Workforce Analytics Approach: An Emerging Trend of Workforce Management

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Workforce management is always a challenge for organizations of all sizes. Proper workforce planning to evaluate ability and utilization of workforce provides strategic intent of organizations using workforce analytics. Workforce analytics can measure the efficiency of workforce, provide correct information for decision making and improve the productivity of firms through identification of the loopholes of the workforce management processes. This paper discusses workforce analytics tools as the best of the breed practices of workforce management. The paper also discusses the scope and benefits of using Workforce analytics tools as an aid to workforce planning.

Keywords: workforce management, workforce analytics, workforce planning

1. Introduction

In the current context, workforce decisions should be supported by workforce data and analytics instead of fully depending on gut feelings and instincts. Harvey (2012) stated that the global economic crisis has brought sudden interest in the area of Workforce analytics. During the initial application of Workforce analytics, departments were ill prepared for the sudden need of the detailed analysis and reporting on workforce costs and related activities. As per IBM Global Services Report (2009), the main issue is the way in which organizations of all sizes are taking decisions of their workforce during economic crises. Many firms have only a partial understanding of the needs of their current and future workforce. They lack the insights to identify the top talents and retaining them. So they are unable to differentiate their value in the market. People are the most important asset of any firm. Global Chief HR Officer for Ernst & Young said at a recent global workforce meeting: "Holding onto key talent is like trying to keep frogs in a wheelbarrow". Deloitte Consulting treated Workforce analytics as performance analytics which is a new class of business intelligence that ties human capital management to financial performance. Ringo (2012) explained that the organizations that use workforce analytics have the most engaged workforce and they thrive in difficult conditions. Rouse (2012) stated that workforce analytics is a combination of methodology and software that applies statistical models to worker related data, allowing enterprise leaders to optimize human resource management. It is possible to make general and specific hiring decisions, identify the necessity for new positions, analyze and predict current and future technological needs and improve recruiting methods with the use of workforce analytics.

As per "100 critical human capital questions" adapted from the source of corporate executive board at nacsonline, Workforce analytics can answer the kind of questions given below.

a. What is the Head Count by -Grade/Job Class, Company, Location, Ethnicity, Age Group, etc.?
b. What percentage of our workforce will retire in the next year or next 5 years?
c. What is the average age in our organization? In the last five years has it increased, decreased or remained the same?
d. What is our ratio of managerial to non-managerial staff? In the last five years has it increased, decreased or remained the same?
e. How many part-time, temporary or contract employees exist across our organization? What business units rely on them heavily?
f. What is the average organization tenure? In the last five years has it increased, decreased or remained the same?
g. What percentage of our current managerial positions is occupied by women or minorities? How does it vary across our lines of business?
h. Are we compliant with Government regulations? What is the inference from Affirmative Action Plan analysis?

2. Literature Review

Workforce Management

A century has passed in exploring and systematically understanding the workforce management. In 1911, Taylor initially attempted a scientific method to develop measures to capture the effectiveness of the workforce of organizations. Munsterberg wrote a book relating to industrial and organizational psychology in 1913 .He wrote in his book on fitting of right kind of workforce for a job, procuring the best performance for a job and finding the best possible outcome. Bailey (1993) stated that in case of programmed or structured jobs, contribution of even a highly skilled and talented workforce will be limited .Because, in these cases, employees knows their job very clearly .So there is no scope to user their inner ability to design new and better way of performing the job. HR practices can influence firm performance through provisions of structures like Quality circles, job rotation and cross functional structures. Ware and Grantham (2003) explored that there is a great momentum towards a radical reformation of the approach in which knowledge workers earn a livelihood .As per the authors, in USA about 15% of the workforce is already engaged in new way of working the basic nature of work and so also the economic value of work is also changing. Innovation, collaboration, integration and agility are the watchdogs of the future work. Mamaghani (2006) investigated how IT innovations have impacted the workplace and workforce over past decades. He also discussed the workforce trends relating to Globalization, Telecommuting and Outsourcing. As per his study, maintaining efficient operations and competitive advantages require motivation of the workforce to operate from remote places, development of measures to protect integrity of data and protection of customer information to check identity theft. Sukumadas and Sawhney (2004) developed and empirically tested a theoretical model of the impact of many workforce management practices on workforce agility. The paper suggests managers to adopt employee

involvement practices as a set of tools to improve agility of the workforce. As per the Aberdeen Research (June 2012), workforce management is a big part of the core HR portfolio which includes time and attendance, scheduling and absent management. In this field of practice where self-service tools help individuals to be more involved with their experience and facilitate managers in taking better decisions.

Workforce Analytics

Workforce analytics enables managers to gather information about different talents and then develop a strategy of deploying these skills for new business events and leadership development. It further provides information on several important factors for the maximization of workforce analytics, which includes defined workforce challenges, consistency in data collection and making the platform easy to use (Bereno, 2011).As per Beeline (2012) report, the workflow and productivity of workforce can be enhanced more efficiently and effectively if we can measure the human dimension of a firm in a better way. The human element can be quantified and understood as the essence of workforce analytics. Gartner (2012) explored workforce analytics as an advanced set of data analysis tools and metrics for comprehensive workforce performance measurement and improvement. It analyzes recruitment, staffing, training and development, personnel, and compensation and benefits, as well as standard ratios that consist of time to fill, cost per hire, accession rate, retention rate, add rate, replacement rate, time to start and offer acceptance rate. Kiron et al. (2011) stated in MITSloan management review the concept of analytics as the use of data and related insights developed through statistical, contextual, quantitative, predictive, cognitive and other models to drive fact-based planning, decisions, execution, management, measurement and learning. Analytics may be descriptive, predictive or prescriptive. Robinson (2012) stated that workforce Analytics is a combination of methodology and software that applies mathematical models to worker-related data, allowing leaders to optimize Human Resource Management. Lesser and Hoffman (2012) explored that analytics does not have to be a whip used to increase the stroke count associated with extracting more from individuals. Rather, it can provide the opportunity to build a more effective, empowered and engaged workforce that increased the value of the larger organization. As per SAS (2007) report ,HR departments are in demand to shift from description of past events and reporting towards predicting future events .Predictive modeling is the latest IT advances.

3. Relevance of Workforce Analytics in Workforce Management

Best companies around the globe should understand the dynamics of the changing workforce .Henson (2002) explored that employees above the age of 50s are dedicated for sacrifice and loyalty, those in 40s believe that hard work will bring them success, employees in age group of 30s try to bring a balance of workplace and home and new workers in their 20s are tech savvy with realistic approach. In the current context, the role of minorities and women is increasing and there is also an increase in contingent workforce. Firms are also changing themselves as per the attitudes of the workforce of different age group. The first and foremost duty of any firm is to create flexible environment where top will be interested to be employed. This is an effort which will facilitate the workforce to come forward and work, feel

the importance of their work, enjoy the work when they are in workplace and continue to stay as the company is taking care of them and developing them. Once Bill Gates remarked "Take away our 20 most important people, and I tell you, we would become an unimportant company".

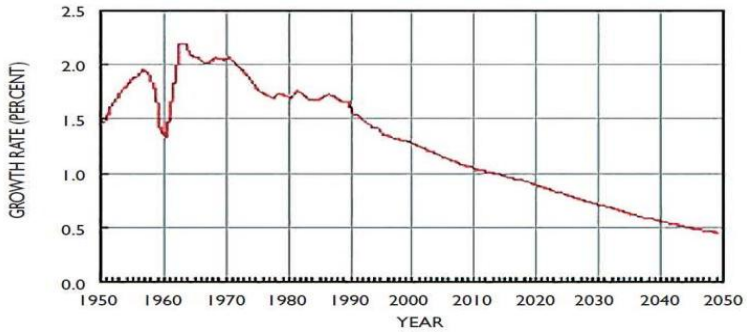


Figure 1 *US Census Bureau, International Database 5-10-00*

The US Census Bureau statistics signifies that the size of the workforce is declining. For talent hunting, it is essential to fully understand the workforce. The US Census Bureau statistics signifies that the size of the workforce is declining (Figure 1).By 2050, there will be smaller number of people will be available to work who will be more than 50 years of old. As size of the workforce decreases, successful companies consistently seek top performers. Lavelle (2007) explored that workforce planning is a neglected area of HR. There should be a strong tie between the strategic workforce planning process and management of the ensuing employment relationships that result when plans are brought to fruition.

Workforce Excellence comes from having the best workforce and deploying it for advantage .The growth factor of workforce analytics is the highest as shown in Figure 2.

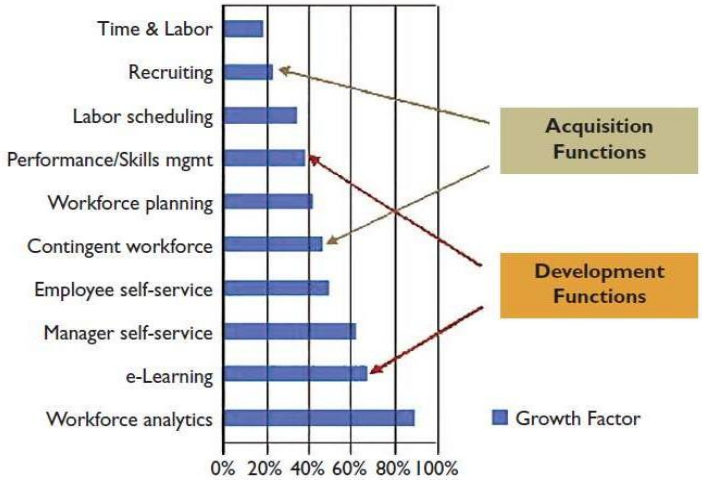


Figure 2 *META Group, Workforce Management Study 2001*

Anderson (2004) stated that there are lots of variations in predictive power of workforce planning metrics used by many firms involved in workforce planning. May be, these disparities are there as firms rely on data that are convenient to gather, or because their information systems are limited, or because critical partnerships have not been formed in order to bring together the most robust and important information available. All the workforce planners should be aware of the examples of workforce metric methods and practices which are available. Decision makers should go through their ERPs and other existing or planned information systems which have the capacity to tell the workforce planning stories of their organizations. Decision makers should be open for proper synthesis of workforce planning with other information's, directions and strategic documents.Ventana Research (2008) explored that top performing companies use analytics to realize the full potential of the workforce. Workforce analytics involves a mix of best practices in people, process, information and technology for these innovative organizations .This research found out some benchmarking questions that can help to enhance the maturity of all four business categories (Table 1).

Table 1 *Benchmarking Questions on 4 Business Categories of Workforce Analytics*

People	
1.	Who leads your Workforce Analytics Projects?
2.	Who will be the most effective sponsor for the process?
3.	Who should attend top-level review meetings?
4.	Which areas of the organization actively use metrics and information about the Workforce?
5.	Which functions use workforce analytics as a source for decision-making?
Process	
1.	What processes are used for generating and delivering workforce analytics?
2.	Does your IT organization support your workforce analytics efforts?
3.	Does that support include applying data quality and master data Management techniques?
4.	How quickly can you generate and deliver metrics?
5.	How often do you examine methods to improve your processes?
Information	
1.	Is easy access to information part of your workforce investment?
2.	How satisfied are various groups with currently available Analytics and Metrics?
3.	What types of Metrics do you use to judge performance of Workforce Activities?
4.	Can people access metrics easily and deliver them to other?
Technology	
1.	Does workforce analytics and BI software operate across the enterprise?
2.	Does it allow monitoring and tracking of workforce performance?
3.	Are you using e-mails to communicate metrics?
4.	Are you using spreadsheet technology to manage data and metrics?
5.	Does your technology have capabilities for modeling and measuring workforce performance?

4. HR Technology and Trends

HR technology is changing very fast in support of HR workforce practices. Workforce planning can be traced back to prehistoric times when tribals were given assignments of hunting and gathering. Chinese kings were identifying right kind of

servants through specific recruitment tests for specific jobs (ERP Asia, 2011). By the passage of time ,the manual HR systems were in existence and subsequently transformed to file oriented computerized systems .To address the fragmented issues of these systems ,centralized RDBMS systems were used which facilitated easy reporting for decision making .ERP databases are also based on RDBMS systems and reporting tools are integrated with these systems for decision making. Now many medium and small companies are adopting ERP SaaS systems which are based on subscription models and much cheaper than licensed ERP packages.

However, decisional business issues were difficult to solve in these operational systems where data integration was difficult. Application of decisional queries to RDBMS systems affects the day-to-day activities as operational systems are disturbed when we apply such queries. Subsequently ,Business Intelligence systems were evolved to address and resolve these issues of RDBMS .BI refers to technologies, applications and practices for the collection, integration, analysis and presentation of business information and sometimes to the information itself.BI is closely associated with Data warehousing and Data Mining .Data warehousing extract data from multiple sources and with the help of ETL process, the data are loaded to the DW.BI and Data Mining techniques are applied to explore the hidden pattern in the data .Tools of BI are MS Excel, LAP Tools, Business Performance Management Tools and reporting tools. Data access, Analysis, Decision and implementation time till the action is implemented is reduced in BI systems and so also the value is saved which is the difference of the values between action implementation time of operational and BI Systems.

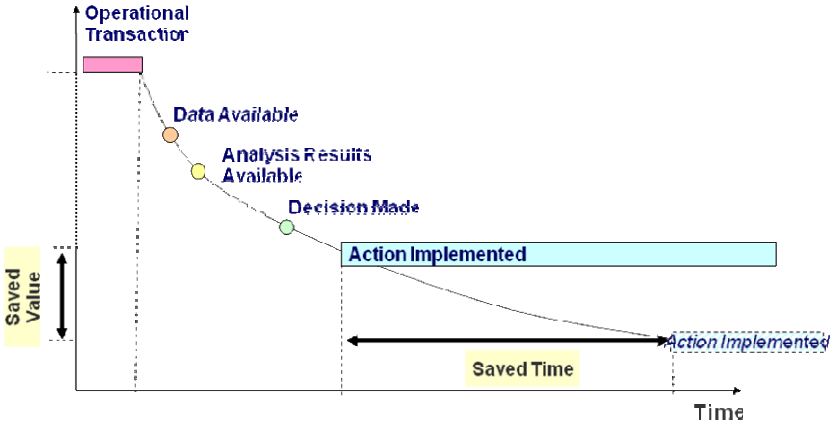


Figure 3 *Hackathorn, R.: Minimizing Action Distance (2003), http://www.tdan.com/view-articles/5132/*

Brobst and Rarey (2003) described five stages of Business Intelligence .Stage I is mainly deals with pre defined batch queries .Stage II is introduced with Ad Hoc queries .Analytical modeling grows in 3rd stage where apart from analysis ,prediction is possible which is based on analytics. 4th stage is based on continuous update and time sensitive queries are possible .5th stage is based on event based triggering (Figure 4).

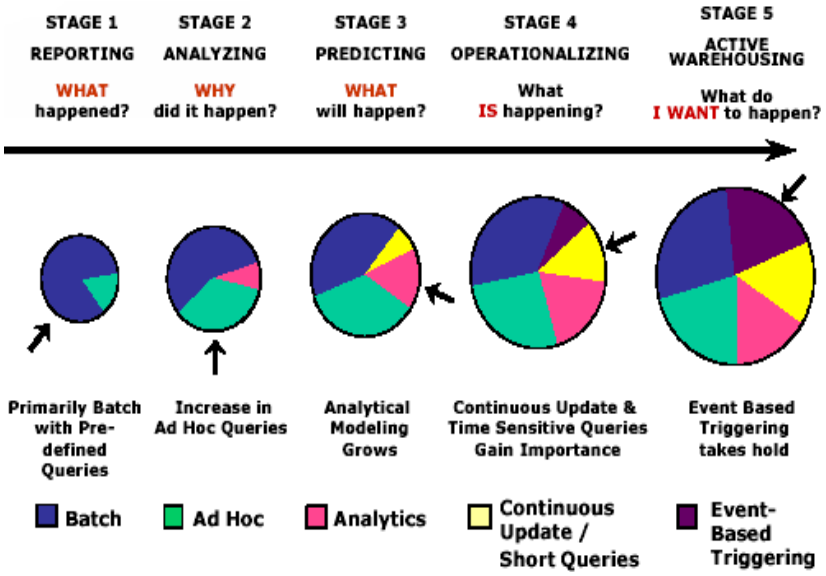


Figure 4 *Brobst, S. and J.Rarey, "Five Stages of Data Warehouse Decision Support Evolution", DSSResources.com*

As per the SAP University Alliance set up at Victoria University, the most important application of BI reporting is through dashboards. Dashboards are one of the styles of BI Applications. There can be performance Dashboards, Metrics Dashboards and dynamic Dashboards. Performance Dashboards displays a consolidated view from across the enterprise .Here the workforce are mainly managers and executives. Consolidation is possible from multiple sources like cubes, data warehouses and operational databases. Metrics Dashboards are suitable for aligning firms for common goal. These dashboards display list of metrics, represent trends and status with graphical indicators and compares to actual goals. Dynamic content dashboards are suitable for executing better and quicker decisions. These dashboards allow the workforce to interactively change context of analysis, synchronize many reports within a single dashboard and embed Analytic workflow to assist decision making. Dynamic Visualization dashboards are ideal for conveying more information to users. It displays more data in less space with advanced visualization, conveys changes over time through animated graphs and provides the control of analysis to users via interactivity. Kapur (2010) stated that many firms are gaining insight through the use of BI in multiple areas. However, HRM area is not completely utilizing BI methodology. Author examined leading features of BI vendors like SAP, SAS, Oracle and IBM in HRM modules. These vendors claim to have workforce planning, Workforce Cost Planning, Workforce Benchmarking, Workforce Process Analytics and Measurement, Strategic Alignment and Talent Management Analytics functions and features in their software. If firms can utilize the features, HR will definitely become a value-adding department of organizations.

Hota (2011) states that there is a shift from BI towards Analytics which deals with extensive use of data, statistical and quantitative analysis, explanatory and predictive

modeling and fact based decision making. As per Forrester research, self service, pervasive, social and scalable analytics will dominate the marketplace in recent future. Pervasive analytics make analytics pervasive across all channels, touch points, transactions, and business processes. Social analytics eases social network analysis which collects data from multiple sources, examines and evaluates effectiveness of relationship. Scalable analytics supports complex databases of all kinds to scale their Enterprise data warehouse. Self service analytics focuses on delivering personalized services, helps in quick transactions and increases customer experience. It also facilitates customers to evaluate various options available to them and compare the offerings of a firm with other competitors. Self service analytics is a step ahead of the progress towards self service technology option .Self service technology supports to build employee self service portals where many operational activities can be accomplished by the employee. As per a prediction of Gartner and Forrester in 2011, within few years, Business analytics will be used extensively by hand held devices, will add scale add scale and computational power through usage of in-memory functions.

Angie Burke, Director of HRIS and Payroll once said "Consider your Organizational needs first. Take the time to identify and implement best practices as opposed to continuing with current practices. While the technology is powerful, what you are able to get out of it will only be as good as what you have put into it". Cloud computing and Software as a Service (SaaS) are also becoming common for medium and small enterprises .It is also a trend to outsource HR functions and HR technology. SaaS is based on subscription based delivery model which is cheaper than licensed based models. Long and Ismail (2011) explored that HR Technology plays a crucial role in transforming HR Professionals from administrators into strategic partners of firms. Lack of expertise on HR Technology is a bottleneck for HR Professionals to turn into a well-integrated strategic partner.

As per Aquire (2011), traditional business intelligence tools lack in the ability to mine workforce data for trends and insight into human capital performance. Workforce analytics helps define what to be measured and then uses information and insight derived from those measurements to drive changes. In the current context, Workforce Analytics is drawing on the knowledge base developed in Human resource area and utilizing the data available in fragmented company database along with the data available in company HRIS systems. The target is same now but the key difference is that HR can now hold the wisdom encapsulated with the data. Success Factors, SumTotal, Ultimate Software, Kronos Incorporated, Visier, Acquire and DoubelStar are few of the vendors of Workforce Analytics which are dominating the market. Most of this software are based on clouds. Cloud computing and Software as a Service (SaaS) are becoming prominent for medium and small enterprises .It is also a trend to outsource HR functions and HR technology. SaaS is based on subscription based delivery model which is cheaper than licensed based models. Schramm (2006) stated that progress of workforce analytics is facilitating to convert HR into a decision science with a measurable impact on business result. New roles for HR professional are also created. The continuous technological advances and easy use of web is enabling organizations of all sizes to have access to tools like time and attendance systems, application tracking software, automated payroll and networks which ease communication of benefits and facilitates employee self-

service, workforce data and analytics. At the same time, organizations which are able to make the best use of HR technology are able to save costs while maintaining the quality of customer service by decreasing the time and resources dedicated to HR administrative tasks. Use of HR technology is reducing HR cost and administrative burdens .The trend will also require all HR professional to improve their skills in HR technology in the years ahead.

Descriptive workforce analytics analyses historical trends whereas Predictive Workforce Analytics states the happening of the events in future and the kind of trend will occur in future .Prescriptive Workforce Analytics signifies the best possible action for an event in a current situation. Key performance indicators and dashboards are used in case of Descriptive Analytics and Statistical modeling is used in case of predictive workforce analytics. Prescriptive Analytics uses simulation and optimization techniques with proper constraints and input to generate recommendations.

5. Benefits of Workforce Analytics Approach

Henson (2002) explained extraction from a central database of all relevant external and internal company data, workforce analytics facilitates firms to model, simulate, report, compare and leverage the most important metrics of HR and the firm .Workforce analytics also measure HR effectiveness, helps processes for addressing gaps in labor and skills, derive metrics for benchmark interpretation and trends, provide compensation and retention planning tools for proactive analysis and support talent development .Success factors (2012) explored that what-if scenario and historical trends can be presented in a graphical way by integrating and comparing raw workforce data through workforce analytics. It is easy for all the stakeholders in the organization to visualize the impact of the movement of talent on cost hiring decisions, cost models, career-path initiatives, risk management and succession planning through modeling capabilities of workforce analytics. Workforce Analytics can identify and addresses the loopholes in the firm's talent mix and the solution to overcome for better business results. Workforce analytics can identify and address the loopholes in the firm's talent mix and the solution to overcome for better business results. As per a report of IBM Global Business Services (2009), workforce analytics has a vital role in HR migration from a more administrative to a more strategic area. Workforce analytics also facilitates the owners of various workforce segments as line managers to make more informed and fact-based decisions about the performance and compositions of their employees. Integration and analysis of data from multiple sources requires a consistent analytics platform .Though many firms have purchased best-of- breed point solutions which highlights metric within a specific human capital area, they do not provide a full picture of overall performance. This requires a single platform from which HR professionals and top management can fetch and interpret data to make fact-based performance and strategic decisions. Robinson (2012) explored that potential benefits of Workforce Analytics includes shorten recruiting cycles ,avoidance of costly mistakes to largest P&L items, Improved retentions and Better training ROI. As per the Aberdeen's research, organizations that utilize dashboards and analytics and combine attendance and time data into its scheduling system are achieving huge gain in business metrics which includes labor cost reduction and customer satisfaction.

6. Research Challenges

Analytics can set the pace for business operations. However; many firms are still unaware of the fact. Faulty realization of cost-benefit analysis and immature knowledge of analytics of firms tend to shove away the fact driven decision making approach. The major challenge to widespread analytics adoption in firms is due to lack of understanding on how to utilize Analytics to improve the business. Most challenging Analytics adoption faced by firms is cultural and managerial rather than related to data and technology. (Lavalle et al., 2010) stated that analytics requires many types of analytical skills such as data integration, Modeling, forecasting and simulation to explore trends and patterns. Firms have these skills in-house, however unevenly distributed at each business unit. Marrs (2012) states even if there are lot of benefits of workforce analytics, the software and science driving analytics is still complex. Though a HR practitioner's intention may be good, it can be dangerous if he/she is inexperienced in handling the analytics tools .Lot of experience and training are essential to operate the tool. A well known American Humorist and author, Mr. Mark Twin remarked 100 years ago that "Figures often beguile me, particularly when I have the arranging of them myself". There are also legal issues like equally opportunity laws and privacy during the use of internal workforce data to arrive at a business decision.

7. Conclusions

Workforce analytics is a new corporate mindset. It can encourage a fresh, animated psychology and culture of excellence among the workforce. Human intervention and intuition are also mandatory for successful workforce analytics to understand and extract the intelligence from the data to better inform business decisions (Beeline, 2012). Kiron et al. (2011) suggested that lack of an adequate analytics strategy is increasing which is likely to put the future of the current firms in jeopardy. With a full range of analytics capabilities governed by an integrated analytics strategy, organizations are better positioned to widen, or narrow, the distance between themselves and competitors to their own best advantage. However there is no consistent or unique "best practices" workforce analytics strategy which is a panacea for all organizations as issues of different types of organizations are different.

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