

# Putting Privacy Pictograms into Practice – a European Perspective

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**Abstract:** Recent proposals for privacy pictograms show a growing interest of simplifying privacy-related statements. Such pictograms can be useful to enhance the users' understanding of privacy issues and empower to react accordingly. In this text we bring together various mostly independently developed approaches and compare them with each other. We distinguish different categories, e.g., pictograms for privacy seals, for matching privacy preferences or for interpreting privacy policies. Further, we elaborate requirements for a widespread use of privacy pictograms by applying the perspective of European data protection regulation.

## 1 Introduction

“Privacy” is a complex issue: it has both an individual meaning for each human being and is a relevant value for democratic societies [So05]. Many specific privacy or data protection regulations position the topic in the legal realm, the risks stemming from – in particular electronic – data processing and possible countermeasures show its technical-organisational and economic dimensions, sociology plays a role for comprehending the societal effects of privacy, and the involvement of individuals who have a more or less pronounced interest in their informational self-determination and should understand the potential consequences of data processing contain a psychological component of privacy – only to mention a few of the flavours in the privacy domain. In addition to the different disciplines and perspectives, the variety of parties involved in data processing with their respective interests render understanding and dealing with privacy anything but trivial. This complexity calls for a simplification in daily use. This text analyses the role of privacy pictograms to improve handling of privacy issues. We understand “privacy pictograms” as simplified pictures expressing privacy-related statements, in particular

- results of data protection audits or similar evaluations concerning informational privacy relevant components of data processing or
- statements on how well a situation matches the privacy preferences of a user or

- statements from privacy policies on planned or performed processing of potentially personal data or on guarantees concerning the use of these data or
- statements on how personal data may be used by others.

The origin of the famous saying: “A picture is worth a thousand words.” is not known. However, this or similar quotes is attributed to several renowned people, among others Napoleon Bonaparte<sup>1</sup>, the Russian writer Ivan Turgenev<sup>2</sup> and the publicist Fred R. Barnard<sup>3</sup>. Whoever said it first – images indeed can express complex issues which would otherwise need a substantial amount of text. What is more, often the meaning of such an illustrative image can be grasped much quicker than studying a purely textual description. Evidently, pictograms (also called “icons”) are an important means for dealing with applications and for understanding data processing steps performed by the information and communication technologies (ICT) since the invention of graphical user interfaces for computers. In psychology, the effect of pictures on learning and memorising – the so-called picture-effect – has been discussed since more than 100 years.<sup>4</sup>

Meanwhile also legal issues are being illustrated by pictograms, in particular in the field of copyright law where the Creative Commons [CC09] comprise a set of icons to express the license under which the authors have put their work. Such licenses may contain statements on whether the author permits republication or redistribution for non-commercial or commercial uses.

So, several recent attempts try to visualise privacy-relevant statements by pictograms, partially inspired by the Creative Commons. Such “Privacy Commons” [Bi08, He09] are in particular interesting in the field of privacy policies which contain information on data processing and user rights. Although from a legal standpoint privacy policies should be studied by the users who care about their privacy, people usually don’t want to read lengthy texts on privacy, and if they do, they hardly understand what is expressed therein [Eu08].

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<sup>1</sup> The exact wording attributed to Napoleon is: “Un bon croquis vaut mieux qu’un long discours.” (Translated: “A good sketch is better than a long speech.”)

<sup>2</sup> In his novel “Fathers and Sons” in 1862 it is: “A picture shows me at a glance what it takes dozens of pages of a book to expound.”

<sup>3</sup> In *Printers’ Ink*, 8 December, 1921, pp. 96-97: “One look is worth a thousand words”. Barnard changed the wording to “One picture is worth a thousand words” in *Printers’ Ink*, 10 March, 1927, pp. 114, where he called it a “Chinese proverb”, probably to enhance its credibility.

<sup>4</sup> Calkins, M.W.: Short Studies in Memory and Association from the Wellesley College Laboratory. *Psychological Review*, 1898, pp. 451-462. Further references are highlighted in [MR05] who apply pictures to security mechanisms in the form of graphical passwords.

The text is organised as follows: In Chapter 2 we distinguish several relevant settings which require a differing treatment when discussing the usage and value of privacy pictograms. Chapter 3 illustrates a few existing proposals for icon sets and compares them. In Chapter 4, requirements for a widespread use are listed, giving a kind of roadmap for further work on privacy pictograms. Finally, Chapter 5 sums up the findings.

## **2 Settings for privacy pictograms**

The idea of abbreviating privacy-related information to users as this can be done by privacy pictograms is not new. In 2004, the Art. 29 Working Party published a proposal of a “multi-layered format for data subject notices” [Ar04]: The most prominent layer – the short notice – should “offer individuals the identity of the controller and the purposes of processing [...] and any additional information which in view of the particular circumstances of the case must be provided beforehand to ensure a fair processing. In addition, a clear indication must be given as to how the individual can access additional information.” Usually the amount of processed data (if not known by the individual anyhow) and potential recipients of the data would be part of the most important information to convey to individuals because these are the baseline for any consequence the processing of personal data may have on the individual.

This set of information typically needs at least text when it comes to contact data of the data controller. However, other information could be abbreviated by standardised privacy pictograms. The Art. 29 Working Party didn’t discuss the use of icons, but the group doesn’t oppose the idea of icons, either.

As introduced in Chapter 1, privacy pictograms express privacy-relevant statements. Depending on the setting, there may be various entities involved:

1. the entity responsible for the privacy-relevant statement (in natural, legal or machine-readable language) which is to be expressed or abbreviated by privacy pictograms;
2. the entity responsible for the choice of privacy pictograms (or even before that: the choice of an appropriate privacy pictogram set to choose a pictogram from) expressing the privacy-relevant statement from no. 1;
3. the entity which displays the privacy pictograms from no. 2;
4. the entity which reacts on the displayed privacy pictograms from no. 3.

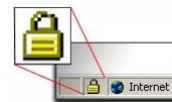
In the scenario of a webserver, the provider as data controller sets the privacy policy, chooses the appropriate icons and displays them on the website. The users interpret the icons to understand how their data will be handled. This scenario can also be modified in a way that the provider sets a (machine-readable) privacy policy which is interpreted by the user's software, e.g., a user-controlled identity management system [Ha08]. This identity management system can use the policy statements to display the appropriate icons which again are interpreted by the user himself.

Note that the privacy pictograms may trigger a user's reaction. If the wrong pictograms are chosen or displayed, this might raise liability issues.

Another scenario is related to the Creative Commons: A user provides own (personal) data, e.g., via e-mail, a social network or a blog, and attaches the icons for the desired or allowed processing of these data. Here the user himself is the "data provider", and specifies privacy statements which contain the reserved rights (a "license") when handling the data. The user chooses the appropriate icons and displays them together with the data. Other users or organisations can see the data together with the icons and are obliged to handle the data according to the given "license".

### 3 Positioning current approaches of privacy pictograms

Beside the internationally standardised and understood warning or information icons, there are multiple pictograms in the area of data security, e.g., the well-known icon for SSL encrypted communication with websites<sup>5</sup> which Internet browsers show in some variations.



Meanwhile there exist also several icons which express that a piece of software or a web service is not a spyware, adware or malware. These pictograms<sup>6</sup> usually depict a man with a black hat and contain some textual information to make sure that users will understand it correctly.

Also specific privacy software works with illustrative pictograms, e.g., the Firefox add-on Ghostery<sup>7</sup> which alerts users about web bugs or other tracking software and shows a little ghost which turns red when trackers are being found.



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<sup>5</sup> Icon taken from [http://www.mra-net.org/ecom/special\\_events/2009annual/ssl-lock\\_icon.jpg](http://www.mra-net.org/ecom/special_events/2009annual/ssl-lock_icon.jpg).

<sup>6</sup> Here: icon shown from [http://www.vb2java.com/images/no\\_spyware.gif](http://www.vb2java.com/images/no_spyware.gif).

<sup>7</sup> <http://www.ghostery.com/>.

The following sections explain already introduced or proposed pictograms expressing privacy-relevant statements.

### 3.1 Pictograms for privacy seals

Figure 1 gives an overview of some well-known pictures of privacy seals (also called trust marks, privacy symbols or privacy labels). Such seals can be awarded after the product or service has passed an evaluation according to defined certification criteria. The criteria and the evaluation procedure differ between the available privacy seal programs.

Several websites which have undergone an evaluation regarding their privacy compliance show the respective privacy seal. The mere existence of the seal demonstrates to users that the providers take their privacy seriously and are willing to invest in data protection and security. However, all these privacy seal pictograms lack real information on the content of the evaluation and certification. For example, the scope of the evaluation is not clear, nor can the user know about the depth of evaluation. Generally, the users are not aware which criteria have been applied and how well the target of evaluation has passed the certification.

Remedy is usually at least partially achieved by clickable pictograms which lead to more information, e.g., the entry in the register of the seal awarding entity, a short or longer evaluation report, a link to the certification scheme or possibilities to contact somebody responsible to get more information.








<p><b>Privacy seals / trust marks</b></p> <p><b>EuroPriSe – European Privacy Seal</b></p>  <p>for IT products and IT services, checking compliance with European Data Protection Law</p> <p><a href="http://www.european-privacy-seal.eu/">http://www.european-privacy-seal.eu/</a></p> <p><b>HONcode – Health On the Net Foundation Code of Conduct</b></p>  <p>for medical and health websites, checking the reliability and credibility of information</p> <p><a href="http://www.hon.ch/HONcode/Conduct.html">http://www.hon.ch/HONcode/Conduct.html</a></p>	<p><b>TRUSTe Seal:</b></p> <ul style="list-style-type: none"> <li>- Web Privacy Seal,</li> <li>- Email Privacy Seal,</li> <li>- Children's Privacy Seal,</li> <li>- EU Safe Harbor Seal</li> </ul>   <p>checking privacy compliance of businesses (including kids privacy requirements)</p> <p><a href="http://www.truste.com/consumers/seal_programs_overview.php">http://www.truste.com/consumers/seal_programs_overview.php</a></p> <p><b>Entertainment Software Rating Board (ESRB) Privacy Online program</b></p>   <p>for websites, checking privacy compliance (including kids privacy online requirements)</p> <p><a href="http://www.esrb.org/privacy/">http://www.esrb.org/privacy/</a></p> <p><b>BBBOnLine – the BBB Accredited Business Seal from the Council of Better Business Bureaus, Inc.</b></p>   <p>for websites, checking privacy and reliability requirements for safe online shopping of consumers</p> <p><a href="http://www.bbb.org/online/">http://www.bbb.org/online/</a></p>
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Figure 1: Overview of several privacy seals

### 3.2 “How well do my privacy preferences match”-pictograms

At least since the work on the privacy policy language “P3P – Platform for privacy preferences” in the World Wide Web Consortium (W3C), methods for expressing privacy preferences have been researched. Some allow for an automatic matching of privacy preferences and the privacy policy from the data controller. Here the results can be enhanced by privacy pictograms. Several approaches have been demonstrated, e.g., [Ts06] or [FHWZ09]. A nice demonstration is given by the software Privacy Bird<sup>8</sup>, as shown in Figure 2. As explained in [Cr05], the PrivacyBird does not only provide visual information by showing a green, yellow or red colour and the type of speech bubble, but it also changes the sound of chirping and twittering. Here we deal with not only a privacy icon, but also with a “privacy earcon”. However, the area of use for “earcons” is limited when it comes to more complex issues – but at least sound features can enhance pictograms by using an additional of the five senses, and it has to be considered to support visually impaired people anyhow.

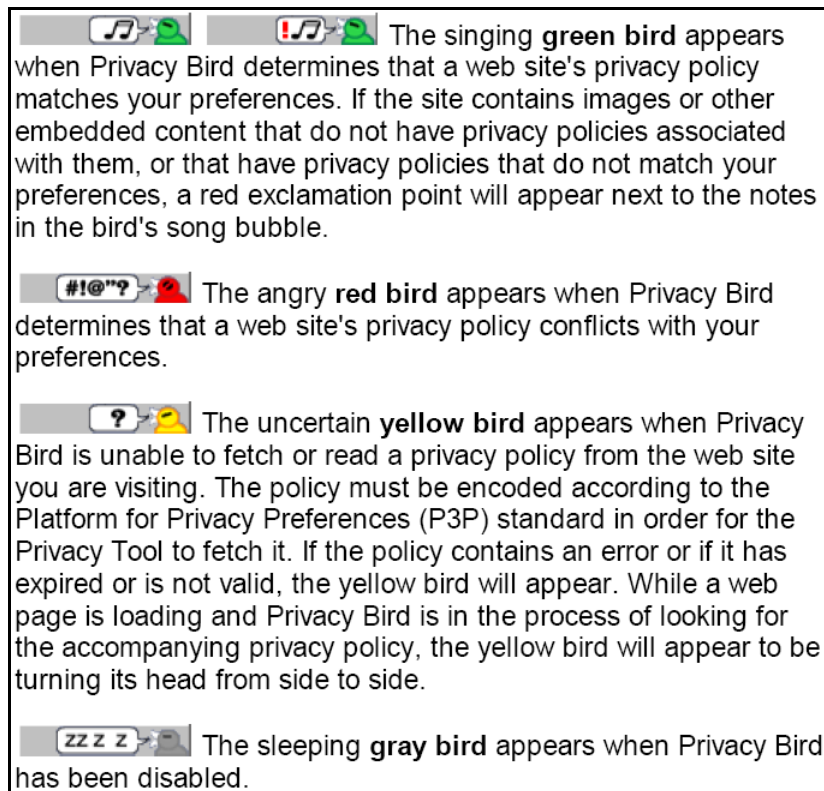


Figure 2: Pictograms of the Privacy Bird [Cr05]<sup>9</sup>

<sup>8</sup> <http://www.privacybird.org/>.

<sup>9</sup> [http://www.privacybird.org/tour/1\\_3\\_beta/tour.html](http://www.privacybird.org/tour/1_3_beta/tour.html).

### 3.3 Pictograms explaining data processing

Compared with the previous sections, this section contains more complex pictograms which express parts of privacy policies or information on rights reserved concerning personal data.

Figure 3, taken from [Ke09] shows an example of a privacy policy which is organised in a better understandable way. The data types (“What we collect”), their purposes (“How we use your information”) and possible recipients (“Who shares your information”) are arranged in a table where each cell consists of a icon, stating whether the user can opt-in or opt-out in this respect. Only very few icons are used; most information from the privacy policy is expressed in written language. The arrangement looks quite clear and understandable; still it may discourage users because of its complexity.

What we collect	How we use your information						Who shares your information	
	Provide service and maintain site	Research and development	Marketing	Telemarketing	Profiling not linked to you	Profiling linked to you	Other companies	Public forums
Contact information	!	!	OUT	OUT	!	!	in	
Content	!	!	OUT	OUT	!	!	in	!
Cookies	!	!	OUT	OUT	☺	!	in	
Demographic information	!	!	OUT	OUT	☺	!	in	
Social security no. and gov't ID	!							
Preferences	!	!	OUT	OUT	☺	!	in	!
Purchase and financial data	!	!	OUT	OUT	!	!	in	
Web browsing information	!	!	OUT	OUT	☺	!	in	!
Unique identifiers	!	!	OUT	OUT	☺	!	in	!

**Understanding this privacy report**





<p> Data is collected and used in this way.</p> <p> You can opt-out of this data use.</p>	<p> Your data will not be used in this way unless you opt-in.</p> <p> You can opt-in or opt-out of some uses of this data.</p>
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Figure 3: Excerpt from [Ke09, p. 5] – original picture shows an example of a proposal for a “Privacy Label”, expressing the content of a privacy policy; here focus on the icon part

Other proposals have been derived from the Creative Commons icon sets. Figure 4 shows the main licenses in this scheme (with the least free license in the bottom). They are not meant to deal with personal data of data subjects as such, but relate to intellectual property where the authors want to express that some rights are reserved, but all the same want to encourage others to use and re-use their content. The full icon set is depicted in [CC09]. The licenses are represented by one or more icons which stand for the core aspects of the license. In addition to the icons, there is a longer text in natural language and a legal text bound to each license.

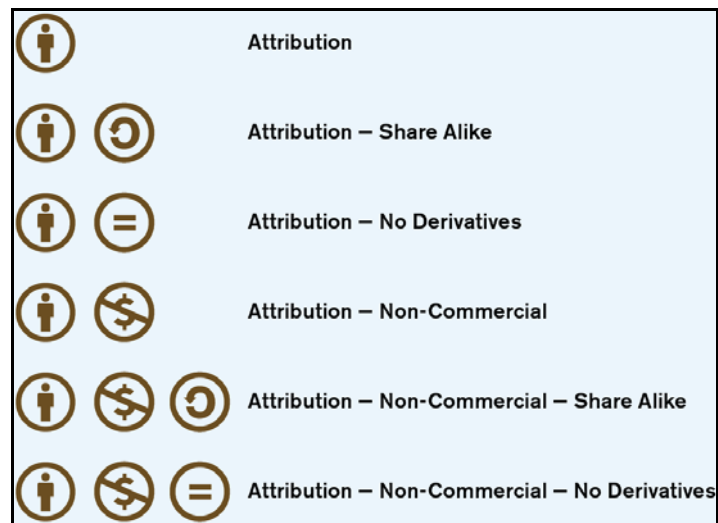


Figure 4: Excerpt of licenses from a Creative Commons handout<sup>10</sup> (licensed under a Creative Commons Attribution 3.0 License)

Figure 5 depicts Mary Rundle's proposal for a rough icon set on privacy statements which was inspired by the Creative Commons [Ru06]. It was meant as a starter for discussion.

This icon set does not come from a European background which can easily be seen from the icons for normal user rights in data protection (right to access, right to rectification or erasure). Of course a widespread icon set will have to bridge different national or international concepts of privacy and data protection. However, when looking at this icon set, European users may have the desire to see at once whether European data protection standards are met or not.

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<sup>10</sup> [http://wiki.creativecommons.org/images/6/62/Creativecommons-informational-flyer\\_eng.pdf](http://wiki.creativecommons.org/images/6/62/Creativecommons-informational-flyer_eng.pdf).










	You agree not to use this data for marketing purposes.
	You agree not to trade or sell this data.
	You agree to submit to a third-party audit program on data use; if government has requested access to my data, you agree to involve my governmental ombudsman.
	You agree to make available to me the data that you have on me without my having to pay for it/at a minimal charge.
	You allow me to address inaccuracies in the data and request its removal.
	You agree to take reasonable steps to keep my data secure.
	You agree to arrange with X organization to help resolve any disputes we have over your treatment of this data. [The seal / name of the entity follows.]

Figure 5: Mary Rundle’s proposal for “Creative Commons-like icons” on privacy [Ru06, p. 8]

An independently developed icon set from Matthias Mehldau [Me07] is much more sophisticated and distinguishes data types, how the data are handled, the purposes and the duration, e.g., for expressing data retention periods. This icon set stems from a German (or European) background where purpose binding is of utmost importance.

It is interesting to note that the user rights are – unlike in Rundle’s proposal – not expressed in this icon set. In particular for an international context where users do not necessarily have privacy rights as granted in the European Data Protection Directive it may be valuable to add certain icons.

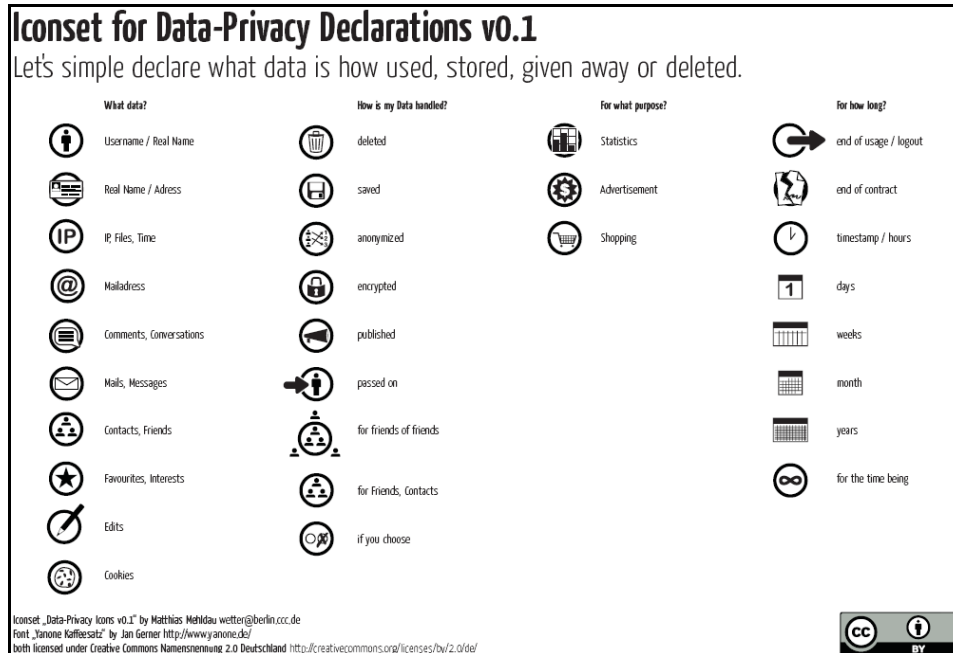


Figure 6: Matthias Mehldau’s proposal for an “Iconset for Data-Privacy Declarations” [Me07]

The author hoped for computer scientists, lawyers and designers to work together on a really usable icon set and a way to easily derive the proper icons from a written privacy policy.

Another independently developed icon set from Aaron Helton [He09] stems from a background characterised by the data protection system in the United States of America, cf. Figure 7. In particular concerning “data ownership”, the distinction between full user ownership, company ownership and shared control is not typical for a European categorisation from data protection law. Still, this is an interesting proposal when dealing with social networks where content and responsibility for data protection may belong to more than one entity. However, the underlying concept has to be clarified when such icons should really get used some day.

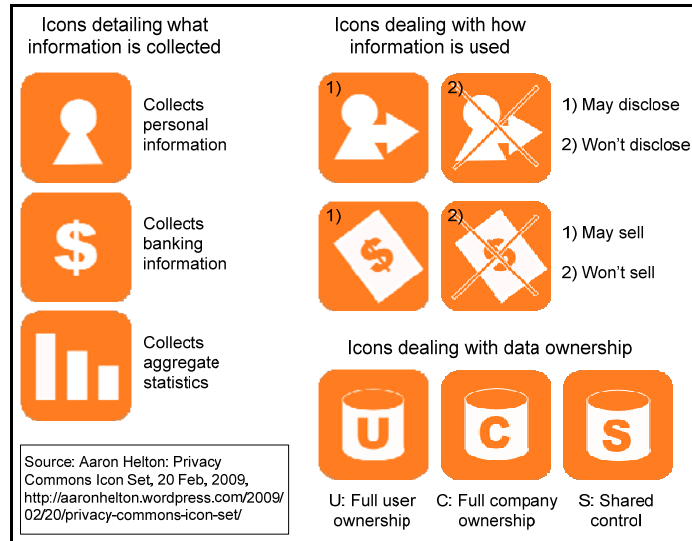


Figure 7: Aaron Helton's proposal for a "Privacy Commons Icon Set" [He09]

The Mehldau icon set [Me07] has been further developed in the EC FP7 project PrimeLife which deals with usable privacy-enhancing identity management in upcoming Internet services [FHWZ09]. Usability tests are being conducted. Firstly, it was planned to limit the available privacy pictograms to a small number, e.g., five or seven. The current approach goes beyond that, differentiating icons representing data processing steps (shown in Figure 8), data types, groups of recipients and purposes. Note that this set allows negations of each icon.

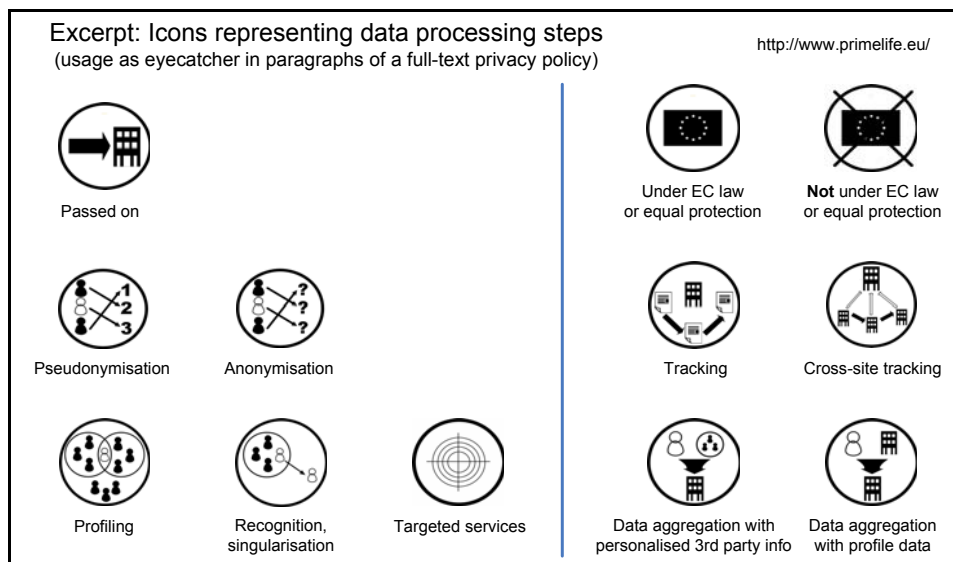


Figure 8: Excerpt of icons developed and to be evaluated in the FP7 project PrimeLife [FHWZ09]

Similar to the Mehldau icon set, there are many open issues concerning practical use, in particular in more complex scenarios. For example, when describing that data are first saved, then encrypted, parts of them are anonymised, some of the non-anonymised data are passed on to other parties, and then the data are erased from the original storage area – and all this could be combined with several data types, purposes and retention periods.

But this is not necessarily the use case of [FHWZ09]: Here the authors propose to simply insert them into the existing privacy policy like an initial in old handwritten books. This also solves the problem that complex icons need textual parameters to be understandable, e.g., on the parties involved or the duration of use. In a later stage when users have become aware of their meaning, the use of pictograms may be expanded.

#### **4 Requirements for widespread usage**

Obviously, privacy pictograms have to fulfil several requirements if they should be successful in enhancing the clarity of data processing and privacy-related statements.

[Le05] warns against pitfalls concerning the user's understanding of an ICT system's privacy implications: The design should not obscure the nature and extent of a system's potential or actual disclosure. Thus, pictograms should enable users to understand when their data is disclosed or transferred to other parties.

It goes without saying that professional designers should be involved when creating pictograms for a widespread use. The shown approaches are not developed by these professionals – we are still in a preliminary phase. This makes sense because it should be prevented that a nice design leads to “false understanding”, i.e., when people mistakenly think they get the meaning. So it first has to be decided for which scenario which information has to be conveyed.

None of the current approaches comes with an “icon language” which explains syntax and semantics of their use. Note that the meaning of icons is not limited to each specific icon on its own, but the combination of icons may be relevant for the interpretation. Moreover, the meaning of zero values (when an icon is left out in the presentation) has to be defined: Think of a web service which presents a few icons expressing parts of its privacy policy, but does not show an icon regarding any possible recipients of the user's data. Here the “non-statement” concerning a possible data transfer to a recipient could mean that there is no recipient at all or that a data transfer is not excluded but may happen from time to time, or even that there are regular recipients but the data controller has not put the icon on the web site although there may be a statement in the full privacy policy. This example shows the necessity of a detailed description of the “icon language” which may require to put up an icon on existing or non-existing data transfer and possible recipients.

Such an “icon language” as proposed in [FHWZ09] would need

- the definition of an “icon alphabet” as symbols to be used; this would contain icons as well as possible parameters (e.g., numbers representing the retention period),
- the specification of the “icon language grammar”, i.e., a set of formation rules that describe which combination of symbols from the “icon alphabet” are syntactically valid (“well-formed”); this includes the definition of mandatory and optional uses of icons as well as operators such as negation or other logical operators such as AND or OR,
- the specification of the semantics of well-formed terms, i.e., the meaning of icons alone and in combination (possibly in a defined order) plus possible parameters, and
- for practical use, the meaning should be immediately understandable, and – if possible – ill-formed terms could also be spotted right away.

An “icon language” would also help to (semi-)automatically derive the correct privacy pictograms from a privacy policy.

Even if only a few icons – comparable to the Creative Commons licenses – exist, a full specification of syntax and semantics of well-formed terms is strongly advised.

A widespread use of such privacy icons would require some kind of standardisation. This would have to be supported by legal mechanisms such as a trademark protection regime (cf. Creative Commons) [FHWZ09]. For some domains, it could also be legally demanded to inform users via specific icons about privacy settings. At least in the area of privacy certification of governmental processes this proposal does not seem far-fetched.

## 5 Conclusion

In the last few years a big variety of privacy pictograms from different scenarios have been proposed. Some have gained a – usually limited – practical relevance, e.g., the pictograms for privacy seals. Other are by now only of theoretical value – and to stimulate a discussion how a easily understandable, expressive, comprehensive and simple to implement set of privacy pictograms should look like. Probably there is not the one and only icon set, and privacy pictograms also cannot act as panacea.

When considering privacy and data protection in law and in practice across the continents, it is clear that an international solution would require international consensus on syntax and semantics of privacy pictograms which is not trivial to achieve. For specific domains, it may be possible, though. In addition, the role of user-controlled identity management systems which are in a large part influenced by European privacy principles can be relevant when introducing privacy pictograms in user interfaces and interpreting statements from privacy policies as well as existing privacy seals.

Potentially a “Privacy Commons” can build upon the success of the “Creative Commons” without running into danger to impermissibly oversimplify privacy issues.

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