

*How will we interact with the #WebWeWant?*

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*Position paper*

# Not in My Castle: The Case for the Web, Not App Platforms, as a Model for Digital Home Ecosystems

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Common Law has always recognised a person's house as his or her castle; an innermost sanctum where one's right to be left alone is protected in all but the most extreme of situations. But the so-called "Digital Home", instrumented, monitored and regulated by a so-called "Internet of Things" may very drastically change this, turning every last detail of every last personal and private activity into an information commodity.

Let's step back for a moment to see how this might happen. The battle for our pockets was lost a few years ago; even as of the beginning of 2014, 98% of the mobile market has been locked in one of two dominant ecosystems, Android and iOS. Each particular platform places great power and responsibility with the companies behind them, for example, as *orchestrators*-establishing what particular devices are able to do, and how they will do them, as *gatekeepers*-regulating both the apps permitted and activities within them, and perhaps most significantly, as *data controllers*-managing the personal data of millions of users.

All things being equal, the likely outcome of the battle of the Digital Home, will be identical to that of mobile – in fact, potentially dominated by the same exact players. But I argue that, in the setting of the home, this outcome would be a much larger and tragic setback for privacy, personal autonomy, freedom from coercion, and the growth of a fair and open market for all – than even our smartphones. Moreover, I argue that no other setting provides a clearer motivation nor appropriate constraints for the use of emerging decentralised web and Linked Open Data technologies than the home, as we discuss next.

The home is very different from a mobile phone, but provides a very good analogy for why we don't want a single-ecosystem home controlled by a singular, monolithic entity. The way that each of these ecosystem providers have behaved in the smartphone setting, has made a number of things clear about intentions and practices such entities have that are likely to persist for the foreseeable future.

**1. App Platform providers are incentivised to commodify everyone's personal data.** Personal data "is the new oil", and drives both directly and indirectly the valuation of current platform providers. Thus, it will be only natural for providers to continue to do so at even greater levels through home integration.

**2. App Platform providers are not incentivised to interoperate.** While the Web grew on interoperability, app platforms remain as incompatible as ever, in part due to their wanting to keep users from switching away to the other platform, and to build loyalty with users through exclusive services. This, however, essentially forces app and device manufacturers to custom build bespoke offerings for each.

**3. App Store culture kills sharing, creative, free innovation** – The kind of massive innovation we have seen result from the Free and Open Source Software (FOSS) movement and the open standards of the Web stand in stark contrast to the “monetise everything” culture of the mobile app environments, in which the most trivial apps are instrumented to be monetised to the maximum. Instead, of people freely sharing and extending each others’ work, app stores promote essentially reproducing, ruthlessly cloning and re-branding the status quo. (The irony in this is that most apps benefit heavily from Free and Open Source software products, tools and capabilities, attempting to commercialise functionality on top of them, while remaining closed themselves).

**4. Closed ecosystems are seldomly very modular, extensible** - Open platforms such as the Web and FOSS operating systems are designed to be extensible through the use of standard protocols, modular interfaces and reusable toolchains and components that extend functionality for all other applications and services on the platform. Examples from the Web include REST APIs, standard filesystem plugins that allow computational devices to read new kinds of files, HID device drivers that introduce a new interaction technique to all apps, and so on. In today’s mobile platforms, it has become clear that App Platform providers are reluctant to allow such extensibility by “third-parties”, instead wanting to dictate what shared resources can and should exist on the system, and how such functionality is shared across apps.

Given these observations, we ask – do we want this to happen to our homes, after it has happened to our phones? There are a huge number of potential dangers in going down this route. First, from #1 above, platform providers will remain information brokers for personal information, amassing an even more complex, accurate and intimate pictures of our lives. The potential for this information about activities in the home to be misused when aggregated vastly outnumbers even similar dangers for current smartphone-only data. Second, due to #2 and #4 above, rather than people being able to extend their homes in the ways he or she wishes, one will only be able to use devices that are desired to interface with the specific platform we have chosen. In a Digital Home where there is only one platform in the ecosystem, people will remain entirely at the mercy of the platform provider when it comes to the ways their home is run, the information that is captured, and what upgrades to functionality or software might do to change how one’s home works. In other words, there will be no ways for individuals to future proof themselves against obsolescence, or to protect themselves from the whims of their platform providers.

Instead of iOS or Android, I would argue that a much better analogue for the Digital Home Ecosystem would be one part an Open Source core functionality, ala Linux, two parts interoperability ala the Web. In particular, if we instead imagine an ecosystem where iOS, Android, Linux, alongside our own, DIY-concocted hardware-software contraptions created by us could deeply interoperate through open standards, standard representations and interfaces, we now have a very different image of the future Digital Home. Instead of new components, like today’s apps, providing one very thin and very vertical piece of standalone functionality (much as our home appliances do today), a multiplicity could emerge from the collective capabilities offered. Moreover, instead of being locked-in to a

particular vendor, individuals would have protection against changes in terms of service, product cancellations, or unwanted features by simply being able to swap out a vendor's device or system with another's with the desired functionality.

Standards and an open software/sharing culture only go part of the way towards such a vision. A community also needs to drive the development of technology to make such interoperability happen and to build applications, interfaces and fundamental services to link it all together. To truly empower individuals with their to "build their own digital home", for example, applications could allow people to craft their own home data structures and services out of suitable to their particular family's needs. Powered by linked-data based representation transformation engines, such applications could interoperate with each appliance or component vendor's particular representations. Finally, to avoid the potential privacy pitfalls of centralised data aggregation, all of the data collected collected within the home could be kept encrypted in a network of decentralised personal data stores under the control of the individual.

If such a vision of Digital Homes is achieved, then our homes will become our digital castles whose perimeters we control, with boundaries that become selectively permable in the ways we desire instead entirely in the ways dictated by a handful of platform providers.