

P.4	Context & Approach
P.6	Informant profiles
P.7	Cloud through the ages
P.8	Cloud in the news

P.10 Inhabiting and Interfacing the Cloud(s).

P.21 Me, My cloud and I.

P.25 Cloud **1**

P.26	Understanding the Cloud
P.27	What is the cloud?
P.27	Colocation Statistics
P.29	List of data Centers (CH)
P.30	Many clouds
P.30–33	What shape is the cloud?
P.34	Moments related to your cloud
P.34	ALpineDC, a data center
P.35	User's definition
P.36	Common beliefs about the cloud
P.36–37	A data center from the inside
P.38	A chat with a cloud technician

P.39 Cloud Services **2**

P.40	Tick the right answer
P.41–43	List of services mentioned by our informants
P.42	Five tips to get free dropbox space
P.42	Icon game
P.44–46	About the services
P.46	ABC file formats
P.47	Users' criteria
P.47–48	Storage devices
P.49	Which cloud storage is right for you?

P.51 Cloud Usage

3

P.52 Main usage

P.53 Frequency of use

P.53–55 Diagrams of uses

P.56–57 Warning!

P.56 How would you live without the cloud?

P.56 Worst passwords (2016)

P.58 Motivations

P.59 Frustrations

P.60–61 Diagram of motivations

P.60 Anonymous animals

P.62 What people love about Dropbox

P.63–65 Design opportunities

P.65 Data loss prevention

P.66 Presence, Persistence, Perception: Cloud Computing and the Body.

P.81 Cloud Culture

4

P.82 Cloud rap

P.83–84 Did you know?

P.84–87 Cloud gestures

P.88–91 Glossary

P.92 Five lessons

Cloud of Practices

A joint design and ethnographic research investigating personal clouds and data centers

Edited by Nicolas Nova
HEAD – Genève

The joint design and ethnographic research project was led at HEAD – Genève by Prof. Nicolas Nova in collaboration with Prof. Patrick Keller, from ECAL/ University of Art and Design Lausanne, with the support of Prof. Christophe Guignard (ECAL).

This research counted on the creative involvement of research assistants Anaïs Bloch and Charles Chalas (HEAD), Lucien Langton and Léa Pereyre (ECAL), students from Media Design (HEAD), from the Media & Interaction Design unit (ECAL), directed by Cyril Diagne and (students) from the Architecture Department (EPFL).

It has also benefited from the engagement of a network of peer partners. Among them the EPFL+ECAL Lab, which made its facilities available to us, Matthew Plummer-Fernandez (#algopop),

James Auger (Auger-Loizeau), Prof Dieter Dietz (Alice Lab, EPFL), Sascha Pohflepp, Dev Joshi (Random International) and Christian Babski (fabric | ch).

The project is based on ownCloud open-source software. All results and outcomes are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

We would like to thank Jean-Pierre Greff (Director HEAD – Genève) and Alexis Georgacopoulos (Director, ECAL) for having facilitated this collaboration, and HES-SO for its financial support.

**What is the user experience of cloud computing?
How do people use cloud platforms?
How do they relate to such an elusive technology?**

Our research was based on two main sources of data. We first spent a year and a half collecting online the messages, discussions, exchanges and arguments relating to cloud computing, primarily from forums and online platforms. We then conducted a series of interviews with nomadic workers of varying profiles (musicians, VJs, journalists, consultants, third space/fab lab users) to understand how they make use of cloud computing systems. The material was complemented by two workshops with Media Design students at HEAD – Genève, under the supervision of James Auger and Sascha Pohflepp. This booklet compiles the results of the design-oriented field research. The insights and lessons derived were subsequently used to inspire new design projects, artefacts and scenarios aimed at imagining and proposing alternative versions of the Personal Cloud.

YH, Consultant

"My name is YH, I'm 34 y.o., I live in Switzerland for 3 years and a half, after living in Brussels and Paris. I've always moved from one place to another, that's the most important thing in my life, that's what define what I am."

GK, Software developer

"I work for the Global Fund against AIDS, paludism and tuberculosis, as a software developer. I have onedrive for my work, in order to keep my files, to have them available anywhere. I use Google Drive and Google products in general for personal projects. Google Drive is for documents, letters, invoices, tickets... but nothing financial. I keep my banking documents on my computer."

PW, Sport consultant

"I work as a freelancer, I used to work in corporate organizations, mostly in sport event organization. I help to prepare the production of big sport events such as the Olympic games since 88. Cloud technology is important for that matter."

Informant Profiles

MB, Game Design

"I'm a video game designer and art director. I'm currently launching a company with people living in different places, so we share quite a lot of content through the Cloud"

CV, Innovation Director

"I'm in charge of innovation programs in an incubator/ coworking space. We're building events to aggregate our community, to accelerate start-ups development and support collaboration with SMEs and big companies."

JV, Teacher

"I'm a lecturer in an art school and a journalist. I write mostly for professional magazines on visual cultures and music. Previously I used to blog to manage the content I produce, storing things on Wordpress, using FTP to transfer. The way we work requires us to use the cloud now. That said, it'd be good to have a precise definition of the cloud."

Informant Profiles



Cloud computing is a type of Internet-based computing that provides shared computer processing resources and data to computers and other devices on demand. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources (e.g., computer networks, servers, storage, applications and services), which can be rapidly provisioned and released with minimal management effort. Cloud computing and storage solutions provide users and enterprises with various capabilities to store and process their data in third-party data centers that may be located far from the user — ranging in distance from across a city to across the world. Cloud computing relies on sharing of resources to achieve coherence and economy of scale, similar to a utility (like the electricity grid) over an electricity network.

The origin of the term cloud computing in computing is unclear. The word “cloud” is commonly used in science to describe a large agglomeration of objects that visually appear from a distance as a cloud and describes any set of things whose details are not further inspected in a given context. Another explanation is that the old programs that drew network schematics surrounded the icons for servers with a circle, and a cluster of servers in a network diagram had several overlapping circles, which resembled a cloud. In analogy to the above usage, the word cloud was used as a metaphor for the Internet and a standardized cloud-like shape was used to denote a network on telephony schematics. Later it was used to depict the Internet in computer network diagrams. With this simplification, the implication is that the specifics of how the end points of a network are connected are not relevant for the purposes of understanding the diagram. The cloud symbol was used to represent networks of computing

Cloud through the ages

equipment in the original ARPANET by as early as 1977, and the CSNET by 198 — both predecessors to the Internet itself. The term cloud has been used to refer to platforms for distributed computing. In Wired’s April 1994 feature “Bill and Andy’s Excellent Adventure II” on the Apple spin-off General Magic, Andy Hertzfeld commented on General Magic’s distributed programming language Telescript that:

“The beauty of Telescript... is that now, instead of just having a device to program, we now have the entire Cloud out there, where a single program can go and travel to many different sources of information and create sort of a virtual service. No one had conceived that before. The example Jim White [the designer of Telescript, X.400 and ASN.1] uses now is a date-arranging service where a software agent goes to the flower store and orders flowers and then goes to the ticket shop and gets the tickets for the show, and everything is communicated to both parties.”

References to “cloud computing” in its modern sense appeared as early as 1996, with the earliest known mention in a Compaq internal document. The popularization of the term can be traced to 2006 when Amazon.com introduced its Elastic Compute Cloud.

Cloud through the ages

- 1950 Mainframe & Time Sharing
- 1969 Arpanet
- 1970 Client-Server
- 1995 Pictures of Clouds
- 1999 Salesforce.com
- 1999 Google
- 1999 Netflix
- 2003 Web 2.0
- 2004 Facebook Launches
- 2006 Amazon Launches
- 2006 Google
- 2007 Apple
- 2008 Private Cloud Emerges
- 2009 Browser-Based Cloud
- 2009/
- 2010 The Open-Source Cloud
- 2011 Hybrid Cloud Emerges
- 2011 Microsoft’s “To the cloud”
- 2011 iCloud
- 2012 Google Drive
- 2013 IBM Acquires SoftLayer

Now Cloud Adoption

Cloud through the ages

March 31, 2016 News

March 31 is the 5th anniversary of the World Backup Day. 5 years of raising awareness about the importance of protection from data loss and doing data backup. New threats are pushing us to take care of our data in depth.

Media cloud, tutte le notizie in una nube

Le cloud, première source de profits d'Amazon

Companies save huge amounts of garbage

Swisscom protects personal information too little

Today, it seems the cloud is the answer to every question.
Where are my photographs? How does this app work?
How will our management strategies change with the cloud?
It wasn't always thus. So how did the cloud come to
envelop us all in its fluffy ubiquity? Can we reinvent it?
Can we adjust it to our habits?

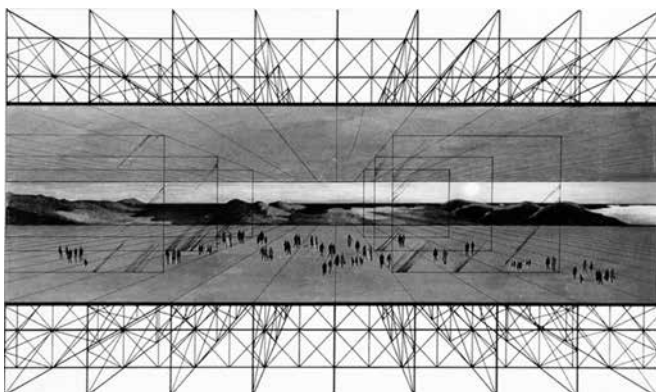
Inhabiting and Interfacing the Cloud(s). A design research

Patrick Keller

Since the end of the 20th century, we have been witnessing the rapid emergence of a new constructed entity. It combines information technology; massive, networked storage of individual or collective data; delocalized computational power and services; distributed access interfaces, security; and functionalism.

It is the “Data Center,” which, itself, constitutes the infrastructure and main vector of a renewed form of personal relationship to information: “Cloud Computing”, known more familiarly as “The Cloud.”

This technological setup produces a definite evolution from the, now outmoded, model of the personal computer. It supports almost all types of disseminated or versatile services and forms the already vital infrastructure of contemporary nomadic lifestyles and decentralized communities: “Personal Cloud Computing.”



Research for "No-Stop City", Archizoom Associati, 1969.



Google Data Center in Lenoir, North Carolina (USA), 2013. Both images served as founding documents and references for the research. Shown side by side, they confront an anticipative speculation to the implemented reality.

As a consequence, we see materialized before our eyes, on a grand scale, the very idea of “dematerialization” and the ubiquity of networks, concepts that generally accompanied “cloud” — based and networked services from their inception. This is a concrete construction, and obviously a paradoxical one, being physical, proprietary, precisely located, and, in point of fact, heavily centralized.

This was accomplished almost by default — a done deed, apparently, with no original statement or preliminary debate concerning the relationship between the distributed digital realm (networks, data, dematerialized services, computation, and so on) and the sensible world, as well as the intense exchanges that now unite them. This materialization can definitely be viewed as one of the

emerging icons of our modernity, but which, nevertheless, distinguishes itself by its near invisibility or stealth.

It was to examine this paradox that the project *Inhabiting and Interfacing the Cloud(s)* was initiated in 2014. The research combined the approaches of interaction designers, ethnographers, and architects¹. Its aim was to explore the creation of counter-proposals to the current expression of “Cloud Computing,” particularly in forms intended for private individuals and end users (“Personal Cloud”). It sought to make clouds truly “personal”, in order to help give access to tools to the design and makers communities². It was designed to offer an alternate appraisal of this “iconic” infrastructure of our modernity and its services because their implementations have followed a logic chiefly born of technical developments and have been mainly governed by the commercial interests of large corporations.³ Also, as of today, it continues to be seen mostly as a purely functional, centralized setup. However, the “Personal Cloud” holds a potential that is largely untapped in terms of design, novel uses, and territorial strategies.

With regard to current forms and uses of this “Personal Cloud,” we observed early in our research the existence of a paradox between a set of extremely “horizontal” practices, on the one hand (the so-called “networked society”), and, on the other, the Cloud’s centralized or hierarchical infrastructure gradually being built up⁴. The research team also noticed a giant gap between the onscreen iconography of the service, usually presented as tiny icons in the corner of users’ screens, and the technological arrangement’s physical plant, which consists of large quantities of distant servers hosted in dedicated air-conditioned buildings, all governed by the laws of “redundancy,” maximum security, “uptime” or “Tier”⁵ certifications, and other restrictive and quantitative rules. We further noted what is happening as a result of this new operating mode: a misunderstanding concerning the overall operation of the sophisticated technological setup for end users, as well as a relative loss of control over their own outputs, files, and data, in favor of the interest groups administering the majority of these systems.

As of late Spring 2017, nearly at the end of our research, we can look back and assess the collaborative work process we've been through and the mechanisms that we used to address these issues. We can also explain the results that have been reached gradually, which are explained further in the other sections of of the Cloud of Cards documentation book.

For this to be done, we should first take into account the fact that the research team has followed, as its main research process and in parallel to an ethnographic field study of the usages of the cloud⁶, a traditional “step-by-step” creative, design-practice-based process.

This reflexive workflow, which is project oriented,⁷ creates a situation whereby the results of one step fuel the next. This process, known for ages by design practitioners,⁸ has been “put to research work” and combined with complementary academic procedures (“sampling” and “observation” of primary and secondary material, “comparison,” and “qualitative analyses”) to track, objectivize, and

validate the creative path. The overall research activity has been sorted (sampled) and carefully documented along the way for further review. In this sense, the workflow was based on, but also improved upon, one experienced during “Variable Environment,”⁹ a previous interdisciplinary work that pursued a similar research-creation path between designers and scientists, which was also entirely documented.



The design research Variable Environment, ECAL, 2007.

The creative research process experienced during Inhabiting and Interfacing the Cloud(s), “practiced based” and “project oriented” as it was, produced successive structured steps over time. It framed sequential periods of experimentation, production of material, and progressive refinements, interspersed with moments of observation and critical analyses, all straining towards a final focus point (“the project”) that emerged progressively.

In a design process, these steps are traditionally labeled, in their consecutive way, as “Intentions” (or “Questions”), “Sketches,” and “Project,” followed naturally by “Final Project,” “Prototypes,” and, if everything goes as planned, “Realization” or “Implementation.”¹⁰ These latter steps are not necessarily meaningful in the context of a research project, as they could consist of final commercial products or realizations, even if this might exclude the reception dimension from the study. Also note that loops are likely to occur between consecutive steps before advancing. We can, therefore, assess Inhabiting and Interfacing the Cloud(s) workflow and its results accordingly.

The research team’s “Intentions,” or rather its research questions, were largely exposed in the foundation document of Inhabiting and Interfacing the Cloud(s)¹¹ back in 2014. These remained valuable until the end of the process, even though some quite interesting new technologies¹² emerged or developed along the way that could offer complementary approaches.

These research questions all addressed the same issue: considering the centralizing nature of the Cloud as it is currently implemented, is there any alternative way to implement the “personal cloud” or even its related “datacenter”? Bearing in mind the results of the parallel ethnographic field study concerning the usages of the cloud¹³, do approaches exist that would take into account the potential for new designs, uses and situations, and offer a less centralized architecture? Do research paths that possibly embrace a fully domestic approach exist that are made of small-sized devices that would, therefore, be necessarily distributed physically and spatially, if not digitally? By doing so, would it be possible to develop or adapt tools to make the technology more accessible to “the community,”¹⁴ which would, in its turn, help trigger additional alternatives?

After analyses of complementary works and resources, the establishment of a documentary blog and related collaborative platform, and the start of the ethnographic field study by Nicolas Nova, we entered the “Sketches” step or

the early research-by-design phase. Early in a research process, this sketching phase can benefit from adequate plasticity and easily be opened to various collaborations. It was, therefore, an important leg of the Inhabiting and Interfacing the Cloud(s) research, during which we did indeed take advantage of this recognized malleability and practiced intensive design trials with partners and peers within the frames previously identified, while under continuous research directors' monitoring.

With the objective of reaching a reasonable quantitative result in the creation of samples from the early design proposals to further scrutinize, this phase was opened to a network of national and international peers¹⁵, partners, and interesting contributions from the students of the different schools involved¹⁶. It was structured in six discontinued weeks of intense, interdisciplinary laboratory design experiments, as well as some underlying, yet continuous, and comparative work about uses, related situations, and platforms of development. At this initial step in the research, this helped us broaden the scope of

the early design answers to our “research questions.” It facilitated beta-testing various paths. Following the start of the field study of Cloud usage and “life hacks” by Nicolas Nova,¹⁷ and under the guidance of James Auger,¹⁸ the first research workshop had MA students in Media Design from HEAD – Genève work on mapping everyday social scenarios and situations in which cloud technologies and services could interfere with pre-established rules¹⁹.

Later at ECAL, Matthew Plummer-Fernandez²⁰ was invited to work with BA students in Media and Interaction Design around small, connected, and automated objects (bots) that would collect, treat, and share data on their own,²¹ like a combination of tiny situated datacenters and the cloud.



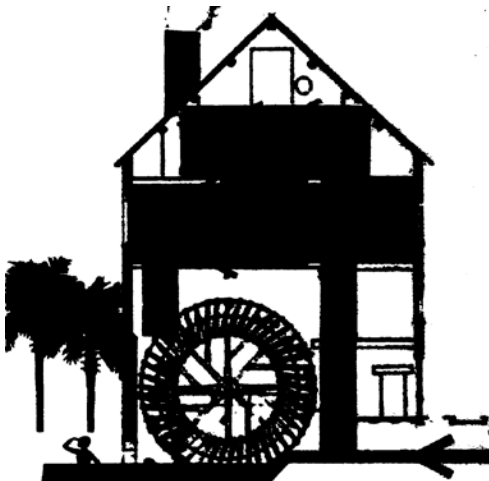
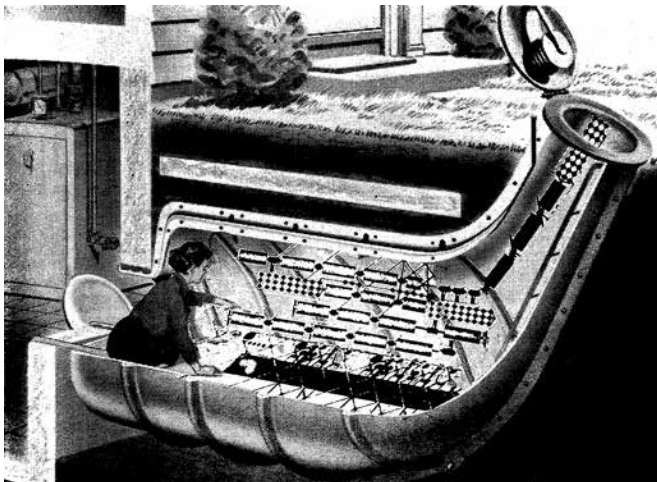
The Beast, a bot inside the head of a 3d printed pig, which continuously asks for money. If unsatisfied, it will “steal” pictures on the hard drive of the user’s laptop to which it is connected and automatically publish them online. By Nicolas Nahornyj during the #algotop’s workshop at ECAL.

Architects then joined the research project during new design experiments held at the EPFL-ECAL Lab²². This was the moment when the team started to question territories, infrastructures, and inhabitable spaces under the prism of information flows and data centers. MA students in architecture from the ALICE laboratory of Prof. Dieter Dietz at the EPFL helped map opportunities for decentralized data infrastructures in the Swiss landscapes²³ under the lead of Thomas Favre-Bulle and Dr. Caroline Dionne²⁴.

cloud or datacenter “devices,” Perhaps even old and sometimes obsolete infrastructures (like watermills, windmills, traditional Swiss chalets, bunkers) could be transformed. Linked to environmental parameters (potential production of energy or heat, access to cooling resources, etc.), these devices would help trigger micro-climatic changes. A sketch by Anne-Charlotte Astrup, Francesco Battaini, Tanguy Dyer, and Delphine Passaquay.

After a brief pause in the project, during which the preliminary results were exhibited at the House of Electronic Arts²⁵ in Basel, which helped us collect additional feedback from peers, Dev Joshi from Random International²⁶ took over and investigated new interfaces to address lost or forgotten personal data in the Cloud.²⁷ By doing so, he addressed, with the support of the research students involved, a major issue about personal data: the existence of various “online shadows” and “digital ghosts” of ourselves, made of data and hosted in the distant servers of the brands delivering the service.

The following week, Sasha Pohflepp²⁸ continued the related study of interfacing the cloud and its distant data or services at HEAD – Genève. In an extension of the ethnographic field study, he worked on natural interfaces that would help connect everyday gestures with the main interactions end users have with the flow and storage of their own data²⁹. These interactions,



Among different proposals advanced during the laboratory week held with the architects from the EPFL-ALICE laboratory, one demonstrated the value of retrofitting existing homes with small

which continuously take place through airwaves, network's tubes, and servers' processors, usually remain hidden or invisible, abstract, and hardly understandable to them.



Further experiments were carried out at ECAL around interfaces to tackle lost or forgotten personal data ("data ghosts") with Random International, alongside a study at HEAD into natural interactions linked to the ethnographic research.

Finally, Christian Babski from fabric|ch³⁰ collaborated with the research team to develop the "access to tools" approach that we were setting up alongside the sketching process to define our platform of development, and provide tools for the experiments, then further adapt them.³¹



Exhibition of Inhabiting and Interfacing the Cloud(s). Presentation of the sketching phase at HEK in Basel, within an exhibit design by fabric|ch.

Once this extensive phase of "Sketches" was completed, addressing all three joint research project disciplines (interaction design, architecture, ethnography), and samples of design answers had been presented, the research team produced analytical and qualitative "wrap ups" and "learnings."³² These would later help us target precisely the steps mentioned previously as the "Project" and the "Final Project."

Three things emerged clearly from the sketching part of the research, which confirmed, yet helped to nuance our first interrogations: Cloud computing "as a service" is indeed useful and pervasive, but its mode of functioning is almost totally obscure to users, even trained ones in some cases. Its misleading and oversimplified iconography and interaction, coupled with the fragmentation of the overall technological setup ("stacked" and dispersed into different fields of competences³³) make it extremely hard to address the Cloud as a whole, if only to understand it. Finally, despite the existence of open-source alternatives, the absence of access to creative or popularized

development tools for a set of creators outside the technological field itself, locks the technology and its evolution in the hands of too few.

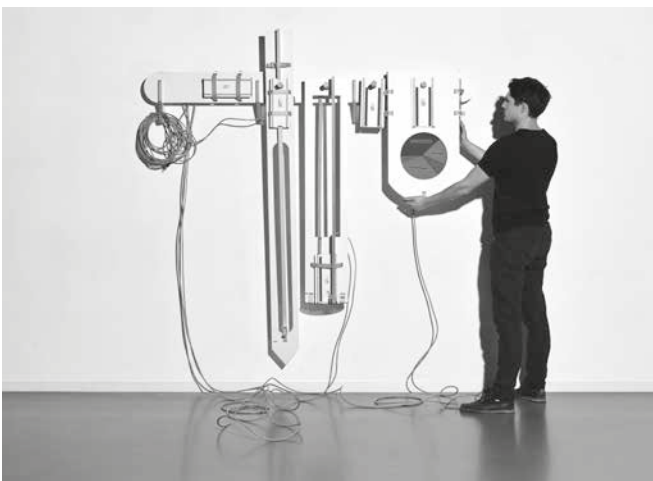
These three wrap-ups informed the frame out of the final design scenario³⁴ that became the “Final Project.” Its purpose was to answer our initial research questions with precision, but also to take into account what was discovered along the step-by-step, “trial and error” process. It would eventually lead us to artifacts and functional prototypes of various natures.

The “Prototype” phase was, therefore, the last leg in our interdisciplinary project and consisted of the development of these artifacts. It was, and still is, composed of open-source, functional, and downloadable “proofs of concepts.” We indeed determined that no commercial “Realization” would oversee and close the work at this stage; this resulted in no further testing with panels of users. This could have likely happened in a different research configuration.

These prototypes, numbering four, are extensively presented

in the following pages of this book and further examined in the texts written by Natalie Kane, Nicolas Nova, and Christophe Guignard, as well as through an interview with Matthew Plummer-Fernandez.³⁵ They come as a “kit,” Cloud of Cards, a home cloud kit to re-appropriate your data self. The kit, combining digital and physical artifacts, can be accessed and downloaded on a dedicated website,³⁶ while the overall design research and its evolutionary process have been archived in linear time on a research blog.³⁷ The central purpose of the kit and its tools is to give everyone, and the community of designers and makers, in particular, the means by which to set up their own small-sized data-center and cloud, manage their data in a decentralized way, or develop their own alternative projects using this personal, small-scale infrastructure.





Various elements of Cloud of Cards being assembled by Léa Pereyre and Lucien Langton.

Finally, when we looked back to the start of our research and its founding issues, we were able to confirm that alternatives to the existing cloud can be developed. Of course they can. But we can also state that these alternatives and their associated tools and “recipes”

are valuable, necessary and needed diversifications of the model. Decentralized and domestic options to the cloud and its datacenter can undoubtedly be envisaged but remain largely, if not totally, untapped to this day.

Additionally, some thoughts about the conception of this book are warranted³⁸. The overall research process has been openly “tagged,” sampled in its entirety, and made accessible on a documentary blog, from which representative elements have been extracted.³⁹ It is the selection of these elements, drawn from the creative process and methodology, that allowed this log book for *Inhabiting and Interfacing the Cloud(s)* to be written.

The selection of posts engendered the structure of the log book and its numbering. It provided meta-data information about tags and categories. The book then became a linear recording highlighting the main elements that led to the research results, which could then be further assessed or even “forked”

The artifacts which form answers to the initial research

questions can then be observed as gradually emerging alongside the documented interdisciplinary process. This demonstrates the relevance of a research-creation approach in answering issues previously identified and described in a rigorous, yet unexpected manner and in producing concrete non-exclusive proposals.

Thus, through the experimental research process presented in Cloud of Cards, we gradually moved from ideas to matter; from questions to answers — answers that may indeed give rise to new questions — and from blurry sketches to artefacts that encapsulate and are the sum of our findings.

- 1 The design-research Inhabiting and Interfacing the Cloud(s) was set up by professors Patrick Keller, from ECAL/University of Art and Design, Lausanne (Media & Interaction Design Unit) and Nicolas Nova, from HEAD – Genève (Media Design), with the collaboration of Prof. Christophe Guignard (MID, ECAL), Prof. Dieter Dietz (ENAC, EPFL), and the EPFL+ECAL Lab. The complete documentation of the process is accessible on <http://www.iiclouds.org>
- 2 The framing of this context excludes existing Networked Attached Storage (NAS) solutions from the field of our research in favor of open-source, semi-professional, and more versatile tools (development opportunities).
- 3 In his recent book, “La silicolonisation du monde” (éd. L’Échappée, Paris, 2016), the author Eric Sadin critically explains many details of this phenomenon.
- 4 In the book “Off the Network: Disrupting the Digital World” (ed. University of Minnesota Press, Minnesota, 2013), Ulises Ali Mejias details how our societies have moved from “one to many” monopolistic forms of media and services companies to “many to one” (many offers or participants, one “buyer”). The name of this latter type of corporation is a “monopsony,” “nodo-centric” in the terminology of A. Mejias. Youtube, Facebook, Instagram, Twitter, Snapchat, Google, etc., are examples of such structures. “Cloud as a service” functions in the same way.
- 5 <http://www.iiclouds.org/tag/0023/>
- 6 Nova Nicolas. (2018) Cloud of Practices. Raleigh: Lulu.
- 7 Vial Stéphane. (2015) Le design. Paris: PUF. pp 80–106.
- 8 This step-by-step creation process is so well known that the Swiss Society of Engineers and Architects (SIA), also known as the main professional association for architects and engineers in Switzerland, has adopted it as part of its official norms (SIA, norm N° 102) for decades. Nowadays, it helps describe the professional service and billing steps for the work of the architect.
- 9 http://sketchblog.ecal.ch/variable_environment/ (retrieved on March 31, 2018), research led by Patrick Keller.
- 10 The terminology might change from one domain to another, sub-steps can naturally occur (i.e. “Preliminary Project,” “Mockups,” “Reception,” etc.), but the main and important legs will remain nearly the same.
- 11 <http://www.iiclouds.org/tag/0009/>
- 12 <http://www.iiclouds.org/tag/0146/> presents a survey of links related to our research. Mostly technologies, projects, and elements that appeared along the process. Notably, we can pinpoint BitTorrent Sync (now Resilio), a peer-to-peer file storage and networked synchronization system, as well as Blockchain architectures (very recently Sia cloud, for example). We should also certainly note the appearance of long-term data storage on DNA.
- 13 The text by Nicolas Nova, Me, my cloud and I, covers this issue more extensively.
- 14 As exposed in the foundation document of the research, design and makers communities were envisaged.
- 15 <http://www.iiclouds.org/tag/0004/>
- 16 The text by Christophe Guignard, Cloud, cards and other interactions, covers the issues linked to the process of research in more detail.
- 17 The text by Nicolas Nova, Me, my cloud and I, covers this issue more extensively.
- 18 <http://www.iiclouds.org/tag/0004/>
- 19 <http://www.iiclouds.org/tag/0062/>
- 20 <http://www.iiclouds.org/tag/0004/>
- 21 <http://www.iiclouds.org/tag/0074/>
- 22 <http://www.iiclouds.org/tag/0005/>
- 23 <http://www.iiclouds.org/tag/0094/>
- 24 <http://www.iiclouds.org/tag/0006/>
- 25 <http://www.iiclouds.org/tag/0107/>
- 26 <http://www.iiclouds.org/tag/0004/>
- 27 <http://www.iiclouds.org/tag/0122/>
- 28 <http://www.iiclouds.org/tag/0004/>
- 29 <http://www.iiclouds.org/tag/0125/>
- 30 <http://www.iiclouds.org/tag/0004/>
- 31 <http://www.iiclouds.org/tag/0079/> and <http://www.iiclouds.org/tag/0096/>
- 32 <http://www.iiclouds.org/tag/0133/> and <http://www.iiclouds.org/tag/0134/>
- 33 Bratton Benjamin. (2016) The Stack: On Software and Sovereignty. Boston: The MIT Press.
- 34 <http://www.iiclouds.org/tag/0138/> and <http://www.iiclouds.org/tag/0139/>
- 35 Short biographies of the authors are accessible in the last section of this book.
- 36 The results of the research are accessible and downloadable (code, blueprints, recipes, etc.) on <http://www.cloudofcards.org> (retrieved on March 31, 2018) under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.
- 37 <http://www.iiclouds.org/resources/>
- 38 The design has been realized by the collective Eurostandard, with photographs by Daniela & Tonatiuh.
- 39 <http://www.iiclouds.org/category/x-posts/>

Note: all links last accessed March 31, 2018.

Me, My cloud and I
Nicolas Nova

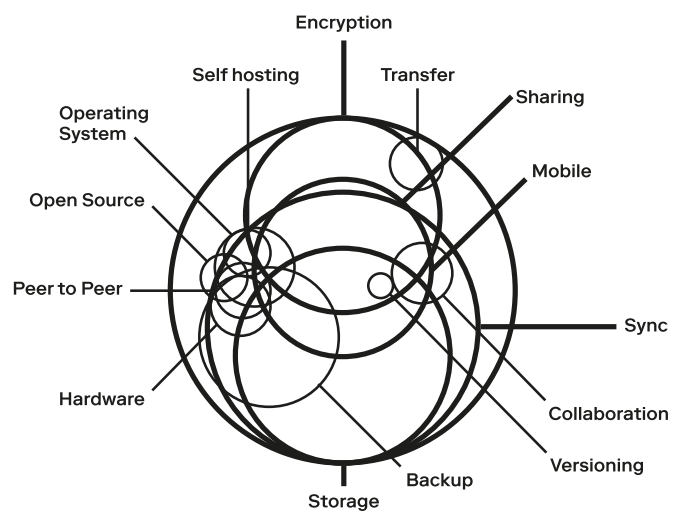
For a large majority of people, the “cloud” is a weird metaphor. Think about this intriguing study from 2012¹ that showed how 51% of US individuals thought that heavy weather could affect “cloud computing”. Although this finding should be taken with a pinch of salt, it nonetheless illustrates the difficulty some users feel when it comes to understand what this technology is about, and how it works. Especially if you think that for most people, the main manifestation of “Cloud Computing” lays in a tiny icon in the corner of one’s screen. I’m referring here to how services such as Dropbox or Google Drive operate in the background and sometimes appear to the user when “refreshing” from time to time.

Said differently, there is a gap between the demiurgic existence of “the cloud” and such a confusing user interface. It’s this gap between the two that we are currently exploring in our design-research project *Inhabiting & Interfacing the Cloud(s)*². It’s this gap between the two that we’ve been exploring in our design-research, the misunderstandings, the opportunities, the repurposing of cloud-based technologies and

the frustrations that we are investigating. Practically speaking, we conducted a series of interviews and observations with users of the cloud, in order to rely on these practices to design alternative instantiations of cloud computing technologies. The point was not necessarily to do this in a standard user-centered design way of doing things. We were not looking specifically for problems to be solved, we were not asking questions about specific needs. Instead, we were intrigued by how people adapt, modify, adjust, and domesticate these services for their own purposes, in their own contexts. It’s the situations that the clouds lead to that attracted our attention. Hence, we didn’t focus on standard usage but we looked at peculiar practices, interviewing DJs and VJs, fab lab users, sportevent organizers, biologists or journalists. Such profiles offered curious perspectives because of their nomadism, their need to deal with special types of content (huge files, protected documents, etc.). It’s this variation in terms of cloud users that we think could be fruitful to rethink this technology from a design perspective.

What did we find? What did we see when doing this? Well, plenty of things. For instance, we realized that infrastructure wasn't an issue the users considered; e.g. the actual presence of the data centers, and their corresponding jurisdiction, did not matter, as long as "the services worked smoothly". We also noticed the difficulty for people to formulate what services correspond (or not) to Cloud computing. This difficulty corresponds to the wide diversity of services that matter to the people we spent time with. Beyond the standard use of cloud platforms (storage and sharing), our interviewees highlighted how they used such platforms to host and modify files collaboratively (a musician playing with distant peers), the importance of document versioning to retrieve archives, the possibility to have SaaS-type of applications³, etc. This diversity also relies on certain needs in our group of non-standard users. For instance, the storage and synchronization of very big files (music, video, large data sets) which other software could access seemed to be important. In addition, security issues appeared relevant too, as attested by

people who use encrypted samples and who do want to see their "cloud folders" investigated because they share copyrighted material with their fellow musicians; or users who avoid putting personal documents (ID, banking details) on Dropbox. We indeed saw people with a very conscious perspective on the type of documents they put in the Cloud, and the ones they keep in hard-drive located in their backpacks.



A diagram of the main Cloud features.

Moreover, we also realized how a whole range of new "situations" is made possible with cloud computing: nomadic work ("the office is where I am, my files stay in the Dropbox folder"), the diminishing use of laptops (as opposed to tablets and smartphones) even in work-related activities, or the strategic use of physical hard-drive when needed. As attested by such examples, the

“situations” operate at different levels, from ways of living to communication practices or what one of our interviewees called “life hacks” (practical trick to be more efficient at doing some-thing). This is the type of material we looked more specifically, especially

because it’s this kind of insights that can prove curious to rethink user interfaces and cloud infrastructure. We do believe it’s by taking these into account that we can question the current state of cloud computing and propose relevant or provoking propositions.

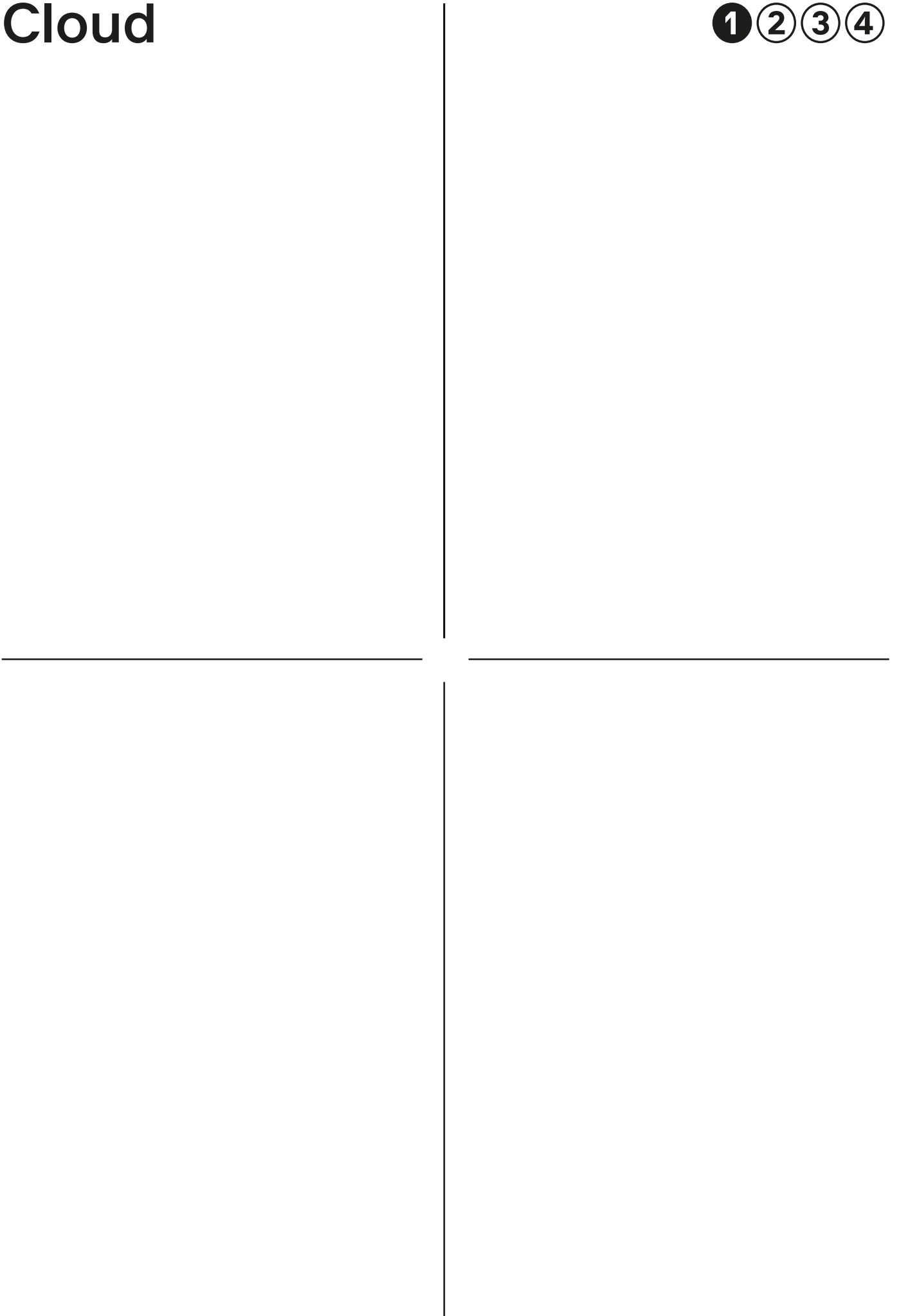
- 1 See <http://www.businessinsider.com/people-think-stormy-weather-affects-cloud-computing-2012-8?IR=T>
- 2 See the text *Inhabiting and Interfacing the Cloud(s). An ongoing design research* by Patrick Keller for a general introduction to the project.

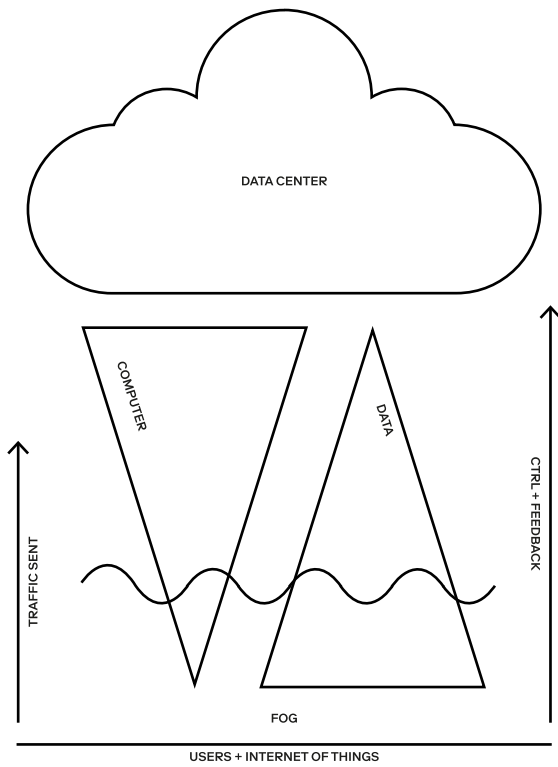
- 3 “Software as a service” (SaaS) is “a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted.” (Wikipedia)

Note: all links last accessed March 31, 2018.

Cloud

① ② ③ ④





What is the cloud?

Telecommunications

General assessment: highly developed telecommunications infrastructure with excellent domestic and international services

Domestic

Ranked among leading countries for fixed-line teledensity and infrastructure mobile-cellular subscribership roughly 100 per 100 persons extensive cable and microwave radio relay networks

Colocation Statistics (CH)

Location

Central Europe
East of France
North of Italy

Natural hazards

Avalanches
Landslides
Flash floods

International

Country code
41 satellite earth stations
2 Intelsat (Atlantic Ocean and Indian Ocean)

Internet hosts

3.437 million (2008)

Internet users

4.61 million (2007)

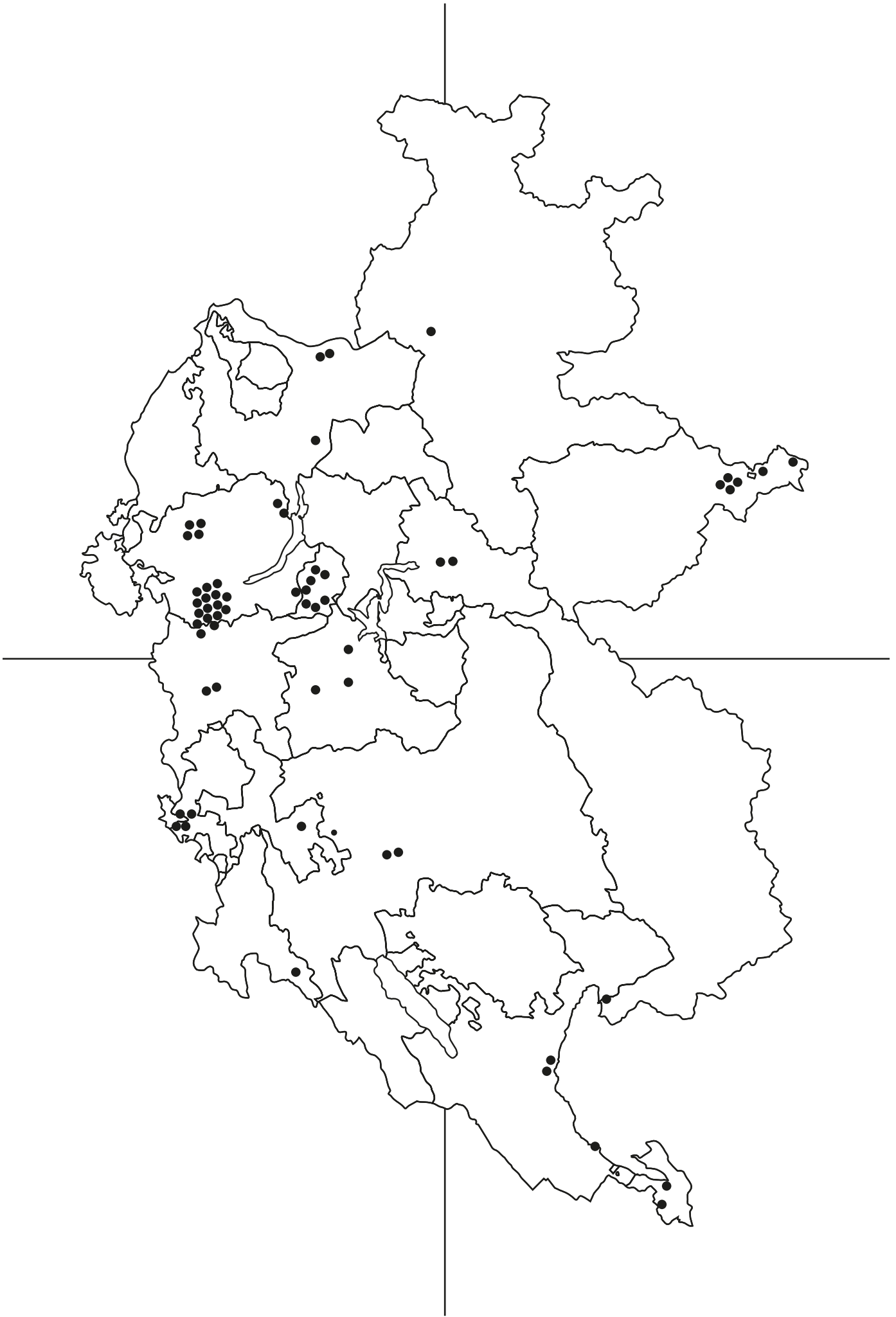
Colocation Statistics (CH)

Currently there are 69 colocation data centers from 16 areas in Switzerland

Aargau (2)
Basel (4)
Bern (3)
Biel (1)
Chiasso (1)
Chur (1)
Geneva (7)
Jura (1)
Lausanne (3)
Lucerne (7)
Lugano (5)
Solothurn (1)
Uri (2)
Winterthur (2)
Zug (6)
Zürich (23)

Colocation Statistics (CH)

→



Ad Valem Switzerland
ApineDC
aquamo San Lorenzo (Lugano)
Artmotion Backup Datacenter
Artmotion Fail Over DC
Artmotion Main Datacenter
Bancadati
Bank of Data
BrainServe
CDrom
ColoBäle
colobern
colozueri.ch
Communication Center cc.ch
data11
Datacenter Brugg
Datacenter DUE
DataCenter SYSTEM-CLINCH
Datacenter UNO
DataHub Ltd.
datasource 1
datasource 2
DATAWIRE DATACENTER ZG01
Datawire Datacenter ZG02
Deltalis DKII
Densitas
e-shelter Zurich
Interoute Geneva
Interoute Zurich
IWB Datacenter
IXSwiss BE1
IXSwiss ZH1
Layer One
Littlebit IT Services AG
Lupfig Datacenter

List of Data Centers (CH)

Netbone Digital
NETBONE DIGITAL
nexellent Glattbrugg
nexellent Zürich
Quickline Datacenter
Rechenzentrum Winterthur RZ156
Rechenzentrum Zuerich
SH1
SH2
SH3
Swiss Data Center
Swisscolocation - Your Datacenter
Tinext Datacenter Lugano
TurnKey Services Datacenter
WZH1
WZH2
Zenvoo
ZUGERNET Datacenter
Zürich nord

List of Data Centers (CH)

Not mapped
Colt Zurich, Altstetten
DC LuZ Luzern Mitte
DC LuZ Luzern Nord
DC LuZ Luzern Ost
Equinix Geneva
Equinix GV2
Equinix Zürich #1
Equinix Zürich #2
Equinix Zürich #3
ICT-Center Zürich
Infomaniak DII
Infomaniak DIII
Interxion ZUR1 (Zurich)
Lets Host Datacenter
Quickline Datacube

List of Data Centers (CH)

Connectication

Connectication, a term coined by media researcher José van Dijck, is a portmanteau of "Connection" and "Californication", which draws a parallel between the influx of Californians into other western coast states and the influx of California-designed platforms to the rest of the world.

Definition

Although the “Cloud” is a commonly used term by our respondents, we noticed that it was a surprisingly unclear notion for most of them. As a category, “cloud computing” was hard to grasp and participants provided us with a variety of interpretations. Although it forms a fundamental infrastructure that permeates our everyday lives with digital technologies, it appears to be less well understood and meaningful than we expected. Cloud technology observed from a user’s perspective is therefore an interesting category of research.

As is often the case in technology, the gap between the discourse of the service providers and the actual user experience has led to a combination of pleasant surprises, frustrations, interrogations and satisfaction. Whereas the service providers’ discourse is about data centers and evanescent clouds of data, the users we interviewed see the Cloud as a set of (small) interfaces that are seamlessly integrated into the OS and only visible as a tiny icon on the OS GUI (Dropbox and Google). This makes it difficult for them to differentiate between the two and the only time they reported “feeling” the Cloud was when “it refreshes”, when it doesn’t work or when there’s no network access.

According to patent drawings, it’s a cloud, or a bean, or a web, or an explosion, or a highway, or maybe a weird lump.

Many clouds

What shapes is the cloud?

→

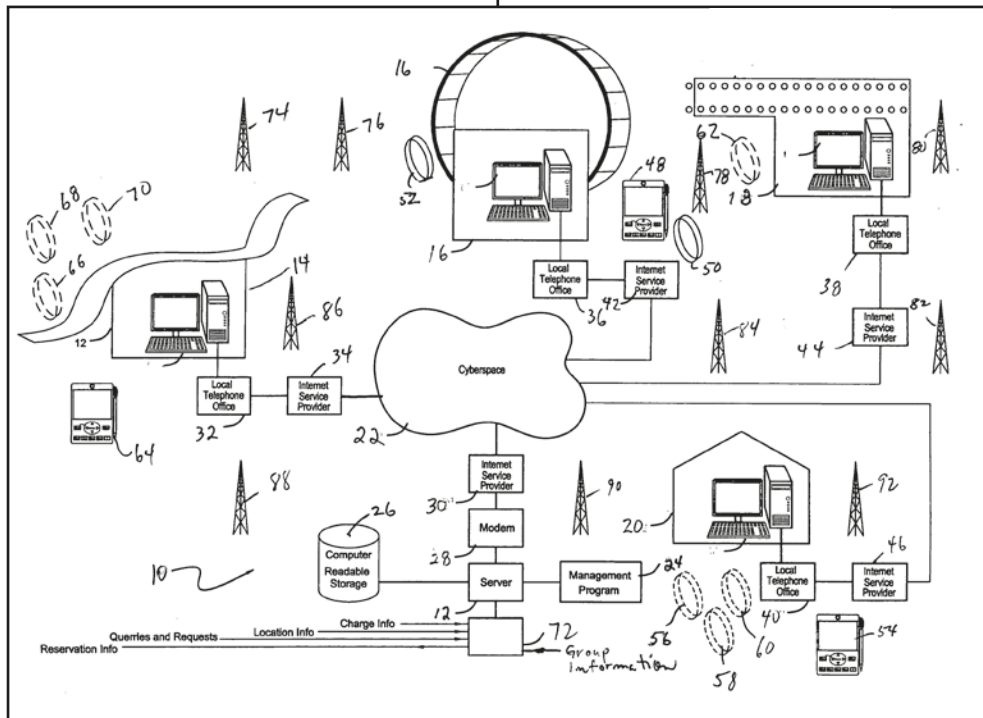
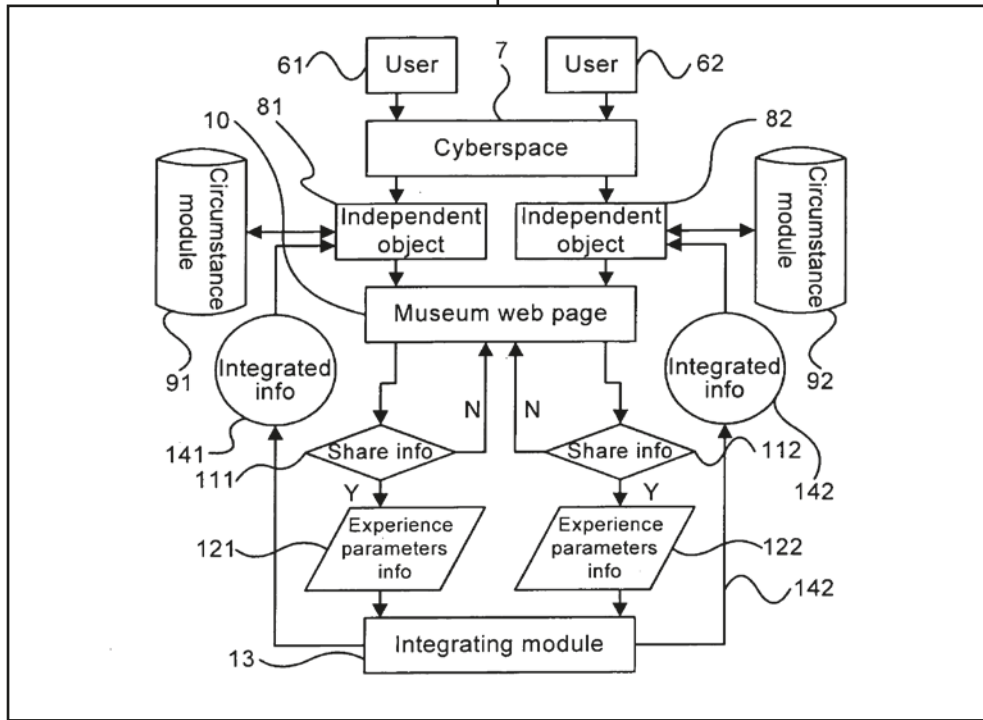
JV It’s funny, we talk about “cloud computing” without having a clear vision of what it actually is. For me, it’s a term we use by default. Most of us are not sufficiently tech-savvy to talk precisely about such complex technologies. It reveals the cloudy character of our relationship with technology. We, including myself, do not worry much about the way in which it works. We just focus on what appears on our screens and the rest is in a mist. I think cloud computing will soon be the generic definition of computing, at least for most people.

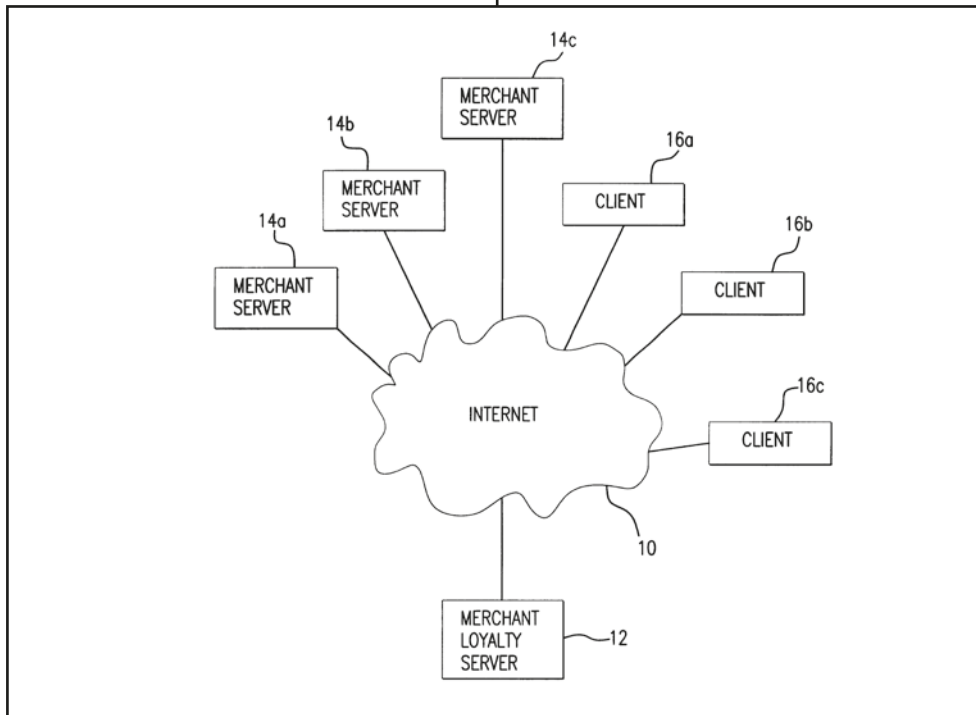
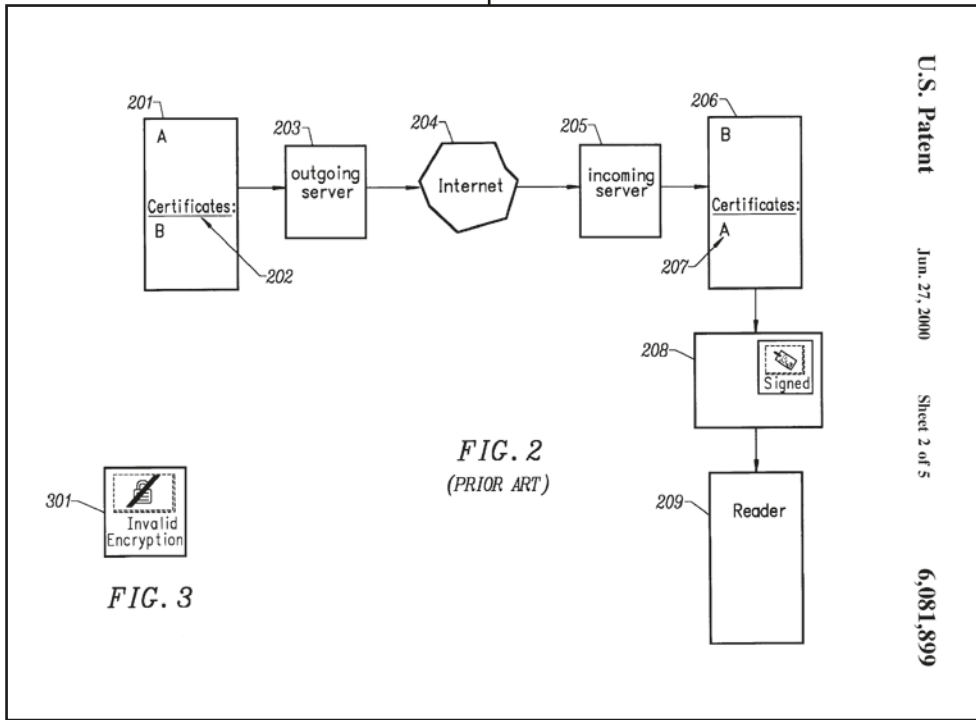
Hardcloud

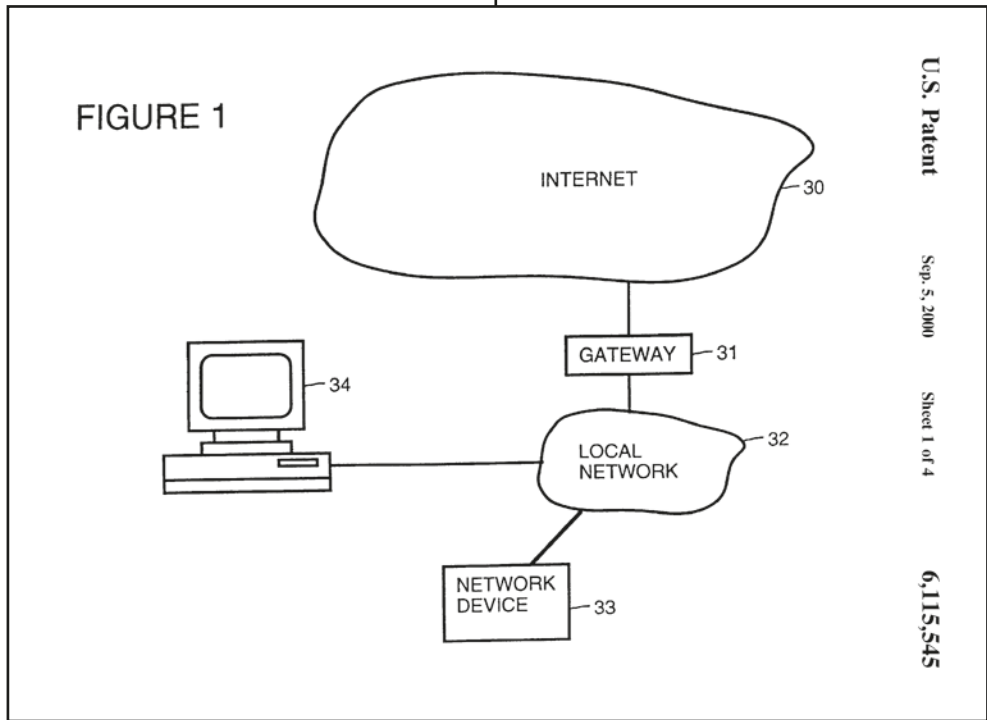
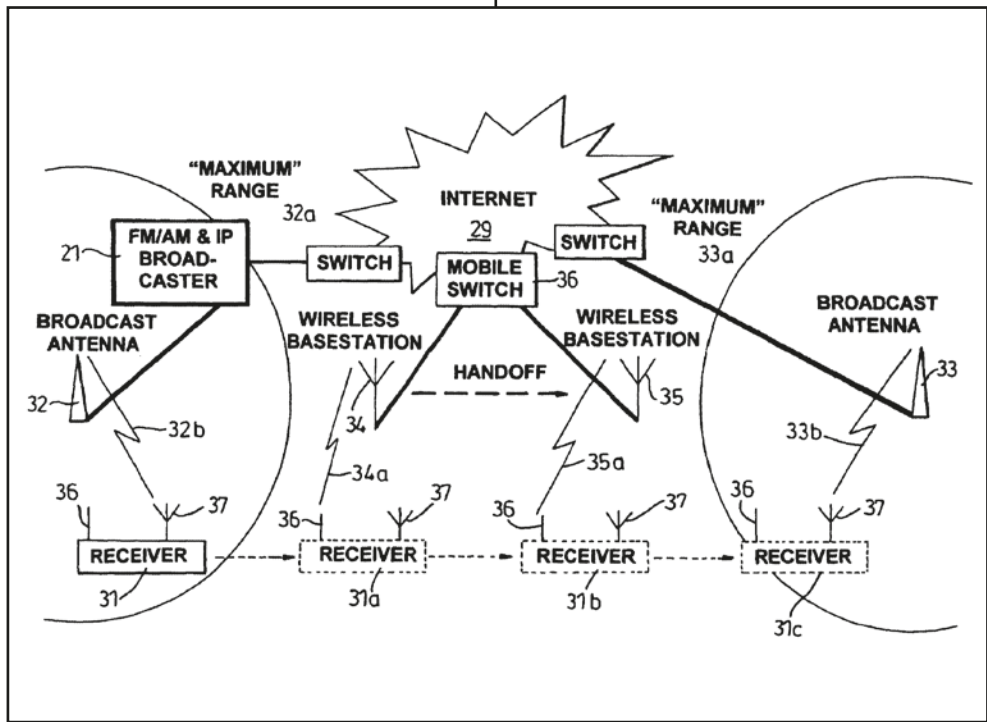
A verb employed to refer to the transfer of Cloud data to older forms of back-up (computer, hard-drive, etc.).

Interview

Definition







First file downloaded
of the year
of the month
of the day

First shared document
of the year
of the month
of the day

First e-mail received
of the year
of the month
of the day

First e-mail sent
of the year
of the month
of the day

First e-mail received
of the year
of the month
of the day

Best e-mail ever received
Best e-mail ever sent
Best document ever shared

Other

Moments related to your cloud

Date/Times — Observation

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Moments related to your cloud

AlpineDC SA
Rumine 13
1005 Lausanne,
(VD) Switzerland

+41 21 552 04 50
info@alpinedc.ch
www.alpinedc.ch

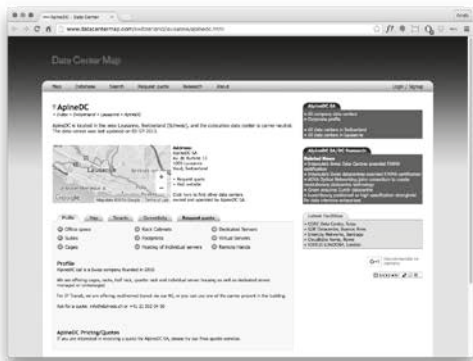
Datacenter entrance
Main datacenter entrance,
you can access it 24h/24 with your private badge

Fire Detection
Argonite fire extinguishing system.

UPS
Some of the batteries used by UPS in case
of a power failure

CCTV
one of our CCTV with
offsite backup in a remote location.

ALpineDC, a data center



"It's like a library or an apartment that is quite messy. Lots of things are stored, sometimes in the right place and sometimes not, and you always start looking for them without remembering where you put the document you need."

"For me it's like a new cathedral. There is something a bit magical about it, something big — a 'wow' effect."

"It's like a box with a user manual but we do not really know what's in there, or who to complain to when it doesn't work."

"The Cloud avoids having to systematically backup tons of things on different devices, or having to bring hard drives with you. It's the ability to do what I have to do and log into my applications and access my documents wherever I am. The reality of it is a bit different but that's the intention of the Cloud, its purpose."

User's definition

"It's not surprising that we call it the 'Cloud', because it's something that is completely cloudy and impalpable."

"I try to think about what the Cloud actually is because everything is 'so cloud' that I can't tell the difference."

"It's a grey zone that is hard to depict. It could have been coined a 'black hole' but the term is too negative."

"The Cloud is an idea promoted by companies such as Apple and Google that offer space for storing files and documents outside your computer. I see it primarily as a place for storage, a substitute to hard drives."

User's definition

"The Cloud is the possibility to access everything I want as soon as I have an internet connection."

"It's really tied up with a space used to store personal and cultural objects."

"Precisely which of the services I use belong to the Cloud, and which do not, isn't clear to me. There is a definitional problem and I lack the technical knowledge to be able to tell the difference."

User's definition

"It's like a screen, a smoke screen that can disappear depending on the service we use."

"It makes me think of people alone in their rooms around this planet, working with other people elsewhere, be it in their own rooms or in their offices..."

"The personal Cloud is about sharing storage capabilities, computational power, etc."

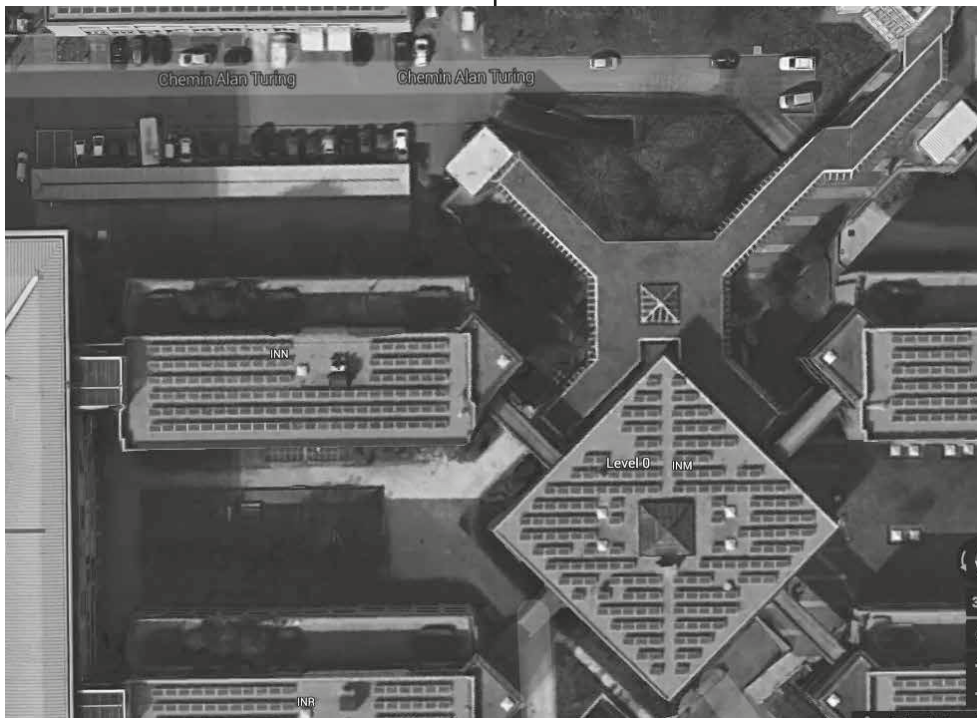
User's definition

The cloud is a thing of the future
The cloud is a fad
The cloud encourages team work
The cloud's applications are rudimentary
The cloud allows for broader accessibility
The cloud is not secure
The cloud is more expensive
The cloud eliminates clunky servers
The cloud is a mystery
The cloud is unreliable

22.06.2016
EPFL, Ecole polytechnique
fédérale de Lausanne,
Switzerland

Common beliefs about the cloud

A data center from the inside





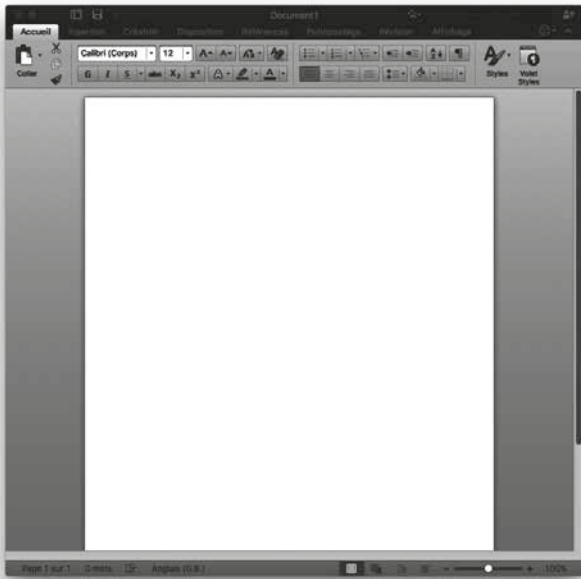


- AB Hello, what are you doing exactly?
- CT We are fixing the optic fiber
- AB What is the problem?
- CT The connection is not working fastly enough so we will be working here during the next couple of days...
- AB May I take a few pictures? It is for a book about the cloud...
- CT I believe so, but we don't know if we are allowed to show how it works to random people

A chat with a cloud technician

Cloud Services

① ② ③ ④



- Google doc
- Microsoft Word

- Google doc
- Microsoft Word



Tick the right answer

Basecamp	https://basecamp.com/
Bitsync	https://getsync.com/
Crashplan	https://www.crashplan.com/
Cyberduck	https://www.cyberduck.io/
Dashlane	https://www.dashlane.com/
Drive	https://www.google.com/
Dropbox	https://www.dropbox.com/
Editorially	https://www.stet.Editorially.com/
Evernote	https://evernote.com/
Gmail	https://www.gmail.com/
Google app	https://apps.google.com/
Google calendar	https://www.google.com/calendar/
Google drive	https://www.google.com/drive/
Google slide	https://www.google.com/slides/
Office 365	https://www.microsoft.office.com/
One drive	https://www.onedrive.live.com
Popcorn time	https://popcorn.time.io/
Skype	https://www.skype.com/en/
Slack	https://slack.com/
Soundcloud	https://soundcloud.com/
Sugarsync	https://www.sugarsync.com/
Trello	https://trello.com/
We transfer	https://www.wetransfer.com/
Yousendit	https://www.yousendit.com/

List of services mentioned by our informants

CV	Basecamp Collaborative to-do lists, and shared calendars. Sometimes I also use it as a project management platform (especially if the people I work with use it).
YH	I use Basecamp a lot, because when I discovered it, it was cool and was used by some of my professional contacts. I learned to appreciate it. Since then, however, it has become very expensive and I stopped using it recently. Even though I ended my subscription, I can still access my files for six months. It does become tricky after that and I will have to export my data.
YH	We chose Basecamp because of its integration with Google Drive. We started drafting a project on Drive because we also used Gmail and there is a link between the two. Initially, we were discussing things over email, but this mode of exchange quickly became frustrating. That's when we realized that we could dump things on spreadsheets and text documents on Google Drive and use the versioning features. Because, hey, who still uses Microsoft Word for this? We put a stop to that. Word is useful if you have to work quickly when you start a document. However we found that Word didn't give us the tools to chat about what we were writing and to iterate our ideas. Hence we switched to Basecamp, which also enabled us to create shared to-do lists.

List of services mentioned by our informants

JV	BitSync I used BitSync for a while but I moved back to Dropbox after I lost some files.
YH	Apart from some bugs, BitSync was great, as there was no limit on data storage. However, it wasn't really clean, nor ordered, and that bugged me. It became so cluttered. I have so many things in there and I don't have the time, or the courage, to sort them out.
CV	Crashplan I subscribed to Crashplan as a back-up tool, but I have since stopped and now use Dropbox.
JV	Cyberduck For my professional work, I used CyberDuck a lot, which is a FTP service. I used it for storing content for a musical blog, especially images. Everything I produced at the time went to Cyberduck
CV	Dashlane I use Dashlane for data back-up and password synchronization.

List of services mentioned by our informants

JV	Google Drive I use Google Drive for data storage, document management, chat, IM, as well as to upload documents and comment on them.
CV	We opened Google Drive in order to write together about our projects, share documents and so forth.
MB	It's very practical, it has a good UX, lots of very interesting functionalities such as the ability to leave comments and a useful "suggestion mode" too.
YH	Drive is like Dropbox but with lots of people. Drive became serious about 2-3 years ago, when all my contacts already had their main address on Google. It was the most efficient way to handle things and we all had a "getting things done" kind of approach, including inbox optimization, etc. Nothing beats Google with its keyboard shortcuts and all.
GK	Drive is really good and it is where I keep personal documents such as passports, visas, documents to apply for citizenship, travel docs, tickets, etc. I use Drive and Google services in general for everything personal, apart from financial data or documents. I keep my banking files on my computer which I trust, despite this NSA thing.

List of services mentioned by our informants

- JV** Dropbox
I mostly use Dropbox for collaborations where I'm often invited to share documents.
- MB** I'd like to change because it's pricy and there are similar tools that are free. We could use the alternatives but Dropbox is so widespread and people are fearful when it comes to installing new tools on their devices. For that reason, Dropbox remains the most common platform for now, but eventually I'd like to move to something else.
- GK** One of the reasons I don't use Dropbox is because it doesn't work at the office where it is blocked by the firewall. It's simply not possible to use it. There are other platforms which do not work either. With One Drive, for example, if I save a file, it automatically saves a second file on the disk. It uses a strange link or it will require you to log in, even if you're logged in already. Moreover, the synchronization isn't reliable.
- MB** Right after Condoleeza Rice joined Dropbox's board, I decided to use it less and less. They have my content but if it were to close shop, it would leave me completely indifferent.

List of services mentioned by our informants

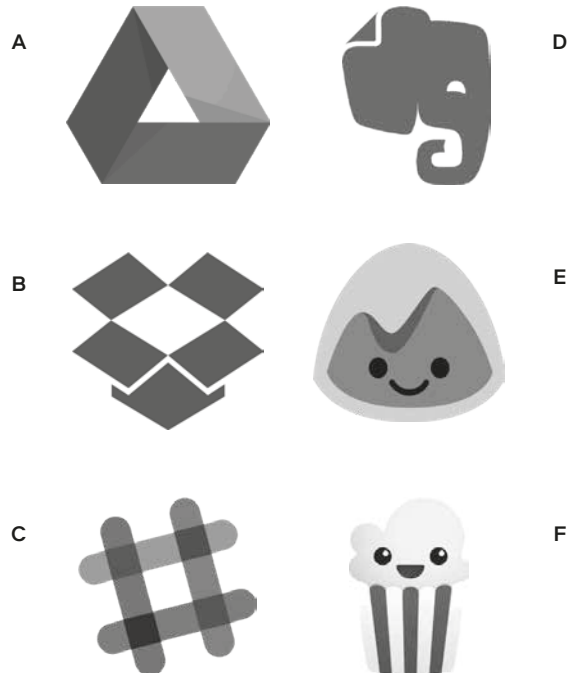
- JV** Editorially
We used Editorially on a project for its collaborative editing function. It's like Dropbox with added little features and formulas.
- CV** Evernote
I use Evernote a lot, both for work and personal stuff.
- YH** I have had a Premium account for quite some time now. Almost everything I do seems to end up in an Evernote document. It works both on my desktop computer and on my smartphone. The synchronization feature is essential.
- YH** Gmail
Gmail knows a lot of things about me. In my opinion, email services are a key element of Cloud Computing which includes Google Mail. I became a Gmail user a long time ago and have been using it as my main address ever since. Now I use Gmail for all of my email addresses and identities with different institutions and organizations. However, this poses a big philosophical and ethical problem to me as it belongs to Google, but I don't have much choice as there is no better alternative. They are so far ahead that it would take a lot of time for anyone to try to catch up with them, even in achieving something remotely close to their platforms from a technical standpoint.
- CV** Google app
Google apps like Gmail, Google Calendar and GoogleTalk actually all belong to the Cloud and we use them a lot.

List of services mentioned by our informants

- 1 Invite your friends. (Up to 16 GB)
- 2 Enable camera upload with Carousel. (Up to 3GB)
- 3 Install Mailbox for iOS or Android. (1GB)
- 4 Use Dropbox on your Samsung (Up to 48GB)
- 5 Clean up your Dropbox

Five tips to get free Dropbox space

(A) google drive / (B) dropbox / (C) slack
(D) evernote / (E) bascamp / (F) popcorn time



Icon Game

- GK Google is well done and one can see that it is designed by people who “get it”, by real engineers. However, my best friend works on iCloud.
- YH Google calendar
The calendar is a central tool for me. “The best calendar” is their tagline, which is why I started using it. They have managed to integrate it well with lots of other services but without impacting the user experience of people who have a limited need for those other tools. No one managed to do as well as this before them. Recently, I have started using both Apple and Google calendars, but Apple’s version is less user friendly on the desktop.

List of services mentioned by our informants

- JV Google Slide
As of this year, I systematically use Google Slides to export my talks. I find it efficient. I often use very long and heavy documents with lots of images and Google Slides makes it easier for me as I don’t need to store them on my computer and can access them from desktop computers anywhere.
- GK OneDrive bothers me. They keep pushing me to upload my pictures. But it’s a back-up system for important things and I use it for collaboration on my work as it allows everyone to access files and documents from anywhere. I also leave my weekly reports in there. However, sometimes it doesn’t work which is odd and it logs me out at times.
- GK Frankly, I started using OneDrive because Dropbox didn’t work. We also use Microsoft a lot which integrates its services into OneDrive so it was kind of inescapable. OneDrive constantly encourages you to upload documents with notifications like “upload the files, upload the files” every two weeks and I don’t like that.

List of services mentioned by our informants

- JV Popcorn time
It’s a platform to watch movies. Even if it’s illegal, it’s very efficient and I like it.
- YH Soundcloud/ Spotify
Of course, there’s music in the Cloud — Soundcloud more and more, followed by Spotify. I have paid for a subscription because I hate being bothered by commercials when listening to music, it’s insufferable.
- JV Skype
I used Skype in parallel with files located on the Cloud. It’s good to think together and see what we are really doing, as a complement to a drawing tool.
- MB Slack
I use Slack to store documents and to chat.
- CV It’s an interesting tool because instead of creating a new space that takes a lot of room on your system, it allows you to centralize and link all of your different clouds.

List of services mentioned by our informants

- CV Trello
We use Trello for projects where we have to dispatch tasks.
- YH I use Trello for collaborative to-do lists.
- JV Wetransfer
WeTransfer is very functional and I use it to share software. It’s a really good example of a super simple service that took off. Before that, I used a similar platform called YouSendIt but WeTransfer established itself as more efficient.
- GK There’s a clear difference in philosophies between Google, Microsoft and Dropbox. I prefer Google because, even if it’s not without faults, it’s better than the others.

List of services mentioned by our informants

Basecamp

Basecamp is a web-based project management tool developed by Basecamp and launched in 2004. A new version was launched in 2012. The Ruby on Rails framework was extracted from the Basecamp project. There is a 60-day free trial and since 2014 is free for teachers. In 2015 Basecamp released Basecamp 3.

BitSync

"The page 'BtSync' does not exist. You can ask for it to be created, but consider checking the search result below to see whether the topic is already covered."

Crashplan (Code42)

Code42 is an American software company that develops and markets the CrashPlan backup software and services suite. It was founded in 2001 as an IT consultancy. Code42 started a project to create a Facebook-like desktop application but ended up focusing on the online storage element, and released CrashPlan in 2007. CrashPlan is offered to consumers in a freemium model. Backing up to Code42's servers requires a monthly subscription; an enterprise edition is offered as well. CrashPlan gets positive reviews for its pricing, feature-set and user interface, but large initial backups were reported as slow.

About the services

Drive

Google Drive, formerly Google Docs, is a file storage and synchronization service created by Google. It allows users to store files in the cloud, share files, and edit documents, spreadsheets, and presentations with collaborators. Google Drive encompasses Google Docs, Sheets, and Slides, an office suite that permits collaborative editing of documents, spreadsheets, presentations, drawings, forms, and more.

Dropbox

Dropbox is a file hosting service operated by American company Dropbox, Inc., headquartered in San Francisco, California, that offers cloud storage, file synchronization, personal cloud, and client software. Dropbox allows users to create a special folder on their computers, which Dropbox then synchronizes so that it appears to be the same folder (with the same contents) regardless of which device is used to view it. Files placed in this folder are also accessible via the Dropbox website and mobile apps. Dropbox uses a freemium business model, wherein users are offered a free account with a set storage size and paid subscriptions for accounts with more capacity.

About the services

Cyberduck

Cyberduck is an open source client for FTP and SFTP, WebDAV, OpenStack Swift, and Amazon S3, available for Mac OS X and Windows (as of version 4.0) licensed under the GPL. Cyberduck is written in Java and C# using the Cocoa user interface framework on OS X and Windows Forms on Windows. It supports FTP/TLS (FTP secured over SSL/TLS), using AUTH TLS as well as directory synchronization. The user interacts with the user interface, including file transfer by drag and drop and notifications via Growl. It is also able to open some files in external text editors. Cyberduck includes a bookmark manager and supports Apple's Keychain and Bonjour networking.

Dashlane

Dashlane is a password manager app and secure digital wallet that provides solutions to the problem of password fatigue. The app is available on Mac, PC, iOS and Android, and described by the New York Times as "one of the best". The app's premium feature enables users to securely sync their data between an unlimited number of devices on all platforms.

About the services

Editorially (Stet editorially)

Stet is a free software package for gathering comments about a text document via a webpage. The initial version was developed from late 2005 until mid-2006 by the Software Freedom Law Center as a service to its client, the Free Software Foundation (FSF). The software was built to facilitate public consultation during the Version 3 draft process of the GNU General Public License.

Evernote

Evernote is a cross-platform, freemium app designed for note taking, organizing, and archiving. It is developed by the Evernote Corporation, a private company headquartered in Redwood City, California. The app allows users to create a "note" which can be a piece of formatted text, a full webpage or webpage excerpt, a photograph, a voice memo, or a handwritten "ink" note. Notes can also have file attachments. Notebooks can be added to a stack while notes can be sorted into a notebook, tagged, annotated, edited, given comments, searched, and exported as part of a notebook.

About the services

Gmail

Gmail is a free, advertising-supported email service provided by Google. Users may access Gmail as secure web-mail, as well as via POP3 or IMAP4 protocols. Gmail started as an invitation — only beta release on April 1, 2004 and it became available to the general public on February 7, 2007, though still in beta status at that time. The service was upgraded from beta status on July 7, 2009, along with the rest of the Google Apps suite.

Google App

Google Apps for Work is a suite of cloud computing productivity and collaboration software tools and software offered on a subscription basis by Google. It includes Google's popular web applications including Gmail, Google Drive, Google Hangouts, Google Calendar, and Google Docs.

Google Calendar

Google Calendar is a time-management web application and mobile app created by Google. It became available on April 13, 2006, and exited the beta stage in July 2009. Users are required to have a Google Account in order to use the app.

About the services

Google Drive

Google Drive is a file storage and synchronization service created by Google. It allows users to store files in the cloud, share files, and edit documents, spreadsheets, and presentations with collaborators. Google Drive encompasses Google Docs, Sheets, and Slides, an office suite that permits collaborative editing of documents, spreadsheets, presentations, drawings, forms, and more. Google Drive was launched on April 24, 2012 and had 240 million monthly active users by October 2014. Google said in September 2015 that they had over 1 million individual or organizational paid users of Google Drive, and that they had made new security and privacy additions.

Google Slide

Google Docs, Google Sheets and Google Slides are a word processor, a spreadsheet and a presentation program respectively, all part of a free, web-based software office suite offered by Google within its Google Drive service. The suite allows users to create and edit documents online while collaborating with other users in real-time.

About the services

Google Wave (Apache Wave)

Apache Wave is a software framework for real-time collaborative editing online. Google originally developed it as Google Wave. It was announced at the Google I/O conference on May 27, 2009. Wave is a web-based computing platform and communications protocol designed to merge key features of communications media such as email, instant messaging, wikis, and social networking. Communications using the system can be synchronous or asynchronous. Software extensions provide contextual spelling and grammar checking, automated language translation and other features.

Office 365

Office 365 is the brand name used by Microsoft for a group of software plus services subscriptions that provides productivity software and related services to its subscribers. For consumers, the service allows the use of Microsoft Office apps on Windows and OS X, provides storage space on Microsoft's cloud storage service OneDrive, and grants 60 Skype minutes per month.

About the services

One Drive

OneDrive (previously SkyDrive, Windows Live SkyDrive, and Windows Live Folders) is a file hosting service that allows users to sync files and later access them from a web browser or mobile device. Users can share files publicly or with their contacts; publicly shared files do not require a Microsoft account to access them. OneDrive is included in the suite of online services formerly known as Windows Live.

Popcorn Time

Popcorn Time is a multi-platform, free software BitTorrent client that includes an integrated media player. The applications provide a free alternative to subscription-based video streaming services (such as Netflix). Popcorn Time uses sequential downloading to stream video listed by several torrent websites (although other trackers can be added and used manually).

About the services

Skype

Skype is an application that provides video chat and voice call services. Users may exchange such digital documents as images, text, video and any others, and may transmit both text and video messages. Skype allows the creation of video conference calls. Skype is based on a freemium model. Much of the service is free, but Skype Credit or a subscription is required to call a landline or a mobile phone number. At the end of 2010, there were over 660 million worldwide users, with over 300 million estimated active each month as of August 2015. At one point in February 2012, there were thirty four million users concurrently on-line on Skype.

Slack

Slack is a cloud-based team collaboration tool co-founded by Stewart Butterfield, Eric Costello, Cal Henderson, and Serguei Mourachov. Slack began as an internal tool used by their company, Tiny Speck, in the development of Glitch, a now defunct online game.

About the services

SoundCloud

SoundCloud is a global online audio distribution platform based in Berlin, Germany, that enables its users to upload, record, promote, and share their originally-created sounds. According to the company's data, in December 2014, the service attracts more than 175 million unique monthly listeners, while content creators upload about 12 hours worth of audio every minute. Founders Alexander Ljung and Eric Wahlforss are the chief executive officer (CEO) and chief technical officer (CTO), respectively.

SugarSync

SugarSync is a cloud service that enables active synchronization of files across computers and other devices for file backup, access, syncing, and sharing from a variety of operating systems, such as Android, iOS, Mac OS X, and Windows devices. For Linux, only a discontinued unofficial third-party client is available.

Trello

Trello is a web-based project management application originally made by Fog Creek Software in 2011, that spun out to be its own company in 2014.

About the services

WeTransfer

WeTransfer is a cloud-based file transfer service based in Amsterdam designed to send small to large files. WeTransfer users can send files up to 2GB in the free version. The company is bootstrapped and was co-founded in 2009 by Bas Beerens and Nalden.

Yousendit (Hightail)

Hightail — formerly YouSendIt — is a cloud service that lets users send, receive, digitally sign and synchronize files. YouSendIt.com and YouSendIt Inc. were founded in 2004; the company renamed itself Hightail in 2013.

About the services

AVI	Audio Video Interleave
BBS	Bulletin Board System
CSS	Cascading Style Sheet
DIF	Data Interchange Format
EPS	Encapsulated PostScript
FMV	Full Motion Video
GIF	Graphics Interchange Format
HTML	HyperText Markup Language
HTT	Hypertext Template File
IFF	Interchange File Format
JPG	Joint Photographic expert Group
KDC	Kodak Digital Camera
LEF	Library Exchange Format
MPG	Moving Picture experts Group
NLM	Netware Loadable Module
OTF	Open Type Font
PDF	Portable Document Format
PNG	Portable Network Graphics
PS	PostScript format
QIF	Quicken Interchange Format
RTF	Rich Text Format
SIF	Standard Interchange Format
TIF	Tagged Image Format
UPF	Universal Picture Format
VDF	Virus Definition File
WLF	Wave Log Format
XML	eXtensible Markup Language
YML	Yet another Markup Language
ZIF	Zooming Image Format

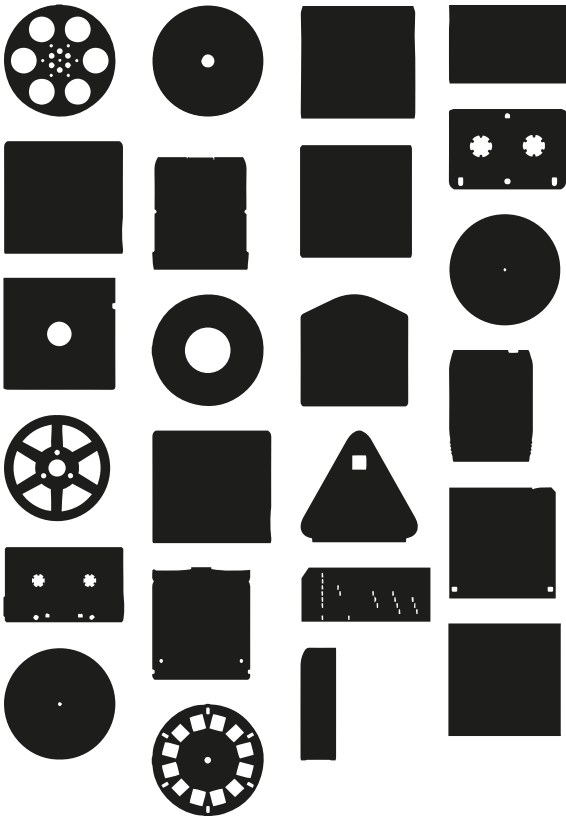
ABC file formats

Free
 Safety
 Stable
 Reliable
 Low price
 Simplicity
 Ergonomic
 Easy to use
 Convenience
 User-friendly
 Storage space
 Nice to look at
 Free to add users
 Easy to add users
 Diffused approach
 Easy to understand
 Ergonomic interface
 User-friendly interface
 Variety of functionalities
 Long-term sustainability
 Long-term improvements
 Possibly to export the data
 Overview of the volume of data
 Connexion between different tools
 Different services for different data

Users' criteria

- JV If I don't have the time to worry about the best solutions, I just take the first one that comes to me.
- JV The fact that I can play with the arrow!
- JV Since it is the interface that I will be using most of the time, it has to be user friendly
- CV Everything in the same place, that's clearly a killer feature for me.
- YH When I can say "that looks promising when they launched the product' and 'ah they really improved after a year' or ok 'now they're mature, stable', then I'm going to look into it."

Users' criteria



Storage Devices

Lost Formats

December 2000
 Lost Formats Preservation Society

The society was founded in 2000 with the design of Emigre issue 57. Its sole purpose is to save formats from obscurity. This overview of Lost Formats is not presented in any particular order and not in any way complete.

Further explanation about this collection can be read below (scroll all the way down).

Storage Devices

MagneticAudioTape
Dimensions: various
Storage Capacity: various
Manufacturer: AEG

MiniDisc
Dimensions: 70 × 67.5 × 5 mm
Storage Capacity: up to 160 Mb
Manufacturer: Sony

FloppyDisk
Dimensions: 5.25 × 5.25 inch
Storage Capacity: up to 1.2 Mb
Manufacturer: Dysan Corp.

SteelWireReel
Dimensions: unknown
Storage Capacity: unknown
Manufacturer: unknown

Visc
Dimensions: 12 × 12 inch
Storage Capacity: 2 × 1 hr
Manufacturer: Matsushita

CompactDiscInteractive
Dimensions: 12 × 12 cm
Storage Capacity: 650 mb
Manufacturer: Philips/Sony

DigitalVersatileDisc
Dimensions: 12 × 12 cm
Storage Capacity: up to 7.2 Gb
Manufacturer: Various

Storage Devices

Playtape
Dimensions: 3 × 2.8 × 9.5 inch
Storage Capacity: 30 min
Manufacturer: Sears/MGM

EighteenTrackTape
Dimensions: unknown
Storage Capacity: unknown
Manufacturer: unknown

Ditto
Dimensions: 2.4 × 3.1 × 0.5 inch
Storage Capacity: up to 7 gb
Manufacturer: Iomega

DVD RAM
Dimensions: unknown
Storage Capacity: unknown
Manufacturer: unknown

ViewMaster
Dimensions: about 3.5 inch
Storage Capacity: 7 pics/stereo
Manufacturer: Sawyers

U-Matic
Dimensions: 85/8 × 5 3/8 × 1 3/16
Storage Capacity: up to 60s min
Manufacturer: Sony

SyQuest
Dimensions: unknown
Storage Capacity: unknown
Manufacturer: unknown

Storage Devices

Jaz
Dimensions: 3.7 × 3.5 inch
Storage Capacity: up to 2 Gb
Manufacturer: Iomega

Telstar
Dimensions: unknown
Storage Capacity: 3 games
Manufacturer: Coleco 1978.

PaperPunchCard
Dimensions: Various
Storage Capacity: 80 columns
Manufacturer: IBM

DiskOnKey USB
Dimensions: Various
Storage Capacity: 8 MB
Manufacturer: IBM

Storage Devices

BetaMax
Dimensions: 155 × 95 × 25 mm
Storage Capacity: 120 min
Manufacturer: Sony

MicroCassette
Dimensions: 2.25 × 1.5 × 0.3 inch
Storage Capacity: up to 90 min
Manufacturer: Olympus

PhonoVision
Dimensions: 10 inch
Storage Capacity: about 3 min
Manufacturer: J. Baird/Columbia

EightTrack
Dimensions: 5.25 × 4 × 0.9 inch
Storage Capacity: 80 min
Manufacturer: RCA

SuperDisc
Dimensions: unknown
Storage Capacity: unknown
Manufacturer: unknown

DesktopHolographic DS
Dimensions: unknown
Storage Capacity: unknown
Manufacturer: unknown

Storage Devices●

Storing your files in the cloud has many advantages. You can view your files from any phone, tablet or computer that's connected to the Internet, and the cloud can also provide backup for files so they'll never disappear if your phone gets lost or your computer crashes. Using the cloud is a no-brainer, but picking which service to use is a bit more difficult.

For that reason, I've compiled a guide to the most popular cloud storage services, covering how they work and their strengths and weaknesses. I've also highlighted some lesser-known options if you want to get away from the mainstream.

Editors' note, March 25, 2016:

This guide originally include cloud storage service Copy, but we've removed it because it is shutting down on May 1, 2016.

Which cloud storage is right for you?

OneDrive

File size restrictions? 10GB

Free storage? 5GB**

Can I earn extra free storage? No**

Paid plans \$2/month for 50 GB**

OSes supported Windows, Mac, Android, iOS, Windows Phone

Dropbox

File size restrictions? 10GB with website,

none with Dropbox apps

Free storage? 2GB

Can I earn extra free storage? Yes

Paid plans \$10/month for 1TB

OSes supported Windows, Mac, Android, iOS, Windows Phone, BlackBerry, Linux, Kindle Fire

Google Drive

File size restrictions? 5TB

Free storage? 15GB

Can I earn extra free storage? No

Paid plans \$2/month 100GB, \$10/month for 1TB

OSes supported Windows, Mac, Android, iOS, Kindle Fire,

Which cloud storage is right for you?



Box

File size restrictions? 250MB for free plan,

5GB for paid personal plan

Free storage? 10GB

Can I earn extra free storage? No

Paid plans \$10/month for 100GB

OSes supported Windows, Mac, Android, iOS, Windows Phone, BlackBerry

Amazon Cloud Drive

File size restrictions? 2GB*

Free storage? No***

Can I earn extra free storage? No

Paid plans \$12/year for unlimited photos,

\$60/year for unlimited files

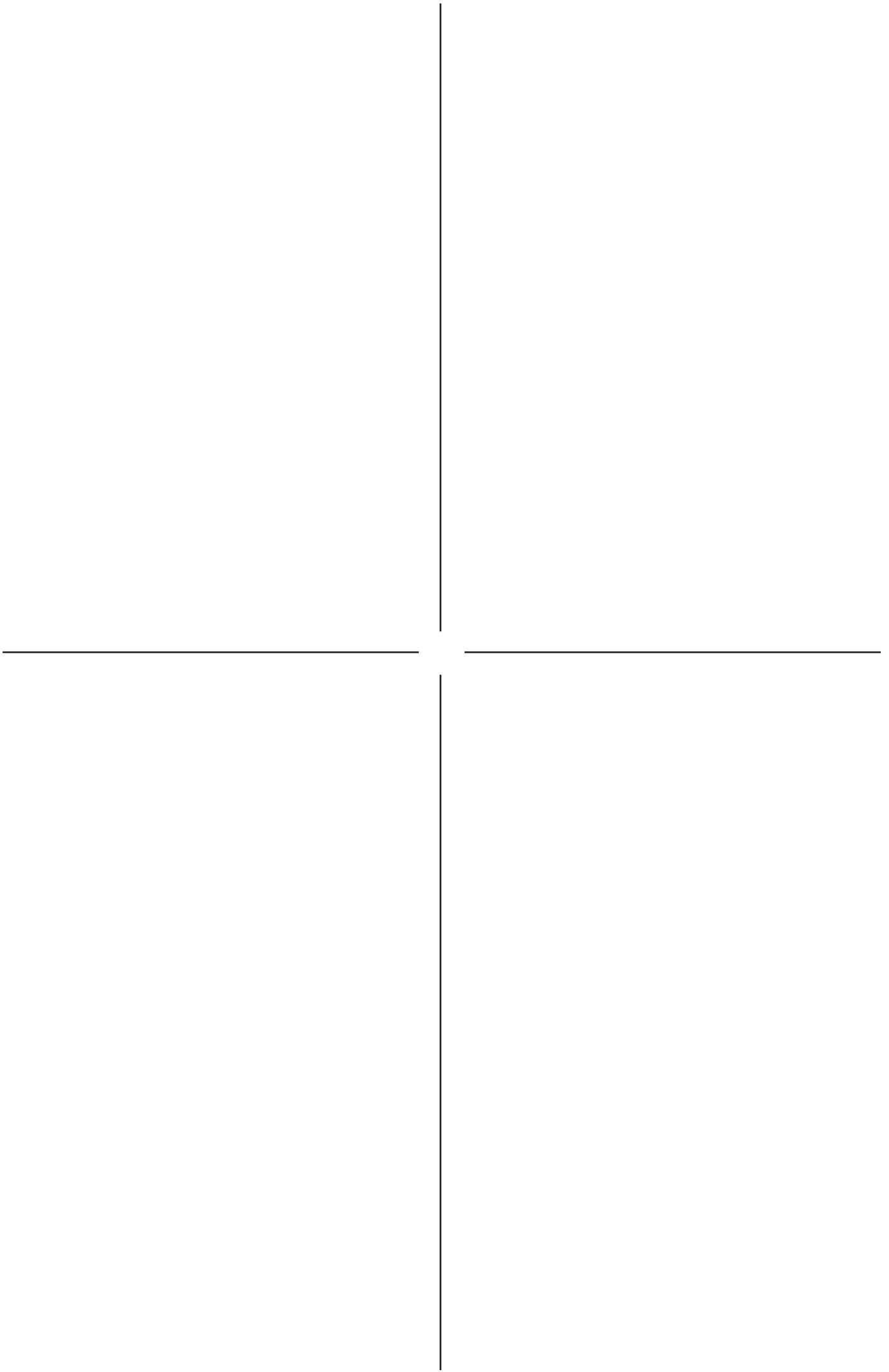
OSes supported Windows, Mac, Android, iOS, Kindle Fire

* There is no file size limit with desktop apps.

** In early 2016, Microsoft will change its free storage from 15GB to 5GB and offer a \$2 per month for 50GB paid plan instead of its earlier offerings. It will also no longer let you earn free storage.

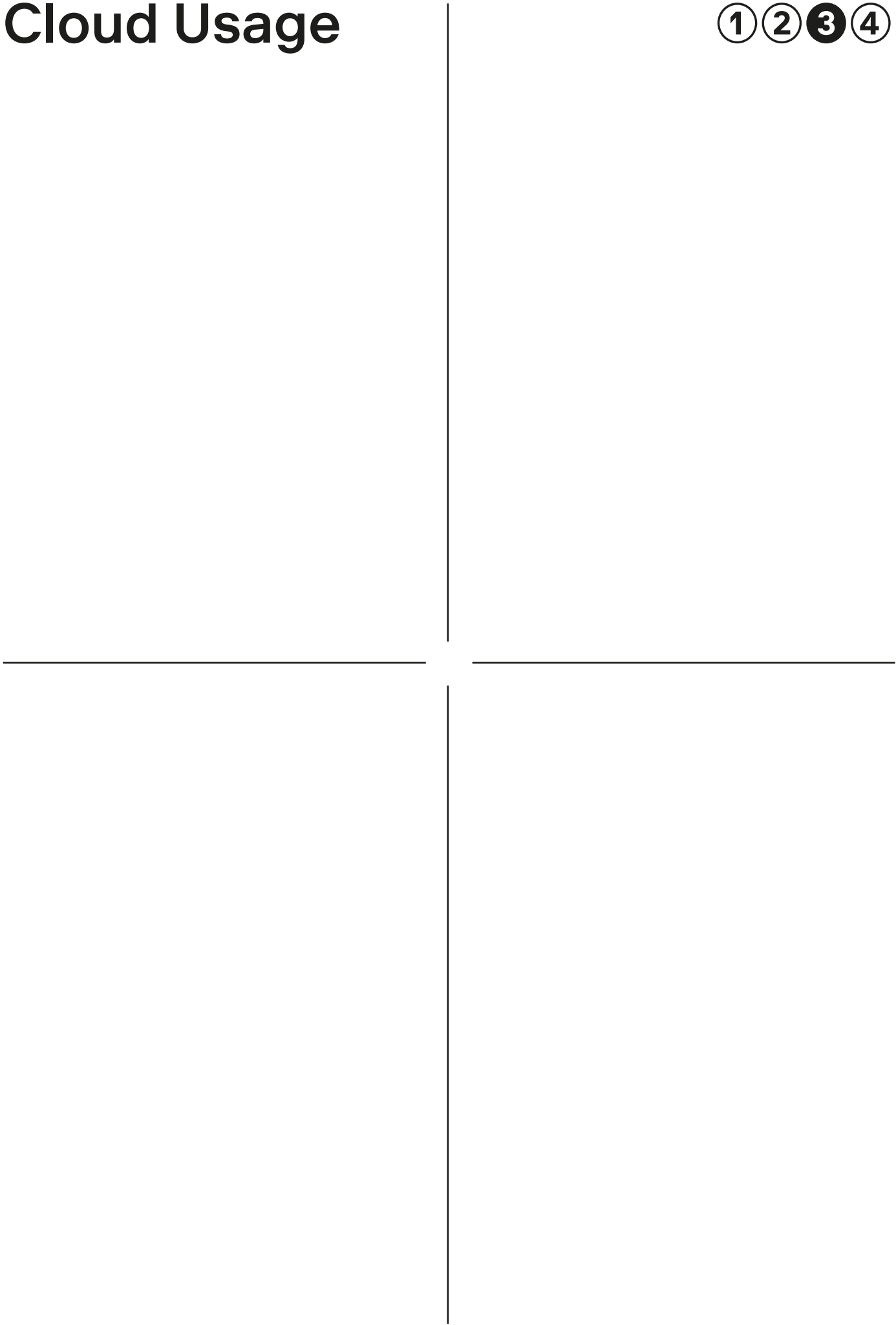
*** Amazon Cloud Drive offers limited free storage with an Amazon Prime subscription.

Which cloud storage is right for you?



Cloud Usage

① ② ③ ④



CV My first experience of the Cloud was actually Gmail where I kept my emails on a remote server as opposed to a local computer. Following that, it was Dropbox. I think my main motivation was the ability to access them from different computers, in different places and being able to retrieve my content when traveling, even on an iPad. These are the main reasons, compounded by the possibility to share information with several people.

JV I'm still not used to having everything on the Cloud. Because I'm not very organized, and don't use it systematically, I have documents on Dropbox or Google Drive as well and end up not being able to find anything. I have however been using Google Drive to store my talks and slideshows for the past year. It's simpler and takes less space on my hard drive.

MB In general, one of us will create a document and a team of us will work on it. Someone then saves it and we chat about what we did and then we will adjust and modify certain things until we have a final document.

Main Usage

MB Many of us work remotely as we are not in the same country, let alone the same continent, and often work across different time zones. This is the specificity of my job: working with people who are not close geographically. It can sometimes be tricky but the tools are here to ease things, or, at least, they should be.

PW Nowadays, we report on what we saw immediately after returning from the field. It allows us to tag photos and gather and share all the information in one place. My job is in events management which is a very international environment and has close connections with the media. We also work with many virtual teams that are fragmented. For example, we could be working with a main company, who in turn has lots of subcontractors and freelancers. It's interesting because the first party to use WiFi during events were photo agencies but this was not scalable as they take literally thousands of pictures every ten seconds and therefore cannot depend on WiFi. They now ask for "fibre in the pit" and a cable to ensure the network speed required.

Main Usage

PW I use Dropbox, Box, WYM, etc. because my clients use these different services. The more I can manage the details, adjust and re-adjust, the better it is for me. I also value the smooth replication of content. I need a tool to help me anticipate and manage collaborations with people. I face a lot of different situations and need a service that allows me to respond in good time. For example, sometimes I want everyone to be able to access everything but in other cases, I want to be able to block a version of the document, to start a new version and to manage the workflow. It's often the case that we are faced with several technological solutions and cannot easily configure them.

GK I currently use 1 gigabytes out of 15, and I don't need any more.

Main Usage

- File storage
- Back-up of digital files
- Back-up of paper-based files
- Disaster recovery
- File access
- Synchronization
- Versioning

- Communication
- Collaboration
- Photo sharing
- Synchronization
- Keep in touch with diaspora members

Main Usage

Daily
 Any day
 Everyday
 Regularly
 Everytime
 It depends
 Commonly
 Once a day
 Continously
 Permanently
 It became a reflex
 I'm way too connected
 Every hour during my day
 Frequently during the moments I teach
 Only to grab a document or to consult it
 Almost the rare times I take a step back in my life
 For retrieving stored information, it's quite punctual

Frequency of use

YH It had been a while since I had taken three consecutive weeks of vacation with my wife and during that time I tried to lower my usage to a minimum, for example by not systematically saving, duplicating documents and checking everything. It was cool to be less focused on screens, and also give my damaged eyes a break. Furthermore, the exercise allowed me to look at the world around me. However, when I got back, I realized that I had completely forgotten to save some things, emails for instance. In the end, it took me more time and energy to catch up with what I hadn't done during those three weeks.

CV I think one of the distinguishing features of the Cloud is that it's closer to a smooth physiological process than something that we are conscious of. The few times when I'm disconnected would be easier to spot than the ones when I'm connected.

Frequency of use

I&IC workshop #1 at HEAD:
 Diagrams of uses

A first step in our field research consisted in investigating various online forums where people comment/complain/discuss cloud computing services (Dropbox, Google Drive, etc.). These boards offer fascinating insight into user practices, and the range of topics discussed is quite broad. We quickly discovered that this approach would enable us to build two typologies according to the main usage of cloud computing services and the motivation of its users.

We basically built a corpus of messages that we categorized and represented visually with the following diagrams. These shed light on the main uses of cloud computing and the practices that the Cloud enables people to undertake. We intend to use them in the upcoming workshops as a stimulus/framing/inspiration for designers.

Diagrams of Uses

The list of platforms and forums that we investigated is the following...

Cloud drive:
 Dropbox
 Google Drive
 Insync
 Copy
 Spideroak
 Wuala
 Skydrive
 SugarSync
 LogMeIn Cubby
 iCloud
 Skydrive
 Mozy Stash
 Box
 Syncplicity
 Liner notes

Filesharing systems:
 MediaFire
 WeTransfer
 YouSendIt

Personal cloud services:
 OVH

Diagrams of Uses

→

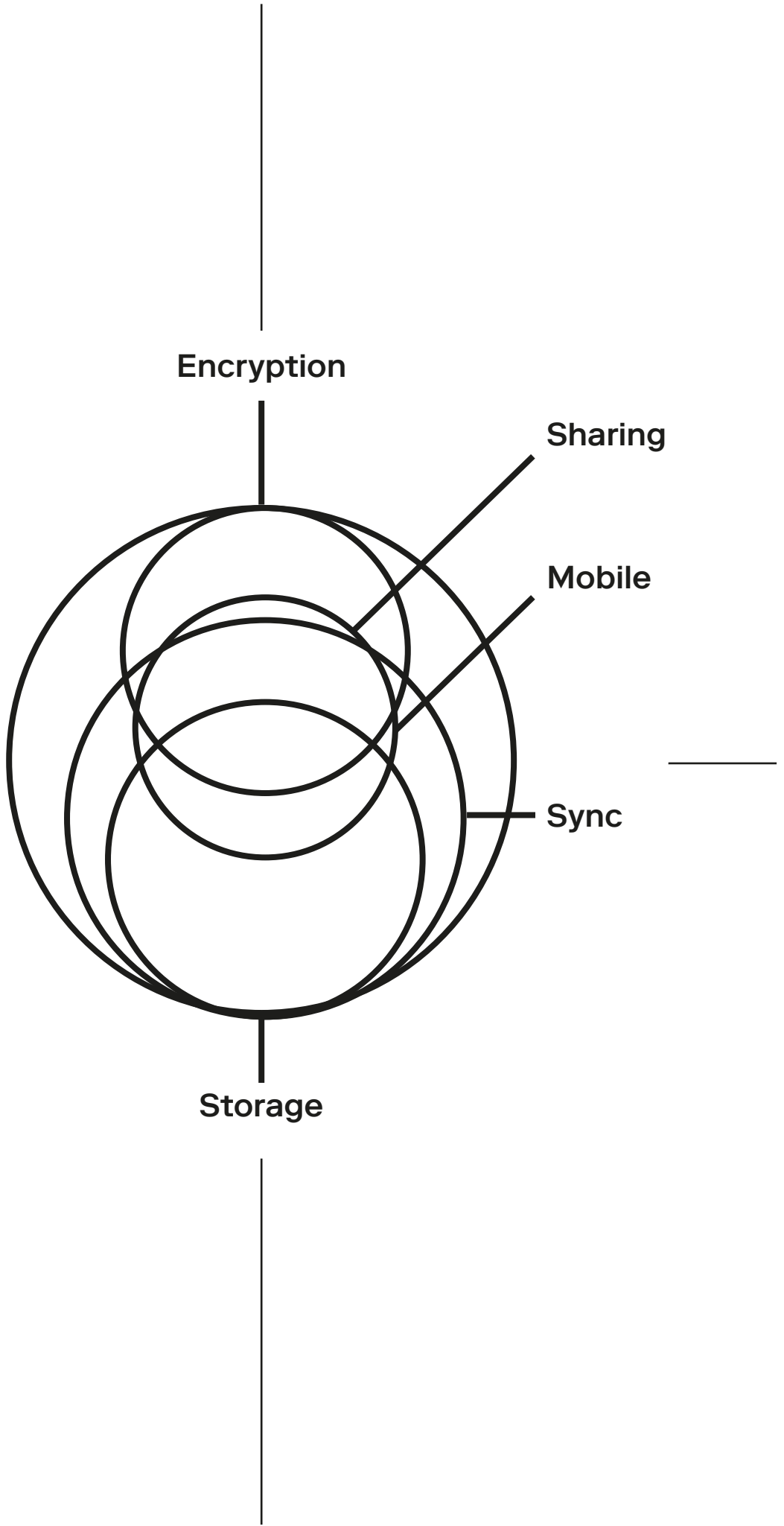
Encryption

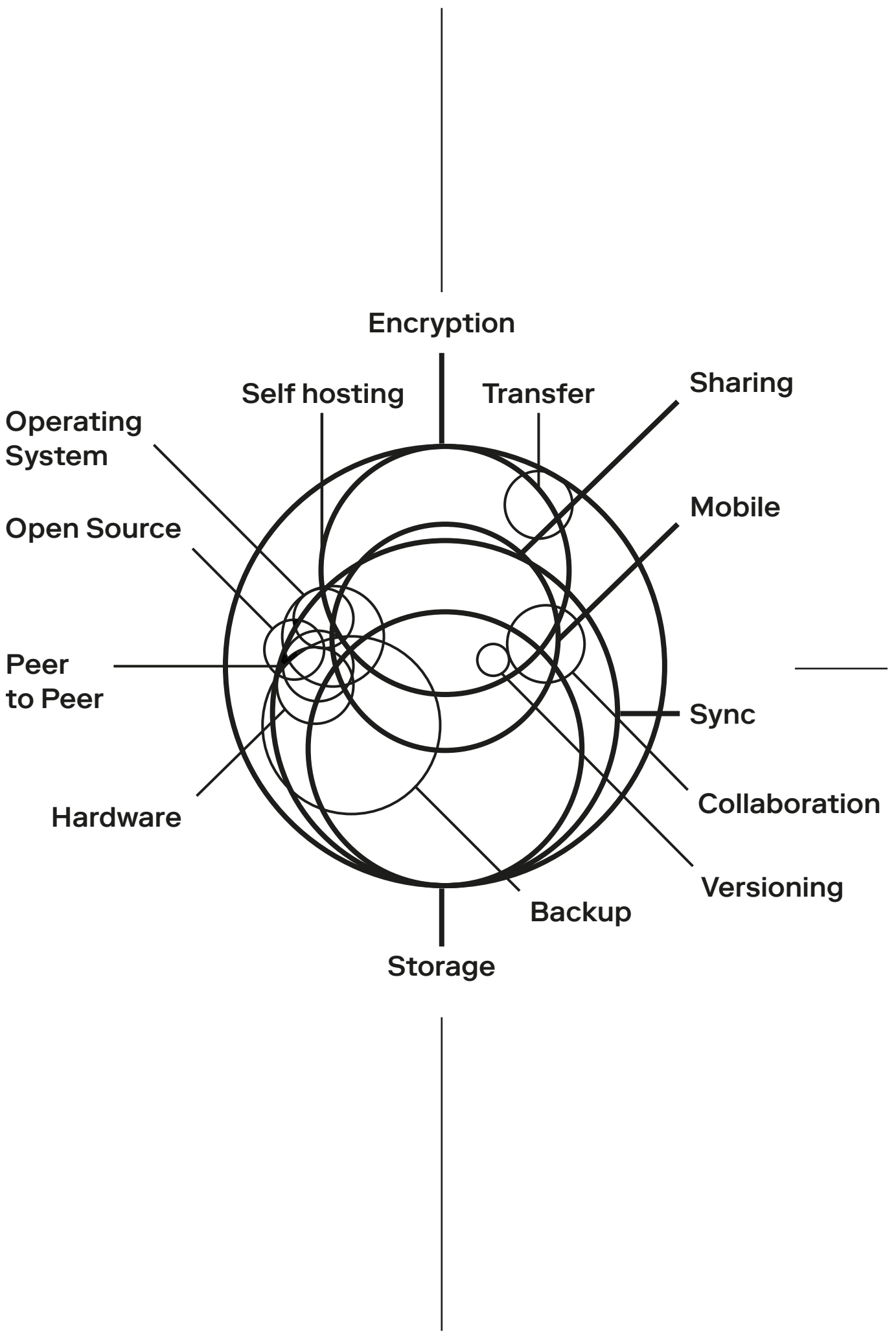
Sharing

Mobile

Sync

Storage





A new way to hack your Google Drive and DropBox accounts has been detected!

Beware! The latest news of cyber security industry is more than disturbing. According to Imperva Hacker Intelligence Initiative report — a well known cyber security company — hackers may now easily get access to all users' files in cloud services such as Google Drive, Microsoft OneDrive, Dropbox, and Box, if they are able to get into the computer, on which the clients of these services are installed. Moreover, the hackers won't need the logins and passwords to access data in the users' accounts.

How do they do it?

The experts have found out that all of the specified services provide a constant access of the client-side applications to the servers with the help of security tokens, which are generated during the initial authentication. These tokens are stored on the device in a file, in the Windows registry or in the Windows Credential Manager (depending on a type of application). The analysts have developed a tool Switcher for simulation of the attack, which is able to execute on victim's computer (for example, disguised as an e-mail or through a leak in browser security etc). After getting on the computer, Switcher replaces the token with its own, connected to the criminal's account prepared earlier and uses it to access an account of a particular cloud service. Then Switcher re-initializes the client-side application of the appropriated cloud service and proceeds to using a changed token. As a result the data from the victim's devices is synchronized with the cloud account of the hacker. The token provided to the Switcher is extracted from the victim's machine and sent to attacker. In some cases the attacker can use this token for access to victim's cloud account. So the

Warning!

attacker not only gets the files of the victim during the attack but can also use the token for further access to the victim's account from his own computer.

Protect your dropbox

- Change your password
- Set up two-step verification
- Look up a computer's last known IP address
- Unlink devices, web sessions, and apps

Change your password

You can change your password in your account settings. Be sure to use a strong password that you don't use for any other service. See our tips for choosing a strong password.

Set up two-step verification

Two-step verification is a highly effective way to protect your account from unauthorized access. When you sign in to Dropbox, you'll be required to enter the code sent to your phone or a mobile authenticator app. Find out how to set up two-step verification.

Look up a device's last known IP address.

A computer's or mobile device's last known Internet Protocol address is recorded when Dropbox connects to the internet on that device. The IP address can be used to identify the approximate geographical location where the device connected through an internet service provider. You can view this information on the Security tab in your account settings.

Roll your mouse over the "i" icon to see the last IP address that was recorded. We currently show the country of the

Warning!

GH If I wasn't a Google Cloud user, I would set up a server at my place, maybe a "replex" or something like that. I wouldn't use USB sticks because it's something you always lose, which is no good.

CV It wouldn't be such a big issue. I would need to make time to manage things better or a new kind of job may emerge, like a "digital housekeeper". It would be like someone coming to clean your house — the digital housekeeper would manage your content, do your back-ups, update your system and so on. It's a possibility

CV The tricky thing would be the lack of collaborative workspaces and we would be forced to revert to platforms based on local servers. This would not only take time to re-adapt but the impact on our work practices would also be huge.

YH My life wouldn't change much, but I would certainly have to adapt. It wouldn't be a problem if the day that I no longer have access to the Cloud, other people wouldn't have access to it either. A big catastrophe like a post-nuclear apocalypse would be worse as it would deprive us of Internet access. It would take time to set a mesh network. The priority would no longer be the ability to access your pictures on the Cloud!

How would you live without the cloud?

As easy as 123456 the 24 worst passwords revealed. If your password appears on this list, you should probably change it right away.

Password	Change from 2014	Rank
123456	unchanged	1
password	unchanged	2
12345678	up 1	3
qwerty	up 1	4
12345	down 2	5
123456789	unchanged	6
football	down 3	7
1234	down 1	8
1234567	up 2	9
baseball	down 2	10
welcome	new	11
1234567890	new	12
abc123	up 1	13
111111	up 1	14
1qaz2wsx	new	15
dragon	down 7	16
master	up 2	17
monkey	down 6	18
letmein	down 6	19
login	new	20
princess	new	21
qwertyuiop	new	22
solo	new	23
starwars	new	24

Worst passwords in 2016

last known IP address, but you can use any IP address lookup service for more detailed information.

Unlink devices, web sessions, and apps

From the Security tab you can also unlink devices, web sessions, and apps as needed by clicking the corresponding X. This will help prevent unauthorized changes to your account.

If you unlink a computer or mobile device, this will turn off syncing to and from that device. Note, however, that this will also stop recording any new IP address from a computer.

If you're signed in to Dropbox through a web browser, unlinking a web session will sign you out and require your password to sign in again.

If a third-party app is linked to your account, unlinking it will end the app's ability to access your Dropbox, and your password will be required to relink it. Remote wipe the Dropbox folder from a device

If you're a Dropbox Pro or Dropbox Business user, you can use remote wipe to delete the Dropbox folder from a device when you unlink it. Learn about how to use remote wipe.

Dropbox Business team admins and team members
Dropbox Business team admins have the ability to sign in to the accounts of team members using "Sign in as user." Team admins can sign in to team member accounts to do any of the following:

Warning!

View a team member's folder structure. Share files and folders with others. View, open, and download files

Delete files, or restore deleted files. If you're a Dropbox Business team member, and you think your account has been compromised because you see that one of the above actions has been taken in your account, first check with your team admin.

"Information = Money!"

Information can be anything — financial statements, health records of patients, source codes, intellectual property (IP), trade secrets, design specifications, price lists — anything from which an organization generates profits. Information is one of the business's most important assets.

Business requires accessing information from anywhere, anytime and on any device. This desire for information to be "free" leads to many security and management related challenges.

Organizations are moving from securing IT infrastructure to securing Information. While a great deal of attention has been given to protecting electronic assets from outside threats — from IPS to Firewalls to Vulnerability management — organizations are now turning their attention to an equally dangerous situation: the problem of data loss from inside.

Data Loss Problem

You may have got a complete arsenal of hardware and software, encryption and firewalls, IDS and IPS, to prevent any hacker, virus, malware or spyware from penetrating your defenses. From the outside you are invincible.

Warning!

Inside is a different story!

Inside, A Blackberry can be as dangerous as an internal spy. Your email server may become a superhighway for sending classified data to the outside world. An HTTP link can be a pipeline to the competition.

The issue of data loss covers everything from confidential information about one customer being exposed, to thousands of source code files for a company's product being sent to a competitor. Whether deliberate or Accidental, data loss occurs any time. Employees, consultants, or other insiders release sensitive data about customers, finances, intellectual property, or other confidential information (in violation of company policies and regulatory requirements).

According to a survey, Employee error is now the fourth largest security concern in the enterprise — behind malware, spyware and spam. With all the avenues available to employees today to electronically expose sensitive data, the scope of the data loss problem is an order of magnitude greater than threat protection from outsiders.

Warning!

Sources of Data Leakage

There are many ways through which confidential data or proprietary secrets can leave an organization via the internet:

E-mail,
HTTP,
Instant Messaging,
Peer-to-peer sites and sessions,
FTP,
Flash drives,
USB Devices,
Mp3 players,
Cell phones,
etc.

are the most common electronic devices used to leak sensitive data.

Warning!

- YH Our generation is very nomadic. The more mobile we are, the more we need the Cloud and the uninterrupted availability of things that it allows. Moving around stacks of books when you have tons of them is annoying. So even if I hate reading on a tablet or on a screen, when e-books arrived, that changed things...
- JV The main attraction is having access to my documents at any time and on different devices. It allows me to work collaboratively. I use chatrooms and multi-user editing platforms.
- MB The speed of editing shared documents and getting team-mates' feedbacks. It's really efficient.
- JV We can access the Cloud anywhere. We have a back up which theoretically can't be damaged or stolen. That said, there are important security issues that I wonder about, such as the fact that my data can be analyzed by the company which manages it.
- MB It works on any device, for example on my tablet and on my phone. I also like the "activity" feature which allows me to see which document was modified and when. This makes it easier to find the last files that people worked on.
- MB Back up and document editing (Google Drive), chatrooms, IM in which we can upload documents and comment on them. This is useful when working remotely.

Motivations

- CV With cloud platforms, you have less "external devices" which is a safeguard against the risk of losing or breaking them. Plus, it removes the need for maintenance as this is done by the service provider. Because the housekeeping tasks are outsourced and basically automated, you don't have to do them yourself.
- MB The fact that I can see other people's presence in the document through icons is very interesting and is a detail that makes us closer. We sometimes joke and have fun in Google Docs, for example by using a 120pixels font and writing something funny right in the middle of the document to lighten the atmosphere.
- MB I share documents with friends, colleagues such as pictures from my vacations. As soon as we go over 1Gb, however, the Cloud is needed.
- GK Things are available everywhere, and it's always the same file, no matter the machine. Once, one my devices stopped working and being able to access my same files from different devices was very helpful. It's also efficient for sharing files by simply sending a link. Recently, we shared photos of New Year's Eve on Google Drive. Almost everyone used it. I also have a folder named "Temp" in which I download music tickets, and I erase the content once the event has passed. I have lots of things that I categorize, photos, music, etc.

Motivations

- PW I use the Cloud both personally and professionally, because I work with teams dotted around the world. I travel quite often and it is the most efficient way for me to retrieve documents. I can use it for photos, videos or apps that I can share with other people. This was the main reason for me as I don't carry much when I travel. It also allows me to access files and archives anywhere and makes it easy for me to look for things.
- CV It's practical to work efficiently and quickly. It fits my job as a consultant. A client sends me a Dropbox link, I add it to my Dropbox and I can work on it right away.
- YH The two main incentives for me were: the possibility to work in the same conditions anywhere and everywhere without having to think of what to bring or moving important assets around.

Motivations

Interview with MB

- CC In your opinion, how would you do without the Cloud?
- MB Badly as it would take ages to share documents. In fact, I can't begin to imagine doing without it. Basically, I would have to create a document, save it and mail it. Can we use email in this hypothetical scenario?
- CC Yes, sure.
- MB OK, so I would mail the file to the other person... can we use Skype, or not?
- CC (laughter)
- MB I'm trying to imagine it... No, it would be very inconvenient.
- CC Does it mean you feel like you are dependent on these services?
- MB Yes, totally! When Google Drive doesn't work or when Skype is down, we're completely stuck. Especially because we are not in the same country and making phone calls is expensive which means we really depend on these services.

Motivations

Fears
 Archive loss
 Idea stealing
 Data Migration
 Service Lifespan
 Technical Issues
 Heavy prices
 File/data loss
 Spam overload
 Confidentially breach
 Forgotten passwords
 Notification overload
 Confidentially breach
 Lack of memory space
 Copy/Past Issue (files)
 Group conversation bug
 End user licence/forcing
 Privacy intrusion/surveillance
 Filetype conversion problems
 Bug with Google Drive plug-in
 Concurrency issues with file-access
 Free services suddenly charge users
 Lack of control over version updates
 No WiFi, no network, no cloud access
 Flaws with automatic updates/installs
 Concurrency issues with file-modification
 Account changed/removed by organization
 Lack of memory space causes by team-mates

Frustrations

Behaviors
 Dependency
 Configurability
 Too much content/document
 Difficulty to train team-mates
 Finding files in shared folders
 Difficulty to change one's habits
 Difficulty to deal with parallel projects
 Lack of understanding/lack of definition

Frustrations

- CV Sometimes I lose my data. I wonder “where did I put this document?” It’s like losing the keys to your apartment. You know they’re somewhere, but you don’t know where.
- MB I find it constraining that we have to fight for storage space.
- CV Data loss is both a physical loss and a loss of control. I have so much unlimited storage space that I don’t control anything. I’m disoriented.
- CV When travelling, we’re often in places with no WiFi and I have to find a solution to work.
- JV I used to have a university email where all of my documents were stored. But I never made a backup, so when it was deactivated, I lost everything!
- YH We signed an end user license agreement that I never read, as no one ever does. I don’t even know what my rights are in the US. If some day Evernote uses my data, I can’t do anything to stop it. I don’t even know the procedures to do anything about it.

Frustrations

- MB When Google Drive doesn’t work or when Slack doesn’t work, we’re stuck.
- MB It’s so easy to create a document that we have a tendency to create too many of them. We then become overwhelmed with documents and files.
- CV It’s often hard for me to retrieve files if I didn’t store them myself, something which is quite common given that we work in teams.
- CV The tricky thing for me is this notion of digital cultural property. For example, my Spotify playlists, can I control them? I store lots of things, but how do I know if they are still there? What happens if Spotify is bought out by Microsoft? Will they vanish? It would be a bummer to lose all of my musical content.
- CV Just as I can’t picture what my bookshelf will look like in 40 years, I’ve no clue what my Cloud space will be like then either.
- PW I find it extremely frustrating when I am spammed. I’m sure my current telecom provider tracks my activities and calls. It’s brutal marketing intrusion.

Frustrations

Motivations

Multi-devices
Multi-location
Universal access
back up anymore
Long-time usage
Multi-generational
No need to handle file
Fear of losing one's data
Reducing congestion of documents
Unique storage place for files and data

Diagram of Motivations

Frustrations

CloudS
File loss
Privacy issues
Memory Inflation
Limited to file storage
Limited to file sharing
Non stop notifications
Multiplicity of services
Organizational schemes
Accounts and identifiers
Memory space management
Folder names and structures
Balance between local and cloud space

Diagram of Motivations

“Google Drive has a fun way of showing anonymous users viewing a document. An animal icon is randomly associated as the anonymous user's avatar. I designed over 74 animal icons from an ‘Anonymous Turtle’ to an ‘Anonymous Kraken’ to delight discreet users.”

J. Soncheng

Anonymous Animals



Anonymous Animals

MOTIVATIONS

NO NEED
TO HANDLE
FILE

FEAR OF
LOSING ONE'S
DATA

UNIQUE
STORAGE
PLACE FOR
FILES AND
DATA

UNIVERSAL
ACCESS

REDUCING
CONGESTION
OF
DOCUMENTS

LONG-TERM
USAGE

USAGE

FILE STORAGE

File access and
synchronization

Back-up of digital files

Back-up of paper-based
files with potential
exceptions

Disaster recovery

Versioning

COMMUNICATION

Collaboration

Photo Sharing

Synchronization
with contacts

Messaging

Keep in touch with
diaspora members

SERVICES

Standard services
(Google Docs)

Shared computation
resources (for developers)

DATA LOSS

PRIVACY
ISSUES

MULTIPLICITY
OF SERVICES

ORGANISATIONAL
SCHEMES

MEMORY
SPACE
MANAGEMENT

LIMITATION
TO STORAGE &
SHARING

PROBLEMS

Anonymous User

"My 16 month old daughter loves to play with our iPad, often taking her own pics/videos. Camera upload lets me see them wherever I am. yay!"

Anonymous User

"Dropbox makes it easy to share a multitude of files in different locations at our school in the IT Department and for school bus drivers."

Anonymous User

"Always worried about what happens if I lose my phone or lose my tablet, there's just far too much to lose. Dropbox solved that problem."

Anonymous User

"My GF and I met thru Dropbox because I accidentally added her email address and ended up sharing my designs with her! Soon to be married :)"

What people love about Dropbox

Tuan Anh D.

"With a scanner, my mom sends me letters over Dropbox! Because she doesn't know how to use email!"

Robert K.

"I work as salesman and drive 100.000 km a year. I use a Notebook, a Smartphone and a PC. With Dropbox I have on all devices the same data. Nice! "

Salvatore C.

"Seven friends in Yellowstone equals 7 different cameras & perspectives. Having Dropbox means we can pick & choose the best pictures."

Brian B.

"Dropbox helped me win her heart; When we were far apart; Now we're married and have Ben; Thank you Dropbox, Again and Again."

What people love about Dropbox

Bruce W.

"On Sept 8, 2011 our house flooded. During the following months Dropbox was indispensable in keeping track of flood ins and FEMA paperwork."

Mikhail K.

"Being a kid I always dreamed of a magic bag which could make things tiny and where I'd put all the needed stuff. Dropbox gave me one."

Rashed R.

"Only mate I can trust with decades of family photos treasured for future generation."

What people love about Dropbox

Alex M.

"España Network is an international radio station based in Palma de Mallorca. With Dropbox we can work with all our DJ's throughout the world."

Shane K.

"I run my nerdy Dungeons & Dragons games off of Dropbox. All the players can see all the game materials thru our shared folder!"

What people love about Dropbox

Advice and Assistance

- "Ideas and tips forum."
- "Advice on the choice of suitable tools."
- "Recommendations for better organization of data."
- "Advice on where to find tools and how to use them."

Management

- "A tool to finalize documents online."
- "A tool to switch from one platform to another."
- "A tool to help classify various documents."
- "An export button in case a service shuts down."
- "A physical object which can 'materialize' your data stored on the Cloud."
- "A digital housekeeper = a human being who manages your online data."
- "A forum with user profiles (designer, banker, developer) where people can discuss how they deal with the Cloud."

Design Opportunities

Creation

- "A tool for brainstorming on game design or level design."
- "A tool to sketch and communicate in real time."
- "A collaborative online sketching tool (like Google Doc but for drawing)."
- "A collaborative online mock-up tool."

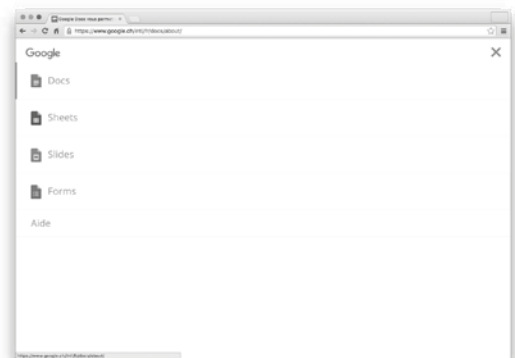
Collaboration

- "A tool to manage the time difference between users."
- "A tool to help manage the use of different services when working with various clients."
- "A tool that shows when people are in the document for live collaboration."
- "Additional training on specific services or tools to be used by team members."

Design Opportunities

- CV I don't really see the difference between content or apps installed on my hard-drive and those found somewhere in the Cloud.
- PW You can see that too when traveling and have no network connectivity, and you suddenly feel naked because you can't access your content off-line. We tend to forget that it's a space that you can only reach with an internet connection.
- JV I never signed up to iCloud. I don't use it. I prefer to keep my own stuff at my place.

Design Opportunities



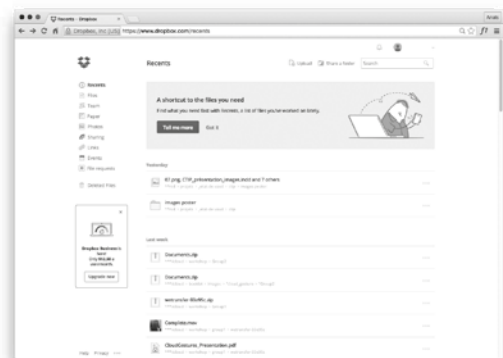
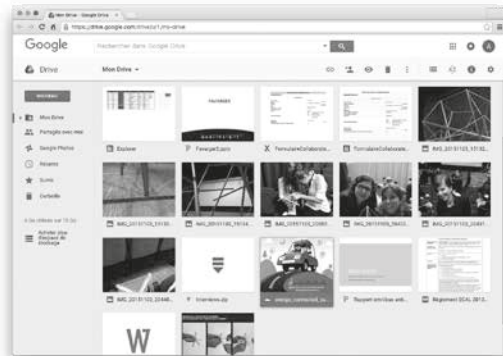
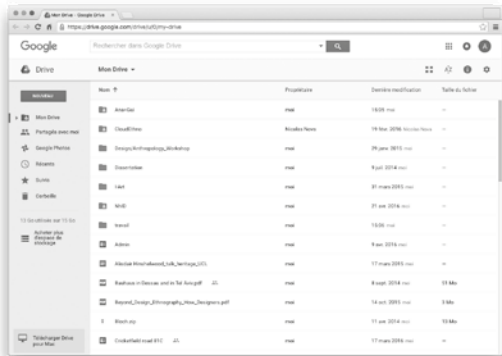


Image in order of appearance:

- google drive account
- google drive account
- dropbox account
- dropbox account

Design Opportunities

Data Loss Statistics

Data loss prevention software that are designed to detect potential data breaches/data ex-filtration transmissions and prevent them by monitoring, detecting and blocking sensitive data while in-use, in-motion, and at-rest. In data leakage incidents, sensitive data is disclosed to unauthorized personnel either by malicious intent or inadvertent mistake. Such sensitive data can come in the form of private or company information, intellectual property (IP), financial or patient information, credit-card data, and other information depending on the business and the industry.

Data Loss, Data Leak

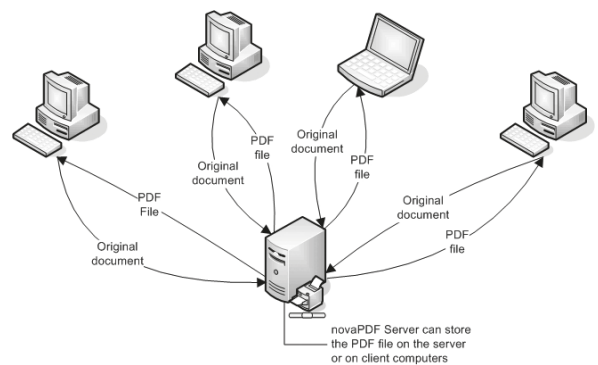
The terms "data loss" and "data leak" are closely related and are often used interchangeably, though they are somewhat different. Data loss incidents turn into data leak incidents in cases where media containing sensitive information is lost and subsequently acquired by unauthorized party. However, a data leak is possible without the data being lost in the originating side. Some other terms associated with data leakage prevention are information leak detection and prevention (ILDPA), information leak prevention (ILP), content monitoring and filtering (CMF), information protection and control (IPC), and extrusion prevention system (EPS), as opposed to intrusion prevention system.

Data Loss Prevention

Loss Prevention

Data Loss Prevention (DLP) is a system/process for identifying, monitoring and protecting sensitive data on information in an organization according to policies. Policies can vary from organization to organization, but the focus is on preventing sensitive data from leaking out of the organization and identifying people or places that should not have access to certain data or information.

Data Loss Prevention



Data Loss Prevention

Presence, Persistence, Perception: Cloud Computing and the Body

Natalie Kane

In this current time, our bodies persist across networks in ways that we never imagined, and in places we never thought we would go. With the invention of the telephone, the radio, and later, the television and many more devices, our bodies could appear wherever we wanted to. In addition, the fear of death and the hope of an afterlife, a step into the eternal unknown, has translated somewhat into our understanding of the digital world.

In the early days of wireless reception in the 1930s, stories of household that suddenly sprung to life were reported, of a “tin roof, next door, making political speeches.” (Sconce, 2000, p. 68) As detailed in Jeffrey Sconce’s *Haunted Media*, it was a simple explanation (emphasis mine):

“Other items tell of a house perpetually ‘haunted’ by radio signals and of a woman who fainted on morning in the bathroom after her mirror greeted her by saying hello (*apparently the lead and glass in the bathroom had served as an antenna for a nearby station.*)” (Sconce, 2000, p. 68-69)

In this case, a mirror did not behave like a mirror should. Of course, due to the seemingly opaque nature of the process at work to make a radio talk at all, the reaction by the woman in question should not be laughed at. The body was not in a place that a body should be. The shock, horror, and fear that arose in the late 1800s as a result of your voice, any voice, being heard in a friend’s living room from many hundreds of miles away was understandable.

Suddenly, your body was not as immediate as you imagined, not as bound by borders and edges. Time became a looser concept to grasp, as travel and postal time was eliminated through a carefully orchestrated series of buttons, bells, and connections.

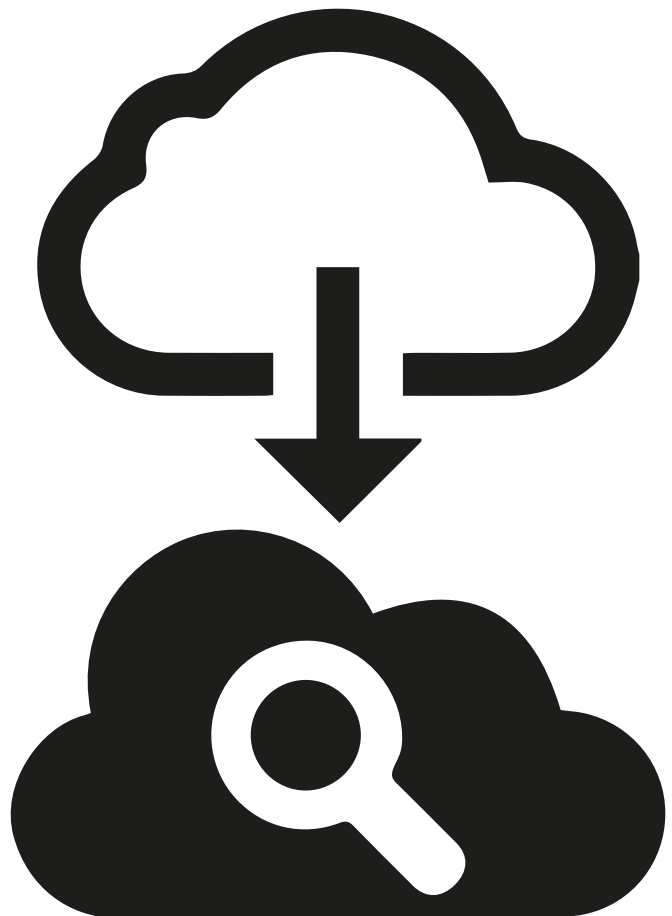
With such technology, we had found a way, perhaps, to listen to the recently departed, for if our bodies could transcend time and space when alive, why not in death? Although the belief that the new technologies signaled a leap in spiritual telecommunication diminished significantly (though not dismissed, as evident in the continued work of the Society for Psychical Research) at the end

of the nineteenth century, the “ghosts” they were creating continued to appear, as glitches, abnormalities and phenomena. As computing developed, unanticipated spectres rose to the surface, from malevolent spirits in the form of viruses, to inexplicable, sudden death; the infamous “blue screen” turning your home computer into an incandescent gravestone.

Fitter, Happier, More Productive, Comfortable

With the introduction of cloud-based (internet) computing, atemporality and amorphous presence expands and fractures exponentially. Though the term “cloud” was used to describe distributed computing such as ARPANET from as early as 1977, the meaning it holds now wasn’t used until the late 90s, with the term coined (and subsequently verified by *Wired* in 2011) in 1996 by marketing executive George Favaloro in a Compaq business plan. The term itself has become somewhat ubiquitous, with a variant of icons to match (how many different ways can you draw a cloud?), and suggests a “lighter”, faster, more nimble relationship with

your computing. As if sprung from futuristic visions of the 50s and 60s, including Hans Hollein’s mobile office, free from the shackles of infrastructure, the dream promised by cloud computing was the ability to work anywhere, and any time. Any number of product vision videos from Microsoft, Samsung and other big technology companies in the last ten years will show you how effortlessly seamless life can be if you engage with “The Cloud”. No need to carry bulky hardware with you, as long as you have a connection, you have the power.



A selection of “Cloud” icons found on Google Images.

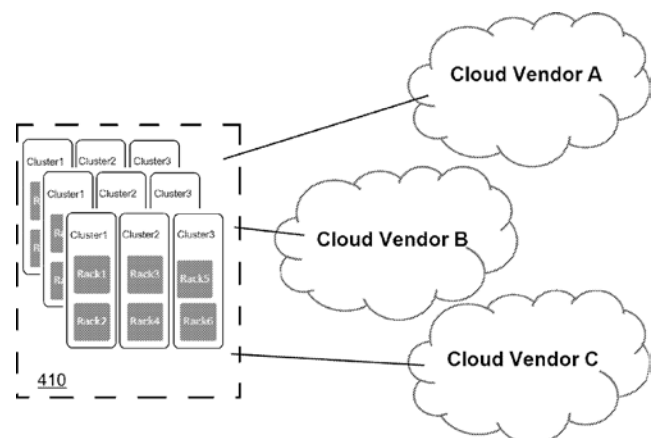
As information is not stored with you and the software needed not even necessarily installed (as in the case of Google Drive), it is easier, smarter, more flexible and less dependent on your computer's memory and storage. You are less limited by the machine in front of you, suddenly your laptop or home computer becomes a portal to the aforementioned "no place" that exists virtually, looked after in impressive-sounding data centres, robustly guarded and maintained.

With distribution, comes convenience, but also a lot more things to pay attention to. Rather than one linear connection (human on telephone, switchboard, other human) there are many, and as in the early days of telecommunications, its processes happen behind the scenes, complex workings rendered invisible. If power is what we want, or are given, as is evangelised by companies such as Apple with their 2015 campaign slogans telling you that "you are more powerful than you think", then how do we know what power we have been granted? Is it power at all, or just a clever sleight of hand

by the ones that are the true beholders?

As Above So Below/
As Within so Without

Our devices aren't doing what they are supposed to do, or rather what we expect them to do, because of this impermeable, unfathomable relationship to the cloud. Our smart televisions are listening to our conversations, our smart-phones are giving away our location without telling us, and the internet of things is opening up wilder possibilities for hackings in our homes. Though we make assumptions on our understanding of presence, of being in-the-world, there is another less recognisable spectre that runs alongside with savage persistence, impacting on our lives economically, socially and politically.



Drawing from US Patent 20100061250A1 (Google)

So, what does this inconsistent, constant presence and persistence do to our understanding, and what does it do to our sense of agency over ourselves? Can we find a way to perceive our bodies, our memories, as they leave us? How does the decentralised, opaque nature of The Cloud create the capacity for ghosts to appear, and what are they telling us? Where bodies are, where we expect them to be, and how to retrieve them once they have left us was once an entirely corporeal concern. Now, we run the risk of losing parts of ourselves entirely, with our “virtual” bodies, so intrinsically tied to our memories, emotions, and everyday machinations, in places we never knew existed in the first place. The Inhabiting & Interfacing the Cloud(s) project (I&IC) addressed some of these questions by showing that users are often confused by the inconsistent, amorphous presence of the Cloud¹.

With the cloud, our bodies, both past, present, and future, can exist at once, influencing the way each manifest in the world, a phenomena Amanda Lagerkvist calls the “persistent presence of the infinite,

in the age of temporal instantaneity.” As I will discuss further in this chapter, in not understanding where our bodies are perceived, persist and are present, we leave ourselves open to possession and subsequent violences.

Ghosts on the network

Evidence of contemporary ghosts, facilitated by opaque network interactions, have already begun to appear over the last few years. In early 2013, 17 year old Retaeh Parsons took her own life after pictures of her being allegedly sexually assaulted were distributed online.² Six months later, her image appeared in an advert for singles in Canada on Facebook, sitting alongside the Newsfeed in the column reserved for third party advertisers. Her family, and friends, were rightfully horrified, and sought answers, not knowing quite where to look for them, or who to blame. The website, ionechat.com, was subsequently banned from advertising on Facebook and claimed no ill intention, ceasing to exist (in its current form) entirely. Facebook themselves calling the incident “an unfortunate example of an advertiser

scraping an image from the internet³.”

Algorithms do not know the context of a photograph. They don't understand, or anticipate the social consequences of their own function. They do not have our faulty methodology, the algorithm is supposedly blameless; it is us as creators who are essentially at fault, it is our faulty application. However, this consistent failure to understand the wider systems at work means that the functions of the algorithm (I am careful not to anthropomorphise, or give an accidental agency here) will continue to act against us unknowingly (as well as with us). It is becoming the benign ghost on the network, walking about without even knowing we are there, or of our fear of it.

Trace Bodies

Who is entitled to share or make sure of your image once it is uploaded to a service provider, and where does the ownership lie? As of January 2017, Facebook's current data sharing policy contains the following:

“We are able to deliver our Services, personalize content, and make suggestions for you

by using this information to understand how you use and interact with our Services and the people or things you're connected to and interested in on and off our Services³.”

As the network becomes far wider and more complex than we can fully understand with the increasing use of cloud computing, signposted by the various terms and conditions that we blithely put our name to as mentioned previously, it becomes harder to see where things go wrong. It becomes hard to know where our information is going, and importantly, where it is held. We are told of the impenetrable fortress of the data centre, but what processes are these “black stacks” a cog in?

Momentarily putting aside their particularly appropriate aesthetic, the data centre is a key example of Bruno Latour's “black box”, a key proponent of the scientist's Actor Network Theory (Latour, 1999). We can see what goes in, and what comes out, but not the process that led us to gain the result that we are presented with. We only really see them when they break, when they start to push back against our will and

begin to haunt us. Alongside the very real spectres that are seen from cases such as Retaeh Parsons', the ubiquitous connectivity of services, products and users online hold the power to cause very real, very unexplained violences.

In 2010, a study by the Microsoft Institute and Max Planck Institute in Germany showed evidence of third party advertisers on Facebook accidentally "outing" gay users by showing targeted ads for relevant services, generated through algorithmically derived guesswork. During the research, six fake user profiles were created with different sexualities; two straight men, two straight women, a gay man and a lesbian. Understandably, some targeted ads are trained on specific sexualities, and were visible on the profiles. What was not clear was the adverts for non-sexuality specific subjects, such as those for a nursing school, had potential consequences too.

In the report findings (Guha et al. 2010), researchers discovered that:

"...unlike the gay bar ad where the target demographic is

blatantly obvious, is that the user reading the ad text would have no idea that by clicking it he would reveal to the advertiser both his sexual-preference and a unique identifier (cookie, IP address, or email address if he signs up on the advertiser's site)."

As Gawker highlight, who reported on the story following the publishing of the study⁵, "The school now knows you're a man who is interested in men, even if you've hidden your sexual preference using Facebook's privacy settings." Therefore your understanding of control over your own data, and curation of where and when it should be seen, falls short. In this specific interaction, it's safe to assume that unless you are particularly technologically literate, you won't know this is happening at all, only feeling the effect at a later stage when it comes back to haunt you. Here, your body becomes subject to the will of others, in this case, your profile and Facebook's privacy policy, which Gawker bluntly suggest, "is fair game."

Like the infamous concept of the doppelgänger, as your data is released into unknown

fields as a multiplying double, your body “living” across the network without your knowledge or informed consent. As highlighted in Hu’s A prehistory of the cloud, MIT’s Sun-ha Hong calls these particular entities, enabled by algorithms and ubiquitous connectivity, “trace bodies”. In Hong’s paper on intimacy and connectivity online in the “new media society”, he experiences this feeling of knowing that your “presence” is out there as “a kind of alienation: I am told my personal data is being exploited, but I do not quite ‘feel it’”. Perhaps the figure of the zombie is more accurate depiction of these separated bodies, removed of the central agent (for arguments sake, you), but still, without consciousness of the action, performs the potentially devastating actions in whatever place (or server rack) that body moves to next.



A representation of a doppelgänger / Dante Gabriel Rossetti, How They Met Themselves, watercolor, 1864

Heaven is a place on Earth

If you search for images of “The Cloud” online, you will find thousands of stock images that frame gleaming black stacks with literal clouds, conjuring visions of a heavenly, ethereal “no place”, a utopia of information exchange. Aside from the obvious absurdity of this vision, the idea of a data centre as a place of possibility, along with the promises of advanced computing that allows the means to being able to do “more”, extends into our dreams of being bigger, more able, than our physical bodies allow. Our bodies, and the bodies of others, are suddenly in many places at one, appearing in sites (in the digital sense) that we never anticipated.

In 2016, a relatively softer episode of Charlie Brooker’s regularly traumatic Black Mirror speculated upon the capacity for data centres and cloud computing to digitally enable immortality. San Junipero follows the lives of two women that visit, for a few hours at a time, a technologically assisted “Neverland”, where, free from the cage of their corporeal body and “real life”, they are able to fall in love.

Upon the approach of actual, corporeal death, a choice given to whether you would “upload” yourself permanently to San Junipero in order to live on in an eternal, atemporal, hinterland. What isn’t quite touched upon, but lightly gestured towards, is the negative, visible only through a subtle awareness of those that do not get access to this service or choose not to, and the people left behind. San Junipero taps into our hopes and fears for our bodies, and perhaps, to go down a darker path, or pathological compulsion to prove that our lives meant something, were worth commemorating and preserving. It’s hardly surprising that it’s the very rich, and the very insecure, that are pioneering the ideas popularised by transhumanist Ray Kurzweil, from radical life extension to the insertion of millions of nanobots that turn our bodies into super efficient, data processing, machines. But should the dream of immortality not be all it was hyped to be, how do you opt-out of eternal life? Conor Friedersdorf in *The Atlantic*⁵ poses a thought experiment on the potential limits of “radical life extension”, in this case, uploading your consciousness onto

the cloud, a possibility not entirely out of reach if Kurzweil et al is to be believed. As you are uploaded, and stored, “you” (I daren’t enter into a philosophical argument about embodied versus digital consciousness) are subject to those that control the system, the algorithms that determine your life on the server.

Time becomes a different consideration altogether, with punishments handed out to those by generations hundreds of years in the future, because if they are not “dead” insofar as we can argue digital immortality a life, they can still be tried by the law of that time. Friedersdorf’s solution is to ensure the possibility of a “suicide switch”, that allows the digitally immortal to essentially cancel their subscription and leave the service, as mentioned earlier in the case of San Junipero, performing the final “opt-out”.

But in the case of the algorithmically drawn data “doppelganger” and our growing “ombre numérique” as explored in a workshop at I&IC⁶, the poltergeist moves your body where you do not want it to, and there is no such thing as a suicide switch. Even if you

withdraw, you still remain, in fragments across the network, subject to the terms and conditions of use by the dozens of services you sign into. You are involuntarily immortal, even if you do not recognise the spectre to be created in your image. It's important to consider immortality, in whatever form it may take, when considering the lives our data may lead the minute they touch the network and cease to be within reach of our control. We become open to further, wilder interpretation by someone other than you.

Averting Disaster

A tension is born in our relationship to internet-enabled computing and storage, which defines our inability to interpret the myriad structures behind their operation; the loss of control (where our data is going, who has it) versus the loss of memory (what is kept, and how is preservation ensured). This dual phenomenon also emerged in the user research of the I&IC projects, with users actually complaining about such losses. In A prehistory of the cloud, Tunghui Hu describes the impulse to preserve as a

“melancholic attachment to the data” (Hu, 2016, p.108) that is contained within, and perhaps worth “trading off” for the foggy processes that allow this archiving to exist.

The ability to upload mass amounts of data to the cloud means that our memories — as well as our memory — can live forever. Everything we place online, from Flickr holiday photos to selfies has a purpose, and a meaning, even though at some point in the future they may become illegible and unreadable, a collection of encoded relics from a previous life. Hu calls this phenomena, this need to store and preserve as melancholia, a phantom that “endures indefinitely, secretly hoping for its resurrection or reincarnation.” (Hu, 2016, p.140).

The cloud, and internet computing as a whole, has supposedly helped to avert the destruction inevitable in our immediate physical devices; the blue screen of death, malfunctioning parts, an accidental baptism. Everything is readily available online with the right username and password, and easy to restore should your hardware finally

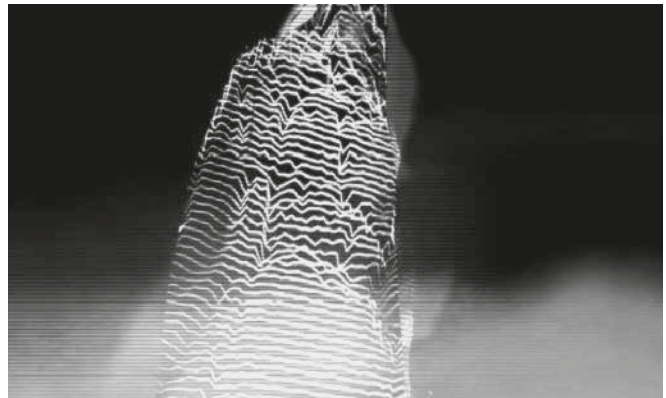
give up the ghost. The cloud, and the corresponding data servers, do not have the apparent weakness of physicality, and therefore “allow the death inherent in disaster to be contained by transmuting it into something like limbo: waiting, suspension, a ‘living dead.’” (Hu, 2016, p.140)

As humans, we have sought to memorialise our most precious, most important moments, and we can all relate to the horror of losing thousands of photographs or videos of our loved ones that may never be seen again. In 1838, English polymath and inventor Charles Babbage wrote the Nineth Bridgewater Treaty, in which he proposed that we could potentially “rewind” the movement of every molecule of air to recreate the voices of everyone who has ever spoken. Perhaps The Cloud is the nearest we have ever got.

Random Access Monsters

The problem, however, is who else has access to our memories, and what systems they are being placed into that can turn our well-intentioned compulsion to archive into a nightmare. As mentioned in

previous examples, our data, once placed onto the network, has a life of its own, redirected and transformed into new forms, subject to unforeseen forces. As mentioned in earlier examples such as the report of Facebook’s algorithms “outing” people, perhaps data centres have the capacity to act as a “stone tape”, a theory conceived in 1961 by parapsychologist Thomas Charles Lethbridge in which inanimate objects and structures could “record” memories, playing them back once the right emotional trigger occurs. With the right trigger, havoc ensues, with the sufferer never quite knowing why until it’s too late.



Stone Tape, a television play directed by Peter Sasdy (2012).

The threat of disaster Hu mentioned is still there, only this time it has transformed into a wilder, less knowable beast. Instead of stolen hard drives, which we immediately know what and how our information

has been compromised, the effects of stolen data, and what was stolen, may not be known until weeks, or even years later. In 2016, data leaks forced by malicious hackers compromised national security as the details of 20,000 FBI and 9,000 Department of Homeland Security employees were dumped online⁷. In March 2016, the records of 2.2 million patients of 21st Century Oncology, a Florida based cancer-care provider where the names, Social Security numbers, physician names, diagnosis, treatment data and insurance information were accessed, with the company not knowing if anything had been done with them⁸. It's not a coincidence that I bring this particular example into this conversation, with their resemblance to tombs and crypts, data bunkers are still data centres, an a-temporal co-presence of the living and the dead, only with a more culturally fitting aesthetic. Although we might not necessarily know all of the infrastructure required to make the cloud work, that it goes somewhere may provide comfort, much like those that believe in the afterlife as a place to tether our worries about our own mortality. It helps us to

think that the most emotional, most important, parts of our lives are being revered in this way, protected by the watchful guardians looking for signs of distress in the bleeps and whirrs of a server stack.

As places of importance, data centres have joined other precious sites. In the Eastern Orthodox Church, priests can be requested to protect important personal objects, such as houses, keys, or even weapons, and in recent times, smartphones and data centres. Although primarily asked to protect the security, smooth running and operation of the day centre, it's difficult not to see the power in blessing something that holds so much power. To know a place has "special protection", or to will it to, has an almost power over our judgement, rendering us unable to see the true machinations and obfuscations at play.

Exorcism

While we obviously don't expect The Cloud to act like a cloud, the visual metaphor holds as a reminder of it's power position, above us, another hierarchy joining the many other actors that interject on our

contemporary reality. The ghosts that we have are not just present in the vulnerability presented by hackers, terrorists or various imagined threats, but as gestured to earlier, the results of interactions, restrictions and controls placed by the service providers themselves.

So often we are told to think that it is the hackers that we have to worry about, rather than the companies and organisations who are using algorithms, building backdoors into our technology and enabling biased and prejudiced modes of search in our most personal digital spaces. The NSA and GCHQ position themselves as friendly ghosts, house guardians to watch out for us, but we know that this supposed benevolence, isn't the case. Evident from Edward Snowden's historic leak of classified information in 2013, detailing the existence of numerous global surveillance programmes that intercepted the telecommunications of thousands of individuals with the full knowledge of the service providers. The depths to which this extends are largely unknown, and may never be uncovered, but their effects have been felt

indefinitely as we revisit what it means to have a private life at all.

The opacity of these processes do not allow us to see where we can interject and disrupt them, and therefore allowing us to predict the degree of potential disaster. As Stephen Fortune writes in his piece *Attuned to Data Doubles*⁹, "if we have dispersed agency with respect to data systems, is our responsibility similarly dispersed?". It's hard to imagine the future ghosts that may accrue as we interact with others, and in fact ourselves, online, much in the same way that companies using these process might not anticipate the ways in which they could cause harm. However, the act of knowing that they could, forecasting their potential consequences and understanding the nature of uncertainty in a technologically determined landscape, could do something to reduce it. Sadly, capitalism and state actors do not have a particularly good track record in doing this, rather patching together a fix should something break, apologising in the least sincere way possible, and continuing on, until the next colossal failure occurs. I live for the day when my pessimism stops, and I am allowed to imagine that

maybe, one day, companies will choose responsibility and forecasting over profit and (apparent) convenience.

Considering the firehose of information that is already collected, stored and distributed with the help of social networks, can further exorcisms be done to rid yourself of these digitally enabled poltergeists? Removing yourself from a social media site comes at a social cost, suddenly you are absent from the conversations, events and interactions that so many of your peers have grown dependant on. We are but social animals, and this effort to remove yourself may be in vain, unless collective, mass action is performed, in which the abandonment by the many (users, advertisers, developers) cripples the functioning of a system (both operationally and financially).

It is not easy to see yourself in one place anymore, and as Sun-Ha Hong writes in his aforementioned essay on “presence”, “how have we come to feel and perceive this world we live in?” Though not ghosts in the paranormal sense, using the framing of their conception, appearance and effect within our contemporary narratives

of the digital is useful in understanding where others may arise. Resolutely, this is a conversation of power; who has the ability to enable and control the path of these phantoms, who stops them, who decides what shape they take. Though I do not know the answer to these provocations, perhaps there is something in slowing the speed of innovation down enough for us to see where there are capacities for abuse, by imagining the future ghost stories and terrors, through rehearsal, foresight and analysis which takes that embodiment into consideration. This may happen may help us to see a little clearer to how we might hope to exorcise them, or at least let our house become less vulnerable to haunting.

- 1 <http://www.iiclouds.org/20160617/iic-ethnographic-research-wrap-up/>
- 2 <http://www.independent.co.uk/news/world/americas/facebook-apologises-over-dating-ad-showing-picture-of-rehtaeh-parsons-after-she-killed-herself-8824232.html>
- 3 https://www.facebook.com/full_data_use_policy
- 4 <http://gawker.com/5669316/is-facebook-outing-gay-users-to-advertisers>
- 5 <http://www.theatlantic.com/technology/archive/2015/05/immortal-but-damned-to-hell-on-earth/394160/>
- 6 <http://www.iiclouds.org/20151111/iic-workshop-5-at-ecal-comments-about-the-brief/>
- 7 <http://motherboard.vice.com/read/hacker-plans-to-dump-alleged-details-of-20000-fbi-9000-dhs-employees>
- 8 <https://www.databreaches.net/21st-century-oncology-notifies-patients-of-data-security-incident/>
- 9 <http://www.stephenfortune.net/blog/attuning-to-data-doubles/>

Bibliography

- Latour, Bruno (1999). *Pandora's hope: essays on the reality of science studies*. Cambridge, Massachusetts: Harvard University Press.
- Sconse, Jeffrey (2000). *Haunted Media*. Durham, North Carolina: Duke University Press.
- Hong, Sun-ha (2015). *Presence, or the sense of being-there and being-with in the new media society*. Chicago, Illinois: First Monday. Online at: <http://journals.uic.edu/ojs/index.php/fm/article/view/5932>
- Guha, Saikat, Cheng, Bin, Francis, Paul (2010). *Challenges in measuring online advertising systems*. Melbourne, Australia: IMC'10. Online at: <http://saikat.guha.cc/pub/imc10-ads.pdf>
- Hu, Tung-Hui (2016). *A Prehistory of the Cloud*, Cambridge: The MIT Press.

Note: all links last accessed March 31, 2018.

Cloud Culture

① ② ③ ④

Paquete semanal/El paquete

A collection of digital material distributed since around 2014 on the underground market in Cuba as a substitute for broadband Internet.

Definition

Cloud rap whose distinguishing features include ethereal, dreamlike beats (which often use wordless vocal samples, wherein singers harmonize or hold long notes, to produce a majestic effect) and abstracted, sometimes deliberately absurd, lyrics.

Stylistic origins

Hip hop,
Ambient,
Chillwave,
New-age,
Chopped and screwed,
Psychedelic music

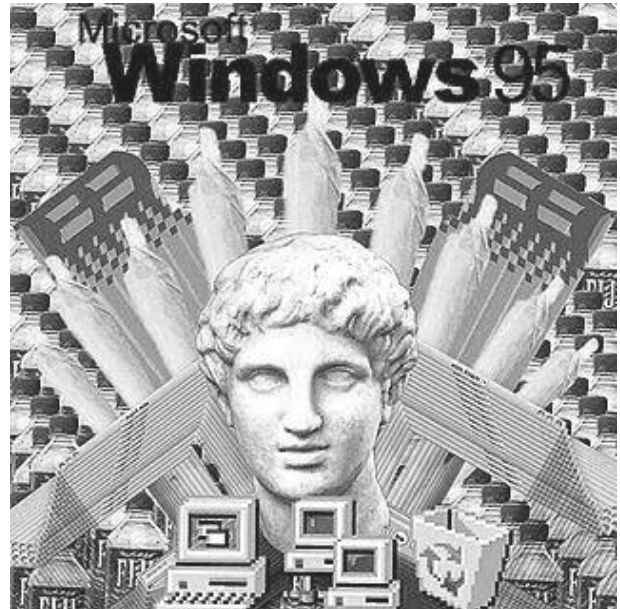
Cultural origins

Mid 2000s

Typical instruments

Rapping,
Synthesizer,
DAW

Cloud Rap



Cloud Rap

A\$AP Rocky,
Bones,
Chris Travis,
Cities Aviv,
Clams Casino,
cLOUDDEAD,
Denzel Curry,
Drake,
Eddy Baker,
Eric Dingus,
FACE,
Flatbush Zombies,
Kitty,
Ledeni,
Lil B,
Lil Yachty,
OldBoy,
Joule\$,
Post Malone,
SpaceGhostPurrp, Viper,
Wicca Phase
Springs Eternal,
Xavier Wulf,
Yung Lean

Cloud Rap

St-Gabriel

In the Abrahamic religions, Gabriel is an angel who typically serves as a messenger sent from God to certain people. He is one of the three archangels. Gabriel is mentioned in both the Old and the New Testaments of the Bible. Patron of messengers, telecommunication workers, postal workers.



Did you know?

St-Expédite

Expeditus is said to have been a Roman centurion in Armenia who was martyred around April 303 in what is now Turkey, for converting to Christianity. Considered the patron saint of speedy cases, he is commemorated by the Roman Catholic Church on 19 April.

Did you know?

Saint Expédite,
Noble Roman youth, martyr,
You who quickly brings things to pass,
You who never delays,
I come to you in need

.....
.....
.....
.....

(Clearly express what you want
and ask him to find a way to get it to you)

Do this for me, Saint Expédite,
and when it is accomplished,
I will as rapidly reply with
an offering to you.

(State your vow or promise)

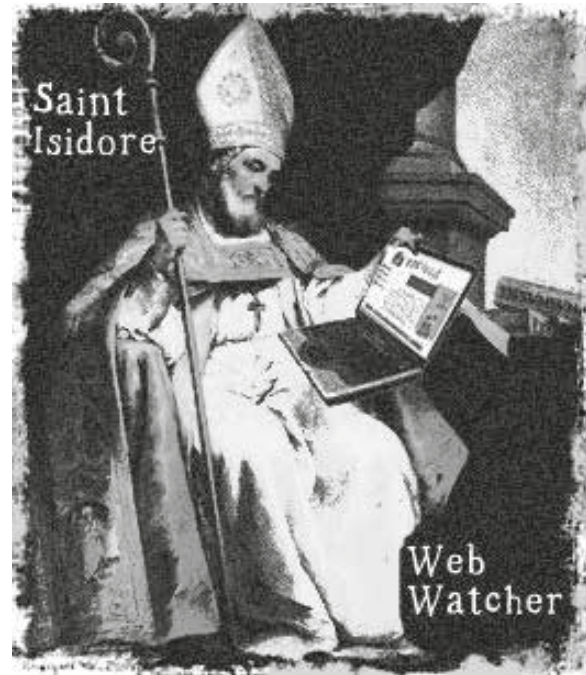
Be quick, Saint Expédite!
Grant my wish before your candle burns out,
and I will glorify your name.

Amen.

Did you know?

St-Isidore of Seville

The patron saint of the internet is widely considered to be Saint Isidore of Seville, a Bishop and scholar, who was nominated for the role by the late Pope John Paul II, although the Vatican has yet to make it official. Saint Isidore wrote a 20 book opus Etymologies, also known as the Origins, in which he tried to record everything that was known. Published after his death in 636, it was for a thousand years considered the encyclopedia of all human knowledge. Written in simple Latin, it was all a man needed in order to have access to everything he wanted to know about the world but never dared to ask, from the 28 types of common noun to the names of women's outer garments. It was a tool by those seeking wisdom much like the internet is used now. The website catholic.org suggests the faithful over a prayer to the Saint before logging onto the internet.



Did you know?

Design research project: "Cloud Gestures"

"Cloud Gestures" emerged from a workshop we conducted at HEAD – Geneva, led by Sascha Pohflepp, with students from the Media Design program at the Geneva School of Art and Design (HEAD – Genève).

The workshop explored the participants' representations of cloud-based technologies and, more specifically, the types of gestures they employ when interacting with them. The research group adopted a design ethnography approach to these issues, documenting everyday practices and designing artefacts that translate and materialize the use of cloud computing services. This research was aimed at generating insights, ideas and opportunities that will later be relevant for designing alternatives to existing systems.

The researchers approached a group of teenage students and interviewed them on their knowledge of the Cloud, social media and networked technologies, as well as the types of gestures they repeatedly use to interact with them. To describe their actions, they used the verbs typing, commenting, sharing, liking, stalking, uploading, communicating, etc. , which they were then asked to reproduce as gestures in front of a camera. These were videotaped and documented as "cloud gestures". Interestingly, the researchers noticed how the teenagers "use their own selves/their body as a reference" and that the gestures were homogeneous among them. The next step consisted in selecting the most salient gestures (classifying, sharing, organizing, blocking, stalking) which were again filmed, this time in two colors in order to create flipbooks.

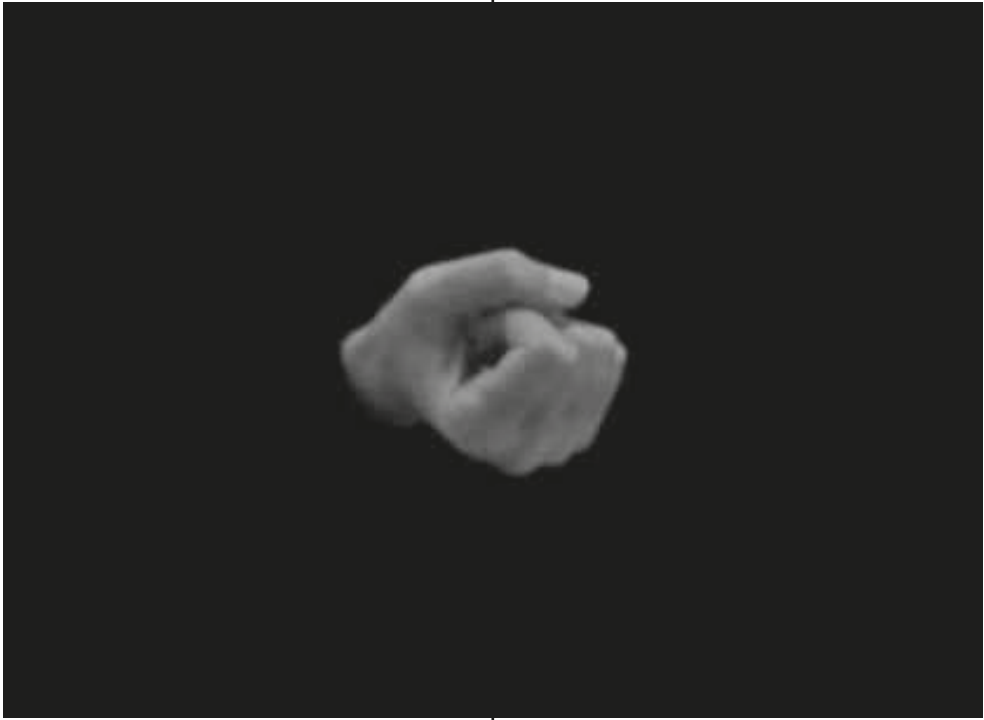
Cloud Gestures

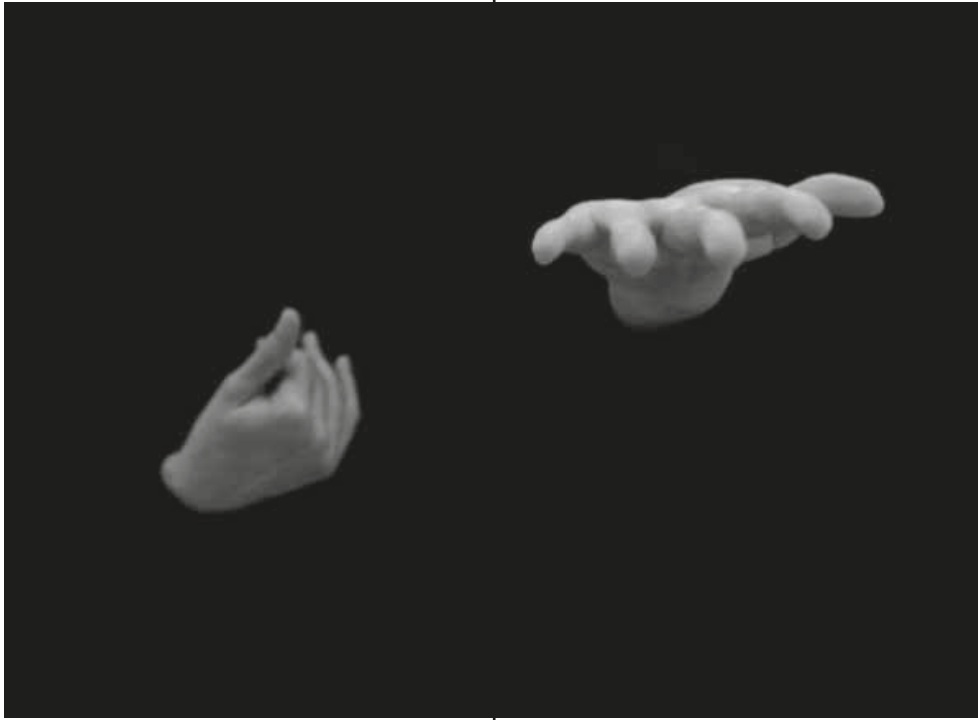
Image in order of appearance:

- Share
- Organize
- Share
- Block
- Classify
- Stalk

Cloud Gestures









Airframe

An open source cloud computing platform targeted at organizations in the thinking stage of adopting a private cloud services model or evaluating options and alternatives for private cloud solutions.

Amazon EC2

Short for Amazon Elastic Computer Cloud, Amazon EC2 is a commercial Web service that lets customers "rent" computing resources from the EC2 cloud.

Anything-as-a-Service

Anything-as-a-service, or XaaS, refers to the growing diversity of services available over the Internet via cloud computing as opposed to being provided locally, or on premises.

Apache CloudStack

An open source cloud computing and Infrastructure-as-a-Service (IaaS) platform developed to help make creating, deploying and managing cloud services easier by providing a complete "stack" of features and components for cloud environments.

Glossary

Cloud App

Short for cloud application, cloud app is the phrase used to describe a software application that is never installed on a local computer. Instead, it is accessed via Internet.

Cloud Application Management for Platforms CAMP

short for Cloud Application Management for Platforms, is a specification designed to ease management of applications - including packaging and deployment - across public and private cloud computing platforms.

Cloud Backup

Cloud backup, or cloud computer backup, refers to backing up data to a remote, cloud-based server. As a form of cloud storage, cloud backup data is stored in and accessible from multiple distributed and connected resources that comprise a cloud.

Cloud Backup Service Provider

A third-party entity that manages and distributes remote, cloud-based data backup services and solutions to customers from a central data center.

Glossary

Cloud Backup Solutions

Cloud backup solutions enable enterprises or individuals to store their data and computer files on the Internet using a storage service provider, rather than storing the data locally on a physical disk, such as a hard drive or tape backup.

Cloud Computing

A type of computing, comparable to grid computing that relies on sharing computing resources rather than having local servers or personal devices to handle applications. The goal of cloud computing is to apply traditional supercomputing, or high-performance computing power, normally used by military and research facilities, to perform tens of trillions of computations per second, in consumer-oriented applications such as financial portfolios or even to deliver personalized information, or power immersive computer games.

Glossary

Cloud Computing Accounting Software

Cloud computing accounting software is accounting software that is hosted on remote servers. It provides accounting capabilities to businesses in a fashion similar to the SaaS (Software as a Service) business model. Data is sent into "the cloud," where it is processed and returned to the user. All application functions are performed off-site, not on the user's desktop.

Cloud Computing Reseller

A company that purchases hosting services from a cloud server hosting or cloud computing provider and then resells them to its own customers.

Cloud Database

A database accessible to clients from the cloud and delivered to users on demand via the Internet from a cloud database provider's servers. Also referred to as Database-as-a-Service (DBaaS), cloud databases can use cloud computing to achieve optimized scaling, high availability, multi-tenancy and effective resource allocation.

Glossary

Cloud Enablement

The process of making available one or more of the following services and infrastructures to create a public cloud computing environment: cloud provider, client and application.

Cloud Management

Software and technologies designed for operating and monitoring the applications, data and services residing in the cloud. Cloud management tools help ensure a company's cloud computing-based resources are working optimally and properly interacting with users and other services.

Cloud Migration

The process of transitioning all or part of a company's data, applications and services from on-site premises behind the firewall to the cloud, where the information can be provided over the Internet on an on-demand basis.

Glossary

Cloud OS

A phrase frequently used in place of Platform as a Service (PaaS) to denote an association to cloud computing.

Cloud Portability

In cloud (cloud computing) terminology, the phrase "cloud portability" means the ability to move applications and its associated data between one cloud provider and another — or between public and private cloud environments.

Cloud Provider

A service provider who offers customers storage or software solutions available via a public network, usually the Internet.

Cloud Provisioning

The deployment of a company's cloud computing strategy, which typically first involves selecting which applications and services will reside in the public cloud and which will remain on site behind the firewall or in the private cloud. Cloud provisioning also entails developing the processes for interfacing with the cloud's applications and services as well as auditing and monitoring who accesses and utilizes the resources.

Glossary

Cloud Server Hosting

Cloud server hosting is a type of hosting in which hosting services are made available to customers on demand via the Internet. Rather than being provided by a single server or virtual server, cloud server hosting services are provided by multiple connected servers that comprise a cloud.

Cloud Storage

Cloud storage means "the storage of data online in the cloud", wherein a company's data is stored in and accessible from multiple distributed and connected resources that comprise a cloud.

Cloud Testing

Load and performance testing conducted on the applications and services provided via cloud computing — particularly the capability to access these services — in order to ensure optimal performance and scalability under a wide variety of conditions.

Desktop as a service

Desktop as a service (DaaS) is a form of virtual desktop infrastructure (VDI) in which the VDI is outsourced and handled by a third party. Also called hosted desktop services, desktop-as-a-service is frequently delivered as a cloud service along with the apps needed for use on the virtual desktop.

Glossary

Enterprise Application

The term used to describe applications — or software — that a business would use to assist the organization in solving enterprise problems. When the word "enterprise" is combined with "application", it usually refers to a software platform that is too large and too complex for individual or small business use.

Enterprise Cloud Backup

Enterprise-grade cloud backup solutions typically add essential features such as archiving and disaster recovery to cloud backup solutions.

Eucalyptus

An open source cloud computing and Infrastructure-as-a-Service (IaaS) platform for enabling private clouds.

Hybrid Cloud Storage

A combination of public cloud storage and private cloud storage where some critical data resides in the enterprise's private cloud while other data is stored and accessible from a public cloud storage provider.

Glossary

IBM Cloud

IBM Cloud refers to a collection of enterprise-class technologies and services developed to help customers assess their cloud readiness, develop adoption strategies and identify business entry points for a cloud environment. IBM's cloud computing strategy is based on a hybrid cloud model that focuses on integrating the private cloud services of a company with the public cloud.

IBM CloudBurst

CloudBurst is a "ready-to-go" solution from IBM that's designed to provide resource monitoring, cost management and services availability in a cloud. IBM CloudBurst is a key component in the company's lineup of cloud computing solutions, which also includes IBM Smart Business Storage Cloud, IBM Smart Desktop Cloud and IBM Smart-Cloud Enterprise.

Glossary

Infrastructure-as-a-Service

IaaS is defined as computer infrastructure, such as virtualization, being delivered as a service. IaaS is popular in the data center where software and servers are purchased as a fully outsourced service and usually billed on usage and how much of the resource is used — compared to the traditional method of buying software and servers outright. May also be called enterprise-level hosting platform.

Internal Cloud

Another name for a private cloud.

Mobile Cloud Storage

A form of cloud storage that applies to storing an individual's mobile device data in the cloud and providing the individual with access to the data from anywhere.

Multi-Tenant

In cloud computing, multi-tenant is the phrase used to describe multiple customers using the same public cloud.

Glossary

Online Backup

In storage technology, online backup means to back up data from your hard drive to a remote server or computer using a network connection. Online backup technology leverages the Internet and cloud computing to create an attractive off-site storage solution with little hardware requirements for any business of any size.

OpenStack Grizzly

The follow-up to the Folsom release of the OpenStack open source cloud computing platform, OpenStack Grizzly debuted in April 2013 as the seventh release of OpenStack. With OpenStack Grizzly, the OpenStack Foundation has focused on adding broader support for compute, storage and networking technologies as well as greater scalability and ease of operations.

Glossary

Personal Cloud Storage

A form of cloud storage that applies to storing an individual's data in the cloud and providing the individual with access to the data from anywhere. Personal cloud storage also often enables syncing and sharing stored data across multiple devices such as mobile phones and tablet computers.

Private Cloud

The phrase used to describe a cloud computing platform that is implemented within the corporate firewall, under the control of the IT department. A private cloud is designed to offer the same features and benefits of cloud systems, but removes a number of objections to the cloud computing model including control over enterprise and customer data, worries about security, and issues connected to regulatory compliance.

Private Cloud Project

Companies initiate private cloud projects to enable their IT infrastructure to become more capable of quickly adapting to continually evolving business needs and requirements. Private cloud projects can also be connected to public clouds to create hybrid clouds.

Glossary

Private Cloud Security

A private cloud implementation aims to avoid many of the objections regarding cloud computing security. Because a private cloud setup is implemented safely within the corporate firewall, it remains under the control of the IT department.

Private Cloud Storage

A form of cloud storage where the enterprise data and cloud storage resources both reside within the enterprise's data center and behind the firewall.

Public Cloud Storage

A form of cloud storage where the enterprise and storage service provider are separate and the data is stored outside of the enterprise's data center.

Red Hat Cloud Computing

It refers to solutions for private clouds, hybrid clouds, and public clouds offered by Red Hat.

Glossary

Red Hat CloudForms

Red Hat CloudForms is an Infrastructure-as-a-Service (IaaS) offering that builds upon a collection of more than 60 open source projects. CloudForms include application lifecycle management capabilities as well as the capability to create hybrid public and private clouds from the broadest range of computing resources with unique portability across physical, virtual and cloud computing resources.

Red Hat OpenShift

OpenShift provides developers with a choice in languages, frameworks, and clouds to build, test, run, and manage Java, Ruby, PHP, Perl and Python applications. Developers can also choose the cloud provider the applications will run on.

Software as a Service

SaaS is a software delivery method that provides access to software and its functions remotely as a Web-based service. Software as a Service allows organizations to access business functionality at a cost typically less than paying for licensed applications since SaaS pricing is based on a monthly fee.

Glossary

Software Plus Services

Software Plus Services (Software + Services) is Microsoft's philosophy for complementing the software company's on-premises software offerings with cloud-based remote computing software options.

Storage Cloud

Storage cloud refers to the collection of multiple distributed and connected resources responsible for storing and managing data online in the cloud.

Vertical Cloud Computing

A vertical cloud, or vertical cloud computing, is the phrase used to describe the optimization of cloud computing and cloud services for a particular vertical (e.g., a specific industry) or specific use application.

VMware vCloud Connector

The VMware vCloud Connector is a tool that facilitates hybrid cloud computing for organizations. The vCloud Connector essentially helps to orchestrate and administer the migration of VMs across different data centers and clouds. ([Learn More](#))

Glossary

Cloud Sylllogomania

Like many people, you have a tendency to compulsively hoard documents in the Cloud such as photos, music, videos, discussions, emails, or any other data format. However, even when you reach your storage limit, you fail to organize and discard data that occupies a lot of space, to the point of causing significant clutter and impairment to the basic operations of a software, computer or mobile device. This hoarding behavior, which is automated by online services, can become a source of stress.

Definition

Lesson 1 — The cloud, a blurry concept

Although the “Cloud” is a commonly used term by our respondents, we noticed that it was a surprisingly unclear notion for most of them. As a category, “cloud computing” was hard to grasp and participants provided us with a variety of interpretations. Although it forms a fundamental infrastructure that permeates our everyday lives with digital technologies, it appears to be less well understood and meaningful than we expected. Cloud technology observed from a user’s perspective is therefore an interesting topic of research.

Lesson 2 — Cloud providers, Cloud users

As is often the case in technology, the gap between the discourse of the service providers and the actual user experience has led to a combination of pleasant surprises, frustrations, interrogations and satisfaction. Whereas the service providers’ discourse is about data centers and evanescent clouds of data, the users we interviewed see the Cloud as a set of (small) interfaces that are seamlessly integrated into the OS and only visible as a tiny icon on the OS GUI (Dropbox and Google). This makes it difficult for them to differentiate between the two and the only time they reported “feeling” the Cloud was when “it refreshes”, when it doesn’t work, or when there’s no network access.

Lesson 3 — Is the Cloud a set of folders?

The gap between the grandiose description of the Cloud by service providers and how it is actually used has also been the source of some miscomprehension. For the participants in this study, the way that file storage on the Cloud is presented by the service providers was considered misleading because it gives users the impression that the system works in a similar way to local folders. However, this it is not the case and can lead to surprises and frustrations, for instance the loss of documents when someone accidentally deletes a file thought to be “only on his laptop”, confusion between “shared folders” and “invitation in a folder”, etc.

Lesson 4 — An opaque process

A possible reason for this confusion is the difficulty for users to understand the opaque processes behind the Cloud. Overall, cloud computing is all about “syncing”, except that the syncing behavior of the services is difficult to grasp, especially when the start and finish of the process are not indicated. Another limiting factor is the fact that cloud computing relies on constant connectivity, something that cannot be guaranteed.

Lesson 5 — Surveillance?

This finding was the biggest surprise of all for us. Although most of our informants were aware of the surveillance risks, such as robocopyright, which automatically verifies the IP-protected content, or the use of personal data for unknown purposes, no one was willing to give up the use of cloud platforms. They were aware of, and concerned, by these issues, but saw them as the (ugly) price to pay for the ease of use/access.

Credits

https://en.wikipedia.org/wiki/Cloud_computing (access september 21, 2016)
https://en.wikipedia.org/wiki/Cloud_computing
<http://www.thoughtsoncloud.com/2015/04/a-brief-history-of-cloud-1950-to-present-day>
https://en.wikipedia.org/wiki/Cloud_computing
<http://noahveltman.com/internet-shape/>
<http://www.datacentermap.com/switzerland/datacenters.html>
<http://www.datacentermap.com/switzerland/datacenters.html>
<https://www.alpinedc.ch/fr/>
<https://www.google.ch/maps/search/epfl-data+center/@46.526815,6.5836552,12z/data=!3m1!4b1>
[https://en.wikipedia.org/wiki/basecamp_\(software\)](https://en.wikipedia.org/wiki/basecamp_(software))
<https://en.wikipedia.org/wiki/code42>
<https://en.wikipedia.org/wiki/cyberduck>
<https://en.wikipedia.org/wiki/dashlane>
https://en.wikipedia.org/wiki/google_drive
[https://en.wikipedia.org/wiki/dropbox_\(service\)](https://en.wikipedia.org/wiki/dropbox_(service))
[https://en.wikipedia.org/wiki/stet_\(software\)](https://en.wikipedia.org/wiki/stet_(software))
<https://en.wikipedia.org/wiki/evernote>
<https://en.wikipedia.org/wiki/gmail>
https://en.wikipedia.org/wiki/google_apps_for_work
https://en.wikipedia.org/wiki/google_calendar
https://en.wikipedia.org/wiki/google_drive
<https://en.wikipedia.org/wiki/>
[https://en.wikipedia.org/wiki/slack_\(software\)](https://en.wikipedia.org/wiki/slack_(software))
<https://en.wikipedia.org/wiki/soundcloud>
<https://en.wikipedia.org/wiki/sugarsync>
<https://en.wikipedia.org/wiki/trello>
<https://en.wikipedia.org/wiki/wetransfer>
<https://en.wikipedia.org/wiki/Hightail>
https://en.wikipedia.org/wiki/Google_Docs,_Sheets,_and_Slides
https://en.wikipedia.org/wiki/apache_wave
https://en.wikipedia.org/wiki/office_365
<https://en.wikipedia.org/wiki/onedrive>
https://en.wikipedia.org/wiki/popcorn_time
<https://en.wikipedia.org/wiki/skype>
<http://trendblog.net/get-free-dropbox-space/>
<http://www.cnet.com/how-to/onedrive-dropbox-google-drive-and-box-which-cloud-storage-service-is-right-for-you/>
<http://www.experimentaljetset.nl/archive/lostformats>
<http://lostformats.tumblr.com/page/3>
<http://www.jeffersoncheng.com/anonymous-animals>
<http://www.iiclouds.org/20141006/iic-workshop-1-at-head-diagrams-of-uses/>
<https://dropbox100m.com>
<https://www.google.ch/intl/fr/docs/about/>
<https://www.theguardian.com/technology/2016/jan/20/123456-worst-passwords-revealed>
<https://spinbackup.com/blog/category/news>
<http://www.jackcola.org/2012/05/the-101-to-basic-hacking-how-to-hack-facebook-and-other-websites/>
<https://www.dropbox.com/help/1973>
<https://www.chmag.in/data-loss-prevention/the-near-future-laboratory>
http://www.webopedia.com/quick_ref/cloud_computing_terms.asp
<http://www.thedog.ie/#!/Cloud-Rap-What-the-heck-is-it-Why-is-it-so-good/ck7d/56ae1cfc0cf2dc1600d954cf>
<https://www.youtube.com/watch?v=05e0ddL4Y6E>
https://en.wikipedia.org/wiki/Cloud_rap
<http://www.iiclouds.org/20160115/iic-workshop-6-at-head-outputs-cloud-gestures/>
<http://www.iiclouds.org/20160115/iic-workshop-6-at-head-outputs-cloud-gestures/>
<https://en.wikipedia.org/wiki/gabriel>
<http://www.telegraph.co.uk/technology/facebook/8334250/profile-saint-isidore-the-patron-saint-of-the-internet.html>
<http://factually.gizmodo.com/the-patron-saint-of-the-internet-is-isidore-of-seville-1595023500>
<http://hellopoetry.com/words/246032/clouds/poems/?page=2>
<http://www.nzz.ch/nzzas/nzz-am-sonntagcloud-dienste-swisscom-schuetzt-persoennliche-daten-zu-wenig-ld.12126>
<https://www.letemps.ch/economie/2016/04/29/cloud-premiere-source-profits-amazon>
<http://it.ejo.ch/digitale/media-cloud-tutte-le-notizie-in-una-nube>
<http://www.archives.les-motards-du-viaduc.com>
<http://www.iiclouds.org/20150115/towards-a-new-paradigm-fog-computing/> — after Lucien Langton
<https://patents.google.com/patent/us6574606b1>
[https://www.alpinedc.ch/fr/technicians-fixing-the-optic-fiber-in-lausanne-\(ch\)-april-2016](https://www.alpinedc.ch/fr/technicians-fixing-the-optic-fiber-in-lausanne-(ch)-april-2016)
<https://bit.ly/2kz05va>
http://www.dorritville.com/come_see/saints_demons_05.html
Data center at epfl, lausanne (ch), june 2016
Screenshots provided by users (dropbox account)

Partners

HEAD/Media Design

Prof. Nicolas Nova
Co-head of the joint design
& ethnographic research

Nicolas Nova is Associate Professor at the Geneva University of Arts and Design (HEAD – Geneva) and founder of the Near Future Laboratory, a design studio based in Europe and California. His work is about identifying weak signals as well as exploring people's needs, motivations and contexts to map new design opportunities and chart potential futures.

Nicolas has given talks and exhibited his work on the intersections of design, technology and the near-future possibilities for new social-technical interaction rituals in venues such SXSW, AAS, O'Reilly Emerging Technology Conference and the design week in Milano, the Institute for the Future, the MIT Medialab.

He holds a Phd in Human-Computer Interaction from the Swiss Institute of Technology (EPFL, Switzerland) and was previously a visiting researcher at the Art Center College of Design (Pasadena, CA). He was also curator for Lift Conference, a series of international events about digital culture and innovation.
→ nicolas.nova@hesge.ch

Anaïs Bloch
(research assistant, 2016–17)

Anaïs Bloch is a Swiss designer and researcher. She holds an Undergraduate degree in Product Design (ECAL/University of Art and Design Lausanne) and a Master's degree in Cultural Anthropology (University College London). Her main research investigates how people interact and engage with built forms and the digital world. It also examines how culture, goods and design affect people and practices.

She is a founding member of Cleaning up after Gropius — a collective exploring the blurred boundaries between anthropological research methods, art and design. She is also part of The studio of material life — a space for collaborative work in anthropology.

Charles Chalas
(research assistant, 2014–15)

Coming from a graphic design background, Charles has attended the Gobelins school in Paris and obtained an Undergraduate degree in multimedia conception focusing on user centered services and interaction design.

He graduated with a Master's degree in Media Design from the Geneva University of Arts and Design.

His personal work focuses on the interactions between humans and the internet as a complex digital, physical and informational system.

ECAL/Media & Interaction Design

Patrick Keller
Co-head of the joint design
& ethnographic research

Patrick Keller is Associate Professor at ECAL/University of Art and Design Lausanne, where he teaches design in the Media & Interaction Design unit. He settled and was in charge of this unit between 2001 and 2004. Between 2005 and 2007, he led the design research Variable Environment that first combined the skills of designers from ECAL and scientists from EPFL (design & sciences research) that later helped set up further collaborations between the two schools.

Patrick is a founding member of fabric|ch, a studio for architecture, interaction and research. As part of his activity as creative director for the studio, he formulates new space proposals that combines digital, physical and environmental dimensions. Oscillating between devices, installations, experiments and productions, the work of the collective has been exhibited and published internationally, so has presented in numerous talks.

Patrick Keller studied architecture at the Swiss Federal Institute of Technology, Lausanne (EPFL) where he graduated in 1993 (M.Sc) and in Berlin. He then continued his education in the research labs of the EPFL with a postgraduate in Computer Graphics (Mas).
→ patrick.keller@ecal.ch

Christophe Guignard

Christophe Guignard is Professor at ECAL/University of Art and Design Lausanne, where he teaches design and theory in the Media & Interaction Design unit.

Christophe is a founding member of fabric|ch, a studio for architecture, interaction and research which formulates new space proposals that combines digital, physical and environmental dimensions. Oscillating between devices, installations, experiments and productions, the work of the collective has been exhibited and published internationally, so has presented in numerous talks.

Christophe studied architecture at the Swiss Federal Institute of Technology, Lausanne (EPFL), at the McGill University in Montreal and in New-York City. He graduated in architecture (M.Sc) before completing his formation with a series of seminars in philosophy at the University of Lausanne (UNIL), then in re-search labs at the EPFL with a postgraduate degree in Computer Graphics (Mas).

Lucien Langton
(research assistant, 2014–17)

Lucien Langton graduated in 2012 from ECAL in Media & Interaction Design (BA). In 2013, he obtained a CAS from HEIG-VD as a part of the Rapid Application Development MAS program. Since his diploma, Lucien worked as a freelance interaction and user experience designer for communication agencies and private clients. He recently co-founded his own company, Octree.

His works have been exhibited at Milan's international design fair, Berlin's Design Days and have been showcased on platforms such as Creative Applications, Gizmodo, Animal New York and The Discovery Channel among others. His personal work focuses on interfaces, tangible design and ethics in the field of digital media. A selection of his personal projects can be seen on cyberschnaps.com

Léa Pereyre
(research assistant, 2016–17)

Léa Pereyre graduated in 2015 from ECAL in Industrial Design (BA). During her studies, she had the opportunity to exhibit her work at the Milan Design Week (in 2014 & 2015), or develop collaborations with companies such as Axor.

She worked in robotic research at EPFL and more recently with the startup Verity Studios at ETH, in Zürich. Next to it, she also works on personal projects.

EPFL/ALICE Laboratory
(Atelier de la conception de l'espace)

Dieter Dietz

Educated at the Swiss Federal Institute of Technology, Zurich (Arch. Degree 1991), Dieter Dietz also studied at the Cooper Union in New York with Diller/ Scofidio. Since 2006, he is Associate Professor for Architectural Design at EPFL, director of the ALICE laboratory in the ENAC faculty. He collaborates with the ALICE team on research projects at diverse scales with labs inside and outside EPFL.

Caroline Dionne
(Architect scientist & lecturer)

Caroline Dionne is interested in questions of language and architecture — her work generally dwells in between words and buildings. She holds a doctorate in the History & Theory of Architecture Program, McGill University, Montréal (PhD. Arch 2006). Her thesis examines issues of spatial perception and language in the writings and scientific works of 19th century author Lewis Carroll. Since 2016, Caroline is Assistant Professor in Art & Design History & Theory at Parsons New School of Design (NYC).

Thomas Favre-Bulle
(Doctoral assistant & lecturer)

Graduated in architecture (M.Sc) from the Swiss Federal Institute of Technology in Lausanne (EPFL) and bachelored in law (B.Law) from the University of Paris 1 Panthéon-Sorbonne, Thomas Favre-Bulle started under the supervision of Pr. Dieter Dietz a doctoral thesis on the spatial dimensions of law. He was in charge with Shin Koseki of the Teaching Unit Spatial Strategies.

EPFL+ECAL Lab

Nicolas Henchoz

Based in Lausanne, the EPFL+ECAL Lab was founded by Nicolas Henchoz in 2007 to explore the potential of emerging technologies. Its mission is to foster innovation at the point where technology, design and architecture overlap.

Under Nicholas's direction The Lab's activities are focused on three main concerns. First, to develop practical, real-world applications for technologies developed in the scientific labs. Secondly, to drive innovation by widening the scope of designers' work. Thirdly, to form new links and develop synergy between researchers and wider society seeking technological and other innovative solutions.

Nicholas Henchoz's teaching and research concerns include augmented reality, innovation management and material science. He has been named among Bilan's "300 Most Influential People in Switzerland". The EPFL+ECAL Lab is a unit of the Ecole polytechnique fédérale de Lausanne — Europe's leading research & development university—in co-operation with the Ecole Cantonale d'Art de Lausanne.

Peers & guest researchers

Dr. James Auger, Madeira

James Auger has a BA in Product Design from Glasgow School of Art and an MA in Design Products from the Royal College of Art. Between 2002 and 2005 he was employed as a research associate at Media Lab Europe, where the main focus of his research was a design-based investigation into technology-mediated human interaction. He then worked at the Issey Miyake Design Studio in Tokyo as guest designer. Since 2005 he has been teaching and continuing his research in the Design Interactions programme at the RCA. James is also a partner in the Speculative Design practice Auger-Loizeau, whose projects have been published and exhibited internationally, including MoMA, New York; 21_21, Tokyo; The Science Museum, London and the Ars Electronica festival, Linz, and are part of the permanent collection at MoMA. In 2003 James was awarded the Köln Klopfer International Designer of the Year by the students of KISD in Germany. James Auger is an external examiner at Edinburgh College of Design,

visiting professor at HEAD, Geneva and on the judging panel of IF Design awards.

Sascha Pohflepp,
Berlin/San Diego

Sascha Pohflepp (*1978 in Cologne, DE) is an artist and researcher whose interest extends across both historical aspects and visions of the future and his practice often involves collaboration with other artists and researchers, creating work on subjects ranging from synthetic biology and artificial intelligence to geopolitics and space exploration. Notable exhibitions include Talk To Me at MoMA New York, Hyperlinks at the Art Institute of Chicago, Micro Impact at the Boijmans Van Beuningen Museum Rotterdam, Pre-History of the Image at STUK Kunstencentrum Leuven, Åzone Futures Market at The Solomon R. Guggenheim Museum New York and The House in the Sky at Pioneer Works, Brooklyn. He holds a diploma from The Berlin University of the Arts (UDK) and an MA in Design Interactions from the Royal College of Art (RCA) London.

Dr. Christian Babski
(fabric|ch), Lausanne

Christian Babski is lead programmer and co-founder at fabric|ch, a studio for architecture, interaction and research based in Lausanne, Switzerland.

As scientist, Christian Babski takes part in the technical and software development of research projects within the group. Through experimental projects, he developed detailed skills in interfacing heterogeneous systems/mechanism/

hardware by achieving specific software libraries in numerous distinct programming languages. Therefore, he is used to manage computer hardware, sensors, mobile devices as well as network and online technologies or services.

Christian Babski holds a Phd in Computer Graphics from the Swiss Federal Institute of Technology (Lausanne), where he was involved into several European research projects. He previously graduated in Computer Science (Ma) in Dijon (France), prior to finalizing a Master of Science (M.Sc) in Lyon (France)/Geneva (Switzerland).

Cloud of Practices
Edited by Nicolas Nova

Research direction
Patrick Keller, Nicolas Nova

Researchers & guest researchers
Christophe Guignard, Christian Babski (fabric|ch), James Auger (Auger-Loizeau), Matthew Plummer-Fernandez (Algopop), Dieter Dietz (ALICE, EPFL), Caroline Dionne (Parsons), Thomas Favre-Bulle (EPFL), Dev Joshi (Random International), Sascha Pohflepp

Research assistants at HEAD
Charles Chalas, Anaïs Bloch

Texts
Patrick Keller, Nicolas Nova, Nathalie Kane.

Transcription and proof-reading
Ming Lin

Graphic & website design, programming
Eurostandard (Pierrick Brégeon, Clément Rouzaud, Ali-Eddine Abdelkhalek)

Typeface
Riforma, NORM

Printing
Lulu Press, Inc.

www.cloudofcards.org
www.iiclouds.org

Director of HEAD – Genève
Jean-Pierre Greff

Head of Ra&D
Anne-Catherine Sutermeister

Head of Media Design (MA)
Alexia Mathieu

Head of EPFL+ECAL Lab
Nicolas Henchoz

Acknowledgements
Jean-Pierre Greff, Alexis Georgacopoulos, Anne-Catherine Sutermeister, Lucien Langton, Léa Péreyre.

With the generous support of
HES-SO, University of Applied Sciences and Arts Western Switzerland

HEAD – Genève / Geneva School of Art and Design
Avenue de Châtelaine 5
CH-1203 Genève
Switzerland

www.hesge.ch/head/

— HEAD Hes·so
Genève University of Applied Sciences and Arts
Western Switzerland

This work is licensed under a [Creative Commons Attribution NonCommercial ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

Cloud of Practices is the preliminary outcome of a joint design and ethnographic research entitled Inhabiting and Interfacing the Cloud(s), which is documented and accompanied by two print-on-demand books.

The main purpose of the field research presented in this first volume, Cloud of Practices, is to document the practices around cloud computing, as well as the user experience of cloud platforms. A combination of online research and interviews and observations with users has provided the insights for the Cloud of Cards design project which is the subject of the second eponymous book. The project is a set of digital and physical tools ('cards') that aims to give the designer, and particularly the maker community, the possibility to set up their own cloud infrastructure.

With texts by Nathalie Kane, Patrick Keller and Nicolas Nova, interventions by James Auger, Sascha Pohflepp, students from HEAD – Genève MD (Media Design).

