

2016 - 2021 CTRM MARKET OUTLOOK

Abridged Version

Please Note – This report is an abridgement of a full report available for purchase from Commodity Technology Advisory. The full report provides a detailed review, analysis and forecast of the global CTRM technology market from 2015 – 2021. Detail in that report includes market segmentation by geography, industrial segments and commodities. To purchase your copy of the full report, please visit <https://www.ctrmcenter.com/publications/reports/2016-2021-ctrm-market-outlook/>

**Commodity
Technology
Advisory**

CTRM Market Research, Analysis and Insights

INTRODUCTION AND SCOPE

Commodity Technology Advisory LLC (ComTech), the leading analyst firm covering commodity trading and risk management (CTRM) technology markets, has recently completed its biannual in-depth review of the CTRM software market space in order to compile an estimate of the size of the global CTRM technology market and prepare an outlook for growth across the various component submarkets that comprise it.

Readers of this report should be aware that in the development of this data, as in past years, 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 CTRM¹. The included capabilities (and associated services - where applica-

ble) 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

1) For definitions of CTRM and related software categories, please see <https://www.ctrmcenter.com/publications/white-papers/ctrmcm-architecture-approach-20-year-old-cond-undrum/>

from this 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 to capture and manage only financial instruments or products (which may or may not include financial commodities) and otherwise provide no capability for capturing, valuing, or tracking physical commodities
- / Supply chain management and optimization applications that cannot capture, manage, or value traded commodities based upon the unique physical characteristics of those commodities
- / Software products related to the metals recycling and waste management segments.

In this report, we examine both the most recent full year results and, based upon our analysis of market development and drivers, provide a 5-year forecast of future market growth along a number of dimensions.

The 2016 CTRM market size presented here is a “bottom-up” estimate that reflects our analysis of the financial performance of all vendors known to us to be servicing the global CTRM market that meet the criteria for inclusion delineated above. The data that forms the basis for this market size esti-

mate has been gathered in a variety of ways - including financial results provided via confidential conversations with many of the vendors, published financial or operational data from others, and other sources of market intelligence (employee counts, geographic location of those employees, announced deals, etc.) that provides the basis for calculating estimated financial and operational results.

Establishing a forecast of future performance 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 forecasting, being a forward-looking exercise, must take into account a complex array of factors and assumptions. These assumptions include overall economic conditions, regional or national market developments, 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.

The data for both the 2016 actual results and the 5 year forecast is presented along 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); and by geographic markets and industrial segments within the greater CTRM market place.

Despite the inherent difficulties in developing a reliable estimate of current size and a forecast of future performance, we believe that our organization's unique position in the market, that of 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 the most 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.*

SUMMARY OF RESULTS – 2016

Although many commodity prices did begin to improve in late 2016, most of the year was marked by the continuation of falling prices that first took hold in mid-year 2014. And, unfortunately, many of the underlying market conditions that led to that price collapse (over-built and over-supplied markets, low global economic growth, changing supply and demand patterns) continued throughout the year, resulting in a spending slump across almost all categories of technologies in the global commodities markets. Though pockets of slightly improved activity were seen in 2016 (driven largely by regional market developments), overall the market for CTRM products and related services in 2016 totaled \$1.47B, a decline of about 7% versus 2015 (\$1.59B). These results are a continuation of the downward trend first noted in 2015 when total market value that year declined by about 2% from the previous year.

There is, however, somewhat of a silver lining in that a significant portion of the decline in market value in 2016 is the result of the transition we're seeing from "traditional" software licenses to cloud solutions.

While "traditional" perpetual software licenses provide for a large upfront license fee, cloud licenses essentially spread that fee over the first 3 – 5 years of deployment, significantly reducing the revenue associated with a cloud license sale in the first year versus the value that would be recognized if it had been sold as a "traditional" license. Given that we are seeing a growing number of cloud deals consummated vs traditional license deals, the impact of the ongoing transition to the cloud has been fairly substantial and will continue to impact market value for the next several years. While this transition is certainly "painful" from the perspective of near-term vendor revenues and market growth, the ultimate value of single cloud deal will be greater than that of an equivalent "traditional" license after that initial 3-5 year period...leading to a net market expansion and growth in overall value. Additionally, the increasing number of vendors offering cloud CTRM solutions and the lower cost of acquisition of these products versus on-premises solutions should allow smaller companies (those that may have otherwise been priced out of the market) to acquire vendor-supplied software, contributing additional market growth in the coming years.

ComTech estimates the value of the global market for vendor-supplied CTRM applications in 2016 was approximately \$900 million, comprised of \$137 million in license sales, \$444 million in services, \$226 million in support and maintenance,

and \$93 million in revenues associated with cloud deployed or hosted software. Based upon these 2016 results, year-to-date information from a select number of the larger vendors, and our forecast of near-term market conditions, we believe that the market in 2017 will generate \$942 million in vendor revenue - a modest increase over 2016.

Total Market Value by Revenue Component

	<u>2015</u>	<u>2016</u>	<u>2017</u>
Vendor Revenue	\$ 1,015	\$ 900	\$ 942
3rd Party Implementation	308	286	314
Unaddressed Market	268	293	296
Total CTRM Market	<u>\$ 1,591</u>	<u>\$ 1,479</u>	<u>\$ 1,552</u>

While vendor supplied software makes up the majority (in terms of available technology revenues) of the market for CTRM applications, there still exists a number of companies that continue utilizing third-party consultants or internal IT staff to develop and support their own custom solutions. ComTech estimates that these bespoke solutions accounted for approximately \$293 million spent on the services of third party consultants in 2016, with a majority of those dollars being spent on continuing support and maintenance and the remaining amounts being expended on development of new capabilities or applications. These estimates do not include costs associated with customer resources assigned to the development or support of these bespoke applications (internal costs).

Though adoption rates for vendor supported solutions will vary by industry segment and geography, ComTech does

forecast that vendor-supplied solutions will continue to see additional adoption (particularly in the metals, ags and softs commodity categories, and in the Asia Pacific region) and we believe the market for custom developed or bespoke solutions will not show significant growth from year-to-year for the foreseeable future.

In addition to 3rd party consulting revenues associated with the development and support of bespoke functionality, consultants and integrators also maintain a significant role in the implementation and support of vendor-deployed solutions. For the purposes of this market sizing analysis, ComTech includes these dollars as part of the global CTRM market size. For 2016, we believe some \$286 million was spent by customers of vendor-supplied CTRM solutions for the services of these consultants to provide assistance during the selection, implementation and integration of the newly acquired technol-

ogies. Though these revenues are down from 2015 (\$308 million), we continue to see more customers of vendor supplied CTRM solutions engaging with third parties to assist in their acquisition and implementation projects, and we expect to see increased spend in this category over the next several years. Based on historical activity and an increasing reliance on 3rd party implementation resources, we believe the expenditures for these consultants to be, on average, at least 3 times the amount spent on vendor supplied consulting resources.

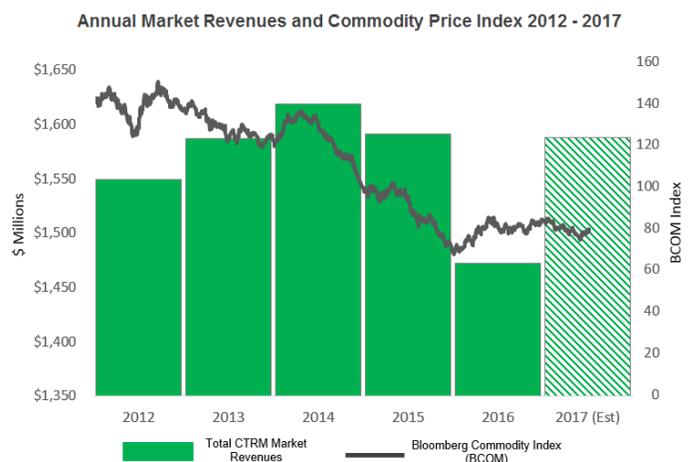
In total across all revenue components, our analysis indicates the total annual global market for CTRM products to be \$1.48 billion in 2016. Further, based on market observations and year-to-date results provided by a few of the largest vendors, we anticipate 2017 full year market revenues be approximately \$1.55 billion, slightly less than 5% growth year over year.

MARKET OUTLOOK AND STUDY ASSUMPTIONS

The global CTRM market has been significantly impacted by the collapse in commodity prices over the last couple of years. While full-year CTRM market spending continued to show modest growth of slightly more than 2% in 2014 despite the broad and deep declines in most commodity prices in the last half of the year, 2015 results indicated a reduction in spending, with the total global CTRM market declining almost 2%. Though some improvement in commodity prices was seen in 2016, reduced spending by almost all market participants - but particularly by producers, traders and merchants in almost all markets - was clearly evident as any hopes for a quick commodity market recovery faded through-out 2015, leading to lower budgets and spending in 2016. As a result, total spending for CTRM solutions and services declined by more than 7% versus 2015.

Despite only a modest improvement in commodity prices since January of 2016, first half results from 2017 indicate that commodity market participants have somewhat adjusted to market conditions and are again spending for IT solutions. Though we do not anticipate that the full year 2017 will grow beyond the levels of 2015, we do expect total CTRM spending in 2017 will show a solid increase over 2016, growing 7-8% over the previous year.

Beyond 2017, the forecast is open to significant uncertainty. As we've previously noted, the market for CTRM products and services is relatively small. Though there are more than 100



solutions vendors selling software products and related services in this market, the vast majority of those are very small and could be considered “boutique shops”. In fact, fewer than 15 software vendors generate more than \$10 million per year in revenues from the CTRM markets. Further, the top 6 vendors (again, as measured in terms of CTRM revenues) account for approximately two-thirds of the total market for vendor supplied

software and services. Given this concentration, annual results for the market can be significantly impacted by the success or failure of any one of these half-dozen vendors. This influence will be in particular focus in the next few years as the market continues its transition from traditionally installed, on-premises software to cloud delivered solutions.

FIVE YEAR CTRM MARKET OUTLOOK – 2017-2021

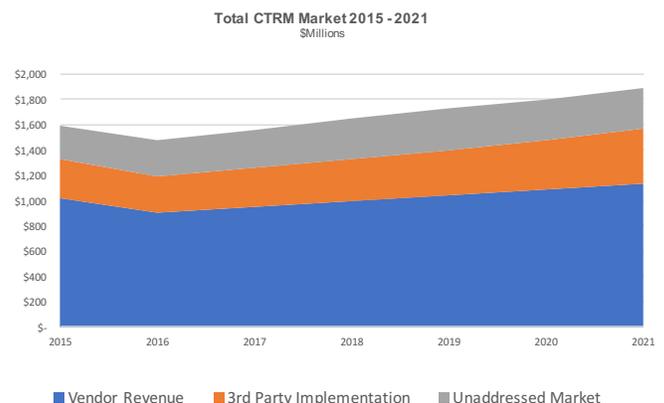
In developing our five year market outlook, the following assumptions were utilized:

- / Growth estimates reflects current consensus outlook for global economic growth of 3 to 3.5% per year for the foreseeable future. Though this rate has been revised upward when compared with recent years, much of the forecast growth is expected to occur in developing countries, regions in which there is little or no market for CTRM products. With slower but steady growth in the larger economies (China being an exception at 6-7%), overall growth in the market for CTRM products is anticipated to be in line with earlier ComTech estimates.**
- / All data is expressed in 2016 dollars – there have been no adjustments for inflation or currency exchange rate changes over the period 2017 to 2021.**
- / In line with previous estimates, ComTech currently believes the global market for CTRM licenses (including ASP/SaaS) will grow 4-6% annually from 2017 to 2021, with a forecast CAGR for the period of 5%. However, as noted earlier, as the trend toward cloud deployment of CTRM solutions continues, it is difficult at this time to accurately forecast the changing mix of perpetual license vs. annual license revenues with any real certainty and market results during the forecast period could show significant inconsistency from year to year.**

In general, we believe future market growth will reflect an increasing number of smaller deals as E/CTRM software is more readily adopted in the cloud by smaller firms that would have otherwise been priced out of the market for traditional software. Additionally, as many larger firms have indicated they are committed to moving their current CTRM solutions into the cloud, we anticipate slowing growth and a potential decline in revenues associated with support and maintenance payments. Nonetheless, as these larger end-user companies transition their CTRM installations from on-premises servers to cloud deployments, additional vendor revenues will be generated by both annual cloud “rentals” and services revenues as vendors assist these customers with the transition.

In developing our outlook for the global CTRM markets, we reviewed the current and perspective market by commodities,

geographies and industrial market segments; developing our topside outlook of the market based upon this granular review. In line with previous years’ estimates, we anticipate the total



global CTRM market will grow by 4-6%, with our estimates reflecting a 5-year CAGR of 5%.

Based upon these assumptions, we project full year 2017 CTRM market revenues at \$1.55B, 2018 at \$1.65B, 2019 at \$1.72B, 2020 at \$1.8B and 2021 at \$1.89B.

DISCUSSION OF REPORT METHODOLOGY

To arrive at this market sizing estimate, ComTech utilized “a bottom-up” review of all known vendors of production solutions and tools that meet the previously discussed criteria of CTRM technologies. While there are numerous vendors around the globe that do provide qualified (as it relates to this analysis) CTRM solutions, many of those companies also provide products and associated services that fall outside the established criteria, and those revenues have been excluded from this analysis.

In developing the bottom up estimate related to CTRM vendor revenues, more than 90 companies were reviewed and most had some or all of their revenues included in the final CTRM Vendor Market Size Estimate. For each known vendor of CTRM systems, research was conducted (including direct contact with many of the vendors) to obtain:

/ An estimate of vendor revenues and license revenues for 2016. Very few E/CTRM vendors are public companies and disclose some information as part of their regulatory reporting requirements. Additionally, several large and a few number of small E/CTRM vendors, though private, have provided this information to our company under terms of confidentiality. Others, more rarely, do occasionally disclose the information publically via press release or other announcements. In some instances, national rules force even private companies to disclose certain information and that too has been utilized. Utilizing these actual and estimated revenues, along with known and estimated headcount numbers, ComTech generated a number of reliable reference points and ratios for analyzing other vendors for which we had less visibility.

/ One of the primary ratios utilized in estimating any particular vendor's revenues was the “revenue per headcount” estimate. In our analysis of metrics provided by vendors or garnered through other sources, the actual revenue per headcount figure ranged from \$50,000 to \$295,000 per employee. The large variances in this

metric were correlated to a number of factors, though the primary influences were geographic location of the employees and level of specialization of the vendor (i.e. specialized risk management resources would command a higher annual salary).

Based on an analysis of the entirety of this data, revenue estimates can be accurately established for all vendors known to provide qualified solutions in the market.

Assumptions were then made for each vendor regarding the allocations of those revenues amongst 4 categories: 1) traditional license revenues, 2) SaaS/Hosted license revenues, 3) services revenues, and 4) revenues associated with support and maintenance agreements.

In addition to the identified and known vendors of CTRM products, we have made the assumption that there exists some number of vendors that are unknown to us. While ComTech Advisory analysts are highly experienced in this market, we cannot assume that every vendor, particularly those that operate in very localized markets (particularly in the Asia Pacific, South America and Eastern European/Russian markets), will be known outside their local areas. Therefore, as with past years, we have included a relatively small amount of revenue (less than 5% of the global total) to account for these entities.

In order to determine a total market spend for CTRM tech-

nologies, it is also important to account for the dollars spent with consultants and system integrators outside those provided by the vendors of the technologies. We have observed a clear trend by most market participants to engage such 3rd party services in almost all new product implementations, and an increasing number of upgrade and other support-related projects. Utilizing the results of a number of different research paths, we have established the value of these 3rd party services related to the initial implementation of CTRM solutions as \$286 million in 2016.

Additionally, we have established a value of custom developed or bespoke solutions (non-vendor) produced and delivered by third party consultants at \$293 million for 2016. This value represents the portion of the market that has chosen to deploy custom developed solutions despite there being commercially available software that could meet many or most of their requirements. While this portion of the market is sizeable, representing about 17% of the total market, and there will certainly always be companies that feel they have unique requirements that cannot be adequately addressed by vendor solutions, the increasing penetration of commercial CTRM solutions has resulted in no appreciable growth in this market.

ABOUT

Commodity Technology Advisory LLC

Commodity Technology Advisory is the leading analyst organization covering the Energy and Commodity Trading and Risk Management (E/CTRM) technology markets. We provide invaluable insights, backed by primary research and years of experience, into the issues and trends affecting both the users and providers of the applications and services that are crucial for success in markets constantly roiled by globalization, regulation and innovation.

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:

www.ctrmcenter.com

19901 Southwest Freeway
Sugar Land TX 77479
+1 281 207 5412

Prague, Czech Republic
+420 775 718 112

ComTechAdvisory.com
Email: info@comtechadvisory.com

**Commodity
Technology
Advisory**

CTRM Market Research, Analysis and Insights