Commodity trading and risk management systems overview

11

Volatile commodity markets, pressure on profit margins and the unprecedented speed of technological progress have marked the years since the financial crisis in 2007. Commodity companies dominated S&P 500’s top 10 by market cap back then, but have since been cast aside by technology companies. In addition, a strong wave of regulation as a response to the last financial crisis has marked the last decade. The adoption of EMIR, MiFID or Dodd-Frank has forced companies to review their trading activities and to comply with stricter requirements.

As a consequence of volatile commodity markets and decreasing margins, commodity companies have to increase volumes while improving efficiency. However, larger volumes can only be handled with a sophisticated and robust commodity trading and risk management (CTRM) system. New technologies such as big data analytics, robotic process automation, artificial intelligence and blockchain can supplement a strong CTRM system to gain efficiency.

CTRM systems are crucial when it comes to handling the life cycle of a physical commodity transaction that carries all manner of risk with it. A transaction needs to be overseen and managed from its initial execution through to its final settlement. CTRM systems have been at the forefront of front, middle and back-office desks. They assist and enable market participants to follow up and hedge against market price movements, monitor their credit risks and obtain an overall view of the numerous other factors that affect their trading portfolio. The choice of a CTRM system should be an informed and practical one. EY is at the forefront of the latest developments in the commodity and technology industries, and EY has dedicated commodity centers of excellence worldwide supporting CTRM projects.

Executive summary

Volatile commodity markets, pressure on profit margins and the unprecedented speed of technological progress have marked the years since the financial crisis in 2007. Commodity companies dominated S&P 500’s top 10 by market cap back then, but have since been cast aside by technology companies. In addition, a strong wave of regulation as a response to the last financial crisis has marked the last decade. The adoption of EMIR, MiFID or Dodd-Frank has forced companies to review their trading activities and to comply with stricter requirements.

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The vendor information contained in this brochure is sourced directly from respondents who agreed to participate in the questionnaire prepared by EY’s CTRM team. The brochure also includes observations on the current CTRM system trends coming from both EY experts and our clients, our suggested approach to CTRM system selection and an overview of selected CTRM-related services that EY can provide.

We hope that this brochure will give you a clear picture of the CTRM system landscape and the relevant challenges that your organization may be faced with when selecting and implementing a new CTRM system.

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Commodity trading and risk management systems overview

Hot topics in commodity trading and risk management systems and the commodity industry

Commodity trading firms have experienced significant changes over recent years. Increased volatility in commodity prices, decreasing margins, extended regulatory and compliance measures and stunted economic growth have put additional pressure on firms to gain a better mastery of their inherent risks, while maintaining acceptable levels of financial performance. These pressures have more than often translated into a quest for cost and volatility reductions that are often reliant on efficient technological solutions. Recent advances in technologies offer the potential to tackle the new challenges that commodity trading companies face.

Robotic process automation

Robotic process automation (RPA) can be used across software and allows the capture, interpretation and execution of a business process in a repetitive, auditable and controlled manner. RPA can handle repetitive, deterministic and high-volume tasks efficiently, reliably, quickly and can be deployed 24/7. As such, it allows human resources to focus on more challenging tasks that need subjective judgement, such as exception handling, change management, process improvement or relationship building.

Although difficult to measure, various studies conclude that RPAs can lead to significant cost reductions. A recent EY study estimates a cost-saving potential of up to 35% for operational processes. This can prove interesting for commodity trading houses seeking to refresh old business processes in an increasingly complex and fast-paced industry. Commodity firms can look into new ways of leveraging on RPAs to improve their profit margins.

Artificial intelligence

Mass collection of data, coupled with progress in the areas of artificial intelligence and machine learning have opened up new operational possibilities. Complex algorithms requiring efficient data storage and structuring can learn from data and tackle complex decision-making tasks. Machine learning can complement human decision-making, such as short-term price predictions of commodity prices based on voluminous data sets.

EY teams have developed various proof-of-concept models applying machine learning techniques in the context of commodity trading:

- Price prediction for various commodities leveraging data from different sources (marine and land weather observations, public and school holidays, market prices)
- Price prediction of vessel performance based on Automatic Identification System (AIS) data and marine weather observations
- Prediction of benzene price based on WTI, Brent, Naphtha, and FX rates for proxy hedging that is automatically optimized to market conditions

Commodity trading and risk management systems overview

"42% of commodity companies wish to see AI applications in CTRM systems while only 11% of surveyed CTRM systems currently provide AI solutions"
Blockchain applications

In the commodity trading space, this technology offers new ways of financing and handling the exchange of physical commodities by bringing more speed and transparency at a lower cost to the process. There are many potential applications and pilot projects that have been successfully conducted in the space of trade finance.

A technology providing a shared database supporting multiple authors whose records are confirmed and signed by an integrated verification model that constitutes an irreversible transaction capable of activating a transaction process.

As an example, in cooperation with Maersk, one of the leading global shipping companies, EY helped to develop a marine insurance platform based on blockchain technology. This platform provides accurate and real-time information on marine insurance contracts shared with clients and brokers, which significantly improved the operational efficiency and the data transparency across the whole value chain. As a result, administrative costs and risks were reduced, benefiting all market participants.

Blockchain technology is currently not implemented on a large scale in the commodity industry but rather in pilot projects by commodity market participants. The main obstacle to its widespread usage is the lack of a mature blockchain solution that is accepted as an industry standard. Nevertheless, efforts have been observed in the marketplace to build consortiums and standards that would simplify operations in commodity markets, e.g.,

- Verification of customer identity (KYC)
- Digitization of letters of credit
- Digitization of physical post-trade processing

Increasing regulation, complexity and speed

With recent adoptions of EMIR and MiFID II in Europe and Dodd-Frank in the US, commodity trading firms have reviewed their trading operations to ensure their compliance. A flexible commodity trading and risk management (CTRM) system can help in performing gap analysis, monitoring limits and generating relevant regulatory reports. With the wave of regulation far from over, stricter regulatory requirements has driven investment in robust, reliable and flexible CTRM systems.

While electronic trading in equity, bonds and FX markets has already started years ago, it is not as common in commodity markets. With the rise of algotrading and a surging need for data scientists, companies are seeking to execute trades in milliseconds to achieve best execution.

Commodity markets are becoming more fast-paced and complex. With the application of new technologies and stricter regulation, CTRM systems are also starting to evolve with the speed of the times to remain competitive.

Commodity trading firms have evolved and many are considering the investment into an in-house built CTRM system as opposed to purchasing third party solutions. As the dilemma between in-house built and third party solutions persists, system vendors are adapting their offering with more targeted and lighter solutions designed to respond to specific needs at different budget levels.

Simplified representation of blockchain technology applied to commodity trading
Commodity trading and risk management systems overview

Based on our interviews, 55% of interviewees were overall either satisfied or very satisfied with their current commodity trading and risk management (CTRM) solution. Nevertheless, 64% of the companies are planning to change at least part of their current CTRM solution in the near future to achieve a better fit with their business requirements, which was also the main area of discontent cited by the respondents (55%). Other commonly cited challenges are performance issues (42%) and a lack of flexibility (42%) in their current CTRM solution.

From their experience of past CTRM implementations, our respondents cited a lack of skilled resources as their major issue (55%), followed by budget constraints (45%) and weak project management (36%).

Companies can choose to buy a system from an external vendor with an existing product, build their own system in-house from scratch or combine both approaches. A CTRM implementation project comes with many financial and operational risks and companies thus often decide to partner with an established CTRM provider for any implementation. Among our respondents only a minority of 25% would choose a pure in-house development, while the other 75% would partner with an established CTRM provider.

CTRM systems have become very complex tools and vendors are working on various fronts to stand out from their competition and meet the expectations of their clients. Ninety-one percent of our interviewees cited performance as the most important aspect of a CTRM system. All processes within the system must run seamlessly and quickly to avoid any business interruption. Other aspects that were cited as key were the flexibility of the system (75%), so that new functionalities can be added or removed, as well as front-to-back coverage of the system (50%).

In future, CTRM users would like to see CTRM vendors improve system functionalities in the areas of process automations (75%), modularity and interconnectivity (67%), data protection (50%), and artificial intelligence, machine learning and big data analytics (42%). Blockchain applications or facilitations were only cited by 9% of the interviewed persons as important factors, which is due to the early stage of this technology.

EY long-standing relationships with leading global commodity trading companies gives first-hand industry insights on CTRM systems. EY commodity teams across the globe conducted interviews with key CTRM system dependent employees from numerous commodity companies to gain specific market relevant insights. The sample of commodity trading companies that were interviewed are diversified across all commodities.
Commodity Trading and Risk Management Systems Overview

Commodities traded by respondents

- Gas
- Refined oil products
- Crude oil
- Agricultural
- Base metals
- Power
- Coal
- Emissions
- Other
- Freight
- Precious metals

Evolution of CTRM-related cost in past 2 years

- 0% to 10%
- -10% to 0%
- -25% to -10%
- < -25%

Most valued CTRM aspects

- Performance
- Flexibility
- Front-to-back coverage
- Vendor support
- Interconnectivity
- Competitive price
- Regular updates
- Multi-device
- Data lake
- AI/ML/BD
- Blockchain applications
- Data protection
- Cloud/mobile applications
- Modular set-up/interconnectivity
- Customizable user interfaces
- Cost savings
- Process automations
- Outdated software
- Weak architecture
- High maintenance cost
- Too many customizations to meet demands
- Weak vendor support

Desired features of CTRM system
The benefits of using CTRM systems

Commodity traders and risk managers have been using CTRM systems in their daily workflow, as they provide them with the basic capabilities to:

1. Execute and track their actions and transactions
2. Measure the risks they have taken (and help them decide on what to do next)
3. Account and report on where they stand with whom
4. Provide some form of monitoring dashboard for their senior management

In the emergence of a more digitalized age, and with easier access to technology overall, a wide variety of commodity trading and risk management (CTRM) system providers are offering a large palette of different types of solutions. Although it would be difficult to summarize the whole supply side of CTRM systems, we do observe different categories, each of which is trying to appeal to the needs and goals of an even more diverse base of prospective buyers. From an operational point of view, we can broadly put them into three categories:

- **Off-the-shelf** solutions that respond to targeted functional requirements and need minimal configuration, but can sometimes have limited extension possibilities
- **Extendable** solutions that have certain off-the-shelf properties, yet allow the user to build on the data model and functionalities, sometimes through a product specific coding language
- **Base framework** solutions that are deemed to provide the essential technological structure for the creation of a customized solution

There are clearly overlaps between these categories among many vendors, and potential customers will seek out whichever one best meets their overall requirements.

**Commodities covered by CTRM vendors**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude oil</td>
<td>83%</td>
</tr>
<tr>
<td>Refined oil products</td>
<td>50%</td>
</tr>
<tr>
<td>Gas (Natural Gas, LNG, LPG)</td>
<td>72%</td>
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<tr>
<td>Coal</td>
<td>56%</td>
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<td>Power</td>
<td>94%</td>
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<tr>
<td>Emissions</td>
<td>61%</td>
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<tr>
<td>Agricultural</td>
<td>83%</td>
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<tr>
<td>Base metals</td>
<td>85%</td>
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<tr>
<td>Precious metals</td>
<td>72%</td>
</tr>
<tr>
<td>Freight</td>
<td>68%</td>
</tr>
</tbody>
</table>

Complexity and simplification (a wider and more competitive landscape)

With an increase in the complexity and multiplicity of financial instruments and transactional choices, as well as a more stringent regulatory environment, commodity trading firms are expanding their skillsets to new horizons. We observe an overall tendency to require more out of a CTRM system, without necessarily burdening budgets significantly.

This trend has led CTRM system vendors to rethink their offering from both a functional and technological perspective. In many instances, they have sought to expand not only their functional workflow coverage, but also their asset class coverage. On top of this, with the general increase of cloud solutions in the enterprise software space, more and more CTRM vendors are offering hosted variants in addition to their deployed solutions.

Moreover, this environment of increased competitiveness has been helped by the ease of access to technological development. Hence, the emergence of more traditional enterprise (and financial) solution providers in the CTRM space has not been uncommon.

In addition to this, newer and smaller CTRM system vendors have appeared on the market over the last decade, offering a variety of solutions that are more accessible to medium-sized and small companies. These solutions, which are for the most part hosted (implying reduced setup costs), aim to meet the needs of smaller firms faced with similar challenges to those of their larger equivalents.

It is also worth noting that more traditional industrial and manufacturing companies, whose primary focus is not on commodity trading, are now becoming potential buyers of CTRM systems, particularly those that have set up centralized trading and risk management entities (often called “margin management” functions).
As the overlap between supply and demand in the commodity trading and risk management (CTRM) system space extends, we have noticed a few trends when it comes to recent market and regulatory developments:

- A focus on efficiency and system performance – be it for executing transactions, computing results or reporting.
- A more blurred line between financial and physical trading – which implies price-cost optimization (under physical constraints), multiple modes of transport and a tendency to have access to some form of geospatial visualization.
- Newly generated needs for automated workflows and embedding of controls into the CTRM system, versus offline spreadsheet-based controls (94% of surveyed vendors reported capabilities on typo programming automated processes).
- Newly created regulatory compliance rules reporting (43% of surveyed vendors reported capabilities on European Market Infrastructure Regulation (EMIR) coverage for European markets).
- The integration of new technologies in existing CTRM systems. In fact, of surveyed system vendors 11% report capabilities on Artificial Intelligence and 21% report capabilities on Blockchain.

Overall, the landscape of CTRM systems has become both more competitive, but also more complete. As traditional vendors are faced with the challenges of expanding their coverage and deployment methods, new (and often niche) vendors are filling the market gaps created by smaller buyers that are increasingly trading in their spreadsheets for more efficient and flexible screen solutions.
Commodity trading and risk management systems overview

CTRM system selection approach

Key success factors for selecting and implementing a CTRM system

Selecting a fit-for-purpose CTRM system is a crucial strategic decision. Prior to any vendor system selection process, a firm should build a solid business case to support the decision to procure or replace a CTRM system.

At EY, we believe that justifying the business case of CTRM system selection must be supported by the prospective business growth related to the investment, meeting risk management and operational excellence standards, and achieving the required regulatory compliance through a scalable or extendable solution. In addition, as CTRM projects require high dedication of key users across the company, it is crucial that every department supports the implementation of a new CTRM system.

The following are some key elements to take into account before launching the selection process.

CTRM system selection road map:

- Define the needs of the business for today and the future without taking into account vendor capabilities
- Prioritize requirements by business value and validate them with senior management
- Define system needs, taking into account the constraints of the existing IT system and compliance considerations
- Evaluate CTRM vendor packages to meet systems needs through a structured, thorough and independent request for proposal (RFP) process
- Establish RFP process governance and ensure that the program structure and deliverables are clearly defined and monitored throughout execution

Technical aspects to take into consideration:

- Performance levels that are acceptable and stable
- Scalability that corresponds to the firm’s growth plans
- Data and platform security (ensuring confidentiality and controlling access)
- Ability to add third-party modules (compatibility and connectivity)

As all companies strive to have the best possible return on their investments, the cost of your future CTRM system will also play a role in the decision-making process.

Selecting and implementing a “fit for purpose” CTRM system is a significant undertaking. From EY experience, there are no two selection (or implementation) projects that are entirely comparable. Although client specifics will always drive the selection process, we can provide an illustrative approach.
Typically proposed timeline for selecting a CTRM system

The following outline uses our business and technical insights in the CTRM sector to layout some example stages we could suggest:

1. **Define requirements and architecture**
   - Agree vision, functional scope and key non-functional requirements (NFRs) with major stakeholders, including relative priority
   - Agree key integration and technical expectations

2. **Research and agree vendors**
   - Identify potential vendors matching defined requirements (long list ~8-10)
   - Evaluate long list against prioritized functional scope and key NFRs
   - Validate short-list of ~4-5 vendors

3. **Conduct RFP and select vendors**
   - Run RFP for short-listed vendors
   - Agree detailed evaluation criteria
   - Evaluate vendor pitches against evaluation criteria including total anticipated cost of ownership
   - Make final choice of vendor

4. **Plan system implementation**
   - Identify the risks and “lessons learned” related to CTRM system implementation
   - Set up a plan, timeline for the implementation project across technology and business

Key objective: Project kickoff
How EY can help

EY CTRM teams at a glance

EY commodity professionals are dedicated to servicing commodity trading and risk management clients. The teams have the depth of industry and technology knowledge to realize business visions through the incorporation of technology initiatives, and specifically:

• A group of commodity industry and financial market professionals
• First-hand industry experience across a variety of systems — both as users and through system selection and implementation support
• Deep experience in IT infrastructure and system capabilities
• Independence from CTRM system providers
• Presence across the globe and network

EY center of excellence for commodity trading and risk management
EY can support you through the business transformation of your trading operations

CTRM system-focused services

EY teams of commodity and technology professionals can help by advising on the selection and implementation of CTRM systems.

CTRM system selection

**EY services**
Design and facilitate the vendor selection process, including RFP support, system selection scoring, infrastructure costing and vendor background due diligence.

**Sample credentials**
- Assisted a power producer in its selection of a CTRM software vendor.
- Assisted a major financial entity with tools selection for its CTRM and International Organization for Standardization (ISO) management needs, providing an independent review of the entity’s requirements versus software package capabilities.

CTRM system implementation

**Our services**
System implementation support lead or support for implementation, including the definition of requirements, testing, deployment and project management.

- Data analytics, reporting and other trade support systems (e.g., pricing, logistics, actualization and accounting), or custom builds.

**Sample credentials**
- Assisted with the design and implementation of a suite of risk management reports to support a client’s new CTRM implementation.

CTRM technology strategy and assessment

**Our services**
Define business needs in terms of IT requirements and assess needs versus current system capabilities to identify improvement opportunities and define an IT road map.

- Design new or assess current CTRM and supporting systems infrastructure, and data management strategy, to help determine improvement opportunities (includes benchmarking, oversight and validation to complement ongoing work).

**Sample credentials**
- Developed a complete IT strategy for a refined oil products entity, dependent on the parent company for its IT systems and infrastructure, so that the entity could operate its IT functions, including CTRM, independently.

Commodities data solutions

**Our services**
Design efficient data strategy, architecture, tools and management processes to centralize and streamline the collection of trade, pricing and valuation data across the organization.

- Support real-time and on-the-go analytics to support automated or ad hoc reporting (for additional capabilities such as trade surveillance and compliance reporting).

**Sample credentials**
- Engaged by a power utility to design a consolidated profit and loss and position reporting platform, adaptable to the changing CTRM landscape.
- Engaged by an oil producer to develop business intelligence and data analytics strategy and design.
Please note that the information in this section has been directly sourced by EY from the participating CTRM system vendors. This overview has been prepared and published to provide factual information on the functional and technical aspects of the various solutions included in the questionnaire. Please be advised that the list of participating system vendors is in no way exhaustive and that they vary in size and scope (asset class and functional coverage), as well as geographical coverage. By including a variety of vendors, interested firms can use the information provided, and their best judgment, to determine which vendor(s) would be most likely to meet their needs within their budget.

* These entities are part of ION.
Commodity trading and risk management systems overview

Agiboo B.V.

### Commodity Trading and Risk Management Systems Overview

<table>
<thead>
<tr>
<th>Main solution name(s)</th>
<th>Date of initial launch</th>
<th>Date of latest version release</th>
<th>Current version number</th>
<th>Customer base for all products</th>
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<td>2011</td>
<td>30 November 2018</td>
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**EY questions**

**Vendor answers**

**Could you please provide a brief description of your company and your solutions?**

Agiboo is a provider of commodity trade and risk management solutions with a focus on agricultural and soft commodities. The flagship product Agiblocks has been adopted in the commodity trade and risk management industry since 2011. Agiblocks incorporates detailed understanding of the specific commodity business and latest information technology. At Agiboo, our ambition is to make complex matters simple, which ultimately finds its evidence in the Agiblocks intuitive and user-friendly user interface. Differentiators of Agiblocks are the functionality specifics for the different softs- and agri-commodity industries (such as cocoa, coffee, sugar, dairy and grains) and the flexibility to configure the application to your needs.

**Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?**

- Trade Finance automation
- Blockchain Integration
- Repository reporting
- APIs to origin/farm/certification applications

**In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?**

- Complete deal life cycle supported
- Multi-commodity and currency
- Other asset classes covered (eq., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

**In your opinion, what are the most pressing demands from your clients?**

- Scalability and Cloud integration
- Configurability
- Low risk implementations
- Risk/Analytical tool integrations

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**Section I – Company information**

**a) Company history**

<table>
<thead>
<tr>
<th>Founding year</th>
<th>Headquarter location</th>
<th>Other representative offices</th>
<th>Number of employees worldwide as of 31.12.2017</th>
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**b) General corporate information**

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**Section II – Verbatim**

**c) General system/solution information**

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<th>Supported functions</th>
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</table>

**Geographical location of clients by continent**

**Company size of typical clients**

- Small: 1-30 staff
- Medium: 30-300 staff
- Large: Over 300 staff
Allegro Development

Commodities

- Crude Oil
- Refined Oil products
- Gas
- Coal
- Power
- Emissions
- Agricultural — grains, oilseeds, softs, dairy
- Base metals
- Precious metals
- Freight
- Other

Front Office

- Core capabilities
- Capabilities

Middle Office

Risk Management

Back Office

Accounting

Logistics

Compliance

Geographical location of clients by continent

Company size of typical clients

Small 1-30 staff
Medium 30-300 staff
Large Over 300 staff

Section I — Company information

a) Company history

Founding year: 1984
Headquarter location: Dallas, USA
Other representative offices: Zurich, Switzerland, Houston, Berlin, London, Singapore, Jakarta, Dubai
Number of employees worldwide as of 31.12.2017: 363

b) General corporate information

Ownership (private/public): Private
Majority shareholder: Vector Capital
Annual revenue last year (2017): Not disclosed

Section II — Verbatim

c) General system/solution information

<table>
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<tr>
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<th>Date of latest version release</th>
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</thead>
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<td>Allegro Analytics</td>
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<td>111</td>
</tr>
</tbody>
</table>

EY questions

Could you please provide a brief description of your company and your solutions?

Allegro is the global leader in commodity management software for companies who buy, sell, produce or consume commodities. For over 30 years, Allegro has delivered position visibility, risk management, comprehensive controls and regulatory compliance through a forward compatible, next-generation architecture that is built for your business. Allegro's proven (energy trading and risk management system) ETRM software innovation and flexibility, coupled with a strong global network of industry partners, makes its solutions the best on the market for full commodity portfolio management.

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

- The new challenge in the power market is the ability to support the settlement of market trades at a 5-minute granularity, which requires digesting an enormous amount of data and an efficient settlement engine.
- Increasing clearing and an increasing move forward continuous trading. Allegro is focusing on cost-cutting and automation of derivative instrument handling a secondary problem/historical weakness for our product exacerbated by increasing interest rates and a shift to OIS as risk-free rates mean we are improving our handling of interest rates to incorporate ‘multi-curve’ treatment of yields and yield spreads.
- Real-time intraday analytics rather than next morning. This year, Allegro acquired Financial Engineering Associates (FEA), the global leader in quantitative analytic solutions, in order to respond to this market need.

In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and currency
- Other asset classes covered (e.g., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

In your opinion, what are the most pressing demands from your clients?

Allegro’s clients demand flexible and scalable solutions that meet their specific business needs, including real-time position visibility, risk management, comprehensive controls, and regulatory compliance in an ever changing market. We deliver these solutions to each of our clients not only during the initial implementation, but after as well. We understand our customers’ needs change as new technologies emerge and the market changes; and we are proactive in working with each of them to ensure our solutions align with their business strategy.
Amphora Inc.

Commodities

<table>
<thead>
<tr>
<th>Commodity Type</th>
<th>Crude Oil</th>
<th>Refined Oil Products</th>
<th>Gas</th>
<th>Coal</th>
<th>Power</th>
<th>Emissions</th>
<th>Agricultural – grains, oilseeds, softs and dairy</th>
<th>Base Metals</th>
<th>Precious Metals</th>
<th>Freight</th>
<th>Other, Steel</th>
</tr>
</thead>
</table>

Front Office

Middle Office

Risk Management

Back Office

Accounting

Logistics

Compliance

<table>
<thead>
<tr>
<th>Supported Functions</th>
<th>Core capabilities</th>
<th>Capabilities</th>
</tr>
</thead>
</table>

Geographical location of clients by continent

Company size of typical clients

Small

Medium

Large

1-30 staff

30-300 staff

Over 300 staff

Section I – Company information

a) Company history

<table>
<thead>
<tr>
<th>Founding year</th>
<th>Headquarter location</th>
<th>Other representative offices</th>
<th>Number of employees worldwide as of 31.12.2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Houston, USA</td>
<td>Zug Switzerland, London, UK, Hyderabad, India, Stamford, CT, Atlanta, GA</td>
<td>110</td>
</tr>
</tbody>
</table>

b) General corporate information

<table>
<thead>
<tr>
<th>Ownership (private/public)</th>
<th>Majority shareholder</th>
<th>Annual revenue last year (2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Not disclosed</td>
<td>Not disclosed</td>
</tr>
</tbody>
</table>

Section II – Verbatim

c) General system/solution information

<table>
<thead>
<tr>
<th>Main solution name(s)</th>
<th>Date of initial launch</th>
<th>Date of latest version release</th>
<th>Current version number</th>
<th>Customer base for all products - number of companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symphony</td>
<td>1997</td>
<td>2018</td>
<td>3.2</td>
<td>18</td>
</tr>
<tr>
<td>Symphony Freight</td>
<td>2007</td>
<td>2015</td>
<td>3.5</td>
<td>5</td>
</tr>
<tr>
<td>Alchemy</td>
<td>2017</td>
<td>In Development</td>
<td>1.0</td>
<td>2</td>
</tr>
<tr>
<td>AssayLocker</td>
<td>2016</td>
<td>2018</td>
<td>2.0</td>
<td>2</td>
</tr>
</tbody>
</table>

Section III – EY questions

Could you please provide a brief description of your company and your solutions?

Amphora, Inc. is the premier software solution provider for trading, logistics and risk management in the global commodities marketplace. Our global presence includes 100+ employees in 5+ global offices, all of who have direct hands-on experience with commodity trading systems. Symphony is a highly scalable, end-to-end solution specific to crude oil, refined products and freight trading, that streamlines operations, reduce transaction costs and manage all of your business requirements within a single platform. Alchemy offers a specialized concentrates User Experience and vertical specific profit and loss, and provides a complete contract management solutions that is catering to the unique pricing of concentrates contracts such as multi dimensional payable rules, penalties, treatment and refining charges and OP optionality. AssayLocker offers a central clearing mechanism that replaces the manual and burdensome assay exchange process to optimize cash flow and the concentrates settlement process.

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

- Customer and market driven development
- Amphora is working on developing next generation solutions to cover the entire commodity supply chain

In your opinion, what are the most pressing demands from your clients?

- Complete deal lifecycle supported
- Multi-commodity and - currency
- Other asset classes covered (e.g., Equity, Bonds) Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

In your opinion, what are the most pressing demands from your clients?

- Usability
- Extendibility
Section I – Company information

a) Company history

<table>
<thead>
<tr>
<th>Founding year</th>
<th>Headquarter location</th>
<th>Other representative offices</th>
<th>Number of employees worldwide as of 31.12.2017</th>
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</thead>
<tbody>
<tr>
<td>2004</td>
<td>Dublin, Ireland</td>
<td>ION Offices in 40+ locations</td>
<td>5,750+</td>
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b) General corporate information

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<tr>
<th>Main solution name(s)</th>
<th>Date of initial launch</th>
<th>Date of latest version release</th>
<th>Current version number</th>
<th>Customer base for all products – number of companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>AspectCTRM</td>
<td>2004</td>
<td>August 2018</td>
<td>CTRM 18.2 released in July (regular monthly release)</td>
<td>1,200+</td>
</tr>
</tbody>
</table>

EY questions

Could you please provide a brief description of your company and your solutions?

1. ION is an industry-leading provider of automation solutions and mission critical applications. We enable financial institutions, central banks and corporations to digitize and automate their most critical business processes. We are reinventing the way business is done through our innovations in automation technology.
2. ION Commodities is the largest dedicated provider of trade and risk management and treasury solutions in the world. ION promotes a multi product strategy to best address different commodities customers' unique requirements.

Vendor answers

- We have four leading ETRM/CTRM products and 1,200+ clients globally, along with 6 add-on products for market data, supply chain, metals accounting and shipping solutions.
- ION Commodities meets the needs of organizations with varying complexities and at different stages of technology adoption. Solutions are delivered via Software-as-a-Service (SaaS) multi-tenant cloud, hybrid cloud, private cloud, and on-premise.

- We are the only Commodities Solution provider with the ability to deliver all asset classes, physical and financials, and changing technology needs through:
  a. Commitment to continuous innovation
  b. Track record of successful delivery
  c. Financial strength with a multi-decade strategic view

- Aspect Enterprise Solutions provides commodities and trading companies of all sizes, supporting bunker trading, fuel marketing, oil and petroleum products, metals, agriculture and coal. It’s the only trade and risk management solution with integrated market data delivered SaaS in the cloud. Aspect’s cloud architecture enables quick deployment and configuration, controlled costs and rapid ROI.

- We have four leading ETRM/CTRM products and 1,200+ clients globally, along with 6 add-on products for market data, supply chain, metals accounting and shipping solutions.

- ION is an industry-leading provider of automation solutions and mission critical applications. We enable financial institutions, central banks and corporations to digitize and automate their most critical business processes. We are reinventing the way business is done through our innovations in automation technology.

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  a. Commitment to continuous innovation
  b. Track record of successful delivery
  c. Financial strength with a multi-decade strategic view

- Development is driven by the needs of the market and our clients. Market needs are diverse, therefore our development plan is focused around flexibility of the product and ease of integration with other systems. It allows AspectCTRM to deliver the best personalized experience in the shortest period of time.

- Archiving data for faster performance
- Enhanced UI & user experience

- Complete lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (eq. Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category? Please tick no more than three options

- Complete deal lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (eq. Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

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- Archiving data for faster performance
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- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

In your opinion, what are the most pressing demands from your clients?

- Nowadays the performance is the number one factor. Users demand real time operations and immediate evaluation of risks based on changes. Users cannot wait hours or days to get PnL and risk numbers. Aspect has always been real-time, where other vendors are not, due to in-memory database technology. Clients demand the same performance despite the increasing volumes of data.

- Leverage SaaS in the Cloud C/ETRM solution with rapid implementation & expedited time to value.

- Complete lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (eq. Equity, Bonds)
- Very competitive cost/price
- Quick implementation
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- Modular set-up/Flexibility
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- Leverage SaaS in the Cloud C/ETRM solution with rapid implementation & expedited time to value.
Brady is a leading provider of software solutions for global energy and commodity trading. We offer a choice of trading and risk management applications designed to help producers, consumers, financial organisations and trading companies manage all of their commodity transactions in an integrated solution. Brady has more than 30 years of expertise in the commodity markets with customers worldwide depending on our software solutions to manage risk and deliver vital business transactions across their global operations. Our expert market knowledge, professionalism and proven problem-solving abilities enable us to understand the challenges our clients face and develop tailored solutions that consistently meet and exceed their needs.

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

In commodities:
- Concentrates & tolling: Management of tolling contracts
- Standardisation of APIs for ease of integration
- ISO 20022 standard for payments
- Enhanced limit management

In energy:
- Regulatory changes: Sizeable changes in terms of compliance, market rules, XML messaging formats + underlying logistical changes with the introduction of data hubs.
- Big data: New market trends/changes through Smart Metering (AMS) and increased data volumes.

In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (eg., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

In your opinion, what are the most pressing demands from your clients?

- Ease of integration and continuing to automate more and more processes, including automation of flow between trading counterparties and with suppliers, as well as increasing ability to provide up-to-the-minute information to all levels of the organization as needed.
### Section I – Company information

#### a) Company history

<table>
<thead>
<tr>
<th>Founding year</th>
<th>Headquarter location</th>
<th>Number of employees worldwide as of 31.12.2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Solihull, UK</td>
<td>45+</td>
</tr>
</tbody>
</table>

#### b) General corporate information

<table>
<thead>
<tr>
<th>Ownership (private/public)</th>
<th>Majority shareholder</th>
<th>Annual revenue last year (2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>Energy One Group</td>
<td>Not disclosed</td>
</tr>
</tbody>
</table>

### Section II – Verbatim

#### Contigo

Contigo develops and supports an energy software suite that manages the full trade lifecycle from trade capture to portfolio management through to settlement and invoicing. Contigo’s Energy Trading and Risk Management (ETRM) Software is designed to support European energy generators and retail suppliers and is preconfigured with industry data to enable rapid implementation. The modular software suite also includes scheduling and nomination functionality managing data flows with both Elexon and National Grid. Contigo software is offered as a fully hosted SaaS solution and includes automated trade capture and straight-through processing from European Power and Gas exchanges and venues.

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

- Increased automation and straight through processing capabilities, real-time risk management, increased support for prompt trading, automated trading, improved market data access and analysis tools.

In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (eq., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

In your opinion, what are the most pressing demands from your clients?

- Increased automation, flexibility, ability to easily integrate with other systems, cloud deployment
Eka is the global leader in providing Commodity Management software solutions driven by Cloud, Blockchain, Machine Learning and Analytics. Eka’s end-to-end Digital Commodity Management platform enables companies to efficiently and profitably meet the challenges of complex and volatile markets.

Eka’s modern commodity platform is designed for commodity companies that need to flex, grow, and adapt to market forces. It is an intuitive commodity software built with features that deliver in-depth commodity workflows, entirely configurable to your needs as you scale. It is the only digital commodity management platform that breaks monolithic CTRM systems into bite-sized chunks of powerful apps that work across the commodity value chain, thereby enabling faster, data-powered decisions. The solution is comprehensive, connected, on cloud and designed to scale as your business requirements grow. The platform offers end-to-end functionality and can rapidly configure every workflow from sourcing to trading & risk and supply chain all the way to downstream. Its suite of domain rich, commodity-savvy apps support every function to help smoothen the entire process. With Eka’s flexible solution businesses can start small or big depending on their requirements. They can configure only the apps they need, with the freedom to add as they go, as their business grows. By providing end-to-end connectivity and visibility, it empowers commodity businesses to go beyond and explore new growth avenues.

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

- Bringing machine learning and AI to commodity management.
- Analytics as core part of decision making.
- Flexibility and scalability of true modern cloud based systems so that companies can implement what they need

In your opinion, what are the most pressing demands from your clients?

- Complete deal lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (e.g., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

In your opinion, what are the most pressing demands from your clients?

- Fast implementations, real-time data and instant access to reports, alerts, data accessible from any/all mobile devices, scalability.
Commodity trading and risk management systems overview

Section I – Company information

a) Company history

- Founding year: 1968
- Headquarter location: Jacksonville, USA
- Other representative offices: London, Geneva, Frankfurt
- Number of employees worldwide as of 31.12.2017: 52'000

b) General corporate information

- Ownership (private/public): Public
- Majority shareholder: Listed
- Annual revenue last year (2017): $9'123 millions

Section II – Verbatim

c) General system/solution information

<table>
<thead>
<tr>
<th>Solution name(s)</th>
<th>Main solution name(s)</th>
<th>Date of initial launch</th>
<th>Date of latest version release</th>
<th>Current version number</th>
<th>Customer base for all products (number of companies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aligne</td>
<td>Aligne</td>
<td>1998</td>
<td>2018</td>
<td>Aligne 5</td>
<td>500</td>
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<tr>
<td>XDM</td>
<td>XDM</td>
<td>2006</td>
<td>2018</td>
<td>XDM</td>
<td></td>
</tr>
<tr>
<td>Kiodex</td>
<td>Kiodex</td>
<td>1999</td>
<td>2018</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ET questions

Could you please provide a brief description of your company and your solutions?

FIS™ is the world’s largest global provider dedicated to financial technology solutions. FIS empowers the financial world with software, services, consulting and outsourcing solutions focused on retail and institutional banking, payments, asset and wealth management, risk and compliance, trade enablement, transaction processing and record-keeping.

FIS Energy & Commodities offers a multi-commodity solution which includes trading, risk management, scheduling and operations, regulatory compliance, settlement, accounting, market order management and management information as well as market data, treasury and finance. The solution helps companies to compete efficiently in global energy and commodities markets by streamlining and integrating the trading, risk management and operations of physical commodities and their associated financial instruments.

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

- Short term trading: FIS is developing solutions for continuous trading including market bidding and algo trading real time positioning and asset management, real time market interfacing and integration of customer specific logic in the trading process. Following the recent market trends on more native integration of optimization and automated trading FIS is working in partnership with leading optimization providers which enable full integration of sophisticated optimization models with Aligne short term trading solutions. FIS is doing R&D work on integration of new technologies such as AI into algo trading.
- Further work on cloud offering, leveraging HTML5 technology. FIS continuously follows the strategy to transfer of all products to the new technology to achieve an ergonomic, intuitive user experience. As for today all operational windows for Front, Middle and Back office are all on the new technology and will be followed by reference data and configuration screens.

In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (eg., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

In your opinion, what are the most pressing demands from your clients?

This depends on the market/asset class; within the Power markets, automation and optimization in real time within the intraday world, usage to AI technique for algo trading, as well as managing retail portfolio’s whereas for the Softs markets, time to market.

Commodities

- Crude Oil
- Gas
- Coal
- Power
- Emissions
- Agricultural – grains, oilseeds, softs and dairy
- Base metals
- Precious metals
- Freight
- Other

Supported Functions

- Front Office
- Middle Office
- Risk Management
- Back Office
- Accounting
- Logistics
- Compliance

Geographical location of clients by continent

Company size of typical clients

- Small: 1-30 staff
- Medium: 30-300 staff
- Large: Over 300 staff

EY questions

Vendor answers

• Short term trading: FIS is developing solutions for continuous trading including market bidding and algo trading real time positioning and asset management, real time market interfacing and integration of customer specific logic in the trading process. Following the recent market trends on more native integration of optimization and automated trading FIS is working in partnership with leading optimization providers which enable full integration of sophisticated optimization models with Aligne short term trading solutions. FIS is doing R&D work on integration of new technologies such as AI into algo trading.
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Could you please provide a brief description of your company and your solutions?

Gen10 is a specialist Commodity Supply Chain technology company that serves the Agriculture, Soft, Metals (including concentrates) and Fuel industries, as well as in the areas of trade finance, insurance, brokerage and inspection services. 100% cloud-based, Gen10’s CTRM platform, Commodity Manager™ has a modern, robust technology stack and agile architecture that offers a wide range of user preferences from dashboards to page layouts and grid options, personalized business processes and report formats. Integration with ERP/accounting systems is simplified via a comprehensive set of web services.

G10’s Commodity Manager platform includes end-to-end transaction processing and analytics, covering everything from fast trade capture, origination, sample management through export, trading, import, distribution, final settlement and risk management.

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

- Pricing and premium formula engine
- Oil Pipeline Scheduling
- More APIs for connectivity with the wider ecosystem
- Performance metrics for quantifying operational risk and optimization

In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and currency
- Other asset classes covered (e.g., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

Section II – Verbatim

EY questions

Vendor answers

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- Complete deal lifecycle supported
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- Other asset classes covered (e.g., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company
Invensoft is a global IT Company providing Commodity Management Software Solutions for Agricultural Commodities, Metals, Minerals and Concentrates. Founded in 2000, we are supporting our global customers in over nine Commodity origin countries. Our solution Invensoft-XBS© is a Unified Commodity Management Platform catering to Commodity Management (CM), CTRM and 3PL (Third Party Logistics) covering Fully Automated End-to-End features of Commodity Business.

CM and CTRM provides extensive features for commodity Origin Business, Procurement, Quality Management, Processing, Warehousing, Certification, Traceability, Trading, Hedging, Risk Management, Positions, Exposures, Daily P&L and reporting. 3PL provides innovative features for commodity 3rd party warehousing and logistics providers.

In your opinion, what are the most pressing demands from your clients?
• Origination
• Traceability
• Physical Risk Management at Origin
Section I — Company information

a) Company history

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<tbody>
<tr>
<td>1995</td>
<td>Minneapolis, USA</td>
<td>Redwood, Mohali, Hyderabad, Singapore</td>
<td>1000+</td>
</tr>
</tbody>
</table>

b) General corporate information

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>webCTRM/ webTrader</td>
<td>1999</td>
<td>05/31/2018</td>
<td>9.X</td>
<td>75+</td>
</tr>
</tbody>
</table>

EY questions

1. Could you please provide a brief description of your company and your solutions?

OATI provides software solutions that are proactively transforming the business of energy. OATI products range from wholesale to retail and include Commodity Trading and Risk Management, Transmission, and Smart Grid solutions. The OATI webCTRM solution is designed for multi-commodity asset-centric and trading focused companies, capturing physical and financial transactions, modeling and valuing assets and supporting operations and settlement processes. With Real-Time data management and all necessary front, mid and back office functions, OATI webCTRM provides the customer with cutting-edge commodity trading and risk management functionality.

2. Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

OATI is enhancing webCTRM with a comprehensive contract modeling function which will enable clients to not only capture trades but also (long term) contracts with complex fees and rates, and perform P&L, settlement and forward valuations on these contracts.

3. In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and currency
- Other asset classes covered (e.g., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

4. In your opinion, what are the most pressing demands from your clients?

The most pressing demand is to establish an enterprise wide CTRM system with front/middle/back office support throughout the entire organization. Increasingly, customers are moving from a best of breed approach to a single vendor to provide this type of system.
Section I — Company information

a) Company history

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Private</td>
<td>ION</td>
<td>Not disclosed</td>
</tr>
</tbody>
</table>

Section II — Verbatim

c) General system/solution information

<table>
<thead>
<tr>
<th>Main solution name(s)</th>
<th>Date of initial launch</th>
<th>Date of latest version release</th>
<th>Current version number</th>
<th>Customer base for all products — number of companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>RightAngle</td>
<td>1995</td>
<td>8/17/2017</td>
<td>$16.0</td>
<td></td>
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</tbody>
</table>

Section II — Verbatim

c) General system/solution information

<table>
<thead>
<tr>
<th>EY questions</th>
<th>Vendor answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could you please provide a brief description of your company and your solutions?</td>
<td></td>
</tr>
<tr>
<td>ION is an industry leading provider of automation solutions and mission critical applications. We enable financial institutions, central banks and corporations to digitize and automate their most critical business processes. We are reinventing the way business is done through our innovations in automation technology.</td>
<td></td>
</tr>
<tr>
<td>1. ION is the largest dedicated provider of trade and risk management and treasury solutions in the world. ION provides a multi product strategy to best address different commodities customers’ unique requirements.</td>
<td></td>
</tr>
<tr>
<td>a. We have 4 leading ETRM/CTRM products and 1,200+ clients globally, along with 6 add-on products for market data, supply chain, metals accounting and shipping solutions.</td>
<td></td>
</tr>
<tr>
<td>b. ION Commodities meets the needs of organizations with varying complexities and at different stages of technology adoption. Solutions are delivered via SaaS multi-tenant cloud, hybrid cloud, private cloud, and on-premise.</td>
<td></td>
</tr>
<tr>
<td>2. ION Commodities is the largest dedicated provider of trade and risk management and treasury solutions for energy, commodity-intensive corporations, and financial services institutions—on-premises and via the Openlink Cloud.</td>
<td></td>
</tr>
<tr>
<td>3. We are the only Commodities Solution provider with the ability to deliver all asset classes, physical and financial, and changing technology needs through:</td>
<td></td>
</tr>
<tr>
<td>a. Commitment to continuous innovation</td>
<td></td>
</tr>
<tr>
<td>b. Track record of successful delivery</td>
<td></td>
</tr>
<tr>
<td>c. Financial strength with a multi-decade strategic view</td>
<td></td>
</tr>
<tr>
<td>Openlink provides award-winning solutions for trading, treasury and risk management to serve energy companies, commodity-intensive corporations, and financial services institutions—on-premises and via the Openlink Cloud.</td>
<td></td>
</tr>
</tbody>
</table>

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

- Preparation for Algo and High Frequency Trading – We expect a significant increase in transaction volume based on programmatic trading (100k+ transaction per day) and will need to focus on non-functional requirements of this market change.
- Cloud & Services – Taking advantage of public cloud including automated, but controlled ramp up/down (speed vs. cost), services around peer to peer network and automation/efficiency gains, advanced business services based on software as well as infrastructure responsibility from single vendor including running the software.
- Streaming Risk Data – Moving to a real time data stream, accessible for standard visualization tools and quick decision making (all types of data, but focusing on risk and supporting meta data).
- Support business agility and the ability to expand into new and upcoming markets (Global LNG, Crude Export, Renewable Energy).

In your opinion, what are the main advantages of your software applications compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (eg., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

Please tick no more than three options

In your opinion, what are the most pressing demands from your clients?

- Providing a single source of truth and single solution to manage overall commodity portfolio and related trading activity.
- Support of programmatic trading implications (timely reporting, performance, risk management, data extract for decision making).
- Total cost of ownership improvements (cost of trade for standardized business) but still providing flexibility and agility to deal with changing market conditions (regulation & compliance, new market opportunities, etc.)
Pioneer Solutions is a global provider of award-winning C/ETRM, environmental management and financial and regulatory compliance solutions. Since 2003, Pioneer has been serving some of the largest energy companies, utilities and midstream producers in the US and Europe. Pioneer’s innovative and flexible solutions have been organically built for rapid implementation and superior services at an overall lower cost of ownership. Pioneer’s suite of C/ETRM solutions are based on its web-based FARRMS platform and offer comprehensive front, middle, and back office process management for both physical and financial trades of all asset classes and commodity types. Developed from the back to the front, resulting in industry-leading data processing and reporting capability, Pioneer’s modern easy-to-use applications deliver ready “out-of-the-box” or tailored functionality designed for ease of implementation and integration with existing systems. With a user-configurable environment for less reliance on vendor services, and with deployment options, including a cloud-based Software-as-a-Service offering via www.trmtracker.com, Pioneer offers a fresh alternative to legacy C/ETRM systems.

Indicative of the next-generation nature of Pioneer’s offering is that it already supports many of the features the markets are looking for, including Cloud, SaaS, Ease of Integration, Real-Time, Mobile, innovative reporting, logistics, renewable energy certificate management, regulatory reporting, and an industry leading settlement engine. We work with companies to help them connect with exchanges, allow them to take advantages of our modular specialist applications in a SaaS environment, and enhance logistics support across commodities. As a result, Pioneer is well positioned to support customers with Digitization, Cloud migration, Automated Trading, RPA, Control & Optimization.

In your opinion, what are the most pressing demands from your clients?

- Flexibility to tailor the system
- Ease of Integration (data in/out)
- Real-time “live” system
- Lower total cost of ownership

In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (eg. Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular set-up/Flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

Could you please provide a brief description of your company and your solutions?
Commodities

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Front Office</th>
<th>Middle Office</th>
<th>Risk Management</th>
<th>Back Office</th>
<th>Accounting</th>
<th>Logistics</th>
<th>Compliance</th>
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<tr>
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<td>Gas</td>
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<td>Coal</td>
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<td>Emissions</td>
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<td>☐</td>
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<tr>
<td>Agricultural – grains, oilseeds, softs and dairy</td>
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<td>Base metals</td>
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<td>☐</td>
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<tr>
<td>Precious metals</td>
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<td>Freight</td>
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</table>

Core capabilities ▪ Capabilities  

Geographical location of clients by continent  
Company size of typical clients

Section I – Company information

a) Company history

Founding year  Headquarter location  Other representative offices  Number of employees worldwide as of 31.12.2017
1972  Walldorf, Germany  SAP has office locations in more than 130 countries and on most continents  88'543

b) General corporate information

Ownership (private/public)  Majority shareholder  Annual revenue last year (2017)
Public  Public  € 23.77 bn.

Section II – Verbatim

c) General system/solution information

<table>
<thead>
<tr>
<th>Main solution name(s)</th>
<th>Date of initial launch</th>
<th>Date of latest version release</th>
<th>Current version number</th>
<th>Customer base for all products (number of companies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Commodity Management</td>
<td>2011</td>
<td>September 2018</td>
<td>SAP S/4HANA 1809 On-Premise</td>
<td>&gt;130</td>
</tr>
</tbody>
</table>

EY questions  

Could you please provide a brief description of your company and your solutions?  

SAP is the world leader in enterprise applications in terms of software and software-related service revenue. Based on market capitalization, we are the world’s third largest independent software manufacturer. The SAP Commodity Management solution enables customers to run fast, intelligent and tightly integrated commodity trading and risk management processes with enterprise resource planning (ERP) systems from SAP, natively and seamlessly integrated with the ERP components and processes. The SAP Commodity Management solution is available for SAP S/4HANA as well as in the SAP Business Suite software. The solution is designed to enable enterprises to buy, sell or trade physical commodities. It provides real-time and end-of-day commodity risk analytics and enables to manage price risks with financial commodity derivatives.

SAP Commodity Management is commodity agnostic and provides functionality to manage the whole spectrum from very complex pricing mechanics to straightforward manual future and basis pricing. It comes with a query-based commodity risk analytics layer that is able to be consumed by the broad range of tools within the SAP Analytics portfolio. The SAP Commodity Management solution includes the SAP Commodity Procurement, SAP Agricultural Contract Management, SAP Commodity Sales and SAP Commodity Risk Management applications. SAP Commodity Management for SAP S/4HANA creates a digital core for implementing new technologies such as machine learning, artificial intelligence, predictive analytics and Blockchain, as well as new upcoming technologies like SAP CoPilot, enabling voice interaction. This opens a huge opportunity for SAP, our implementation partners and our Commodity Management customers to deliver and build the intelligent enterprise.

Which CTRM capabilities are you currently developing as a priority in order to face current and future challenges in the commodity markets?

Current development topics are:

- Enhanced deal capture (user experience for traders)
- Mass pricing for commodity contracts
- Automated end-to-end “Against Actuals”/“Exchange for Physicals” process
- Commodity derivative order trade execution workbench (including automated broker integration)
- Interface to 3rd party solution for advanced risk analytics – value at risk, stress testing and scenario analysis

The roadmap for the various SAP products can be found under https://www.sap.com/products/roadmaps.

In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?

- Complete deal lifecycle supported
- Multi-commodity and – currency
- Other asset classes covered (e.g., Equity, Bonds)
- Very competitive cost/price
- Quick implementation
- Multi-device (web/cloud)
- Modular setup/flexibility
- Support
- Proven track record of CTRM implementations
- Global presence of company

Please tick no more than three options

- To integrate their CTRM functionality into a wide range of supply chain processes, managed within ERP applications, beyond simple accounting integration
- To consolidate and separated CTRM systems into one instance as single point of truth for processing and analytics.
### Section I – Company information

#### a) Company history

<table>
<thead>
<tr>
<th>Founding year</th>
<th>Headquarter location</th>
<th>Other representative offices</th>
<th>Number of employees worldwide as of 31.12.2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>Dublin, Ireland</td>
<td>ION Offices in 40+ locations</td>
<td>5,750+</td>
</tr>
</tbody>
</table>

#### b) General corporate information

<table>
<thead>
<tr>
<th>Ownership (private/public)</th>
<th>Majority shareholder</th>
<th>Annual revenue last year (2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>ION</td>
<td>Not disclosed</td>
</tr>
</tbody>
</table>

### Supported Functions

- **Commodities**
  - Crude Oil
  - Refined Oil products
  - Gas
  - Coal
  - Power
  - Agricultural – grains, oils, soys and dairy
  - Base metals
  - Precious metals
  - Freight
  - Other: Food & Beverage, Chemicals

### Geographical location of clients by continent

[Map showing client distribution by continent]

### Company size of typical clients

- Small: 1-30 staff
- Medium: 30-300 staff
- Large: Over 300 staff

### Section II – Verbatim

#### c) General system/solution information

<table>
<thead>
<tr>
<th>Main solution name(s)</th>
<th>Date of initial launch</th>
<th>Date of latest version release</th>
<th>Current version number</th>
<th>Customer base for all products (number of companies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TriplePoint</td>
<td>Q1 2002</td>
<td>June 2018</td>
<td>6.14</td>
<td>1,200+</td>
</tr>
</tbody>
</table>

**EY questions**

1. **Could you please provide a brief description of your company and your solutions?**
   - 1. ION is an industry leading provider of automation solutions and mission critical applications. We enable financial institutions, central banks and corporations to digitize and automate their most critical business processes. We are reinventing the way business is done through our innovations in automation technology.
   - 2. ION Commodities is the largest dedicated provider of trade and risk management and treasury solutions in the world. ION promotes a multi product strategy to best address different commodities customers’ unique requirements.
      - a. We have 4 leading ETRM/CTRM products and 1,200+ clients globally, along with 6 add-on products for market data, supply chain, metals accounting and shipping solutions.
      - b. ION Commodities meets the needs of organizations with varying complexities and at different stages of technology adoption. Solutions are delivered via SaaS multi-tenant cloud, hybrid cloud, private cloud, and on-premise.
   - 3. We are the only Commodities Solution provider with the ability to deliver all asset classes, physical and financial, and changing technology needs through:
      - a. Commitment to continuous innovation
      - b. Track record of successful delivery
      - c. Financial strength with a multi-decade strategic view

#### TriplePoint

- **Commodities**
  - The ideal E/CTRM solution for companies that operate in one or more segments of the energy and commodity global supply chains, including power, gas, bulk, liquid and packaged commodities.
  - TriplePoint provides full front to back-office support with sophisticated real-time intelligence and automated processes.

- **Financials**
  - We have 4 leading ETRM/CTRM products and 1,200+ clients globally, along with 6 add-on products for market data, supply chain, metals accounting and shipping solutions.
  - The unique requirements.

- **Technology**
  - We are reinventing the way business is done through our innovations in automation technology.
  - We are the only Commodities Solution provider with the ability to deliver all asset classes, physical and financial, and changing technology needs through:
      - a. Commitment to continuous innovation
      - b. Track record of successful delivery
      - c. Financial strength with a multi-decade strategic view

- **Deployment**
  - TriplePoint is the ideal E/CTRM solution for companies that operate in one or more segments of the energy and commodity global supply chains, including power, gas, bulk, liquid and packaged commodities.
  - It provides full front to back-office support with sophisticated real-time intelligence and automated processes for production, sourcing, procurement, processing, marketing, and distribution.
  - TriplePoint’s long history of successful E/CTRM implementations and extensive client base make it the proven solution for companies with diverse supply chains and stringent regulatory and auditing requirements.

- **Current version development includes**, but not limited to:
  - Integrating the ION platform and component architecture, system componentization facilitates modernization and extendibility.
  - Cutting edge UX
  - Expanding scalable, in-memory processing engine, supporting companies with large transaction volumes that require intensive processing.
  - Operational P/L Attribution and trade version components to report detailed explanation of p/l correlated to transactional changes as well as market movements.
  - Compliance and sustainability module to provide a framework for flexible configuration, collection, management, and reporting of data for various regulatory regimes.
  - Expanding reporting capabilities through C-ARC module supporting data aggregation and business intelligence.

- **In your opinion, what are the main advantages that your software applications offer compared to your competitors in the same category?**
  - Complete deal lifecycle supported
  - Multi-commodity and – currency
  - Very competitive cost/price
  - Quick implementation
  - Multi-device (web/cloud)
  - Modular set-up/Flexibility
  - Support
  - Proven track record of CTRM implementations
  - Global presence of company

- **In your opinion, what are the most pressing demands from your clients?**
  - Enhanced UI, dashboards & reports are important.
  - Manage diverse supply chains with advanced simulation for best transaction, and meet stringent regulatory & auditing requirements. Re-engineered solution, new dashboards, enhanced user experience.

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56 Commodity trading and risk management systems overview

Commodity trading and risk management systems overview 35
# CTRM system vendor profiles

The following section contains specific product functionality questions prepared by EY CTRM Team and the relevant vendor answers. It allows the reader to verify areas of capability and asset class coverage quickly for the vendor solutions included.

<table>
<thead>
<tr>
<th>Section III – Product features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Please select which asset class your product is relevant for:</strong></td>
</tr>
<tr>
<td><em>Commodity trading and risk management systems overview</em></td>
</tr>
<tr>
<td>[ ] Crude Oil</td>
</tr>
<tr>
<td>[ ] Refined Oil products</td>
</tr>
<tr>
<td>[ ] Gas (Natural Gas, LNG, LPG)</td>
</tr>
<tr>
<td>[ ] Coal</td>
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<tr>
<td>[ ] Power</td>
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<tr>
<td>[ ] Emissions</td>
</tr>
<tr>
<td>[ ] Agriculture: Base Metals</td>
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<tr>
<td>[ ] Precious Metals</td>
</tr>
<tr>
<td>[ ] Freight</td>
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<tr>
<td>[ ] Other - please specify</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>For which asset class (from the above) is this product most advanced?</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Saffos Gas</td>
</tr>
<tr>
<td>[ ] Crude Oil Refined Oil products</td>
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<tr>
<td>[ ] LNG</td>
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<td>[ ] Coal</td>
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<td>[ ] Concentrates</td>
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<td>[ ] Oils, Gas and Natural Gas liquids</td>
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<td>[ ] Power</td>
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<td>[ ] Energy</td>
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<td>[ ] Metals</td>
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<td>[ ] Concentrates</td>
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<table>
<thead>
<tr>
<th>Have you already implemented other product versions in different locations?</th>
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</thead>
<tbody>
<tr>
<td>[ ] Africa</td>
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<tr>
<td>[ ] Asia</td>
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<tr>
<td>[ ] Americas</td>
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<tr>
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<tr>
<td>[ ] Continental Europe (excluding Nordics)</td>
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<td>[ ] UK</td>
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<tr>
<td>[ ] Nordics</td>
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<tr>
<td>[ ] North America</td>
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<tr>
<td>[ ] Other – please specify</td>
</tr>
</tbody>
</table>

* Please note that unless otherwise stated, the answers provided or ticked would be covered by one or more of the multiple products listed below.

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### Table of CTRM system vendor profiles

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<tr>
<td><strong>Agribusiness (Allegro)</strong></td>
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### Section III - Product Features

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<th>RightAngle</th>
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<th>Commodity XL</th>
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<th>Aligne, XDM, Kiodex</th>
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*Please note that unless otherwise stated, the answers provided or ticked would be covered by one or more of the multiple products listed below.*
### Section III - Product features

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<thead>
<tr>
<th>Name of software (Name of company)</th>
<th>Applicable (plug-ins)</th>
<th>Agile version (Adaptable)</th>
<th>Symphony (scalable)</th>
<th>Citrine (ready)</th>
<th>Trinity (ready)</th>
<th>Study (ready)</th>
<th>EKA Commodity Platform (EKA)</th>
<th>EKA Commodity Management (EKM)</th>
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Does the product offer capabilities for the following processes and functionalities inherent to middle office and risk management tasks 3?

- Mark to market valuation
- P&L computation
- Standard exposure management (Greeks)
- Complex exposure management (VaR, correlation)
- Trade control and limit management
- Pricing models for standard products/options
- Pricing models for complex options (including options)
- Pricing models for physical assets (e.g., gas storage)
- Pricing models for complex physical contracts (e.g., contracts with embedded options)
- FX exposure management
- Basic credit risk management (counterparty, collateral)
- Advanced credit risk management such as Expected Exposure, CVA, DVA, etc.
- Operational risk management
- Stress testing/"What-if" scenario/optimization
- Collateral and margin management
- Delegation of authorities and limit management
- Other - please specify

- Periodic/Logistics management
- Credit value
- Back-office/period rolling
- delineation of authorities and risk management

Answer is applicable if cell is marked in yellow

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### Section III - Product features (Continued)

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<th>INVENT/ RBC (Invensoft)</th>
<th>Endur (Openlink)</th>
<th>RightAngle (Openlink)</th>
<th>Aspect CTRM (Aspect)</th>
<th>Commodity MD (Triple Point Technology)</th>
<th>TRMTracker (Pioneer)</th>
<th>Aligne, XDM, Kiodex (FIS)</th>
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### Section III - Product features

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## Section III – Product features

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<th>Trinity (Brady)</th>
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<tr>
<td>Regulatory reporting</td>
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<td>MMF II commodity position limit monitoring</td>
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<td>MMF II commodity position limit reporting</td>
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<tr>
<td>MMF II ancillary activity reporting</td>
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<tr>
<td>Does the product offer the following additional capabilities?</td>
<td>Machine learning/Artificial intelligence analytics</td>
<td>Blockchain facilitation</td>
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</tbody>
</table>

* Please note that unless otherwise stated, the answers provided or ticked would be covered by one or more of the multiple products listed below.
# Section III - Product features

<table>
<thead>
<tr>
<th>Name of software (Name of company)</th>
<th>Agiblocks (Agiboo)</th>
<th>Allegro Horizon (Allegro Development)</th>
<th>Symphony (Amphora)</th>
<th>Trinity (Brady)</th>
<th>Trinity Energy (Brady)</th>
<th>EKA Commodity Platform (EKA)</th>
<th>E2O Commodity Manager (Generation 1)</th>
<th>SAP Commodity Management (SAP)</th>
<th>Answer is applicable if cell is marked in yellow</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICE, CME (CBOT), ICX, LME, NYSE</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
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<tr>
<td>INVENSOFT - XBS</td>
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<td>webCRM/ webTrader (OATI)</td>
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<td>Endur (Openlink)</td>
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<td>RightAngle (Openlink)</td>
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<tr>
<td>Aspect CTRM</td>
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<td>Commodity XL</td>
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<td>TRMTracker</td>
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<td>Aligne, XDM, Kiodex (FIS)</td>
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<td>enTrader</td>
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<td>enVoy</td>
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<td>• EPEX Nordpool</td>
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<td>• Other</td>
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</tr>
<tr>
<td>What are the usual enterprise applications with which the product is interfaced?</td>
<td>General ledger application (e.g., SAP, Oracle) Reporting engine (e.g., Crystal Reports, Crystal/Report)</td>
<td>Embedding reporting tool</td>
<td>Any modern API is supported</td>
<td>Embedded reporting tool</td>
<td>Any modern API is supported</td>
<td>Embedded reporting tool</td>
<td>Any modern API is supported</td>
<td>Embedded reporting tool</td>
<td>Any modern API is supported</td>
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<tr>
<td>Other - please specify</td>
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<tr>
<td>With which frequency does the product offer connectivity to a market data feed?</td>
<td>Live - Real-time</td>
<td>Delayed (via batch or similar)</td>
<td>On demand (user initiated)</td>
<td>Can be scheduled as often as is relevant</td>
<td>Can be scheduled as often as is relevant</td>
<td>Can be scheduled as often as is relevant</td>
<td>Can be scheduled as often as is relevant</td>
<td>Can be scheduled as often as is relevant</td>
<td>Can be scheduled as often as is relevant</td>
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<tr>
<td>Other - please specify</td>
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</tbody>
</table>

* Please note that unless otherwise stated, the answers provided or ticked would be covered by one or more of the multiple products listed above.
### Section III ~ Product features

<table>
<thead>
<tr>
<th>Name of software (company)</th>
<th>Apligraf (Apligraf)</th>
<th>Allegro/Algo/Allegro Development</th>
<th>Symphony (Symphony)</th>
<th>Excelate (Excelate)</th>
<th>Symphony (Symphony)</th>
<th>Eka Commodity Platform (Eka)</th>
<th>DMS Commodity Manager (DMS)</th>
<th>SAP Commodity Management (SAP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If the product offers trading capabilities, with which frequency does trade execution and confirmation occur?</td>
<td>Live — as soon as the trade is matched/ executed</td>
<td>Deleted via batch or similar</td>
<td>On demand (user initiated)</td>
<td>Not applicable</td>
<td>Other — please specify</td>
<td>Automatic</td>
<td>Real-time web services API</td>
<td>Connectivity is provided via LME Select and banks' proprietary OMS systems</td>
</tr>
<tr>
<td>If the product offers reporting capabilities, with which frequency do the relevant calculations (that depend on external calculations) occur?</td>
<td>Live — as soon as the trade is matched/ executed</td>
<td>Deleted via batch or similar</td>
<td>On demand (user initiated)</td>
<td>Not applicable</td>
<td>Other — please specify</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>What deployment method does the product support?</td>
<td>Deployed installation (local servers)</td>
<td>Hosted cloud application</td>
<td>Other — please specify</td>
<td></td>
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</tbody>
</table>

* Please note that unless otherwise stated, the answers provided or ticked would be covered by one or more of the multiple products listed below.
Section IV — Fee model and implementation approach

<table>
<thead>
<tr>
<th>Name of software (Name of company)</th>
<th>INVENSOFT (XBS)</th>
<th>Aspect/CTR (Aspect)</th>
<th>G10 Commodity Manager (Generation 10)</th>
<th>TRMTracker (Pioneer)</th>
<th>Aligne, XDM, Kiodex (FIS)</th>
<th>enTrader (Energy One)</th>
<th>enVoy (Energy One)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please indicate which license fee model applies to the product?</td>
<td>Subscriptions to multi tenant (SaaS)</td>
<td>Flexible licensing options</td>
<td>Subscription fee: License, Support &amp; hosting all in one for TRMTracker.com</td>
<td></td>
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<tr>
<td></td>
<td>Perpetual license (one-time fee)</td>
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<tr>
<td></td>
<td>License rental (yearly/monthly recurring)</td>
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<tr>
<td></td>
<td>Licenses fees are companywide (multiple geographical locations)</td>
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<tr>
<td></td>
<td>Licenses fees are on a site by site basis</td>
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<tr>
<td></td>
<td>Other – please specify</td>
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</tbody>
</table>

| Please indicate which user fee model applies to the product? | | | | | | |
| | License fees for named users are available | | | | | |
| | License fees for concurrent users are available | | | | | |
| | Other – please specify | | | | | |

| Which implementation model does the company most frequently apply? | | | | | | |
| | Implementation is exclusively done by the vendor | | | | | |
| | Implementation is outsourced externally (i.e., done by a system integrator) | | | | | |
| | Implementation is done by the client | | | | | |
| | A combination of all of the above | | | | | |
| | Other – please specify | | | | | |

* Please note that unless otherwise stated, the answers provided or ticked would be covered by one or more of the multiple products listed above.
### Section IV — Fee model and implementation approach

<table>
<thead>
<tr>
<th>Name of software (name of company)</th>
<th>Agiblocks (Agiboo)</th>
<th>Allego Horizon (Allegro Development)</th>
<th>Symphony (Amphora)</th>
<th>Endur (Openlink)</th>
<th>RightAngle (Openlink)</th>
<th>Aspect CTRM (Aspect)</th>
<th>Commodity XL (Triple Point Technology)</th>
<th>TRMTracker (Pioneer)</th>
<th>Aligne, XDM, Kiodex (FIS)</th>
<th>enTrader (Energy One)</th>
<th>enVoy (Energy One)</th>
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</thead>
<tbody>
<tr>
<td>24 hour support, upgrades, and maintenance in the subscription</td>
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</tbody>
</table>
### Name of software (Name of company)

In terms of implementation approaches, which of the following statements would you say best describes the majority of the ones done for this product?

- Implementation is mainly done offsite and the configured package is then installed to the client
- The product is installed and implemented onsite
- Other — please specify

### Own staff

<table>
<thead>
<tr>
<th>Name of software (Name of company)</th>
<th>Own staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agiblocks (Agiboo)</td>
<td></td>
</tr>
<tr>
<td>Allegro Horizon (Allegro Development)</td>
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<tr>
<td>Symphony (Symphony)</td>
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<tr>
<td>Trinity (Brady)</td>
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<tr>
<td>Trinity (Brady)</td>
<td>Combination of the two.</td>
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<tr>
<td>Trinity Energy (Brady)</td>
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<tr>
<td>EKA Commodity Platform (EKA)</td>
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<td>EKA Explorid (EKA)</td>
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<tr>
<td>EKA Commodity Manager (EKA)</td>
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<td>EKA Commodity Manager (EKA)</td>
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<td>Endur (Openlink)</td>
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<tr>
<td>Endur (Openlink)</td>
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<tr>
<td>RightAngle (Openlink)</td>
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<tr>
<td>Aspect CTRM (Aspect)</td>
<td></td>
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<tr>
<td>Aspect CTRM (Aspect)</td>
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<tr>
<td>Commodity XL (Triple Point Technology)</td>
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<tr>
<td>TMRTracker (Pioneer)</td>
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<td>AlfaCom (FID)</td>
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<td>AlfaCom (FID)</td>
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<tr>
<td>eTrader (Energy One)</td>
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<tr>
<td>eTrader (Energy One)</td>
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</tbody>
</table>

### Implementation partners

- www.agiblocks.com
- www.agiboo.com
- https://www.allegrodev.com
- https://www.amphorainc.com
- Solutions for Physical Commodity Trading and Risk Management
- CTRM for Metals
- https://www.bradyplc.com/download/ctrm-for-metals/
- Trading and Risk Management Solutions for Concentrates
- Brady Softs and Apps Solutions Overview
- CTRM for Cotton
- https://www.bradyplc.com/download/ctrm-for-cotton/
- Everything done in the Cloud
- https://www.bradyplc.com/commodities-solutions/
- https://www.bradyplc.com/download/time-solutions-for-clearing-members/
- https://www.bradyplc.com/download/hedge-manager/
- Brady Energy
- https://www.bradyplc.com/energy/
- Brady Energy Trading and Risk Management
- Brady Logistics
- https://www.bradyplc.com/energy-logistics/
- Brady EDM
- https://www.ekaplus.com/platform/
- http://generation10.net/generation-10-commodity-manager-demo
- https://www.invensoft.co.in
- https://www.oati.com
- https://www.openlink.com
- https://www.openlink.com
- https://www.aspectenterprise.com
- https://iongroup.com/corporations/commodities/
- https://www.trmtracker.com

### Please indicate whether you conduct the CTRM implementation with your own staff or may also work with implementation partners.

- Own staff
- Implementation partners

### Please indicate a link to a relevant product website brochure/description/demo.

- www.agiblocks.com
- www.agiboo.com
- https://www.allegrodev.com
- https://www.amphorainc.com
- Solutions for Physical Commodity Trading and Risk Management
- CTRM for Metals
- https://www.bradyplc.com/download/ctrm-for-metals/
- Trading and Risk Management Solutions for Concentrates
- Brady Softs and Apps Solutions Overview
- CTRM for Cotton
- https://www.bradyplc.com/download/ctrm-for-cotton/
- Everything done in the Cloud
- https://www.bradyplc.com/commodities-solutions/
- https://www.bradyplc.com/download/time-solutions-for-clearing-members/
- https://www.bradyplc.com/download/hedge-manager/
- Brady Energy
- https://www.bradyplc.com/energy/
- Brady Energy Trading and Risk Management
- Brady Logistics
- https://www.bradyplc.com/energy-logistics/
- Brady EDM
- https://www.ekaplus.com/platform/
- http://generation10.net/generation-10-commodity-manager-demo
- https://www.invensoft.co.in
- https://www.oati.com
- https://www.openlink.com
- https://www.openlink.com
- https://www.aspectenterprise.com
- https://iongroup.com/corporations/commodities/
- https://www.trmtracker.com
### Section V — Technical Aspects

<table>
<thead>
<tr>
<th>Name of software (company)</th>
<th>Application (Web-based)</th>
<th>Allegro (Legacy) (Development)</th>
<th>Symphony (Legacy)</th>
<th>Commodity Trading Systems (Company)</th>
<th>Commodity Manager (Generation 10)</th>
<th>SAP Commodity Management (SAP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agiblocks</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser and Thin Client (SAP GUI, SAP business client)</td>
<td>Web browser</td>
<td>Web Browser</td>
</tr>
<tr>
<td>Allegro Horizon</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
</tr>
<tr>
<td>Allegro Development</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
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<tr>
<td>Symphony</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
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<tr>
<td>Trinity</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
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<tr>
<td>Brady</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
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<tr>
<td>Brady Energy</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
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<tr>
<td>Brady Energy (Brady)</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
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<tr>
<td>EKA Commodity Platform</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
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<tr>
<td>EKA Commodity Platform</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
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<tr>
<td>EKA Commodity Platform</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
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<tr>
<td>G10 Commodity Manager</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
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<tr>
<td>G10 Commodity Manager</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
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<tr>
<td>G10 Commodity Manager</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
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<tr>
<td>SAP Commodity Management</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
<td>Web browser</td>
<td>Web Browser</td>
</tr>
<tr>
<td>SAP Commodity Management</td>
<td>Web browser</td>
<td>Thin client</td>
<td>Rich client</td>
<td>Web Browser</td>
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<td>SAP Commodity Management</td>
<td>Web browser</td>
<td>Thin client</td>
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**Does the user interface run in a web browser, thin or thick client application?**

- **Web browser**
- **Can be deployed on a PC can be made through deployment point with no administration rights being required.**
- **Thin (aka smart) client which updates from the customer’s Allegro app server**
- **Rich client application. For Cloud deployments, we use remote desktop, installation on a PC can be made through deployment point with no administration rights being required.**
- **Rich client application. For Cloud deployments, we use remote desktop, installation on a PC can be made through deployment point with no administration rights being required.**
- **Rich client application. For Cloud deployments, we use remote desktop, installation on a PC can be made through deployment point with no administration rights being required.**
- **Web Browser**
- **Web Browser and Thin Client (SAP GUI, SAP business client)**

**Which programming languages does the product support?**

- SQL
- HTML
- C
- C++
- Python
- .NET
- PHP
- Java
- Other: Please specify

<table>
<thead>
<tr>
<th>INVENTO / TIBCO (Microsoft)</th>
<th>INVENTO/ webTrader (OATI)</th>
<th>EXCEL (Openlink)</th>
<th>SYMPHONY (Openlink)</th>
<th>Aspect CTM (Aspect)</th>
<th>Commodity, Inc. (Triple Point Technology)</th>
<th>TRMTracker (Pioneer)</th>
<th>Aligne, xDM, Kiodex (FIS)</th>
<th>enTrader (Energy One)</th>
<th>enVoy (Energy One)</th>
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**Answer is applicable if cell is marked in yellow**

*Please note that unless otherwise stated, the answers provided or ticked would be covered by one or more of the multiple products listed below.*
## Section V — Technical Aspects

**Can the standard solution be extended?**

- **Yes** — Agile architecture supports various integration and on-request APIs.
- **Yes** — we offer collaborative development where clients can intervene in development.
- **Yes** — Client must go through the vendor for development.
- **Yes** — additional modules available. Configuration can be done by user of Brady if complex.
- **Yes** — additional modules available. Configuration can be done by user of Brady if complex.
- **Yes** — Solutions can be extended any through Eka.
- **Yes** — solutions are possible without code modification. The ADABAP dictionary and workbench allow for plug in custom code.
- **Yes** — enhancements are added to the core by the vendor.
- **Yes** — all product extensions must go through the vendor.
- **Yes** — all product extensions must go through the vendor.
- **Yes** — within a flexible framework.
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### Name of software (Name of company)

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<tr>
<th>Name of software (Name of company)</th>
<th>Agileblocks (Agiboo)</th>
<th>Allegro Horizon (Allegro Development)</th>
<th>Symphony (Amphora)</th>
<th>Fortress (Brady)</th>
<th>Trilogy (Brady)</th>
<th>Brady Energy (Brady)</th>
<th>EKA Commodity Platform (EKA)</th>
<th>ODS Commodity Manager Generation (ODS)</th>
<th>SAP Commodity Management (SAP)</th>
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