

# Analysis of Changes in Software License Management

## Masterarbeit

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# 1 INTRODUCTION

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In recent times digitization is an everyday topic – in private as well as in business matters. Nowadays the worldwide IT expenditures reached an amount of about \$ 3.732 billion and the forecasting additionally shows rising numbers.<sup>1</sup>

That is why an efficient and effective software license management is indispensable. CIOs need to adapt software licenses continuously to their IT infrastructure and their usages to fulfil licensing requirements. Most of the companies do not have the resources or the know-how to face the challenges concerning their license management. They even have troubles understanding which software is installed on which systems and who has access to it. Especially in times of new technological trends and new infrastructures like Internet of Things and indirect usages, it is tremendously hard for companies to understand the connections and processes behind the IT infrastructures and the impacts on licensing. All these questions and concerns are of high relevance for the companies using the software, the software vendors themselves and the Software Asset Management business area. An effective license management can prevent customers from having high findings during a software license audit, which are conducted by the big software vendors. They can lead to huge financial, but also legal troubles, which should be avoided. Furthermore, some software manufacturers are starting to change their license agreements and start to adapt them for the present and the future. Inter alia the software manufacturer SAP started to license the indirect use of their software and this came along with a huge lawsuit and alarmed SAP customers. Those were only a few reasons why a software license management is necessary for companies. Right now, different trends have impacts on license management and that is why it is important to be aware of these changes and the consequences.

Accordingly, a research gap is identified, which investigates the question of the forthcoming changes in the form of trends and challenges regarding new IT infrastructures and technologies in software license management.

Concerning the aforementioned research gap the following research questions will be examined:

- i. *How and why will upcoming trends influence the Software License Management?*
- ii. *How and why do software vendors have to adapt their licensing metrics in order to keep up with upcoming changes?*

These research questions will be applied to explain which trends will prevail in the future and how exactly and why they will influence software license management. In addition, the

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<sup>1</sup> See Gartner Inc. (2019c).

influence of the current license metrics on this and the extent to which software manufacturers may have to adapt to the new changes will be examined.

In order to answer the research questions, it will be proceeded as follows. First of all, theoretical foundations about software license management including important terms and concepts are presented. Moving on, a literature review by Webster and Watson is conducted in order to identify relevant literature concerning upcoming trends in license management. Afterwards, the trends and challenges identified in the literature are explained more in detail in chapter 4 and their relation and influence on license management is presented. This leads to the following part, the qualitative expert interviews. The interviews<sup>2</sup> were conducted to supplement the results of the available literature and to seek new information. Those are analyzed and evaluated using Mayring's qualitative content analysis. Subsequently, the results are discussed in relation to the research questions and recommendations for future actions are developed. This is followed by a brief description of the limitations of this elaboration. In the end the thesis is closed with a conclusion and a short outlook.

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<sup>2</sup> In order to guarantee the anonymity of all interview partners, no personal names or the corresponding company names are mentioned in this paper. In addition, company names have been replaced by fictitious names in relevant places and can be recognized by a different font.

trends will in some way cause a change in the usage of software or in the IT infrastructure. This inevitably has an influence and impact on the license management of a company, since changed usages, processes and infrastructures change the way the software is used, and this can lead to a different licensing. In most cases, this is likely to lead to sublicensing. Accordingly, there is a direct influence of the trends on license management.

With regard to the second research question of how and why software vendors need to adapt their licensing metrics to emerging trends, the following can be said. The analysis has shown that all experts are of the opinion that the current license metrics no longer represent the current time and are also not suitable for future trends and technologies. The examined literature does not provide relevant information on these aspects of license management, as it is the case with trends. This is probably due to the fact that the license metrics are not scientifically investigated. One of the biggest changes in the metrics will be in relation to container virtualizations. There are no contrary opinions among the experts, even the expert who works for a software vendor holds the same opinion as the other experts. The current metrics are not suitable for the licensing of a container licensing and thus an adjustment is urgently needed. If programs are spread over hundreds of different containers, it is not appropriate to license them by capacity, such as cores. Here, a solution must be found which has been specially developed for container virtualization and which can track and license the use appropriately. Thus, it would be very important that it is possible to track the software exactly so that all containers can be identified. Accordingly, the software manufacturers must be able to make the software more trackable. This can be achieved, for example, by the mentioned asset tagging. In addition, many opinions were expressed on the future of user licensing. Therefore, it can be stated that user licensing will only make sense in the future if it concerns many different devices, such as IoT or BYOD. In all other matters which were addressed in the interviews, user licensing is no longer perceived as up to date. This is mainly due to the previously discussed trends such as indirect use, but also process automation. There are more and more users accessing the systems, so user licensing is no longer acceptable for companies. A reference to chapter 4.3 can be made here. In this chapter, the problem of indirect use was presented on the basis of the court ruling from the United Kingdom. This problem was mirrored by the experts and shows again how relevant this topic is for the different companies. As an alternative, it was suggested not only for indirect use but also for technologies such as IoT or Cloud that licensing should increasingly be based on the actual use of the software. Metrics such as the number of accesses, the number of items or the amount of volume could be licensed. These metrics would reflect the actual usage. It would be important to define exactly how and where the usage is measured. On the one hand, this is necessary to avoid misunderstandings and problems during software audits, but on the other hand, it is also necessary so that customers can estimate their usage in advance. Among other things, this is necessary in order to estimate the license quantity appropriately. Moreover, conditions and metrics should be better communicated in the future. This has also been mentioned several times by the experts and could lead to a better relationship with the customer.



## 8 CONCLUSIONS AND OUTLOOK

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The aim of this work was to analyze changes in license management. More precisely, emerging (technology-) trends and their influence on license management and SAM were analyzed.

First, a short introduction to the topic of license management was provided and important terms and concepts in this context were explained. In the following, selected trends were further examined. A literature review according to Webster and Watson was prepared to illustrate that. After that, the trends mentioned above were explained and their connection to license management was presented. In this case the literature was not sufficient, so expert interviews were conducted on the basis of guidelines. This questionnaire contained questions on possible trends in license management, which were asked to nine interview partners. These interview partners were all experts in the field of software licensing and SAM. The interviews were evaluated and analyzed according to Mayring's method of qualitative content analysis. Subsequently, the answers to the research questions were discussed and recommendations for practical action were developed. The analysis and the relevance to the two research questions have shown that some trends have been identified that will have an impact on license management. The trends IoT, cloud, indirect use and process automation will become increasingly important and will have a major impact on the licensing of software products as described in chapters 5.3 and 6. However, technologies such as AI or Blockchain will not have a major impact on license management in the medium term. In addition, it became clear that the concept of BYOD also brings challenges, but that this concept has been actively used in companies for years. Many software users do not think about license management until they have been audited. Within the scope of this elaboration, the direction in which the process of software audits will develop was examined as well. It became clear that the focus continues to develop in the direction of customer satisfaction and that there are more and more collaborative approaches. This also made it clear that awareness can be increased in almost all companies. Whether then an operational or a strategic license management should be used depends on the respective company. In addition, the analysis of the second research question revealed that software manufacturers have to react more quickly to changes and that the current metrics for the usages of the software in connection with newer technologies are no longer appropriate. Therefore, there is an acute need for action here. Especially emerging changes such as container virtualization have a big influence here, this was discussed in chapter 6. At the end, brief recommendations for customers, SAM consultants and software manufacturers were given and graphically illustrated.

Further research can be carried out on how the customer's point of view is to be understood in this context. It would be interesting to find out how strongly the individual technologies and infrastructures are actually used. This requires an analysis of a specific sample and use cases.

Furthermore, it would be interesting to investigate the influence of current world situations on software and software licensing.

In addition, more detailed research should be conducted into what license management can include in addition to software. More precisely, what kind of assets could be included in license management together with software in the future. Moreover, it would be a good possibility to look further into the matter of Asset Tagging as it was mentioned by many experts. Due to the fact, that this topic was not discussed and analyzed as an interview question it would be necessary to deepen the view into this. Furthermore, it would be interesting to investigate the influence of current world situations on software and software licensing.