

VENDOR SELECTION MATRIX™ IT AND ENTERPRISE SERVICE MANAGEMENT SAAS AND SOFTWARE

THE TOP VENDORS FOR THE GERMAN UPPER MIDMARKET IN 2020

Research In Action

March 2020

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RESEARCH IN ACTION
independent research & consulting

FOREWORD

The Vendor Selection Matrix™ is a primarily survey-based methodology for comparative vendor evaluation where 60% of the evaluation is based on a survey of enterprise IT or business decision makers. This is balanced by analyst subject matter expert input fed by a combination of intensive interviews with software or services vendors and their clients, plus the informed, independent points-of-view - all of which combine to make Research in Action Vendor Selection Matrix™ reports so unique. For this report, we interviewed 750 IT managers with budget responsibility in German upper midmarket* companies. We selected those vendors which achieved the best evaluations scores from the buyers, but disregarded the ones with fewer than 15 evaluations.

We have seen a steady evolution of IT Service Management towards Enterprise Service Management for a number of years, which means that many companies want to apply their process modeling skills to other business processes. Many companies still have heavily manual business processes today, such as in human resources, supplier management, technical services, field service, financial and asset management, and here too, modeling, optimization and automation should be carried out. All of this will change drastically in the next few years. The majority of the 750 companies surveyed will invest in Enterprise Service Management solutions by the end of 2022, and what is almost more important: In many companies, business management and IT will finally decide jointly on these investments.

As well as the ratings, we also asked respondents whether they would recommend the vendor to their peers, the percent of affirmatives is documented as the Research In Action Recommendation Index; it ranges in this landscape from 88% to 98%.

This report provides you with a useful guide to important IT and Enterprise Service Management Trends and will help you make an informed decision regarding which vendors could best fit your requirements. This information can then be used in a amore detailed evaluation.

To Infinity...and Beyond!

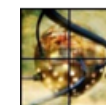
Dr. Thomas Mendel



*The "deutsche gehobene Mittelstand" includes companies with a minimum of € 50 million annual revenue. Excluded are PLCs (AGs) as well as government, public sector and non-profit organizations.

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THE VENDOR SELECTION MATRIX™ METHODOLOGY

COUNTRY BREAKDOWN



INDUSTRY BREAKDOWN

	Energy	51
	Financial Services	113
	Government & Non Profits	0
	Healthcare & Chemicals	79
	Manufacturing	230
	Media & Telecoms	62
	Consumer Packaged Goods & Retail	78
	Technology & Professional Services	75
	Travel & Transportation	62
	Total	750

RESEARCH FACTS

90,000 +
Data Points

750
IT Managers

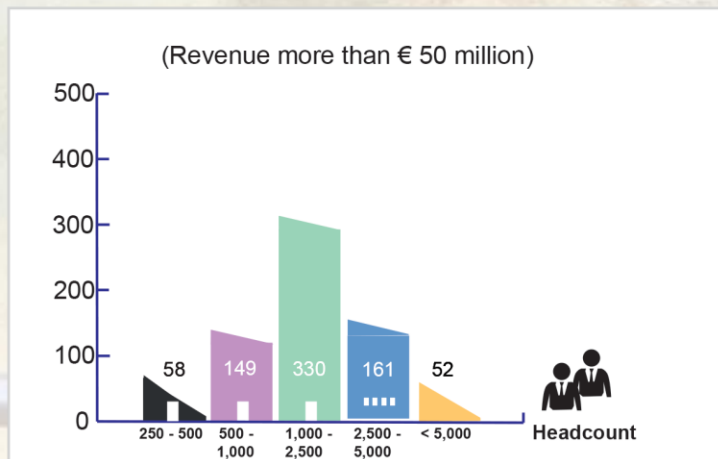
TOP 20
Vendors

30+ Reports
in 2020

40%
Analyst's
Opinion

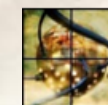
60%
Survey
Results

COMPANY SIZE BREAKDOWN



JOB TITLE BREAKDOWN

	IT Manager	98
	IT Operations Manager	88
	IT Service/Help Desk Manager	85
	IT Infrastructure Manager	77
	Project Manager	54
	VP IT	50
	CIO	46
	Manager DevOps	43
	Manager Process Management	37
	Shared Services Manager	35
	Change Manager	33
	Test Manager	27
	Manager Digitalization	21
	Capacity Manager	19
	IT Supply Manager	17
	General Manager	12
	Others	11
	Total	750

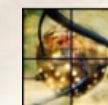


WHAT TOOLS DO YOU USE TO CREATE THE VENDOR SHORTLIST?



Decision Makers use a mix of traditional & online tools to create vendor shortlists

N = 3,000 Business and IT Managers with budget responsibilities



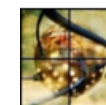
WHAT IS IT AND ENTERPRISE SERVICE MANAGEMENT?

- IT Service Management (ITSM)¹ refers to the entirety of activities – directed by policies, organized and structured in processes and supporting procedures – that are performed by an organization to plan, design, deliver, operate and control Information Technology (IT) services offered to customers. It is thus concerned with the implementation of IT services that meet customers' needs, and it is performed by the IT service provider through an appropriate mix of people, process and information technology.
- The IT Infrastructure Library (ITIL)² is the de facto standard for IT Service Management process definitions today.
- Enterprise Service Management (ESM)³ is a category of business management software - typically a suite of integrated applications that a service organization uses to capture, manage, save and analyze data critical to their service business performance. Enterprise Service Management has grown out of the use of IT Asset Management for traditionally non-IT assets. Today it is also increasingly used for:
(1) Human resources, (2) Vendor management, (3) Technical services, (4) Field services, (5) Financial management and (6) Shared services organizations.

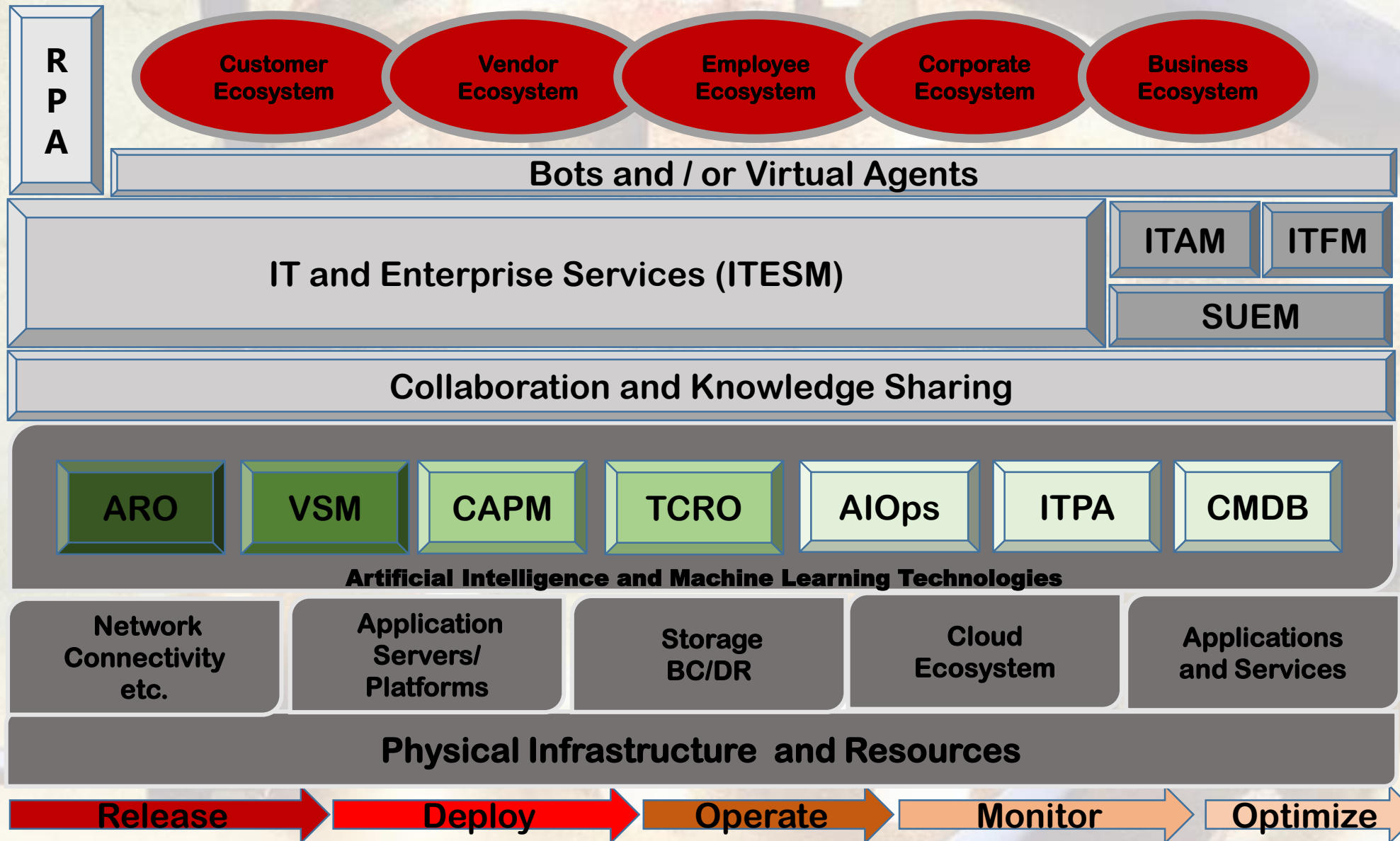
¹ IT Service Management, see https://en.wikipedia.org/wiki/IT_service_management.

² IT Infrastructure Library, see http://en.wikipedia.org/wiki/IT_Infrastructure_Library. ITIL is a trademark of AXELOS Limited.

³ Enterprise Service Management, see https://en.wikipedia.org/wiki/Enterprise_service_management.



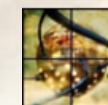
THE IT AUTOMATION MARKET TEXTURE



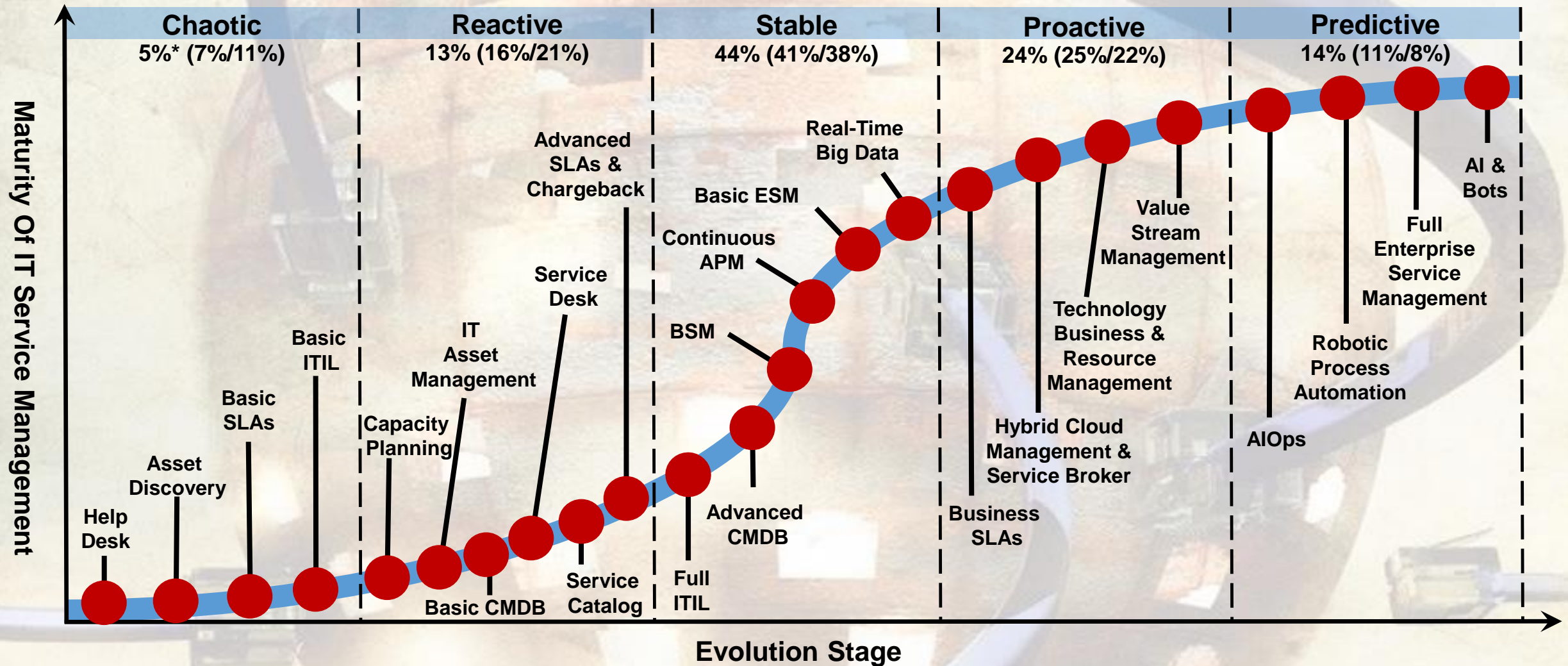
IT Automation is key to IT optimization as it allows to scale fast.

IT Automation is key to Digital Transformation as it enables to predict and provide reliable services.

IT Automation will finally shift IT departments from service provider to business partner.

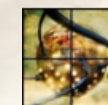


IT AND ENTERPRISE SERVICE MANAGEMENT MATURITY S-CURVE 2020

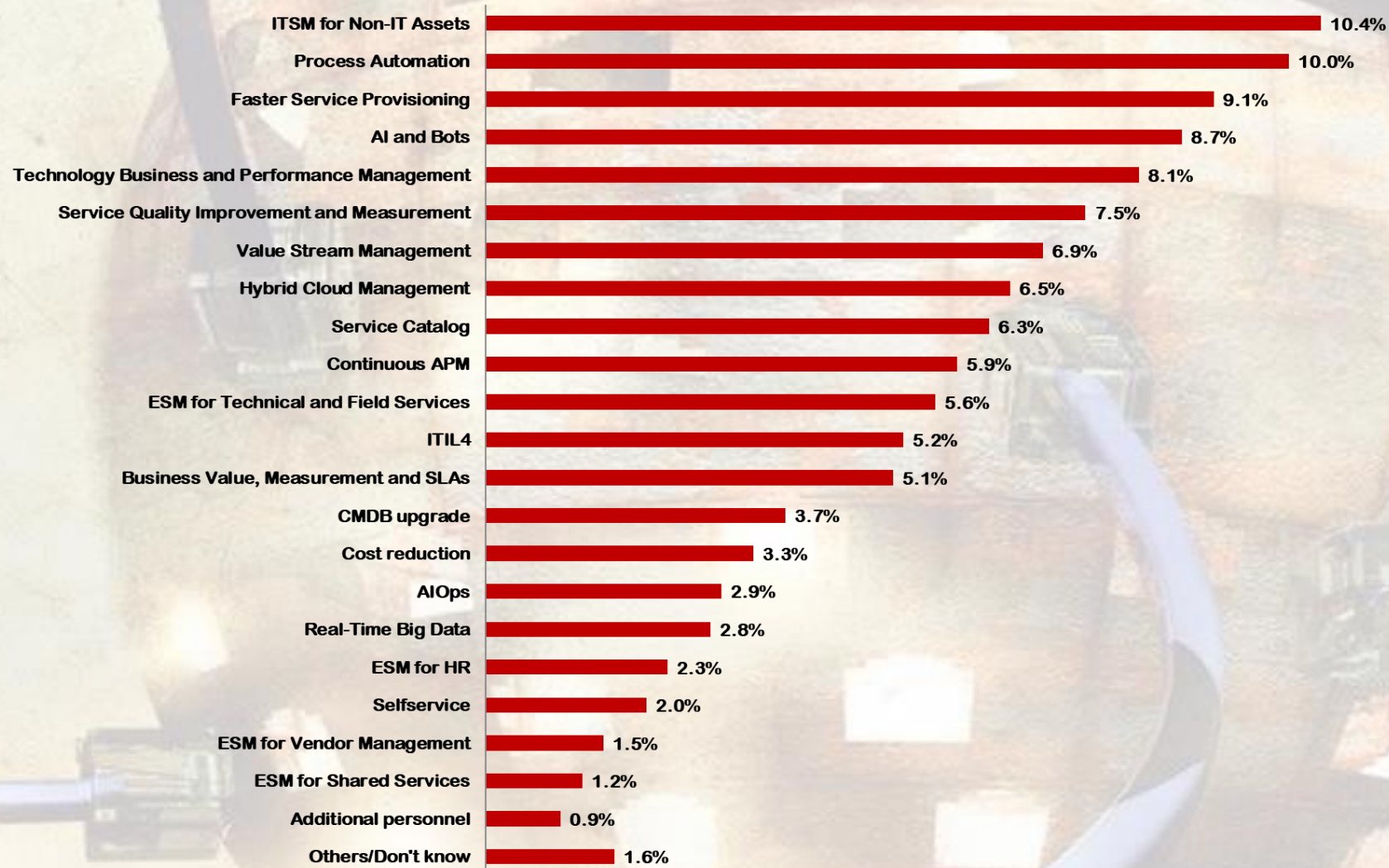


N = 2,250 IT Managers with budget responsibility

* Categories show adoption rates, (/) show changes from 2019/2018

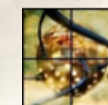


RESEARCH: WHAT IS YOUR NUMBER ONE INVESTMENT AREA RELATED TO IT AND ENTERPRISE SERVICE MANAGEMENT IN 2020?

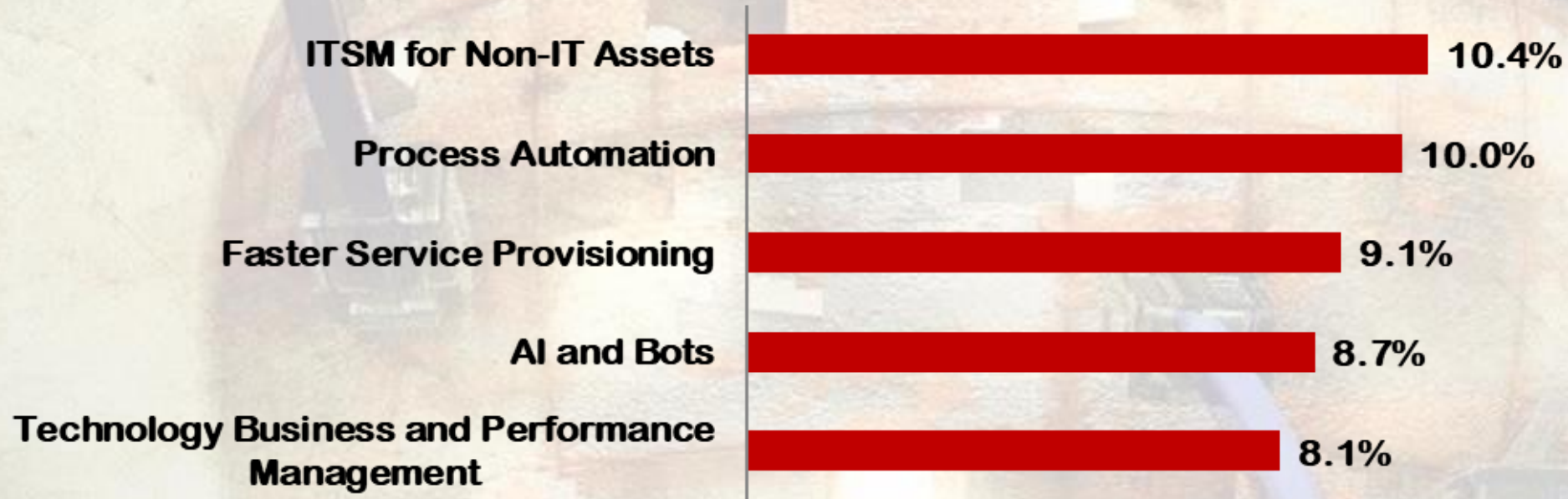


The IT and Enterprise Service Management market is traditionally characterized by a high degree of complexity. This can be seen in the gigantic number of vendors (more than 1,500 worldwide), as well as in the large number and very different nature of the investment topics.

N = 750 IT Managers with budget responsibilities in German upper midmarket companies

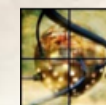


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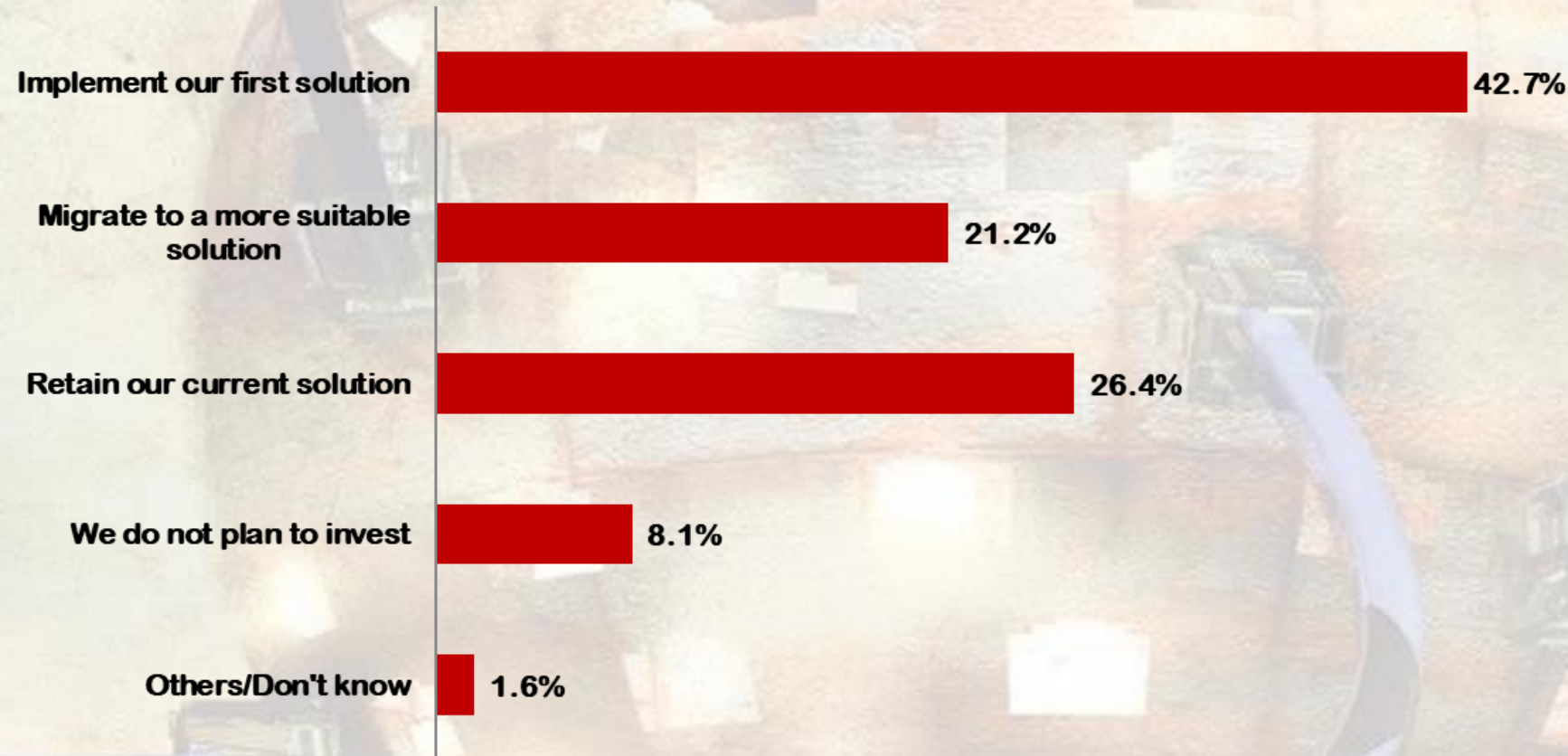


The Top Five investment areas for the German upper midmarket companies in 2020 present an interesting mix of Enterprise Service Management (# 1 and # 5) and advanced IT Service Management (# 2, # 3, # 4) topics.

N = 750 IT Managers with budget responsibilities in German upper midmarket companies

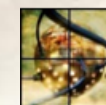


RESEARCH: ARE YOU PLANNING TO IMPLEMENT OR REPLACE YOUR ENTERPRISE SERVICE MANAGEMENT SOLUTION IN THE NEXT ONE – THREE YEARS?

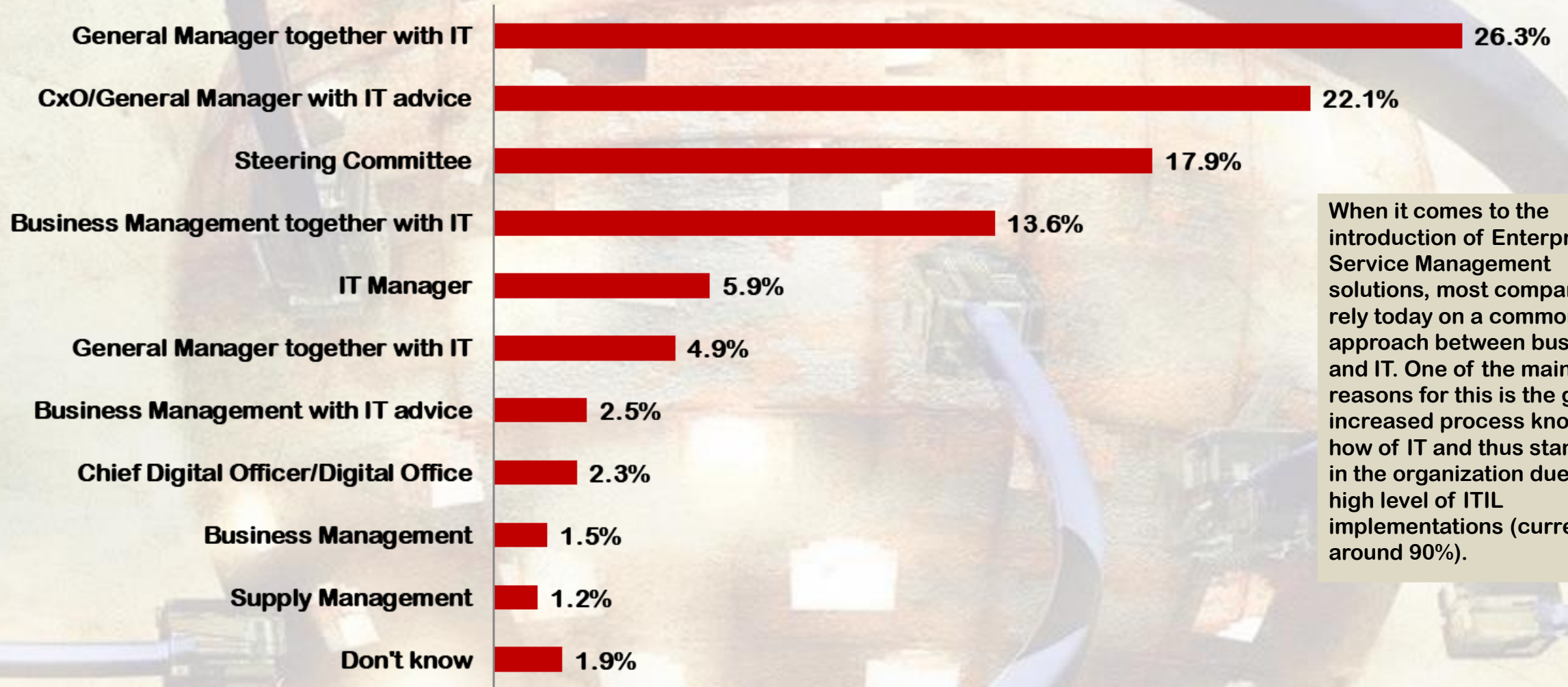


By 2022, the majority of German upper midmarket companies will have introduced Enterprise Service Management solutions.

N = 750 IT Managers with budget responsibilities in German upper midmarket companies

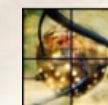


RESEARCH: WHO IS THE KEY DECISION MAKER WHEN IT COMES TO ENTERPRISE SERVICE MANAGEMENT?



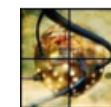
When it comes to the introduction of Enterprise Service Management solutions, most companies rely today on a common approach between business and IT. One of the main reasons for this is the greatly increased process know-how of IT and thus standing in the organization due to the high level of ITIL implementations (currently around 90%).

N = 750 IT Managers with budget responsibilities in German upper midmarket companies



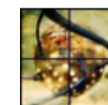
INSIGHTS: TOP MARKET TRENDS 2020

- **ITSM and ESM have become one.** Enterprise Services Management means to manage processes across a variety of lines of business from a central point. Existing ITSM solutions and processes are excellent foundations to extend into enterprise processes such as human resources, facilities, case management, project management, fleet management and beyond as ITSM teams have already figured out how to streamline and automate key processes. The extension of ITSM tools towards enterprise services is a natural evolution and elevates ITs value to the business. As many services within an organization are connected and teams collaborate and transform, Enterprise Service Management becomes a high value investment.
- **Joined decision making between IT and the business.** The provisioning and delivery of services is no longer only the job of IT. As employees and departments within organizations are continuing the trend for self-service, decision makers are joining hands in deciding for the best IT and Enterprise Service Management strategy and tools to ensure positive impact on the service experience across their organization and ultimately towards the bottom line.
- **Digital attitudes will continue to drive the adoption of ESM.** Connectivity, everything-as-a-service-thinking, all time access to applications and information and global and local collaboration needs are also creating big challenges. These challenges – to name only a few - managing the network of workers, connectivity, data security, regulatory compliance, internal governance and the management and compensation of device usage must be managed and orchestrated by a team or function. As the workforce becomes more digital, the opportunities and challenges need to be managed and orchestrated also and IT and ESM become the orchestration point.



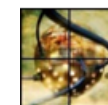
INSIGHTS: TOP MARKET TRENDS 2020

- **Demands for agility, velocity and improvements of service quality require intelligent automation.** The automation of processes has always been one of the fundamentals of IT and Enterprise Service Management. Agile thinking and Digital Transformation models such as DevOps require intelligent automation across all processes within the service eco system. Examples such as agile swarming and Kanban boards are just a few innovations which are being implemented today. This year, IT enterprise organizations should focus on what their automation objectives are no matter what silo they are in. Breaking the silos will help those who consume software and services and ultimately raise employee and customer experience.
- **Artificial Intelligence and Machine Learning support modern ways of working and interacting.** Intelligent chatbots and other AI-assisted service tools are on the rise and are providing an efficient and automated way to improve customer and employee journeys. The gain in economic benefits and scalability of these are great benefits. The evolving capabilities of these bots (and additional innovations leveraging Artificial Intelligence) will change the working environment and every organization must evaluate the suitability of these technologies for their culture and work environment.
- **The modern ways of working require collaboration and coordination which demand further innovations.** Teams comprised of global, local, internal and external team members which are part of partners and suppliers need models to collaborate and coordinate. In the emerging model of global service delivery, several teams and members must work collaboratively to develop, orchestrate, automate and deliver services and solutions. IT and Enterprise Service Management enables the management and coordination of complex end-to-end processes carried out collaboratively by several organizations.



INSIGHTS: TOP MARKET TRENDS 2020

- **Employee and customer experience rules.** Plenty of research has shown that there is a close link between employee experience and customer satisfaction. In fact some research suggests that companies with highly engaged employees outperform their competitors by as much as 147%. For an employee to be highly engaged, it requires a good working experience across the person's job. This means ease-of-access and use of resources, coordinated support and help from teams shaping the employees experience which then shapes the internal culture. Modern IT and Enterprise Service Management tools empower the workforces of today.
- **Innovation will shift people to higher level skills.** Mundane tasks of e.g. managing incidents, report creation and deciphering knowledge articles are not fun plus they are a waste of valuable resources. With IT budgets only increasing by 3% globally, organizations are implementing additional automation capabilities which allows them to shift their workforce towards higher value work.



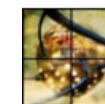
VENDOR SELECTION MATRIX™ – ENTERPRISE SERVICE MANAGEMENT SAAS AND SOFTWARE: THE TOP 20 GLOBAL VENDORS 2020

VENDOR NAME	PRODUCT(S)
BMC	BMC Helix, Remedy Service Management Suite, Remedyforce, FootPrints, Track-It
DESKCENTER	Deskcenter Management Suite
EASYVISTA	EV Service Manager
EFFECTE	efecte Service Management
FNT	FNT Command, FNT ServicePlanet
FRESHWORKS	Freshservice
IBM	Control Desk, Maximo
KYBERNA	ky2help
MATRIX42	Enterprise Service Management, Secure Unified Endpoint Management
MICRO FOCUS	IT Operations Management, Service Management Automation X (SMAX)
MICROSOFT	System Center Service Manager, Microsoft Operations Manager
OMNINET	OMNITRACKER
OPEN SOURCE	(1) OTRS, RT und openITCOCKPIT für Incident und Problem Management (2) I-Doit, OCS Inventory NG, OpenQRM, RANCID, Facter, Opsi und Puppet für Change, Configuration und Asset Management (3) R-Project, SE Toolit, XE Toolkit, Orca und JProject-Open[für Capacity Management
REALTECH	The Guard, dot4
SAP	SAP Solution Manager
SERVICENOW	ServiceNow Service Management Suite, ServiceNow Express
SERVICWARE	Serviceware Processes (helpLine), Serviceware Financials (anafee)
TOPDESK	IT/Facility/HR Servicemanagement
ULTIMO	IT/Enterprise Service Management
USU	Valuemotion

Vendors outside of the evaluation Matrix* or with fewer than 15 evaluations:

- AXIOS
- CHERWELL
- IET SOLUTIONS
- IVANTI
- SOLAR WINDS

* i.e. at least one of the two axes has an evaluation lower than 3.0.



VENDOR SELECTION MATRIX™ – ENTERPRISE SERVICE MANAGEMENT SAAS AND SOFTWARE: THE TOP 20 GLOBAL VENDORS 2020 - QUICK FACTS

VENDOR NAME	STAFF	REVENUE ¹	GROWTH	RI ²	GOOD TO KNOW
BMC	> 5,000	> € 1 b	< 5% p.a.	93%	Globally a Top Three player, but only in the Top 10 for German upper upper midmarket companies.
DESKCENTER	< 100	< € 10 m	> 20% p.a.	93%	The Rule IT concept fills an important gap in many companies.
EASYVISTA	> 200	> € 100 m	> 15% p.a.	93%	Is focused on the transformation towards the digital-first world.
EFFECTE	> 110	> € 10 m	20% p.a.	96%	The leading European Cloud alternative for the upper midmarket in Germany.
FNT	> 350	< € 50 m	> 15% p.a.	96%	Leading in integrated management of IT, Data Center and Telecom infrastructure.
FRESHWORKS	> 2,300	> € 200 m	> 15% p.a.	93%	Delivers a unified experience that works for users across the functional organizations.
IBM	> 350 k	> € 1 b	> 5% p.a.	88%	Formerly one of the market leaders, slowly disappearing from the upper midmarket in Germany.
KYBERNA	> 50	< € 10 m	> 20% p.a.	95%	An insider tip for IT and Enterprise Service Management in the German upper midmarket.
MATRIX42	> 400	> € 50 m	> 20% p.a.	98%	Market leader in managing the digital workspace in Germany's upper mid-sized businesses.
MICRO FOCUS	> 14 k	> € 500 m	> 15% p.a.	90%	The decline in customer favor after the spin-off from HP seems to be over.
MICROSOFT	> 140 k	> € 250 m	< 5% p.a.	88%	Used by most companies for basic monitoring topics.
OMNINET	> 180	< € 50 m	> 10% p.a.	97%	The OMNINET one product strategy is paying off more and more.
OPEN SOURCE	N.A.	N.A.	< 10% p.a.	95%	Traditionally popular in the German upper midmarket but with a steadily decreasing tendency.
REALTECH	< 100	< 20 m	< 0% p.a.	94%	After some difficult years with new innovations on the best way towards a turnaround.
SAP	> 100 k	N.A.	> 25% p.a.	93%	Very strong in Enterprise Service Management solutions. Solution Manager gaining importance.
SERVICENOW	> 6,000	> € 3 b	> 25% p.a.	89%	The global market leader has not yet fully arrived in the German upper midmarket.
SERVICEWARE	> 450	< € 100 m	> 20% p.a.	98%	Still the best vendor for the German upper midmarket.
TOPDESK	> 800	> € 50 m	> 25% p.a.	95%	Extremely strong in both IT and Enterprise Service Management.
ULTIMO	< 250	< € 50 m	> 5% p.a.	93%	Increasing focus on Enterprise Asset Management.
USU	> 750	< € 100 m	> 10% p.a.	97%	The most complete portfolio for holistic IT and Enterprise Service Management.

¹ In the IT and Enterprise Service Management SaaS and Software market

² The Research In Action Recommendation Index

VENDOR SELECTION MATRIX™ – ENTERPRISE SERVICE MANAGEMENT SAAS AND SOFTWARE: EVALUATION CRITERIA

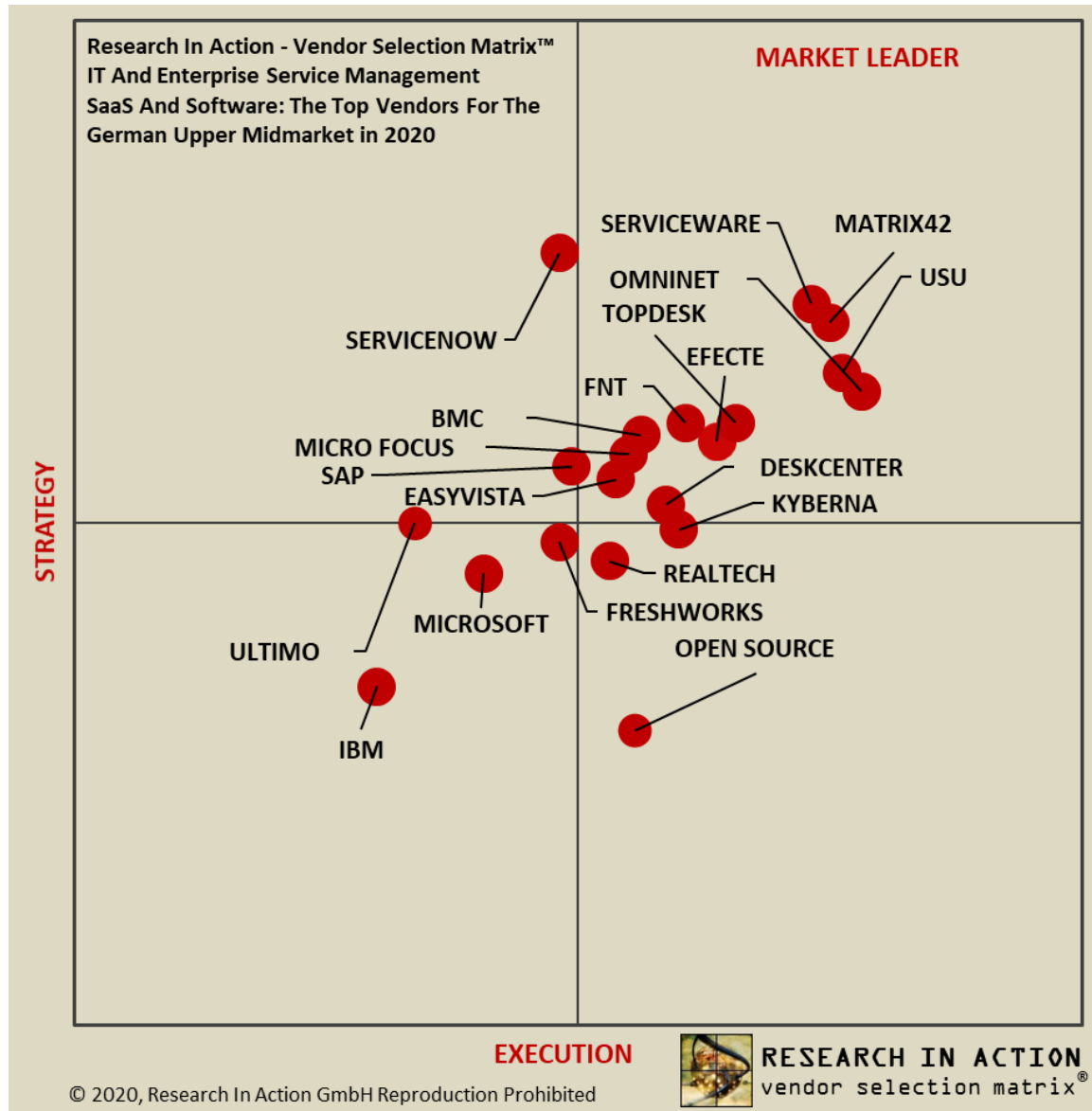
STRATEGY

Vision & Go-To-Market	30%	Does the company have a coherent vision in line with the most probable future market scenarios? Does the go-to-market and sales strategy fit the target markets and customers?
Innovation & Partner Ecosystem	20%	How innovative is the company? How is the partner ecosystem organized and how effective is the partner management?
Viability & Execution Capabilities	15%	How likely is the long-term survival of the company in this market? Does the company have the necessary resources to execute the strategy?
Differentiation & USP	35%	Does the solution have a Unique Selling Proposition (USP) and clear differentiators?

EXECUTION

Breadth & Depth Of Solution Offering	30%	Does the solution cover all necessary capabilities expected by the customers?
Market Share & Growth	15%	How big is the market share and is it growing above market rate?
Customer Satisfaction	25%	How satisfied are customers with the solution and the vendor?
Price Versus Value Ratio	30%	How do customers rate the relationship between the price and perceived value of the solution?

VENDOR SELECTION MATRIX™ – IT AND ENTERPRISE SERVICE MANAGEMENT SAAS AND SOFTWARE



	STRATEGY	EXECUTION	TOTAL
1. MATRIX42	4.40	4.50	8.90
1. SERVICEWARE	4.44	4.46	8.90
2. OMNINET	4.26	4.56	8.83
2. USU	4.30	4.53	8.83
3. TOPDESK	4.20	4.31	8.51
4. SERVICENOW	4.54	3.96	8.50
5. EFECTE	4.16	4.28	8.44
6. FNT	4.20	4.21	8.41
7. BMC	4.18	4.13	8.30
8. MICRO FOCUS	4.14	4.10	8.24
9. DESKCENTER	4.04	4.18	8.21
10. KYBERNA	3.99	4.20	8.19
11. EASYVISTA	4.09	4.08	8.16
12. SAP	4.11	3.99	8.10
13. REALTECH	3.93	4.06	7.99
14. FRESHWORKS	3.96	3.96	7.93
15. MICROSOFT	3.90	3.81	7.71
16. OPEN SOURCE	3.59	4.11	7.70
17. ULTIMO	4.00	3.68	7.68
18. IBM	3.68	3.60	7.28

Note: Potential numerical deviations due to rounding

VENDOR SELECTION MATRIX™ – IT UND ENTERPRISE SERVICE MANAGEMENT

Matrix42 is the market leader in managing the digital workspace in Germany's upper mid-sized businesses

- **General:** Matrix42 grows up to 25% annually, significantly faster than their competition. Matrix42 is also investing in new innovations such as: Field Service Management, the Virtual Support Agent “Marvin” and the expansion of integrated IT Business Management Processes with the new Cloud Expense Management to optimize the Cloud costs of e.g. Azure and AWS. Matrix42 products are based on an intuitive low-code platform and a workflow studio. These enable customers to make update-safe adjustments of any kind to systems. This allows customers to model all IT and beyond-IT processes with Matrix42 ESM independently and without development effort.
- **Strategy:** Matrix42 is becoming the market leader in the digital workspace management. Based on the motto "Simplify and Secure Digital Work", the OnPremise and SaaS solution helps IT organizations evolve from cost center to profit center. The balance between productivity and security plays just as significant a role as the value stream from IT to business. Therefore, the focus is always on the user. The strategy to support IT organizations in the end-to-end mapping and automation of their processes is the fundament of agile initiatives in IT and promotes cross-functional collaboration. This strategy is rated very positively by the surveyed customers. Matrix42 is perceived as a highly differentiated vendor.
- **Execution:** Matrix42 has reached over 5,000 customers with a renewal rate of an outstanding 99%. Matrix42 is very advanced in the implementation of the above strategy and delivers innovations on a quarterly basis. German customers see it the same way and give Matrix42 excellent marks for customer satisfaction and price-performance ratio. Especially the easy adaptability of the platform via configuration and by applying the low-code SolutionBuilder is a strong competitive advantage. This allows customers not only to adjust and extend existing processes, but also to create their own apps without having to write a single line of code. In addition, for the Research In Action Recommendation Index, which was surveyed for the first time, Matrix42 received the highest rating from all vendors with 98%.
- **Conclusion:** Matrix42 is the most important partner for the Digital Transformation of the internal IT service department of German upper mid-sized companies, since 2016. With its expansion into the cross-functional DevSecOps platform, the strategic goal of becoming one of the leading European providers is quite realistic. The efforts of Matrix42 are rewarded by its customers. In the Vendor Selection Matrix™, Matrix42 has now been awarded the first place in the vendor selection after a fourth place in 2018 and a third place in 2019.



STRATEGY	RESULT
Vision & Go-To-Market	4.75
Innovation & Partner Ecosystem	4.25
Viability & Execution Capabilities	4.25
Differentiation & USP	4.25
	4.40
EXECUTION	RESULT
Breadth & Depth Of Solution Offering	4.50
Market Share & Growth	4.50
Customer Satisfaction	4.50
Price Versus Value Ratio	4.50
	4.50



THE RESEARCH IN ACTION GMBH VENDOR SELECTION MATRIX™ METHODOLOGY

Vendor Selection Matrix™ Disclaimer:

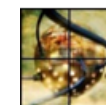
The Vendor Selection Matrix™ is a primarily survey-based methodology for comparative vendor evaluation. Research In Action GmbH does not endorse any vendor, product or service depicted in our research publications, and does not advise technology users to select only those vendors with the highest ratings. The information contained in this research has been obtained from both enterprise as well as vendor sources believed to be reliable. Research In Action GmbH's research publications consist of the analysts' opinions and should not be considered as statements of fact. The opinions expressed are subject to change without further notice. Research In Action GmbH disclaims all warranties, expressed or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

About:

Research In Action GmbH is a leading independent information and communications technology research and consulting company. The company provides both forward-looking as well as practical advice to enterprise as well as vendor clients.

APPENDIX: IT AUTOMATION MARKET TEXTURE DEFINITIONS

- **Robotic Process Automation (RPA)** solutions enable the automation of tasks, processes and procedures which are normally conducted by a human. RPA solutions create software robots that mimic human actions. Typically, these are tasks that a human would do. (Ro)Bots and Virtual Agents are part of RPA solutions.
- **Application Release Orchestration (ARO)** solutions equip IT enterprise organizations and their teams with the automation of the software deployment cycle across hybrid technology environments.
- **AI Powered Chatbot Platforms** which are used to build applications that answer questions, provide advice and/or recommendations using natural language processing and other dialog related technologies.
- **IT Service Management (ITSM)** refers to the entirety of activities – directed by policies, organized and structured in processes and supporting procedures – that are performed by an organization to plan, design, deliver, operate and control Information Technology (IT) services offered to customers. It is thus concerned with the implementation of IT services that meet customers' needs, and it is performed by the IT service provider through an appropriate mix of people, process and information technology.
- **Enterprise Service Management (ESM)** is a category of business management software - typically a suite of integrated applications that a service organization uses to capture, manage, save and analyze data critical to their service business performance. It automates service offerings across functional areas such as (1) Human resources, (2) Vendor management, (3) Technical services, (4) Field services, (5) Financial management and (6) Shared services organizations.
- **IT Asset Management (ITAM)** software manages the full lifecycle of IT assets which typically includes all software, hardware, networking, cloud services, and client devices. In some cases, it may also include non-IT assets such as buildings or information where these have a financial value and are required to deliver an IT service. IT asset management can include operational technology (OT), including devices that are part of the Internet of Things. These are typically devices that were not traditionally thought of as IT assets, but that now include embedded computing capability and network connectivity.
- **IT Financial Management (ITFM)** software enables the accurate and cost-effective management of IT assets and resources with the aim to plan, control, recover (or overall manage) costs which are occurring while providing IT and Enterprise Services to the organization.
- **Secure Unified Endpoint Management (SUEM)** software enables the management and securing of mobile applications, content, collaboration and provides for the management of all endpoints like smartphones, tablets, laptops, printers, ruggedized devices, Internet of Things (IoT) and wearables.
- **Technology Cost & Resource Optimization (TCRO)** software enables the planning, management and visibility of the supporting and required business and IT technology resources from a cost and capacity perspective by visualizing, planning, prioritizing and optimizing the usage and demands of technology resources (people, processes and technologies) for the enterprise.
- **Value Stream Management (VSM)** software solutions capture, visualize, and analyze the flow of work across the entire agile software delivery project. The capabilities include end-to-end visibility, traceability and governance over the entire process and help to plan, track, and steer work at the team, program, portfolio, and enterprise levels. It includes the people working on a project, the systems which are operated and leveraged, and the flow of information and materials between teams. It enables the measurement of speed and quality for digital transformations.
- **Continuous Application Performance Management (CAPM)** software solutions continuously identify issues around performance and availability of software applications, IT and enterprise services. The solutions strive to proactively detect and diagnose application performance problems and health and enable a situational awareness of application related issues.
- **Artificial Intelligence for Operations (AIOps)** solutions equip IT enterprise teams with analysis of volumes and categories of data to improve key processes, tasks and decision making. The adoption of these tools automates the ingestion of fast volumes of data; leverage machine learning to analyze the data, present findings to either predict or alert on issues, and leverage the knowledge for automation or decision making.
- **Artificial Intelligence and Machine Learning (AI/ML)** are both technologies and are leveraged in automation solutions. Artificial intelligence (AI) is the ability of a computer program or machine to think and learn (AI can mimic human cognition). Within IT Automation AI is used to correctly interpret a variety of data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation. Machine learning enables computers with the ability to learn without being programmed (explicit algorithms). It explores the study and construction of algorithms which can learn and make predictions on data. The algorithms follow programmed instructions or can make predictions or decisions based on the data. Machine learning is used when explicit algorithms cannot be done (e.g. computer vision, search engines, optical character recognition).



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