

A Submission to the ACCC Digital Platform Services Inquiry.

Following is a submission to the current ACCC Digital Platforms Inquiry. It is structured around three main points:

1. My personal experiences as an independent publisher, in contending with Apple, who:
 - Manufactures and sells mobile devices on which they have sole, unchallengeable authority to approve or deny the presence of third-party eBook Reader & eBook Store Applications.
 - Operates a Digital Publishing Platform / eBook store / Reading Application.
2. The primary source of anti-competitive behaviour within digital platforms.
3. A suggested broad-based solution that can solve the anti-competitive problem in digital platforms.

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Independent Publishing in an Anti-Competitive Market:

My Personal Experience:

As a creator of Digital Graphic Novels and Photo Books, I began publishing in EPUB-standard format in 2013, through Apple's *iBooks* (now *Apple Books*) Store.

I published exclusively on Apple's store for just over seven years, until I launched an independent storefront with *FastSpring* (a general eCommerce platform) in 2021, and ceased to bring new publications to Apple's service.

I had a number of reasons to pursue an independent store option. Most of them were related to deficiencies in Apple's eBook business, and rooted in Apple's ability to wield abusive control over the market for Applications & Payment Processing on its mobile devices.

These deficiencies manifest in both the cost of the service provided by Apple, but also in the quality of that service, and the lack of effort Apple put into its maintenance.

A full documentation of my reasons for leaving the *Apple Books* store, can be read here:

<https://www.golgotha.com.au/on-leaving-the-apple-books-store/>

Apple's store was more expensive for me as a retail channel, than an independent *FastSpring* storefront. Cost per sale from store fees alone worked out at 30% of retail price for *Apple Books*, Vs. approximately 12% for *FastSpring* (after factoring in all currency conversion fees with *FastSpring*). Apple may argue that its costs include the creation & maintenance of their eBook Reader application, but that presumes an inherent need for the store and reader to be tied together, and ignores the loss-leader value for Apple in marketing their "premium" reader application as an exclusive benefit, included in the bundle pricing of Apple-branded mobile devices.

Apple's attention to the needs of publishers has been lacking. Their reading application underwent "redesigns", losing significant functionality which had previously differentiated it against other reader applications. Additionally, Apple was detrimentally altering book cover art when presenting it in their *Apple Books Preview* marketing website - changing brightness and contrast, such that areas of illustration were indistinguishable, and author names were unreadable. This situation continued, in spite of objections raised with Apple's eBook store vendor-support staff, for most of a year.

I investigated selling my eBooks on multiple stores - *Apple Books* for Apple-branded device owners, *Google Books* for Android-device owners etc, but every format requires its own set of specialist work, and every store has its own minimum payout threshold. The risk is one can end up distributing all of a book's sales, such that no single store sells enough units to trigger an actual return.

I then sought out an independent, multi-platform eBook reader application, with its own book store, or ability to access publishers' independent book stores. Unfortunately, Apple requires its own merchant services be used for any in-application purchases on Apple-branded mobile devices. The fee for this service is 30% of the item's purchase price - the same rate Apple charges a publisher to sell directly on Apple's own store. After that fee, the independent eBook Store must deduct its fees from the remaining 70%. This results in independent eBook stores offering significantly lower returns to publishers for sales that occur on Apple-branded devices.

A number of Apple's eBook store competitors, such as Amazon with their *Kindle* eBook Reader & Store, require users of Apple-branded devices to log in to their websites via a browser in order to purchase eBooks, which avoids Apple's (expensive) merchant services fees. The books then become available to download & read within the application. Until April 2022, Apple strictly prohibited linking out to an external purchasing system, such as a website, from within applications on their mobile devices. Apple prohibited mentioning the existence of an external purchasing system, *or of mentioning the rule against mentioning an external purchasing system* within any application on their mobile devices. **This prohibition is currently in flux, due to ongoing Dutch antitrust actions against Apple.**

My only realistic option, given the file size & bandwidth requirements of my image-heavy eBook files, was to use *FastSpring* to set up an independent web store, and to sell my eBooks from that store, as file downloads. Customers would then have to manually load the downloaded files into their choice of eBook reader application, on their choice of device.

The consequences of leaving the Apple Books store to sell independently have been greater revenue per sale, as can be seen by the table on the next page, and a larger addressable market, with the addition of people who have Windows, Android, & Linux devices capable of running eBook reading applications. That is in contrast to Apple's eBook store and reader application, which is only available on Apple-branded devices.

The downside, is less convenience for my customers who do use Apple devices, and must now manually load a purchased eBook into Apple's eBook reading software. Additionally, certain organisational capabilities are denied to independently-sourced eBooks. For example, the ability for all books within a series to be grouped as a single distinct entity (shown as a stack of books) within the library view, is only available to books purchased from Apple.

Customers using Apple devices, who buy books independently, will also face a potential additional expense in cloud storage if they want their eBook libraries to retain the ability to automatically sync between their devices, which they would not have had buying the same eBook from Apple.

Additionally, selling independently means the loss of access to anti-piracy Digital Rights Management (DRM) features, such as Apple's *FairPlay* DRM. Apple does not make this technology available to competing eBook stores, or to eBook reader applications on non-Apple devices. Apple also refuses to support alternative DRM systems within their eBook reader application.

Apple Vs. FastSpring; eBook Merchant Fees Compared:

FastSpring 5.9%				FastSpring 8.9%				Apple Books 30%			
"Net" Price		\$5.00		"Net" Price		\$5.00		"Net" Price		\$5.00	
GST		\$0.50		GST		\$0.50		GST		\$0.50	
Customer Price		\$5.50	\$5.50	Customer Price		\$5.50	\$5.50	Customer Price		\$5.50	\$5.50
Less:				Less:				Less:			
FastSpring Sales Service Cut:	5.9%	\$0.32		FastSpring Sales Service Cut:	8.9%	\$0.49		Apple Sales Service Cut:	30%	\$1.65	
Plus: USD0.95		\$1.26		Or: USD0.75		\$1.00					
Sum:		\$1.59	-\$1.59	Higher Value:		\$1.00	-\$1.00			\$1.65	-\$1.65
GST Paid Direct By FastSpring:				GST Paid Direct By FastSpring:				GST Paid Direct By Apple:			
FastSpring Payout Currency Conversion Fee:				FastSpring Payout Currency Conversion Fee:				GST on Apple Cut, charged to publisher for Sales Service:			
2.5%				2.5%				10%			
-\$0.09				-\$0.10				-\$0.17			
Plus:				Plus:				Plus:			
GST for Sales Service Claimed back by Publisher via BAS:				GST for Sales Service Claimed back by Publisher via BAS:				GST for Sales Service Claimed back by Publisher via BAS:			
								\$0.17			
Net Revenue:				Net Revenue:				Net Revenue:			
\$3.33				\$3.90				\$3.35			

FastSpring 5.9%				FastSpring 8.9%				Apple Books 30%			
"Net" Price		\$10.00		"Net" Price		\$10.00		"Net" Price		\$10.00	
GST		\$1.00		GST		\$1.00		GST		\$1.00	
Customer Price		\$11.00	\$11.00	Customer Price		\$11.00	\$11.00	Customer Price		\$11.00	\$11.00
Less:				Less:				Less:			
FastSpring Sales Service Cut:	5.9%	\$0.65		FastSpring Sales Service Cut:	8.9%	\$0.98		Apple Sales Service Cut:	30%	\$3.30	
Plus: USD0.95		\$1.26		Or: USD0.75		\$1.00					
Sum:		\$1.91	-\$1.91	Higher Value:		\$1.00	-\$1.00			\$3.30	-\$3.30
GST Paid Direct By FastSpring:				GST Paid Direct By FastSpring:				GST Paid Direct By Apple:			
FastSpring Payout Currency Conversion Fee:				FastSpring Payout Currency Conversion Fee:				GST on Apple Cut, charged to publisher for Sales Service:			
2.5%				2.5%				10%			
-\$0.20				-\$0.23				-\$0.33			
Plus:				Plus:				Plus:			
GST for Sales Service Claimed back by Publisher via BAS:				GST for Sales Service Claimed back by Publisher via BAS:				GST for Sales Service Claimed back by Publisher via BAS:			
								\$0.33			
Net Revenue:				Net Revenue:				Net Revenue:			
\$7.89				\$8.78				\$6.70			

FastSpring 5.9%				FastSpring 8.9%				Apple Books 30%			
"Net" Price		\$20.00		"Net" Price		\$20.00		"Net" Price		\$20.00	
GST		\$2.00		GST		\$2.00		GST		\$2.00	
Customer Price		\$22.00	\$22.00	Customer Price		\$22.00	\$22.00	Customer Price		\$22.00	\$22.00
Less:				Less:				Less:			
FastSpring Sales Service Cut:	5.9%	\$1.30		FastSpring Sales Service Cut:	8.9%	\$1.96		Apple Sales Service Cut:	30%	\$6.60	
Plus: USD0.95		\$1.26		Or: USD0.75		\$1.00					
Sum:		\$2.56	-\$2.56	Higher Value:		\$1.96	-\$1.96			\$6.60	-\$6.60
GST Paid Direct By FastSpring:				GST Paid Direct By FastSpring:				GST Paid Direct By Apple:			
FastSpring Payout Currency Conversion Fee:				FastSpring Payout Currency Conversion Fee:				GST on Apple Cut, charged to publisher for Sales Service:			
2.5%				2.5%				10%			
-\$0.44				-\$0.45				-\$0.66			
Plus:				Plus:				Plus:			
GST for Sales Service Claimed back by Publisher via BAS:				GST for Sales Service Claimed back by Publisher via BAS:				GST for Sales Service Claimed back by Publisher via BAS:			
								\$0.66			
Net Revenue:				Net Revenue:				Net Revenue:			
\$17.00				\$17.59				\$13.40			

(Currency conversion as of 30/03/2022)

In Summary:

- Apple's Reading Application has lost functionality over time. That functionality had previously justified the investment of time in producing eBooks specifically for Apple's eBook Reading Application, and therefore Apple's eBook sales platform, and Apple's mobile devices.
- Apple's sales service is more expensive (30% of retail price) than selling independently via the web.
- Alternative eBook stores on Apple-branded devices are forced to choose between a lower quality web-based purchasing experience, in order to avoid Apple's 30% merchant fees, or an uncompetitive royalty share for their publishers, with whom they must split the 70% remaining after Apple's take. Those publishers can get the full ~70% of retail price directly from Apple.
- eBooks purchased from independent eBook stores face the following disadvantages within Apple's eBook Reader Application:
 1. Some organisational features within the *Apple Books* reading application, are not available to eBooks purchased via independent sources which compete with Apple.
 2. Independently purchased eBooks incur costs that do not apply to eBooks purchased from Apple, namely the requirement that all independently sourced documents and eBooks in a user's eBook library must have a copy stored on *iCloud*, Apple's separate subscription-priced cloud storage service, in order to synchronise between devices.
 - An eBook purchased from Apple consumes zero *iCloud* storage quota with full synchronisation of bookmarks, user created notes etc.
 - An eBook purchased independently consumes its full size of *iCloud* storage quota, as long as any library synchronisation function, for any eBooks, is enabled.
 3. Independently purchased eBooks do not have access to anti-piracy Digital Rights Management within Apple's eBook Reader Application.

An Overview of Apple's eBook Platform:

Apple's eBook ecosystem features a number of intertwined components. The customer-facing aspect of this system is the *Apple Books* application. Exclusive to Apple-branded devices, *Apple Books* combines book library organisation, with book reading, and the sole purchasing storefront for the *Apple Books Store*.

Apple Books Application:

1. An on-device library for storing and organising eBook-type documents.

- Stores eBook documents sourced from the *Apple Books Store*, and those manually added via web downloads or file transfer.
- Certain user interface functionality, such displaying books from a series as a distinct collected group, is only available to books purchased from the *Apple Books Store*.
- Library contents are automatically synchronised with the user's other Apple-branded devices, exclusively via Apple's cloud storage service *iCloud*.
 - *iCloud* synchronisation is an all-or-nothing function. Users cannot choose to exclude individual eBooks from being synchronised.
 - *iCloud* is a separate Apple service, used by Apple and third party products, with a free minimal tier, and larger storage options available as an additional paid subscription service.
 - **eBooks purchased from the *Apple Books Store* do not count against this storage quota**, as they are downloaded (optionally automatically) directly from the *Apple Books Store* onto each of the user's devices.

2. A reader function for eBook documents.

- Supports EPUB, Apple's proprietary .ibooks format, and PDF.
- DRM support is limited to purchases from the *Apple Books Store*, using Apple *FairPlay* DRM.
- Uses *iCloud*-synchronisation, if enabled, to keep the user's progress through eBooks consistent across devices.

3. The sole storefront for the *Apple Books Store*.

- *Apple Books* application is the only way to buy books from the *Apple Books Store*.
- Payment can only be made with an *AppleID*, which is linked to a credit card on file with Apple, or with Apple *iTunes Store* credit - e.g. from an *iTunes Gift Card*.
- Limits purchases to customers who own an Apple-branded device, as the *Apple Books* application is only available on Apple-branded devices.

Apple Books Store:

1. Merchant services for publishers to sell eBooks in the *Apple Books* application.

- Apple charges the customer's credit card for the retail price of the book.
 - Apple charges the publisher 30% (plus GST) of the retail price for their sales service.
 - Publisher receives the remaining ~67% of the retail price (3% GST can be reclaimed via BAS).
 - Publishers are not permitted to know any details of who bought the book, and access to geographic information about where sales originate has been reduced over time.
- Apple dictates pricing intervals for retail prices, eg \$3.99, rather than \$3.90, or \$4.
- Apple can refuse to accept a book for sale, and subjects every submitted book to a review process.

2. Hosting of downloadable files.

- Publishers upload their book, typically containing the full complete eBook, an extract version to be offered as a free preview, as well as promotional cover art, & screenshots.
- Apple assumes costs of distribution.
- Apple does not charge a distribution fee to publishers for books offered to the customer at no cost.

3. Management of errata updates.

- Publishers can upload new versions of their books, to correct errors, or change the book's content.
- Updates are free to the customer, and cannot be monetised.
- Updates go to the same review process as new books.

4. Digital Rights Management.

- Every book purchased through the *Apple Books Store* is watermarked to the AppleID of the purchaser.
- Optionally, a publisher can enable Apple *FairPlay* DRM for the book.
 - *FairPlay* DRM locks the book to the *Apple Books* application, as Apple does not license their DRM implementation to other applications.

Anti-Competitive Issues with Apple Books:

Any discussion of Apple's anti-competitive conduct with regards to eBooks should take into account Apple's 2013 conviction in the US District Court for conspiring with large publishers to fix the price of eBooks on an industry-wide basis.

Anti-competitive cartel behaviour, leveraging Apple's abuse of its gatekeeper position as the sole arbiter of whose competing bookstores could operate on Apple mobile devices (*iPhone / iPad*), and detailed within emails surfaced in the Apple Vs. Epic trial, was integral to the initial launch of Apple's eBook business.

It is therefore appropriate, that any examination of Apple's behaviour be conducted through a lens which considers ongoing anti-competitive acts as recidivism. This recidivistic behaviour reflects a failure of existing remedies, such as fines, or narrowly-targeted sanctions or regulation, to achieve meaningful reform, or to eliminate the anti-competitive tendencies within the company's culture.

Main Anti-Competitive Aspects of Apple's eBook Ecosystem:

Apple uses its gatekeeper power to exercise control over the availability and behaviour of applications on Apple-branded mobile devices. Apple ensures that publishers who sell eBook files independently, will find their products disadvantaged within Apple's eBook reader application. Conversely, publishers who attempt to create their own reader application to avoid that disadvantage, will find Apple can disadvantage their application as a whole.

The purpose of this control, is to protect Apple's rent-seeking revenue extraction, which can most simply be expressed as "*Apple believes it is entitled to 30% of all revenue generated on Apple mobile devices*".

1. Apple creates an anti-competitive advantage for its own eBook store, by tying user interface and functionality features within the *Apple Books* application, to whether the eBook was purchased from Apple's eBook store.
 - eBooks purchased from the *Apple Books Store* are provided a competitive advantage within the *Apple Books* application, enabling them to be grouped by series, so that they appear to be a separate collection within the user's eBook library within the *Apple Books* application. This enhanced organisational ability is not available to eBooks purchased from competing sources. It involves the addition of proprietary metadata, after the eBook files have been uploaded to Apple's servers. This process is performed manually by Apple support staff, in response to a request from a publisher. Independent eBook stores are unable to add this metadata to their book files.
 - Apple refuses to provide anti-piracy protections within the *Apple Books* application to eBooks purchased from legitimate non-Apple sources. This provides an unfair competitive advantage to the *Apple Books Store*, with the availability, and withholding of anti-piracy DRM features operating like a protection racket. The only way a publisher can to shield their eBooks from piracy within Apple's eBook reader application, is to sell them through Apple's (high-fee) eBook store.

2. Apple uses its *iCloud* business, a subscription-based cloud storage service, to effect a cross-subsidy for books purchased from the *Apple Books Store*.
 - Synchronisation of a user's *Apple Books* library between that user's devices is achieved by maintaining a copy of the library's contents on Apple's *iCloud* servers. Only Apple's *iCloud* service can be used for this task. Whenever an eBook is added on a device, it is copied up to the server (where it must remain), and then down to the user's other devices. Since the space on the server is subject to a quota, and paid for with a separate *iCloud* subscription plan, each eBook is subject to an imposed cost equivalent to its own size, as a proportion of that quota.
 - Apple does not include eBooks purchased from the *Apple Books Store* in this synchronisation process. Instead of copying the book to the server in order to distribute it to other devices, Apple downloads copies directly from the *Apple Books Store*, separately onto each device. They still have all the synchronisation functions, but they do not cost their size in *iCloud* server quota.
 - The user is not provided with the option to skip server-based synchronisation on a book-by-book basis. It is an all-or-nothing system, requiring users to give up the significant functional convenience of synchronisation, in order to avoid higher server costs, if they choose to buy eBooks from a non-Apple source.
3. Apple uses the cost of its merchant services, to create a competitive advantage for its eBook Store.
 - By pricing its merchant services at the same level it sets for its own cut of the retail price on the *Apple Books Store*, Apple ensures it is effectively impossible for a competing eBook store, which features in-app purchasing of eBooks, to compete with it on price.
 - Any competing eBook store will have to pay publishers AND meet its own costs out of the 70% remaining after Apple takes its cut. Whereas Apple can offer those publishers the full 70% if they publish on Apple's store directly.
4. Apple is able to control which applications are available on Apple-branded mobile devices, by using technical means to prevent the installation & operation of any application that has not been downloaded from Apple's own App Store.
 - Any developer or publisher who invests in creating an eBook Reader application which competes with the *Apple Books* application - for example, syncing libraries without using *iCloud* quota, or providing the organisation options Apple reserves for eBooks purchased on its own store, or by supporting multiple DRM schemes, would be completely at the mercy of Apple who, after the work had been completed, could simply refuse to allow the application into their store, effectively barring it from Apple-branded mobile devices.

5. Apple dictates the terms under which applications operate.

- eBook Applications offering in-application purchasing of eBooks, must use Apple’s merchant services for the purchasing process, or they are refused permission to exist on Apple-branded mobile devices. This ensures Apple can extract the same 30% of retail-price revenue from a sale on a competitors’s eBook store, as they would extract from the sale if it had been through their own store.
- eBook Applications relying on sales through a website are prohibited by Apple from mentioning their web-based sales system within their application. Or, from providing any link to their web store from inside the application. *(This situation is in flux, in response to current Dutch antitrust actions against Apple, and exceptions appear to be on a case-by-case basis.)*
- Apple retaliates against developers who refuse to provide 30% of their revenue to Apple, by enforcing an inferior web-based user-experience upon applications which use alternatives to Apple’s merchant services. This inferior user experience is not due to any intrinsic abilities of Apple to make “better” applications or user experiences than those of third party developers. It is created purely through the arbitrary denial of access to non-Apple in-app purchasing workflows, which could provide a user experience equivalent to that provided by Apple’s merchant services.

Apple uses its gatekeeper position to ensure that no developer is able to craft an eBook reader application, with an integrated eBook store, in competition with Apple’s own reader and store, unless they give Apple 30% of all their revenue, which is effectively exactly what Apple would have received from that developer’s customers if they had used Apple’s products and services.

This effectively disincentivises Apple from investing in its own eBook platform, denying consumers better Apple products. Simultaneously, it disincentivises competitors from trying to make better eBook platforms, as their efforts are always subject to the capricious whims of Apple, as to whether they’ll even be able to exist, let alone do so profitably.

Fundamental to Apple’s eBook business is the use, through forced bundling, of other non-related aspects of its business to provide competitive advantages that distort the market for eBooks. These advantages would not be enjoyed by Apple, if they were forced to compete on a level playing field, in which they were prevented from tying their eBook store to their eBook reader application, their eBook reader application to their cloud synchronisation service, their devices to their application store, and their application store to their merchant payment service.

The Fundamental Competition Problem:

The fundamental competition problem within digital platforms is a result of the ability of platform owners to use proprietary methods to integrate their separate products and services together, in a way that is not available to competitors of those products and services. This allows an inferior aspect of an integrated ecosystem to remain insulated from the competitive pressures that would otherwise force it to improve.

Central to this is ensuring the maximum cost to a user, in expense and in loss of functionality, in attempting to switch platforms, or even in attempting to switch one aspect of their digital life to a competing platform or solution.

Canonical examples of this can be found within Apple - the “butterfly keyboard” debacle, which for years saw Apple laptop computers shipping with a keyboard that was vulnerable to failure as a result of individual grains of dust, requiring out-of-warranty repairs costing hundreds of dollars per instance, only to happen again, and again.

Apple spent over four years including these inherently flawed keyboards on their laptops, and was able to delay the expense of retooling for a better design for so long, because no one else is allowed to make a computer that runs Apple’s macOS operating system. Without macOS, a computer user would have no access to proprietary software made by Apple, that only runs on macOS - such as Apple Books, and its associated eBook library.

Through the integration of their operating system business, with their hardware business, Apple insulated their flawed laptop keyboards from reasonable market competition, resulting in four years of consumers suffering lower-quality products than would have otherwise been available in a market free of integrative distortion - a market in which macOS could run on a different manufacturers laptops.

To expand on the theme of eBooks, and Apple - a customer who has purchased eBooks from Apple’s store would be faced with a significant disincentive to buy a mobile device, or computer, from any other company, since the books in their eBook library cannot be transferred to the new device.

- Apple does not offer its eBook reader application on competitors’ operating systems.
- Apple does not allow eBook purchasing from its own eBook store without using its eBook reader application.
- Apple’s DRM ties books bought in its store to its own reader application.
- eBook stores are not required to allow customers to shift the licences for the individual eBooks between competing eBook store libraries.

- eBooks (generally) cannot be sold secondhand, to allow a customer to cash-out of one store's library format, and re-buy into a different store.
- This issue is an old problem with regards to all digital media platforms - customers are simultaneously only in possession of a *licence to access* an instance of the digital media and so therefore can't sell it secondhand, BUT they also can't shift the access licence to different formats of the same piece of media, because they've bought their licence from a specific source. Digital media has somehow been allowed to combine the downsides of physical media (locked to a single format), with the downsides of ephemeral media (cannot be resold).

Therefore, the cost of switching platforms, from an Apple-branded device to one of their competitors, isn't just the cost of the new device, it is also the cost of re-buying all the eBook content the user has bought from Apple's eBook store. Again, this is content for which they own a *licence*, not a physical instance. There is no reason it should be tied to a specific format.

From a technical standpoint, there is no reason Apple's eBook store should be tied to Apple's eBook reader. Apple could very easily offer a web-based storefront for their eBook store, as they do for the sale of all their hardware products. Additionally, there is no reason Apple's eBook reader should be tied to their devices. eBooks are primarily standards-based documents, based on web technologies, and Apple's own reader application *Apple Books* is merely a modified web browser, whose core rendering engine and technologies (*WebKit*) already operate across multiple operating systems and devices.

The problem is integration itself - the ability for any company to require that in order to use one of their products, a customer must also buy another of their products, even to the extent that the two products are claimed to be the one, singular immutable thing, as Microsoft claimed with *Internet Explorer*, and *Windows 95*. We are still living in the aftermath of the failure of political will that saw the US Department of Justice largely abandon its pursuit of Microsoft after securing an antitrust conviction. Behaviours were modified, at least for a while, but the fundamental structural problems of digital platform markets have remained. As long as platform owners are able to retain control over how content within their platforms is accessed, modified, & transferred, consumers will remain at their mercy.

Merely breaking up a single company has never solved a problem in the longer term - fragments of larger companies retain the anti-competitive urge, they merge, regrow, and retain the same mindsets in their management culture. Merely levelling fines has not changed a company culture in the longer term - many companies simply treat fines as a cost of business.

Competition within digital platforms requires a broader solution, one which imposes equal competitive access as the fundamental structural design paradigm, for every aspect, of every level, of every digital platform product and service.

A Suggested Solution:

It has been 21 years since the landmark ruling in the case of Microsoft Vs. the US Government, in which Microsoft was found to be in breach of the Sherman Antitrust Act, by illegally tying its web browser *Internet Explorer*, to its computer operating system, *Windows*. Microsoft's goals in doing so, were to extend its existent monopoly over computer operating systems platforms, into the new market of internet platforms, in order to defend its operating system platform against irrelevance in the face of the new internet platforms. A company does not need the insight and agility to predict the road ahead, if they can, instead, direct its path.

Microsoft avoided a forced breakup, by agreeing to binding modifications in its behaviour, intended to foster competition within the internet browser market, and thus for internet platforms.

To this day, Microsoft is still facing accusations of anti-competitive conduct with regards to its new browser, *Edge*. Each new version of Microsoft's *Windows* operating system, seems to introduce a new barrier to the use of competitor's browsers on *Windows*, which must again be wound back through the efforts of public pressure, and antitrust enforcement jurisdictions.

This battle, a battle to simply make software platform creators follow the rules, never seems to end. Why?

Why do societies, economies, and lawmakers tolerate the sort of disregard for rules, for the common good, from digital platform owners, that would be unacceptable in any other industry?

We don't allow engineers to disregard the safety margins of materials strength over and over. We don't keep giving third, fourth and fifth chances to surgeons who disregard ethics and patient safety. We insist on accessibility standards for our urban landscape.

Why should software, upon which arguably almost every human being is inextricably reliant to varying degrees, not be regulated as thoroughly as the architecture of our homes and workplaces? We have regulations for door widths, door handles, staircase lengths, stair tread depth, ceiling heights, flammability, insulation, efficiency - every single aspect of a building has a regulation which standardises it in terms of how the various components within interact with it, and with each other.

Despite all this, architecture has not suffered from its regulation. It has not stagnated, or become bogged down. For all the regulation, architecture has thrived, from the domestic vernacular, to the dreams given form of Gehry and Hadid.

Why not software and digital platforms?

If the problem, as previously stated, is that software platforms use control over points of integration to effect anti-competitive distortions to free markets, then the solution should be to take control over the points of integration away from platform owners. **The solution should be to regulate the points of interconnection in digital platforms, as thoroughly as we regulate architecture.**

Regulating Interconnection:

Regulations within the software and digital platforms field have always failed, primarily through their specificity to the particular problem they target. This is unsurprising, given the pace of change within software platforms, and that software as a profession, is a trade whose entire domain is finding creative ways to work around problems.

The only way to solve the problem of software platforms using the ability to tie their products together, in order to grant those products anti-competitive advantages, or to protect them from competitive challenge, is to fundamentally break the ability of software companies and platforms to extract unique competitive advantage from the interconnection of their different products and services.

Regulators must mandate that every point of interconnection between hardware, operating systems, applications, filesystems, media stores, cloud services, & device services, be effected exclusively through openly documented processes. These processes must be free to use, free to implement, independently audited, and must be the only allowable form of interaction, for all parties.

Regulatory Consequences:

In practical terms, this regulation would mean:

- **Hardware Vendors:**

- Would be required to publicly document the processes to interact with their products, such that any competitor could make an operating system for, or application to interact with their hardware.
- Would be prohibited from using any methods not in their public documentation, to create an operating system for, or application to interact with their hardware.

- **Operating System Vendors:**

- Would be required to publicly document the processes by which their operating systems interact with hardware, such that any hardware maker could make their product equally compatible with the Operating System.
- Would be prohibited from using any methods to interact with hardware that are not part of their public documentation.
- Would be required to publicly document every method by which applications, files, and data storage systems are written to work on their operating system.
- Would be prohibited from using any method not in the public documentation, to create applications, files, or data storage systems for their own operating system.
- Would be prohibited from privileging any aspect of the operation of their own software products or platforms, on their own operating system.

- **Application Vendors:**

- Would be required to publicly document the processes by which their applications read, write, and store data, such that any competing application vendor could create an application capable of reading, modifying, and saving documents or data, while maintaining full data compatibility (this would include the requirement for social media and server-based applications to allow independent, equally privileged third-party clients).
- Would be prohibited from using any method not in the public documentation, to read, write, or store data.
- Would be prohibited from differentiating between documents modified in competitors applications, versus those which have stayed within their own.

- **Media Store Vendors:**

- Would be prohibited from tying their content store, to a particular hardware vendor, operating system vendor, or viewing or reading application.
- Would be required to provide their DRM specifications to all viewing or reading applications to enable interoperability of content.
- Would be prohibited from locking content purchased to a particular user, allowing for content to be shifted, resold or inherited.

- **Cloud Storage Vendors:**

- Would be required to publicly document the processes by which applications and operating systems can access their storage and synchronisation capabilities.
- Would be prohibited from tying access to their storage and synchronisation capabilities to any application, device, or operating system.
- Would be prohibited from privileging any application, device, or operating system in access to their storage and synchronisation capabilities.

- **Device Services Vendors:**

- Primarily related to point of sale and Near Field Communication (NFC) support in devices. Device makers would be required to provide access to their hardware to any application wishing to use it. For example, Apple would be required to allow alternative banking wallet applications to access the NFC hardware in *iPhones*.
- Services making use of NFC hardware would be prohibited from tying their service, to their application. If a device user prefers to use the device vendor's NFC payment infrastructure / wallet (for example *ApplePay*), their financial provider may not refuse to provide connectivity, or may not provide reduced utility or increased cost in providing connectivity, to the device user.
- Point of sale operators may not refuse to provide service to an NFC device, based upon the device owner's choice of NFC payment infrastructure / wallet.

Benefits:

Fundamental to this regulatory scheme, is that while any aspect of digital platforms are allowed to be opaque black boxes internally, the places, and ways in which they talk to any other aspect must be in the light. The connections must be standardised, to the extent, that any one vendor, or component can be removed, and replaced with a competitor, and so long as the connection standards are followed, the user's overall utility must be able to continue.

The major benefit of this, will be to embed competitive improvement of products and services into the very fabric of digital platforms. All digital platforms will be forced to compete on what they are right now, rather than on what they were when they built their existing userbases. They will need to stand on their own feet, on the value they provide individually, rather than propped up by integration with a vendor's other products.

A vendor's performance will depend on how comfortable they can make their furnishings, not on how unbreakable are their bars, how secret are their handshakes, or how un-pickable are their locks.

The benefit to vendors subjected to this regulatory scheme is also significant. In software development, there is a practice known as "*eating one's own dogfood*" - i.e. using the same tools to do one's own job, that one makes for other people to do theirs. For example, a company that makes customer management software, using its own product to manage its customers. For operating system vendors, *dogfooding* typically relates to using the same tools and methods to make software that is bundled with the operating system (or to make applications also sold by the operating system's vendor), as are provided to third-party developers to make independent software.

This *dogfooding* forces the operating system vendor to experience the same pain-points, errors and flaws in their own development tools and products, that users and independent developers go through. As a canonical example, a recent statement on Twitter from a former Apple engineer, who having left the company to create their own independent applications, was startled by how difficult it was to create applications for the *Apple Watch*. The reason was that while inside Apple, he had access to development tools that Apple does not provide to outside developers. It was only once he was outside the company, and forced to eat Apple's metaphorical dog food, that he realised how unpalatable it was.

When digital platform developers, and software companies in general, are put onto an all-dogfood diet, it forces them to make better products. It makes their own internal development processes stronger. It enforces the need to document the work done - something that is often skipped for expediency, or cut for budgetary savings. They are prevented from taking shortcuts, or hacking together fragile cross-product connections via private methods that would never withstand scrutiny by independent developers.

The result of the openly-connected, and all-dogfood-diet digital platform world, will be better tasting, and more nutritious digital platforms, for the whole of society.