WAR (file format)

In software engineering, a **WAR** file (**W**eb **A**pplication **R**esource[1] or **W**eb application **AR**chive[2]) is a file used to distribute a collection of JAR-files, JavaServer Pages, Java Servlets, Java classes, XML files, tag libraries, static web pages (HTML and related files) and other resources that together constitute a web application.

Content and structure

Web ARchive	
Filename extension	`.war`
Internet media type	applicat archive
Magic number	`PK\x03\x` (standard Z file)
Developed by	Sun Micro
Container for	JSP, Java Servle
Extended from	JAR

A WAR file may be digitally signed in the same way as a JAR file in order to allow others to determine where the source code came from.

There are special files and directories within a WAR file:

- The /WEB-INF directory in the WAR file contains a file named web.xml which defines the structure of the web application. If the web application is only serving JSP files, the web.xml file is not strictly necessary. If the web application uses servlets, then the servlet container uses web.xml to ascertain to which servlet a URL request will be routed. The web.xml file is also used to define context variables which can be referenced within the servlets and it is used to define environmental dependencies which the deployer is expected to set up. An example of this is a dependency on a mail session used to

send email. The servlet container is responsible for providing this service.

Advantages of WAR files

- Easy testing and deployment of web applications
- Easy identification of the version of the deployed application
- All Java EE containers support WAR files
- MVC structure supports WAR files.

Assuming production environments do not promote a fix without sufficient testing prior to deployment, a WAR file has a

distinct advantage when properties files are used to identify environment specific variables. For example, an LDAP server in a testing environment may be something like `ldaps://testauth.example.com:636`. The LDAP server in a production environment is `ldaps://auth.example.com:636`. An external properties file would define the link with some thing like:

```
LINKED_PAGE=ldaps://testauth.example.com:636
```

The source code reads the property file to determine the target LDAP server. In this way, developers can be certain that the WAR file tested and verified is exactly the same as that which is being promoted to production.

Disadvantages of WAR files

Some consider web deployment using WAR files to be disadvantageous when minor changes to source code are required for dynamic environments. Each change to source code must be repackaged and deployed in development.[3] This does not

require stopping the web server if configured for runtime deployment.[4]

Example

The following sample *web.xml* file demonstrates the declaration and association of a servlet:

```
<?xml version="1.0"
encoding="UTF-8"?>
<!DOCTYPE web-app
    PUBLIC "-//Sun
Microsystems, Inc.//DTD Web
Application 2.2//EN"
```

```
"http://java.sun.com/j2ee/dtds/web-app_2_2.dtd">

<web-app>
    <servlet>
        <servlet-name>HelloServlet</servlet-name>
        <servlet-class>mypackage.HelloServlet</servlet-class>
    </servlet>

    <servlet-mapping>
        <servlet-name>HelloServlet</servlet-
```

```
name>
        <url-
pattern>/HelloServlet</url-
pattern>
    </servlet-mapping>

    <resource-ref>
        <description>
            Resource
reference to a factory for
javax.mail.Session
            instances that
may be used for sending
electronic mail messages,
            preconfigured
to connect to the
```

```
appropriate SMTP server.
        </description>
        <res-ref-
name>mail/Session</res-ref-
name>
        <res-
type>javax.mail.Session</re
s-type>
        <res-
auth>Container</res-auth>
    </resource-ref>
</web-app>
```

The `/WEB-INF/classes` directory is on the ClassLoader's classpath. (The classpath consists of a list of locations

from which `.class` files can be loaded and executed by the JVM.) The `/WEB-INF/classes` directory contains the classes associated with the web application itself.

Any JAR files placed in the `/WEB-INF/lib` directory will also be placed on the ClassLoader's classpath.

See also

- EAR (file format)
- JAR (file format)

References

1. *Crossley, Allistair. "Apache Tomcat 8 (8.0.44) - Tomcat Web Application Deployment" (https://tomcat.apache.org/tomcat-8.0-doc/deployer-howto.html) . Apache Software Foundation. Retrieved 2017-06-27.*
2. *Hunter, Jason (1999-10-15). "What's New in Java Servlet API 2.2?" (https://www.infoworld.com/article/2076518/what-s-new-in-java-servlet-api-2-2-.html) . JavaWorld. Retrieved 2020-11-08.*
3. *"Web Application Lifecycle" (https://docs.oracle.com/javaee/6/tutorial/doc/bnadu.html) . The Java EE 6 Tutorial. Oracle.*

4. *"Deploying on a running Tomcat server" (https://tomcat.apache.org/tomcat-6.0-doc/deployer-howto.html#Deploying_on_a_running_Tomcat_server) . Apache Software Foundation.*

External links

- Packaging Web Archives (https://eclipse-ee4j.github.io/jakartaee-tutorial/packaging003.html#BCGHAHGD) Archived (https://web.archive.org/web/20201106084953/https://eclipse-ee4j.github.io/jakartaee-tutorial/packaging003.html#BCGHAHGD) 2020-11-06 at the Wayback Machine (The Jakarta EE 8 Tutorial)

- JSR 154: JavaTM Servlet 2.4 Specification (https://jcp.org/en/jsr/detail?id=154)

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GOOGLE PRIVACY POLICY

When you use our services, you're trusting us with your information. We understand this is a big responsibility and work hard to protect your information and put you in control.

This Privacy Policy is meant to help you understand what information we collect, why we collect it, and how you can update, manage, export, and delete your information.

Privacy Checkup

Looking to change your privacy settings?

Take the Privacy Checkup

Effective November 15, 2023 | Archived versions

We build a range of services that help millions of people daily to explore and interact with the world in new ways. Our services include:

- Google apps, sites, and devices, like Search, YouTube, and Google Home
- Platforms like the Chrome browser and Android operating system
- Products that are integrated into third-party apps and sites, like ads, analytics, and embedded Google Maps

You can use our services in a variety of ways to manage your privacy. For example, you can sign up for a Google Account if you want to create and manage content like emails

and photos, or see more relevant search results. And you can use many Google services when you're signed out or without creating an account at all, like searching on Google or watching YouTube videos. You can also choose to browse the web in a private mode, like Chrome Incognito mode. And across our services, you can adjust your privacy settings to control what we collect and how your information is used.

To help explain things as clearly as possible, we've added examples, explanatory videos, and definitions for key terms. And if you have any questions about this Privacy Policy, you can contact us.

INFORMATION GOOGLE COLLECTS

We want you to understand the types of information we collect as you use our services

We collect information to provide better services to all our users — from figuring out basic stuff like which language you speak, to more complex things like which ads you'll find most useful, the people who matter most to you online, or which YouTube videos you might like. The information Google collects, and how that information is used, depends on how you use our services and how you manage your privacy controls.

When you're not signed in to a Google Account, we store the information we collect with unique identifiers tied to the browser, application, or device you're using. This allows us to do things like maintain your preferences across browsing sessions, such as your preferred language or whether to show you more relevant search results or ads based on your activity.

When you're signed in, we also collect information that we store with your Google Account, which we treat as personal information.

Things you create or provide to us

When you create a Google Account, you provide us with personal information that includes your name and a password. You can also choose to add a phone number or payment information to your account. Even if you aren't signed in to a Google Account, you might choose to provide us with information — like an email address to communicate with Google or receive updates about our services.

We also collect the content you create, upload, or receive from others when using our services. This includes things like email you write and receive, photos and videos you save, docs and spreadsheets you create, and comments you make on YouTube videos.

Information we collect as you use our services

Your apps, browsers & devices

We collect information about the apps, browsers, and devices you use to access Google services, which helps us provide features like automatic product updates and dimming your screen if your battery runs low.

The information we collect includes unique identifiers, browser type and settings, device type and settings, operating system, mobile network information including carrier name and phone number, and application version number. We also collect information about the interaction of your apps, browsers, and devices with our services, including IP address, crash reports, system activity, and the date, time, and referrer URL of your request.

We collect this information when a Google service on your device contacts our servers — for example, when you install an app from the Play Store or when a service checks for automatic updates. If you're using an Android device with Google apps, your device periodically contacts Google servers to provide information about your device and connection to our services. This information includes things like your device type and carrier name, crash reports, which apps you've installed, and, depending on your device settings, other information about how you're using your Android device.

Your activity

We collect information about your activity in our services, which we use to do things like recommend a YouTube video you might like. The activity information we collect may

include:

- Terms you search for
- Videos you watch
- Views and interactions with content and ads
- Voice and audio information
- Purchase activity
- People with whom you communicate or share content
- Activity on third-party sites and apps that use our services
- Chrome browsing history you've synced with your Google Account

If you use our services to make and receive calls or send and receive messages, we may collect call and message log information like your phone number, calling-party number, receiving-party number, forwarding numbers, sender and recipient email address, time and date of calls and messages, duration of calls, routing information, and types and volumes of calls and messages.

You can visit your Google Account to find and manage activity information that's saved in your account.

Go to Google Account

Your location information

We collect information about your location when you use our services, which helps us offer features like driving directions, search results for things near you, and ads based on your general location.

Your location can be determined with varying degrees of accuracy by:

- GPS and other sensor data from your device

- IP address
- Activity on Google services, such as your searches and places you label like home or work
- Information about things near your device, such as Wi-Fi access points, cell towers, and Bluetooth-enabled devices

The types of location data we collect and how long we store it depend in part on your device and account settings. For example, you can turn your Android device's location on or off using the device's settings app. You can also turn on Location History if you want to create a private map of where you go with your signed-in devices. And if your Web & App Activity setting is enabled, your searches and other activity from Google services, which may also include location information, is saved to your Google Account. Learn more about how we use location information.

In some circumstances, Google also collects information about you from publicly accessible sources. For example, if your name appears in your local newspaper, Google's Search engine may index that article and display it to other people if they search for your name. We may also collect information about you from trusted partners, such as directory services who provide us with business information to be displayed on Google's services, marketing partners who provide us with information about potential customers of our business services, and security partners who provide us with information to protect against abuse. We also receive information from advertising partners to provide advertising and research services on their behalf.

We use various technologies to collect and store information, including cookies, pixel tags, local storage, such as browser web storage or application data caches, databases, and server logs.

WHY GOOGLE COLLECTS DATA

We use data to build better services

We use the information we collect from all our services for the following purposes:

Provide our services

We use your information to deliver our services, like processing the terms you search for in order to return results or helping you share content by suggesting recipients from your contacts.

Maintain & improve our services

We also use your information to ensure our services are working as intended, such as tracking outages or troubleshooting issues that you report to us. And we use your information to make improvements to our services — for example, understanding which search terms are most frequently misspelled helps us improve spell-check features used across our services.

Develop new services

We use the information we collect in existing services to help us develop new ones. For example, understanding how people organized their photos in Picasa, Google's first photos app, helped us design and launch Google Photos.

Provide personalized services, including content and ads

We use the information we collect to customize our services for you, including providing recommendations, personalized content, and customized search results. For example, Security Checkup provides security tips adapted to how you use Google products. And Google Play uses information like apps you've already installed and videos you've watched on YouTube to suggest new apps you might like.

Depending on your settings, we may also show you personalized ads based on your interests. For example, if you search for "mountain bikes," you may see ads for sports equipment on YouTube. You can control what information we use to show you ads by visiting your ad settings in My Ad Center.

- We don’t show you personalized ads based on sensitive categories, such as race, religion, sexual orientation, or health.
- We don’t show you personalized ads based on your content from Drive, Gmail, or Photos.
- We don’t share information that personally identifies you with advertisers, such as your name or email, unless you ask us to. For example, if you see an ad for a nearby flower shop and select the “tap to call” button, we’ll connect your call and may share your phone number with the flower shop.

Go to My Ad Center

Measure performance

We use data for analytics and measurement to understand how our services are used. For example, we analyze data about your visits to our sites to do things like optimize product design. And we also use data about the ads you interact with to help advertisers understand the performance of their ad campaigns. We use a variety of tools to do this, including Google Analytics. When you visit sites or use apps that use Google Analytics, a Google Analytics customer may choose to enable Google to link information about your activity from that site or app with activity from other sites or apps that use our ad services.

Communicate with you

We use information we collect, like your email address, to interact with you directly. For example, we may send you a notification if we detect suspicious activity, like an attempt to sign in to your Google Account from an unusual location. Or we may let you know about upcoming changes or improvements to our services. And if you contact Google, we’ll keep a record of your request in order to help solve any issues you might be facing.

Protect Google, our users, and the public

We use information to help improve the safety and reliability of our services. This includes detecting, preventing, and responding to fraud, abuse, security risks, and technical issues that could harm Google, our users, or the public.

We use different technologies to process your information for these purposes. We use automated systems that analyze your content to provide you with things like customized search results, personalized ads, or other features tailored to how you use our services. And we analyze your content to help us detect abuse such as spam, malware, and illegal content. We also use algorithms to recognize patterns in data. For example, Google Translate helps people communicate across languages by detecting common language patterns in phrases you ask it to translate.

We may combine the information we collect among our services and across your devices for the purposes described above. For example, if you watch videos of guitar players on YouTube, you might see an ad for guitar lessons on a site that uses our ad products. Depending on your account settings, your activity on other sites and apps may be associated with your personal information in order to improve Google's services and the ads delivered by Google.

If other users already have your email address or other information that identifies you, we may show them your publicly visible Google Account information, such as your name and photo. This helps people identify an email coming from you, for example.

We'll ask for your consent before using your information for a purpose that isn't covered in this Privacy Policy.

YOUR PRIVACY CONTROLS

You have choices regarding the information we collect and how it's used

This section describes key controls for managing your privacy across our services. You can also visit the Privacy Checkup, which provides an opportunity to review and adjust important privacy settings. In addition to these tools, we also offer specific privacy settings in our products — you can learn more in our Product Privacy Guide.

Go to Privacy Checkup

Managing, reviewing, and updating your information

When you're signed in, you can always review and update information by visiting the services you use. For example, Photos and Drive are both designed to help you manage specific types of content you've saved with Google.

We also built a place for you to review and control information saved in your Google Account. Your Google Account includes:

Privacy controls

Activity Controls

Decide what types of activity you'd like saved in your account. For example, if you have YouTube History turned on, the videos you watch and the things you search for are saved in your account so you can get better recommendations and remember where you left off. And if you have Web & App Activity turned on, your searches and activity from other Google services are saved in your account so you can get more personalized experiences like faster searches and more helpful app and content recommendations. Web & App Activity also has a subsetting that lets you control whether information about your activity on other sites, apps, and devices that use Google services, such as apps you install and use on Android, is saved in your Google Account and used to improve Google services.

Go to Activity Controls

Ad settings

Manage your preferences about the ads shown to you on Google and on sites and apps that partner with Google to show ads. You can modify your interests, choose whether your personal information is used to make ads more relevant to you, and turn on or off certain advertising services.

Go to My Ad Center

About you

Manage personal info in your Google Account and control who can see it across Google services.

Go to About You

Shared endorsements

Choose whether your name and photo appear next to your activity, like reviews and recommendations, that appear in ads.

Go to Shared Endorsements

Sites and apps that use Google services

Manage information that websites and apps using Google services, like Google Analytics, may share with Google when you visit or interact with their services.

Go to How Google uses information from sites or apps that use our services

Ways to review & update your information

My Activity

My Activity allows you to review and control data that's saved to your Google Account when you're signed in and using Google services, like searches you've done or your visits to Google Play. You can browse by date and by topic, and delete part or all of your activity.

Go to My Activity

Google Dashboard

Google Dashboard allows you to manage information associated with specific products.

Go to Dashboard

Your personal information

Manage your contact information, such as your name, email, and phone number.

Go to Personal Info

When you're signed out, you can manage information associated with your browser or device, including:

- Signed-out search personalization: Choose whether your search activity is used to offer you more relevant results and recommendations.
- YouTube settings: Pause and delete your YouTube Search History and your YouTube Watch History.
- Ad Settings: Manage your preferences about the ads shown to you on Google and on sites and apps that partner with Google to show ads.

Exporting, removing & deleting your information

You can export a copy of content in your Google Account if you want to back it up or use it with a service outside of Google.

Export your data

To delete your information, you can:

- Delete your content from specific Google services

- Search for and then delete specific items from your account using My Activity
- Delete specific Google products, including your information associated with those products
- Delete your entire Google Account

Delete your information

Inactive Account Manager allows you to give someone else access to parts of your Google Account in case you're unexpectedly unable to use your account.

And finally, you can also request to remove content from specific Google services based on applicable law and our policies.

There are other ways to control the information Google collects whether or not you're signed in to a Google Account, including:

- Browser settings: For example, you can configure your browser to indicate when Google has set a cookie in your browser. You can also configure your browser to block all cookies from a specific domain or all domains. But remember that our services rely on cookies to function properly, for things like remembering your language preferences.
- Device-level settings: Your device may have controls that determine what information we collect. For example, you can modify location settings on your Android device.

SHARING YOUR INFORMATION

When you share your information

Many of our services let you share information with other people, and you have control over how you share. For example, you can share videos on YouTube publicly or you can decide to keep your videos private. Remember, when you share information publicly, your content may become accessible through search engines, including Google Search.

When you're signed in and interact with some Google services, like leaving comments on a YouTube video or reviewing an app in Play, your name and photo appear next to your activity. We may also display this information in ads depending on your Shared endorsements setting.

When Google shares your information

We do not share your personal information with companies, organizations, or individuals outside of Google except in the following cases:

With your consent

We'll share personal information outside of Google when we have your consent. For example, if you use Google Home to make a reservation through a booking service, we'll get your permission before sharing your name or phone number with the restaurant. We also provide you with controls to review and manage third party apps and sites you have given access to data in your Google Account. We'll ask for your explicit consent to share any sensitive personal information.

With domain administrators

If you're a student or work for an organization that uses Google services, your domain administrator and resellers who manage your account will have access to your Google Account. They may be able to:

- Access and retain information stored in your account, like your email
- View statistics regarding your account, like how many apps you install
- Change your account password
- Suspend or terminate your account access

- Receive your account information in order to satisfy applicable law, regulation, legal process, or enforceable governmental request
- Restrict your ability to delete or edit your information or your privacy settings

For external processing

We provide personal information to our affiliates and other trusted businesses or persons to process it for us, based on our instructions and in compliance with our Privacy Policy and any other appropriate confidentiality and security measures. For example, we use service providers to help operate our data centers, deliver our products and services, improve our internal business processes, and offer additional support to customers and users. We also use service providers to help review YouTube video content for public safety and analyze and listen to samples of saved user audio to help improve Google's audio recognition technologies.

For legal reasons

We will share personal information outside of Google if we have a good-faith belief that access, use, preservation, or disclosure of the information is reasonably necessary to:

- Meet any applicable law, regulation, legal process, or enforceable governmental request. We share information about the number and type of requests we receive from governments in our Transparency Report.
- Enforce applicable Terms of Service, including investigation of potential violations.
- Detect, prevent, or otherwise address fraud, security, or technical issues.
- Protect against harm to the rights, property or safety of Google, our users, or the public as required or permitted by law.

We may share non-personally identifiable information publicly and with our partners — like publishers, advertisers, developers, or rights holders. For example, we share information publicly to show trends about the general use of our services. We also allow specific partners to collect information from your browser or device for advertising and measurement purposes using their own cookies or similar technologies.

If Google is involved in a merger, acquisition, or sale of assets, we'll continue to ensure the confidentiality of your personal information and give affected users notice before

personal information is transferred or becomes subject to a different privacy policy.

KEEPING YOUR INFORMATION SECURE

We build security into our services to protect your information

All Google products are built with strong security features that continuously protect your information. The insights we gain from maintaining our services help us detect and automatically block security threats from ever reaching you. And if we do detect something risky that we think you should know about, we'll notify you and help guide you through steps to stay better protected.

We work hard to protect you and Google from unauthorized access, alteration, disclosure, or destruction of information we hold, including:

- We use encryption to keep your data private while in transit
- We offer a range of security features, like Safe Browsing, Security Checkup, and 2 Step Verification to help you protect your account
- We review our information collection, storage, and processing practices, including physical security measures, to prevent unauthorized access to our systems
- We restrict access to personal information to Google employees, contractors, and agents who need that information in order to process it. Anyone with this access is subject to strict contractual confidentiality obligations and may be disciplined or terminated if they fail to meet these obligations.

EXPORTING & DELETING YOUR INFORMATION

You can export a copy of your information or delete it from your Google Account at any time

You can export a copy of content in your Google Account if you want to back it up or use it with a service outside of Google.

Export your data

To delete your information, you can:

- Delete your content from specific Google services
- Search for and then delete specific items from your account using My Activity
- Delete specific Google products, including your information associated with those products
- Delete your entire Google Account

Delete your information

RETAINING YOUR INFORMATION

We retain the data we collect for different periods of time depending on what it is, how we use it, and how you configure your settings:

- Some data you can delete whenever you like, such as your personal info or the content you create or upload, like photos and documents. You can also delete activity information saved in your account, or choose to have it deleted

automatically after a set period of time. We'll keep this data in your Google Account until you remove it or choose to have it removed.

- Other data is deleted or anonymized automatically after a set period of time, such as advertising data in server logs.
- We keep some data until you delete your Google Account, such as information about how often you use our services.
- And some data we retain for longer periods of time when necessary for legitimate business or legal purposes, such as security, fraud and abuse prevention, or financial record-keeping.

When you delete data, we follow a deletion process to make sure that your data is safely and completely removed from our servers or retained only in anonymized form. We try to ensure that our services protect information from accidental or malicious deletion. Because of this, there may be delays between when you delete something and when copies are deleted from our active and backup systems.

You can read more about Google's data retention periods, including how long it takes us to delete your information.

COMPLIANCE & COOPERATION WITH REGULATORS

We regularly review this Privacy Policy and make sure that we process your information in ways that comply with it.

Data transfers

We maintain servers around the world and your information may be processed on servers located outside of the country where you live. Data protection laws vary among countries, with some providing more protection than others. Regardless of where your information is processed, we apply the same protections described in this policy. We also comply with certain legal frameworks relating to the transfer of data.

When we receive formal written complaints, we respond by contacting the person who made the complaint. We work with the appropriate regulatory authorities, including local data protection authorities, to resolve any complaints regarding the transfer of your data that we cannot resolve with you directly.

ABOUT THIS POLICY

When this policy applies

This Privacy Policy applies to all of the services offered by Google LLC and its affiliates, including YouTube, Android, and services offered on third-party sites, such as advertising services. This Privacy Policy doesn't apply to services that have separate privacy policies that do not incorporate this Privacy Policy.

This Privacy Policy doesn't apply to:

- The information practices of other companies and organizations that advertise our services
- Services offered by other companies or individuals, including products or sites they offer that may include Google services to which the policy applies, or products or sites displayed to you in search results, or linked from our services

Changes to this policy

We change this Privacy Policy from time to time. We will not reduce your rights under this Privacy Policy without your explicit consent. We always indicate the date the last changes were published and we offer access to archived versions for your review. If changes are significant, we'll provide a more prominent notice (including, for certain services, email notification of Privacy Policy changes).

RELATED PRIVACY PRACTICES

Specific Google services

The following privacy notices provide additional information about some Google services:

- Payments
- Fiber
- Google Fi
- Google Workspace for Education
- Read Along
- YouTube Kids
- Google Accounts Managed with Family Link, for Children under 13 (or applicable age in your country)
- Family Link privacy guide for children & teens
- Voice and Audio Collection from Children's Features on the Google Assistant

If you're a member of an organization that uses Google Workspace or Google Cloud Platform, learn how these services collect and use your personal information in the Google Cloud Privacy Notice.

Other useful resources

The following links highlight useful resources for you to learn more about our practices and privacy settings.

- Your Google Account is home to many of the settings you can use to manage your account
- Privacy Checkup guides you through key privacy settings for your Google Account

- Google's safety center helps you learn more about our built-in security, privacy controls, and tools to help set digital ground rules for your family online
- Google's Teen Privacy Guide provides answers to some of the top questions we get asked about privacy
- Privacy & Terms provides more context regarding this Privacy Policy and our Terms of Service
- Technologies includes more information about:
    - How Google uses cookies
    - Technologies used for Advertising
    - How Google uses information from sites or apps that use our services

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Key terms

Affiliates

An affiliate is an entity that belongs to the Google group of companies, including the following companies that provide consumer services in the EU: Google Ireland Limited, Google Commerce Ltd, Google Payment Corp, and Google Dialer Inc. Learn more about the companies providing business services in the EU.

Algorithm

A process or set of rules followed by a computer in performing problem-solving operations.

Application data cache

An application data cache is a data repository on a device. It can, for example, enable a web application to run without an internet connection and improve the performance of the application by enabling faster loading of content.

Browser web storage

Browser web storage enables websites to store data in a browser on a device. When used in "local storage" mode, it enables data to be stored across sessions. This makes data retrievable even after a browser has been closed and reopened. One technology that facilitates web storage is HTML 5.

Cookies

A cookie is a small file containing a string of characters that is sent to your computer when you visit a website. When you visit the site again, the cookie allows that site to recognize your browser. Cookies may store user preferences and other information. You can configure your browser to refuse all cookies or to indicate when a cookie is being sent. However, some website features or services may not function properly without cookies. Learn more about how Google uses cookies and how Google uses data, including cookies, when you use our partners' sites or apps.

Device

A device is a computer that can be used to access Google services. For example, desktop computers, tablets, smart speakers, and smartphones are all considered devices.

Google Account

You may access some of our services by signing up for a Google Account and providing us with some personal information (typically your name, email address, and a password). This account information is used to authenticate you when you access Google services and protect your account from unauthorized access by others. You can edit or delete your account at any time through your Google Account settings.

IP address

Every device connected to the Internet is assigned a number known as an Internet protocol (IP) address. These numbers are usually assigned in geographic blocks. An IP address can often be used to identify the location from which a device is connecting to the Internet.

Non-personally identifiable information

This is information that is recorded about users so that it no longer reflects or references an individually-identifiable user.

Personal information

This is information that you provide to us which personally identifies you, such as your name, email address, or billing information, or other data that can be reasonably linked to such information by Google, such as information we associate with your Google Account.

Pixel tag

A pixel tag is a type of technology placed on a website or within the body of an email for the purpose of tracking certain activity, such as views of a website or when an email is opened. Pixel tags are often used in combination with cookies.

Referrer URL

A Referrer URL (Uniform Resource Locator) is information transmitted to a destination webpage by a web browser, typically when you click a link to that page. The Referrer URL contains the URL of the last webpage the browser visited.

Sensitive personal information

This is a particular category of personal information relating to topics such as confidential medical facts, racial or ethnic origins, political or religious beliefs, or sexuality.

Server logs

Like most websites, our servers automatically record the page requests made when you visit our sites. These “server logs” typically include your web request, Internet Protocol address, browser type, browser language, the date and time of your request, and one or more cookies that may uniquely identify your browser.

A typical log entry for a search for “cars” looks like this:

```
123.45.67.89 - 25/Mar/2003 10:15:32 -
http://www.google.com/search?q=cars -
Firefox 1.0.7; Windows NT 5.1 -
740674ce2123e969
```

- `123.45.67.89` is the Internet Protocol address assigned to the user by the user’s ISP. Depending on the user’s service, a different address may be assigned to the user by their service provider each time they connect to the Internet.
- `25/Mar/2003 10:15:32` is the date and time of the query.
- `http://www.google.com/search?q=cars` is the requested URL, including the search query.
- `Firefox 1.0.7; Windows NT 5.1` is the browser and operating system being used.
- `740674ce2123a969` is the unique cookie ID assigned to this particular computer the first time it visited Google. (Cookies can be deleted by users. If the user has deleted the cookie from the computer since the last time they’ve visited Google, then it will be the unique cookie ID assigned to their device the next time they visit Google from that particular device).

Unique identifiers

A unique identifier is a string of characters that can be used to uniquely identify a browser, app, or device. Different identifiers vary in how permanent they are, whether they can be reset by users, and how they can be accessed.

Unique identifiers can be used for various purposes, including security and fraud detection, syncing services such as your email inbox, remembering your preferences, and providing personalized advertising. For example, unique identifiers stored in cookies help

sites display content in your browser in your preferred language. You can configure your browser to refuse all cookies or to indicate when a cookie is being sent. Learn more about how Google uses cookies.

On other platforms besides browsers, unique identifiers are used to recognize a specific device or app on that device. For example, a unique identifier such as the Advertising ID is used to provide relevant advertising on Android devices, and can be managed in your device's settings. Unique identifiers may also be incorporated into a device by its manufacturer (sometimes called a universally unique ID or UUID), such as the IMEI-number of a mobile phone. For example, a device's unique identifier can be used to customize our service to your device or analyze device issues related to our services.

Additional Context

ads you'll find most useful

For example, if you watch videos about baking on YouTube, you may see more ads that relate to baking as you browse the web. We also may use your IP address to determine your approximate location, so that we can serve you ads for a nearby pizza delivery service if you search for "pizza." Learn more about Google ads and why you may see particular ads.

advertising and research services on their behalf

For example, advertisers may upload data from their loyalty-card programs so that they can better understand the performance of their ad campaigns. We only provide aggregated reports to advertisers that don't reveal information about individual people.

Android device with Google apps

Android devices with Google apps include devices sold by Google or one of our partners and include phones, cameras, vehicles, wearables, and televisions. These devices use Google Play Services and other pre-installed apps that include services like Gmail, Maps, your phone's camera and phone dialer, text-to-speech conversion, keyboard input, and security features. Learn more about Google Play Services.

combine the information we collect

Some examples of how we combine the information we collect include:

- When you're signed in to your Google Account and search on Google, you can see search results from the public web, along with relevant information from the content you have in other Google products, like Gmail or Google Calendar. This can include things like the status of your upcoming flights, restaurant, and hotel reservations, or your photos. Learn more
- If you have communicated with someone via Gmail and want to add them to a Google Doc or an event in Google Calendar, Google makes it easy to do so by autocompleting their email address when you start to type in their name. This feature makes it easier to share things with people you know. Learn more
- The Google app can use data that you have stored in other Google products to show you personalized content, depending on your settings. For example, if you have searches stored in your Web & App Activity, the Google app can show you news articles and other information about your interests, like sports scores, based your activity. Learn more
- If you link your Google Account to your Google Home, you can manage your information and get things done through the Google Assistant. For example, you can add events to your Google Calendar or get your schedule for the day, ask for status updates on your upcoming flight, or send information like driving directions to your phone. Learn more

customized search results

For example, when you're signed in to your Google Account and have the Web & App Activity control enabled, you can get more relevant search results that are based on your previous searches and activity from other Google services. You can learn more here. You may also get customized search results even when you're signed out. If you don't want this level of search customization, you can search and browse privately or turn off signed-out search personalization.

deliver our services

Examples of how we use your information to deliver our services include:

- We use the IP address assigned to your device to send you the data you requested, such as loading a YouTube video
- We use unique identifiers stored in cookies on your device to help us authenticate you as the person who should have access to your Google Account
- Photos and videos you upload to Google Photos are used to help you create albums, animations, and other creations that you can share. Learn more
- A flight confirmation email you receive may be used to create a “check-in” button that appears in your Gmail
- When you purchase services or physical goods from us, you may provide us information like your shipping address or delivery instructions. We use this information for things like processing, fulfilling, and delivering your order, and to provide support in connection with the product or service you purchase.

detect abuse

When we detect spam, malware, illegal content (including child sexual abuse and exploitation material), and other forms of abuse on our systems in violation of our policies, we may disable your account or take other appropriate action. In certain circumstances, we may also report the violation to appropriate authorities.

devices

For example, we can use information from your devices to help you decide which device you’d like to use to install an app or view a movie you buy from Google Play. We also use this information to help protect your account.

ensure and improve

For example, we analyze how people interact with advertising to improve the performance of our ads.

ensure our services are working as intended

For example, we continuously monitor our systems to look for problems. And if we find something wrong with a specific feature, reviewing activity information collected before the problem started allows us to fix things more quickly.

Information about things near your device

If you use Google's Location services on Android, we can improve the performance of apps that rely on your location, like Google Maps. If you use Google's Location services, your device sends information to Google about its location, sensors (like accelerometer), and nearby cell towers and Wi-Fi access points (like MAC address and signal strength). All these things help to determine your location. You can use your device settings to enable Google Location services. Learn more

legal process, or enforceable governmental request

Like other technology and communications companies, Google regularly receives requests from governments and courts around the world to disclose user data. Respect for the privacy and security of data you store with Google underpins our approach to complying with these legal requests. Our legal team reviews each and every request, regardless of type, and we frequently push back when a request appears to be overly broad or doesn't follow the correct process. Learn more in our Transparency Report.

make improvements

For example, we use cookies to analyze how people interact with our services. And that analysis can help us build better products. For example, it may help us discover that it's taking people too long to complete a certain task or that they have trouble finishing steps at all. We can then redesign that feature and improve the product for everyone.

may link information

Google Analytics relies on first-party cookies, which means the cookies are set by the Google Analytics customer. Using our systems, data generated through Google Analytics can be linked by the Google Analytics customer and by Google to third-party cookies that are related to visits to other websites. For example, an advertiser may want to use its

Google Analytics data to create more relevant ads, or to further analyze its traffic. Learn more

our users

For example, to prevent abuse and increase transparency and accountability over our online content moderation practices, Google shares data about requests for removal of content from our services with Lumen, which collects and analyzes these requests to facilitate research to help Internet users understand their rights. Learn more.

partner with Google

There are over 2 million non-Google websites and apps that partner with Google to show ads. Learn more

payment information

For example, if you add a credit card or other payment method to your Google Account, you can use it to buy things across our services, like apps in the Play Store. We may also ask for other information, like a business tax ID, to help process your payment. In some cases, we may also need to verify your identity and may ask you for information to do this.

We may also use payment information to verify that you meet age requirements, if, for example, you enter an incorrect birthday indicating you're not old enough to have a Google Account. Learn more

personalized ads

You may also see personalized ads based on information from the advertiser. If you shopped on an advertiser's website, for example, they can use that visit information to show you ads. Learn more

phone number

If you add your phone number to your account, it can be used for different purposes across Google services, depending on your settings. For example, your phone number can be used to help you access your account if you forget your password, help people find and connect with you, and make the ads you see more relevant to you. Learn more

protect against abuse

For example, information about security threats can help us notify you if we think your account has been compromised (at which point we can help you take steps to protect your account).

publicly accessible sources

For example, we may collect information that's publicly available online or from other public sources to help train Google's AI models and build products and features like Google Translate, Bard, and Cloud AI capabilities. Or, if your business's information appears on a website, we may index and display it on Google services.

rely on cookies to function properly

For example, we use a cookie called 'lbcs' that makes it possible for you to open many Google Docs in one browser. Blocking this cookie would prevent Google Docs from working as expected. Learn more

safety and reliability

Some examples of how we use your information to help keep our services safe and reliable include:

- Collecting and analyzing IP addresses and cookie data to protect against automated abuse. This abuse takes many forms, such as sending spam to Gmail users, stealing money from advertisers by fraudulently clicking on ads, or censoring content by launching a Distributed Denial of Service (DDoS) attack.
- The "last account activity" feature in Gmail can help you find out if and when someone accessed your email without your knowledge. This feature shows you

information about recent activity in Gmail, such as the IP addresses that accessed your mail, the associated location, and the date and time of access. Learn more

sensitive categories

When showing you personalized ads, we use topics that we think might be of interest to you based on your activity. For example, you may see ads for things like "Cooking and Recipes" or "Air Travel." We don't use topics or show personalized ads based on sensitive categories like race, religion, sexual orientation, or health. And we require the same from advertisers that use our services.

Sensor data from your device

Your device may have sensors that can be used to better understand your location and movement. For example, an accelerometer can be used to determine your speed and a gyroscope to figure out your direction of travel.

servers around the world

For example, we operate data centers located around the world to help keep our products continuously available for users.

services to make and receive calls or send and receive messages

Examples of these services include:

- Google Voice, for making and receiving calls, sending text messages, and managing voicemail
- Google Meet, for making and receiving video calls
- Gmail, for sending and receiving emails
- Google Chat, for sending and receiving messages
- Google Duo, for making and receiving video calls and sending and receiving messages

- Google Fi, for a phone plan

show trends

When lots of people start searching for something, it can provide useful information about particular trends at that time. Google Trends samples Google web searches to estimate the popularity of searches over a certain period of time and shares those results publicly in aggregated terms. Learn more

specific Google services

For example, you can delete your blog from Blogger or a Google Site you own from Google Sites. You can also delete reviews you've left on apps, games, and other content in the Play Store.

specific partners

For example, we allow YouTube creators and advertisers to work with measurement companies to learn about the audience of their YouTube videos or ads, using cookies or similar technologies. Another example is merchants on our shopping pages, who use cookies to understand how many different people see their product listings. Learn more about these partners and how they use your information.

synced with your Google Account

Your Chrome browsing history is only saved to your account if you've enabled Chrome synchronization with your Google Account. Learn more

the people who matter most to you online

For example, when you type an address in the To, Cc, or Bcc field of an email you're composing, Gmail will suggest addresses based on the people you contact most frequently.

the public

For example, we process information about requests to remove content from our services under Google's content removal policies or applicable law to assess the request, and to ensure transparency, improve accountability and prevent abuse and fraud in these practices.

third parties

For example, we process your information to report use statistics to rights holders about how their content was used in our services. We may also process your information if people search for your name and we display search results for sites containing publicly available information about you.

Views and interactions with content and ads

For example, we collect information about views and interactions with ads so we can provide aggregated reports to advertisers, like telling them whether we served their ad on a page and whether the ad was likely seen by a viewer. We may also measure other interactions, such as how you move your mouse over an ad or if you interact with the page on which the ad appears.

Voice and audio information

For example, you can choose whether you want Google to save an audio recording to your Google Account when you interact with Google Search, Assistant, and Maps. When your device detects an audio activation command, like “Hey Google,” Google records your voice and audio plus a few seconds before the activation. Learn more

your activity on other sites and apps

This activity might come from your use of Google services, like from syncing your account with Chrome or your visits to sites and apps that partner with Google. Many websites and apps partner with Google to improve their content and services. For example, a website might use our advertising services (like AdSense) or analytics tools (like Google Analytics),

or it might embed other content (such as videos from YouTube). These services may share information about your activity with Google and, depending on your account settings and the products in use (for instance, when a partner uses Google Analytics in conjunction with our advertising services), this data may be associated with your personal information.

Learn more about how Google uses data when you use our partners' sites or apps.

Memorandum on
Signature and Ratification, Acceptance or Approval
of the
Convention on the Settlement of Investment Disputes
between States and Nationals of Other States

Note concernant
la signature et la ratification, l'acceptation ou l'approbation
de la
Convention pour le Règlement des Différends Relatifs aux
Investissements entre Etats et Ressortissants d'Autres Etats

Memorándum sobre
la Firma y la Ratificación, Aceptación o Aprobación
del
Convenio sobre Arreglo de Diferencias Relativas a Inversiones
entre Estados y Nacionales de Otros Estados

Memorandum on
Signature and Ratification, Acceptance or Approval
of the
Convention on the Settlement of Investment Disputes
between States and Nationals of Other States

This memorandum has been prepared at the request of certain member governments of the International Bank for Reconstruction and Development (hereafter the Bank) and deals with the formalities connected with (A) the signature of the Convention; and (B) the ratification, acceptance or approval of the Convention.

It is understood that each State will take such formal action as may be required on these matters in accordance with its own constitutional and administrative procedures, and that the documents connected with such action will follow the traditional forms and precedents of that State. This memorandum is intended only to highlight the basic legal requirements which need to be covered in each case.

Formal communications addressed to the Bank, as depositary of the Convention, should be in English, French or Spanish. If transmitted in another language, they should be accompanied by a translation in one of the three languages specified.

A. Signature

1. Under Article 67, the Convention is open for signature on behalf of

   (a) States members of the International Bank for Reconstruction and Development; and

   (b) other States which are parties to the Statute of the International Court of Justice and which have been invited to sign by the Administrative Council of the International Centre for Settlement of Investment Disputes (established by Article 1), by a vote of two-thirds of its members.

2. Article 68 of the Convention authorizes only States which have signed the Convention to become parties to it by ratification, acceptance or approval. Signature of the Convention is thus an essential step to be taken prior to deposit of an instrument of ratification, acceptance or approval. This remark applies equally to States members of the Bank and to those States invited to sign by the Administrative Council under Article 67.

3. The Convention is open for signature at the principal office of the Bank at 1818 H Street, N.W., Washington, D.C. 20433. Arrangements for signing should be made in consultation with the Secretary's Department of the Bank.

4. The Convention may be signed by the duly authorized representatives of the States indicated in Article 67. A person wishing to sign the Convention on behalf of a State is expected to furnish to the Secretary's Department of the Bank a statement in writing which designates him by name and title as the person authorized to sign the Convention on behalf of the State he represents. The statement should recite the title of the Convention and should be signed by the Head of State, Head of Government or Minister of Foreign Affairs of the State concerned.

B. Ratification, Acceptance, Approval

1. By Article 68, a formal act of ratification, acceptance or approval by a State is a prerequisite for entry into force of the Convention in relation to that State. Under Article 68(2), the Convention entered into force on October 14, 1966. For each State depositing its instrument of ratification, acceptance or approval, the Convention enters into force 30 days after such deposit.

2. Only States which have signed the Convention in accordance with Article 67 may validly ratify, accept or approve it. A signatory State may deposit its instrument of ratification, acceptance or approval at the principal office of the Bank, 1818 H Street, N.W., Washington, D.C. 20433 at any time during the

Bank's hours of business. Arrangements for deposits of instruments of ratification, acceptance or approval should be made in consultation with the Secretary's Department of the Bank.

3. No form of words is prescribed for instruments of ratification, acceptance or approval. They should, however:

   (a) recite the title of the Convention;

   (b) affirm that the Convention has been duly signed on behalf of the State concerned;

   (c) affirm that the Convention is ratified, accepted or approved on behalf of that State; and

   (d) affirm the State's willingness to perform all its obligations under the Convention.

Instruments of ratification, acceptance or approval should be signed by the Head of State, Head of Government or Minister of Foreign Affairs of the State concerned.

REST

REST (**Representational state transfer**) is a software architectural style that was created to guide the design and development of the architecture for the World Wide Web. REST defines a set of constraints for how the architecture of a distributed, Internet-scale hypermedia system, such as the Web, should behave. The REST architectural style emphasises uniform interfaces, independent

deployment of components, the scalability of interactions between them, and creating a layered architecture to promote caching to reduce user-perceived latency, enforce security, and encapsulate legacy systems.[1]

REST has been employed throughout the software industry to create stateless, reliable Web-based applications. An application that obeys the REST constraints may be informally described as *RESTful*, although this term is more commonly associated with the design of HTTP-based APIs and what are widely considered best practices regarding the

"verbs" (HTTP methods) a resource responds to while having little to do with REST as originally formulated—and is often even at odds with the concept.[2]

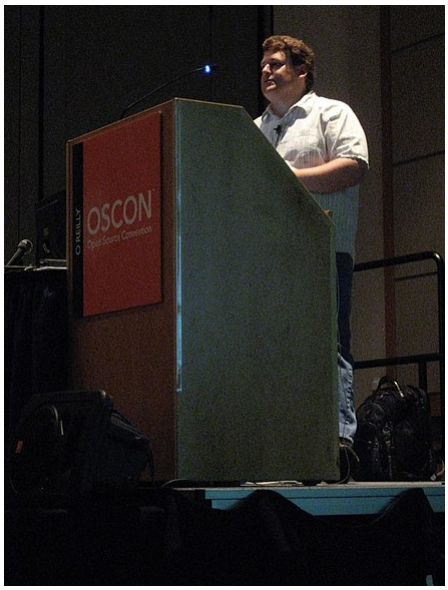
Principle

The term *representational state transfer* was introduced and defined in 2000 by computer scientist Roy Fielding in his doctoral dissertation. It means that a server will respond with the representation of a resource (today, it will most often be an HTML, XML or JSON document) and that resource will contain hypermedia links that can be followed to make the state of

the system change. Any such request will in turn receive the representation of a resource, and so on.

An important consequence is that the only identifier that needs to be known is the identifier of the first resource requested, and all other identifiers will be discovered. This means that those identifiers can change without the need to inform the client beforehand and that there can be only loose coupling between client and server.

History



Roy Fielding speaking at OSCON 2008

The Web began to enter everyday use in 1993–1994, when websites for general use started to become available.[3] At the time, there was only a fragmented description of the Web's architecture, and there was pressure in the industry to agree on some standard for the Web interface protocols. For instance, several

experimental extensions had been added to the communication protocol (HTTP) to support proxies, and more extensions were being proposed, but there was a need for a formal Web architecture with which to evaluate the impact of these changes.[4]

The W3C and IETF working groups together started work on creating formal descriptions of the Web's three primary standards: URI, HTTP, and HTML. Roy Fielding was involved in the creation of these standards (specifically HTTP 1.0 and 1.1, and URI), and during the next six years he created the REST architectural style, testing its constraints on the Web's

protocol standards and using it as a means to define architectural improvements — and to identify architectural mismatches. Fielding defined REST in his 2000 PhD dissertation "Architectural Styles and the Design of Network-based Software Architectures"[1][5] at UC Irvine.

To create the REST architectural style, Fielding identified the requirements that apply when creating a world-wide network-based application, such as the need for a low entry barrier to enable global adoption. He also surveyed many existing architectural styles for network-based

applications, identifying which features are shared with other styles, such as caching and client–server features, and those which are unique to REST, such as the concept of resources. Fielding was trying to both categorise the existing architecture of the current implementation and identify which aspects should be considered central to the behavioural and performance requirements of the Web.

By their nature, architectural styles are independent of any specific implementation, and while REST was created as part of the development of the Web standards, the implementation of the

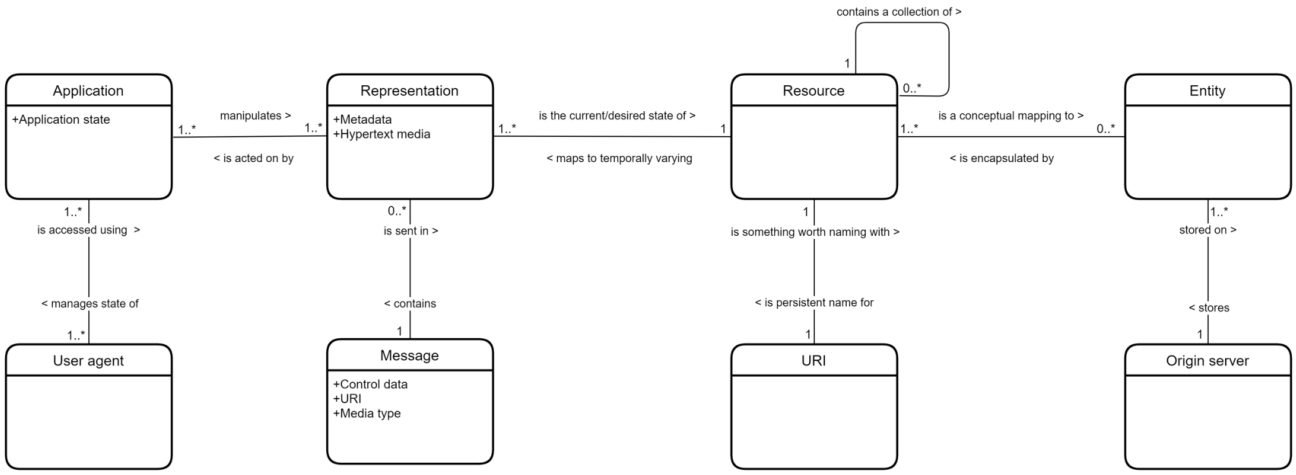
Web does not obey every constraint in the REST architectural style. Mismatches can occur due to ignorance or oversight, but the existence of the REST architectural style means that they can be identified before they become standardised. For example, Fielding identified the embedding of session information in URIs as a violation of the constraints of REST which can negatively affect shared caching and server scalability. HTTP cookies also violated REST constraints because they can become out of sync with the browser's application state, making them unreliable; they also contain opaque data that can be a concern for privacy and security.

Architectural properties

The REST architectural style is designed for network-based applications, specifically client-server applications. But more than that, it is designed for Internet-scale usage, so the coupling between the *user agent* (client) and the *origin server* must be as loose as possible to facilitate large-scale adoption.

The strong decoupling of client and server together with the text-based transfer of information using a uniform addressing protocol provided the basis for meeting the requirements of the Web: robustness

(anarchic scalability), independent deployment of components, large-grain data transfer, and a low entry-barrier for content readers, content authors and developers alike.



An entity-relationship model of the concepts expressed in the REST architectural style

The constraints of the REST architectural style affect the following architectural properties:[1][6]

- Performance in component interactions, which can be the dominant factor in user-perceived performance and network efficiency;[7]
- Scalability allowing the support of large numbers of components and interactions among components;
- Simplicity of a uniform interface;
- Modifiability of components to meet changing needs (even while the application is running);
- Visibility of communication between components by service agents;
- Portability of components by moving program code with the data;

- Reliability in the resistance to failure at the system level in the presence of failures within components, connectors, or data.[7]

Architectural constraints

The REST architectural style defines six guiding constraints.[6][8] When these constraints are applied to the system architecture, it gains desirable non-functional properties, such as performance, scalability, simplicity, modifiability, visibility, portability, and reliability.[1]

The formal REST constraints are as follows:

Client–server architecture

The client-server design pattern enforces the principle of separation of concerns: separating the user interface concerns from the data storage concerns. Portability of the user interface is thus improved. In the case of the Web, a plethora of web browsers have been developed for most platforms without the need for knowledge of any server implementations. Separation also simplifies the server components,

improving scalability, but more importantly it allows components to evolve independently (anarchic scalability), which is necessary in an Internet-scale environment that involves multiple organisational domains.

Statelessness

In computing, a stateless protocol is a communications protocol in which no session information is retained by the receiver, usually a server. Relevant session data is sent to the receiver by the client in such a way that every packet of information transferred can be understood

in isolation, without context information from previous packets in the session. This property of stateless protocols makes them ideal in high volume applications, increasing performance by removing server load caused by retention of session information.

Cacheability

As on the World Wide Web, clients and intermediaries can cache responses. Responses must, implicitly or explicitly, define themselves as either cacheable or non-cacheable to prevent clients from providing stale or inappropriate data in

response to further requests. Well-managed caching partially or completely eliminates some client–server interactions, further improving scalability and performance. The cache can be performed at the client machine in memory or browser cache storage. Additionally cache can be stored in a Content Delivery Network (CDN).

Layered system

A client cannot ordinarily tell whether it is connected directly to the end server or to an intermediary along the way. If a proxy or load balancer is placed between the client

and server, it won't affect their communications, and there won't be a need to update the client or server code. Intermediary servers can improve system scalability by enabling load balancing and by providing shared caches. Also, security can be added as a layer on top of the web services, separating business logic from security logic.[9] Adding security as a separate layer enforces security policies. Finally, intermediary servers can call multiple other servers to generate a response to the client.

Code on demand (optional)

Servers can temporarily extend or customize the functionality of a client by transferring executable code: for example, compiled components such as Java applets, or client-side scripts such as JavaScript.

Uniform interface

The uniform interface constraint is fundamental to the design of any RESTful system.[1] It simplifies and decouples the architecture, which enables each part to

evolve independently. The four constraints for this uniform interface are:

- Resource identification in requests: Individual resources are identified in requests, for example using URIs in RESTful Web services. The resources themselves are conceptually separate from the representations that are returned to the client. For example, the server could send data from its database as HTML, XML or as JSON—none of which are the server's internal representation.
- Resource manipulation through representations: When a client holds a

representation of a resource, including any metadata attached, it has enough information to modify or delete the resource's state.

- Self-descriptive messages: Each message includes enough information to describe how to process the message. For example, which parser to invoke can be specified by a media type.[1]
- Hypermedia as the engine of application state (HATEOAS) - Having accessed an initial URI for the REST application—analogous to a human Web user accessing the home page of a website—

a REST client should then be able to use server-provided links dynamically to discover all the available resources it needs. As access proceeds, the server responds with text that includes hyperlinks to other resources that are currently available. There is no need for the client to be hard-coded with information regarding the structure of the server.[10]

Classification models

Several models have been developed to help classify REST APIs according to their

adherence to various principles of REST design, such as

- the Richardson Maturity Model
- the Classification of HTTP-based APIs[11]
- the W S^3 maturity model[12]

Applied to web services

Web service APIs that adhere to the REST architectural constraints are called RESTful APIs.[13] HTTP-based RESTful APIs are defined with the following aspects:[14]

- the resource identifier (URI) of one or several resources used as starting points, sometimes called endpoints or entry points
- the encoding of all possible resource representations (which will include representation of the data and of the hypermedia links for state transitions)
- the possible state transitions and where they can occur

Unlike SOAP-based web services, there is no "official" standard for RESTful web APIs. This is because REST is an architectural style, while SOAP is a protocol. REST is not a standard in itself,

but RESTful implementations make use of standards, such as HTTP, URI, JSON, and XML. Many developers describe their APIs as being RESTful, even though these APIs do not fulfill all of the architectural constraints described above (especially the uniform interface constraint).[2] Most APIs claiming to be RESTful actually only satisfy the level 2 of the Richardson Maturity Model.

See also

- Clean URL – URL intended to improve the usability of a website

- Content delivery network – Layer in the internet ecosystem addressing bottlenecks
- Domain Application Protocol (DAP)
- List of URI schemes – Namespace identifier assigned by IANA
- Microservices – Collection of loosely coupled services used to build computer applications
- Overview of RESTful API Description Languages
- Resource-oriented architecture (ROA)
- Resource-oriented computing (ROC)
- Service-oriented architecture (SOA)

- Web-oriented architecture (WOA)

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Privacy & Cookie statement

Since day one, WeTransfer has cared about privacy and respecting our users. Protecting the data of our users is of the highest importance to us, and we go to great lengths to make sure we keep it safe.

We take your trust and right to privacy seriously and work continuously to keep your digital footprint small and in your control. Nevertheless, to enable you in your flow and to improve and secure our service, we need to process some personal information. For privacy-related questions, please reach out to our Data Protection Officer via dpo@wetransfer.com. If you're based in the United Kingdom, you may also reach out to our UK privacy representative via uk-privacy@wetransfer.com.

This statement covers the processing activities of the WeTransfer services, software, websites (including browser extensions) and/or applications (together: "Services"). The Services allow you to create, share, collect, capture and/or visualize your ideas, texts, graphics, videos, data, information, files, decks or other content (together: "Content"). The Services may be provided to you online, in the form of a mobile and/or desktop application(s) and/or may be integrated in a third party service. By using any of the Services you agree to have read and understood our Privacy and Cookie Statement as below.

To make sure this Statement is easy to read, each question has a drop down with a short explanation, followed by a more formal statement.

What information do we collect?

We store some personal information to make your use of our Services possible. There are several ways in which we may collect personal information from you: you may submit it or we will collect it automatically through our Services. Different types of personal information may be collected depending on the way you use our Services and which Services you use. Please check the section "What are your rights as a user" to find out how you can change, access or delete your personal information.

Personal information you submit

WeTransfer collects, processes or hosts personal information you provide.

1. **Contact information:** your name and your email address or the email address of the recipient(s).
2. **Information about yourself:** age, gender, city.
3. **Preferences**: for example language settings or interests.
4. **Content and metadata:** you may choose to upload or create Content which contains all sorts of personal information about you and others. Such Content also contains a filename, size and filetype.
5. **Personal messages:** the ones you send to people along with sharing your files.

The uploader or creator(s) is responsible for the legitimacy of the Content and needs to follow our Terms of Service, WeTransfer only processes it to provide its Services. If you upload, send or create personal information via one of our Services, you may ask for a Data Processing Agreement by sending an email to legal@wetransfer.com.

Personal information we collect by automated means

WeTransfer also collects and uses personal information by automated means while you use our Services.

1. **Browser information:** type of browser, language settings, country and timezone.
2. **Cookie or web beacon information:** cookie IDs and settings and other personal information received through cookies, web beacons or pixel tags. Learn more about under section “Why and how are cookies used”.
3. **Device information:** the type of device, hardware model and operating system.
4. **Identification details:** unique identifiers such as an IDFA (for iOS), MAC address or a UserID.
5. **Network information:** IP-addresses and mobile network information.
6. **Location data:** data on your geo-location. If we use your device based, precise GPS-location, we will make sure we only do so after receiving your consent.
7. **Service usage**: information regarding the way you interact with our Services, websites and mobile apps.

Personal information we receive from partners

In some cases we receive personal information from third parties, such as:

1. **Integration information:** you can choose to integrate some of our Services with your (social media or messaging services) account, such as Slack, in order to provide you with a rich messaging functionality.
2. **Marketing information:** some partners may provide additional (aggregated) information, for instance through their Software Developer Kits (SDKs). This may contain demographic or behavioural information in order for us to personalize content, advertisements and offers and to find the right audience for our advertisements.
3. **Legal Information:** when law enforcement agencies or courts order us to take down Content, we may initially receive personal information about you and your behaviour.

Why do we use your personal information?

We use your personal information in order to provide and improve our Services, to comply with legal obligations and to advertise our Services and to keep our Services safe and secure. Please find below how we use your personal information specifically and on what legal grounds we base the use of your personal information.

Activities & purposes

1. **Service:** the most important reason for using your personal information is, of course, to offer you our Services as mentioned in our Terms of Service, for example to create or visualize your Content or share your ideas and to let you access and use your Content across different devices.
2. **Support:** we provide a wide range of support services to help you out whenever you're in need, for instance when you need technical assistance. If it's needed to offer support, the Support-team can, on your request, access your Content in order to help you out.
3. **Account & billing:** creating and upholding your personal account for example to facilitate your address book and to enable you to access your Content across different devices, facilitating payment of your subscription fee and perform accounting, auditing & billing activities.
4. **Safety, integrity & security:** WeTransfer follows up on abuse reports, NTD/DMCA reports, fraud investigations and could investigate your compliance with our of our Terms of Service and/or API Terms of Use. Furthermore, we detect & block Child Sexual Abuse Imagery (CSAI). Detection of CSAI leads to automated decisions whether such Content is potential CSAI. Cases of potential CSAI will be reported directly to law enforcement agencies.

   Furthermore, we protect ourselves against fraud and other illegal activities. In all these cases we withhold the right to preserve your Content and share it, together with other identifying information, with law enforcement agencies. Finally, we could use your personal information for internal control to safeguard our and your safety, integrity and security. For instance, in case of any suspicion of violations of our Terms of Service or the API Terms of Use.
5. **Improvement & development:** we evaluate the use of our Services to improve our Services, fix bugs, develop new products and services. We do this either by market research (for instance by sending out surveys) or by performing analyses (for example by tracking and bringing together your personal information across our Services or across your mobile devices). We do this in order to understand how our user base as a whole interacts with our Services, but also to review the effect of our advertisements and to improve those Services and advertisements accordingly.
6. **Marketing, advertisement & communication:** we use your personal information for marketing and (interest based) advertising for instance by using SDKs or cookies, as well as communication. Think updates on new Services, but also personalised advertisements of WeTransfer or our partners, which we can serve on our or third party websites. In order to find the right audience for these advertisements we will look at

certain segments of people. For instance, people who use similar Services as ours, people who share the same characteristics as our current users or people within a certain geo-location, such as the Amsterdam area. In order to connect with our target audience, we might use sequential messaging, which is basically a form of storytelling: each time you interact with our Services on a different device, you may receive a slightly different ad in a different form, but the ads are part of the same story. Moreover, based on the way you interact with our Services through your devices, we might promote one of our (other) Services or features. Furthermore, we enable you to engage in any (personalised) actions, promotions or events we offer. Finally, we make use of email marketing to send you relevant stories about creativity or WeTransfer news. Where necessary, we'll always ask for your consent before sending you email marketing. Of course, you can always simply opt-out in each email you receive.

7. **Legal:** in so far as necessary, we might use your personal information to defend WeTransfer in legal proceedings in relation to or as a result of your use of our Services, following a court order, abiding by any law, regulation or governmental request, cooperating with law enforcement, cooperating in fraud investigations of third parties, safeguarding national security, defense, public security, and to uphold our Terms of Service.

Legal grounds

Each processing activity has a valid legal ground, which is described below.

1. **Contractual obligations with you**: regarding the activities and purposes mentioned under 1, 2 and 3. We need to process personal information to offer our Services through our websites and mobile apps, to provide (technical) support and to bill your subscription fee.
2. **Legal obligations:** regarding the activities and purposes under 3, 4 and 7. We're legally obliged to process your personal information for accounting purposes, to respond to legal requests and NTD- or DMCA-requests.
3. **Consent:** (partially) regarding activities and purposes mentioned under 2 (e.g. accessing your Content for support) and 6, except when we communicate direct marketing in relation to our own and similar Services to you as a paid user.
4. **Legitimate interests:** (partially) regarding activities and purposes under 1 & 3 (e.g. to provide cross device access). For the purposes mentioned under 4 in order to provide safe Services, to prevent fraud and react against illegal use of our Services. For our innovative interests as mentioned under 5. And finally for our (direct) marketing, brand interests under 6 and legal & compliance interests as stated under 7. When we use your personal information based on our or a third party's legitimate interest, we will make sure to balance your rights and freedoms against said legitimate interest. If, to the extent applicable, you wish to object to the activities based on our legitimate interest and there's no opt-out available in your account settings or received communication, please contact legal@wetransfer.com.

What parties do we share personal information with?

WeTransfer has several partners to operate and improve its Services. Furthermore, we may share or allow you to share your information as part of some of the Services.

1. **Service providers:** such as our hosting provider, user support provider, IT & software providers, our payment processors, email processors and the accountant.
2. **People and (social) media of your choice:** you may choose to share your Content with others, such as teammates, within our Services or on (social) media like Twitter.
3. **Law enforcement agencies or regulators:** we are obliged to share your personal information in case of a legal request. In case we run across CSAI or when we're notified on other illegal Content we'll also share your personal information with law enforcement agencies.
4. **Business partners:** we collaborate with advertising partners, marketing and communication agencies. We do this for (interest based) advertising, branding and reaching out to you. Our advertising partners implement their own tracking cookies which fall under their terms of services and privacy & cookie statement. Please find a list of all third party cookies and their privacy policies here.
5. **Integrated services:** if you decide to integrate (one of) our Services with another service (such as Slack or your social media account) we will connect that service with ours. In order to provide such service, we will need to share some of your personal information with that service. The terms and privacy & cookie statement of these third parties applies, at least for their part of the connection.
6. **WeTransfer entities:** we share personal information between entities which are part of the WeTransfer group in order to provide our Services and for all purposes mentioned under "Why do we use your personal information?".

We're a global business, which means we might share or store personal information in countries outside of the European Economic Area ("EEA"). Those countries have different data protection laws in place. However, when we transfer- and host data globally, we will make sure that appropriate safeguards are in place in order to ensure your personal information enjoys a similar level of protection as it would within the EEA. For example, we will verify that the receiving partner is certified under EU-US Privacy Shield or we will sign EU Standard Contractual Clauses.

Why and how are cookies used?

We place cookies with the intention of making WeTransfer even better. We work hard to make our Services safe, beautiful and unobtrusive. Feel free to block cookies, but this may affect how well our Services work.

We place several cookies (or similar technologies, like pixels or web beacons) on your device for the purpose of facilitating your use of the Service and to find out how the Service may be improved. We or our advertising partners also place cookies on our website(s). Being a global service, these partners can vary per country. When our advertising partners place cookies, these cookies can process personal information to measure the effectiveness of the campaign.

Cookies are small text files that are stored on your computer by your browser when you visit a website. Examples of cookie purposes are: your language preferences, logging into an account, remembering login details, serving you personalised advertisements and acceptance of the Terms of Service and Privacy & Cookie Statement. Our website can place these cookies for the following purposes:

1. **Functional cookies** are used to provide functionalities when using our Service, such as the possibility to set preferences or to remember your previous settings.
2. **Analytical cookies** are used to optimise our Service. For example to optimise the usability of our website by AB-testing a new feature, to make the website more user-friendly and to analyse how you use our Service. We also use analytical cookies to stop bots and malicious behaviour like spam. When we use analytical cookies, this could include third party cookies, as found in the cookie list. These third party analytical cookies process personal information, which is detailed in the cookie list too.
3. **Advertisement cookies** are used for commercial, editorial and promotional purposes. With these cookies your internet- and surf behaviour can be followed over various domains and websites. WeTransfer only checks the (one) website you visited prior to your visit to one of our websites. We do not track the website you visit after you leave our website. Advertisement cookies are often also placed by third parties to measure the effectiveness of their advertising campaigns and to follow your internet- and surf behaviour over other domains and websites where they have placed a cookie. WeTransfer does not have access to or control over personal information collected via these cookies or other features that advertisers and third parties may use. Our Privacy & Cookie Statement is therefore not applicable to these third party cookies and we refer you to third parties' Privacy Statements to read how they handle personal information. You can find a list of the limited amount of third party cookies and a link to their privacy policies here.
4. **Pixel tags or web beacons** are a piece of code embedded on the website that collects personal information about users' engagement on that web page. The use of a pixel allows us to record, for example, that a user has visited a particular web page or clicked on a particular advertisement. The pixel also allows us to see from which previous website or channel a user arrived at our website.

If you would want to remove certain cookies, or block them from being stored in your browser, it is possible to arrange this through your browser settings for cookies. You can find these settings under the Privacy tab in the Preferences section of most browsers. Here you can specify your cookie preferences or remove cookies. Please note that if you remove or refuse WeTransfer cookies, the Service might not function in optimal form.

Can you use WeTransfer for private or sensitive files?

We treat your Content with respect. We don't provide any public search function, catalogue or listing to find Content. We trust you understand that in order to fulfill our moral responsibility to reduce the spread of Child Sexual Abuse Imagery (CSAI), we do use automated systems to to detect such Content. Finally, we're obliged to delete your Content when we receive a Notice-and-takedown/DMCA-request or when we receive a legal request.

Please be mindful when distributing download/ access links - whoever it is passed on to or has access to a download/access link can access or download the Content. For extra security and confidentiality you might want to use our feature to protect your files with a password (if available).

What retention procedures are in place?

The retention period for your personal information depends on which Service you use and it depends on which category of personal information we're talking about. Always check out the website(s) or app(s) of the Service(s) for the specific information on retention periods.

Personal information

WeTransfer retains your personal information as long as its necessary to provide our Services to you (e.g. upholding your user account), to conduct our business activities and fulfill our legitimate interests, such as providing safe and secure services, to fix bugs and to reach out to you, to comply with applicable laws (e.g. retaining financial information for 7 years for tax purposes) and legal requests and to resolve (legal) disputes.

Files you transfer

When using WeTransfer File Sharing your Content will be deleted after 7 days, unless you have a Plus account in which case your transfer data is stored by default for 28 days or until the expiry date you set manually. After this period, a file is automatically deleted from our servers. The personal information that accompanies your transfer is kept for a maximum of 12 months. Such personal information is only accessible to very few people within WeTransfer, those that need it to perform their job, for example to provide you with support. When data is older than 12 months, we scrub it from the database, pseudonymise or anonymise it for analysis. Pseudonomising your personal information means that we do not use your email address or IP address for analytical purposes, but create a random pseudonym for both and use that

pseudonym instead. That way we don't have to handle directly identifiable personal information, which is privacy-friendly.

Content you create, use, store or share through the Services other than file sharing

The Content you create, use, store or share on our Services, other than our File Sharing Service, is, in principle, retained until you stop interacting with our Service(s), when you delete your Content from the Service(s), when you delete the Service(s) from your device(s) or when you delete your account. Always check out the website(s) or app(s) of the Service(s) you use for specific information.

How safe is it to use our Services?

WeTransfer takes technical and organisational measures to protect your personal information against loss or other forms of unlawful processing.

We make sure that personal information is only accessible by those who need access to do their job and that they are properly authorised. That means we keep logs of who has access to personal information, we limit the amount of people that have access and we make sure that personal information can only be read, copied, modified or removed by properly authorised staff. We monitor internal activity to ensure the safety and accuracy of personal information.

WeTransfer staff is required to conduct themselves in a manner consistent with the company's guidelines regarding confidentiality, ethics, and appropriate usage of personal information. Staff is required to sign a confidentiality agreement.

During an upload, while it's stored on our servers and during a download, Content is encrypted and only sent over a secure connection (https). The servers we use to store your Content for you are GDPR compliant and secure.

Can minors use our Services?

You are only allowed to use our website, apps and/or Services when aged 16 and over. When you're younger than 16 you may use our website, apps and/or Services only after parental approval or approval of your legal representative. Minors under the age of 13 in the USA are not allowed to use our Services.

What are your rights as a user?

If you need more info on your personal information, please let us know. We may ask for proof of identity. If you change your mind and no longer want us to process your personal information, let us know.

You can ask WeTransfer to:

1. access, receive a copy of or correct your personal information;
2. in certain cases, erase your personal information or block or restrict our use of it;

3. in certain cases, send your personal information to other third parties.

You can do this by sending an email to legal@wetransfer.com. Please state clearly in the subject that your request concerns a privacy matter and more specific whether it is a request to access, correction or deletion. Bear in mind that under circumstances WeTransfer requests for additional information to determine your identity.

Right to object

You have a right to object to our use of your personal information, for instance when the legal base for processing is based on one of our legitimate interests (see subsection “Legal grounds”). If you inform us that you do not longer wish us to process your personal information or to be approached, WeTransfer will move your personal information to a separate file. Your personal information will no longer be used for the above mentioned purposes, unless our legitimate interest, for example safety & security, outweighs your right to objection. You can request this via legal@wetransfer.com. Please state clearly that your request concerns a privacy matter and more specifically that you exercise your right to object.

If you think we have infringed your privacy rights, you can lodge a complaint with the relevant supervisory authority. You can lodge your complaint in particular in the country where you live, your place of work or place where you believe we infringed your right(s).

Withdrawal of consent

When you’ve provided your consent for us to process your personal information, you can withdraw your consent at any time, without affecting the lawfulness of processing activities based on consent before its withdrawal. If you withdraw your consent, we will no longer process the personal information which we’ve received based on your consent.

California consumers

Subject to certain limitations under California Civil Code § 1798.83, if you are a California resident, you may ask us to provide you with (i) a list of certain categories of personal information that we have disclosed to certain third parties for their direct marketing purposes during the immediately preceding calendar year and (ii) the identity of certain third parties that received personal information from us for their direct marketing purposes during that calendar year. We do not, however, share your personal information with marketers, subject to the above statute.

How to contact WeTransfer

Our support team is available via support@wetransfer.com. If you have any questions, please email us in English, to make sure we can help you in the best way. If you have questions about the way WeTransfer processes your personal information or the personal information WeTransfer stores about you, please contact WeTransfer by sending an email with your question to legal@wetransfer.com. If you’re based in the United Kingdom, you may also reach out to our UK privacy representative via uk-privacy@wetransfer.com. If you need to contact our Data Protection

Officer, please do so via dpo@wetransfer.com.

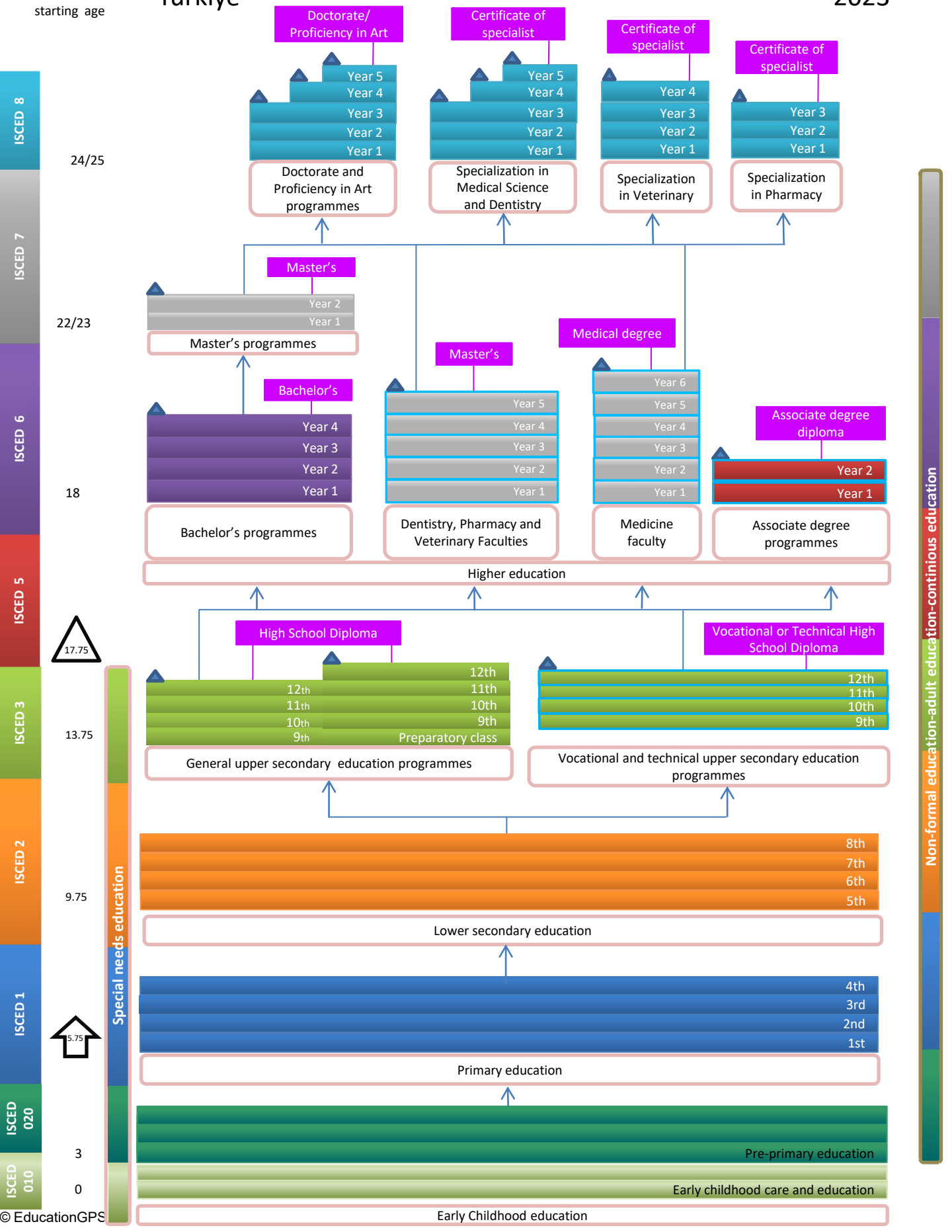
Revisions to the Privacy & Cookie Statement

Note that WeTransfer may revise this Privacy & Cookie Statement from time to time. Each revised version shall be dated and posted on the website. WeTransfer recommends that you review the website from time to time and take note of any changes. If you do not agree with the Privacy & Cookie Statement, you should not or no longer access or use the website and/or service. By continuing to use the website and/or service you accept any changes made to the Privacy & Cookie Statement.

Theoretical starting age

Türkiye

2023



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Key

English

Starting/ending age of compulsory education

Ending age of compulsory training

Recognized exit point of the education system

Typical student flow

Transfer from a program to another

Program designed for part-time attendance

Vocational/Professional orientation
(according to national definition at the tertiary level)

Program can be offered via dual as well as non-dual learning

Single structure education (integrated ISCED levels)

May be provided within one school structure

Transfer at crossing lines is not possible

Diploma

Name of diploma, degree or certificate

ECTS

European Credit Transfer and Accumulation System

NQF L

National Qualification Framework - Level

2023

Reference year (school year 2022/2023 in the northern hemisphere)

* **Theoretical starting ages** refer to the ages as established by law and regulation for the entry to a programme, actual starting ages may vary depending on the programme.