

2016 CTRM MARKET UPDATE

An interim review of market trends and market size

**Commodity
Technology
Advisory**

CTRM Market Research, Analysis and Insights

INTRODUCTION AND SCOPE

Given the significant decline in commodity prices throughout the year in 2015, and impact that decline has had on the markets for CTRM/ETRM software, Commodity Technology Advisory LLC (ComTech) has recently completed an interim update to its biannual in-depth review of the CTRM software market space. This update is based upon an analysis of reported vendor results for 2015 and confidential conversations with several of the larger CTRM vendors regarding financial performance, unannounced deal closings and deal flow. Additionally, our analysis has factored in trends in the job market created by CTRM software and other sources of data.

Please note: *This interim analysis is a topside adjustment to previously published forecasts and is not a comprehensive top-down analysis of the market as presented in our biannual CTRM Market Trends and Outlook publication.*

As with all our market sizing reviews, readers should be aware that in the development of this data, as in the 2015 CTRM Market Trends and Sizing report, we must delineate boundaries for the companies and applications reflected in the scope of the analysis.

'CTRM' is a term that has been widely adopted by many

technology companies. "Traditional" CTRM vendors have been expanding their reach outside of what has been widely and traditionally accepted as core CTRM through acquisition of applications that would commonly be viewed as tools for managing and optimizing supply chains and as such, without adjusting vendor reported results to eliminate these non-CTRM capabilities, we would be overstating the size of the market directly related to commodity trading and risk management capacities. Therefore, for this report, ComTech has utilized a fairly rigid view of what capabilities are encompassed within the bounds of CTRM. The included capabilities (and associated services where applicable) for this report are:

- / Physical and financial commodity deal capture, contract management and origination
- / Position management and valuation
- / Tracking/managing of commodities logistics as they apply to functionality commonly deployed as a functional component of large scale CTRM solutions servicing gas, power, crude and bulk product movements
- / Confirmation, settlement and accounting of deals/transactions
- / Trader analytics and trading optimization tools
- / Commodity risk management and analytics including but not limited to, VaR, EaR, limits management, credit risk management and PnL.

Products, functionality, and application modules excluded from this and all market sizing analysis include:

- / Logistical management capabilities not associated with core trading requirements, such as truck, rail or ship tracking software
- / Treasury and treasury-oriented credit functionality
- / Production modeling or optimization software for industries such as oil and gas production, mining or agriculture
- / Applications for managing physical facilities, such as power generation, mines, gas plants, pipelines, refineries, mills or other processing plants
- / The modules or functional components of ERP applications (such as JDE, SAP and Oracle Financials) that are not directly related to trading or commodity marketing activities
- / Applications intended only to manage financial products

(which may or may not include financial commodities) and provide no capabilities for capturing, valuing or tracking physical commodities

- / Supply chain management and optimization applications that cannot capture, manage or value traded commodities based upon their unique physical characteristics
- / Software products related to the metals recycling and waste management segments.

In developing this market outlook, we have included the following commodity classes: natural gas, power, oil and oil products, coal, industrial metals, precious metals, agricultural commodities, softs, and others (including freight, RECs, and other minor commodities).

Establishing a definitive size for any market, particularly one as complex as commodity trading and risk management, is a difficult exercise and is impossible to complete with absolute certainty. Market sizing, being a forward-looking exercise, must be based upon numerous factors and assumptions. These assumptions include overall economic conditions, forces encouraging new market entrants, historical buying patterns of existing market participants, technology drivers encouraging new purchases, and the number and capabilities of product vendors servicing the needs of the market.

Despite these difficulties, we believe that our organization's unique position in the market, as highly experienced analysts focused exclusively on the intersection of the commodity trading markets and their requisite technologies, provides us the market vision and insight necessary to compile a reliable and accurate estimate of this unique and dynamic technology market.

Note: *The market sizing figures presented in this study are our best estimates based on the methodology and approach documented herein. They should be treated as estimates and are subject to change should additional information become available.*

2016 Market Trends Update

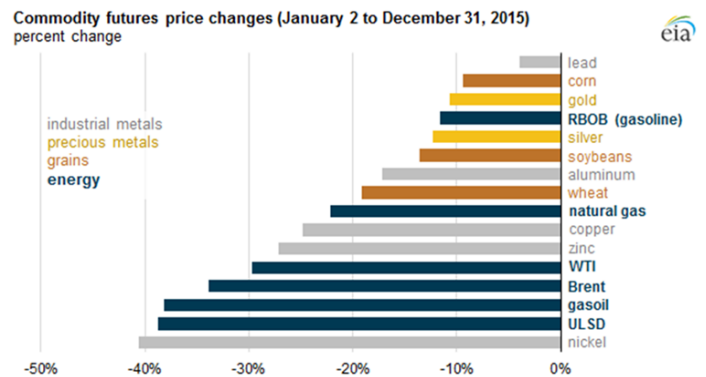
Commodity prices fell throughout the year in 2015, driven in large part by declining economic growth in the Asia-Pac region, and over-investment in commodities infrastructure during the previous 5 years of high prices and growing demand.

Faced with the steadily declining prices and increasing costs, 2015 was marked by producers, merchants and traders cutting budgets and reducing or delaying spending, impacting the global spend for IT solutions, including CTRM software products. Based on our analysis, we believe the market for CTRM solutions, 3rd party implementation services and 3rd bespoke solutions development, support and services to \$1.59B in 2015.

Given the overall current difficult conditions in commodity markets, ComTech does expect H1 2016 to continue the trend set in 2015 – moderate deal flow, but lower revenues on a per deal basis than in previous years; though some segments will be impacted more than others in this regard. However, giv-

en the changes across the industry driven by regulatory and structural change, we expect pent-up demand to start to flow through later in the year, with overall spend expected to be up slightly from 2015 to \$1.65B.

This interim market size update provides estimates and forecasts of total CTRM market size through the year 2020, categorized along three dimensions – by revenue component, by commodity, and by geographic region.



CTRM Market Revenue Forecast By Revenue Component

Reviewing total CTRM market revenue-by-revenue components, results for 2015 were essentially flat to 2014, though overall license sales were down slightly. The key events, trends and issues reflected in this analysis were as follows:

- / While procurement activity (in the form of RFPs etc.) appeared to be good in most regions outside of the Asia-Pacific markets, and potentially actually higher than in 2014 in Europe, it appears that reduced IT budgets resulted in fewer deal closures, lower average deal prices and a higher number of SaaS/Hosted solutions being deployed than previously forecast.
- / Adoption of SaaS/Hosted solutions exceeded expectations and that market component increased more rapidly than forecast. Additionally, the movement from recognized license revenues to annual recurring revenues

associated with SaaS/hosted solution deployment also increased, reflecting a growing tendency for vendors to negotiate new deals (regardless of the technology deployment method) as an annual payment that includes license and support & maintenance fees.

- / License revenue was lower than expected in 2015 due to greater adoption of SaaS/Hosted solutions, increasing use of annualized license/S&M agreements, and fewer than expected large deals; mid-sized deals (those less than \$1MM in first year total revenue) and lower revenue deals dominated the market in 2015.
- / The estimated market share of the 6 largest vendors declined in 2015 to 67% from 71% in 2014 due to the increased numbers of deals done in the mid-tier and lower market segments.

/ Despite the lower license revenues from 2014 to 2015, services revenues were relatively flat year to year:

// Though vendor and 3rd services associated with implementing SaaS/Hosted solutions tend to be lower than traditional implementations, the num-

ber of deals done in both categories did help sustain services revenues.

// Regulatory compliance efforts, particularly in Europe, drove additional higher than anticipated vendor services revenues associated.

Total CTRM Market Revenue Forecast By Commodity

The developments and trends affecting the commodity categories and their underlying markets reflected in this analysis for 2015 were as follows:

/ The largest impact of falling commodities prices was arguably in the Ags & Softs space, with a significantly lower number of CTRM deals and lower deal size in that segment than previously forecast.

/ Natural gas centric solutions were also significantly impacted, as falling prices for the commodity in North America resulted in reduced IT systems spending by most market participants, reducing both deal counts and deal sizes.

/ Though oil prices did fall in track with other commodities during the year, those falling prices were actually beneficial for a number of market participants, particularly in the refining and petrochemical space. These markets helped to offset low-

er numbers of deals in the trading and merchant categories and resulted in demand for oil centric CTRM solutions being higher than in 2014 and approximately in-line with our previous estimates.

/ The CTRM markets for power are primarily utility-centric and are somewhat isolated from commodity market prices. Nonetheless, total global revenues derived from power deals was flat to 2014. Regionally, while there appears to be a larger number of power deals consummated in Europe in 2015, most were at a lower price point than in previous years. However, we did note an increase in retail provider deals in this market in the US in 2015, though deals values in this segment are traditionally lower than other market segments, and its contribution to the overall market is relatively small.

Total CTRM Market Revenues Forecast By Geography

The 2015 CTRM revenue results by geography reflects a number of global and regional economic trends that emerged beginning in late 2014 and continued throughout the year in 2015:

/ The Asia-Pac CTRM markets were significantly impacted by the slowing Chinese economy and its knock-on effects across the region. Though CTRM-related rev-

enues in this region were flat from 2014 to 2015, the results for 2015 were significantly lower than previous forecasts in that region.

/ North American markets were also significantly impacted by lower commodity prices, with a decrease in revenues from 2014 to 2015, primarily due to the collapse of oil and natural gas prices, and the impact those lower prices had on producers and traders. However, the lower

spend in those segments was partially offset by higher than expected spend from refiners and petrochemicals (improved margins due to lower feedstock prices), as well as retail energy providers who saw increased activity from retail customers seeking to lock-in lower prices.

/ Europe saw reasonable demand for energy-centric CTRM solutions in 2015, primarily due to energy market liberalization, shifting generation dynamics (continuing impact of renewables) and spending for regulatory

compliance. This strength was partially offset by lower demand for ags and softs systems due to a combination of over-investment in those markets in the preceding years and the slowing global economy. Sales of CTRM products to commercial and industrial commodity consumers (a diverse group that would include food/bev manufacturers and supermarkets) in the European markets were in line with expectations, though very few, if any, top-tier deals were consummated.

Revised Outlook For 2016 Through 2020

Overall, 2016 should be somewhat stronger than 2015 as the market continues to adjust to a lower commodity price regime. While buying cycles have lengthened, deal size for traditionally deployed solutions should increase somewhat. Additionally, we have increased our outlook for growth in the SaaS/hosted solutions markets to reflect higher than anticipated adoption of such solutions.

2017 should be stronger as commodity prices are general-

ly forecast to move higher. Overall, we anticipate growth in total CTRM vendor revenue in 2017 will be higher than ComTech has previously forecast, primarily driven by IT spending which was deferred in late 2014 thru 2016. This delayed spend is anticipated to occur in 2017 and beyond as prices improve and the commodity markets return to a more "normal" state driven by increasing growth in the Asia-Pac region. As such, we are projecting the CTRM markets in 2017 through 2020 to grow an average of 6-8% per year for the period.

Additional Considerations To Note

As previously mentioned, as estimates of annual market size has in the past been primarily a combination of recognized license, support & maintenance and implementation revenues, the increase in popularity of other approaches (such as SaaS/hosted) will have an increasing impact on annual market size. Recurring revenues, often with support & maintenance and even enhancements and/or implementation fees rolled-in, may

effect timing of revenue recognition in an increasing degree in the coming years. While the full impact of this shift is difficult to forecast, it is likely that shift in deal structuring will serve to reduce annual market size growth while increasing future growth by essentially deferring revenue recognition for new CTRM deals.

Total CTRM Market Size Forecast (\$Millions)

Revenue by Component	2014	2015	2016	2017	2018	2019	2020
License	\$ 210	\$ 195	\$ 201	\$ 209	\$ 216	\$ 224	\$ 231
Vendor Services	501	491	506	541	589	639	690
Support & Maintenance Saas/ Hosted	267 42	274 55	282 66	290 79	299 95	308 114	317 137
Subtotal Vendor Revenue	<u>\$1,020</u>	<u>\$1,015</u>	<u>\$1,055</u>	<u>\$1,120</u>	<u>\$1,200</u>	<u>\$1,285</u>	<u>\$1,375</u>
3rd Party Implementation	326	308	320	337	356	378	399
Unaddressed Market	<u>273</u>	<u>268</u>	<u>273</u>	<u>279</u>	<u>282</u>	<u>283</u>	<u>282</u>
Total CTRM Market	<u>\$1,619</u>	<u>\$1,591</u>	<u>\$1,648</u>	<u>\$1,737</u>	<u>\$1,838</u>	<u>\$1,946</u>	<u>\$2,055</u>

Revenue by Commodity	2014	2015	2016	2017	2018	2019	2020
Natural Gas	\$ 380	\$ 367	\$ 382	\$ 406	\$ 432	\$ 460	\$ 489
Power	405	393	407	424	453	483	513
Oil and Products	238	240	246	259	271	285	299
NGLs	112	113	116	120	123	125	128
Coal	27	26	27	27	27	28	28
Precious Metals	41	41	43	44	46	47	49
Other Metals and Ores	115	113	116	122	127	132	137
Ags/Softs	272	269	284	306	330	355	381
Other (Freight, Emissions, Etc)	<u>28</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>31</u>	<u>31</u>
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Revenue by Region	2014	2015	2016	2017	2018	2019	2020
North America	\$ 789	\$ 760	\$ 788	\$ 840	\$ 900	\$ 962	\$ 1,025
South America Europe	51	50	51	52	53	54	55
Middle East & Africa Asia/ Pacific	581 53	585 52	606 53	632 55	655 56	680 57	705 58
	<u>146</u>	<u>144</u>	<u>149</u>	<u>158</u>	<u>174</u>	<u>192</u>	<u>212</u>
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ABOUT

Commodity Technology Advisory LLC

Commodity Technology Advisory is the leading analyst organization covering the ETRM and CTRM markets. We provide the invaluable insights into the issues and trends affecting the users and providers of the technologies that are crucial for success in the constantly evolving global commodities markets.

Patrick Reames and Gary Vasey head our team, whose combined 60-plus years in the energy and commodities markets, provides depth of understanding of the market and its issues that is unmatched and unrivaled by any analyst group.

For more information, please visit:

www.comtechadvisory.com

ComTech Advisory also hosts the CTRMCenter, your online portal with news and views about commodity markets and technology as well as a comprehensive online directory of software and services providers.

Please visit the CTRMCenter at:

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