Attribute Based Credentials for Trust: towards the privacy preserving eIdentity management of the future

ABC4Trust EU project

https://abc4trust.eu/

A research project funded by the European Commission's 7th Framework Programme.

Identity landscape

- More and more business/government services are migrated online
  - Improves convenience
  - Reduces costs
- High-value transactions require high-level of identity assurance
  - Usernames/passwords are ubiquitous, but provide low-security
  - Conventional “enterprise” solutions (e.g., Kerberos, PKI) don’t scale or are not flexible enough for an internet-wide system
  - How can you show some ID (identifier) online, just like in real life?

Identity federation

- Most popular proposed architecture
  - Very flexible
  - Easy to deploy
  - Many protocols: WS-Federation/Trust, SAML, Information Cards, OpenID, OAuth, …
- But many challenges
  - Security
  - Privacy
  - Scalability

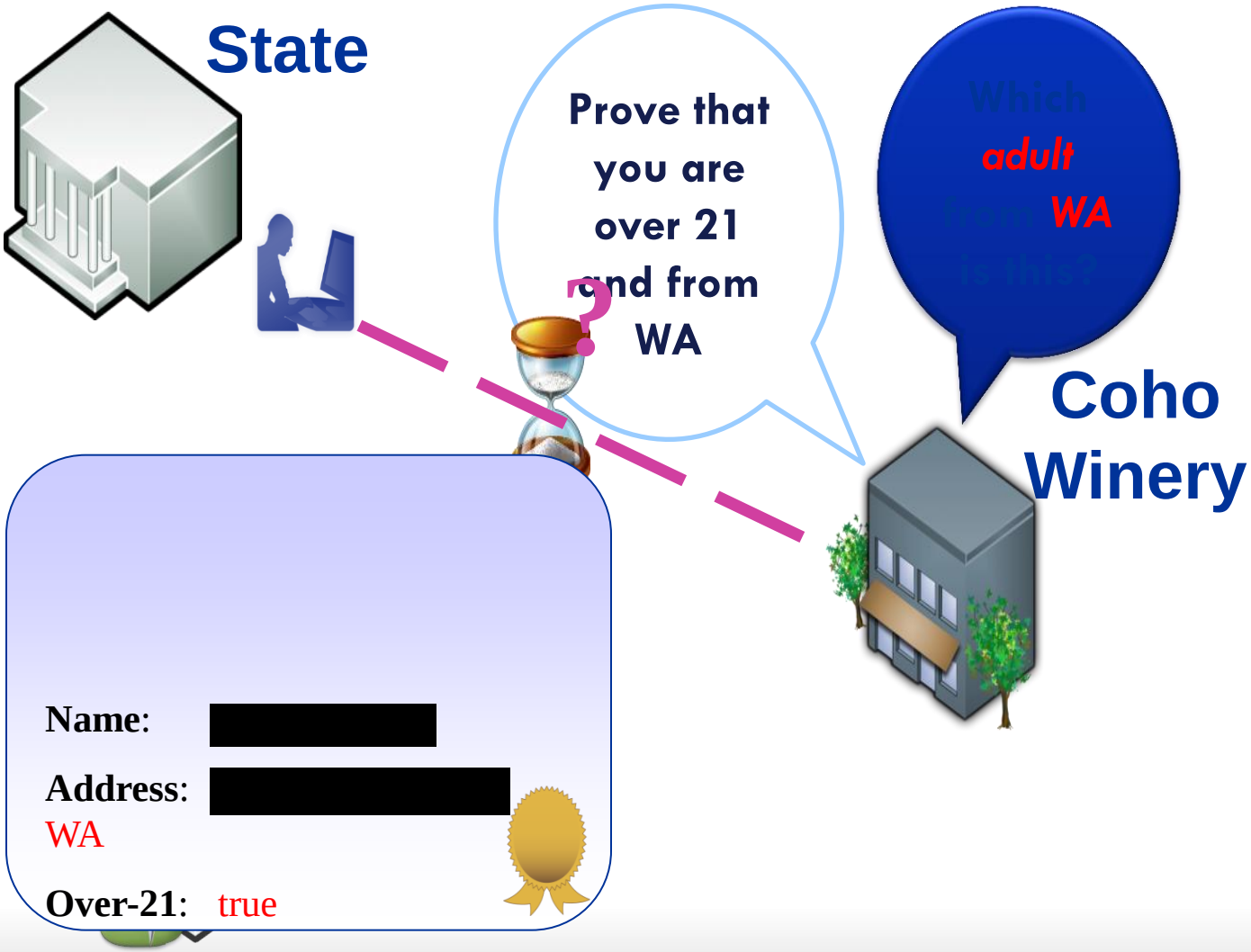
What's new? Minimal disclosure!

- ABC tokens cannot be combined and lead to the revelation of identity
  - Token issuance and presentation are unlinkable
  - Think "coins" (cannot be distinguished) vs. "bills" (have a serial number!)
- Users can disclose a *subset* of the encoded claims
  - To respond to unanticipated requests of RPs
  - Without invalidating the token integrity

An example of minimal disclosure:

Coho Winery

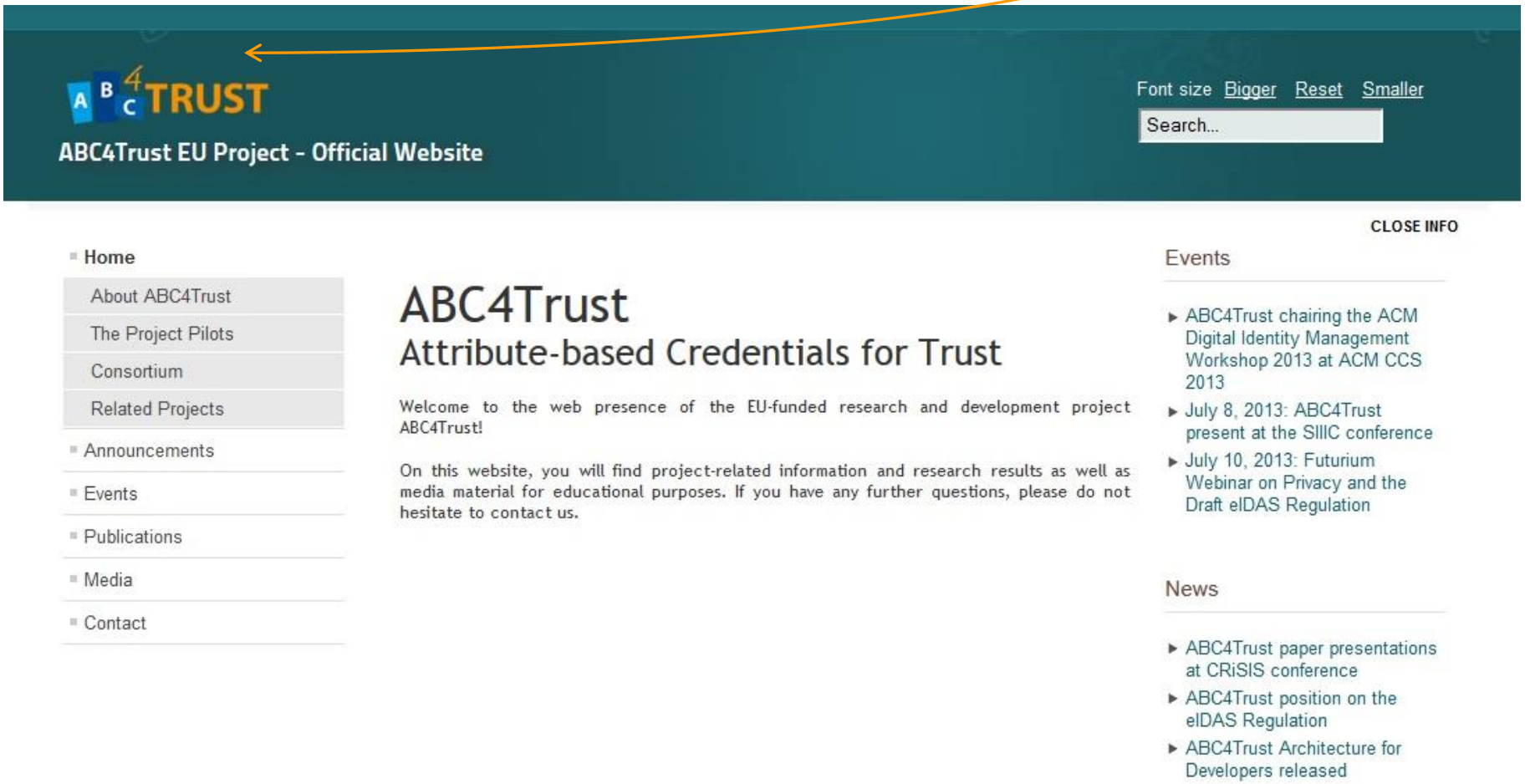
Minimal disclosure illustrated



ABC4Trust participants:

Participant No.	Participant organization name	Participant short name	Country
1	Goethe-Universität Frankfurt am Main	GUF	Germany
2	Alexandra Institute AS	ALX	Denmark
3	Research Academic Computer Technology Institute	CTI	Greece
4	IBM Research GmbH	IBM	Switzerland
5	Miracle A/S	MIR	Denmark
6	Nokia Siemens Networks GmbH & Co. KG	NSN	Germany
7	Technische Universität Darmstadt	TUD	Germany
8	Unabhängiges Landeszentrum für Datenschutz	ULD	Germany
9	Eurodocs AB	EDOC	Sweden
10	CryptoExperts	CRX	France
11	Microsoft Research and Development France	MS	France
12	Municipality of Söderhamn	CSH	Sweden

Visit: *https://abc4trust.eu/*



By joining our Pilot :

1. You will Meet the privacy-ABCs Technology

- Crypto technology combining the security of PKI with the flexibility of federation, providing *user-centric*, *privacy-by-design*
- It is planned be the *future e-identity* standard (applications include: *e-commerce, e-government, e-voting, blogging, e-consultation, financial applications like lotteries*)

By joining our Pilot :

2. You will participate in a lottery using this unique technology

The winner receives:

- A registration for two people for the upcoming ***International IFIP Summer School on Privacy and Identity Management for Emerging Services and Technologies in September 2014***

By joining our Pilot

3. You will also be rewarded with a bonus mark for your final grade at the “Distributed Systems I” course:

- If you sign the distributed User Consent Form
- If you have participated at the course evaluation in the end of the semester
- If you join the lottery
- If you deliver a questionnaire of your feedback on the usability of the privacy-ABCs technology

By joining our Pilot :

4. You get:

- The *smart card reader* & *your eIdentity smart card* loaded with your privacy ABC-credentials
- The book: "*The Future of Identity in the Information Society: Challenges and Opportunities*" written by some of the leader in the eIdentity domain

Course Rating by Certified Students

- ✓ A group of 60 students will take part in the evaluation of two courses they have attended at a University Department.

Course Rating by Certified Students

- ✓ It will take place in the Computer Engineering and Informatics Department of the University of Patras in Greece.

Course Rating by Certified Students

- ✓ A group of 60 students will take part in the evaluation of the following two courses:
  - ✓ Distributed Systems I

Course Rating by Certified Students

University Pilot will realize a trial where university students can anonymously rate courses they took while ensuring that:

1. students have indeed taken the course and have had sufficient attendance
2. can only rate the course once, without keeping list of students who have already rated the courses, so as to protect student anonymity.
3. Can join a lottery

Course Rating by Certified Students

- ✓ Students of Computer Engineering and Informatics Department will be issued credentials that certify a number of facts about them e.g.:
- ✓
  - ✓year of study
  - ✓major
  - ✓percentage of attendance of a course (5 attendance units).

Course Rating by Certified Students

A student can be eligible to participate the course evaluation:

- ✓ by using his credentials with ABC technologies in order to prove some facts about him, i.e.:
  - ✓ whether he took the course,
  - ✓ the year of his first registration to the university department
  - ✓ his course attendance ratio.

Course Rating by Certified Students

- ✓ The sufficiency of attendance will not be proved by revealing the exact attendance percentage (as this might be used to identify students)
- ✓ it just shows that is above the predefined attendance threshold that allows the student to enter the evaluation process

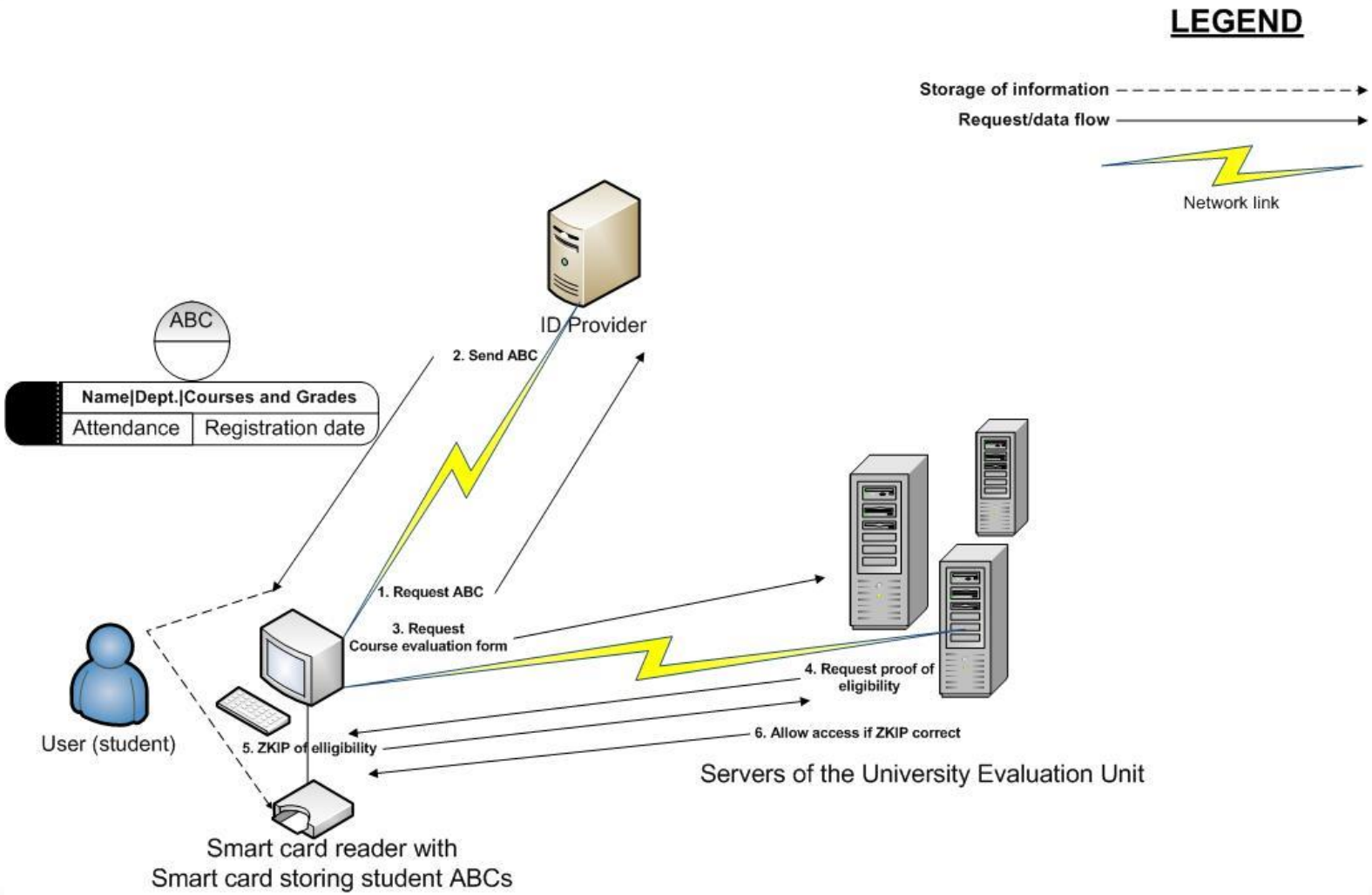
  (or to get a bonus).

Course Rating by Certified Students

- All the students can also prove that they participated in the course evaluation, in order to have access to a Tombola lottery.
- A participated student in lottery will win a prize.

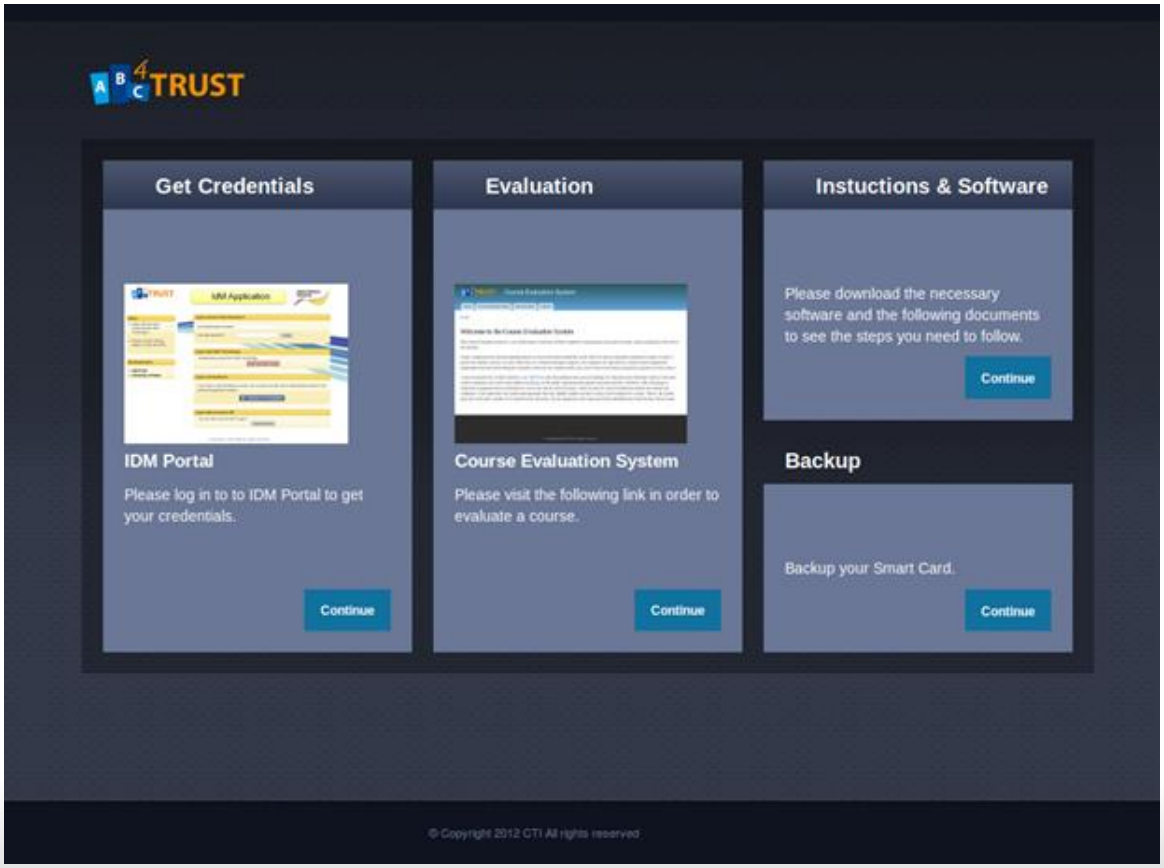
A registration for two people for the upcoming ***International IFIP Summer School on Privacy and Identity Management for Emerging Services and Technologies in September 2014***

Course Rating by Certified Students



University Pilot Portal

- University Pilot Portal is an information web portal (https://ces.cti.gr/Portal/Portal.html)



University Pilot Portal

- University Pilot Portal consists of three blocks:

✓ Get Credentials

✓ Evaluation

✓ General Info

✓ User Manual

✓ Join Tombola lottery

✓ All the necessary software

Today

- We will make a short introduction in the aspects of ABC4Trust Pilot
- We will distribute the User Consent Form in order to sign it
- You will get Your SC
- You will collect your first attendance Unit

Participating in the Pilot

Beginning of the Semester (Red Phase)

- **Get Your Smart Card**
- Setup Your PC
- Unistall ABC4Trust User Service
- Register Your Smart Card
- Get a University Credential
- Get a Course Registration Credential
- Test Your Smart Card

During the Semester (Blue Phase)

- **Collect Class Attendance Evidence**
- View Attendence Units
- Periodic Backup of Your Smart Card
- Smart Card Restore in Case Needed
- Change Your PIN
- Unlock Your card
- View Your Credentials
- Delete Your Credentials

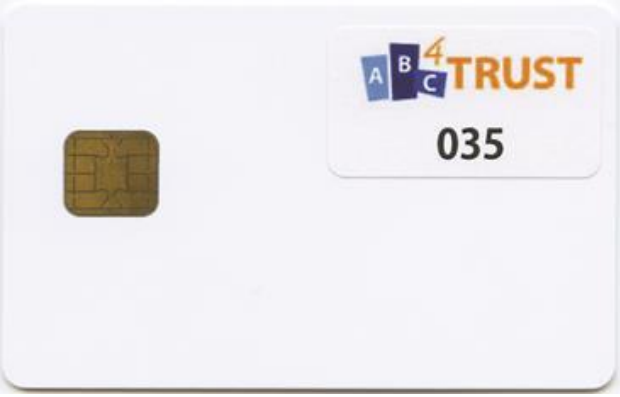
In the end of the Semester (Green Phase)

- Participate in the Course Evaluation
- Join the Tombola lottery

Today

- We will provide you with:

☑A smart card (*You can keep it in the end*)



☑A sealed envelope that is marked with the smart card ID and contains your smart card's PIN and PUK.

DeviceID	pin	puk
35	4220	48520787

Today

- You will obtain your attendance data:

☑You have to wave your smart cart in front of a contactless NFC reader

On 11/11/2013

- We will provide you with:

☑A smart card reader (*You can keep it in the end*)

☑A slip of paper containing a one-time-password (OTP)

You will be able to:

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Pilot’s Information

- Take a look at:
- Patras Portal
- Course’s Forum
- User manual
- User Consent Form