, using our core competencies in the development and delivery of simulation platforms to advance the understanding of students of the scope and breathe of the financial markets. We believe that we have the capacity and global reach to deliver these student competitions worldwide and delivering value to those institutions that seek to reach these influential future leaders.

UNIVERSITY TRADING CHALLENGE VALUES

University Orientation: We strive to...

- Embodied our programs to always meet our ACE principles: Achieving Competitive Excellence
- Provide tools that will allow for students to familiarize them with order-driven markets
- Allow students to understand the liquidity of markets and the impact of trading costs
- Provide a realistic interface and environment for understanding Sales & Trading, Portfolio Management and Construction, as well as the Risk impacts on markets from the news.
- To provide a simulated market platform that measures the Trader analytics’ and metrics that govern the risk/reward of Trading and Portfolio Management

Risk Taking: We strive to...

- Foster innovation and creative thinking for students looking at careers in the financial markets
- Provide a safe environment to allow these high-performing students to explore alternative strategies
- Give student the ability to learn from their successes and mistakes
- Encourage and reward informed risk taking by the participating students and universities

Results Oriented: We strive to...

- To provide a simulated market platform that measures the Trader with Analytics and Metrics that govern the risk/reward of Trading and Portfolio Management
- Provide communication and presentation opportunities that simulate the real financial markets

UNIVERSITY TRADING CHALLENGE IS A BRAND OF CAPITALWAVE INC.

CapitalWave Inc. is committed to “Developing Technology Enabled Learning Simulations” for both commercial and investment banks, corporate treasuries, other financial institutions and Universities.

Delivering solutions is different from delivering programs or courses. We work hard to insure our programs are applicable, relevant and engaging. We expect that those who use our simulations walk away with something that is applicable to their jobs today. We will leave the ‘educationally interesting programs’ but lacking relevancy to other development firms.

BENEFITS TO PARTICIPANTS / STUDENTS

Programs like ours show students new ways of thinking about things while their minds are most open. Most students from the participating universities' finance and economic programs go on to work at major investment banking firms in London and New York. Many of them take on roles directly involving trading and hedging decisions. Even graduates who go on to work on the corporate side influence trading decisions.

As a student participant in the UTC, you will:

- Feel a real sense of daily life as a trader
- Sharpen your financial acumen
- Experience the true competition of the finance world
- Demonstrate your financial skills
- Meet and interact with students from other universities
- Enjoy unique learning opportunities during a fun and memorable event

COMPETITION RULES

1) Who is eligible to Compete

Both graduate as well as high potential undergraduate students.

2) Registration

We are currently in the phase of registration. University Team Leaders can fill out the registration form to reserve a spot for a team from their institution.

They must be students of an accredited university, but they can be in any program. (MBA, Undergrad, Masters, etc.)

3) Team Compositions

Teams can be comprised anyway that students and faculty organize. For example, a team may be comprised of just undergraduate students and another team of graduate students. A Team must consist of 4 students.

Team Member Requirements

Each Team Member must be a currently enrolled in an undergraduate or graduate program at the time of the competition. An individual is ineligible to be a Team Member if that individual has: 1) Previously participated as a Team Member in the UTC Challenge, 2) has or is no longer a matriculating university student.

4) Competition Weighting & Participation Requirements

Trading Challenge (25% of the competition results)

The Real Market Trading Challenge will start on October 12th. Team members will need to select a Team Leader to trade the predetermined portfolio via an online interface. Rules for trading are available by clicking here. This portfolio challenge will use the “Real Market Simulator” from CapitalWave for students to trade with and for results. For this particular challenge, the students will compete both individually AND as a team. The results for both will be tabulated to determine placement.

Portfolio Challenge (25% of the competition results)

For the Portfolio Management Challenges, individual Team members will be given a trading screen to participate in a trading simulation. Each simulation will provide each student the opportunity to trade a limited number of securities over a simulated trading day. Student

Trader results will then be measured on the quality of their trading, using standard trader analytics of: Profitability, RaRoc, Sharpe Ratio, Sortino Ratio and Portfolio Alpha/Beta. This challenge will use the CapitalWave “Portfolio Management Simulator” which will be available at the event.

Investment Banking Challenge (25% of the competition results)

Each Team will make each Presentation to a panel of Judges. Teams may utilize their Faculty Adviser as a resources but may not enlist the help of any other professionals in preparing or evaluating the presentations. Each Presentation can include the use of PowerPoint or other presentation software. The teams cannot hand the judges any printed material before the Presentations. All Presentation material must be submitted at time of Registration on the November 2nd 2018.

The Presentation must be in English. Each Presentation is limited to 9 minutes, however and additional 5-7 minutes will be provided to answer questions posed by the Judges. Only Judges are permitted to pose questions to a Team during a Presentation. Each Presentation will be timed and the time-keeper will provide a one-minute warning and an announcement when time has expired. When the timekeeper announces that time has expired, Teams must immediately conclude their Presentation.

Teams may not listen to other Presentations prior to their own Presentation. A separate room should be reserved for Teams to wait before their allotted Presentation time.

Treasury Challenge (25% of the competition results)

Teams are asked to be a Treasury for a Major Fortune 100 company. They are specifically tasked with managing the currency risk for a part of the company. They are to trade a basket of currencies with the sole purpose to both hedge the corporate risk as well as generate profits from currency trading. For more information, please refer to the Rules for the competition. Only Team Members may participate in the Investment Banking Presentations.

Participation Requirements

All teams are encouraged to participate in all of the UTC Challenges. In the event that a particular team is unable to participate in all challenges, they acknowledge that they cannot be listed as either individual challenge or competition winners. If a particular team fails to compete in a challenge, their score for that challenge will be zero.

5) Contest Judging

For the Portfolio and Sale & Trading Challenges, any determination of errors in order entry, execution and eligibility shall be determined by UTC to be final with the regards to the contest standings.

6) Consent to Publication of Ranking and Results

Entry to the contest constitutes permission for the University Trading Challenge to post the university's and trader's information, including, without limitation, name, perform and relative ranking, on the University Trading Challenge website and to use all information for purposes of advertising and promotion without compensation to the universities or contestants.

7) Prohibited Use of Contest for Promotional Purposes

Contestants acknowledge that the University Trading Challenge name and that of the contest are copyrighted and are the sole property of CapitalWave Inc. Contestants shall not, either alone or in concert with others, use their participation in the contest for promotional purposes unless approved in advance in writing by the University Trading Challenge. If a contestant violates this provision, the contestant may be disqualified from competition in the contest for future contests at the University Trading Challenge's sole discretion. If determined by University Trading Challenge to be in violation, the contestant agrees to pay all legal fees and damage incurred by University Trading Challenge, including those to enforce this provision.

8) Indemnification

All issues and question concerning the construction, validity, interpretation and enforceability for the rights and obligations of the contestants and University Trading Challenge in connection with the contest shall be governed by and construed in accordance with the substantive laws of the State of New York, without regard to choose of law rules.

9) Postponement, Cancellation, Acceptance and Removal

University Trading Challenge reserves the right to modify the contest terms, to postpone the contest commencement date or to cancel the contest if, in its sole discretion, it determines that such action is reasonable and necessary. University Trading Challenge may reject any contestant's application for any reason. Furthermore, University Trading Challenge has the right to remove or bar any contestant from the contest for any reason in its sole discretion, including, without limitation, barring any contestant who would or might: bring disrepute to the contest; or who has violated any rule, law or regulation pertaining to futures trading; or has

attempted to benefit from any collusive or other trading irregularity. University Trading Challenge will review and monitor all participants throughout the contest in the interest and fairness of all participants. Minimum participation required; we reserve the right to cancel the contest if minimum participation is not reached. In the event that the contest is cancelled, entry fees will be refunded and no prizes will be awarded. University Trading Challenge reserves the right to cancel the contest at any time and will make honest efforts to notify all contestants. No Refunds; exception: in the case of contest cancellation, refunds will be available for entry fee.

10) Conflicts of Interest

All participants in the University Trading Challenge, including Hosts, Teams, Team Members, Faculty Advisers, and Judges have an obligation to avoid actual or potential conflicts of interest with their participation. A conflict of interest may exist when a participant or participant's family member or close friend is involved in activities that may impact the participant's ability to perform their role fairly and impartially. A conflict may be actual or perceived.

COMPETITION STRUCTURE

In the realistic and intensely educational competition, teams of 4- students go head-to-head in competitive situations in four (4) distinct challenges: 1) Trading Challenge, 2) Portfolio Challenge, 3) Treasury Challenge, and 4) Investment Banking Presentation. Each competition area highlights products or strategies exclusive to the capital markets. See below for details on each of segment and their competition results weighting.

TRADING CHALLENGE – 25% of the Competition Results

Teams (and individuals) compete over a 30-day period using CapitalRMS (Real Market Simulator software). Each team starts with an available balance of \$50,000,000 and can allocate that investable amount over a portfolio containing equities, fixed income contracts, Forex, metals, Agri's, and index contract (values are based on opening prices recorded by global exchanges). Teams follow the news and learn how it affects price change across each instrument. They can modify their positions daily and monitor the up-to-the-minute leader board online.

INVESTMENT BANKING PRESENTATION CHALLENGE – 25% of the Competition Results

Each team is given the 'AQOEO Exploration' case-study and data set, with the task of formulating a financial strategy as a solution. From the 4-person team, 2 members of the team will give a 10-minute presentation outlining the solution, while the other 2 will field questions from the judges.

FIXED INCOME PORTFOLIO CHALLENGE – 25% of the Competition Results

In the 100-minute competition, teams compete on-site at the Challenge location using CapitalFITS (Fixed Income Trading Simulator). This intense simulation provides students an opportunity to act as a Portfolio Management team for the

TREASURY CHALLENGE – 25% of the Competition Results

In this 100-minute competition, teams compete on-site at the Challenge location using CapitalFITS (Forex Trading Simulator). This intense simulation provides students an opportunity to act as a Trader managing the Forex Desk for one of corporate treasury department.

COMPETITION TIMELINE

The timeline example below is provided to show timing for the key elements (beginning, endings, etc.) of each of the Challenge’s components:

Announcement of the Challenge:	August 1st 2019
Team Registration:	September 5th – October 8th
Trading Challenge:	October 10th – November 7th 2019
Investment Banking Challenge:	November 8 th 2019
Portfolio Challenge:	November 8 th 2019
Treasury Challenge:	November 8 th 2019
Competition Day:	November 8 th 2019
Awards Ceremony:	November 8 th 2019

COMPETITION AGENDA

Competition Day Agenda

8:30- 9:15 Registration for students and teams
9:20- 9:45 Welcome. Rules and Agenda for the day
9:45-10:15 First Speaker – TBD

10:15-10:30 [Break – provided by the University Trading Challenge](#)

10:30-11:00 Forex Trading Simulator Training

11:00-12:30 Treasury Challenge

10:30-12:30 Investment Banking Presentation Challenge

12:30- 1:15 [Lunch – provided by the University Trading Challenge](#)

1:15 – 2 :00 Call out competition

2:00-2:30 Portfolio Trading Simulator Training

2:30-4:00 Portfolio Challenge

4:00-4:15 Break

4:15-4:45 Final Speaker – John Donato, CapitalWave Inc.

4:45-5:30 **UTC Awards Ceremony**

TRADING CHALLENGE

The Real Market Trading Challenge will start October 10th and finish on November 7th. Student teams representing different universities, over 20 trading days using the CapitalRMS (Real Market Simulation), manage a base portfolio consisting of equity, fixed income, currency, metal, agri, and index contracts valued based on opening prices recorded by global exchanges.

The purpose of the competition is to have the participants focus on the impact of news and how it relates towards the price volatility of the various instruments.

The objective of this challenge is to help participants develop interest, understanding and analysis of financial market news. The participants in each team are encouraged to have discussions of the daily events/news in the financial markets and then make their trading decisions based on those discussions.

The competition will be divided into two parts.

1. There will be a main team competition, with a team leader executing the transaction for the team after their internal discussions and group decisions are made.
2. Additionally, there will be an individual competition taking place simultaneously in which each individual student is invited to participate to the exact same game but with his/her own account.

The latter will allow students to create and manage their own portfolios independent of the team decisions. At the end of the 24 trading days profit results will show two different winners, one in the team category and another one in the individual category.

Real Market Simulator (RMS)

The Real Market Simulator (RMS) is an interactive and dynamic Investment Simulation designed to get participants to understand the role of news in investment and portfolio decisions. Individuals or Teams are allowed to strategize and invest in the limited but strategically important securities for the duration of the simulation. To play the simulation, individuals or teams need to take positions (long or short) in the markets listed in up to a maximum size of the limits given for each instrument. Individuals or teams will have a number of opportunities to change their position for the duration of the game. All trades are done at the prevailing market prices and a running profit and loss is kept.

DESCRIPTION OF THE TRADING GAME

Name of Game= “**UTC19US**”

Start Date = 10th October 2019

End Date = 7th November 2019

Trading days= 21 – No Trading on Weekends

Trading Period = 9:30am to 4:00pm EST

Investment amount = \$1,000,000 per trader

Individual Trade Limit = \$100,000

The Game will be divided into two parts:


Team competition

Individual competition

Platform = Real News Trading Simulator (RNTS), <http://www.CapitalRMS.com>

RULES AND CONDITIONS

- *You should have already received confirmation of your registration. You should have also automatically been organized into teams.*
- Each individual will be trading for themselves and the aggregate of the team’s results will be the Teams Performance
- Positions can be long or short in any amount up to the maximum of the trading limit.

The limit for each security can be found placing the cursor on the  symbol next to the security name in the first column of the trading table.

- Each team and individuals are able to trade any of the instruments; however, you must remain in a particular instrument position for at least 30 minutes. The system will prevent you for trading (for that instrument) for that period of time.
- Prices will be updated on a continually throughout the available trading period. There is no attempt to match the markets in terms of times open. For example, forex trading will NOT be available 24/5, rather, only during the predesigned trading period.
- All trades will take place at the market prices supplied – it should be noted that the prices in the RMS are delayed market prices by 1 minute.
- Profit & Loss standings will be updated throughout each trading day and available for all traders and teams to see.

WINNING THIS CHALLENGE

Teams will be ranked and measured and RANKED by a variety of metrics, including Profit & Loss, but also including: VaR, RaROC, Sharpe Ratio, Sortino Ratio, Treynor Ratio and the Information Ratio. Traders/Teams will only be able to view their P&L standings daily.

WINNING IS DETERMINED BY USING THE TEAM'S P&L AND ADJUSTING THE TEAM 'TRADING RISK' BASED ON THEIR SHARPE RATIO, VAR, RAROC, SORTINO AND TREYNOR RATIOS.
HIGHER P&L DOES NOT NECESSARILY INDICATE THAT THE TEAM IS IN FIRST PLACE.

WARNING: Excessive Risk strategies penalize a team's ranking!

For More Information on any of these analytics:

VaR: http://en.wikipedia.org/wiki/Value_at_risk

RaROC: http://en.wikipedia.org/wiki/Risk_adjusted_return_on_capital

Sharpe Ratio: http://en.wikipedia.org/wiki/Sharpe_ratio

Sortino Ratio: http://en.wikipedia.org/wiki/Sortino_ratio

Treynor Ratio: http://en.wikipedia.org/wiki/Treynor_ratio

Information Ratio: http://en.wikipedia.org/wiki/Information_ratio

NEWS DISCUSSIONS

To help the news discussion process we encourage participants to think about the following issues:

- What news stories are important?
- How those stories may influence the market?
- Which market participants are most likely to be impacted?
- How market participants will try and make money from the different circumstances?

MARKET NEWS INFORMATION WEB RESOURCES:

The simulation platform will provide you with updated news articles both on the traded securities as well as general business news.

GAME ANALYTICS:

Here are the primary data points for the instrument set:

Analytics	
Risk Free Rate	1.00%
Min Accept Return	0.50%
VaR Time Horizon	252
VaR Confidence Level	90%
Benchmark Index	S&P 500

INSTRUMENTS THAT WILL BE TRADED

Only the following listed instruments are able to be traded.

AGRI Futures

Cocoa
Cotton
Lumber
Coffee
Lean Hogs
Orange Juice
Corn Live Cattel

Barclays PLC (GBP)
Citigroup
Deutsche Bank AG (EUR)
Goldman Sachs
Alphabet (Google)
JPMorgan
Rolls Royce Group (GBP)
Royal Mail (GBP)
Vanguard Internal Equity Index
Vanguard FTSE Small cap
Vanguard TT World

CURRENCIES

EUR/GBP
GBP/USD
EUR/USD

FIXED INCOME

Vanguard Short Term Bonds
Vanguard Intermediate Term Bonds
Vanguard Total Bond Fund
Vanguard Long Term Bond Fund

ENERGY FUTURES

Brent Crude Oil
Light Sweet Crude Oil

INDEX

FTSE 100
S&P 500

CRYPTO Currencies

Bitcoin
Bitcoin Cash
Dash
Ethereum
IOTA
Monero
NEM
NEO
Ripple

METAL FUTURES

Copper
Silver
Gold
Platinum

EQUITIES

Apple Inc.
Bank of America

INVESTMENT BANKING CHALLENGE

PRESENTATION CHALLENGE

In order to successfully complete this challenge, each Team will need to deliver a short PowerPoint presentation.

Team Presentations must:

1. Identify the potential risks faced by the company.
2. Develop a hedging solution for those risks that the group believes need to be hedged.
3. Provide a graphical scenario analysis showing the impact of the hedges across a number of positive and negative market outcomes.
4. Develop a proposal for funding the new mine project in Australia.

Each team will be allocated up to 15 minutes to make their 'pitch' to the client. The PowerPoint presentation should take 8-9 minutes, leaving time for questions.

The client pitch is to be made by two of the team members with the other team member answering the follow-up questions. Every team member must contribute to the presentation.

OVERVIEW

UTC Presentation Judges Scoring Rubric – See Addendum A

You are being provided with two case studies to choose from.

YOU ONLY NEED TO CHOOSE ONE OF THEM FOR YOUR PRESENTATION

You can review both -- See Addendum B

PORTFOLIO CHALLENGE

On the day of the live event – November 8th, each team will participate in a Portfolio Challenge using the Portfolio Management Simulator. The simulation will last 100 minutes. Each team will manage a portfolio of fixed income investments for the NASHVILLE INVESTMENT MANAGEMENT COMPANY, a Long/Short strategy hedge fund firm domiciled in the US, with offices globally.

WINNING THE CHALLENGE

To win this challenge, the total Profit & Loss for each time will be adjusted based on their risk level of trading as calculated by RaROC and Sharpe Ratio. This adjusted calculus will determine this particular challenge winner.

For More Information on any of these analytics:

VaR: http://en.wikipedia.org/wiki/Value_at_risk

RaROC: http://en.wikipedia.org/wiki/Risk_adjusted_return_on_capital

Sharpe Ratio: http://en.wikipedia.org/wiki/Sharpe_ratio

Sortino Ratio: http://en.wikipedia.org/wiki/Sortino_ratio

Treynor Ratio: http://en.wikipedia.org/wiki/Treynor_ratio

Information Ratio: http://en.wikipedia.org/wiki/Information_ratio

PURPOSE

The purpose of the challenge is for each team to: communicate, develop real-world strategies and deal with unknown and potentially volatile market circumstances. Each team will have to collectively and consensually decide how to allocate their portfolio. Each member of the team will trade and execute their own trades.

INVESTMENT SIZE

Each team will be given the following:

- \$600,000,000
 - \$200,000,000 – allocated to each team member
- You are able to take both LONG and SHORT positions
- You are only able to take short positions up to 20% of the market value of your portfolio
- You are unable to purchase on Margin
- There is only one price per trading period
- There are no commission costs

SIMULATION ANALYTICS

Analytics

Imputed Interest Rate	2.50%
Risk Free Rate	2.00%
Min Accept Return	3.00%
VaR Time Horizon	252
VaR Confidence Level	90%
Benchmark Index	S&P 500

TIMINGS

- 8 Trading Periods
- Each trading period will be 8 minutes
- A final period will be used to determine the final
- All trading periods will have various video and online news releases
- You are able to use the trading period to discuss your plan of action for your team's portfolio
- Once you have made your investment plan, each trader will execute their trades.

INSTRUMENTS

These are all of the instruments that will be available to trade in the Portfolio Challenge. All instruments with the EXCEPTION of the INDEXs are traded in USD. The Index securities are representative of different fixed income instrument types.

LIST OF INSTRUMENTS – See Addendum B

LEARNING THE PLATFORM

We will send separately a schedule of times when you can have access to the Fixed Income Trading Simulator to learn more about it.

TREASURY CHALLENGE

On the day of the live event – November 8th, each team will participate in a Treasury Challenge using the Forex Trading Simulator. The simulation will last 90 minutes. Each team will manage the cash investments for the DUBAI TRADING COMPANY, a global trading firm domiciled in Dubai, UAE, with offices globally.

WINNING THE CHALLENGE

To win this challenge, the total Profit & Loss for each time will be adjusted based on their risk level of trading as calculated by Sharpe Ratio. This adjusted calculus will determine this particular challenge winner. You are getting USD from the US and the purpose needs to repatriate to USD.

PURPOSE

The purpose of the challenge is for each team to: communicate, develop real-world strategies and deal with unknown and potentially volatile market circumstances. Each team will have to collectively and consensually decide how to allocate their portfolio. Each member of the team will trade and execute their own trades.

INVESTMENT SIZE

Each team will be given the following:

- \$30,000,000
 - \$10,000,000 – allocated to each team member
- You are able to purchase on Margin - margin to 4:1
- Prices are 'continually updated'
- There are no commission costs

SIMULATION ANALYTICS

Analytics

Imputed Interest Rate	2.50%
Risk Free Rate	2.00%
Min Accept Return	3.00%
VaR Time Horizon	252
VaR Confidence Level	90%
Benchmark Index	USD Index

INSTRUMENTS

You will be given 4-6 currency pairs to trade. The final list will not be available until the day of the competition.

LEARNING THE PLATFORM

We will send separately a schedule of times when you can have access to the Forex Trading Simulator to learn more about it.

Addendum A

IB Challenge Judges Rubric

Addendum B

Presentation Case Studies

2019 UTC - Presentation Challenge

ENERTRAN Methanol Production Plant

NATURAL GAS PRESENTATION CHALLENGE

In order to successfully complete this challenge, each Team will need to deliver a written submission and make a short PowerPoint presentation.

Team Presentations must:

1. Identify the potential risks faced by the company.
2. Develop a risk management solution for the risks the group believes need to be managed.
3. Provide a graphical scenario analysis showing the impact of the solution across a number of positive and negative market outcomes.
4. Develop a proposal for hedging the foreign exchange and natural gas price risks.
5. Teams may use market data from sources other than this case study. Sources must be documented in the team presentation.

Each team will be allocated 15 minutes to make their 'pitch' to the client. The PowerPoint presentation should take 5-8 minutes, leaving the remaining time for questions.

The tasks for the live pitch to the client must be divided as equally as possible within the team to include team members who deliver the pitch, and different team members who address the follow-up questions.

OVERVIEW

The group project is designed to test Team's ability to:

- Identify the different types of market and business risks faced by this company
- Develop risk management strategies for the identified risks using traditional cash market and derivative products
- Present a client proposal in a clear and ordered fashion

Client Overview



Energy-Transformation Methanol Company, International (ENERTRAN) creates methanol from natural gas. Methanol is an extremely versatile compound with global distribution. It is among the top 5 chemicals in the world in the amount shipped and transported around the world every year. ENERTRAN seeks to evaluate a short term (under three months on a rolling basis) hedge program for the costs of their natural gas feedstock, which is the only feedstock input into their methanol production. They expect to sell 50% of their production to the United States, and 10% to Asia. The Asian exports are paid in USD. The remaining 40% of their

production will be exported to the Eurozone, and will be paid in Euros. Since almost all of ENERTRAN'S expenses are paid in USD, ENERTRAN would like to evaluate a hedge program for some or all of their Euro foreign currency exposure to limit losses in the event the USD declines in value. ENERTRAN is not seeking to hedge the future sales price of methanol at this time.

Natural gas consumption and methanol production:

The typical gas consumption for a world-scale methanol plant ranges from 28 to 31 million Btu per metric ton of methanol. For this case study, assume 30 million British thermal units (mmBtu) of natural gas will produce one metric ton of methanol. The CME Natural Gas Futures contract specification is a unit size of 10,000 million Btu (10,000 mmBtu). Therefore, the amount of natural gas in one futures contract would theoretically yield approximately 333 metric tons of methanol. The CME Futures contracts based on natural gas delivery at Henry Hub exhibit a seasonal price trend. Prices tend to rise going into the winter months and fall going into the summer months. Methanol prices generally do not follow this seasonal trend.

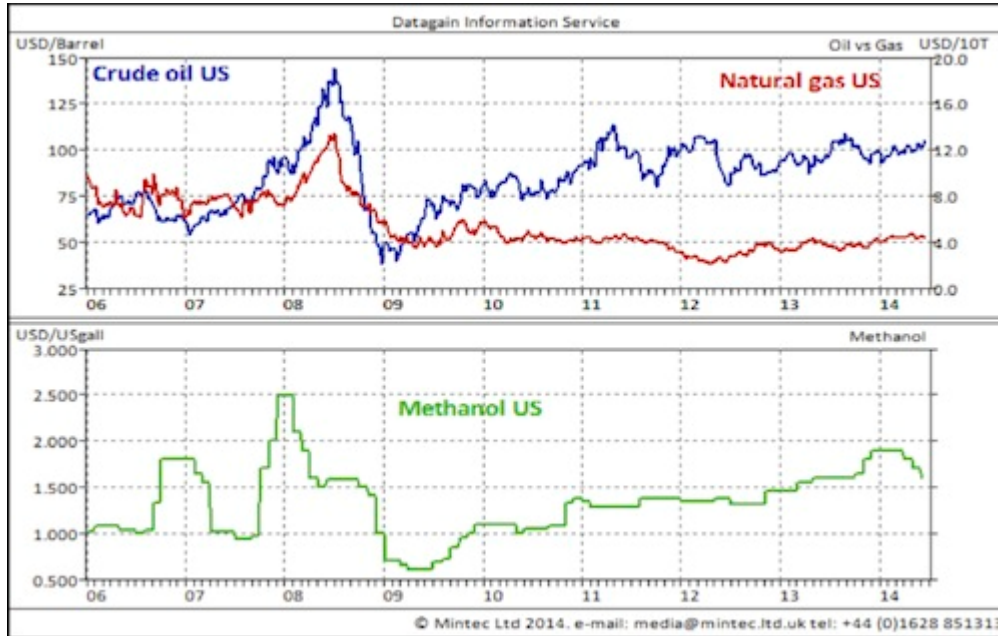
Methanol sales:

The ENERTRAN plant produces 3,000 metric tons of methanol per day, and operates 330 days per year (planning 35 days for downtime). Assume that methanol sales are equally distributed over time, according to the international and domestic ratios provided. Domestic and Asia sales are priced in USD and are 60% of production. European sales are priced in Euro, and are 40% of production. However, ENERTRAN has the ability to vary their domestic and export amounts (exports may be down/up 33% - 47% of production) at their discretion. The horizon for a currency hedging strategy will go no further than 5 years from November, 2019. It may be shorter, at your discretion, and with your justification for choosing a shorter period.

Methanol pricing:

As of November, 2019 the posted price for methanol (per metric ton, or MT) in the US is USD \$342, and for Asia is USD \$295. The posted price of methanol per MT for Europe is EUR €280. You are free to make your own assumptions regarding the future range of methanol prices in USD, within a 20% range up and/or down over the next five years. The Euro pricing for methanol is highly correlated with the value of EUR/USD at the time of actual sale.

The following chart illustrates an historical price correlation between crude oil, natural gas, and methanol (USD price). You may use this chart as a resource for your methanol pricing speculations. Note: The methanol chart is priced in \$/GAL. To convert to \$/MT use a conversion rate of 332.6 Gal per MT.



<http://spendmatters.com/2014/06/23/methanol-the-cheaper-gasoline-substitute/>

KEY MARKET DATA

CME NATURAL GAS FUTURES			
Contract	Price	Contract	Price
NGX19 (Nov '19)	2.3030	NGM22 (Jun '22)	2.3750
NGZ19 (Dec '19)	2.5000	NGN22 (Jul '22)	2.4130
NGF20 (Jan '20)	2.6300	NGQ22 (Aug '22)	2.4240
NGG20 (Feb '20)	2.5950	NGU22 (Sep '22)	2.4150
NGH20 (Mar '20)	2.5070	NGV22 (Oct '22)	2.4390
NGJ20 (Apr '20)	2.3080	NGX22 (Nov '22)	2.5010
NGK20 (May '20)	2.2930	NGZ22 (Dec '22)	2.6800
NGM20 (Jun '20)	2.3360	NGF23 (Jan '23)	2.8010
NGN20 (Jul '20)	2.3830	NGG23 (Feb '23)	2.7680
NGQ20 (Aug '20)	2.3900	NGH23 (Mar '23)	2.6540
NGU20 (Sep '20)	2.3720	NGJ23 (Apr '23)	2.4120
NGV20 (Oct '20)	2.3990	NGK23 (May '23)	2.3930
NGX20 (Nov '20)	2.4660	NGM23 (Jun '23)	2.4320
NGZ20 (Dec '20)	2.6310	NGN23 (Jul '23)	2.4710
NGF21 (Jan '21)	2.7450	NGQ23 (Aug '23)	2.4870
NGG21 (Feb '21)	2.7080	NGU23 (Sep '23)	2.4810
NGH21 (Mar '21)	2.5800	NGV23 (Oct '23)	2.5110
NGJ21 (Apr '21)	2.3130	NGX23 (Nov '23)	2.5850
NGK21 (May '21)	2.2870	NGZ23 (Dec '23)	2.7660
NGM21 (Jun '21)	2.3210	NGF24 (Jan '24)	2.8940
NGN21 (Jul '21)	2.3560	NGG24 (Feb '24)	2.8600
NGQ21 (Aug '21)	2.3630	NGH24 (Mar '24)	2.7420
NGU21 (Sep '21)	2.3530	NGJ24 (Apr '24)	2.5010
NGV21 (Oct '21)	2.3810	NGK24 (May '24)	2.4850
NGX21 (Nov '21)	2.4500	NGM24 (Jun '24)	2.5140
NGZ21 (Dec '21)	2.6270	NGN24 (Jul '24)	2.5440
NGF22 (Jan '22)	2.7550	NGQ24 (Aug '24)	2.5500
NGG22 (Feb '22)	2.7280	NGU24 (Sep '24)	2.5430
NGH22 (Mar '22)	2.6160	NGV24 (Oct '24)	2.5650
NGJ22 (Apr '22)	2.3600	NGX24 (Nov '24)	2.6260
NGK22 (May '22)	2.3410	NGZ24 (Dec '24)	2.7960

KEY MARKET DATA

Nat Gas Options		
Expiration: Feb-20		
Calls	Strike	Puts
0.3484	2.5000	0.2539
0.3280	2.5500	0.2833
0.3090	2.6000	0.3140
0.3101	2.6300	0.3330
0.2912	2.6500	0.3459
0.2959	2.6700	0.3591
0.2812	2.6800	0.3579
0.2748	2.7000	0.3792
0.2716	2.7100	0.3860
0.2685	2.7200	0.3929

Nat Gas Options		
Expiration: May-20		
Calls	Strike	Puts
0.3080	2.1000	0.2330
0.2713	2.1500	0.2560
0.2452	2.2000	0.2780
0.2138	2.2500	0.2980
0.2063	2.2700	0.3250
0.1883	2.3000	0.3530
0.1650	2.3500	0.3750
0.1439	2.4000	0.4060
0.1250	2.4500	0.4420
0.1081	2.5000	0.4690

Nat Gas Options		
Expiration: Nov-20		
Calls	Strike	Puts
0.3314	2.3000	0.1590
0.3031	2.3500	0.1771
0.2765	2.4000	0.2047
0.2663	2.4200	0.2147
0.2516	2.4500	0.2302
0.2238	2.5000	0.2574
0.2068	2.5500	0.2861
0.1843	2.6000	0.3164
0.1755	2.6300	0.3354
0.1669	2.6500	0.3483

EUR/USD Futures	
E6X19 (Nov '19)	1.1006
E6Z19 (Dec '19)	1.1029
E6F20 (Jan '20)	1.1053
E6H20 (Mar '20)	1.1095
E6M20 (Jun '20)	1.1157
E6U20 (Sep '20)	1.1216
E6Z20 (Dec '20)	1.1274
E6H21 (Mar '21)	1.1331
E6M21 (Jun '21)	1.1389
E6U21 (Sep '21)	1.1446
E6Z21 (Dec '21)	1.1502
E6H22 (Mar '22)	1.1557
E6M22 (Jun '22)	1.1613
E6U22 (Sep '22)	1.1672
E6Z22 (Dec '22)	1.1728
E6H23 (Mar '23)	1.1779
E6M23 (Jun '23)	1.1839
E6U23 (Sep '23)	1.1894
E6Z23 (Dec '23)	1.1950
E6H24 (Mar '24)	1.2005

KEY MARKET DATA

WTI CRUDE OIL FUTURES			
Contract	Price	Contract	Price
CLX19 (Nov '19)	53.08	CLM22 (Jun '22)	50.05
CLZ19 (Dec '19)	53.03	CLN22 (Jul '22)	50.06
CLF20 (Jan '20)	52.86	CLQ22 (Aug '22)	50.09
CLG20 (Feb '20)	52.64	CLU22 (Sep '22)	50.13
CLH20 (Mar '20)	52.35	CLV22 (Oct '22)	50.20
CLJ20 (Apr '20)	51.89	CLX22 (Nov '22)	50.27
CLK20 (May '20)	51.63	CLZ22 (Dec '22)	50.36
CLM20 (Jun '20)	51.54	CLF23 (Jan '23)	50.37
CLN20 (Jul '20)	51.09	CLG23 (Feb '23)	50.40
CLQ20 (Aug '20)	50.86	CLH23 (Mar '23)	50.44
CLU20 (Sep '20)	50.66	CLJ23 (Apr '23)	50.50
CLV20 (Oct '20)	50.51	CLK23 (May '23)	50.57
CLX20 (Nov '20)	50.42	CLM23 (Jun '23)	50.65
CLZ20 (Dec '20)	50.54	CLN23 (Jul '23)	50.69
CLF21 (Jan '21)	50.25	CLQ23 (Aug '23)	50.76
CLG21 (Feb '21)	50.16	CLU23 (Sep '23)	50.84
CLH21 (Mar '21)	50.09	CLV23 (Oct '23)	50.94
CLJ21 (Apr '21)	50.04	CLX23 (Nov '23)	51.05
CLK21 (May '21)	50.02	CLZ23 (Dec '23)	51.16
CLM21 (Jun '21)	50.01	CLF24 (Jan '24)	51.22
CLN21 (Jul '21)	49.96	CLG24 (Feb '24)	51.23
CLQ21 (Aug '21)	49.92	CLH24 (Mar '24)	51.27
CLU21 (Sep '21)	49.90	CLJ24 (Apr '24)	51.34
CLV21 (Oct '21)	49.90	CLK24 (May '24)	51.43
CLX21 (Nov '21)	49.92	CLM24 (Jun '24)	51.50
CLZ21 (Dec '21)	50.05	CLN24 (Jul '24)	51.55
CLF22 (Jan '22)	49.94	CLQ24 (Aug '24)	51.63
CLG22 (Feb '22)	49.93	CLU24 (Sep '24)	51.72
CLH22 (Mar '22)	49.94	CLV24 (Oct '24)	51.80
CLJ22 (Apr '22)	49.96	CLX24 (Nov '24)	51.93
CLK22 (May '22)	49.99	CLZ24 (Dec '24)	52.03

