

# On-Demand Business Intelligence



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**By Ken Rudin,  
LucidEra Founder**

In my career, I have had the good fortune of being deeply involved in two fascinating industries that I’m very passionate about: the Business Intelligence industry and the On-Demand / Software as a Service (“SaaS”) industry. Regarding Business Intelligence, I’ve been a practitioner in the BI industry for about 17 years. I was one of the early members of Oracle’s Parallel Server division in 1989, where we built some of the first large scale data warehouses ever deployed on Oracle. I also ran a 35-person consulting company called Emergent which focused on data warehousing and BI, and we had great customers like United Airlines, Nike, and Visa. And in recent years I was in charge of marketing for Siebel Analytics.

The other half of my career has focused on the On-Demand / SaaS industry. I was lucky enough to be involved in salesforce.com in the early days as its head of Engineering and Products, and shortly after that I was on the original advisory board of NetSuite. And in 2002 I started up the Siebel CRM OnDemand division within Siebel.

Based on my personal experiences, it seems obvious to me that these two worlds should be brought together, and I’m now focusing my energies on helping to make that a reality.

There’s no denying that the on-demand approach for delivering business applications has made its mark on the software industry. And, there’s good reason for this. The approach initially gained attention because it focused on simplifying many of the complexities that companies have wrestled with regarding traditional business software. By providing the solution as a service delivered over the web, the on-demand approach promised to remove the headaches associated with purchasing, deploying, maintaining, and upgrading traditional enterprise software. Though initially these were just promises, the industry has matured over the past several years to the point where on-demand applications are delivering on their initial claims, and are now widely used by companies of all sizes and in all industries. In fact, Gartner Group predicts that 25% of new business software will be delivered on-demand by 2011.

But there’s one curious observation about the on-demand industry: it has been almost entirely focused on transactional applications. That is, we see successful on-demand solutions for areas such as managing sales, processing accounting transactions, providing customer service,

managing your supply chain, executing marketing campaigns, and managing HR. But, the equivalent types of offerings for Business Intelligence haven't existed. However, this situation is changing. People recognize the benefits that the on-demand approach delivers for transactional applications, and are now looking for these same types of advantages to be applied to Business Intelligence solutions. Following the laws of supply and demand, On-Demand Business Intelligence solutions are now available to meet this new customer demand.

## On-Demand BI

Where is this growing interest for On-Demand Business Intelligence coming from? Looking at the BI market today points to two main factors driving customer demand: complexity and cost.

**Complexity issues** - Traditional BI solutions are complicated, requiring people with specialized skills to implement and manage them. You need to deploy an ETL engine, you need to build a data warehouse, you need to have a data cleansing solution in place, you need to implement an OLAP engine, and so on. Because of this, the prospect of deploying a BI solution is overwhelming to many – in fact, a prior consulting client of mine once equated it with trying to build and manage your own nuclear reactor. Many companies just don't have the in-house skills needed to build and maintain a traditional BI solution.

**Cost Issues** - Because of this complexity, BI solutions have also historically been expensive. First, there are many hardware and software components that you need to buy before you have a complete solution that can pull together data from multiple sources to give you visibility into what's going on in your part of the company. Second, once you have all the pieces, you then incur significant additional costs over the next 6-12 months as the solution is implemented.

Note that new open source BI solutions don't really solve these issues. Though open source can lower or remove the initial software license cost, the high cost of implementation is still there. And, the real barrier for most companies is not the cost, but the lack of specialized skills in-house to manage the

solution. Making the solution open source doesn't make it easier to implement or manage. It's really a free version of the "nuclear reactor" referred to above. If I offered you a nuclear reactor for free, and told you that you could install it in your own basement to generate your own electricity, I'm fairly sure few of you would take me up on my offer. Even though it's free, you still wouldn't have the skills to manage it.

“Two main factors are driving interest in On-Demand Business Intelligence: The complexity and the cost of traditional BI solutions”

So, what options are left for most companies who don't have large IT resources and deep IT pockets? Most end up in what I call "Excel Hell". Gaining real insight usually requires data from more than one system. So they export data from their various systems, and then cut and paste the data into Excel and do their best to manage their business that way. Essentially, by necessity they end up trying to use Excel as a data warehouse. But, the process is highly manual, which means it's also highly resource intensive and error prone. And, since there's no integrated system in place to help create reports and analyses, it typically takes a long time to generate any new types of reports. And, things like customer names often differ between systems. Also, there's no way to ensure that the data in a spreadsheet is up-to-date, so data quality is also a significant issue. Finally, there are no controls over who gets to see what data. These are the types of issues that are driving interest in On-Demand Business Intelligence solutions.

## The on-demand approach to BI

Many people mistakenly think that the essential difference between on-demand software and traditional on-premise software relates to where the software is located and how it's paid for. Yes, it's certainly true that on-demand software is managed

outside of the customer's four walls instead of inside their data center. And, it's also true that on-demand software is usually paid for as a subscription pricing model instead of purchasing the software. But to conclude that these make up the essence of the on-demand paradigm is to miss the point.

Both hosting and subscription pricing have advantages, but they're incremental advantages rather than breakthroughs. For example, taking traditional software and moving it out of a customer's data center and instead placing it in a vendor-managed data center doesn't really address the fundamental software complexity issues discussed above. Just by having the same software and servers in a remote location managed by someone else doesn't mean that the software magically becomes simpler to implement or customize. It doesn't make it any faster to deploy. It doesn't make it easier to make changes after the initial implementation is complete. And it doesn't make it any easier to use.

Regarding the pricing model, charging for the solution on a pay-as-you-go incremental basis means you don't have to pay a large sum for your solution upfront and then hope that you receive the promised benefits in the near future. Instead, you pay incrementally as you receive the value. But again, though changing the pricing model on existing traditional software may mean you pay less initially, it doesn't mean you'll pay less overall. In the same way that paying for a car in monthly installments doesn't make the car any less expensive overall, paying for traditional software on a subscription basis doesn't significantly lower the overall price of the software. If you don't actually redesign the software to be simpler and less costly to deploy and manage, it will still be as costly to manage as before (regardless of who physically manages it), which means that one way or another you'll eventually have to pay these costs.

**On-Demand is a mindset, not a feature set** - On-demand is not just an alternative deployment option or payment option for an otherwise largely identical solution. The goal of an on-demand solution should never be to replicate the same set of features that traditional software has and then just deliver it as

a service. Designing new solutions to mimic old solutions rarely provides real value. For example, imagine if the creators of the first automobiles had designed them to look like the horses they were trying to replace. You'd still get saddle sores, and you'd still get wet when it rained.

To truly provide meaningful new solutions that address long-standing market issues, you need a different approach to thinking about the problem. The on-demand approach is much less about focusing on a particular feature set, and much more about focusing on a mindset. It's a mindset that is service-oriented rather than product-oriented, and it has security, simplicity and the end-user experience as the critical focus areas.

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Since on-demand service providers are responsible for managing customer data, security has the highest priority. In 1999, the idea of having a third party manage your data was a foreign concept that many companies were uncomfortable with. But the environment is very different today. First, there are many successful companies (many of which are public companies) such as Salesforce.com that now act as precedents for having third parties safely manage customer data. Second, many industry best practices and government standards have been defined for securely managing and protecting customer data. And most importantly, there are certifications performed by third-party security firms to provide a level of trust and ensure that all security standards and best practices are being followed by on-demand vendors. So today, people see on-demand solutions as being a common way of running applications.

In addition, it's also important to note that because on-demand vendors can leverage economies of

scale and amortize their security costs over all their customers, they can spend more on building a world-class security infrastructure than most companies. So, for many companies, the data being managed by their on-demand solution vendors is often more secure than the data in their own data center.

Regarding simplicity and the end-user experience, the mantra is to provide solutions that are first and foremost simple to set up, simple to use, and simple to buy. That’s why they hold so much promise for customers that previously did not find it practical to implement traditional BI solutions. And, following this mindset, hosting and subscription pricing no longer are the defining factors of on-demand applications. They are just two components out of many regarding making the application as simple as possible to set up, use, and buy.

### Simple to set up

One of the most significant differences between traditional BI solutions and On-Demand BI solutions is the way the solutions are set up by the customer. With the traditional approach, you first buy several sophisticated tools that you can use to build your own unique solutions. These tools include an ETL tool to extract the data from their sources, a data cleansing tool to remove duplicate records and to match up things like customer names across systems, a database engine to store the cleaned and integrated data, and reporting and analysis engines to create your reports, charts, and dashboards.

Then you use these tools to design, build and deploy your Business Intelligence solution. This involves defining ETL scripts, designing star schemas for your data warehouse, creating OLAP cubes, and often requires writing custom code as well.

The notion of being able to build a solution completely tailored to your every need is certainly attractive. It’s like someone who needs a house to live in and decides to design and build their own dream home. But, just like building a home, building your own BI solution comes at a price: it can take 9-12 months or longer, and it usually requires hiring contractors

or consultants with specialized skills to help you customize it.

**Prebuilt, configurable On-Demand BI solutions** - The on-demand approach to setting up a BI solution is different. The architecture has a generic hosted “analytic services” platform that performs all the standard data gathering, cleansing, storage, reporting, and analysis functions, but you don’t have to directly design or modify these components to create your solution. Instead, the focus is on leveraging prebuilt solutions that sit on top of the platform, and which are easily configurable by you (Figure 1).

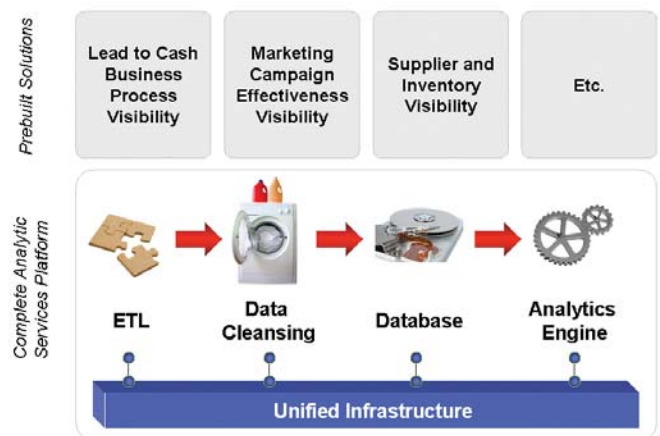


Figure 1: On-Demand Business Intelligence architectural diagram

The prebuilt nature of On-Demand BI solutions means they are a great fit for companies that want visibility into common business processes, and want to answer the most common types of questions asked by employees about those areas of business. For example, one prebuilt solution could provide visibility into marketing campaign effectiveness, another could provide visibility into all aspects of the lead-to-cash business process, and another could provide visibility into suppliers and inventory. Unlike designing and building a home from scratch, the “prebuilt and configurable” on-demand approach equates to someone buying an existing home and then redecorating it.

Of course, the notion of prebuilt BI solutions might not seem new. But, traditional prebuilt solutions

(sometimes called “analytic applications”) are very different from the new breed of on-demand prebuilt solutions. First, traditional prebuilt solutions typically focus on only a few of the components of the overall BI technology stack, such as supplying prebuilt data warehouse schemas to answer certain types of questions about particular business areas. All the other components that make up a BI solution (like ETL scripts or OLAP cube definitions mentioned above) still need to be custom built. Second, modifying the prebuilt components to meet your needs requires using development tools to modify database schemas and write custom code.

In contrast, true On-Demand BI solutions deliver prebuilt solutions which include everything prebuilt, not just some of the components. This includes connectors to data sources, prebuilt ETL scripts, predefined data warehouse schemas and OLAP cubes, and a set of prebuilt reports built around analyzing key metrics. That is, the focus is on providing a complete, end-to-end solution to truly simplify the setup experience for you.

**Customization versus configuration-** The prebuilt nature of On-Demand Business Intelligence doesn’t mean that you get a set of reports or dashboards that are rigid and fixed. Different companies have different needs, so the prebuilt elements are modifiable. For example, you can start with an existing report and modify it, or you can create a new report from scratch.

The process for tailoring On-Demand BI solutions to meet your needs differs significantly from the process of tailoring traditional BI solutions. I refer to the traditional approach as customization, and the on-demand approach as configuration. That is, the traditional process for tailoring a solution to meet your needs involves using development tools to open up the analytic platform and customize the components directly. For example, you might edit a data warehouse schema, change an ETL script directly, and write custom code. The benefit is that there is great flexibility in this approach, but the downside is that it requires significant skill to make these modifications and significant testing and debugging of the customizations is critical to ensure that you get valid results.

The on-demand approach is different. Rather than using development tools to customize the underlying platform by changing schemas and writing code, you use a point-and-click approach to configure the application. Essentially, you walk through a number of set up screens, answering questions, selecting options, and providing information such as user names. It’s more like configuring your MyYahoo! homepage than writing custom code.

“True On-Demand BI solutions deliver everything prebuilt, not just some of the BI components”

For example, to tell the On-Demand BI solution the type of source system you’re pulling data from (such as whether it’s a CRM system, a financial system, etc.), you would select the type from a picklist that contains all the types of source systems that the prebuilt solution supports. To indicate which data fields you’re interested in pulling from those source systems, you would be presented with a list of all the fields, and you check a box next to the fields you’re interested in.

The same configuration approach is used to tailor the On-Demand BI solution to your company’s business processes. For example, there are a few common processes for recording order cancellations in order entry systems. Some companies use a process that updates the original order record, and changes its status from “Open” to “Cancelled.” Other companies leave the original order record as is, and instead create a separate cancellation record that points to the original order record. Clearly, a BI solution needs to know which of these processes is being used in order to handle your data correctly. Traditionally, you would use developer tools to customize the BI solution’s order cancellation logic to match your company’s process. But, with the on-demand approach, the prebuilt solution would instead have support for both processes built in, and you configure the solution by telling it which of these processes your company uses.

**The benefits of configuration-** There are two primary reasons why the on-demand approach favors configuration over customization:

First, the point-and-click nature of configuration means individuals don't need any specialized knowledge, and they don't need to be skilled in database schema design or writing custom code. This helps to greatly reduce the setup complexity.

Second, it also simplifies upgrades. The traditional model of going under the covers and customizing the underlying schema and business logic creates complexities when upgrading to a newer version of your BI solution. If you've modified the schema, and then your vendor provides a software upgrade which includes a new version of the schema, none of your customizations will be in the new version. So, upgrading involves not just installing new software and schemas, but also recreating all of your customizations in the new version. And, often the vendor will make architectural changes to the platform that require you to redesign how your customizations are implemented.

Using a configuration approach instead of a customization approach avoids this issue. With configuration, you specify the rules and select the settings that define how you want the solution to behave, leaving the underlying platform untouched. Since your configurations are not directly tied to the underlying platform, this means that your configurations are preserved across changes in the underlying platform. Any new version of the platform just needs to look at the rules and settings you've already specified to fully understand how you want the solution to behave. Using the order cancellation example discussed above, even if the vendor completely rewrites the underlying platform and database schema, the new version need only look at the choice I made previously regarding the processing of cancellations to know that my company processes them by creating a separate cancellation record.

**Why configuring prebuilt solutions works-** The traditional BI industry has not significantly focused on prebuilt solutions. Instead, it has grown up around

the notion of building custom solutions. All of the dominant traditional BI vendors began life selling toolsets that customers could use to build their own solutions. The vision has always been that you could have a customized solution tailored to your exact needs that could answer any question you had about any area of your business. There's even a thriving ecosystem of consultants and systems integrators to build these custom solutions for you.

BI set-up	Traditional BI solutions	BI software as a service
Design and deployment time	Months	Days
Application design team	In-house IT and/or BI consultants	SaaS vendor
Deployment team	In-house IT and/or BI consultants	End user
Special skills required for set-up	DB, DW, ETL, OLAP, reporting	None

*Table 1: Comparing traditional BI solution set-up to On-Demand BI set-up*

The problem is that if you ask employees at most companies what they really want regarding getting visibility into the business data they need to succeed in their jobs, it's unlikely that they'll say they need to be able to answer any question about any area of their business. In fact, as a consultant, I was regularly asked to create over 100 prebuilt reports for clients. But, out of all those reports, rarely were more than a dozen ever used regularly.

In line with this, rather than wanting to answer any question about any area of their business, you quickly find out that most employees really want a handful of relatively straightforward reports that answer some key, fundamental questions about their area of responsibility. And, they'd also generally agree that the questions they ask are pretty similar to the questions other people ask in comparable roles in other companies.

That's the key that enables prebuilt solutions to succeed. Despite the "everything must be custom built" mantra that we've been both practicing and preaching since the late 1980's, people in similar roles in similar companies ask similar types of questions. Though most people wouldn't find this statement to

be controversial, isn't it odd that most still end up building a custom solution using traditional BI tools?

A more controversial point is that people in similar roles across companies that are in different industries tend to ask similar types of questions too. When I was a BI consultant, I helped build customized solutions for an airline company, a telecommunications company, a sports apparel manufacturer, and a fast food chain, to name a few. I'm sure I'm not the only ex-consultant who realized that at least 80% of what I custom built again and again was the same across clients, because the questions they wanted to answer were similar.

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For example, a sales manager at a software company wants visibility into her team's forecast compared to their actual bookings, how much her sales reps are discounting, is the lead-to-cash cycle getting longer or shorter, what is their win rate against their top competitors, and so on. Those are the same types of questions that sales managers ask in the manufacturing industry, the professional services industry, as so on. As another example, a marketing manager in a consumer electronics retailer wants visibility into customer segmentation and customer profitability, marketing expenses compared to budget, the ROI of marketing campaigns, website traffic analysis, and so on. Those are the same types of questions that marketing managers in several other industries ask, such as the travel industry, the clothing industry, and many others.

The point is straightforward: when there are similarities in the solutions people are seeking, then there is a great opportunity to provide prebuilt, configurable solutions to meet their needs.

**Configuration requirements** - It's important to note that the idea of making set up simple by

leveraging configurability works best only if all of the components of your BI solution are integrated and can be configured from one centralized location. Real visibility comes from pulling together data from multiple sources, so missing any of the components required to do this significantly increases your setup time and complexity. If one or more of the pieces requires separate customization, then you can't just run through the configuration process once and be done with it. You'd also have to separately customize each of the other components. (For example, imagine if the configuration settings on your MyYahoo! homepage weren't integrated with the backend content providers. You could change the configuration settings to return, say, 10 news headlines instead of five, but though the Yahoo user interface might now expect to display 10 items, the backend content providers are still only providing five headlines. You'd then also have to change the interfaces to the content providers so they would return 10 headlines.) But, if you have the ETL, data cleansing, data warehousing, reporting, and analytics engines all sharing the same configuration information, then you make a change in one place, and all components are aware of it.

### Simple to use

The on-demand approach to BI enables it to be much simpler to set up and maintain. But, the success of BI in your company is by no means guaranteed just because you've successfully set it up. Of course, BI is only valuable if people actually use it, and that depends on two factors. First, the content has to be valuable, meaning that people must feel that the visibility they are getting is helping them succeed in their jobs. Prebuilt solutions can be helpful here, because they can represent the feedback from hundreds of different companies about their best practices regarding which types of reports, charts, and KPI's are most valuable to them.

The second key factor is usability – if a solution is confusing or hard to use, internal adoption will drop, and therefore the value you gain from that solution drops. For many traditional BI vendors, the approach to increasing the value that companies receive from their solutions is to deliver an ever-expanding list of more powerful features. But, experience has shown

that this strategy backfires. It makes the solution more complex to use, and the result is that most BI solutions now require users to attend long training classes to be able to use them.

As I mentioned earlier, the on-demand paradigm is more about a mindset than a feature set. There is much more emphasis on building a user interface that requires little or no training, that makes it easy to bring in external data, and makes it easy to share results with a community than there is on building a long list of power-user features. This is the right approach, since the majority of people would rather have a clean and simple solution that works well and is easy to use than a powerful and highly sophisticated solution that's hard to use. That's why iPods are so successful. They do just what you want them to do, and they're a delight to use.

BI purchase	Traditional BI solutions	BI software as a service
Total cost of ownership (annual average)	\$\$ Hundreds of thousands	\$ Tens of thousands
Contract terms	Pay up-front	Pay as you use
Proof of concept - trial	Small portion of eventual application	Full application

*Table 2: Usability is a core part of the On-Demand BI mindset*

Of course, every BI solution (whether traditional or on-demand) tries to be easy to use, and I'm pleased to say that over the years there have been important improvements in usability across the BI industry. But, with on-demand, providing solutions that are simple to use takes on an even more critical role. Usability and user adoption are core necessities built into the on-demand business model – if users find the solution too hard to use, they'll stop using it. And, if users stop using it, customers will stop paying for the service. The direct link between usability and revenues has a strong impact on how on-demand solutions are designed and built (Table 2).

### Simple to buy

After being simple to set up and simple to use, the third key aspect of On-Demand BI solutions is making them simple to buy, both from a price perspective as well as the purchasing process

perspective. Regarding the price perspective, traditional solutions can cost several hundreds of thousands of dollars, or even millions of dollars. This introduces significant risk, since you have to invest a significant amount long before you get to see what value you'll get in return. Also, the high cost acts as a barrier for many companies who just can't afford the up-front investment. If you have to spend \$150,000 - \$250,000 or more before you can use your solution, then the cost barrier is still there, so this approach is at odds with the on-demand "simple to buy" focus.

On-Demand BI solutions don't require you to make any capital expenditures up front, since there's no hardware or software to buy. Instead, you just pay a monthly subscription fee. Prices vary, but a true On-Demand BI solution can have an annual cost that's between 5% - 10% of the upfront hardware, software, and implementation costs of a traditional BI solution. Also, since an On-Demand BI solution should be easily configurable, there should be no need to pay significant upfront implementation fees.

**Multi-tenancy** - There's really no magic regarding how On-Demand BI solutions can be delivered at a lower cost than traditional solutions deployed in a customer's own data center. One of the key cost-reducing architectural techniques used by on-demand vendors is the idea of "multi-tenancy." The concept is fairly simple, though the behind-the-scenes implementation can be quite sophisticated: instead of every customer getting their own dedicated deployment of the solution (the "single tenant" model), multiple customers (i.e. "multiple tenants") share the same physical infrastructure. To ensure that customers only see their own data, each piece of data is carefully tagged with information regarding which company that data belongs to. In addition, there is a set of configuration data associated with each customer that indicates how that customer wants its solution to behave. So, whenever a user makes a request to the BI service, each part of a multi-tenant BI solution (such as the ETL engine, the data warehouse, the analytics engine, and the UI) reads the configuration data associated with that customer and then processes and returns the results accordingly.

This reduces costs because it's more efficient to manage one larger platform that's shared by a large number of customers than it is to manage a large number of individual deployments, where each one is used by a single customer. For example, from an operations standpoint, each operational activity like creating a backup or upgrading the system needs to be done only once per platform instead of once per customer, so you get economies of scale. Additionally, the hardware and personnel are shared across many customers, so they are used more efficiently and therefore the amortized costs are lower than if a customer had to buy their own hardware and hire their own operations staff.

BI usability	Traditional BI solutions	BI software as a service
Feedback on usability	Periodic surveys	Online usage statistics tracked by application
Link between usability and vendor revenue	Indirect	Direct
Percentage of functionality actually used	Low	High

*Table 3: The On-Demand approach simplifies purchasing a BI solution*

**Try before you buy-** Not only can On-Demand Business Intelligence solutions lower your upfront costs, but they can also help simplify the purchasing process. Before buying any solution, every customer wants to be sure that it will meet their needs. Though sales meetings, talking to other customers, and technical discussions can help, the best way to know if a solution will meet your needs is to try it yourself. Traditionally, this means that you carry out a proof-of-concept. Because there's no pre-existing platform that you can use, you have to build and deploy a scaled down version of the intended business intelligence solution. This can take weeks or months, and requires a significant investment of time and energy.

But with On-Demand Business Intelligence, the solution is already built and running as a service that you connect to over the web. That means that performing a proof-of-concept is much simpler. It's like going to a car dealership and test driving a car that's already on the lot versus having to wait while a car is custom assembled for you. In fact, in many cases this "try before you buy" process for on-demand is

simple enough that On-Demand BI vendors can offer any customer a free trial instead of the traditional resource intensive proof-of-concept.

### Keeping It Simple

The Business Intelligence industry has a lot to be proud of. Over the past two decades, it has helped many commercial, educational, and government organizations gain insight into their operations and improve their overall effectiveness. The introduction of the on-demand model to this industry will have far reaching effects, opening up Business Intelligence to a far broader population of companies and individuals. It will be fascinating to see what this will enable in the next two decades.

### About LucidEra

LucidEra delivers simple to set up, simple to use, and simple to buy reporting and analysis solutions as an on-demand service. We are reinventing the way you view what drives your customers, operations, revenues, and expenses. We do this by letting you quickly get answers to your most important business questions. After a simple online set-up, LucidEra combines data from your company's applications and delivers the information to you in simple reports, on demand. The business intelligence technology necessary to access, combine, clean and present the data is integrated behind the scenes, so that you don't have to design, build, manage, or worry about it.

LucidEra was founded in 2005 by veterans of the on-demand and business intelligence industries. Our founders are leading the transition of the business intelligence software market to an on-demand model.

**For more information, visit us at [www.lucidera.com](http://www.lucidera.com), send an email to [info@lucidera.com](mailto:info@lucidera.com), or call 1-650-357-9505**

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