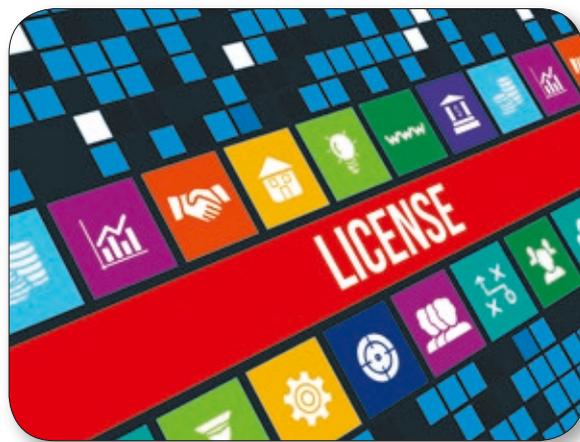


Flexible licensing models in the Internet of Things

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Cross-linking of machines via the internet has grown tremendously in recent years. An increasing amount of intelligent software-based hardware is being deployed in industrial production. Engineering companies are therefore shifting their focus onto software development rather than hardware development, with the consequent need for license management.



■ The Internet of Things (IoT) is turning engineering companies into software providers. Thus, securing intellectual property (IP) is especially important. License management plays a major role in this. New licensing solutions not only protect embedded software; they also entail new business opportunities. These include flexible licensing models such as pay-per-use, function and capacity-based licensing, software keys and subscriptions. This type of licensing requires constant changes, in order to meet the user demands. Therefore, companies need to implement Licensing Lifecycle Management.

Certain licensing models are more suitable for the IoT than others. Licensing with physical keys like Smart Card Chips attached to control boards, which work just like the well-known dongles, limits the access employees have to certain machines or functions. However, software keys are more appropriate in the IoT because they are more cost-saving than chips or dongles. The latter need to be delivered, repaired, or possibly replaced if an employee loses the key.

Yet, the software is only as secure as its key. An example: if the keys are stored in software, they can be stolen or misplaced. It is for this reason that companies should put their trust in special platforms like Hardware Security

Modules (HSM) when it comes to key management. Keys can simply be stored on and managed from the hardware, where they are better secured and can be more easily controlled than from software. With unified key management and built-in, granular security controls users can manage the encryption very accurately.

Function-based licensing is especially interesting for engineering companies that deliver the same device to customers with different requirements. This form of feature monetization enables integrating a software into the machine on which the functions are then unlocked. This allows a variety of products and at the same time doesn't give the user the impression of paying for functions he doesn't even need or use. Merely the functions that actually get used are billed. These can be offered in bundles according to what applications are in high demand. With this kind of flexible licensing vendors can easily increase their revenue.

Another option to choose from is pay-per-use-licensing. With this model companies can also bill usage subsequently if it goes over the originally fixed amount. Usage-based licensing helps equipment manufacturers capture the actual use of their machine, as the data containing this information is forwarded to

them. This helps capturing the exact way the user has utilized the machine – something that was not possible with traditional models, as only the access to software and not the usage could be restricted. An example; the use of a robot during an operation can be calculated afterwards, if it was used for more occurrences than originally planned. The software development also profits from utilization data as usage reporting functions can be activated. This provides information on which software functions were well-perceived by the users and which need to be optimized.

All these licensing models can be combined with one another. By licensing application functions separately, an own license metric can be applied to each function. Thereby different combinations of licensing terms are possible for each deployment. Customer A would like a subscription-based core module, as well as a fixed number of licenses for different add-ons. Customer B on the other hand orders the same core module but on a pay-per-use basis. He would like to subscribe to the add-ons. Numerous combinations are possible: licenses, simultaneous use, pay-per-use, time-based licenses. The device sent to the customer is always the same.

Flexible Licensing requires continuous Licensing Lifecycle Management (LLM), as

most changes become necessary after the granting of a license. This means that plant manufacturers need to be able to react to their customers changing demands quickly. A user that originally booked 10 Gigabyte data volume in a capacity-based model might need 20 Gigabyte in the future. In order to process these customer bookings smoothly, companies need a tool that optimizes and automates (internal) processes. A good LLM-Solution offers the possibility of updating software

remotely or easily adding and removing capacities and functions without the customer noticing a thing.

The IoT makes the development and protection of embedded software a challenge for engineering companies. Intelligent production also enables new business models, with which companies can increase their profits. This makes the IoT a great opportunity for plant manufacturers. ■