Safe Exam Browser, the Modular Freeware Solution for Secure E-Assessment

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Introduction
What is Safe Exam Browser (SEB)

- Secured web browser application
- For conducting exams on computers (Windows/Mac OS X) using web-based
  - exam systems
  - quiz modules of learning management systems
- Exams using third party applications
SEB: A Modular Tool for Secure E-Assessments
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- SEB
  - Safe Exam Browser

- Kiosk Application
  - starts

- Browser
  - exam URL
  - exam content

- Exam Server
SEB: A Modular Tool for Secure E-Assessments

Kiosk Application

Browser

Exam Server

Third Party Application

Starts

exam URL

exam content
Safe Exam Browser is …

- **Open**: Compatible with any computer based exam system
- **Flexible**: Computer labs, BYOD, desktop, tablets
- **Modular**: Third party applications, VDI, SEB Server
- **Free**: Open source, freeware, no centralized cloud service
History: Safe Exam Browser Project

- Idea by Stefan Schneider at University of Giessen, our Windows browser developer
- Developed since 2008 mainly at ETH Zurich
- Partly publicly funded (2010-2014) by national Swiss e-learning programs
- Open for community suggestions and contributions
- Global user base
- Integrations with various exam systems, for example Moodle, ILIAS, OpenOLAT, Inspera Assessment
Safe Exam Browser – Future of the Project

The options we examined in the last 7 months:

1. SEB Consortium
2. Spin-off company
3. Something small and inside ETH

In all cases SEB shall remain open source/freeware
SEB Consortium - Vision

- SEB is under the Mozilla Public License and freely available
- Deliver, enhance and support SEB for organizations wishing to perform e-assessments
- SEB shall be recognized for its quality of software, its security and data privacy as well as its engagement with the user, standards and development communities.
- The SEB Consortium is established to provide a structure whereby the Community can support the direction and development of the SEB project through financial and other contributions
SEB Consortium - Tasks

- Foster the development of a flexible lockdown browser for educational and commercial use
- Provide financial and infrastructural support for at least two SEB-developers to allow ongoing development of SEB within the consortium
- Sustain and develop the existing community of interest for the SEB project
- Support the use and adoption of SEB software
# SEB Consortium – Benefits & Membership Fees

<table>
<thead>
<tr>
<th>Category</th>
<th>Membership Fee</th>
<th>Who should join?</th>
<th>Benefits</th>
</tr>
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<tbody>
<tr>
<td><strong>Principal Members</strong></td>
<td>€ 50,000 US$ 60,000</td>
<td>Educational Institutions, Companies</td>
<td>Prioritize SEB development goals, get direct, personal development support and consultancy by the SEB developers. Logo of institution/company is placed on consortium website</td>
</tr>
<tr>
<td><strong>Gold Members</strong></td>
<td>€ 10,000 US$ 12,000</td>
<td>Educational Institutions, Companies</td>
<td>Suggest SEB development goals, build a feature list for SEB, Get direct, personal development support and consultancy by the SEB developers. Logo of institution/company is placed on consortium website</td>
</tr>
<tr>
<td><strong>Silver Members</strong></td>
<td>€ 5,000 US$ 6,000</td>
<td>Educational Institutions, Small Companies, public authorities</td>
<td>Suggest SEB development goals, logo of institution/company is placed on consortium website</td>
</tr>
<tr>
<td><strong>Bronze Members</strong></td>
<td>€ 2,500 US$ 3,000</td>
<td>Small Educational Institutions, Small Companies</td>
<td>Logo of institution or company is placed on consortium website</td>
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What’s New in Safe Exam Browser
What’s New: SEB 2.1 for Windows and Mac OS X

- Touch optimized mode for Windows tablet computers
- Buttons for restart exam, reload page, change keyboard layout, current time can be displayed
- Process monitoring
- Individual proxy settings, URL filters and server certificates can be used per exam
- New settings for page and text zoom, disable spell check, browser user agent
- Re-engineered SEB Config Tool now allows comfortable editing and testing of SEB configuration files
Live Demo
Using Virtual Desktop Infrastructure with SEB
Online Exams at ETH Zurich
Swiss Federal Institute of Technology

- 2007 first pilots, 2010 regular service
- >50 exams with ~5’000 students in spring semester 2015
- Large percentage of selective, high-stakes examinations
- Summative exams designed by lecturers
- Important role of first year university exams in Switzerland
Competency oriented exams using third party applications
Exam tasks today

learning  exam  application / competence
Example: Programming

function zahlen(n)
% Dies ist ein Zahlen
% Test ist es ein
% in möglichst wenig
zahl = randi(10);
test = -1;
while (test < 20)
test = input('Bitte versuche = versuche ='
if (test < = zahl)
disp (' 2');
elseif (test > zahl)
disp (' 3');
end
end

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The goal: authentic, competence oriented exam tasks

learning

exam

application / competence
How does it work?
Technology: Requirements

- Secure, fraud-proof
- Reliable, robust
- Easy to use, familiar (for students)
- Easy to customize and manage (for administrators & examiners)
SEB with VDI

SEB
Safe Exam Browser

Kiosk Application

Browser
SEB with VDI

Diagram:
- SEB
- Safe Exam Browser
- Kiosk Application
- Browser
- VDI Client
  - VMware View

Process:
- SEB
- Safe Exam Browser
- Kiosk Application
- VDI Client
  - VMware View
- Browser

 Starts

Description:
The diagram illustrates the integration of SEB with VDI, highlighting the use of Safe Exam Browser, Kiosk Application, and VMware View through the Browser interface.
SEB with VDI

Exam Client

Individual Configuration

Kiosk Application

Browser

SEB

Safe Exam Browser

VDI Client

VMware View

starts
SEB with VDI

Exam Client

Virtual Desktop

Individual Configuration

Secure Configuration
Future Roadmap

- SEB 2.2
- SEB for iPad
- New browser engine in SEB for Windows
- SEB Server
SEB 2.2

- Release for Windows, Mac OS X, iOS
- Opening of permitted resources in additional browser windows, accessible via individual icons and popup menus placed in the SEB task bar (configurable per exam).
- Improved handling of downloads, allows restricting access to particular file types, which may then be opened with associated permitted third party applications.
- Improved URL filter also in SEB for Windows
- New settings for presetting language dictionaries (spell check)
SEB for iPad

- Works on managed iOS devices and with BYOD
- Opening of permitted resources (HTML, PDF etc.) in additional browser tabs
- With embedded permitted resources pure offline exams are possible
- Built-in support for hand drawings
- Supporting most setting options of the SEB desktop versions
SEB Server

- Central management of SEB clients for exams: Configuration of client settings for different exams in a web backend.
- Clients receive exam settings automatically from the SEB Server.
- Improved security with automatic three-way authentication between SEB clients, exam system and SEB Server which drastically eases configuration.
- Easy to operate remote supervising/proctoring functionality such as screen recording and logging of user activity without requiring third party software solutions.
SEB Server

Keeping the SEB exam solution modular and compatible with a wide range of exam systems

- Open source and freely available
- API to connect to exam system
- Installation on common open source servers
- Scalable: A centralized SEB Server for a large number of institutions will be possible
Links

- www.let.ethz.ch/pruefungen/onlinepruefungen/index_EN
- www.safeexambrowser.org
Thank you for your attention. Please discuss…

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