February 2016
GLOBAL Manufacturing
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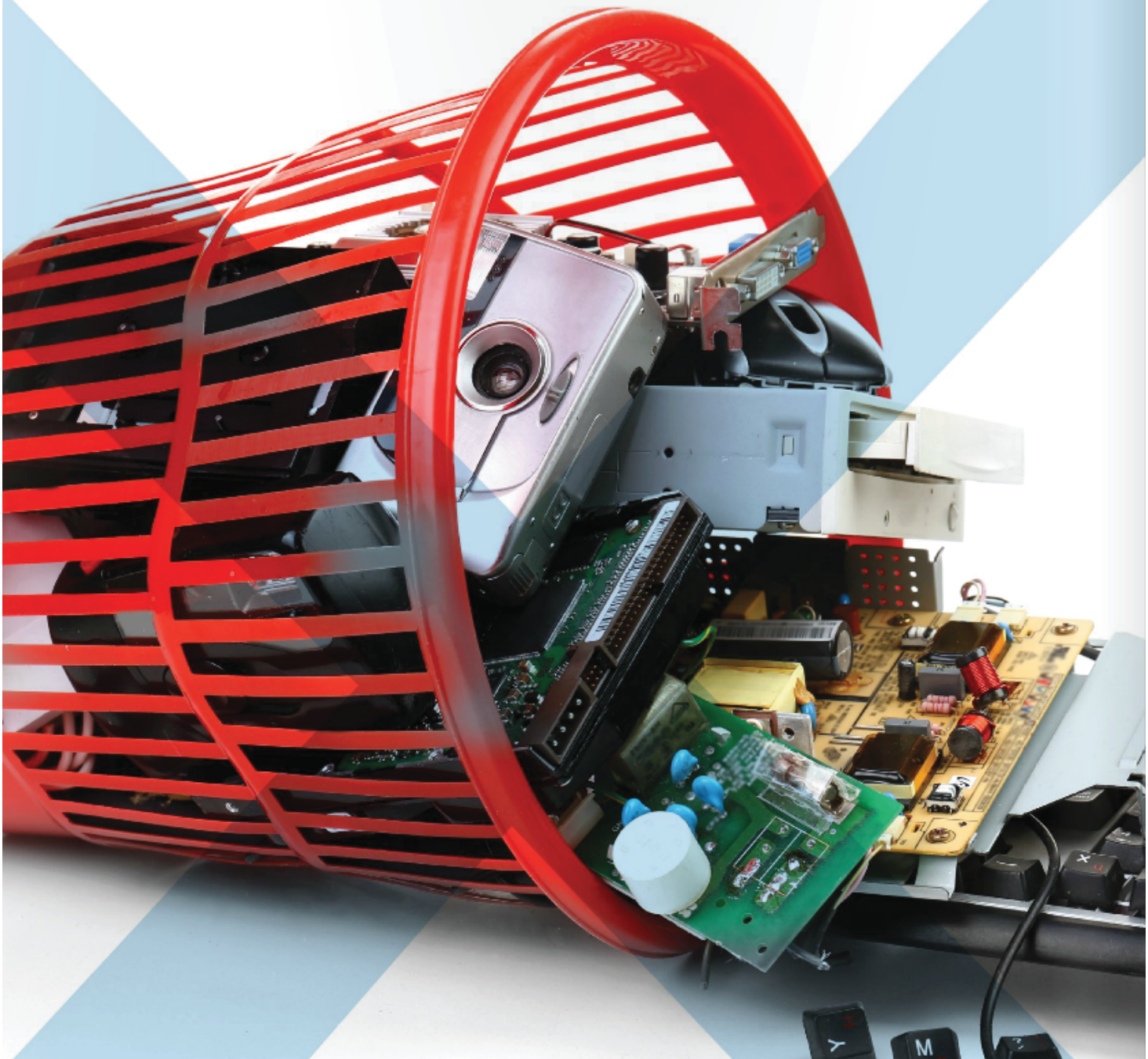
Written by Cris Wendt, *Principal Strategy Consultant, Flexera Software*



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The rapid adoption of software in physical goods

Marc Andreessen, the inventor of the web browser, said in 2011 that 'software is eating the world'. Increasingly the value of physical devices is defined by the embedded software inside of those devices, or the control software that helps to manage those physical goods. In this context, it's important to understand how software is different to hardware, and what it means to eliminate digital waste that is so hard to characterise, yet so important to understand. Eliminating digital waste can drive up revenue and increase overall product margins.

Why is this important?

In our customer engagements, we have found classic hardware companies are seeking to have high margin software become 40 percent or higher of overall revenues. In addition, many of these companies find that their value and market differentiation are due to software. In a discussion with a marketing executive at a large networking company that manufactures and sells large network switches, I was told 'we are a software company – all of our value is in the software. The hardware you see is mostly off-the-shelf components that anyone can buy and use. Even the Tesla has been described as a computer with software on wheels. And of course, the Nest thermostat is an expensive,

'smart' device that commands a premium because of the value the embedded software provides.

Another executive once told me that their 'land and expand' market strategy was to sell a low-end device that more easily allows market penetration, and then increase the revenue from that device over time by selling advanced features and capacity that can be deployed simply by issuing an electronic license key that enables those functions.

A similar strategy is also used by companies that sell using a bid process to academic and government institutions. Once they win the highly competitive and costly bid, they can more easily expand capabilities without going through the bid process again. They are able to sell more capabilities and capacity through software enablement expansion (again using electronic license keys) that only they can provide.

Again, going back to the networking and telecommunications markets, entire hardware offerings such as routers or security appliances are replaced by pure software deployed as 'virtual machines' that run on commercial blade servers.

Understanding digital waste

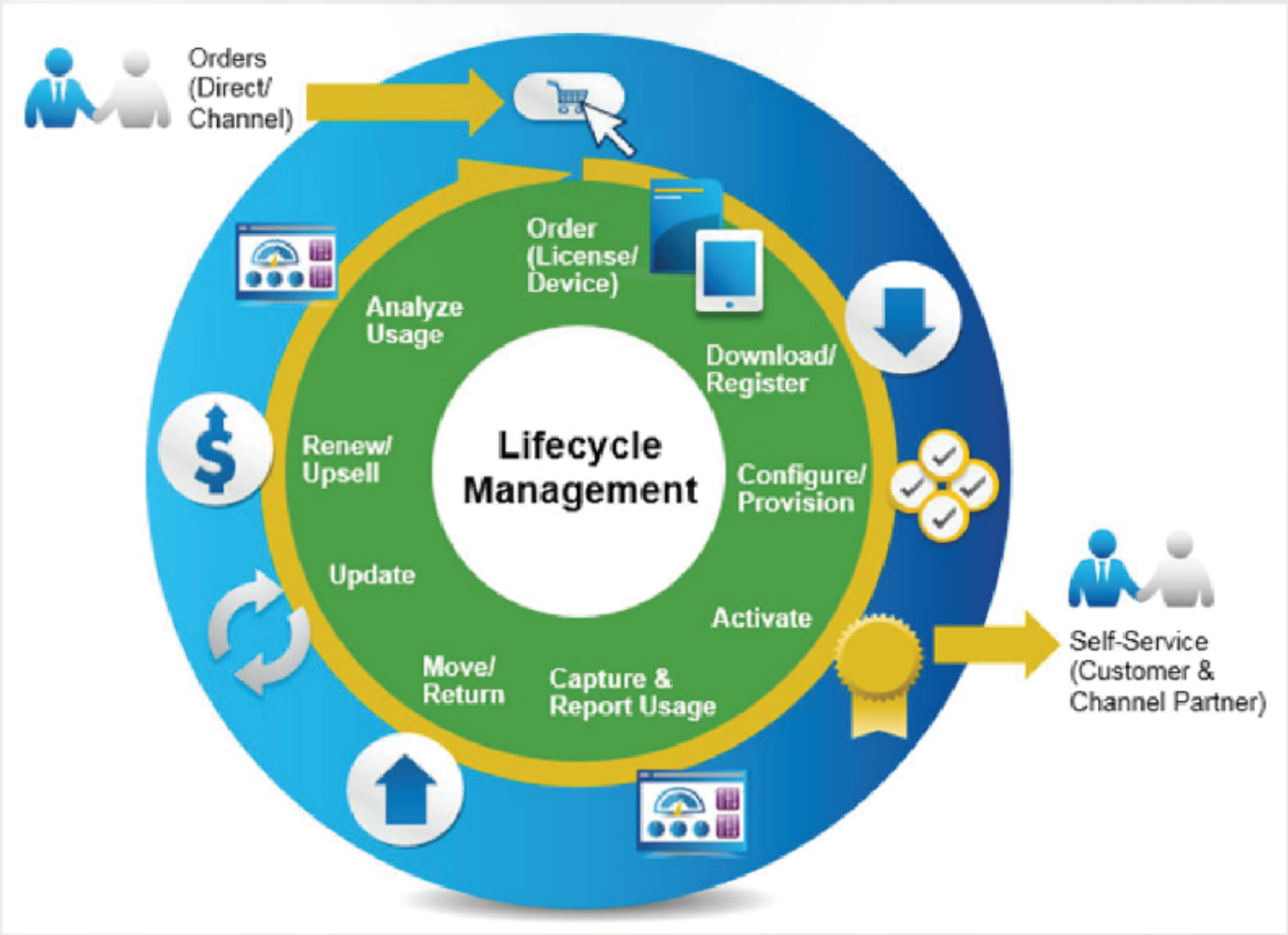
Companies that are built to deploy physical goods have more trouble trying to effectively monetise their software or digital goods that one might think. Part of that is due to how they approach managing the ongoing software lifecycle.

'Eliminating digital waste can drive up revenue and increase overall product margins'

When a company manufactures physical goods, it's easy to identify defective material that becomes waste and a drag on the bottom line. On the manufacturing floor, you will find containers with defective components, sub-assemblies and final assemblies. Some can be repaired, while other waste may need to be discarded. Material that is defective in the field may be returned via a return material authorisation (RMA) process. In these cases, the waste is characterised, a cost is assigned, root causes for

defective material can be found, and remediation process put in place to reduce defects and waste. Over time, the manufacturing processes are improved and optimised and better component suppliers may be used.

In the digital economy, waste is different. It is not a problem, for instance, of a higher-than average cost per part that is shipped. Digital goods such as software don't typically have a cost of goods sold. Waste is a problem of not maximising revenue over the lifetime of the business relationship with customers because the sale, deployment, use, replenishment and tracking of digital goods is not effectively managed. In a digital economy, the goods produced are not physical, but rather a 'license to use' the digital goods within well-defined boundaries. A license-to-use is not a one-time event, but an entire series of interactions with a customer that evolve and grow over time as the usage of the digital goods continues. When companies only focus on the initial sale, and not the ongoing relationship,



Once the order is taken, the end-customer is provided access to the software and is able to use it, potentially move software functions among machines, renew support (to enable access to new versions), and expand functionality

digital waste can easily cost 25 percent or more of overall revenue. One large software company invested over $50 million in a project to recover over $700 million in annual revenue. The waste in this case resulted from problems effectively managing their ongoing recurring revenue stream.

The needs of a software supply chain

In the world of physical goods, the supply chain and monetisation paradigm is built upon a model of taking an order, fulfilling the order with physical goods from inventory, billing the customer and then collecting revenue. All of the heavy lifting is done by the supply chain during the manufacturing process and ends at shipment or fulfillment.

For software, the revenue model is built upon an ongoing relationship with the customer to enable continuous expansion. Once the order is taken, the end-customer is provided access to the software and is able to use it, potentially move software functions among machines, renew support (to enable access to new versions), and expand functionality. In this paradigm the 'heavy lifting' in the supply chain is done after

fulfillment to manage the ongoing lifecycle of the software revenue model. In some cases a channel partner sits between the producer and the end-customer, obfuscating what an end-customer really owns.

A good way to think of a digital goods supply chain is to view it like the app store experience for mobile phones such as the Apple App Store or Google Play. Once a purchase is made, the customer has a self-service facility to view their financial credit, manage purchases, view their history, and move software to another device. In addition, Google and Apple have keen insights into who the end-user is, what they've purchased, and upsell opportunities.

Digital waste accumulates because of an inability to manage this ongoing lifecycle of the software revenue model.

Indicators of digital waste

Signs that you have digital waste include:

1. Digital waste is evident when maintenance or subscription renewal rates are lower than the industry best practice value of 85 to 95 percent or when renewals are late, or are incomplete. I've heard some executives describe the renewal problem as 'gold dust littering the floor while we concentrate on building bricks'. I've even heard renewal representatives say, 'We had to get this renewal done, so we felt the number of copies that we had was good enough. At times it seems as though the gold dust might more accurately be described as gold bars littering the floor.

2. An inability to create targeted upsell campaigns to the appropriate individual, creating a void of five – 10 percent of revenue. One person responsible for marketing campaigns I've encountered said that based upon experiences at her previous company, her current company is missing out on seven percent upsell potential due to poor tracking of actual end-customer deployments.

3. Manual-intensive audits (of the largest revenue producing customers) reveal over-usage of goods usually by 10 percent, if not greater. Many producers and consumers of the software are startled to find levels these levels of software license non-compliance

– where customer usage exceeds contractual terms. Without software compliance controls and monitoring, customers can easily over-deploy or over-use software. This is especially true for large customers who find efficient ways to deploy large amounts of software or software upgrades using distribution methods and have no good methods to reconcile against the entitled amount. This over-usage amounts to revenue leakage, because the producer is not getting paid for software that has been deployed and is being used by the customer.

Developing a world-class digital goods supply chain

As companies move to expanding their hardware supply chain or create a software supply chain, we focus on the 3Ps, summarised below as a way to minimise waste and maximise revenue:

'When a company manufactures physical goods, it's easy to identify defective material that becomes waste and a drag on the bottom line'

- **Pricing (and licensing):** Hardware is usually priced on a cost-plus basis – the price is determined based upon the cost of goods plus a margin. Software or software enabled functions are priced based upon customer value since there is no cost of goods equivalent. This means determining a scalable pricing meter that captures the value the software provides, and pricing it according to what the market will enable. The meter might be a measure of speed, additional functions, or increased capacity. This should include a pricing model for maintenance, which often includes the access to new capabilities. Starting with an effective pricing and licensing model ensures that producers have designed their offering to maximise revenue (or meet some other business objective).
- **Protection:** Software, by its very nature can be copied and over-used if there are no adequate controls. Adding or embedding licensing technology to the software ensures customers cannot over-use or over-deploy the software by providing some form of enforcement experience such

Entitlement management systems function between an ERP system and the end-customer, enabling customers to create an account to easily access and manage their software access rights

as messaging, or denial of service for out-of-compliance use.

- **Provision:** Ensure the supply chain is able to address the needs of the recurring revenue model of software. This means adding a secret sauce to the supply chain, a system function called "entitlement management." Entitlement management systems function between an ERP system and the end-customer, enabling customers to create an account to easily access and manage their software access rights. In addition, entitlement management works in conjunction with the licensing technology (briefly described above in Protection) by deploying a manifest of license rights (sometimes called a license file) used by the software to ensure the customer doesn't over-use or over-deploy software without warning. In addition, entitlement management systems provide reporting and dashboards so that the producer and customer have visibility into the status of the deployed software at any point in time, and, provide an activity audit trail.

There are many companies who have learned or are learning to eliminate digital waste. Doing so is essential to effectively compete in a world driven by software. ■