

Age Restriction and Legal Issues

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Introduction

This document tries to collect expert opinions, ideas, explanations and juridical cases to help rectify a legally safe implementation of the GNU Taler payment system and its extension, the age restriction. Taler tokens with age restriction are described in a design document retrievable at <https://docs.taler.net/design-documents/024-age-restriction.html> and in a white-paper by Özgür Kesim and Christian Grothoff¹.

The solution allows for automated age verification at point of sale and in web shops where GNU Taler is used as payment option. Sellers ('merchants' in the following text) need to have installed a software called 'Taler Merchant' which is part of the Taler payment system.

Sources of legal advice

Several sources were asked to provide for legal advice. We received expert opinions from the Juridical advisory board of the Chamber of commerce (IHK Nürnberg) and the Chair of Criminal Law, Criminal Procedure Law, Legal Theory, Information Law and Legal Informatics (Forschungsstelle RobotRecht, Juristische Fakultät der Universität Würzburg) and several specialised lawyers. Especially, we honour the contributions of RA Prof. Dr. jur. Edgar Weiler (Böbrach), Ass. jur. Max Tauschhuber (Würzburg) and Tobias Schmidt (Passau).

As we are still awaiting legal advice from other sources, e.g. the 'Bundeszentrale für Kinder- und Jugendmedienschutz', future iterations of this document will be refined and further developed. This will be the case within the next months during the NGI Pointer project.

For a better understanding of legal issues that may arise from the use and a potential abuse of digital coins some general characteristics and consequences of Taler tokens have to be explained in the first place:

General implications of Taler Tokens with age restriction

Merchants accepting tokens within the Taler payment system may use the opportunity to renounce on age verification during their Know-Your-Customer (KYC) procedures where payers are normally requested to be identified by showing their ID cards, passports, driving licenses or other sensitive personal data like social security numbers with year of birth, passwords consisting of birth dates or membership cards with an embossed birth date on it or require that clients

- upload sensitive personal data including their birth dates,
- send high resolution scans of ID cards or driving licenses, or
- undergo a video identification with ID cards held into the camera

which is in any case endangering their data safety and data integrity.

¹ The upcoming paper on anonymous age restriction for GNU Taler from Özgür Kesim and Christian Grothoff will be cited here, once it is published.

If age verification could be performed in an automated way like Taler tokens permit, accepting coins with age restriction would enable merchants to

1. sell goods and services allowed for certain age levels to children, youngsters and wards without asking them for their credentials or birth dates,
2. sell goods and services to adult clients paying with Taler tokens without age restriction and without the need of performing identity or birthday checks at every purchase.

The latter case (2.) would be valid only in a situation where all minors and wardens were given tokens *with age restriction solely* and where merchants thus can be sure that only adults pay with unrestricted tokens that have unhindered access to adult consumer goods. This situation will definitely be reached when such a payment system becomes legal tender offered to the public as central bank digital currency (CBDC) and minors are given age restricted coins.

Already today, without being established as legal tender, tokens with age restriction would make case (1.) possible and feasible. Merchants can sell goods to minors in certain age bands which require the respective coin attributes and simultaneously abandon the uploading of sensitive personal data, video identification or high-res scans of personal unique identifiers with all the consequences this entails:

- Merchants will not possess personal data of juvenile clients which they would otherwise have to secure, safeguard, erase and request again and again from clients for future purchases,
- these clients can buy goods without fear of being tracked and traced, profiled, categorised and targeted,
- they only need to disclose their most personal identifiers like ID cards for interactions with state authorities and not for simply buying everyday consumer goods,
- children and minors will not be enforced to disclose their identity or fear to get rejected as clients at point of sale when they cannot authenticate,
- citizens without valid IDs or passports will not be prone to rejections as customers.

This would increase technical security, data minimisation, personal integrity, fulfilment of GDPR requirements, and the avoidance of 'toxic' sensitive data at merchants' databases. Phishing attempts, man-in-the-middle attacks, data breaches, black markets for credentials, identity theft and integrity flaws and so on could be decreasing. Access to goods and service for juvenile clients and those clients without valid documents improves significantly.

Given the case that Taler tokens would once become an official payment system as legal tender, ideally in the appearance of a Retail CBDC (t.i. a central bank digital currency representing a state's nominal legal tender as digital cash equivalent for all citizens), any identity checks for purchases in the whole economy may be waived by law and, as a consequence, sensitive personal information like ID cards or driving licenses would not need to be submitted or shown to merchants anymore.

After having depicted these general implications of Taler tokens it makes sense to compare with other existing technologies for age restriction in commercial applications. This helps draw a larger picture of the legal issues contemporary automated age verification brings to the light of the world.

Other technologies for age restriction in commercial applications

1. Some banking cards carry a chip which allows for youth protection. For example, in Germany the broadly used 'Girocard' which is bound to KYC'ed IBAN bank accounts can be activated with an indicator that the card is used by a minor of 16 to 18 years of life. The issuing bank must generate this feature so that merchants can check it, for example, in vending machines during the payment process. This mechanism could be deployed for web shops, too, when a card reader in an end-user device acknowledges the indicator, but at the same time this mechanism allows merchants to learn that a young person of the age band 16 to 18 is buying, even though the juvenile's birth date is encrypted². In combination with the birthday indicator merchants could profile these customers as being youngsters who are using a regular bank account number and dispose over their own money, also knowing for what goods and when they spent how much. The variety of data put together empowers merchants to target this specific group of clients who could easily be discriminated and micro-targeted with advertising tailored to the youngsters' beliefs and feelings.
2. Another mechanism known as 'GeldKarte' is widely spread in Germany as an extension to regular banking cards issued by commercial banks. Thanks to this extension the card's chip can be loaded with amounts of fiat money (maximally 200 €) and used like a debit card for cash-like digital payments at POS or vending machines. Germany's Commission for the Protection of Minors in the Media (Kommission für Jugendmedienschutz, KJM) reveals the downside of this technique: 'The debit-based GeldKarte which has been developed by the German banking association the Zentraler Kreditausschuss (ZKA) is a module for a closed user group. The card alone is not sufficient to protect a closed user group, it must be applied as part of a suitable overall concept.'³. In fact, 'GeldKarte' is not ubiquitously accepted as only a tiny percentage of the population makes use of it for a rather restricted range of goods and services (mainly for parking tickets and the like) and the overall concept is missing.

In distinction to these two described technologies Taler pursues a concept with specific technical characteristics which are pointed out as follows.

2 Initiative Deutsche Zahlungssysteme e.V., last visit 2022, April 30: „Es handelt sich um das verschlüsselte Geburtsdatum (bei Minderjährigen) bzw. einen sogenannten Legitimationsvermerk (bei Volljährigen)“.

3 <https://www.kjm-online.de/aufsicht/technischer-jugendmedienschutz/unzulaessige-angebote/altersverifikationssysteme/>, last visit 2022, April 29: 'Bei der vom Zentralen Kreditausschuss (ZKA) entwickelten „Debit-Chipkarte“ handelt es sich um ein Modul für eine geschlossene Benutzergruppe. Die Karte alleine reicht nicht aus, um eine geschlossene Benutzergruppe sicherzustellen, sie muss im Rahmen eines geeigneten Gesamtkonzepts zur Anwendung kommen.'

Specific characteristics of Taler Tokens with age restriction

- An adult person wires money from a KYC'ed bank account at a normal commercial bank. The adult optionally chooses coins with age restriction, t.i. age levels with bands of one life year as attributes on each withdrawn coin. All of these tokens carry the same age restriction on each coin. Then, these Taler coins with age attribution can be withdrawn by the wallet of the adult and are then sent to a minor's or ward's wallet.
- The withdrawn sum equals rarely one single coin but a multitude of coins bearing all the same chosen age restriction. This is due to the fact that the equivalence of a decimal amount expressed by means of binary digital coins - which are based on powers of 2 - and that will in most cases generate a multitude of tokens for a withdrawn sum (e.g. 5 Euro in the appearance of six coins: 4, 16, 32, 64, 128 and 256 Cent).
- When a minor spends a coin of higher denomination than the price to be paid, the core logic of the Taler system - the Exchange - will render a set of smaller coins to the minor's wallet by using Taler's refresh protocol. However, allowing the Exchange to compare attributes of the old and new coins in order to ensure the transfer of age restriction attributes would break the unlinkability of the payer. Due to this reason, the cut-and-choose method is engaged for the refresh operation (see section 4.7.4 in [Dold 2019]). This method introduces a security parameter k , where k is the number of attempts a user could try to cheat by triggering coin refreshes for obtaining Taler tokens without age restriction. Unsuccessful attempts to cheat will lead to a loss of the coin's value, so the challenge for cheaters is too high to pay off, return on investment (represented by the game's return value) is bounded by $1/k$, and consequently the cutting of coin attributes will be prevented. The consequences will be discussed at the section Issue #2: Minors pay with cheated coins on page 9.
- When coins are withdrawn *with* age restriction, no other but exactly these coins only should be sent from the adult's wallet to a minor's or a ward's wallet. At this point the adults bear personal responsibility to choose the right coins for peer-to-peer transfers to minors or wards. A wrong choice of coins could legally be treated as violation of the parental supervision obligation when a minor unlawfully causes damage to a third party⁴.
- Payments effectuated by Taler tokens do not allow the merchants to learn that a client belongs to a group of minors or wards. Vending machines and web shops cannot distinguish whether a purchase was triggered by an adult or a minor when these clients use coins *with* or *without* an age restriction. Merchants only get the verification if a payment was successful when a Taler Exchange, the central logic of the Taler system hosted at a commercial bank or payment service provider, proves the spent coins as

4 See Bürgerliches Gesetzbuch (BGB) § 832 Abs. 1 'Haftung des Aufsichtspflichtigen': 'Wer kraft Gesetzes zur Führung der Aufsicht über eine Person verpflichtet ist, die wegen Minderjährigkeit oder wegen ihres geistigen oder körperlichen Zustands der Beaufsichtigung bedarf, ist zum Ersatz des Schadens verpflichtet, den diese Person einem Dritten widerrechtlich zufügt.'

valid. The purchase will be aborted when a vending machine, a web shop or a POS payment device does not receive payments for goods indicated at the merchant's article database for grownups that youngsters or kids want to pay for with age restricted Taler coins.

- Coins *with* age restriction in the wallet of a minor or ward are in their possession and can be spent for purchase of goods and services that are allowed to be sold to the respective age groups. All persons having access to the wallet containing Taler coins can spend these coins. Users have to be aware to secure their wallets and to prevent abuse of unrestricted coins. This is what adults or legal guardians should tell the minors or wards in order to prevent losses of their pocket money.
- Taler's terms of service want users to know about the fact that losses of funds may occur⁵ and that users must be eligible to use the services, especially be able to form legally binding contracts or have the permission of a legal guardian⁶.
- A minor or ward should be instructed not to lose the device with a wallet or to lent it to unauthorised persons. Coins once redeemed for purchase cannot be spent a second time and their value is deposited without indication who spent them. A deposit of coins reveals only the date of purchase and to which IBAN bank account the coin values were wired. The receivers of wired amounts cannot be held liable for unauthorised purchases.
- Still, merchants are confronted with the legal framework for contracts with minors: The validity of the contract concluded by the minor depends on the consent of the legal representatives (pending invalid transactions)⁷. In Germany, minors who have reached the age of 8 are permitted to purchase everyday goods of little value without the consent of the parents. This makes the handling of a minor's own pocket money more flexible while merchants can be assured that contracts with minors are legally valid⁸.

This is the point where the discussion about legal issues of Taler tokens starts.

5 Taler's terms of service:

'You release us from all liability related to any losses, damages, or claims arising from:

1. user error such as forgotten passwords, incorrectly constructed transactions;
2. server failure or data loss;
3. unauthorized access to the Taler Wallet application ...'

6 'To be eligible to use our Services, you must be able to form legally binding contracts or have the permission of your legal guardian.'

7 See [Grüneberg 2021] (vormals Palandt), Bürgerliches Gesetzbuch. Kommentar, § 110 Rn. 3: 'Die Wirksamkeit des von dem Minderjährigen abgeschlossenen Vertrags hängt von der Zustimmung der gesetzlichen Vertreter ab (schwebend unwirksame Geschäfte).'

8 See <https://de.wikipedia.org/wiki/Taschengeldparagraph> at 'Auswirkungen der Bestimmung', last visit 2022, April 29.

Legal issues of Taler tokens

Two main issues have to be treated:

1. Legal requirements for merchants must allow for the kind of age restriction the Taler payment system provides.
2. Taler tokens minted with an age restriction could theoretically be deprived of their age attributes due to the algorithm used in the refresh protocol for Taler coins and can be spent at merchants to purchase goods for grownups. This use case is clearly an abuse as the spender of the coins has to try many times to trigger the refresh protocol in order to receive a formerly restricted coin now without any age restriction.

Issue #1: Legal requirements for merchants to allow Taler's age restriction

What are the legal requirements in Germany?

- In the relationship between the payment service provider operating the Taler Exchange and the merchants, rules in Taler's terms of service may contractually shift responsibility to the merchants in advance.
- The Youth Protection Act (Jugendschutzgesetz, JuSchG) specifies media, gambling, consumption of alcohol, light alcoholic beverages and tobacco as well as the consumption of these goods in public spaces and private enterprises. This law also differentiates underage children of less than 14, 16 and 18 years of life. Two types of sanctions are differentiated into (1.) 'misdemeanour' (Ordnungswidrigkeit, Vergehen) which foresees fines (§ 28 JuSchG) for organisers, publishers or merchants who intentionally or negligently allow minors to buy or consume prohibited goods or services, and (2.) 'intentional criminal acts' (vorsätzliche Straftat, Verbrechen) which are sanctioned through severe fines or imprisonment (§ 27 JuSchG) for gross violations. Such a violation can be for example the repeated intentional sale of goods to minors meant to be sold to grownups.
- In regard to Taler tokens, the law sanctions the repeated intentional sale of prohibited goods to minors by a merchant who 'recklessly endangers the physical, mental or moral development of a child or young person or commits or persistently repeats an intentional act for profit'⁹. In any given case, judges at court will always consider the severeness and the repetition of unlawful actions with the proven evidence of criminal intentions, accumulated profits over time, and clandestine behaviour of the convicted.
- Merchants can only avoid to be punished when unlawful sales to minors happen very seldom and due to negligence of the merchant in rare cases.
- If a merchant proves evidence that under normal conditions no goods and services meant for grownups are sold to underage clients using Taler tokens *with* age restriction, responsibility and caution will prevent sanctions on behalf of the Youth Protection Act

9 See § 27 JuSchG.

(JuSchG). This will be the case when at POS or in a web shop all prohibited or restricted goods are clearly identified as such in the merchant's article database, for example wine, beer or champagne (but not alkopops!) can be sold to minors at the age of 16 to 18 years¹⁰ when paid with coins testifying this age band - even without presenting any ID card. All other minors of less than 15 years cannot pay these alcoholic beverages as their Taler tokens testifying the age band up to 14 years will not trigger the Exchange to deposit that coins. Adults paying with normal Taler tokens can of course obtain the desired goods, but they would have to present their ID or age verification to the merchant¹¹.

- Merchants may face prosecution through another type of law: Laws against unfair competition sanction the disadvantaging of competitors who perform costly age verification checks (Gesetz gegen den unlauteren Wettbewerb, UWG). When minors typically and repeatedly pay for items with Taler coins without age verification, the merchant profits on the one hand from increased turnover and on the other hand gains profit from lesser costs for client identification (the use of PostIdent service currently costs 10,75 euros for each check). Competitors can take legal action in court to prohibit and sanction this unlawful behaviour¹².
- In regard to Taler, in the given legal situation, cheating merchants will have a hardship transferring the liability for extra profits due to violations of laws they normally should respect to the Taler payment system provider. A merchant profiting from this criminal intentional act coins cannot not hold liable the provider of the Taler payment system.
- Parents and their offspring should respect the common law on pocket money (BGB § 110, the so-called 'Taschengeldparagraph'):
 - If parents expressly prohibit the purchase of certain goods, minors may not purchase them, even if they use their own money to do so, and on the other side of the coin:
 - a contract concluded by a minor - even without the consent of the legal representative - shall be deemed effective, if the minor effects the contractual performance with means provided to him for this purpose or at his free disposal by the representative or, with his consent, by a third party.¹³.

The second point reminds the fact that parents or warden carry a certain personal responsibility for the behaviour of their children.

10 See § 9 JuSchG (1)

11 This case also describes that adult clients who would like to purchase wine, beer or champagne without wanting to present their IDs or birth dates at vending machines, web shops or at a counter where Taler is accepted can do so by refreshing normal Taler tokens into tokens with the age restriction for 16 to 18 years and pay for it.

12 Landgericht Bochum: Urteil vom 23.01.2019 - 13 O 1/19, last visit 2022, April 30.

13 See Bürgerliches Gesetzbuch (BGB) § 110 'Bewirken der Leistung mit eigenen Mitteln': 'Ein von dem Minderjährigen ohne Zustimmung des gesetzlichen Vertreters geschlossener Vertrag gilt als von Anfang an wirksam, wenn der Minderjährige die vertragsmäßige Leistung mit Mitteln bewirkt, die ihm zu diesem Zweck oder zu freier Verfügung von dem Vertreter oder mit dessen Zustimmung von einem Dritten überlassen worden sind.'

Conclusion

To our mind's eyes, the legal situation and jurisdiction in Germany allow for the kind of age restriction a Taler payment system offers. How judges would refer to precedent cases when they consider new cases involving Taler tokens is subject to further discussion. On one side, it depends on the intensity and severeness of unlawful behaviour of merchants, but on the other side responsibility and negligence of parents and wardens also play a role. In some cases governed by the German Youth Protection Act, merchants are even held responsible for negligence of parents who grossly violate their duty to educate the children by giving consent, offering, providing, making accessible or presenting media that could harm a child (chapter 4 of § 27 JuSchG¹⁴)

Merchants who are acting lawful and avoid negligence (by taking a look at delivery addresses and prevent deliveries of explicit adult material or alcohol to kindergardens for example) can accept Taler tokens with age restrictions and feel assured to commit no crime - under the condition that the merchant's article database clearly identifies and differentiates all prohibited / restricted goods.

Merchants who are acting unlawful cannot so easily transfer the liability for their own violations to the Taler payment system. This is in the end also due to the fact that merchants face income transparency with the acceptance of Taler tokens (think of the auditors' role in the Taler system!) and therefore cannot sweep traces of their income through teenagers who bought adult goods, especially due to the other fact that teenage clients receive a receipt of purchase into their wallets and by that could testify the delivery of prohibited goods with a timestamp that corresponds to the deposit of the spent coins at the Taler Exchange.

For these reasons we believe that merchants who obey the law will fulfil all requirements for the Taler age restriction to be legally acceptable.

The situation in other countries in the EU has to be examined in further iterations of this document.

Issue #2: Minors pay with cheated coins

What are the legal issues for abuse with coins that should carry age restrictions but no longer do so? If a person tries to influence the age restriction on a Taler coin and triggers the refresh protocol to obtain a new coin without the age attributes, the success rate is diminished through the danger of loss at a probability of $1-1/k$.

This probability derives from the challenge of the so-called 'Diffie-Hellman lock' in Taler's refresh protocol: the wallet generates k pairs of private keys and public keys of the Taler Exchange that minted the original coin (k times a Diffie-Hellman lock). When the person in possession of a wallet is triggering the refresh of coins the Taler Exchange sends to the wallet k queries, to which the wallet reveals its private transfer keys to the Exchange - except for a single key 'ty'. Due to this challenge, the Exchange might overlook an attempted misuse with a probability as low as $1/k$. For the age restriction attributes of Taler coins, the probability of detecting attribute changes is therefore also $1/k$. The price for the challenge is the loss of a tampered coin with a probability of $1-1/k$.

14 See § 27 JuSchG (4).

In reality, this means that a little - almost negligible - probability exists that fraudulent persons might refresh Taler coins with a higher age threshold or no age restriction at all. A minor could theoretically forge tokens to grab the opportunity buying prohibited goods, but the price of losing the game is normally too high to do so.

Conclusion

Legally, Taler's terms of service should clarify about this method in order to avoid liability on the Exchange's side. But the complicated explanation of the sophisticated mathematical solution might scare away users and merchants. So, an idea to mitigate this issue could be to deprecate the explanation and to let Exchange providers set the security parameter k high enough if cases of abuse occur.

In any case, merchants cannot be held liable for purchases with forged tokens. This would also not be viable even if Taler's Terms of service shift liability to the merchants. It is more or less a question how much responsibility parents or wardens carry over when their children or wards try to pay with tampered Taler coins. A comparable situation exists where minor steal cash from a purse being easily accessible in a household and the minor pays with the money for adult goods.

For these reasons we believe that even if persons exist that might use unlawful methods to circumvent legality with tokens replicating pocket money, all other legal requirements for the Taler age restriction are still fulfilled to be juridically acceptable.

Outlook: Next steps

The following steps for refinement of the legal expertise in this document will comprise:

- retrieval of verdicts from law case databases,
- perception of legal requirements for merchants in different European countries,
- discussion of literature on automated age verification, laws and cases,
- further discussion with lawyers and legal experts and
- a deeper market analysis of competing approaches.

These refinements will be taken into consideration for this document. The Taler AP³ project will present its results at the upcoming milestone meetings with NGI Pointer.

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