Dots Analytics.

A.I. Brochure

About Dots Analytics

Dots Analytics helps organizations transform with AI through cutting-edge innovation, bringing together the brightest people in AI to help advance human-machine collaboration. Dots Analytics collaborates with an ecosystem of research and development groups. This network, combined with Dots Analytics depth of applied AI experience, can help organizations transform with AI. Dots Analytics solutions covers a broad spectrum of AI focus areas, with current research on ethics, innovation, global advancements, the future of work, and AI case studies.

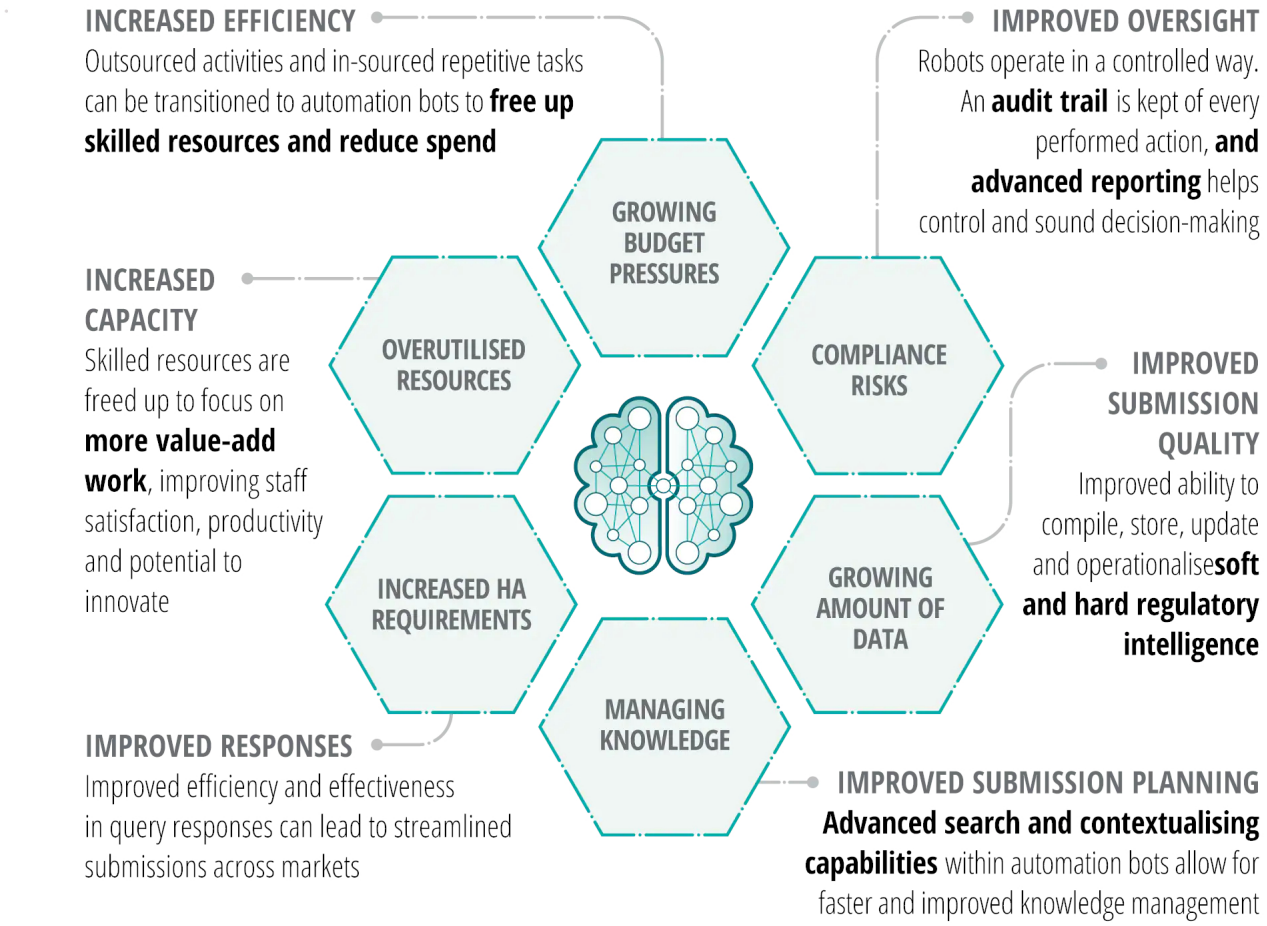


Figure 1: Dots Analytics A.I. benefits.

Risk and control framework

Dots Analytics Risk and Control framework can help your organization with the implementation of artificial intelligence solutions in a secure, compliant and manageable way by making your company's IT Governance and Risk framework AI ready.

Frameworks & Regulations Align the internal automation control framework with internal policies and external regulations.

Change Management & Culture Strategy, communication, engagement and training to promote an automation augmented workforce.

Governance & Oversight The organisational structure, committees, and roles & responsibilities for managing automation environments.

Controls & Procedures Processes to manage 1st(operations and risk management) and 2nd(risk oversight) Lines of Defence.

Organisational Engagement The programs and methods for engaging the workforce in automation opportunity identification and collaboration.

Planning & Alignment The methodologies and processes to effectively identify, value, prioritise, and align on automation opportunities.

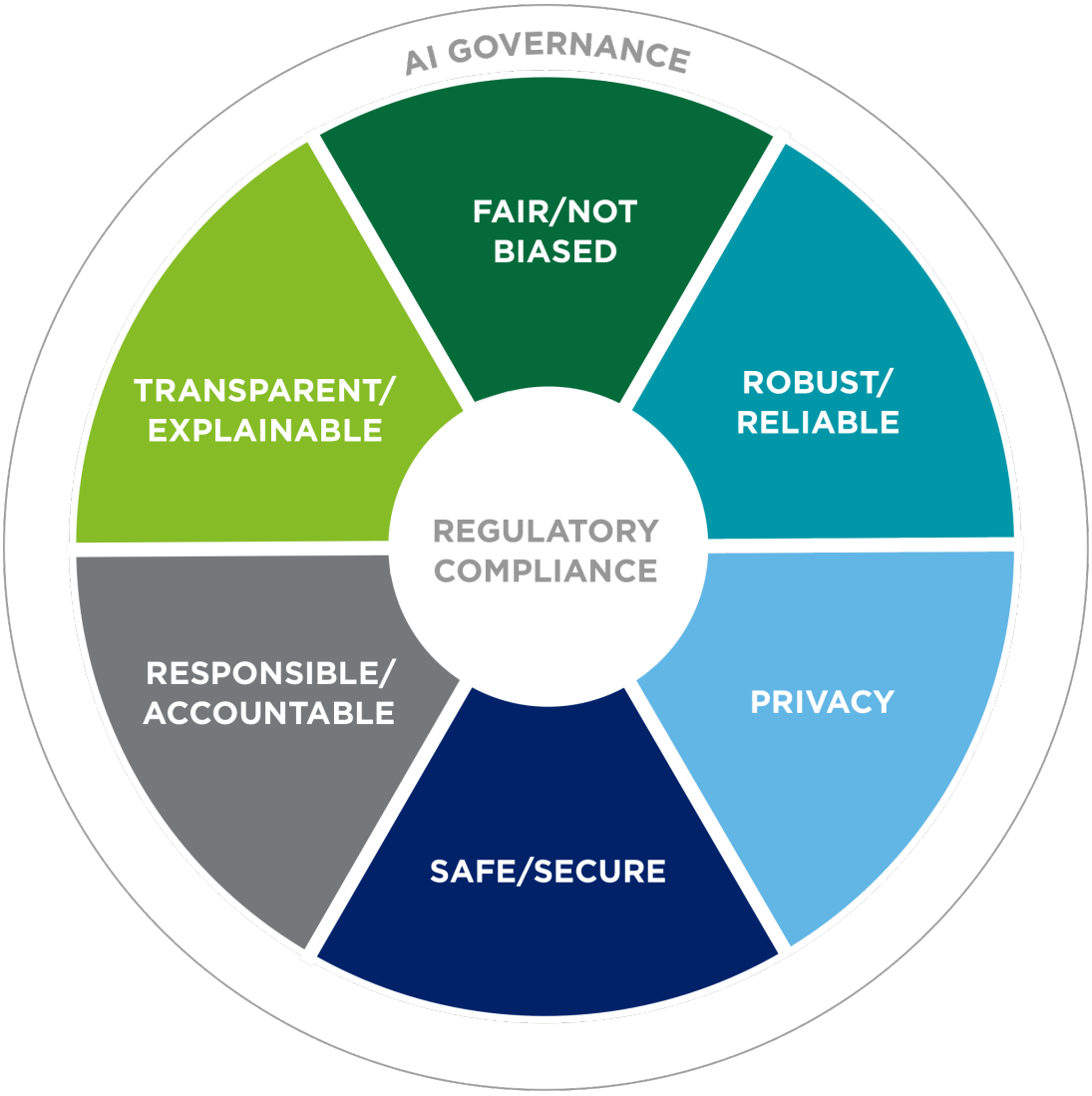
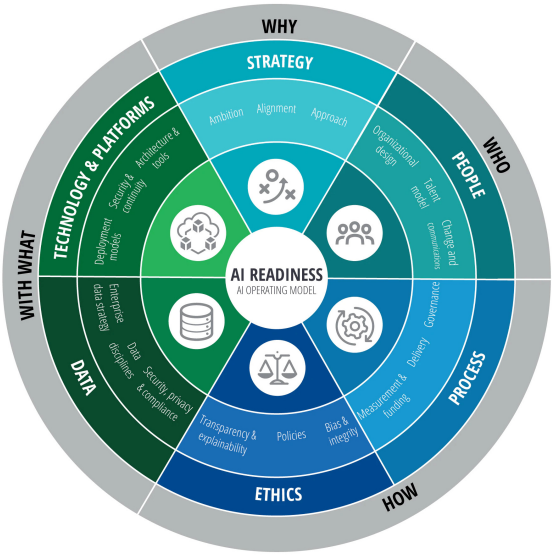


Figure 2: Dots Analytics A.I. Governance

Risk management throughout the Artifical-Intelligence (AI) lifecycle

Getting started with A.I.

Readiness assessment Just getting started with AI? We can provide information on the risks an organization needs to address to be AI ready. We do this by assessing the current and desired levels of AI maturity. We then perform a risk and gap assessment to establish the as-is AI maturity level.Based on the as-is maturity level we provide a high level report of the artificial intelligence readiness of your organization categorized into three main domains: people, processes and technology. The readiness assessment will be the input to establish an AI strategy.



Readiness assessed

Quick Scans Benchmarks To determine the AI strategy, it is crucial to have an objective source of information comparing the current maturity level to similar organizations in the market. Using comparative AI Risk studies in combination with the risks and opportunities identified during the readiness assessment, we help the organization in the development of the automation strategy.

Strategy defined

AI Risk Workshops Find out how your organization can leverage the power of AI. The Technology and digital risk team offers the opportunity to brainstorm about the roles and risks of AI within your organization together with our experts in the field. We will discuss your business and processes and identify potential AI related risks. We will then help you develop a risk control framework and look for program and project investments which can create value within your organization by using this framework.

Processes developed

Dots Analytics A.I. Solutions When the AI strategy has been defined and/or the AI processes and risk control frameworks have been designed and/or implemented, Dots Analytics can help in both the risk evaluation of the existing AI systems and processes as well as develop new AI solutions to support the strategy. A couple of example domains where Dots Analytics has built expertise over the years are the following:Prototyping, Explainable AI, Bias and Ethics risk assessments, Data anomaly and risk detection, Table extraction All of these solutions are designed to help you discover new ways of leveraging AI in your organization or improve the maturity of already existing processes

Maturity increased

AI Audit When your AI processes have been implemented, there are still a great deal of risks to overcome. These can range from IT and cyber security as well as compliance and ethics. We can help you gain assurance over the implemented IT and business cycle controls with relation to AI. We assess controls related to identity and access management, change management, data integrity, IT operations & processes and business continuity. Based on this assessment we provide recommendations to improve your AI control framework to increase the level of artificial intelligence maturity within your organization.

High A.I. maturity

Dots Analytics A.I Solutions

Executive Level

- Augmented-reality visualization of remote operation performance and forecasting with automated executive dashboards.
- Advanced forecasting, rule setting, game theory with automated tools.
- Optimized contract management process with enabled tools.

Operations & engineering

- Better operation optimization with tools allowing real-time decision making.
- Local in/out multi -site logistics.
- Defining better production recipes with data profiling.
- Real-time value chain KPI with intelligent IoT insight.
- Optimization of key process variables (mining, refining, carbon, reduction, casting) with game theory.

Production planner

- Better production planning with optimized capabilities that take account of production rotations, downtime, inbound feeds, raw stock.
- Batch optimization with consideration of cost reduction.
- Production and working schedule optimization with automated multi-factor inputs.

Maintenance manager

- Maintenance inventory optimized with forecasting planned maintenance, costing and ordering.
- Maintenance planning with process optimization as primary target.
- Orders and shipment with to synchronize with maintenance.

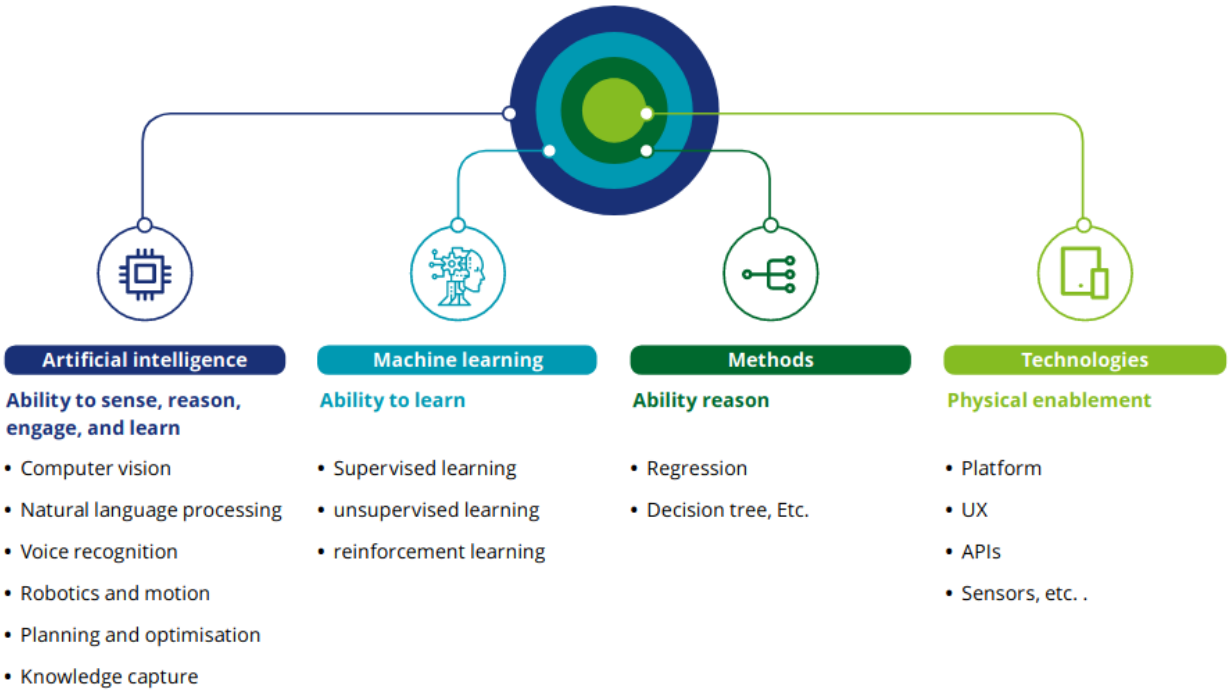


Figure 3: Dots Analytics A.I Solutions

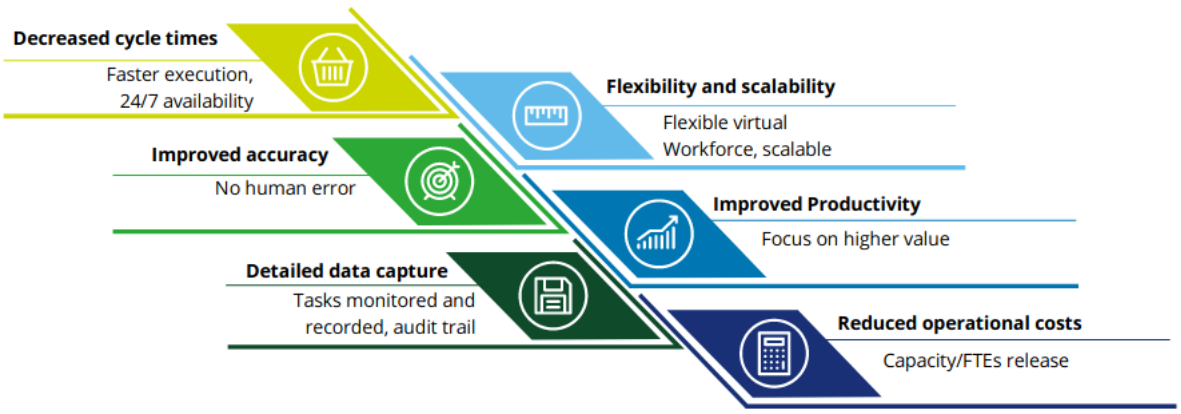
Dots Analytics in action

Production planning A Metal construction facility was facing extremely high and fluctuating power prices. Using power demand data and correlating it to variables such as regional weather patterns, changes in the economy, and the power demand of other users, we employed machine-learning models to analyse all the possible solutions the facility executives could implement to adjust production and minimize power cost. Each scenario was ranked based on the best electricity price for the next 24 hours, next week, or next month. The optimal solution calculated by the machine learning models helped its executives to better plan production: This resulted in switching day and night shifts, midweek days and weekend days, and performing maintenance when the demand on the grid is the lowest.

Smart grid forecasting Power grids need to maintain a balance between demand and supply. Over the years, power-generating stations have learned to maintain this delicate balance, albeit for a price. However, the demand for power is dramatically increasing as a result of the exponential growth in electronic devices and equipment. This includes electric vehicles, which are either consumers or producers of electricity as they move. Their unpredictability of supply and demand will become challenging to maintain balance with simple deterministic linear models. AI provides a solution for dynamic power balancing by establishing a set of rules of engagement for each household, neighbourhood, or parking lot while finding the optimal distribution under the constraints of pricing models. On a small scale, these solutions are already being applied today. On a large scale, the power grid of the future is poised to use these autonomous agents.

Yield optimization An oil & gas pumping service had been collecting production data for years, but was unable to effectively use it to deliver insights for operations due to the data's volume and complexity. To prepare it for analysis, the data was classified into three categories: inputs, processing, and outputs. Using the computing power of machines and machine-learning techniques such as clustering, we were able to analyse the large quantity of production data to identify and define 90 different operating scenarios. It was furthered determined that seven of these scenarios constituted 80 percent of the entire production. In addition, the results showed that five of these seven possibilities were producing a yield below the average production. This simple yet critical insight prompted the company executives to eliminate the underperforming possibilities, and thereby significantly increase production.

Predictive maintenance Down periods are part of the production cycle, as every plant has to shut down for scheduled maintenance at some point. AI can help minimize this down time by using the data collected by sensors to more accurately predict when a machine will need to be repaired. Prescriptive maintenance uses advanced algorithms to compare the data collected by sensors to known threshold levels to enable real-time decision-making based on actual operating parameters. For example, a 3000HP Pump & motor that generated its own power for the plant benefited significantly by switching from two long season-dependent maintenance periods to three short dynamic periods synchronized with the supply-and-demand cycles of the municipal power grid. This AI-driven process enabled a more accurate diagnosis of maintenance demand, and improved productivity and profitability using data-driven insights.



Smart factory, Dots Analytics smart

The smart factory represents a leap forward from more traditional automation to a fully connected and flexible system.While automation and controls have existed for decades, the fully smart factory has only recently gained traction as a viable pursuit for manufacturers.
The decision on how to embark on or expand a smart factory initiative should align with the specific needs of an organization. The reasons that companies embark or expand on the smart factory journey are often varied and cannot be easily generalized. However, undertaking a smart factory journey generally addresses such broad categories as asset efficiency, quality, costs, safety, and sustain-ability. These categories, among others, may yield benefits that ultimately result in increased speed to market; improved ability to capture market share; and better profitability, product quality, and labour force stability. Regardless of the business drivers, the ability to demonstrate how the investment in a smart factory provides value is important to the adoption and incremental investment required to sustain the smart factory journey.

Asset efficiency

Every aspect of the smart factory generates reams of data that, through continuous analysis, reveal asset performance issues that can require some kind of corrective optimization. Indeed, such self-correction is what distinguishes the smart factory from traditional automation, which can yield greater overall asset efficiency, one of the most salient benefits of a smart factory. Asset efficiency should translate into lower asset downtime, optimized capacity, and reduced changeover time, among other potential benefits.

Quality

he self-optimization that is characteristic of the smart factory can predict and detect quality defect trends sooner and can help to identify discrete human, machine, or environmental causes of poor quality. This could lower scrap rates and lead times, and increase fill rates and yield. A more optimized quality process could lead to a better-quality product with fewer defects and recalls.

Lower cost

Optimized processes traditionally lead to more cost-efficient processes those with more predictable inventory requirements, more effective hiring and staffing decisions, as well as reduced pro-cess and operations variability. A better-quality process could also mean an integrated view of the supply network with rapid, no-latency responses to sourcing needs thus lowering costs further. And because a better-quality process also may mean a better-quality product, it could also mean lowered warranty and maintenance costs.

Safety and sustainability

The smart factory can also impart real benefits around labour wellness and environmental sustain-ability. The types of operational efficiencies that a smart factory can provide may result in a smaller environmental footprint than a conventional manufacturing process, with greater environmental sustainability overall.25 Greater process autonomy may provide for less potential for human error, including industrial accidents that cause injury.26 The smart factory's relative self-sufficiency will likely replace certain roles that require repetitive and fatiguing activities. However, the role of the human worker in a smart factory environment may take on greater levels of judgment and on-the-spot discretion, which can lead to greater job satisfaction and a reduction in turnover.

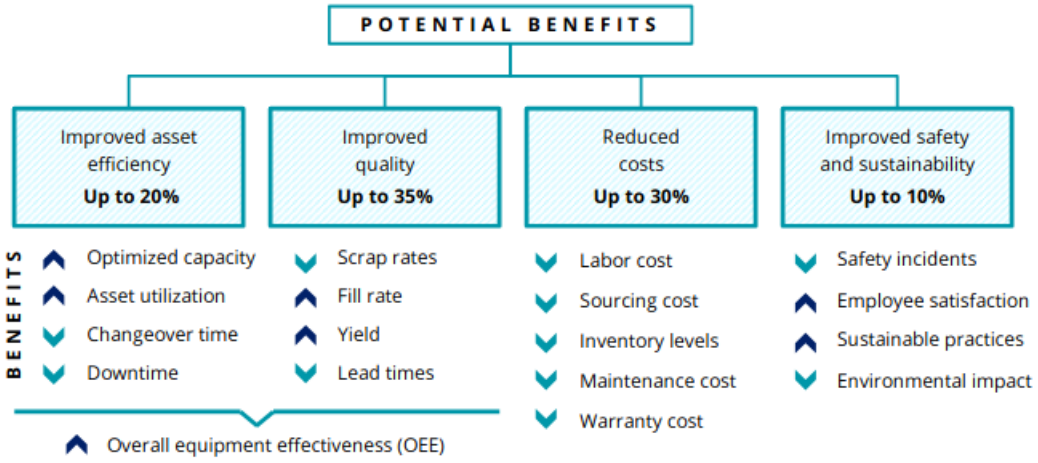


Figure 4: Benefits

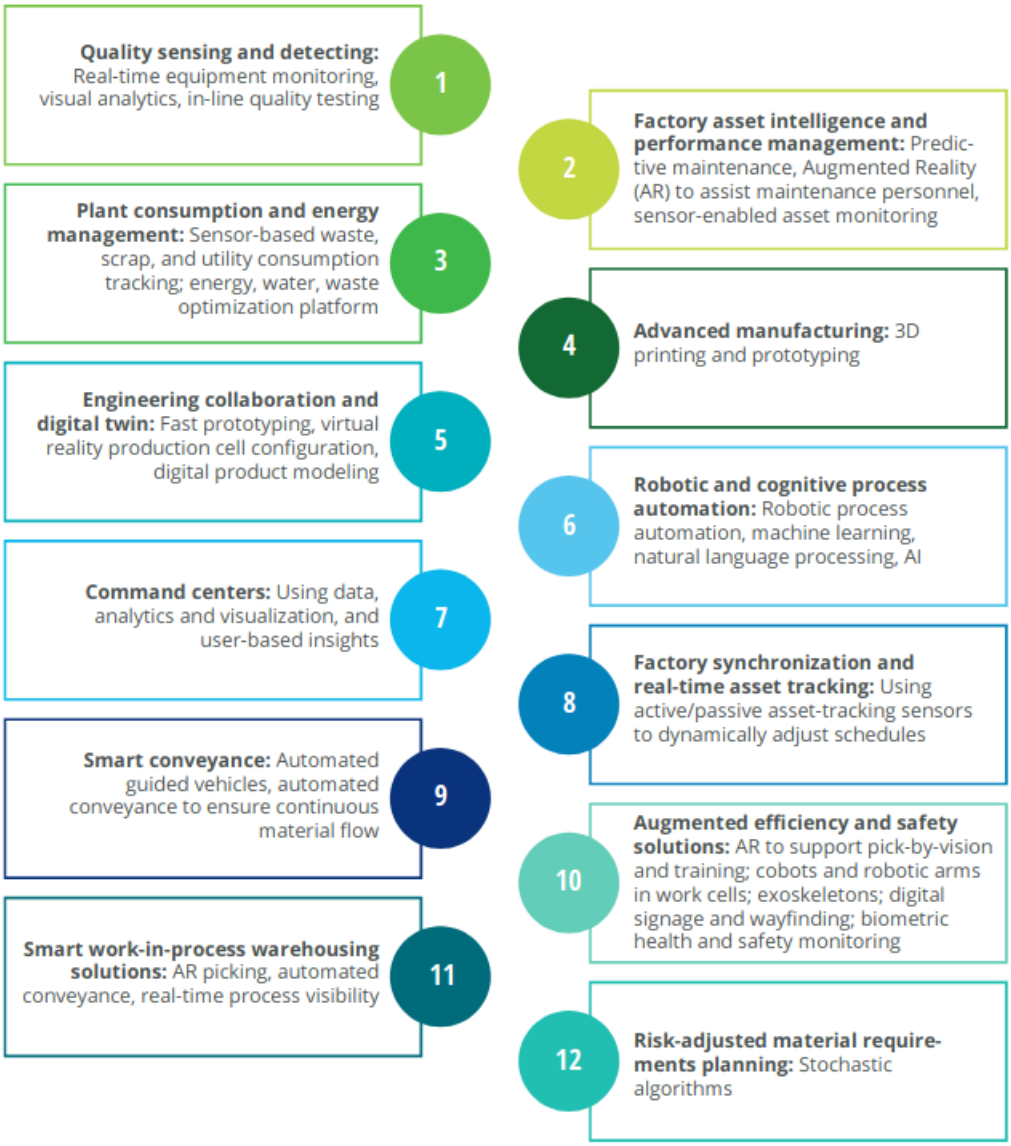


Figure 5: Dots Analytics Services

Contact us

Our insights can help you take advantage of change. If you're looking for fresh ideas to address your challenges, we should talk.

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