

# PSA HYPE CYCLE 2019

*Opkomende technologieën die van belang zijn voor Professional Services Automation*

## Samenvatting

Auteur  
Cees Quirijns  
sales@portland.eu  
020-2144000

- Portland detecteerde 70 opkomende technologieën die relevant zijn op het gebied van Professional Services Automation;
- Op korte termijn (< 2 jaar) is het advies om te focussen op het (beter) structureren en automatiseren van *bedrijfsprocessen* evenals het *beveiligen van klantdata*.
- Op middellange termijn (2-5 jaar) is onze visie dat partijen er goed aan doen om *Remote Monitoring en Management* (nog strakker) te implementeren, aandacht te besteden aan (marketing, sales en support) *content management* en aan *relatiemanagement* (inclusief klant specifieke prijsplannen en contracten).
- Op lange termijn (5-10 jaar) zijn wat ons betreft de dominante thema's binnen PSA: *artificiële intelligentie* en *sales en support automatisering*.
- Verder praten over een PSA-oplossing die klaar is voor de toekomst? Bekijk dan eens het aanbod van [Connectwise](#), de wereldwijde marktleider op dit gebied.

# INLEIDING

Op basis van de research van Gartner, introduceert Portland vandaag de eerste Hype Cycle op het gebied van PSA. Zo'n 70 opkomende technologieën worden hierin beschreven die relevant zijn voor IT Professionals die voor de keuze staan hoe hun interne operatie (verder) te automatiseren.

Professional Services Automation, afgekort PSA, behelst een softwaresysteem voor professionals om hen te assisteren bij het managen van de projecten van hun klanten. Binnen ons domein zou je het ook een ERP-systeem kunnen noemen, maar dan specifiek gericht op de werkzaamheden van de IT Professionals.

## Bedrijfsprocessen

Een goed PSA-systeem structureert én automatiseert de bedrijfsprocessen die typisch binnen de IT-dienstverlening van toepassing zijn. Welke bedrijfsprocessen dat dan zijn? Wij splitsen die processen allereerst op in primaire en ondersteunende processen (naar het model van [Kotler](#)).

### Primaire processen

In het primaire process wordt door de IT-dienstverlener het gros van de waarde toegevoegd in de vorm van goederen en diensten:

- 1) **Inkopen.** Bijvoorbeeld de inkoop van hardware, software en clouddiensten.
- 2) **Aanpassen.** Bijvoorbeeld het configureren en bundelen van producten en diensten in één oplossing.
- 3) **Afleveren.** Installeren bij de eindklant.
- 4) **Verkopen.** Nieuwe klanten vinden en meer plaatsen bij bestaande klanten.
- 5) **Ondersteunen.** Support leveren en (pro-actief) problemen oplossen.

### Ondersteunende processen

Draait het primaire process eenmaal op volle toeren, dan is het zaak om ook andere processen goed in te richten om het zakendoen vlot te laten verlopen:

- 1) **Financiële administratie en compliance.** Uiteraard moeten facturen efficiënt verstuurd worden, maar ook bijvoorbeeld contracten adequaat beheerd worden en voldaan worden aan de relevante wet- en regelgeving.
- 2) **Personeelsmanagement.** De activiteiten van medewerkers moeten goed georganiseerd worden in het klant- en bedrijfsbelang.
- 3) **Leverancier management.** Effectief en doelmatig omgaan met [steeds meer] toeleveranciers.
- 4) **IT.** Systemen op orde hebben om processen bijvoorbeeld te vereenvoudigen en te versnellen.

### Vraag naar PSA groeit hard

Het is niet onmogelijk om voorgaande processen in te regelen met allerlei puntoplossingen. Leveranciers van PSA bieden echter een aantal voordelen die de doe-het-zelf route minder aantrekkelijk maken:

- **Specialisatie.** Veel puntoplossingen zijn generiek van aard en daarmee dus per definitie niet toegespitst op de dagelijkse praktijk binnen een IT-dienstverlener. PSA is daarentegen gespecialiseerd in procesondersteuning binnen het IT-domein;
- **Structuur.** Verschillende puntoplossingen zijn vaak moeilijk aan elkaar te knopen en staan een gestructureerd, efficiënt proces daarom vaak in de weg. Binnen PSA-oplossingen ligt die processtructuur er al.
- **Doorgroei.** Puntoplossingen doen vaak wat ze nu moeten doen. Maar hoe zit dat in de toekomst? Kan het systeem meegroeien met de onderneming? PSA-systemen zijn doorgaans modulair opgebouwd en kennen talloze integratiemogelijkheden met een - alsmaar groeiend- ecosysteem van toevoegingen die het leven makkelijker maken.

Het is daarom niet verwonderlijk dat de vraag onder IT-dienstverleners naar PSA sterk groeiende is. Wij herhalen regelmatig op feesten, partijen en bijeenkomsten dat een Managed Service Provider eigenlijk niet zonder gespecialiseerde PSA-tool kan, tenzij hij ook de weekenden wil spenderen aan de alsmaar toenemende administratieve beslommeringen.

Steeds meer IT-dienstverleners staan voor de keuze om hun interne organisatie aan te pakken. Waarom juist nu? Concurrentie is een vaak gehoord antwoord; je moet blijven en waar mogelijk zelfs vooroplopen. Complexiteit is een andere: de hoeveelheid IT-oplossingen groeit explosief en het wordt dus steeds duurder en foutgevoeliger om dit alleen handmatig in goede (winstgevende) banen te leiden.

# ACHTERGROND PSA HYPE CYCLE

IT Professionals die zich oriënteren op het gebied van PSA zullen al snel de conclusie trekken dat er veel bij komt kijken. Dat is ook niet vreemd, want PSA raakt nagenoeg alle bedrijfsprocessen binnen de organisatie.

Portland ontwikkelde daarom de PSA Hype Cycle, een overzicht van opkomende technologieën die relevant zijn op het gebied van PSA, om IT Professionals te ondersteunen bij het maken van een keuze.

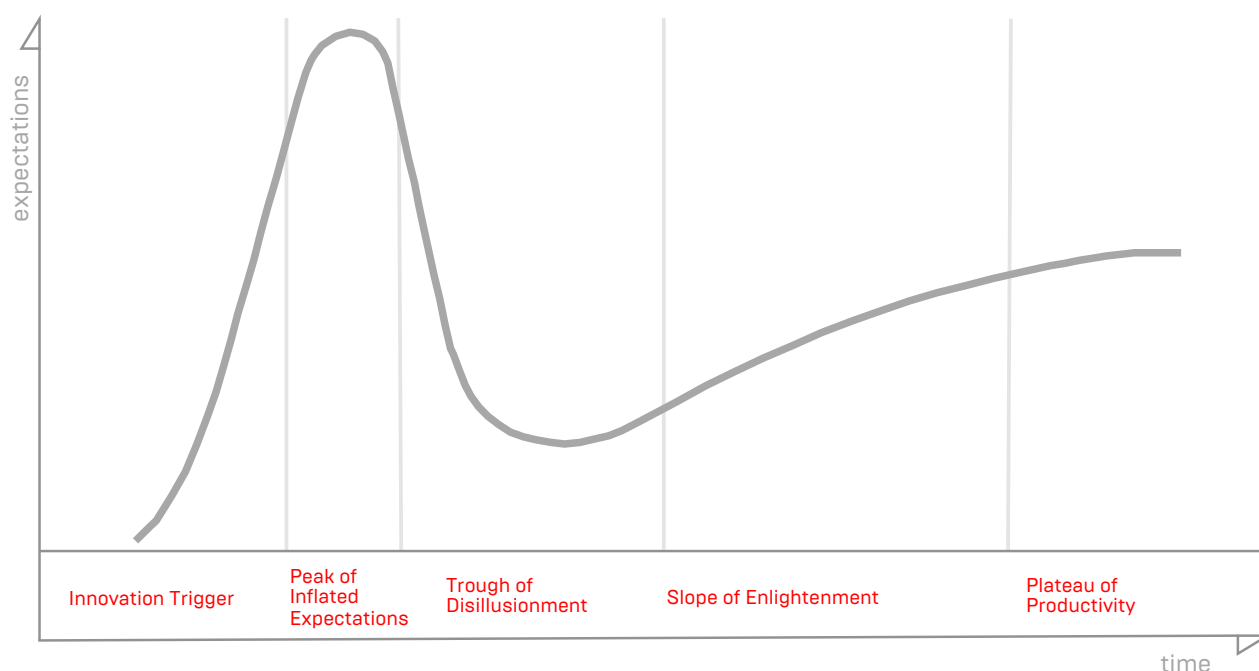
## **Connectwise**

De PSA Hype Cycle is mede mogelijk gemaakt door Connectwise, de wereldwijde marktleider op het gebied van PSA. Portland distribueert [Connectwise](#) in de Benelux.



# HYPE CYCLE OPFRISSTERTJE

De Hype Cycle, ontwikkeld en gebruikt door Gartner, is een grafische presentatie van de volwassenheid, adoptie en toepassing van specifieke technologieën.



*Figuur 1: de Gartner Hype Cycle*

Een Hype Cycle bestaat uit 5 kritieke fases binnen de levenscyclus van technologie:

1. **Innovation Trigger.** Een potentiële technologie-doorbraak zet zaken in gang. Enkele vroege *Proof of Concepts* leiden tot serieuze media-aandacht. Er bestaan vaak nog geen concrete producten en de [commerciële] haalbaarheid is nog niet duidelijk.
2. **Peak of Inflated Expectations.** Publiciteit van het eerste uur leidt tot een aantal succesverhalen (vaak vergezeld van mislukkingen). Sommige organisaties ondernemen actie, de meeste niet.

3. **Trough of Disillusionment.** Interesse voor de technologie neemt af omdat experimenten en implementaties tegenvallen. Bepaalde producenten overleven het niet. Investerings gaan door, maar alleen in producten die zich weten aan te passen aan de wensen van de eerste klanten.
4. **Slope of Enlightenment.** Meer voorbeelden komen op van hoe de technologie profijtelijk kan zijn voor organisaties en dit wordt beter en breder begrepen. Tweede en derde generatie producten zien het licht. Meer organisaties slaan aan het testen. Conservatieve organisaties blijven afwachtend.
5. **Plateau of Productivity.** Adoptie door de massa begint. Criteria voor de selectie van producten zijn duidelijker gedefinieerd. De markt begint in te zien dat de technologie toepasbaar én relevant is voor organisaties.

Een bepaalde technologie hoeft niet perse alle fases van de Hype Cycle te doorlopen. Een technologie kan er bijvoorbeeld 'vanaf vallen' wanneer duidelijk wordt dat deze (inmiddels) achterhaald is. Ook kunnen technologieën zomaar uit het niets in een latere fase van de Hype Cycle verschijnen, simpelweg omdat ze niet eerder op het netvlies van Gartner stonden.

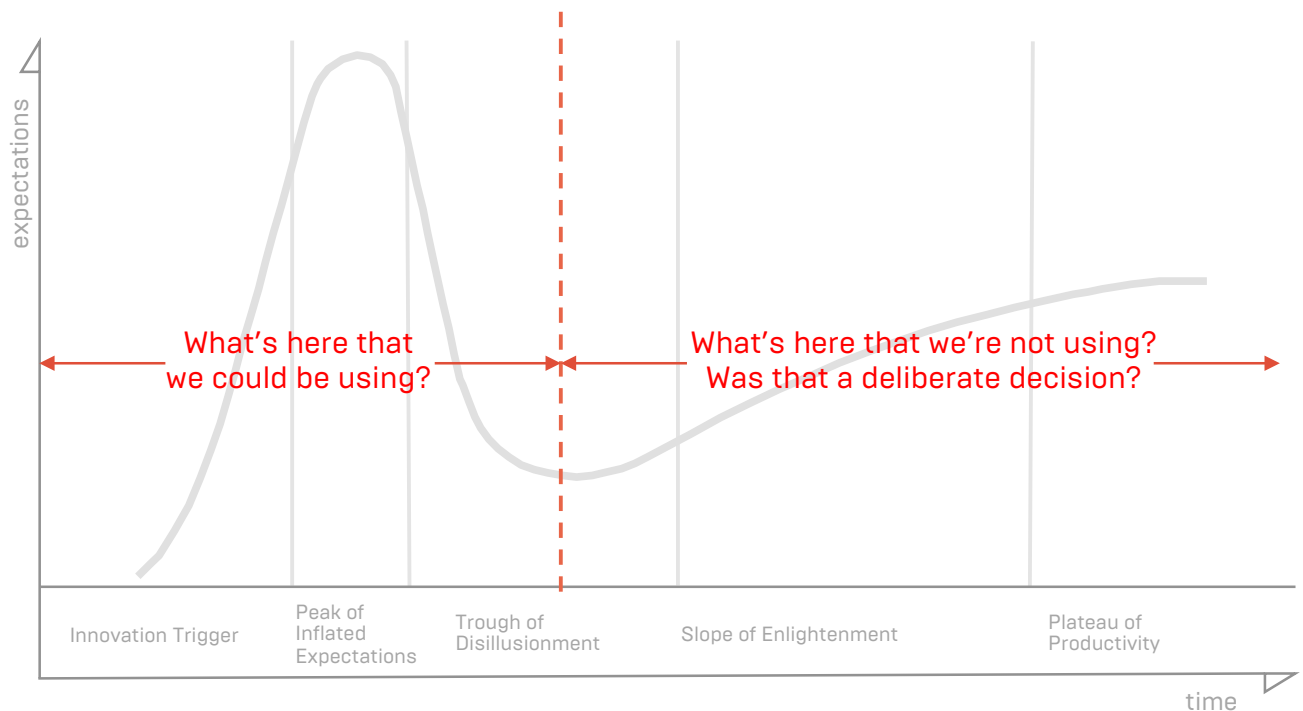
## Interpretatie van de Hype Cycle

Een specifieke technologie wordt ergens op de Hype Cycle ingetekend op basis van de inschattingen en analyses van Gartner. Maar voordat we op die specifieke technologieën ingaan, bekijken we eerst hoe je de Hype Cycle op hoofdlijnen kunt interpreteren.

Je kunt de Hype Cycle in een linker- en rechterhelft splitsen. Aan de linkerkant staan dan alle technologieën waarvan nog niet met enige zekerheid te zeggen is of ze door de massa omarmd gaan worden. Aan de rechterkant

is die waarschijnlijkheid (veel) hoger. Het is daarom aan te bevelen om hier als volgt mee om te gaan:

- **Linkerkant Hype Cycle.** Welke technologieën staan hier waar we misschien iets mee kunnen doen?
- **Rechterkant Hype Cycle.** Welke technologieën staan hier die we nog niet in portfolio hebben? Waarom niet?



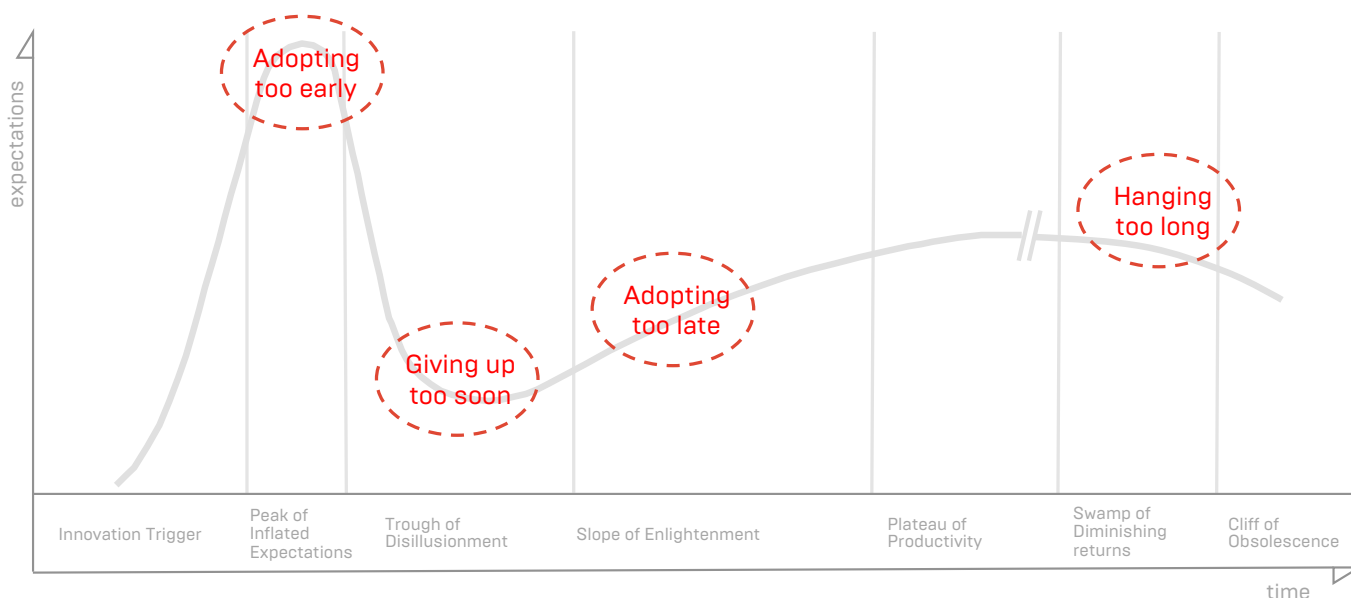
Figuur 2: Hype Cycle en vuistregel voor interpretatie

Het idee is dat de rechterkant van de Hype Cycle op je roadmap zou moeten staan voor toekomstige implementatie, tenzij je een goede reden hebt om dat niet willen. Deze technologieën bewegen immers naar massa-adoptie volgens Gartner.

Aan de linkerkant van de Hype Cycle kan er daarentegen nog van alles gebeuren en zou je zomaar een afwachtende houding kunnen kiezen, tenzij je natuurlijk goede redenen hebt om nu al aan boord te springen.



De Hype Cycle kan ook gebruikt worden om de risico's in te schatten voor jouw organisatie. Dit staat weergegeven in Figuur 3.



Figuur 3: Hype Cycle en risico's

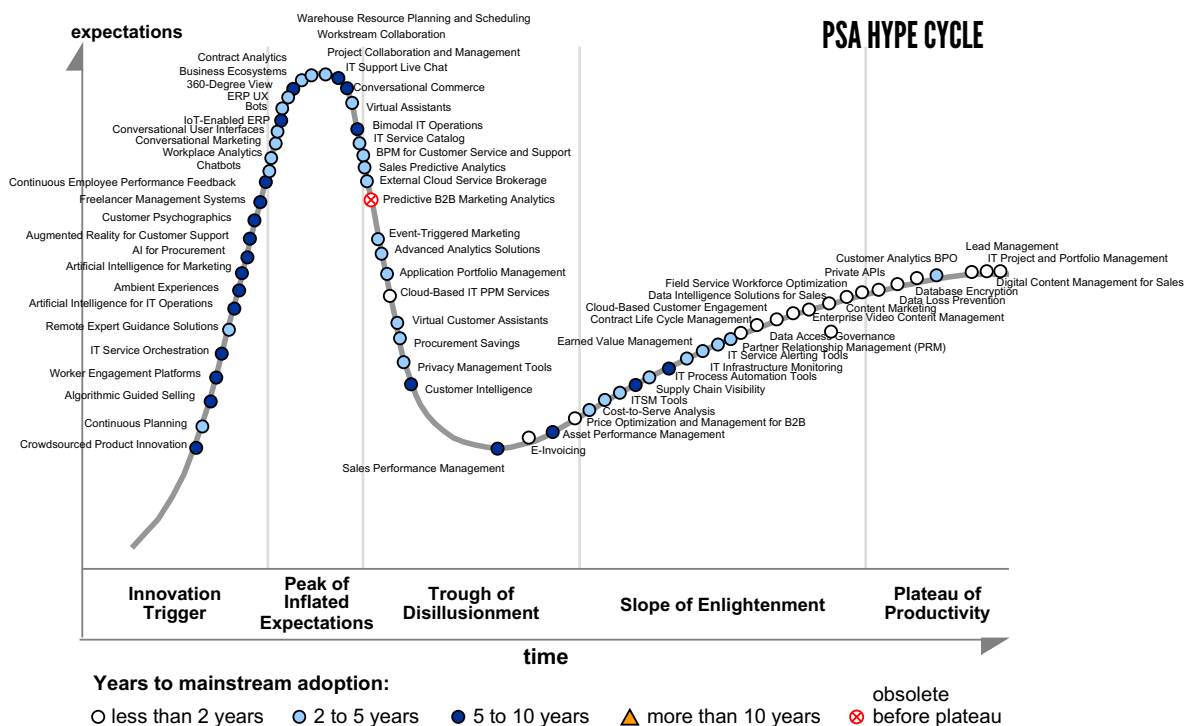
De risico's worden als volgt samengevat:

1. **Te snel** een opkomende technologie **adopter**, terwijl deze nog onbewezen is;
2. Een eenmaal geadopteerde technologie **te snel afschrijven**, terwijl deze aan de vooravond staat van sterke groei;
3. Een opkomende technologie **te laat adopteren** zodat je achter de feiten aanloopt en competitief voordeel mist;
4. **Te lang vasthouden** aan een oude technologie terwijl die (inmiddels) achterhaald is of wordt.

Genoeg nu over de achtergrond, op naar de MSP Hype Cycle!

# PSA HYPE CYCLE

Zonder verder oponthoud presenteren we je bij deze de Portland PSA Hype Cycle 2019.



Bron: Portland, Gartner, 2019

Figuur 4: Portland PSA Hype Cycle 2019

## Methodiek

We analyseerden de 1700+ opkomende technologieën die Gartner volgt voor 2019. Daaruit maakten we een selectie van opkomende technologieën die naar onze mening relevant zijn voor het onderwerp PSA.

Hieruit resulteerde een lijst van ruim 70 opkomende technologieën die je kunnen helpen bij het selecteren van het voor jou juiste PSA-systeem of combinatie van

puntoplossingen. Zoals altijd claimen we daarbij geen patent op gelijk, maar zijn we wel van mening dat je van deze opkomende technologieën iets zou moeten vinden als IT Professional, zeker wanneer je een transitie naar PSA overweegt.

Zie de PSA Hype Cycle als een checklist van opkomende technologieën waarvan je primair moet afvragen of je ze überhaupt zou willen/moeten gebruiken. Op de tweede plaats kan de PSA Hype Cycle handig zijn om niets over het hoofd te zien daar waar het de roadmap van de verschillende leveranciers betreft.

## Highlights

In deze whitepaper gaan we niet in op alle individuele technologieën: de meesten spreken namelijk voor zich. In de bijlage vind je een omschrijving van de verschillende technologieën ter referentie. We lichten er in deze whitepaper wel een aantal opvallende uit.

### 1. Innovation Triggers

Er staan weer heel wat (potentieel) disruptieve technologieën aan de linkerkant van de PSA Hype Cycle. De grote lijnen die wij zien:

- **Artificiële Intelligentie (AI).** AI gaat ingezet worden binnen verschillende bedrijfsprocessen in de IT-dienstverlening. AI voor procurement, marketing maar ook voor het managen van de IT Operations. Wellicht nog 5-10 jaar in toekomst, maar de tendens is duidelijk.
- **Sales en Support automatisering.** Algorithmen en chatbots die gaan helpen bij het verkopen en augmented reality inzetten op de support desk bijvoorbeeld. Eveneens nog jaren vooruit, maar de initiatieven zijn er en hebben tractie.

## 2. Peak of Expectations

Voor een aantal disruptieve technologieën geldt dat er wel erg veel (misschien teveel) van verwacht wordt. De rode draad:

- **Ecosystemen.** Ecosystemen zijn een 'buzz word' geworden en krijgen te pas en te onpas miraculeuze eigenschappen toegedicht. Het wordt tijd voor wat realiteitszin. Ja, het is erg fijn wanneer ecosystemen effectief en efficiënt opereren, maar in de praktijk is er nog veel werk aan de winkel.
- **Workstream Collaboration.** Beter samenwerken door gebruik te maken van software tools is eveneens een populaire strategie. Verwacht er echter (op korte termijn) geen wonderen van.

## 3. Through of Disillusionment

Hier vinden we technologieën waar eens heel veel van werd verwacht, maar die nu in het verdomhoekje zitten of daar naartoe bewegen. Een mooi moment om er iets mee te gaan doen dus, als je erin geloofd, om zo klaar te zijn voor de volgende groeifase. De rode draad zoals wij hem zien:

- **Privacy Management.** Velen hebben de buik even vol van GDPR/AVG. We hebben ruim een jaar rust gehad nu de privacy-storm is gaan liggen. Verwacht echter een revival.
- **Sales Performance Management.** De economie zit al weer een tijdje mee, dus de verkopen gaan relatief gemakkelijk. Verwacht dat daar in een volgende recessie verandering in komt en dat het weer belangrijker wordt om de performance van de verkoopafdeling op te schroeven.
- **E-Invoicing en Price Optimization.** Digitaal factureren, liefst zoveel mogelijk automatisch, en

klant specifieke prijzen krijgen momenteel niet de aandacht die ze verdienen. Verwacht dat deze zaken opnieuw in de 'spotlight' komen, zeker wanneer er wat economische tegenwind komt.

#### 4. Slope of Enlightenment

De hoofdthema's in deze fase:

- **Monitoring, Alerting en Automatisering.** De noodzaak tot het op afstand kunnen monitoren van de infrastructuren van klanten, problemen snel detecteren en (automatisch) oplossen, heeft steeds minder toelichting. Binnen 2-5 jaar gemeengoed.
- **Content Management.** Of je nu spreekt over specifieke content ten behoeve van de verkoopafdeling, algemene marketing content of video content voor support en opleiding: Content is nog steeds King! Minder dan 2 jaar verwijderd van massa-adoptie.
- **Relatiemanagement.** Of je nu met partners werkt of direct eindklanten bedient: het is zaak om ze betrokken te houden bij je organisatie en scherp op het netvlies te hebben wat ze bijdragen aan (de winstgevendheid van) je organisatie.

#### 5. Plateau of Productivity

Hier zijn de hoofdthema's:

- **Beveiliging.** Je werkt als IT Professional per definitie met (privacy-) gevoelige informatie van klanten, dus je eigen beveiliging dient zwaar op orde te zijn. Dat betekent ten minste: het voorkomen van datalekken en gegevensencryptie toepassen. Is dat niet geregeld binnen twee jaar, dan kun je er competitief nadeel van verwachten.
- **IT Project en Portfolio Management.** We noemden

het al in de inleiding: het IT-dienstenaanbod groeit en de omgeving wordt complexer. Consequentie: je eigen bedrijfsprocessen dienen soepel te lopen met de ondersteuning van de juiste PSA-tools. Binnen 2 jaar mainstream.

# TOT SLOT

We hopen dat je met de PSA Hype Cycle een tool in handen krijgt die het makkelijker maakt om jouw PSA-strategie te optimaliseren.

## Conclusies

Samenvattend zien we op het gebied van PSA de volgende grote technologietrends die wij zouden betrekken in je overwegingen bij de keuze voor een PSA-oplossing:

- Lange termijn (5-10 jaar): **AI en Sales & Support automatisering.**
- Middellange termijn (2-5 jaar): **RMM, content management en relatiemanagement.**
- Korte termijn (< 2 jaar): **security en procesautomatisering.**

## Over de PSA Hype Cycle

De Portland PSA Hype Cycle is een overzicht van opkomende technologieën op het gebied van PSA die relevant zijn voor de IT Professional. Daarbij wordt een inschatting gemaakt van waar ze zich bevinden in termen van hype en hoe lang het nog gaat duren voordat het overgrote deel van de zakelijke IT-markt zo'n technologie zal adopteren.

De PSA Hype Cycle is gebaseerd op het onderzoek van Gartner. Portland is verantwoordelijk voor de selectie van relevante PSA-technologieën: Gartner heeft daar geen rol in gespeeld. Deze whitepaper is gesponsord door [Connectwise](#), de wereldwijde marktleider op het gebied van PSA.

## BIJLAGE: TECHNOLOGIEËN

<b>360-Degree View</b>	A 360-degree view brings together all trusted data about a customer, product or other business-critical object to fulfill one or more specific business requirements. The resultant object can then be "viewed" holistically through many business contexts whether they be operational or analytical. From these holistic views, better business outcomes can be achieved such as improved customer or citizen experience, customer or citizen service, procurement and product sales and service.
<b>Advanced Analytics Solutions</b>	Advanced analytics uses sophisticated quantitative methods (such as data mining, prediction, simulation and optimization) to produce insights that traditional approaches to business intelligence (BI) — such as query and reporting — are unlikely to discover. Advanced analytics include a range of technologies, but mostly are focused on forward-looking, predictive outcomes, as well as prescriptive indicators to help organizations with actionable outcomes.
<b>AI for Procurement</b>	Artificial intelligence (AI) for procurement is the concept of applying AI technologies, such as predictive analytics, cognitive expert advisors and virtual assistants, to procurement-specific use cases.
<b>Algorithmic Guided Selling</b>	Guided selling solutions use predictive and prescriptive machine learning algorithms to manage the sequential sales actions that managers expect sales users to consistently execute. Application leaders supporting sales select these tools to improve sales effectiveness, using them to enforce process discipline and to remove the uncertainty about "what to do next" in complex sales processes.
<b>Ambient Experiences</b>	Ambient experiences emphasize delivery of a real-time experience across multiple systems in proximity to the user. The spaces users inhabit seamlessly blend physical and virtual environments. Context is injected by sensors, historical data and user action. Ambient experiences adapt real-time contextual data as the user moves between places or the environment changes delivering a more engaging, intuitive and responsive experience. Output appears through sight, sound, touch, taste or smell.
<b>Analytics for Customer Intelligence</b>	Analytics for customer intelligence involves the analysis and fusion of large customer datasets to identify patterns of behavior and to generate predictive or actionable insight that



	enhances customer experience and customer acquisition, growth and retention. It also enables more targeted/personalized marketing, as well as product and service innovation.
<b>Continuous Planning</b>	Continuous planning is the process of planning in a world of continual change, woven into the fabric of management. It uses technology to support dynamic response to change vs. plans. Gartner's observation of the rise of continuous planning is marked by the adoption of continuous intelligence, in which streaming data is always collected, events analyzed, and algorithms suggest courses of action. Over the course of the next decade, this will be supported by digital twins of the organization, digital twins of people, and digital twins of things.
<b>Application Portfolio Management</b>	Application portfolio management (APM) is the foundation of an application strategy. APM profiles an organization's business applications — evaluating business and technology fitness together with cost and risk — to identify and prioritize activities for improvement. Application portfolio rationalization and modernization are achieved by the execution of strategies to tolerate, invest in, migrate or eliminate assets.
<b>Artificial Intelligence for Marketing</b>	Artificial intelligence (AI) for marketing comprises systems that change behaviors without being explicitly programmed based on data collected, usage analysis and other observations for marketing use cases. Enabling technologies and techniques include machine learning, deep learning and natural-language processing.
<b>Asset Performance Management</b>	Asset performance management (APM) is a market of software tools and applications for optimizing operational assets (such as plant, equipment and infrastructure) essential to the operation of an enterprise. It uses data capture, integration, visualization and analytics to improve operations, maintenance timing, and which maintenance and inspection activities to perform on mission-critical assets. APM includes the concepts of asset strategy and risk management, condition monitoring, predictive forecasting and reliability-centered maintenance.
<b>Augmented Reality for Customer Support</b>	Augmented reality (AR) for customer support overlays a combination of 3D graphics, video feeds, annotations and sound over the user's direct or indirect view of the physical world. It projects these digital assets onto an optically transparent surface (such a vehicle's windshield, glasses or other head-mounted display) or superimposes them onto the feed from a tablet, phone or other camera. Customers and technicians can receive visual information or assistance without having to use hands or glance away from the physical environment.
<b>Bimodal IT Operations</b>	Bimodal IT operations comprise a strategy that enables infrastructure and operations (I&O) leaders to support customers based on the certainty of requirements using two complementary sets of work style capabilities (Mode 1 and

	Mode 2). Mode 1 capabilities are used when requirements are certain and can lead to predictable and well-modeled IT services or products. Mode 2 is used when requirements are uncertain and exploration is required, such as during the pursuit of digital business strategies.
<b>Bots</b>	Bots are microapps or apps that can operate on other bots, apps or services in response to event triggers or user requests. They may invoke other services or apps, often emulating a user or app, or using an API to achieve the same effect. These requests can be initiated via conversational UIs (chatbots) or in response to events — such as a change in state of an application or database. Bots automate tasks based on predefined rules or via more sophisticated algorithms, which may involve artificial intelligence (AI).
<b>BPM for Customer Service and Support</b>	Business leaders are looking to business process management (BPM: the ability of a system to discover, model, analyze, measure, improve, and optimize business processes) to coordinate the behavior of people, systems, information and things to produce business outcomes in support of a business strategy. For a business to evolve customer service in an agile way, it must have the tools to systematically modify the customer processes for many different roles and contexts, from sales and marketing to service and internal processes.
<b>Business Ecosystems</b>	A business ecosystem is a dynamic network of entities (people, business and things) interacting with each other to create and exchange sustainable value for participants. A business ecosystem allows participants to work cooperatively and competitively to support new products, satisfy customer needs and innovate (see "Eight Ways Ecosystems Supercharge Business Models" G00335982).
<b>Artificial Intelligence for IT Operations (AIOps) Platforms</b>	Artificial intelligence for IT operations (AIOps) platforms combine big data, AI/machine learning and other technologies to support all primary IT operations functions with proactive, personal and dynamic insight. AIOps platforms enable the concurrent use of multiple data sources, data collection methods, analytical technologies (real-time and deep) and presentation technologies.
<b>Cloud-Based Customer Engagement Center</b>	A cloud-based customer engagement center (CEC) provides the functionality required for a customer service and support center via a subscription service through a SaaS cloud delivery model. There are several types of cloud deployment. A popular version is to choose a private instance on public infrastructure rather than a software supplier that hosts one master version of the core application that is shared by many organizations with shared infrastructure. The database model can be multitenant or private cloud, depending on business need.
<b>Cloud-Based IT PPM Services</b>	Cloud-based IT project and portfolio management (PPM) services provide IT PPM functionality delivered as a form of software as a service (SaaS), in which tenants use shared

	software and shared databases as part of a subscription to a PPM product or platform.
<b>Content Marketing</b>	Content marketing involves the process and practice of creating, curating and cultivating text, video, images, graphics, e-books, white papers and other content assets that are distributed through paid, earned and owned media platforms. These assets are used to tell stories that help brands engage with and nurture customers, prospects and other audiences. The goal of content marketing is to drive awareness, demand, preference and loyalty through deeper engagement with prospects and customers.
<b>Continuous Employee Performance Feedback</b>	Continuous employee performance feedback tools enable managers and employees to regularly provide and receive performance and development feedback. It may include functionality related to the tracking of progress on goals, peer feedback on specific activities, 360-degree feedback, informal feedback, check-ins, manager one-to-one preparation and follow-up, and pulse engagement surveys.
<b>Contract Analytics</b>	Contract analytics solutions use natural-language processing (NLP) technology to quickly extract and interpret data from contracts with a high degree of accuracy. Use cases include contract review and comparison, contract compliance reporting, contract risk scoring and contract financials reporting. These solutions can be considered a subset of broader enterprise legal management (ELM) solutions. Some contract life cycle management (CLM) vendors offer contract analytics as an add-on feature.
<b>Contract Life Cycle Management</b>	Contract life cycle management (CLM) denotes a solution and the process to proactively manage a contract from initiation through award, compliance and renewal. This can include any agreements or contractual documents containing obligations that affect the organization now and/or in the future. CLM solutions can be deployed tactically at the department/contract-type level (e.g., IT, legal, procurement and sales) or, more broadly, across an organization as an enterprise CLM solution.
<b>Conversational Marketing</b>	Conversational marketing technologies enable interactions between companies and customers that mimic human dialogue and do so at scale. It employs persistent session-based cross-channel exchanges in the form of natural language dialogue, using a blend of text and audio. Marketers use it to improve business metrics across the customer journey by humanizing their interactions with audiences.
<b>Conversational User Interfaces</b>	Conversational UI (CUI) is a high-level design model in which user and machine interactions primarily occur in the user's spoken or written natural language. Typically informal and bidirectional, these interactions range from simple utterances through to highly complex interactions, with subsequent highly complex results. As design models, CUI depends on

	implementation via applications or related services or on a conversational platform.
<b>Cost-to-Serve Analysis</b>	Supply chain cost-to-serve (CTS) analysis is the ability to understand profitability at a deeper level along multiple dimensions including customer, product and route to market. The most common use cases for CTS analysis are improved process and resource efficiency, differentiated performance targets for supply chain segments, gain sharing between suppliers and customers, and more-informed product portfolio management, costing decisions and supply network design.
<b>Crowdsourced Product Innovation</b>	Crowdsourced innovation is a collaboration model that provides both internal and external sources the ability and opportunity to contribute to new product concepts. These concepts can be for physical goods, digital products or business services. Crowdsourced innovation may be conducted in multiple ways, including public campaigns soliciting new ideas, a virtual storefront, or through customer engagement platforms.
<b>Customer Analytics BPO</b>	Customer analytics BPO is a form of knowledge process outsourcing. Customer data is analyzed, either with technology or coupled with human analysis, to offer more insight to buyers about their customers. When outsourcing analytics services, buyers have the opportunity to consume an integrated stack of services or select the layers of the solution that best complement their needs.
<b>Customer Psychographics</b>	Customer psychographics evaluates customers according to their attitudes, communication or decision-making style, rather than according to their specific actions, requirements, values or levels of satisfaction. In general, customers are matched to a limited number of predefined styles. These can be based either on directly captured data (such as word usage from calls, or subjects they comment on in social media) or data derived from analysis of behaviors (such as purchasing products with a consistent set of attributes).
<b>Data Access Governance</b>	Data access governance (DAG) provides data access assessment, management and real-time monitoring capabilities for unstructured and semistructured data found in file repositories. DAG's primary purpose is to determine who has access to which data in an organization's repositories, how that data is classified and what the history of access to that data has been.
<b>Chatbots</b>	A chatbot is a stand-alone conversational interface that uses an app, messaging platform, social network or chat solution for its conversations. Chatbots vary in sophistication, from simple, decision-tree-based marketing stunts, to implementations built on feature-rich platforms. They are always narrow in scope. A chatbot can be text- or voice-based, or a combination of both.

<b>Data Intelligence Solutions for Sales</b>	Data intelligence solutions deliver data enrichment capabilities like firmographic data such as company size, as well as relationship and market intelligence to B2B sales users. These solutions are used for prospecting, and account and contact selection. Some solutions provide real-time social and news insights on companies and people, by ingesting external direct data feeds or web crawling news and social network posts. Most providers integrate this data into account and contact records in SFA and CRM lead management systems.
<b>Data Loss Prevention</b>	Data loss prevention (DLP) is the dynamic application of a policy based on the content and context at the time of an operation. DLP addresses the risks of inadvertent or accidental data loss, and the exposure of sensitive data using monitoring, filtering, blocking and remediation features.
<b>Database Encryption</b>	Database encryption solutions protect the column, table or database instance of relational database management systems (RDBMSs) on-premises.
<b>Digital Content Management for Sales</b>	Digital content management for sales applications encompass content repositories, authoring tools and collaborative environments, as well as interfaces for publishing, versioning, and presenting sales and marketing materials. Most solutions provide a dedicated application where sales presentations can be accessed, shared and emailed. Most solutions offer prescriptive content recommendations and track contacts' engagement with the content. Some solutions can be used for data collection, like credit applications.
<b>E-Invoicing</b>	Gartner's definition of e-invoicing is "the interchange and storage of legally valid invoices in electronic format only among trading partners." E-invoicing requires cross-functional knowledge spanning business, accounting, regulations and IT, and it involves a lot of complexity, especially when this spans multiple countries.
<b>Earned Value Management</b>	Earned value management (EVM) compares project schedules with budgets in measuring project progress, enabling better forecasting of project performance problems.
<b>Enterprise Video Content Management</b>	Enterprise video content management (EVCM) comprises software, appliances or software as a service (SaaS) intended to manage and facilitate the delivery of one-to-any, on-demand or live video across internet protocols. It may also include associated network services intended to manage and facilitate the delivery of video, such as content delivery networks. EVCM serves any or all workers and customers who need to watch videos.
<b>ERP UX</b>	ERP user experience (UX) refers to the latest enhancements by ERP vendors to increase the simplicity of the UX, which is similar across desktop, tablet and mobile devices. The experience of consumer applications on a smartphone or tablet have raised expectations for enterprise application usability. Users are demanding enhancements that go beyond

	a nice look and feel, to the increasing use of tools, such as social-media-style, context-sensitive communications; chat-like interfaces; and user-defined workflow to help increase productivity.
<b>Event-Triggered Marketing</b>	Event-triggered marketing is the process of identifying, prioritizing, categorizing, monitoring and optimizing purposeful, event-driven conversations with audiences and customers. It is the most effective technique multichannel marketers can use to reach audiences at the right moment.
<b>External Cloud Service Brokerage</b>	The term "external cloud service brokerage" replaces "outsourcers and system integrations (SIs)." It refers to well-established IT and cloud services providers that have combined their traditional or cloud-managed services, consulting or SI capabilities with a focus on the cloud service brokerage (CSB) role. It For these providers, the intermediation capabilities required of a CSB are an extension of their existing IT services offerings that are becoming integrated with these offerings as more of their clients adopt cloud services.
<b>Field Service Workforce Optimization</b>	Field service workforce optimization is the ability to optimize the planning and dispatch of complex teams of field service technicians through software algorithms and machine learning that incorporate technicians' skills, previous results, SLAs, issue severity, travel conditions, parts availability and business rules. This technology profile is focused on field services performed on customer-owned equipment at a customer site, rather than on company-owned equipment in its physical plant.
<b>Freelancer Management Systems</b>	A freelancer management system (FMS) is a platform that enables direct communication between hiring managers and freelance workers. It uses structured workflows to create an effective source-to-pay process. An FMS generally provides algorithmic job matching, compliance checks, workflow automation, payment processing and performance feedback. FMSs often focus on specific skills or types of workers, ranging from unskilled labor to highly specialized professionals. Workers are often selected from public and/or private talent pools.
<b>Conversational Commerce</b>	Conversational commerce utilizes natural-language interfaces such as voice and text chat, including messaging platforms, to enable people (and machines) to discover and purchase goods and services via a dialogue.
<b>Virtual Assistants</b>	Virtual assistants (VAs) help users or enterprises with a set of tasks previously only made possible by humans. VAs use AI and machine learning (such as natural-language processing, prediction models, recommendations and personalization) to assist people or automate tasks. VAs listen to and observe behaviors, build and maintain data models, and predict and recommend actions. VAs can be deployed in several use cases, including virtual personal assistants, virtual customer assistants and virtual employee assistants.

<b>IoT-Enabled ERP</b>	IoT-enabled ERP leverages advancing IoT technologies alongside postmodern ERP strategies to enable businesses to adopt and develop new business models and revenue streams.
<b>IT Infrastructure Monitoring</b>	ITIM tools capture the performance and availability of IT infrastructure components that reside in a data center or are hosted in the cloud as infrastructure as a service (IaaS). These tools monitor and collate the availability and resource utilization metrics of servers, networks, database instances, hypervisors and storage. It is common for these tools to collect metrics in real time and perform historical data analysis of the elements they monitor.
<b>IT Process Automation Tools</b>	IT process automation (ITPA) tools automate IT operations processes across traditional, virtual and public cloud resources, integrating and orchestrating multiple IT operations activities. ITPA tools can focus on a specific IT process (e.g., server provisioning), replacing or augmenting scripts and manual processes, or can be applied to processes that span different operational or application domains.
<b>IT Project and Portfolio Management Applications</b>	On-premises and cloud-hosted IT project and portfolio management (PPM) providers allow their customers to deploy a dedicated instance of their IT PPM applications on-site, at the customer's facility, or in the cloud, in a hosting environment offered by the provider. These products provide portfolio, demand, project, resource and time management capabilities needed by IT departments to manage their IT projects against fixed resources (such as time, people and money).
<b>IT Service Alerting Tools</b>	IT service alerting tools automate the distribution and management of notification messages to identified recipients. These tools integrate with ITSM and monitoring tools, which are the source of the events, incidents and alerts. The messaging can be delivered by SMS, voice calls, pager and/or a mobile app.
<b>IT Service Catalog</b>	IT service catalogs support request fulfillment by simplifying the documentation of orderable IT service offerings, and by creating a portal that enables business users to easily submit IT service requests. This catalog should provide clear information on service pricing, service-level commitments, escalation/exception-handling procedures and how to request IT services. IT service management (ITSM) tools may also provide a process workflow engine to automate, manage and track service request fulfillment.
<b>IT Service Orchestration</b>	IT service orchestration (ITSO) is the organization, sequencing and management of workflow activities and scripts across multiple functional pockets of IT/I&O automation to help visualize, control and simplify the delivery of IT services. ITSO technologies and practices leverage automation skills and capabilities across multiple technologies and teams. ITSO includes intelligence-based decision making to orchestrate provisioning of increasingly complex business services.

<b>IT Support Live Chat</b>	IT support live chat facilitates real-time support interactions between business users and live service desk agents via text chat. A live chat session can take place through a browser-based web chat application or an instant messaging (IM) client. During a chat session, complementary, internet-based interactions (such as screen or application sharing) may take place.
<b>ITSM Tools</b>	IT service management (ITSM) tools automate the tasks and workflows associated with delivering IT services to the business. ITSM tools facilitate the tasks and workflows associated with the management and delivery of quality IT services. They are a core component of the experience management minisuite of IT operations management (ITOM) tools. Previously, Gartner had called ITSM tools by the name "IT service support management tools (ITSSM) tools.
<b>Lead Management</b>	CRM lead management is the process of capturing leads, tracking their activities and behavior, qualifying them, giving them constant attention to make them sales-ready, and then passing them on to the sales team. Lead management facilitates a business's inbound, outbound, online and offline customer acquisition. The outputs are qualified, scored, nurtured, augmented and prioritized selling opportunities that are designed for B2B, B2C or B2B2C sales channels.
<b>Partner Relationship Management (PRM)</b>	Partner relationship management (PRM) applications enable producers, technology providers, manufacturers, life science, financial and service industries to execute their go-to-market strategies with their indirect channel partners in a robust and collaborative manner. In recent years, the focus of PRM applications was to enable sales partners for higher sales. Today's focus has shifted to enhance the partner experience for achieving long-term partner and end-customer satisfaction. PRM applications are often designed to be purchased in modules.
<b>Predictive B2B Marketing Analytics</b>	SaaS-based applications, featuring embedded data science and machine learning models leveraging both internal (from CRM lead management and sales force automation [SFA] systems) and external data (from social media, public and proprietary databases). They are used by B2B marketers and sales development representatives to identify segments, accounts and leads with a higher propensity to buy. The predictive scoring models are based on fit and intent scores.
<b>Price Optimization and Management for B2B</b>	Price optimization and management (PO&M) software enables an organization to efficiently manage and optimize the prices of its goods and services. More recently, these offerings have begun to support a wider range of sales intelligence advice, such as best-next-action recommendations and customer churn warnings. Some vendors focus on the back-office price management and product management roles; others focus on



	providing sales intelligence in real time to the sales representative. The most successful companies offer both.
<b>Privacy Management Tools</b>	Privacy management tools help organizations conduct privacy impact assessments, facilitate data discovery, guide consent management and check processing activities against requirements of privacy regulations. These tools may analyze and document data flows of personal data (for example, the nature of the data, purpose of processing and the data controller), support authoring and distribution of privacy policies (for which they provide templates), and track user awareness (users acknowledging having read the policies).
<b>Private APIs</b>	Private APIs are web APIs used exclusively between organizations, such as within a supply chain, media ecosystem or financial network. Permission to use these APIs is granted to organizations on the basis of a business agreement.
<b>Procurement Savings Management Solutions</b>	Procurement savings management solutions help organizations classify, manage and track savings from sourcing and other cost reduction activities. They can include workflow capabilities for signing off or handing off savings to lines of business (LOBs). The more advanced solutions track what happens to savings after contracts have been signed. They also track cost drivers such as volumes, order patterns and indexes through integration with ERP projects and third-party systems.
<b>Project Collaboration and Management</b>	Project collaboration and management (PCM) solutions provide a unified online workspace for distributed teams. They enable scattered participants to access project information from forums, dashboards and Kanban/task boards, wikis, email, and ancillary, integrated solutions. Especially when temporary teams lack a common set of tools, PCMs have been an attractive solution. PCMs that usually feature are document sharing and commenting, Gantt charts, resource and task tracking, audit trails and change notification.
<b>Remote Expert Guidance Solutions</b>	Remote expert guidance tools provide two-way communication between a centrally located expert and workers in the field through mobile and wearable devices. Using a device camera, centralized personnel receive a live view of the field employee's environment and task being performed, allowing the expert to provide audio guidance and visual cues through annotation capabilities that display as an overlay on the remote worker's field of view. Some tools can capture content for reuse and knowledge sharing or create workflows to guide employees.
<b>Sales Performance Management</b>	Sales performance management (SPM) is a suite of operational and analytical functions that automate and unite back-office operational sales processes. It is implemented to improve sales execution and operational efficiency. Capabilities include sales incentive compensation management (ICM), quota management (QM) and territory management (TM), and may

	include additional capabilities such as territory and quota planning, advanced analytics, and gamification.
<b>Sales Predictive Analytics</b>	Sales predictive analytics systems apply heuristic and machine-learning algorithms to a firm's historical opportunity and account data. They deliver statistically derived insights to sales representatives and managers in three categories: · Predictive forecasting · Upsell/cross-sell recommendations · Opportunity scoring The main purpose of sales predictive analytics is to increase sales forecast and pipeline inspection accuracy, and to improve sales velocity and close rates.
<b>Supply Chain Visibility</b>	Supply chain visibility (SCV) is about generating accurate, timely and complete views of plans, events and data (such as transactions, content and related information) within and across organizations and services operating supply chains to support collaborative supply chain planning and/or execution. Visibility is a foundational capability that enables companies to capture plans, events and data (through connect, interoperate, and visualize) along their extended value chain, laying the foundation for value-add functions.
<b>Virtual Customer Assistants</b>	A virtual customer assistant (VCA) is an application that acts on behalf of an organization to simulate an engagement and deliver information and/or take action on behalf of a customer. The VCA consists of five parts: 1. A user interface that receives a request and delivers the response. 2. A natural-language processing and generation engine. 3. A search engine that can traverse data repositories of knowledge through enterprise integrations. 4. A dialog manager that analyzes and handles the intent. 5. Machine learning (optional).
<b>Warehouse Resource Planning and Scheduling</b>	Warehouse resource planning and scheduling applies the concepts of forward-looking, constraint-based planning and optimization to work activities within a warehouse or warehouse campus.
<b>Worker Engagement Platforms</b>	Worker engagement platforms aim to boost employee engagement and motivation by providing positive worker experiences. This spans their interactions with HR, managers, teams and communities of interest/practice within the context of their work environment. Disciplines such as behavioral economics and positive psychology underpin the design of these platforms to maximize worker adoption. These disciplines also encourage workers to embrace a desired mindset or set of behaviors that align with a given organization's culture, values and objectives.
<b>Workplace Analytics</b>	Workplace analytics refers to aggregated insight derived from a collection of data sources, tools (including machine learning) and processes to enhance the quality of the digital workplace. The collective insights enable organizations to create business value, enhance employee engagement, improve IT operational performance and mitigate security risks. The data is harnessed

	by leveraging application APIs or instrumenting the endpoints with an agent or an SDK.
<b>Workstream Collaboration</b>	Workstream collaboration creates a persistent, shared conversational workspace that helps groups initiate, organize and complete work. It integrates direct and group messages, alerts, notifications, activity streams, files, tasks, bots, and real-time audio and video into searchable groups or channels.