SimpleWay Technologies Ltd.

UXify Ecosystem

Digitalization of our society and economy continues to gain momentum. By 2030, each user will have, on average, four times (4x) more devices compared to 2017. This poses challenges for current technologies due to data synchronization limitations and increased device switching friction, which lead to an inconsistent user experience for you, the user. It's time to switch from having a "collection of devices" to having a seamless, personal and unified ecosystem where all your devices co-exist with each other. Your "digital workspace", that is, your data, applications, settings and user experience should always be current and ubiquitous.

At SimpleWay Technologies we have created the innovative UXify concept so that you can stay in touch with your digital workspace all the time. The patented Uxify technology provides you with a seamless, personal and unified digital ecosystem by keeping your digital workspace current, ubiquitous and private. The patented UXify technology with its combination of user-controlled UXify hub storage, and common operating system (OS) for devices to load and boot over private direct connections answers the challenges posed by increased digitalization to current technologies.

Several market trends such as development of unified OS, increased user need for better device interoperability and user control, and regulatory developments show the clear need for a technology like the UXify. Technological trends such as improvements in connection, storage, charging and energy-efficient technologies will increase feasibility and attractiveness of UXify in the future. By providing a seamless, personal and unified ecosystem, the UXify technology will yield many benefits for you, the user.

UXify. Different devices - unified experience

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What is UXify?

The UXify concept

Digitalization of our society and economy continues to gain momentum. This is driven by trends such as the growth of the Internet of Things (IoT), where objects and people are interconnected through communication networks and report about their status and/or the surrounding environment. IoT will continue to be one of the key technology trends over the next decade. The number of networked devices in operation is estimated to grow from 27 billion devices in 2017 to 125 billion devices by 2030, which is an estimated cumulative annual growth rate (CAGR) of 12.5%.[1]

Given these growth trends, if the global population grows from 7.6 billion in 2017 to 9.8 billion in 2050 as anticipated [2], the number of devices per person increases from 3.6 devices per person to 14.5 devices per person worldwide. Users like you will therefore have four times as many devices by 2030 compared to 2017. At the same time a number of challenges and issues are being revealed, related to everything from security to connectivity to integration, with many of these issues being intertwined.

These challenges leave users feeling like they have a “collection of devices”, not a seamless, secure and private digital ecosystem.

SimpleWay Technologies’ innovative UXify technology takes a giant step forward towards addressing this problem. To understand the UXify concept, we need to first understand the concept of a user’s “digital workspace”. Your digital workspace is your data, applications, settings and experience. So that you feel like you are experiencing a seamless, personal and unified ecosystem, you need your digital workspace to be current, ubiquitous and private.

A diagram of the UXify concept is shown in Figure 1. The heart of the UXify concept is the UXify Hub, which you control. The UXify Hub could be a smartphone or, for example, a wearable device. Your UXify Hub stores a common operating system (OS) and your digital workspace. Your devices connect to your UXify Hub, load the common OS, and

[1] https://sst.semiconductor-digest.com/2017/10/number-of-connected-iot-devices-will-surge-to-125-billion-by-2030
[2] https://www.un.org/en/desa/world-population-projected-reach-98-billion-2050-and-112-billion-2100

boot this OS. Since you control your UXify Hub, and your devices connect privately to your UXify Hub, your digital workspace is privately and securely synchronized between your devices. Direct connections help you enjoy faster and more reliable synchronization, leading to a more current and ubiquitous digital workspace. You enjoy a more consistent user experience due to a shared operating system and software environment across all devices.

It's time. It's time for you to switch from having a "collection of devices" to having a seamless, personal and unified ecosystem where all your devices co-exist with each other.

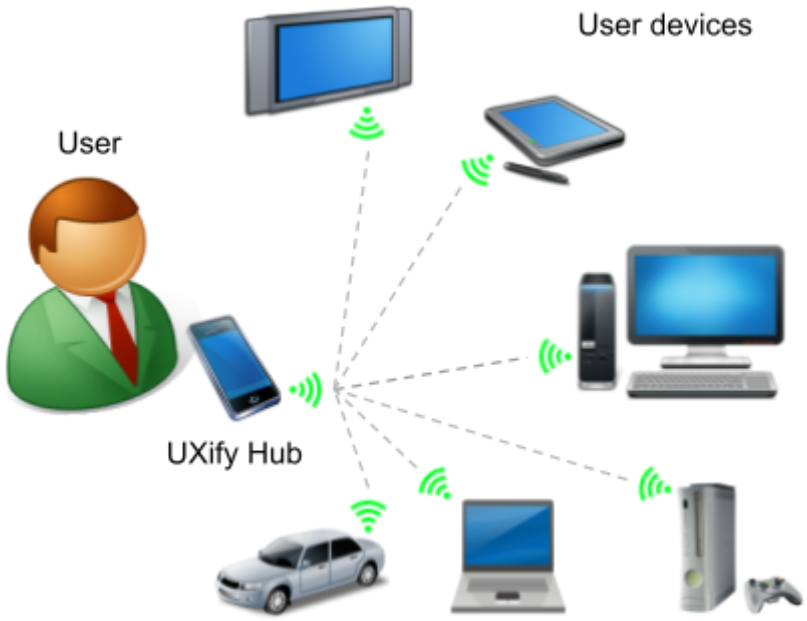

Figure 1: The UXify Hub connected to your devices via private, direct wired/wireless connections

How does the UXify concept resolve challenges posed by current approaches?

As explained above, the rapid growth in the digitalization of society poses challenges. Three key challenges posed are:

1. Synchronization
2. Device switching friction

3. Inconsistent user experience across devices

Synchronization

Three current synchronization techniques in use are:

- Cloud-based synchronization
- P2P-based synchronization
- Local synchronization

As will be seen below, these approaches suffer from the following issues to one extent or another:

- Architecture limitations and slow networks / additional latency limit synchronization scope and speed.
- Privacy and / or security risks.
- Loss of connectivity means loss of synchronization as well.

These will be explored further in detail below.

Problems with current synchronization techniques: Cloud-based synchronization

Cloud-based synchronization is the most commonly used synchronization technique today. Traditional cloud-based sync solutions, such as Google Drive, Dropbox, and iCloud, primarily focus on synchronizing specific data types - mostly user files (documents, photos, and videos) and, in some cases, app-specific data (such as browser bookmarks or notes). However, these systems do not provide full synchronization of the entire user workspace, leading to a suboptimal experience across devices.

Scope of Synchronization:

Since cloud sync primarily transfers files rather than the full system environment, users often face inconsistencies when switching between devices. Applications may need to be reinstalled, settings reconfigured, and software updates manually applied on each device. Even when certain apps offer cross-device syncing (such as web browsers syncing bookmarks and history), each application handles it separately, requiring multiple sync mechanisms rather than a unified experience.

Cloud sync does not extend to the operating system, installed software, or system configurations. This means that:

- A user's workflow may differ between devices due to variations in software versions and settings.
- Some applications and tools might not be available on all devices, requiring workarounds or alternative solutions.
- Updates must be managed separately on each device, leading to inconsistencies in software versions and potential compatibility issues.

Moreover, cloud sync is mostly a passive synchronization mechanism. It doesn't understand or synchronize the user's current state or running processes. If you are working on a document on your laptop and need to switch to your tablet, cloud sync will ensure the file is available, but it won't transfer your active work session. You'll need to manually reopen the file, navigate back to your place, and restart your workflow.

Potential Privacy Issues:

Today's cloud-based synchronization solutions suffer from privacy and security risks inherent to centralized storage. Centralizing storage means that data belonging to a large number of users is located in one facility. This incentivizes hackers to break into such facilities, because when they get in, they don't just get access to one person's data or assets, they get access to data belonging to all the users. Even the world's best and most funded technology teams cannot protect users' data adequately, as evidenced by recent major hacks and breaches, for example, iCloud (2012), Yahoo (2013), Dropbox (2014), Equifax (2017), Uber (2016), Marriott (2018), Microsoft (2020), Facebook (2021), T-Mobile (2023), AT&T (2024).

Furthermore, a third party controls your data, not you. No doubt this concerns you, and you are not alone. In a 2019 survey[3]:

- 75% of respondents limited the amount of personal information that they shared online;

- 41% of users disagreed that data sharing improves their experience, compared to 22% who agreed; and

- 29% of users agreed that providing more data leads to better products and services, which is a decrease from 31% in 2017.

[3] https://www.rsa.com/content/dam/en/misc/rsa-data-privacy-and-security-survey-2019.pdf

Additionally, users often rely on insecure third-party networks such as public and unsecured Wi-Fi networks for cloud-based synchronization. This could leave users like yourself potentially exposed to a security threat.

Network Limitations and Reliability:

The speed and scope of synchronization is reliant upon the reliability and speed of your network connections. If you lose your network connection, then you lose your ability to synchronize data. If your network connection is intermittent or slow, this seriously affects your speed of data synchronization. It could also affect your scope of data synchronization. For example, large files may take a longer time to synchronize than small files.

Finally, you may have to depend on an expensive external connection to synchronize data. This could occur if you are, for example, outside of your cellular provider's zone, necessitating that you pay expensive roaming charges.

Problems with current synchronization techniques: Peer-to-peer (P2P)-based synchronization

Another alternative is P2P-based synchronization. In a P2P-based synchronization approach, each of your devices synchronizes data with peer devices without relying on a centralized storage facility. Examples include solutions proposed by Resilio[4] and Librevault[5]. Unlike cloud-based synchronization, P2P-based synchronization utilizes decentralized or edge storage solutions. Edge storage solutions are solutions which enable you to store your data and programs at the edge of a network, that is, on your devices instead of in a third-party storage facility. If a hacker wants to get access to data belonging to a large number of users, the hacker now has to attack devices belonging to all the users. This makes it unattractive to a hacker. Furthermore, users control their own data.

However, P2P-based synchronization has limitations. As your device count increases, each of your devices has to potentially synchronize data with all your other devices, thereby requiring more network connections and power usage to transmit data. Therefore, scalability with increased device count is a concern.

Similar to cloud-based synchronization, your devices may connect with each other over public and unsecured networks, leaving you open to potential security threats. Just

[4] https://www.resilio.com/
[5] https://librevault.com/

like cloud-based synchronization, P2P-based synchronization may be hampered by intermittent, non-existent or slow network connections. Also, synchronization could be an expensive proposition, as your device may have to synchronize with all of your other devices over, for example, a roaming connection.

Moreover, this approach suffers from the same scope limitations as the cloud-based solutions described earlier, due to its architectural design. Personalized settings, such as themes, accessibility options, input methods, network configurations, and even basic preferences like language and region, are not synchronized. Users must reconfigure these settings on each device individually to maintain a semblance of consistency. Each device may have different versions of applications installed, leading to compatibility issues and a fragmented user experience.

Therefore, while P2P-based synchronization resolves some of the issues faced by cloud-based synchronization, it does not resolve all the issues.

Problems with current synchronization techniques: Local synchronization

Another currently used synchronization approach is local synchronization. An example of such an approach is Tonido[6]. This is where your devices synchronize using a hub that you control. It resolves some of the issues faced by P2P-based synchronization and cloud-based synchronization. However, your devices need to connect to your local hub for synchronization, meaning that similar to cloud-based and P2P-based synchronization, you may face problems due to insecure or unreliable or slow or non-existent network connections. Similar to the other two options discussed previously, local synchronization also has the same drawbacks in terms of sync scope, resulting in an inconsistent application environment and incomplete synchronization of user profiles and customizations. This lack of continuity negatively impacts user engagement and satisfaction.

How does the UXify concept solve the problems faced by current synchronization techniques?

The architecture of UXify technology eliminates these limitations by enabling all devices to run in the same unified ecosystem with a consistent OS, application set, and user workspace. Instead of merely syncing pieces of data, it ensures that a user experiences an identical digital environment across all devices, without needing to worry

[6] https://www.tonido.com/

about manual software installations, system mismatches, or data inconsistencies. This leads to a seamless, truly continuous workflow, regardless of which device is being used.

Also, since you control the UXify Hub, and your devices connect to the UXify Hub using private, direct connections, your digital workspace is secure and private, unlike with the approaches above. Also, direct connections tend to be faster and more reliable, leading to a more current and ubiquitous digital workspace and eliminating the network speed and reliability limitations detailed above. A comparison of the UXify concept to current synchronization techniques is shown below in Figure 2:

	SIMPLEWAY TECHNOLOGIES UXIFY CONCEPT	CLOUD SYNCHRONIZATION (Drive, iCloud, Dropbox)	PEER TO PEER SYNCHRONIZATION (Resilio, Librevault)	LOCAL/PERSONAL SYNCHRONIZATION (TONIDO)
Sync scope	Broad scope due to shared OS and workspace	Limited by architecture and/or network restrictions	Limited by architecture and/or network restrictions	Limited by architecture and/or network restrictions
Sync privacy	Uxify Hub + private direct connections -> privacy and security	3rd party data storage and potentially insecure 3rd party networks	Depending on the implementation	Depending on the implementation
Sync connectivity	More reliable direct connections	Potentially intermittent or expensive 3rd party network	Potentially intermittent or expensive 3rd party network	Potentially intermittent or expensive 3rd party network
Sync speed	Fast due to direct connectivity	May be limited by 3rd party network and server performance	May be limited by 3rd party network and peers availability	Depending on the implementation

Figure 2: Comparison of UXify concept to current synchronization techniques

Device switching friction

You will often need to switch between devices for different uses. Currently this switching is not frictionless. For example, file editing using similar software running on different platforms may result in data corruption or loss. The data synchronization challenge further exacerbates this friction.

Two current techniques used to reduce device switching friction are:

- Hybrid devices
- Unified operating systems

These techniques have the following limitations as discussed below.

Problems with current techniques to reduce switching friction: Hybrid devices

A hybrid device is a device which combines different types of devices. Some examples include: 2-in-1 devices, convertibles, ASUS PadFone S[7], Samsung Dex[8], external graphics cards[9] and Miracast[10] technologies. Figure 3 shows different examples of current hybrid devices with their permanent and connectable/changeable components:

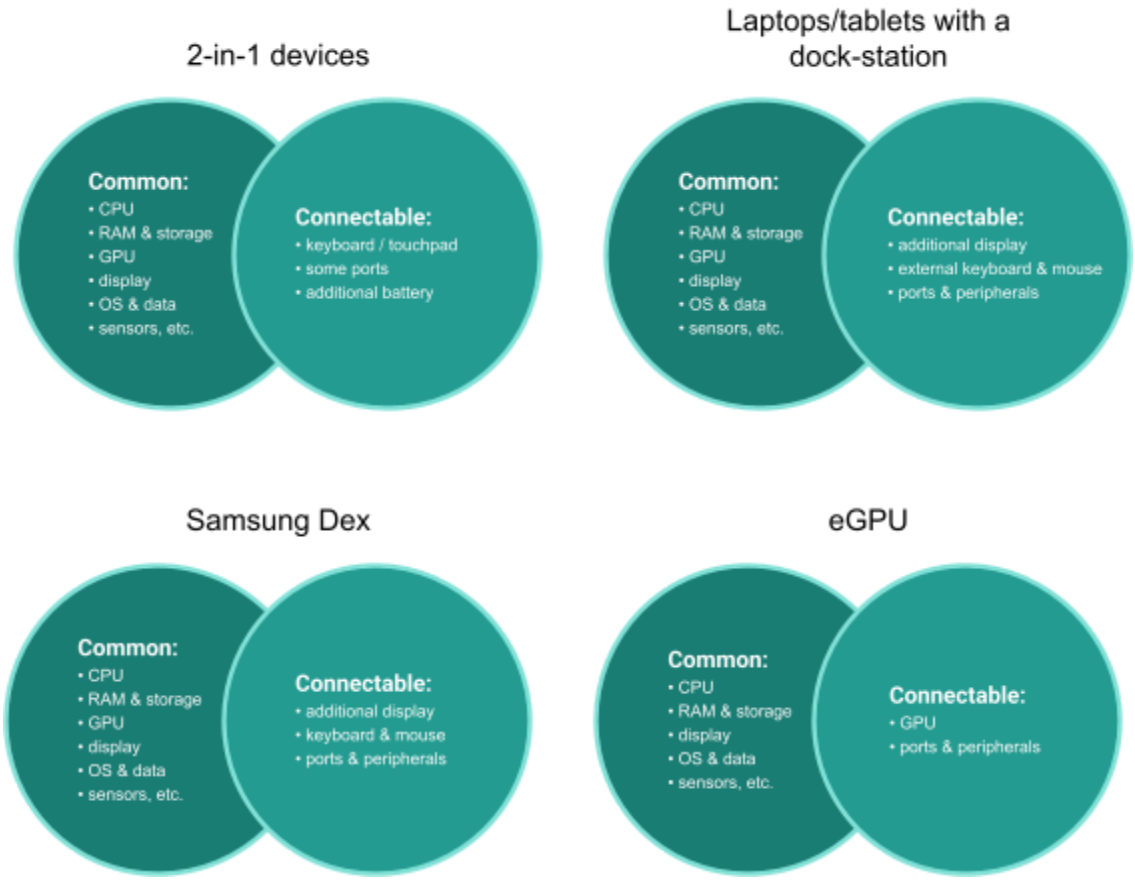

Figure 3: Various hybrid device combinations

[7] https://www.asus.com/Phone/PadFone_S_PF500KL/
[8] https://www.samsung.com/us/apps/dex/
[9] https://en.wikipedia.org/w/index.php?title=Graphics_processing_unit#External_GPU_(eGPU)
[10] https://www.wi-fi.org/discover-wi-fi/miracast

These hybrid devices aim to reduce device switching friction by changing form factor without changing the OS. However, in reality these hybrid devices are limited as:

- Using a hybrid device gives you the illusion of change without there being real change. For example, connecting a smartphone to an external display, keyboard and mouse gives the illusion of change to a powerful "desktop" mode. In reality, the performance is still the less powerful "smartphone" mode.
- Flexibility is limited as hybrid devices are usually limited to only two device type variations.
- You still need to synchronize data between hybrid devices and non-hybrid devices, which means that you suffer all the limitations of current synchronization techniques.

Figure 4 below shows how the UXify concept addresses the limitations of existing hybrid device combinations by providing the most flexible hybrid solution where every hardware component is connectable and can be fully utilized.

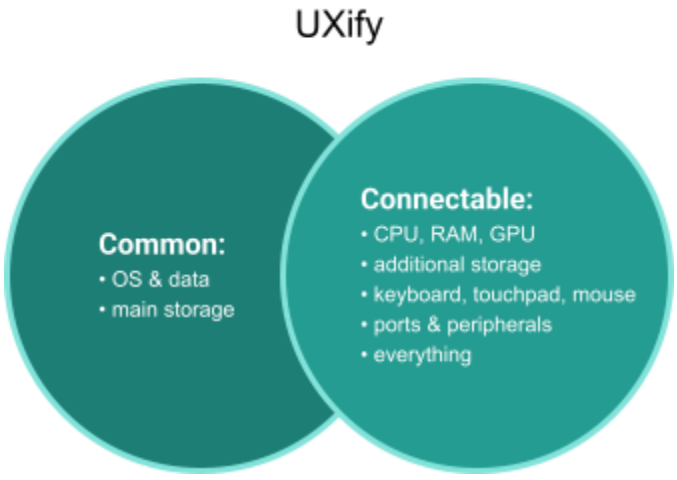

Figure 4: UXify concept's common and connectable components

Problems with current techniques to reduce switching friction: Unified operating systems

In order to address the issue of switching friction, manufacturers such as Google, Apple and Microsoft aim to build unified operating systems for different device types and form factors to reduce device switching friction. An example is Google Fuchsia. While this is somewhat similar to the UXify concept approach, these operating systems tend to rely heavily on cloud-based synchronization. Therefore you still experience the same problems as you have currently with cloud-based synchronization.

How does the UXify concept solve the problems faced by current techniques to reduce switching friction?

The UXify concept addresses the limitations of hybrid devices in the following ways:

- By loading and booting a common OS on all devices, you can switch to any device you want yet have the same experience.
- Unlike existing hybrid devices, the UXify concept allows you to optimize your performance from your ecosystem. For example, while the UXify is connected to a smartphone, it provides you with the flexibility of using a mobile device. When the UXify Hub connects to a desktop, you get the advantage of using desktop processing power in a form factor more suited to your needs.

Since the UXify concept uses private connections for synchronization, it does not suffer the issues of cloud-based synchronization. A comparison of the UXify concept to current techniques to reduce device switching friction is shown below in Figure 5:

	SIMPLEWAY TECHNOLOGIES UXIFY CONCEPT	HYBRID DEVICES SAMSUNG DeX **2-in-1 devices**	UNIFIED OS GOOGLE FUCHSIA
Device Switching Friction	Common OS and full data sync reduces friction	Performance limitations, limited flexibility, problems with current sync techniques add friction	Reliance on current sync solutions adds friction

Figure 5: Comparison of UXify concept to current techniques to reduce device switching friction

Inconsistent user experience

The problems outlined with current solutions lead to an inconsistent and sub-optimal user experience. Users often perceive themselves as having a “collection of devices” instead of a seamless ecosystem with an up-to-date and ubiquitous digital workspace. Having to use different OSes on different devices makes adapting and learning difficult.

The reliance on existing solutions for syncing different types of data leads to a fragmented user experience. Users often find themselves juggling various applications and platforms to achieve a cohesive workflow. This fragmentation can result in:

- Increased Cognitive Load: Users must remember which service to use for specific tasks, leading to confusion and inefficiency. The need to switch between different applications and interfaces can disrupt workflow and reduce productivity.
- Data Duplication and Redundancy: Users may inadvertently create duplicate files or data across different cloud services, complicating data management and increasing the risk of version control issues.
- Manual Selection and Management Necessity: Users are required to manually select which files and folders to synchronize. This adds complexity and potential for error. Users must actively manage their synced folders, ensuring they include everything important and avoid syncing unnecessary data.

Even in the case of unified OSes, reliance on cloud-based synchronization poses potential issues with privacy, reduced synchronization speed and scope.

Unlike existing solutions, our technology takes a holistic approach, synchronizing the entire user workspace, including applications, settings, OS, and user preferences. This fundamental difference in scope unlocks a new level of device interoperability.

UXify in essence

By giving you control over your digital workspace stored on your UXify Hub, and combining the use of private direct connections for data synchronization with a shared environment, the UXify technology addresses many of the limitations of current solutions, allowing you to experience a seamless, personal and unified ecosystem with a current and ubiquitous digital workspace.

Our solution is engineered to offer the following benefits:

- Unified Experience Across Devices: All components of the workspace, including OS state, applications, and settings, are in sync, enabling a true “follow-me” computing model.
- Reduced Administrative Overhead: Elimination of repetitive manual setups and configurations on new devices.
- Enhanced Productivity: By ensuring that every device is a mirror of the user’s complete work environment, the workflow remains uninterrupted and consistent.

This leads to a better experience for you, the user, and is the next step forward in the evolution of computing. In the next section we detail why UXify is now more relevant than ever.

Why is the UXify concept relevant now?

"No army can stop an idea whose time has come"

Victor Hugo

Several market trends show the clear need for a technology like the UXify concept. Technological trends are likely to increase the feasibility and attractiveness of the UXify concept for you in the future.

Market Trends

Manufacturers realize the need for many of the features of the UXify concept, and are moving in the same direction as we are. Additionally, there are user and regulatory trends which make the UXify concept more attractive going forward.

Demand for better devices interoperability and unification

Consumers all over the world seek for better and more fluent interoperability while using several devices. IT market leaders see the trend and try to deliver new products and technologies aimed at solving this need.

- Apple, which is known by its ecosystem, gives you connection and integration between different Apple devices, making them work more synced than usual. And that is one of Apple's major selling points.
- Microsoft, another IT giant also tries to provide their customers with better device interoperability. Think of a Microsoft account for Windows[11] devices. You can use the account syncing feature to sync some settings, such as themes, passwords, and language preferences across Windows devices.

[11] https://support.microsoft.com/en-us/windows/manage-devices-used-with-your-microsoft-account-d4044995-81db-b24b-757e-1102d148f441

- Another Microsoft product that follows this direction, is Microsoft Windows 365[12], which is a Windows based cloud PC. It gives access to the same environment on your devices, but it inherits all disadvantages from its cloud nature.

- Big hardware manufacturers also express the interest in new trends in device interoperability. Recently, for example, Lenovo presented Android-based desktop workstations[13], which gives you the same Android feel experience on mobile and desktop devices. And that fact shows that there is a confirmed potential for the Android platform in the new markets.

- Another telling example is Samsung, with its Samsung DeX technology[14]. Using it, a user can connect his phone to the monitor and keyboard, and use it like a desktop PC. So, it clearly aimed at giving additional workspace flexibility, but unlike UXify, it is limited by the phone's performance.

- Intel is also into the topic of multi-PC workflows. Take as example, its Intel Thunderbolt Share technology[15]. It allows you to share screen, keyboard, mouse and some files through Thunderbolt cable.

- As explained before, OS manufacturers like Google, Apple and Microsoft are pursuing development of unified OS[16] for multiple devices and form factors. This shows that manufacturers recognize growing user demand for seamless operation across devices with reduced switching friction.

All the trends mentioned above indicate the industry's shift toward the unification of personal computer devices, a process in which UXify technology will be a significant step forward.

User need for more security and privacy

As explained earlier, users are becoming more skeptical about the benefits of sharing data online and are increasingly limiting the amount of personal information they disclose.

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[12] https://www.microsoft.com/en-us/windows-365

[13] https://www.techradar.com/computing/desktop-pcs/lenovo-shifts-direction-with-new-android-based-pcs-and-they-look-powerful

[14] https://www.samsung.com/us/support/owners/app/samsung-dex

[15] https://www.intel.com/content/www/us/en/download/822291/thunderbolt-share.html

[16] https://www.digitaltrends.com/computing/computing-watershed-moment-coming/

Among some segments of users, for example, cryptocurrency users, there is increased user need for self-storage of sensitive data. Manufacturers have recognized and tried to meet this need. For example, Samsung Galaxy S10[17], HTC Exodus[18] and Sirin Lab's Finney[19] smartphones have secure onboard storage for cold storage of cryptocurrency. Apps to facilitate cold storage on user devices such as Coinomi[20] are also becoming more readily available.

All of this points to an increased user need for more security and privacy which current synchronization techniques are clearly not meeting. Furthermore, regulatory trends have led to an increase in awareness of issues surrounding user security and privacy, as will be explained below.

Regulatory trends

Many jurisdictions around the world are becoming increasingly protective of user privacy and security. The clear leader in this regard is the European Union (EU). The EU regards protection of personal data as a fundamental right, and has enacted the General Data Protection Regulation (GDPR)[21], which is seen as one of the most stringent sets of regulations of its kind. Under the GDPR, users have the right to access, rectify and delete personal data upon request, and can submit a complaint if they feel their data is being misused. Users can also object to having their personal data used for any other purpose than that specified at the time that consent was given.

Similar laws have been enacted in California, namely the California Consumer Privacy Act (CCPA)[22]. The CCPA came into effect on January 1, 2020; and is designed to enhance user privacy rights and consumer protection. It includes an opt-out right for sales of personal information.

Additionally, user awareness of privacy issues tends to increase after enactment of such legislation. For example, in Germany[23]:

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17 https://news.samsung.com/global/samsung-raises-the-bar-with-galaxy-s10-more-screen-cameras-and-choices

18 https://www.htcexodus.com/eu/zion/

19 https://shop.sirinlabs.com/

20 https://www.coinomi.com/en/

21 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016R0679

22 https://oag.ca.gov/system/files/attachments/press_releases/CCPA%20Fact%20Sheet%20%2800000002%29.pdf

23 https://www.rsa.com/content/dam/en/misc/rsa-data-privacy-and-security-survey-2019.pdf

- 70% of users felt more protective of medical data after GDPR was passed compared to 63%,
- 62% of users felt more protective of their communications post-GDPR compared to 52% pre-GDPR, and
- 42% of users felt more protective of location data post-GDPR compared to 29% pre-GDPR.

Another example of current regulatory trends is EU Digital Markets Act Regulation[24], which tries to remove gatekeeping from big tech companies to mandate interoperability of basic functions across various devices and ecosystems.

Technological Trends

Several technological trends are already making the UXify concept more feasible and attractive. These include platform changes, hardware and software improvements, and new technologies in areas such as UI and software frameworks in recent years. Figure 6 presents examples of current technological trends that enable the development of the UXify ecosystem.

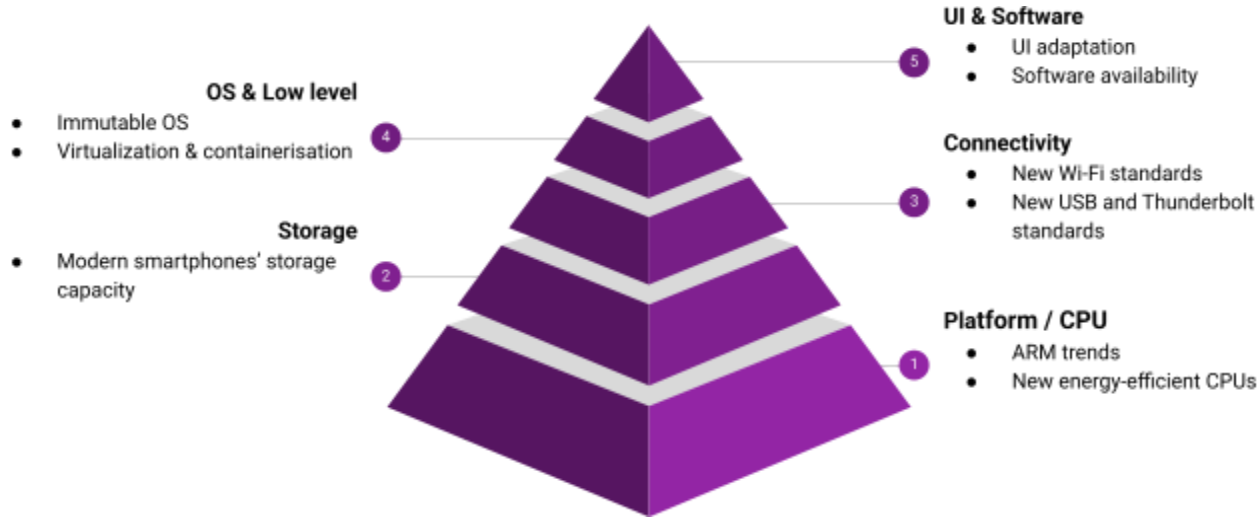

Figure 6: Technological trends

24 https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en

Platform and CPU trends

Industry leaders started to support the ARM platform. Apple has entirely switched to a homogeneous ARM platform[25]. Microsoft introduced and is actively developing Windows for ARM[26]. These trends create a good ground for our core feature: using the same OS on different computer devices (including mobile & desktop devices). In the x86 platform camp, Intel[27] and AMD[28] created new energy-efficient CPUs for mobile devices, which opens a door for using modern x86 CPUs in the most lightweight mobile devices.

So, whatever platform you think of, x86 or ARM, thanks to these trends of today, it's becoming much more feasible to create a homogeneous CPU and OS platform for a combined smartphones and laptops/desktops ecosystem.

Storage capacity

With the ever-improving density of storage, mobile device storage capacity continues to improve[29]. For example, the Samsung's Galaxy S24 Ultra storage options could range from 128GB all the way up to 2TB[30]. It is likely that the introduction of new denser storage technologies will drive this trend further.

Storage capacity of modern smartphones is already comparable with laptop/desktop storage, and enough for full fledged OS, apps and personal data in the UXify ecosystem hub.

Improved connection technologies

It is likely that you will use Wi-Fi to set up connections between the UXify Hub and your devices for several reasons:

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[25] https://en.wikipedia.org/wiki/Mac_transition_to_Apple_silicon
[26] https://learn.microsoft.com/en-us/windows/arm/overview
[27] https://wccftech.com/intel-lunar-lake-to-feature-a-brand-new-cpu-architecture-built-from-the-ground-up-perf-watt-focused-at-mobile/
[28] https://videocardz.com/newz/amd-ryzen-z1-apu-series-can-operate-with-9w-tdp
[29] https://www.forbes.com/sites/marcochiappetta/2019/01/30/heres-why-your-next-smartphone-will-have-1tb-of-storage/#5f1ff39430af
[30] https://www.phonearena.com/news/samsung-galaxy-s24-ultra-storage-options-128gb-2tb-rumor_id150245

- Wi-Fi is the most used wireless connectivity technology in the world today. It can be found on almost every computer device. This makes it a technology of choice for the connections.
- Wi-Fi can be made secure and private.

There are several trends which will make Wi-Fi even more attractive in the future.

- Currently, Wi-Fi speeds are comparable to mainstream storage interface speeds as shown in Figure 6:

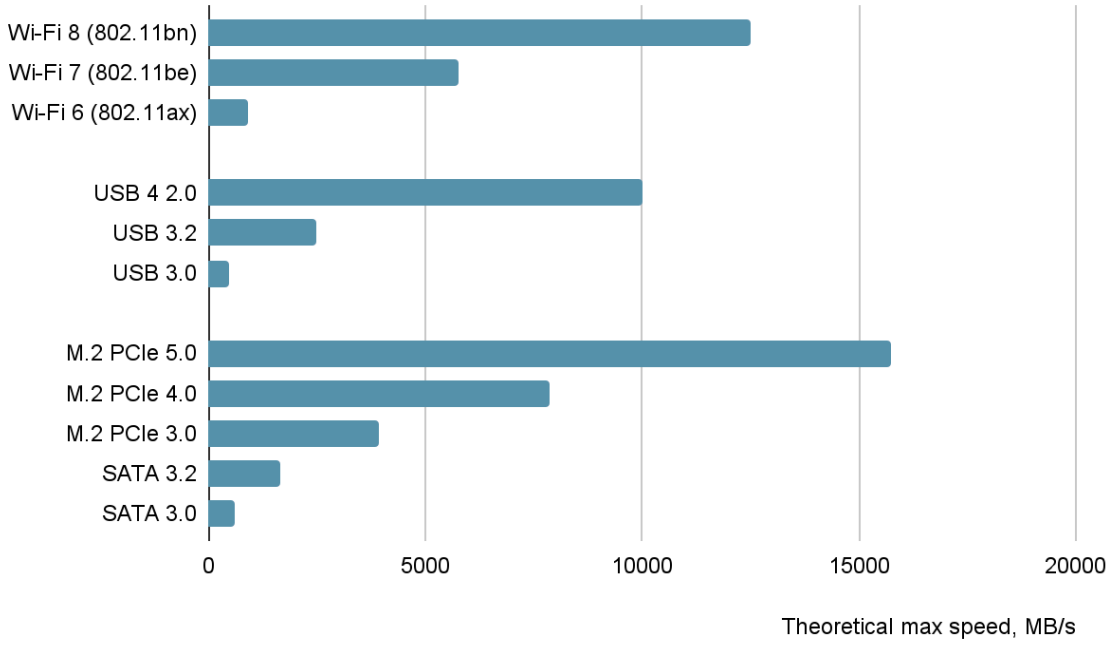

Figure 6: Wi-Fi speeds compared to hard drive speeds

- Several new high-speed and energy-efficient standards are coming to the market such as Wi-Fi 7[31], Wi-Fi 8[32] and Li-Fi[33]. This further increases the speed and reliability of connections between the UXify Hub and devices.

[31] https://www.wi-fi.org/discover-wi-fi/wi-fi-certified-7

[32] https://wifinowglobal.com/news-blog/standards-update-yes-were-already-working-on-wi-fi-8-heres-what-you-need-to-know/

[33] https://www.photonics.com/Articles/Li-Fi_Adds_Data_to_Light_the_Way/a64273

While we suggest Wi-Fi, we foresee the possibility of other types of connections such as wireless USB, Bluetooth, or any other connectivity technology being used. Alternatively, wired connections can be used as well, for example, via a cable or a docking station.

The appearance of newest USB[34] and Thunderbolt[35] standards and upcoming Wi-FI 8[36] makes wired & wireless connectivity speed and bandwidth comparable to internal storage drive speed and bandwidth. This helps UXify to make OS booting and data read/write operations feasible through wired and even wireless channels.

Improved energy efficiency and charging technologies

The UXify Hub will likely need to maintain connections with devices for long periods of time. To mitigate this, since connection distances involved are likely to be short, transmission power can be adjusted to improve power-savings. Other technological trends will assist in improving UXify Hub feasibility in terms of energy consumption to manage connections:

- Constant improvements in storage and processor energy efficiency will assist in reducing UXify Hub power consumption.
- Proposed improvements in UXify concept intelligent caching will help reduce the amount of transmitted data and therefore power consumption.
- Constant improvement in wireless charging techniques will further support UXify Hub connection maintaining capabilities.

Operating systems and low-level software

Immutable OS architecture[37] potentially simplifies the usage of UXify main OS on different computer devices. In the immutable OS architecture the whole system is a solid image that is exactly the same across all existing installations. All configurations, starting from users present on the system, locales, file privileges, and even installed packages are listed in one, simple configuration file.

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[34] https://usb.org/sites/default/files/usb_data_performance_language_usage_guidelines_jan_2024.pdf
[35] https://www.intel.com/content/www/us/en/newsroom/news/intel-introduces-thunderbolt-5-standard.html
[36] https://wifinowglobal.com/news-and-blog/wi-fi-8-its-going-to-be-all-about-ultra-high-reliability-heres-an-update/
[37] https://sonalake.com/latest/the-future-is-minimal-and-immutable-a-new-generation-of-operating-systems/

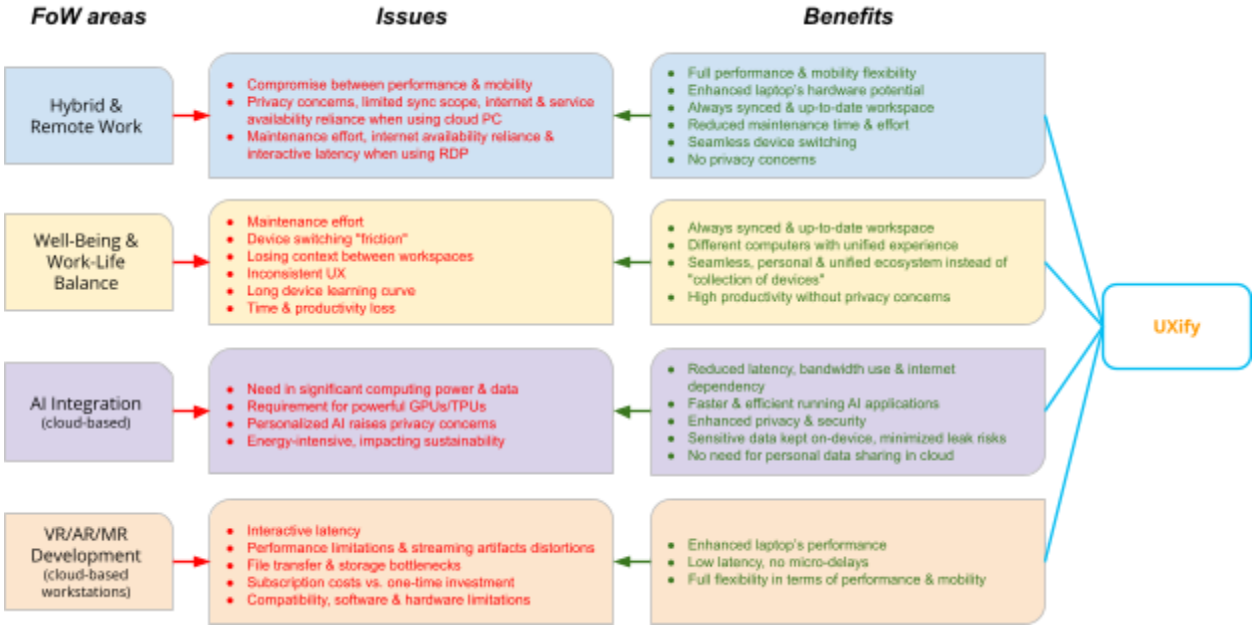
Hypervisor and containerisation technologies[38], which gained a lot of advancement in recent years, are also useful in managing low level resources in Uxify-like architecture.

UI and software availability improvements

UI of different computer devices can be adopted automatically according to different form factors, using, for example, Android Desktop Mode technology[39]. On the software availability side, in the recent years, we saw a lot of professional full fledged software, released for mobile platforms, for example Adobe software for Android and iOS[40] or DaVinci Resolve professional video software for iPad[41]. These trends also play a great role in the feasibility and attractiveness of UXify technology.

Future of Work trends

The workplace is undergoing a massive transformation[42], driven by technological advancements and evolving employee expectations. The rise of remote and hybrid work, AI-driven automation, and decentralized work models are shaping the Future of Work. By providing a unified and personal computing ecosystem centered around the user, UXify directly improves several key aspects.



[38] https://devopssaga.com/containerization-and-virtualization/
[39] https://www.androidauthority.com/android-15-desktop-mode-demo-3430991/
[40] https://www.adobe.com/products/catalog.html#types=mobile
[41] https://www.blackmagicdesign.com/media/release/20221020-02
[42] https://reports.weforum.org/docs/WEF_Future_of_Jobs_Report_2025.pdf, https://iftf.org

What are the benefits of the UXify concept for you as a user?

The UXify concept offers a variety of benefits:

- With the UXify concept technology all documents and data are available on your computer, without
    - the need for a potentially insecure, slow, intermittent or unreliable internet connection, or
    - installing synchronizing-software on different platforms.
- This means less time lost on these activities.
- Your user experience is consistent across your devices. No need to get used to different operating systems and applications.
- The possibility of file corruption when using different applications for editing is reduced.
- You don’t need to repeat activities like changing settings, installing applications, performing software updates etc on dozens of different devices.
- For syncing you don’t need to upload your personal data to the cloud and expose it to privacy and security risks.
- Device replacement is extremely easy. All you need is to connect the UXify Hub to the new computer, and you will get the environment that you are used to.
- The computer that supports UXify technology is still able to work in a traditional autonomous way.

User experience with the UXify concept

Device requirements

Most devices today are compatible with the UXify concept with some minor software/firmware modifications. For UXify concept operation, devices require the ability to boot operating systems over a wired/wireless channel. Currently, most modern PCs already support booting from a wired network. Moreover, any of your devices can be simultaneously compatible with the UXify concept and be self-sufficient, that is, able to function in a traditional way. For example, during a system start-up a PC can provide the option to boot the OS from the UXify Hub.

What hardware configurations/architectures are supported?

The UXify technology uses concepts which are already familiar to many users. Major technology companies such as Microsoft see the need to offer features we plan to offer as part of the UXify concept. For example, Windows To Go enables users to boot a full version of Windows from external USB drives on host PCs and support different hardware configurations.

We aim to optionally design the UXify concept for shipping with kernels for both x86 and ARM architectures. The UXify concept will use the appropriate kernel automatically and seamlessly, depending on which of your devices is connected.

Are my devices compatible without a firmware upgrade?

We aim to make your existing devices compatible with the UXify concept even without a firmware upgrade. Using one or more miniature USB dongles, you can wirelessly communicate and begin using the UXify concept. For example, if you choose to set a smartphone as the UXify Hub, and you want to connect it to a desktop, you just need to attach a USB dongle as shown below in Figure 7:

Figure 7: USB dongle enables connection between UXify Hub and a desktop

The desktop will recognize the USB dongle and work as a usual USB flash drive with the OS loaded on the dongle. Any device can be booted through this USB dongle in the same way as from an ordinary USB flash drive. The only thing you have to do is to insert the USB dongle into your computer and to change the boot order to a USB flash drive in BIOS/UEFI.

What about performance issues?

Since all the program code runs on your connected device, this device's hardware power is fully utilized.

We are also contemplating implementation of caching using your device's storage to increase read access speed as follows:

- When some piece of data is read from the UXify Hub storage for the first time, it is also cached.
- Subsequent readings of this data are performed from the cache.
- OS maintains the file-checksums correspondence database for the main storage as well as for every cache (from your different devices).
- When the OS boots and discovers previously cached data on, for example, your PC's storage, the checksum database of that cache is compared against the reference one (from the main storage) to determine which data is still unchanged, and therefore whether the cached copy of that data can be used.

- The data writes are performed in write-through mode to ensure that the UXify Hub storage always contains the most actual data. The checksum database is updated after changing/creating data as well.
- If the OS discovers that the UXify Hub is connected to a power source, then more aggressive prefetching is performed and the changed/new data is being transferred to the cache during system idle time (and thus even before the first read attempt).

How secure is the UXify concept?

As explained above, the major hacks that have occurred over the last few years have resulted in an increased demand for decentralized storage solutions or edge storage solutions. The UXify concept is an example of an edge security solution. In addition to the improvement in security over cloud-based solutions, we have deployed other measures. Figure 8 below shows the various measures we intend to use to make the UXify concept as secure as possible:

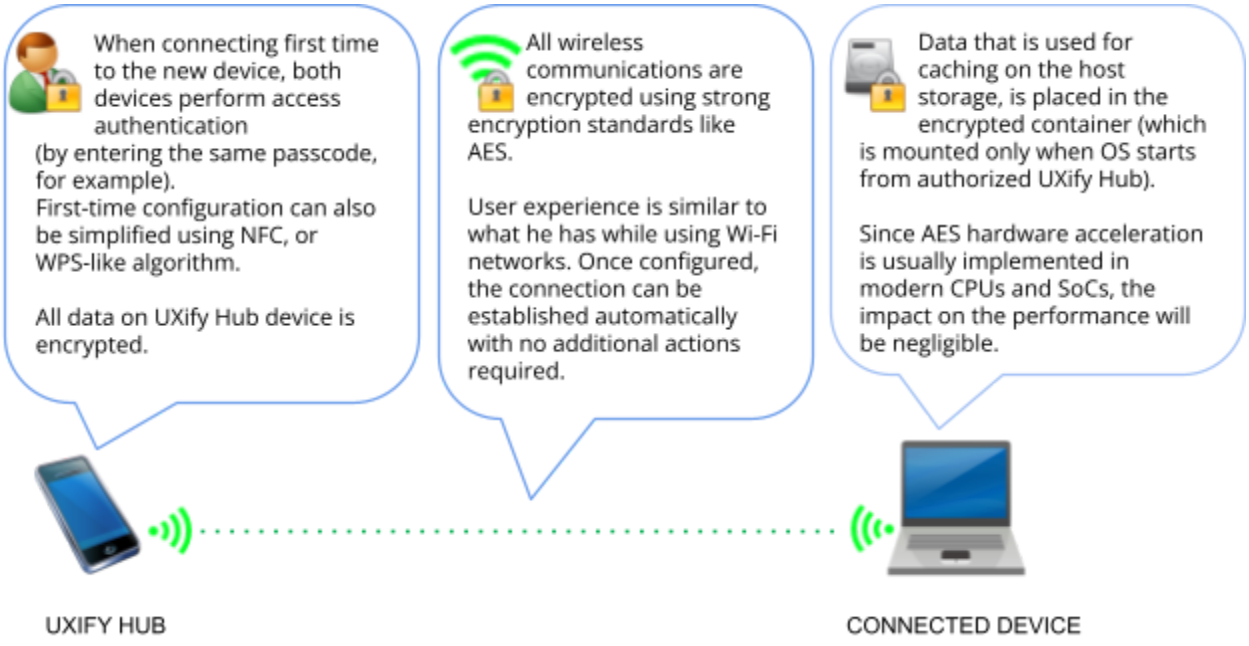


Figure 8: Security in the UXify concept

What about adding/replacing devices?

Adding a new device is fairly simple for you. Here is an example process:

- You turn on your new device which is a computer/tablet/console/etc.
- It presents you with an option "Press [button] to use the UXify Hub".
- After pressing [button], you perform the one-time authorization process (by entering the same passcode on both your device and the UXify Hub, or using near field communications (NFC) if available), then OS boots and automatically installs drivers for new hardware.
- That's it. From a user experience standpoint, all subsequent bootups on this device are performed seamlessly and automatically.

In case your new device is not yet compatible with the UXify technology, you can simply insert a special USB dongle and change the boot order in BIOS/UEFI. You do not even need to authorize devices because the UXify Hub and the dongle are preconfigured for secure communication.

In case you buy a new device, replacement is equally simple. All you need to do is connect the UXify Hub to the new device, and this device seamlessly becomes part of your ecosystem.

What about automatic backups?

Due to the fact that the UXify Hub frequently connects and works with devices that have their own storage drives, it is much easier to organize regular automatic distributed backup to these drives.

Instead of relying on external drives or cloud storage, available storage across connected devices is utilized dynamically for redundancy and recovery.

Additionally to ensure data protection all the backups are encrypted so only an authenticated and trusted UXify Hub is able to access them.

1. Device Detection & Sync: The system detects connected user devices and evaluates available storage for backup. Users may set their preferences for usage of the storage.

2. Incremental Backup & Comparison: Data from the UXify Hub is backed up incrementally. The system compares stored backups with the hub's current data to identify missing or outdated files.
3. Cached Data Utilization: The data, cached on the connected device to improve the performance, is also evaluated in the backup and restore processes to achieve better efficiency.

This reduces reliance on cloud storage for backups, enables faster local recovery, and ensures redundant data distribution across trusted personal devices.

What are your everyday experiences like with the UXify concept?

The UXify concept enhances your everyday experiences such as communication, driving and entertainment in many ways:

Your communication experience with the UXify concept

- You get a phone call while working at your PC/laptop/tablet. You receive a notification on your PC screen and you answer the call using your PC/laptop/tablet.
- Alternatively, you answer the call using your mobile phone. This is possible because the speaker and microphone of the mobile phone are recognized by the OS as ordinary wireless headset.
- This flexibility is enabled because the OS recognizes the internal components of the mobile phone such as the microphone, sensors, GSM module and even the display as connected external devices.

Your driving experience with the UXify concept

- Your car navigation system remembers the address of a restaurant that you found via your smartphone one week ago thanks to the enhanced synchronization capabilities of the UXify concept.
- Contact books with addresses on your PC, on your laptop and in your car are always the same, even without an Internet connection.

- When your spouse gets behind the wheel of your car, the whole electronic system of the car is completely personalized for him or her.
- The music or videos that you downloaded yesterday to your home PC are immediately available in your car.
- You can use Skype in your car as well as any other of your PC software. All your apps are available to you.
- If necessary, you can use any function of your PC (from computer games for kids in the back seat to editing business documents). Moreover, you aren't limited by your phone's or tablet's performance because in-car hardware can be more powerful and less energy constrained than your phone or your tablet.

Your entertainment experience with the UXify concept

- When turning on your smart TV, you can view yesterday's party photos without thinking about any connections or data transfer.
- On your TV you can use the familiar environment that you have customized for yourself.
- You are able to view and even edit documents in full-fledged Microsoft Office on your TV or use any other software you want.
- Buying a new TV? Just connect it to the UXify device and there is no need for additional effort. For example, you don’t need to enter your password for messengers or streaming services and don’t need to synchronize browser history.
- Do you prefer a specific browser? Now you are not limited to the browser and software which were pre-installed on your TV.
- You can personalize your TV just like you personalized your computer.

Is it possible to work simultaneously and in parallel on several devices?

We foresee the possibility of using different approaches in the UXify technology to implement full-fledged parallel work of several host systems.

The UXify concept is designed to work seamlessly with multiple user devices. Each device runs its own instance of the OS in parallel with the others. Active connections are auto-balanced based on their current utilization. The concurrent access to shared storage is coordinated using a distributed lock management approach.

So a user seamlessly works with several devices and easily switches between them while the workspace remains current and synced between all devices.

Additionally, the OS supports the migration of running applications between instances on different user devices, using "push" and "pull" techniques. So a user will be able to “move” his running apps from one device to another to keep the workflow smooth and uninterrupted during device switching.

The UXify concept – seamless, personal and unified ecosystem

As shown in Figure 9, the UXify concept represents a big step forward in the evolution of personal computing.

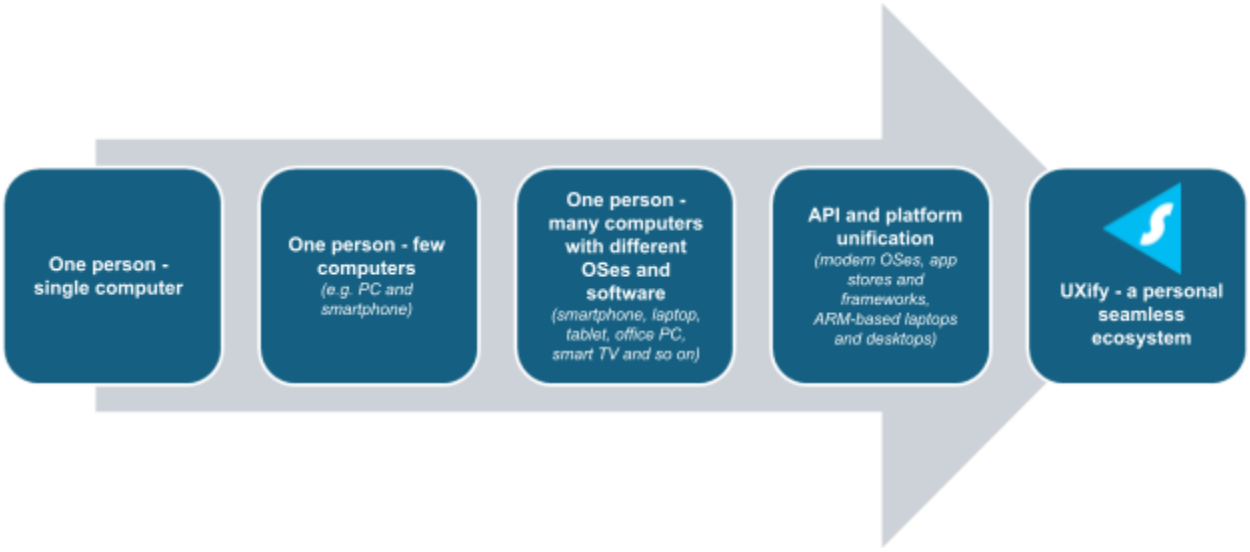


Figure 9: The UXify concept – seamless, personal and unified digital ecosystem

Notices

The Uxify technology is patented. For further details, please refer to www.simpleway.ie