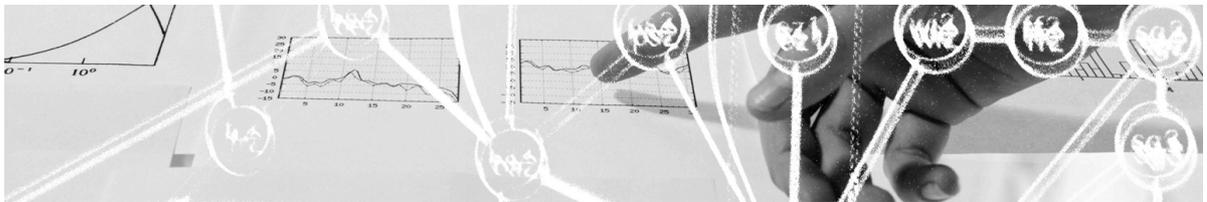


# Mobile WG Report

Report of the Swiss edu-ID working group  
“Mobile App Support”



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**Document Type:**  
**Version:**  
**Created:**  
**Last changes:**  
**Classification:**

Documentation  
V1.0  
9.12.14  
01.04.15  
Public

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*Note: Institutional information in this report was provided by the working group participants. This information does not pretend to be implicitly complete or representative for a whole organization in every case or for all Swiss Higher Education Institutions.*

# 1 Mobile Working Group

SWITCH has published its call for participation in working groups for the further development of the Swiss edu-ID in July 2014 on <http://projects.switch.ch/de/eduid/working-groups/>. Goals of the mobile working group are:

- Describe requirements of institutions/users
- Discuss ideas for better mobile support
- Evaluate existing solutions
- Provide input for further project steps/pilots (call 15. 2. 2015)

9 volunteers from 5 institutions have participated in the working group:

- Gérald Collaud, UNIFR, head centre NTE
- Ioana Gatzka, FHNW, School for Teacher Education, Digital Teaching and Learning in the University Setting
- Christian Glahn, ETHZ, researcher International Relations and Security Network, (now director Blended Learning Center, HTW Chur)
- Christophe Hadorn, HES-SO, Cyberlearn, mobile technology developer
- Olivier Jeannin, UNIGE, NTICE, developer
- Aicha Rizzotti, HE-ARC, ISIC-Arc, Prof./teacher development for mobile applications
- Patrick Roth, UNIGE, NTICE, developer
- Bruno Vuillemin, UNIFR, head of IT security
- Marinka Valkering-Sijsslingg, ETHZ, LET, EduApp project manager

A large subset of the working group met on November 6th 2014 in Fribourg for information exchange and discussion about used technologies, available and planned mobile applications and general trends at their participants' institutions as well as opportunities for pilots. The other participants were interviewed individually in person or online. Additional input was provided by Werner Schnedl (ID Software Services, ETHZ), the lead developer of the ETHZ EduApp.

The input was collected in notes prepared by SWITCH. The content of this document is largely based on these interview notes.

The working group was moderated by Lukas Hämmerle ([lukas.haemmerle@switch.ch](mailto:lukas.haemmerle@switch.ch)) and Petra Kauer-Ott ([petra.kauer@switch.ch](mailto:petra.kauer@switch.ch)). The report was edited by Petra Kauer-Ott and extended by Lukas Hämmerle.

## 2 Summary

The input of the working group and the discussions with its members demonstrates that the support of mobile applications (in particular app-friendly authentication mechanisms and Swiss edu-ID account creation) is **a must but not a high priority on the roadmap** of the Swiss edu-ID project. The reasons for this are:

- The number of developed and maintained apps by Swiss Higher Education institutions is smaller than expected. Most universities are interested in the topic “apps for higher education” but the development of apps requires special skills and a long-term commitment (and thus is costly).
- Not all apps require authentication (or do restrict use to HEI members only). Apps tend to be easy to use and thus often don't require more than device-based identification.
- The numbers of users are sometimes low, which would not justify the efforts to adapt the applications to make use of the Swiss edu-ID.
- Some web apps could be AAI-enabled like any regular AAI web applications instead of relying on special authentication methods for native apps.
- Compared with traditional responsive web applications, the benefit of dedicated mobile apps is not always obvious given that mobile devices increasingly are capable to render web applications sufficiently well.
- Also the small interest (or rather commitment) to make use of the AAI mobile proxy proof of concept implementation that SWITCH created in 2013 is an indicator to attribute lower priority to the mobile support at the current state

Nevertheless a **long authentication session timeout** is a precondition for additional functions like learning analytics and the development/use of mobile mash-ups (different kinds of applications involved – web, mobile, others). Here the authentication hurdles with the consequently bad usability may be the reason for slow progress in those fields.

The members proposed ideas for Swiss edu-ID pilot projects. Considering the benefit for users and institutions the most promising idea seems to be the one of an authentication/broker app shortly outlined in chapter 2.3.7. Several members of the working group support this idea and see advantages for their institutions once such an authentication app would be available.

As next steps, the Swiss edu-ID team will internally evaluate and discuss the options and roadmap for protocols that best will be supported. Then the members of the working group will be informed and in order to identify one or more pilots. The timeframe for this is summer-autumn 2015, the estimated implementation of pilots with version 2 of Swiss edu-ID in 2016.

### 2.1 Relevant Mobile Applications

Mobile Applications	Development, Status
<b>ETHZ (LET)</b>	
<a href="#">ETH EduApp</a> (since autumn 2012, includes clicker/vote function)	Developed by LET and <a href="#">Ubique</a> Authentication via Shibboleth (nethz) - but Shibboleth is not used for session management App (client) – server communication via REST protocol

Moodle App	<p>Used attributes: uid, name, (ev. email); additional data: role (lecturer etc.) and occupancy (which lectures etc.)</p> <p>New version planned for spring 2016 with integrated event support and offline functions (interim version on current architecture in spring 2015)</p> <p>Silent login with session (token) duration of several days/weeks because of usability (past &lt; 1h)</p> <p>No higher security necessary (idea to query test results via app was refused)</p> <p>-</p>
<b>ETHZ (ISN)</b>	
Mobler Cards ( <a href="#">Android</a> , iOS) (since 2012)	<p>Quiz app used for NATO trainings</p> <p>Questions are created in LMS (QTI standard compatible)</p> <p>Many questions are uploaded during lecturers to build up a question pool for exam preparation</p> <p>Use of app is optional, ca. 12 ETHZ users per course, 80 active users, more during exam preparation</p> <p>Ca. 200 NATO users and 750 Baltic defense college users per years</p>
<b>FHNW</b>	
<p>Moodle mobile</p> <p>e-Books (reader on mobile devices)</p> <p>„commercial“ apps as Zotero or Evernote (link and reference management)</p> <p>many apps for communication and sharing (not university specific, dropbox etc.)</p> <p>SWITCHdrive app</p>	<p>Moodle mobile is interesting for many universities but must be compiled/customized for each instance of Moodle separately.</p> <p>Access for students, teachers, staff and continuing education participants. Ca. 25'000 users on Moodle instance (access closed 1 month after leaving, and courses usually deleted after 13 months)</p> <p>High security is required (but marks are stored in Evento, not in Moodle)</p> <p>Storage of credentials not within e-Book shops but on server</p> <p>Increasing importance of learning analytics and adapted personalized environments</p>

<b>HES-SO (Cyberlearn)</b>	
<p>“M-Drill” language app for English (German and French) (<a href="#">iOS</a>, <a href="#">Android</a>) since 2012 ()</p> <p>“M-Défi” quiz app (<a href="#">iOS</a>, <a href="#">Android</a>) since 2015</p>	<p>Regular development of mobile applications (1/year) at Cyberlearn</p> <p>Need for authentication (email, name, surname), for M-Défi OAuth, Facebook login supported</p> <p>2’900 M-Drill downloads and ca. 115 active users</p> <p>Web app ported to iOS and Android; notifications work on mobiles only</p> <p>Not clear if there will be new versions of M-Drill in the future. Plans for integration of Spanish.</p> <p>Apps can also be used after studies (and by external people)</p> <p>Collaboration with <a href="http://www.logrr.com">www.logrr.com</a> for unique authentication with QR codes</p> <p>Authentication not HEI specific (all kind of users accepted)</p> <p>User management implemented (low effort)</p> <p>No deletion of users (persistent identities within the app)</p>
<b>UNIGE</b>	
-	<p>Web apps favoured over native apps due to missing resources for development of native apps for iOS and Android (or others)</p> <p>Only few development of apps (because of budget, specialized development know-how, security issues, problems of multi-platform frameworks with periphery)</p> <p>Multi-user is common on tablets at UNIGE (institutional tablets borrowed by students)</p>
<b>UNIFR</b>	
<p><a href="#">BibUp</a> (for iOS, Firefox and Word, operative since 2012)</p>	<p>Ca 100 downloads per month (26’000 total from all-over the world)</p> <p>Authentication with IP (OCR function for UNIFR users only because of costs for external web service), AAI would be good solution for external students (but effort to implement)</p> <p>Android version will be implemented soon (extensions difficult due to insufficient resources)</p>

## 2.2 Options for Pilots

Pilot Options	Scenario, Requirements
<b>ETHZ (LET)</b>	
ETH EduApp extension for events	<p><b>Guest accounts:</b> Access for external people without verification</p> <p>Options:</p> <ol style="list-style-type: none"> <li>1. Open Authentication (Google, Facebook, etc)</li> <li>2. Device-dependent anonymous login (with nick name) → best usability</li> <li>3. edu-ID ev. with in-app browser (branding of HTML website or API?). Interface within app allowing creation of Swiss edu-ID.</li> </ol> <p>Effort for integration via API (API key per app) probably lower than in-app web browser (because of web flow)</p> <p>Potential use:</p> <ol style="list-style-type: none"> <li>1. <a href="#">Teaching document repository</a> (ILIAS; a kind of portfolio for teaching content)</li> <li>2. <a href="#">Academe flashcards</a></li> <li>3. MOOCs and TORQEs (Tiny, Open-with-Restrictions courses focused on QUALity and Effectiveness; with restricted access)</li> </ol>
<b>ETHZ (ISN)</b>	
Connect (3 <sup>rd</sup> party) app with Learning Management System	<b>Demonstrator for authentication/broker app</b> (e.g. Mobler cards with Moodle) (see also chapter 2.3.7)
<b>FHNW</b>	
Moodle – Mobler cards connection	<p><b>Equal authentication for LMS, readers and offline use</b> (see also chapter 2.3.7)</p> <p><b>Showcase for authentication app</b>, providing login and automatic connection between mobile app (e.g. Mobler cards) and LMS Moodle</p> <p>Authentication with a general identity like with Facebook or Google helps to collect and share user data (as achieved points in a quiz)</p> <p>Broker model idea like TinCan API – but missing showcases for TinCan</p> <p>Broker should allow combining several identities</p> <p>Sharing of workload for realization of a pilot necessary</p>

<b>HES-SO</b>	
M-Défi (ev. M-Drill) Authentication method/application	<b>Unique authentication for all apps</b> Benefit if there will be apps for HEI users only (or different versions/content for specific user groups)  Benefit if effort for user management increases (more apps, successful apps, interlinked apps)
<b>UNIGE</b>	
Safe Exam Browser	Authentication for exam applications: SEB tablet version could be a possible candidate (currently AAI is used for connection to Moodle during exam; UNIGE should contact SEB team directly (ETHZ, Daniel Schneider)
<b>UNIFR</b>	
BibUp	<b>Authentication for mobility/external students</b>

### 2.2.1 Additional Links

Moodle Mobile:

<https://github.com/arael/>

<https://play.google.com/store/apps/details?id=ch.ffhs.eDidactics>

<https://play.google.com/store/apps/details?id=org.elearninglab.iCorsi2>

<https://play.google.com/store/apps/details?id=com.moodle.moodlemobile&hl=en>

<https://itunes.apple.com/en/app/moodle-mobile/id633359593?mt=8>

TinCan API:

<http://tincanapi.com/>

## 2.3 General Aspects of Mobile Development and Swiss edu-ID

### 2.3.1 Benefits for Apps using Swiss edu-ID identities

- Increase clientele
- outsourcing of account management
- use of Swiss edu-ID for multiple accounts
- applications for students that change their university (mobility students, international relations, ERASMUS)
- Swiss edu-ID could be used as identifier between different institutions

### 2.3.2 Mobile Development & Mobile Frameworks

Frameworks work well for iOS and Android. But frameworks as PhoneGap<sup>1</sup> do not evolve anymore. Multi-platform frameworks sometimes struggle to well support peripheral devices like microphones, cameras and GPS.

**HTML 5** is an increasingly promising alternative but there are security problems which are not solved yet (local storage, JavaScript).

University of Geneva has guidelines for the development of web apps.

University of Fribourg has no official directive but favours HTML 5. The developers have also experience with **PhoneGap**. The mobile version of the web site is a web app.

10% of Moodle accesses are done via iOS. Moodle 2.7 is responsive - there's no need for a native version.

There's the possibility to let develop students at ISIC-Arc small mobile apps.

The need to develop native apps decreases with the increased support of HTML 5 and the use of responsive (web) frameworks.

### 2.3.3 Testing & Security

**Test accounts (legal framework):** In AAI it is generally strongly discouraged to share user accounts between several users and (impersonal) test accounts are also not allowed by the SWITCHaai Policy. The consequence is that institutions use additional AAI accounts for people who need to test their applications.

For testing purposes, one needs test accounts – and due to the AAI policy a person who is responsible for these accounts. This has also to be foreseen in the agreements (compare AAI interfederation agreement).

In the context of e-Assessment lecturers want to test all parts and modules in advance (with real accounts and/or test accounts).

**Guest accounts:** A similar situation can occur with guest accounts, which can be created by users that are not affiliated to an AAI organisation – ideally there is also a person (professor) responsible (godfather) for such accounts.

**Security:** The Swiss edu-ID should be forgery-proof. Therefore scenarios of abuse should be considered at an early stage.

### 2.3.4 Logout

The problem with the missing logout option in AAI should be solved with Swiss edu-ID.

This can be solved already on the level of the IdP, but only few administrators configure their Identity Provider (IdP) and their Service Provider (and adapt the web applications they

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<sup>1</sup> PhoneGap Framework <http://phonegap.com/>

protect) to support logout. This partially is because the configuration/adaptation is complicated, not very well documented yet and because federated logout by concept is difficult to implement as there often are more than two parties involved in a logout process. With a single central IdP – like the Swiss edu-ID IdP - the configuration to support logout is simplified because it is a one-time effort.

The central administration of University of Fribourg uses an alternative authentication method than AAI because logout is crucial for them.

The AAI [mobile proxy](#) allows logout because the app and the mobile proxy do not rely on the AAI session but instead use OAuth2, which better supports logout, to bilaterally communicate with each other.

### 2.3.5 Identity Lifecycle

**Lifecycle:** An early start of using Swiss edu-ID would be helpful (already at school). End of life aspects, deleted identities and deleted data have to be considered in detail.

**Governance:** It has to be clarified who has when access to what data.

### 2.3.6 Alumni

The AAI affiliation attribute value „alum“ is only used at some few institutions.

User directories for Alumni are usually separated.

FHNW starts using AAI also for Alumni. Continuing education is important for teachers.

If additional user groups can access services, it's necessary to organize support from the beginning. Resources are needed and responsibilities must be clearly defined.

### 2.3.7 Idea of a “Swiss edu-ID broker/authentication app”

Students prefer to access all their resources centrally (also if they are stored into different LMS and applications). Many students attend small courses with few participants from different institutions. Usually it's the professor who informs students about apps to be used, access, authentication etc.

A broker app for authentication on mobile devices should know what LMS courses a student is enrolled in. The broker app would implement certain mobile OS-specific functions (similar like the broker apps that provide Facebook or Twitter login features to other apps). These functions then could be used by third party apps via the standard OS-specific interfaces to authenticate and identify Swiss edu-ID users. The broker app should be small with only a few functions to implement and it's likely that only few updates will be needed once implemented.

A potential pilot project making use of such a broker app could for example be BeAXI<sup>2</sup>.

Moodle does not yet support the SCORM 2 successor IMS [Common Cartridge](#) Specification, but ILIAS does.

AAI directs users to a login page – this could be done with a new window within a mobile application. Offline authentication must work too, which then would require caching identity data.

It's unclear for a user where username and password are sent by an app. Therefore third party apps are not allowed to request passwords, but they are allowed to authenticate against social apps – that is basically the idea of a broker app.

An app has to dock on the device's **service layer**. This is OS specific, but a protocol supports exchange of information between OS since iOS 8.

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<sup>2</sup> BeAXI app: <https://itunes.apple.com/ch/app/beaxi-e-assessment-lite/id907060000?mt=8>

The service layer defines what protocols are supported. An app connects and would like to authenticate against Facebook. Facebook sees that the app would like to communicate and gets back an OAuth hash, allowing Facebook to access the apps API.

The realisation of a demonstrator would need ca. 6 months for a first app version with core functions, then should follow the design and adaptations for iOS and Android. The framework [Cordova](#) could be used.

An interface to authenticate against would be necessary (REST interfaces preferred).

An alternative to such an authentication app would be the development of a Shibboleth plugin, being activated after AAI login and being able to exchange user data with third party services/apps and to inform such services about successful login of a user and to store the URL etc. Or a plugin allowing graduated connections could solve the problem too.

### **2.3.8 Further possible Pilot candidates**

A collection of mobile applications used at Swiss HEI's is available for [SIG Mobile Learning members](#). The apps are also mentioned in „[Inventory of Mobile Learning Technology D1.6.1 Report](#)”.

# Annexe

## Interview questions

### Status:

1. Role of person(s) and motivation to contribute to the working group
2. What apps are used or potential candidates for pilots? (what kind of app: web, native, used frameworks)
3. Are there apps used at the institution being able to profit by a persistent support of authentication, or would such support be desired for future apps?
4. Which users (from institutions, organization etc.) should be able to access the app(s)?
5. Is authentication necessary and should it be integrated?
  - For which/all users?
  - Which (AAI) attributes and other identity data are necessary for the app?
  - What are the security requirements? Are important or confidential data used? What user data have to be stored? Is 2-factor authentication required/relevant in the future?
  - How is authentication solved currently? (protocol, LDAP, AAI etc.)?
    - What options have been tested already?
    - Which problems occur yet or could appear in the future?
    - What are the preferred protocols (OAuth1, OAuth2, OpenID Connect, proprietary)?
  - Are there recommendations/guidelines at the institution or do the developers solve authentication individually as needed?
  - What are requirements to make authentication for the app better/easier?
  - Where could Swiss edu-ID have a specific role and what are the advantages it could provide)?

### Planning:

1. How looks the roadmap for the app?
2. What is the time frame for the app (initial development/ further development)?
3. Is there interest in pilot with version 2 of Swiss edu-ID?
4. Could a pilot be realized without additional external funds or is an application necessary? (call in spring and autumn 2015)
5. Who should be involved in the pilot planning?

The following links have been sent in advance to the interview partners for further information about Swiss edu ID and the AAI mobile proxy:

1. AAI for Mobile Apps: <https://www.switch.ch/aai/support/tools/aai-for-apps.html>
2. Full presentation: <https://tnc2013.terena.org/core/presentation/43>
3. Shorter presentation: [https://www.switch.ch/aai/support/presentations/techupdate-2014/05\\_AAI-for-Mobile-Apps.pdf](https://www.switch.ch/aai/support/presentations/techupdate-2014/05_AAI-for-Mobile-Apps.pdf)
4. Extended Abstract: <https://tnc2013.terena.org/getfile/171>
5. Swiss edu-ID presentation: <https://www.switch.ch/de/aai/support/presentations/techupdate-2014/>