ENSURING THE LEARNERS' AUTHENTICATION AND AUTHORSHIP AS A MECHANISM FOR ENHANCING THE QUALITY OF ONLINE LEARNING
THE CONTRIBUTION OF THE TeSLA PROJECT

AN ADAPTIVE TRUST-BASED E-ASSESSMENT SYSTEM FOR LEARNING

DISPA Meeting - “Learning in the Digital Age: Intelligent assistance”
Sofia, Bulgaria; 21 June 2018

Prof. Roumiana Peytcheva-Forsyth
Director of Distance education center, Sofia University
R.Peytcheva@fp.uni-sofia.bg

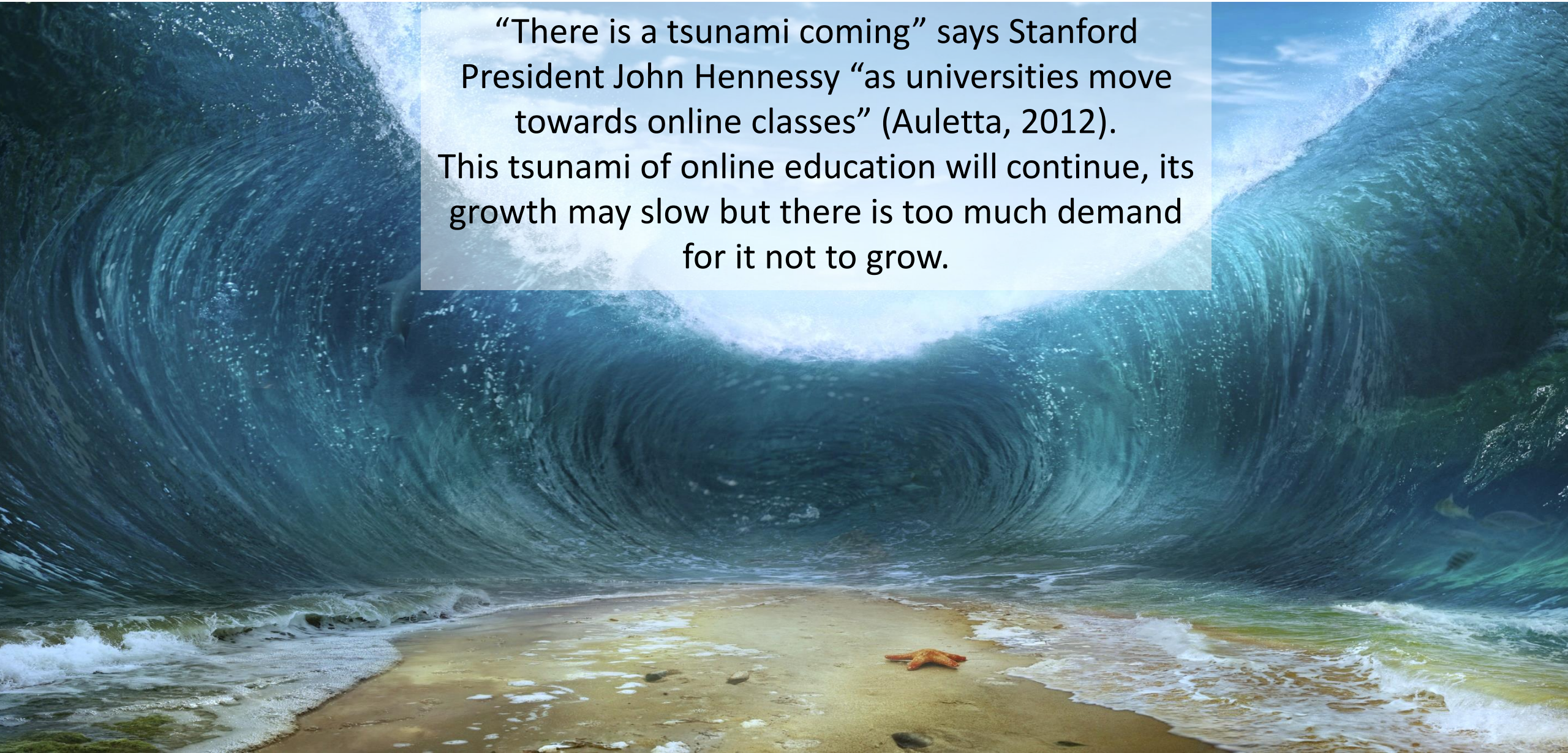
TeSLA
Adaptive trust-based e-assessment

Funded by
the European Commission

Project Number: 688520 – TESLA - H2020-ICT-2015/H2020-ICT - 2015
Agreement Number: 688520

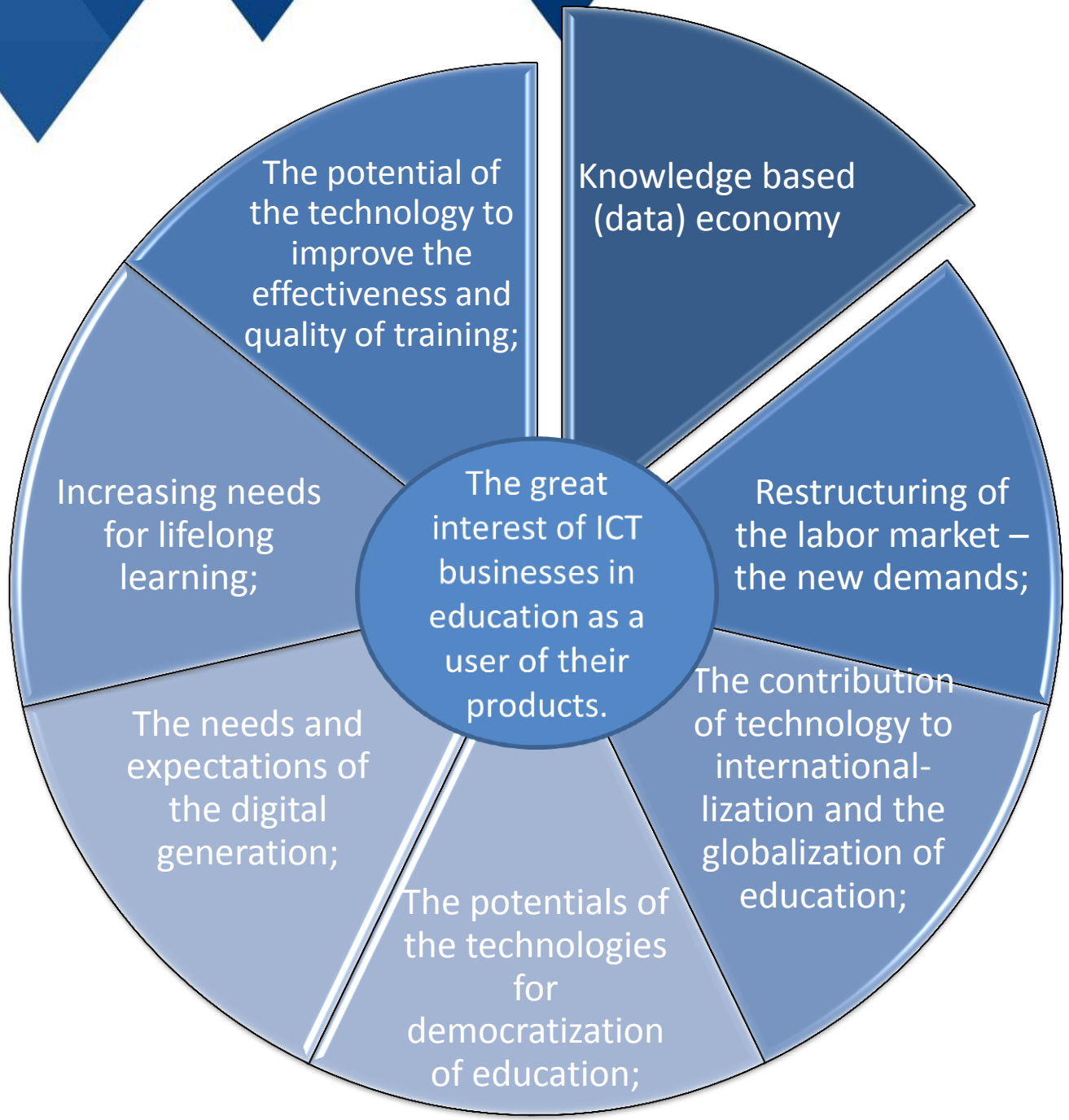
CONTENTS:

The expansion of online education



"There is a tsunami coming" says Stanford President John Hennessy "as universities move towards online classes" (Auletta, 2012).
This tsunami of online education will continue, its growth may slow but there is too much demand for it not to grow.

Factors supporting the boost of online learning



The expansion of online education

Some statistics to prove the "tsunami"

USA

- In 2016, the number of students taking online courses grew to **5.8 million nationally**, continuing a growth trend that has been consistent for 13 years.
- More than a quarter of higher education students (**28 percent**) are enrolled in least one online course.
- Today even the elite universities in the USA - Harvard, MIT, Stanford, Yale, Carnegie Mellon - are embracing the internet.

"When one professor at Stanford can teach an online artificial-intelligence course to more than 160,000 students universities and society cannot ignore the cost benefits."
(Auletta, 2012)

The expansion of online education

Australia

(according to ICEF Monitor)

- Over the past five years, the online education market in Australia has grown by almost 20% and is expected to be worth an estimated US $ 4.68 billion this year;
- During the next 10 years Australia will become one of the world's leading providers of online education.

The expansion of online education - Europe

Enrolment numbers in distance-teaching universities alone exceed at least 2 million:

- **Anadolu University, Turkey**: 1,360,000
- **Open University, UK**: 250,000
- Universidad Nacional de Educación a Distancia, Spain: 250,000,
- **Universitat Oberta de Catalunya**, Spain: 80,000
- Fernuniversität Hagen: 80,000
- Fédération Universitaire de l'Enseignement à Distance/Centre national d'enseignement à distance, France: 50,000
- **Open University, The Netherlands**: 20,000.

More and more traditional universities offer online programmes and courses.

The overall number of students taking some form of distance education (included blended learning) in Europe must be higher than 3 million.

The expansion of online education at all levels and type of education and learning

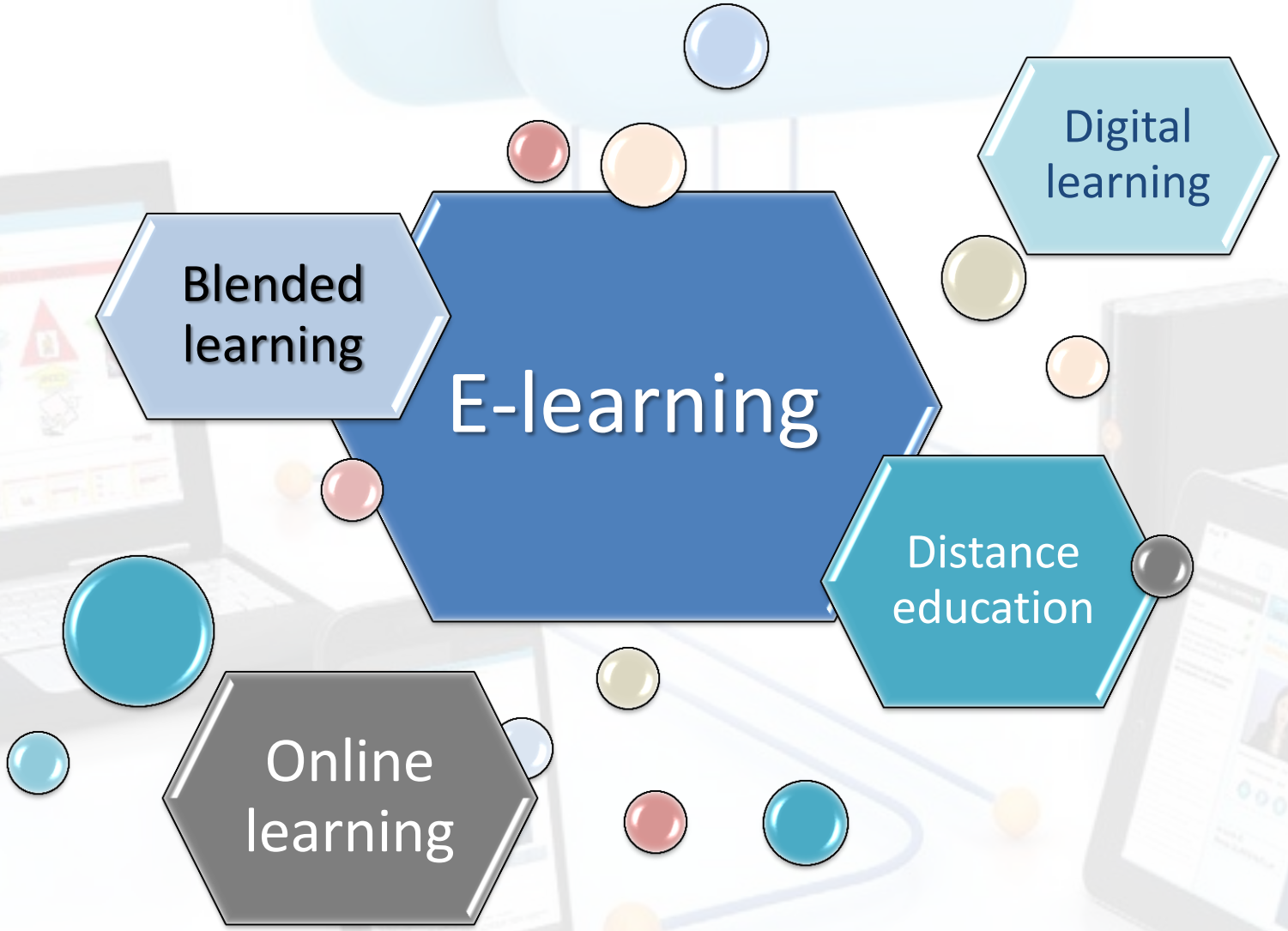
Study conducted by the Bulgarian IPA among similar institutions in Europe suggests that:

1) Among the 13th countries – participants in the study **– 8 have introduced fully online courses**, 1 – plans to do so, 4 institutions don't offer such courses. **Blended courses (combining online and face to face delivery) – are offered by 10 institutions,** 1 plans to introduce it and only 2 don't offer such courses.

2) The percentage of online and blended learning courses among the total number of courses provided by these organization in 2018 varies to a great extend at the different institutions: with some institutions not offering such courses at all; to some – providing e-learning in between 10% and 20% of their courses; to institutions offering **70% of their courses in online format**.

3) In relation to the key digital competences targeted in the training courses 2018 by these institutions the priority are the Information and data literacy and Communication and collaboration (10 institutions), followed by Safety (9), Problem solving (8) and Digital content creation (6).

Key concepts related to technology in education



E-learning and e-assessment – conceptual framework

Tony Bates

E-learning (Digital learning) - All computer and Internet-based activities that support teaching and learning – both on-campus and at a distance

Distance education courses are those where no classes are held on campus – all instruction is conducted at a distance. Distance education courses may use a variety of delivery methods, such as print-based, video/audioconferencing, as well as internet-based.

Online learning - A form of distance education where the primary delivery mechanism is via the internet. These could be delivered synchronously or asynchronously. All instruction is conducted at a distance.

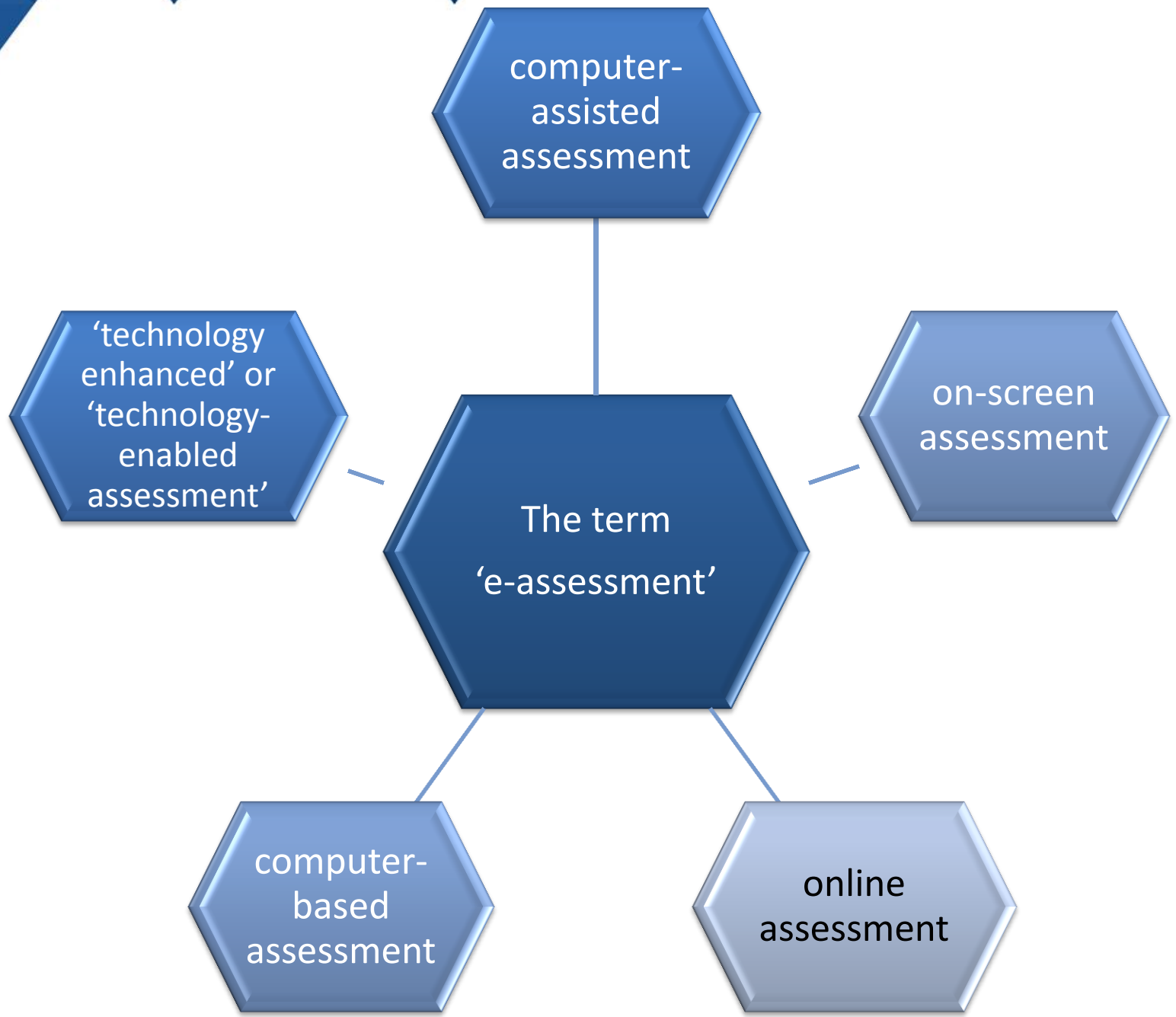
Blended learning – combination of the two modes of delivery – online and face to face. “The challenge is to identify what the added value is of the face-to-face component, when most teaching can be done as well or better, and much more conveniently for students, online, and how to combine the two modes of delivery to deliver better learning outcomes more cost-effectively.

E-assessment

The assessment of learning can be defined as a process where learners' achievement and progress are measured (Gikandi, Morrow & Davis, 2011; De Villiers, Scott-Kennel & Larke, 2016).

The assessment of learning outcomes is a key element of an instructional design process, as it enables improvement in teaching and learning by providing feedback on the whole process (Haladyna, 2002).

Developments in ICT have a profound impact on the methods used in assessments and have provided new opportunities for conducting electronically-based assessments, otherwise known as e-assessments, on student learning via computers, laptops and mobile devices (Hillier, 2014; Stödberg, 2012; De Villiers, Scott-Kennel & Larke, 2016).


computer-assisted assessment
'technology enhanced' or 'technology-enabled assessment'
The term 'e-assessment'
on-screen assessment
computer-based assessment
online assessment

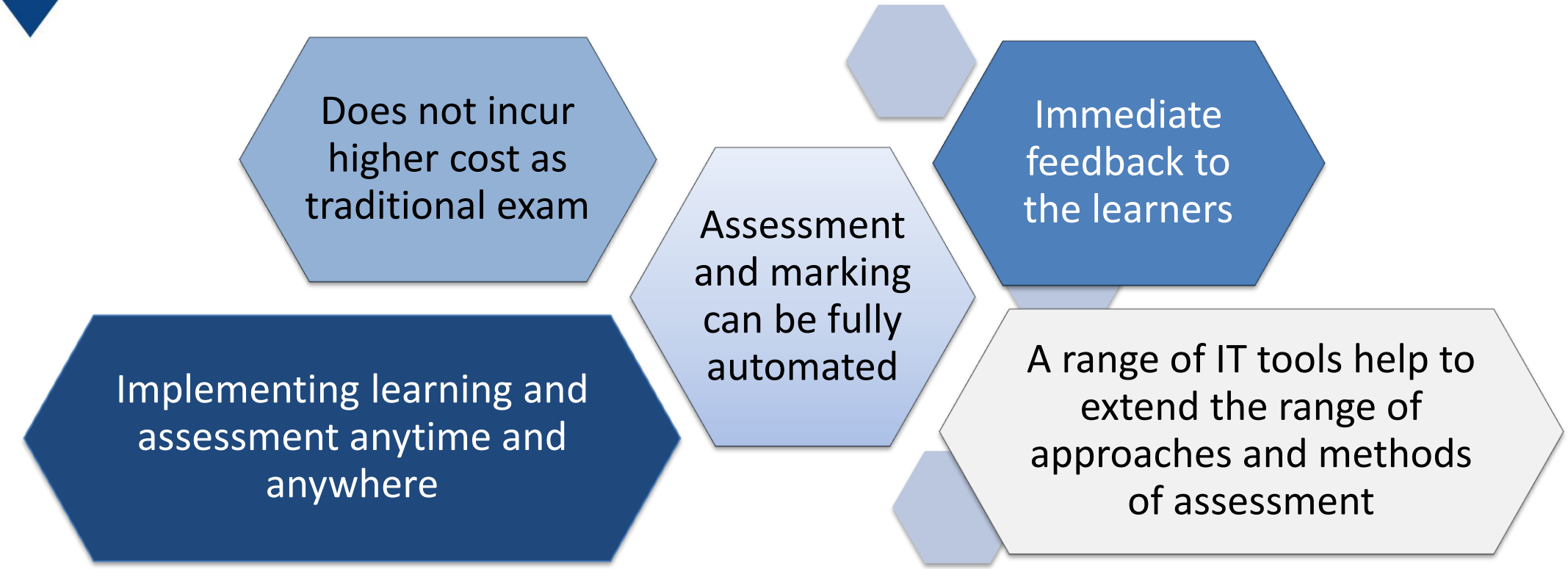
E-learning and e-assessment

- The bigger is the growth of e-learning and online education the more important the way of assessing online learners become.
- In order to provide an alignment between the teaching, learning and assessment processes, it is essential to employ the use of ICT in assessment.

Brown et al.(1996) suggests that "due to paradigm shift in educational technology, it may become unfair to train learners online and then use pens for assessments."

What the technology has to offer to assessment?

Among the advantages of e-assessment and examination the authors include:



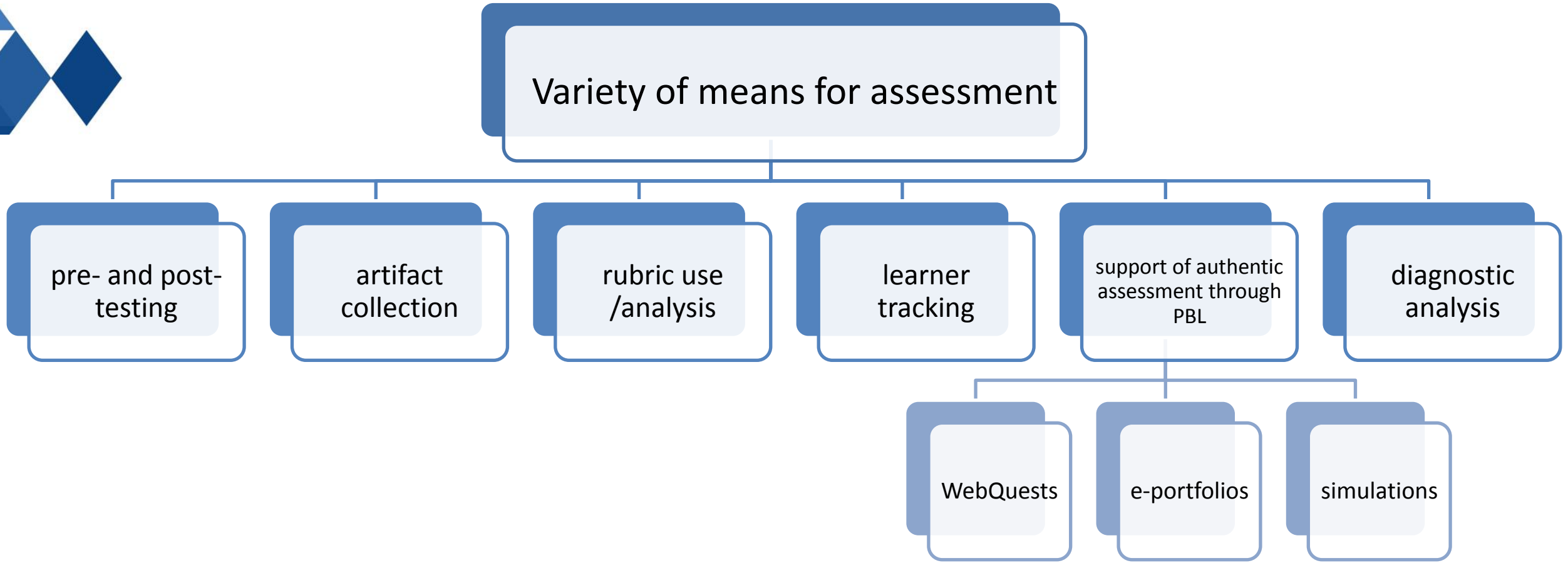
What the technology has to offer to assessment?

Supports different types of assessment: formative, summative and diagnostic assessment.

Improved access for disabled or geographically dispersed learners.

Significant advantages in terms of cost, ease of use, reliability, replicability, scoring, aggregating results, and data management.

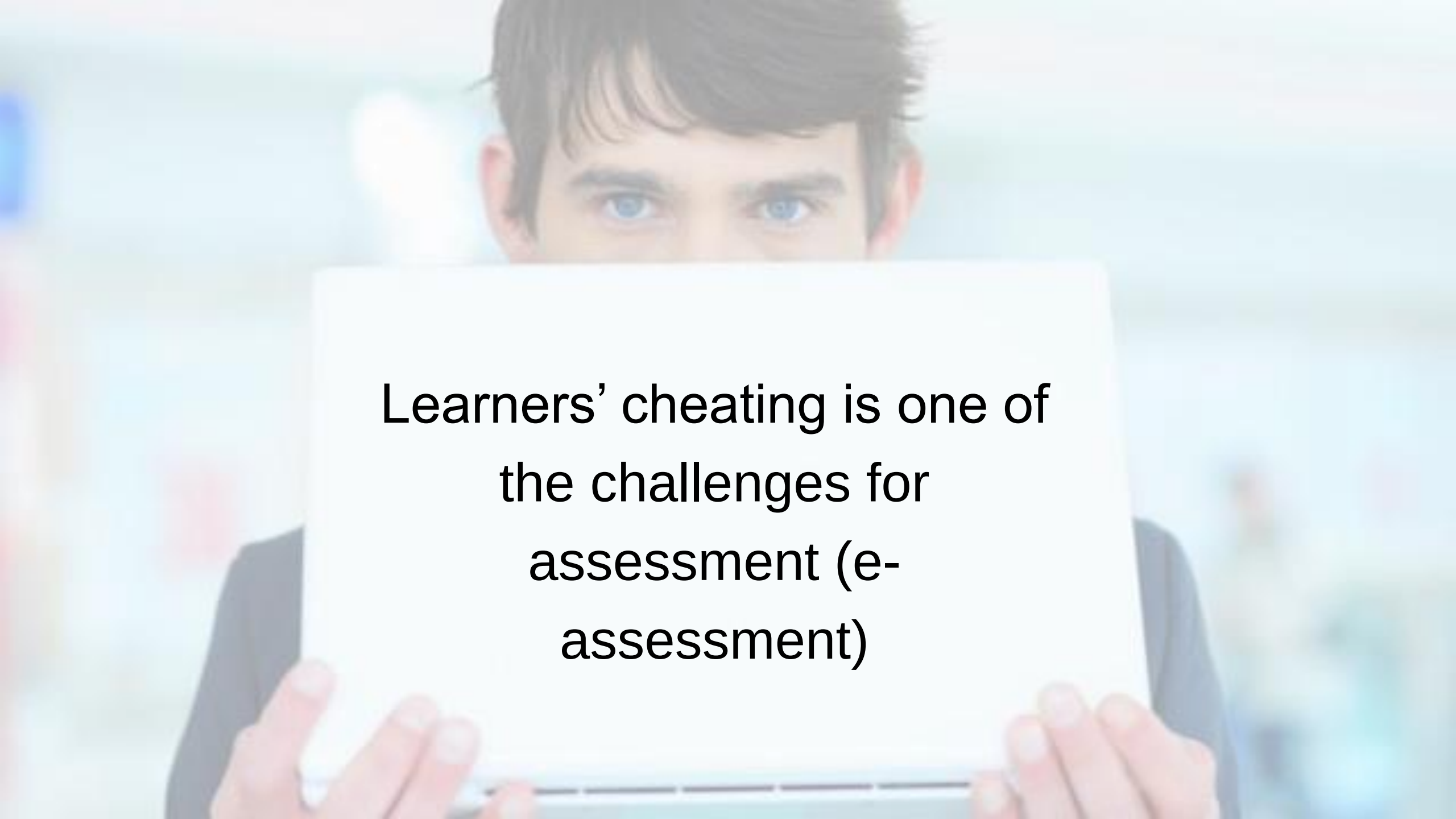
What the technology has to offer to assessment?



The challenges / limitations of e-assessment

Challenges identified by researchers and practitioners related to e-assessment:

- fairness to the learner;
- objective testing of knowledge;
- the capacity of learner (especially elder learners) to respond in electronic mode;

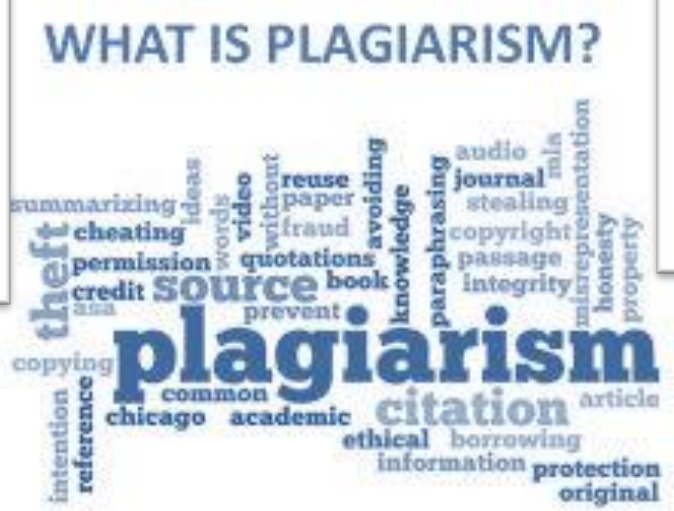

Learners’ cheating is one of the challenges for assessment (e-assessment)

Cheating takes place in any educational setting

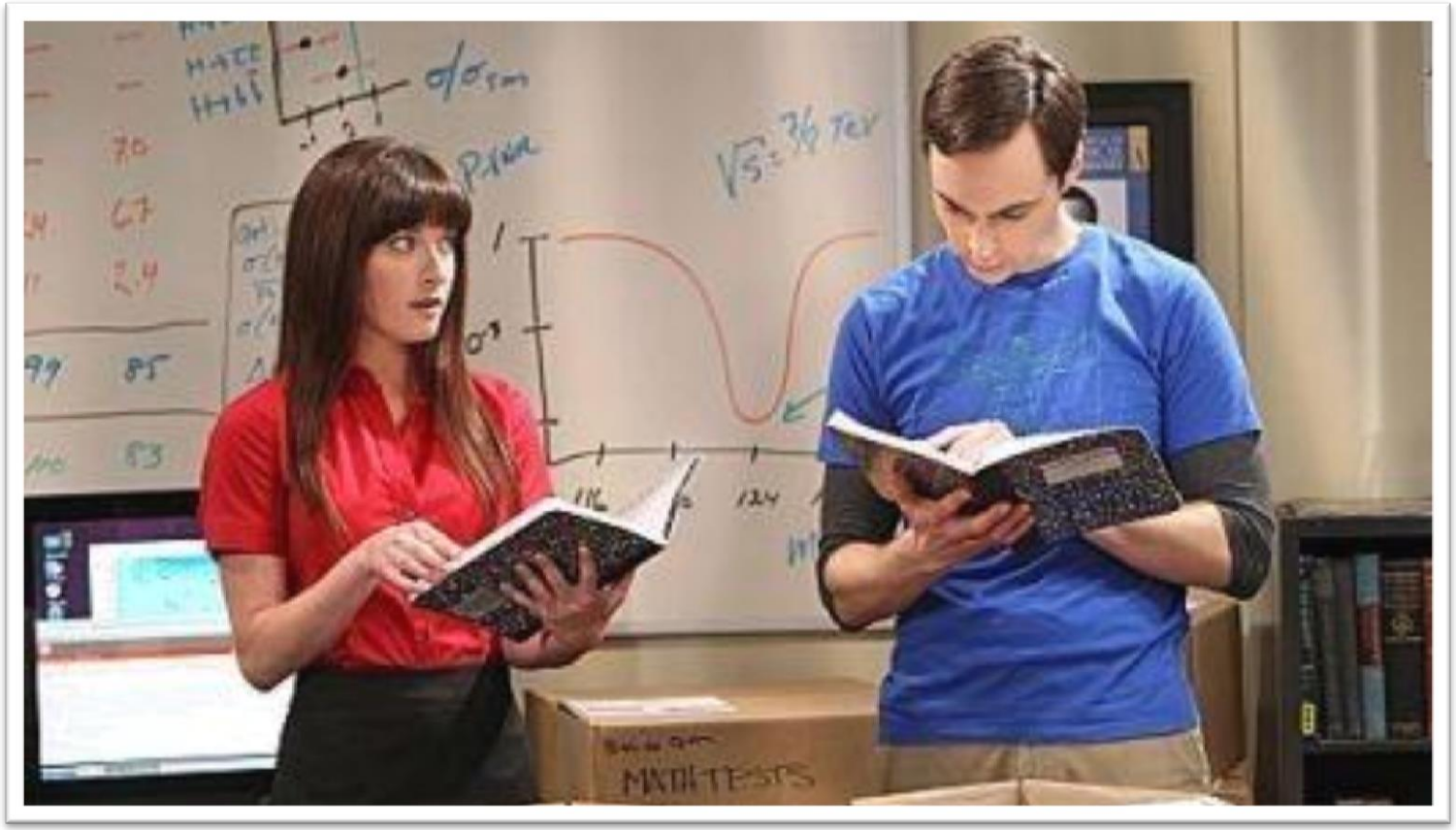
Face to face exams

Possible solutions

Cheating with the help of technology

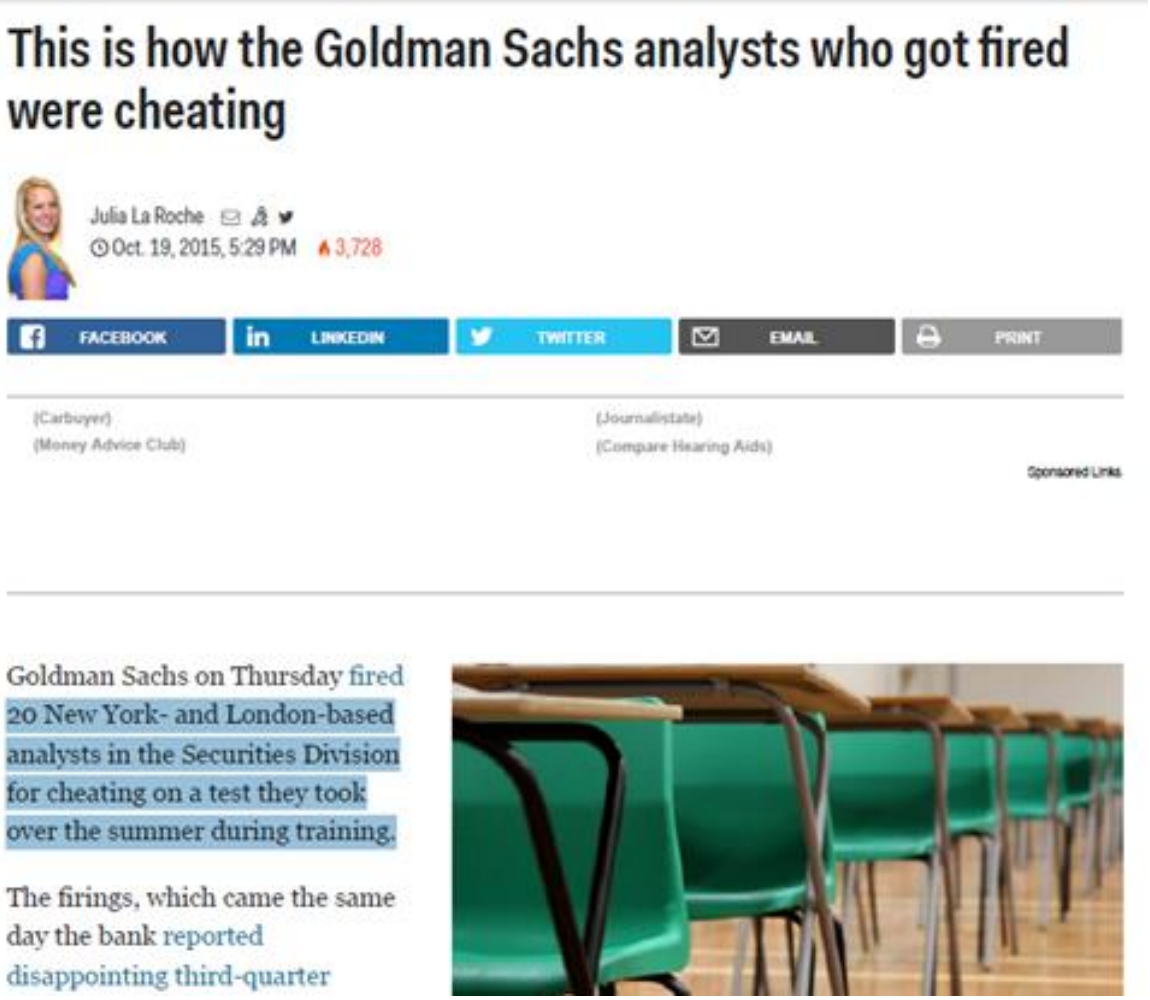


Impersonation as a form of cheating



There is even an example from the TV show *Big Bang Theory* where *Sheldon* tells his assistant to take an on-line sexual harassment course for him.

One good example of cheating



This is how the Goldman Sachs analysts who got fired were cheating

Julia La Roche
Oct. 19, 2015, 5:29 PM 3,728

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(Money Advice Club)

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(Compare Hearing Aids)

Sponsored Links

Goldman Sachs on Thursday fired 20 New York- and London-based analysts in the Securities Division for cheating on a test they took over the summer during training.

The firings, which came the same day the bank reported disappointing third-quarter

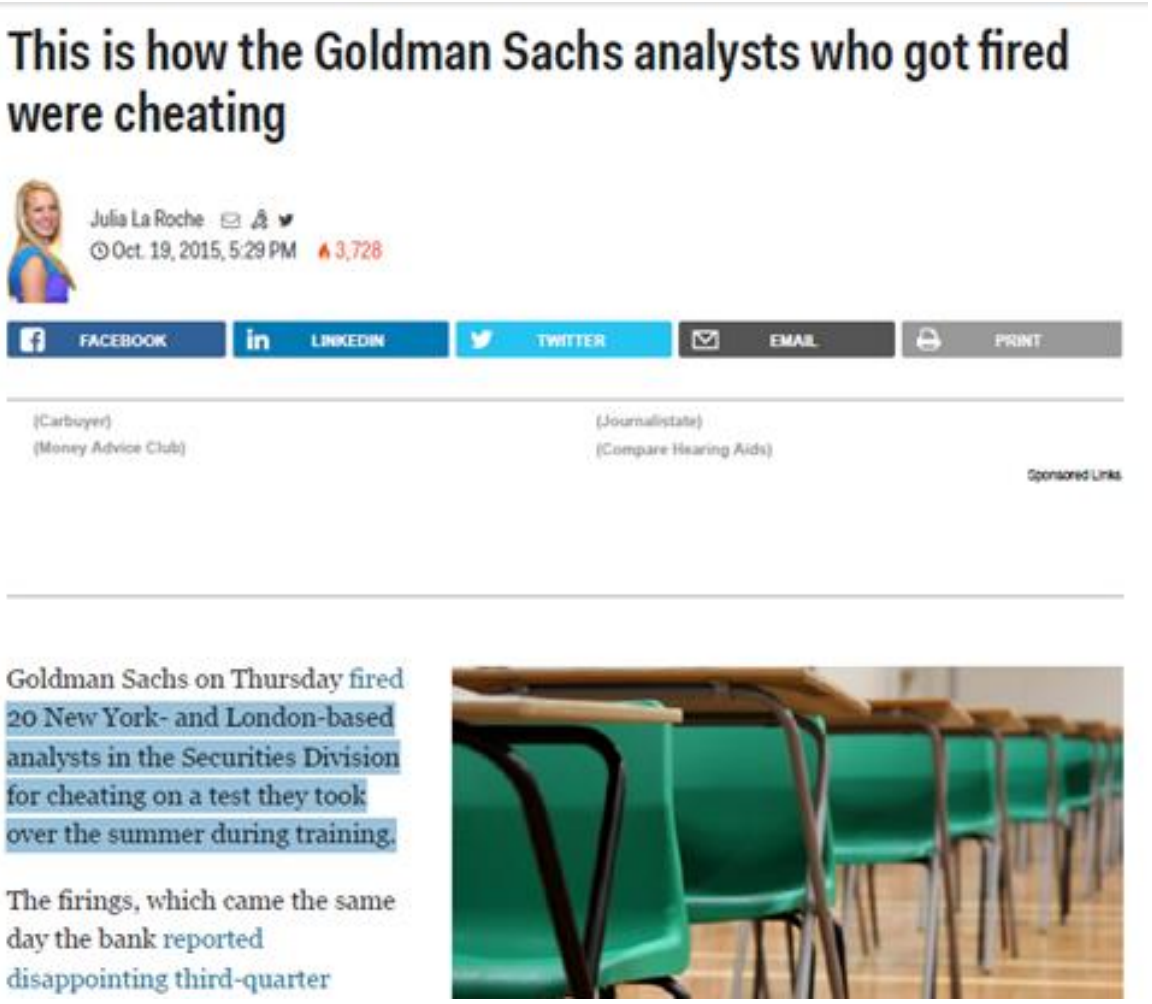
The premier global investment bank had caught some of the brightest young minds on Wall Street cheating.

Upon joining Goldman Sachs, analysts are put through a multiweek training and orientation program.

Goldman invests a great deal of resources in preparing its new recruits. During the training, hundreds of analysts attend classes in which different modules are taught and senior executives speak.

Throughout the program, trainees are tested on what they have learned. Goldman Sachs warned analysts repeatedly that cheating on the tests would be not tolerated.

Online cheating



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The analysts took a multiple choice exam that tested their knowledge of general finance.

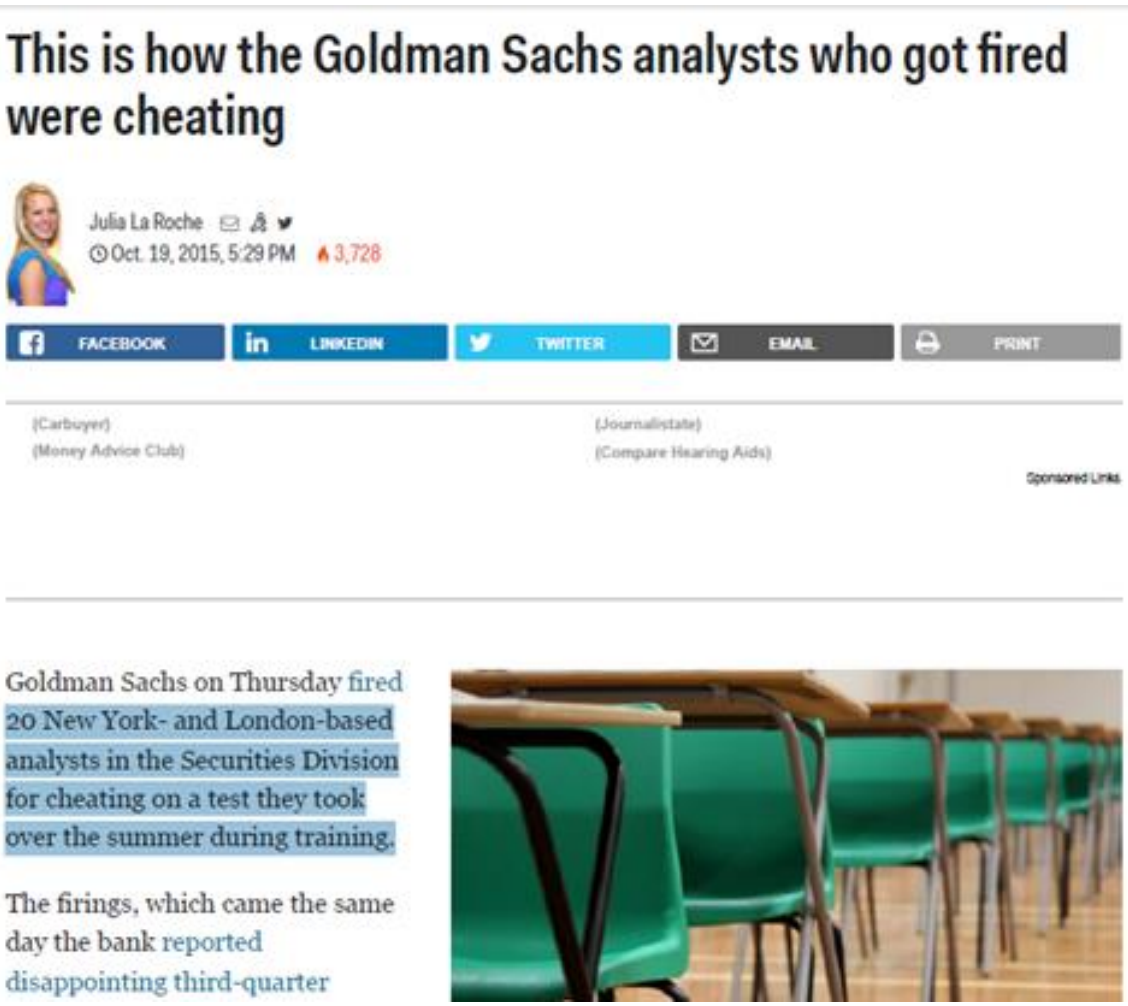
The analysts were given materials a couple of days beforehand to prepare. They had to score a 70% or higher to pass. If they failed, they would not lose their jobs; they could retake the test.

The exam was not seen as being especially difficult.

The cheaters, who were spread across different rooms, used their Goldman-issued computers to search terms that came up on the exam.

Goldman was able to trace the activity and as a result the careers of 20 or so analysts were cut short.

Online cheating



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Way the analysis have cheated?

The exams are described by the participants in the training as a "big waste of time." A person said "cheating was done only to get rid of them (the tests).“
"A lot of training is not finance-related and more on how to follow the internal rules and on the culture of integrity,“
One of the participants said "[I] would have been kicked out if I cheated in college, so what about a regulated working environment where I play with money?“

Michael Duvally, a Goldman Sachs spokesman in New York, said in a statement: "This conduct was not just a clear violation of the rules, but completely inconsistent with the values we foster at the firm."

Online cheating

Impersonation

Plagiarism

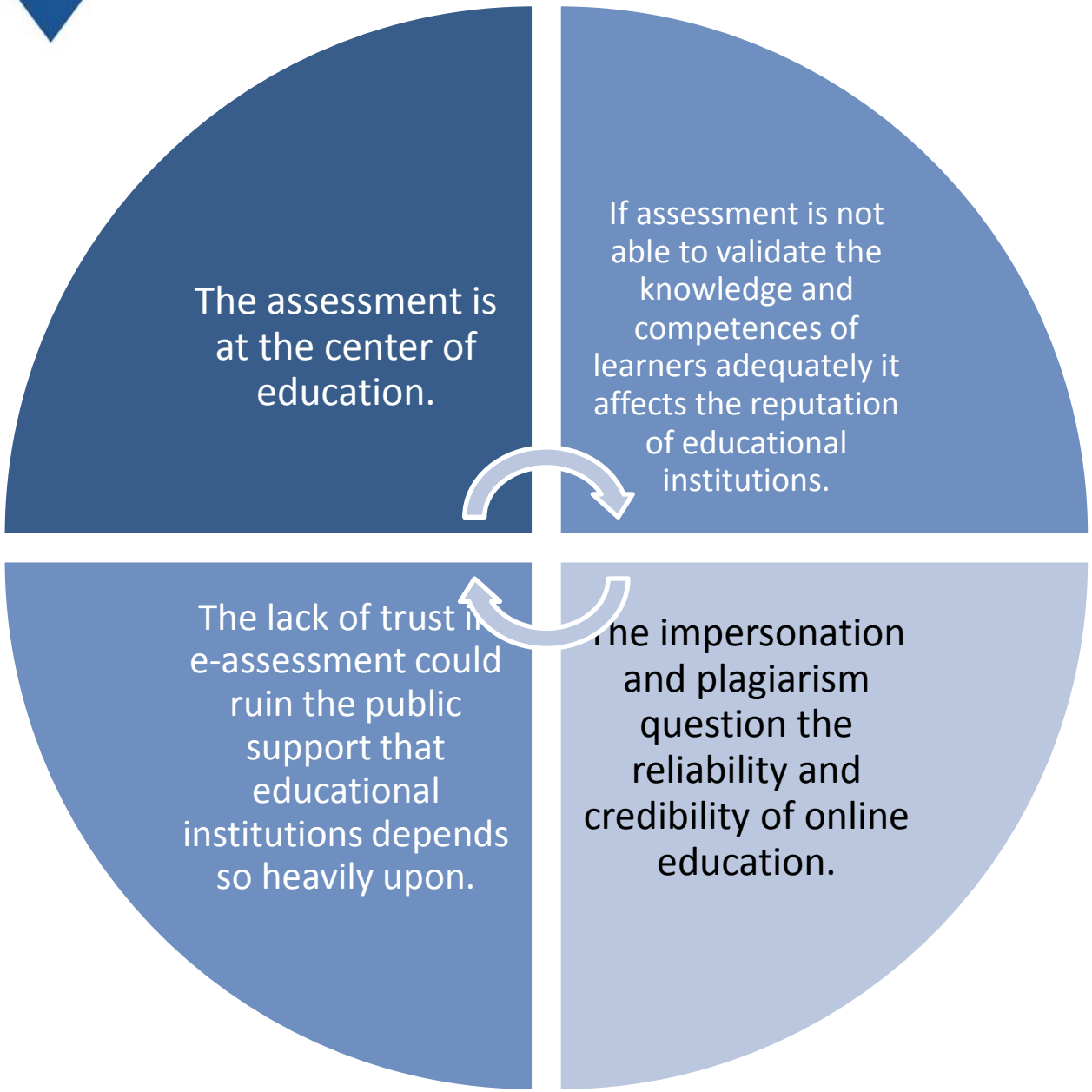
Impersonation - Is the learner really who they say they are?

- A common problem in online examination is verifying that the person at the keyboard is the actual learner registered.
- Some learners are tempted to have another individual take the exam for them.

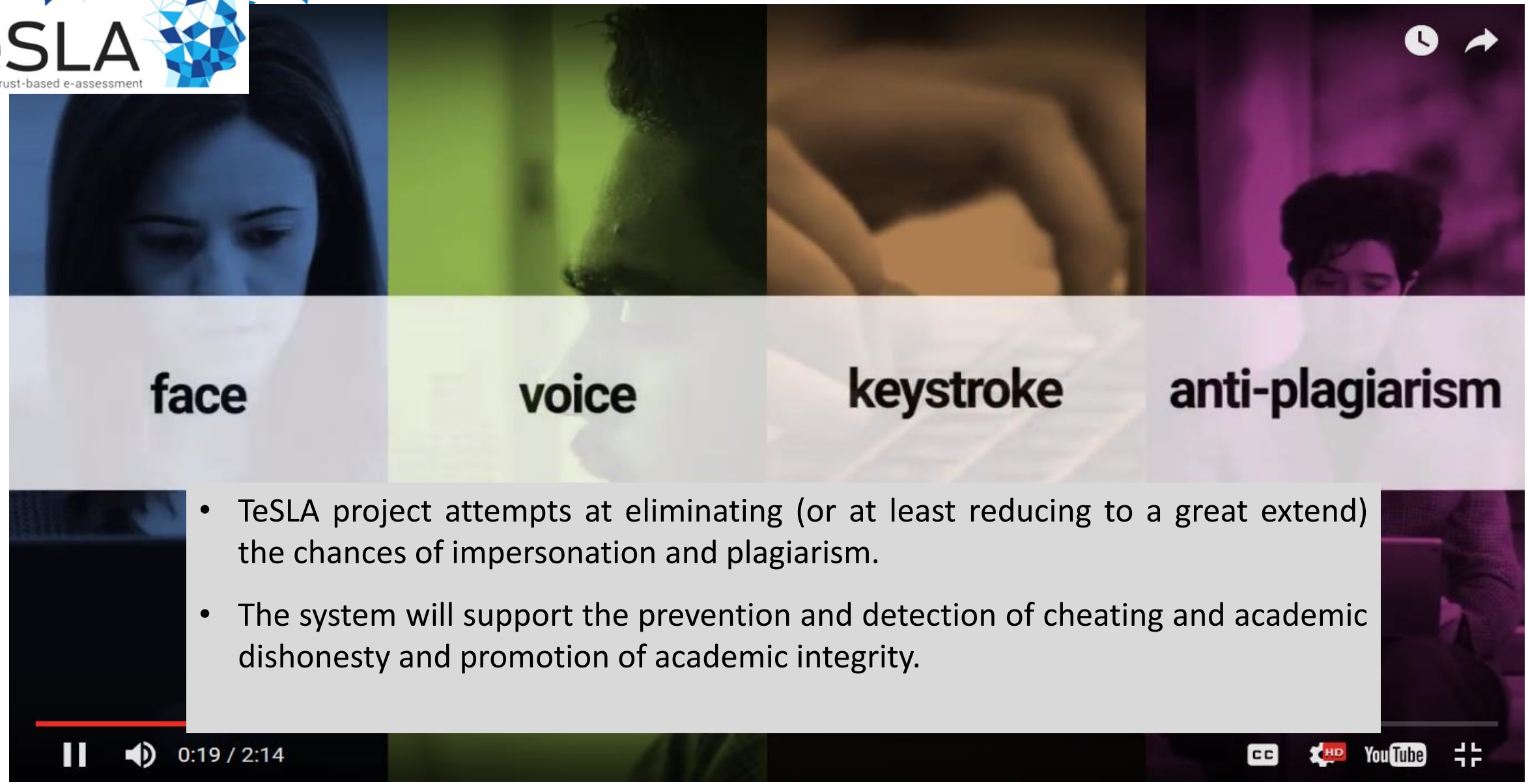
Plagiarism

Paraphrasing or copying a few phrases or sentences from either a written or web source (‘cut and paste’ plagiarism), using somebodies else work, or fabricating/falsifying a bibliography occur frequently.

Possible consequences of cheating on educational institutions' reputation



TeSLA
Adaptive trust-based e-assessment



- TeSLA project attempts at eliminating (or at least reducing to a great extend) the chances of impersonation and plagiarism.
- The system will support the prevention and detection of cheating and academic dishonesty and promotion of academic integrity.

About the TeSLA project

- Horizon2020 – ICT 20 (Information and Communication Technologies)
- Topic: Technologies for better human learning and teaching
- Type: Innovation Action, with Large Scale Pilots
  (Innovation Action means: 80% Innovation and 20% Research)
- Budget: € 6,000,000
- Implementation period: 3 years (2016-2018)

Objectives of the project

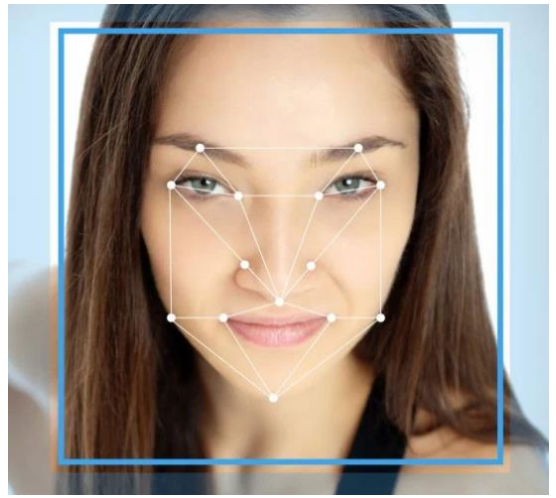
- The overall objective of the TeSLA project is to define and develop an e-assessment system, which ensures learners authentication and authorship in online and blended learning environments while avoiding the time and physical space limitations imposed by face-to-face examination.

- TeSLA will offer to educational institutions, accrediting agencies and to society an unambiguous proof of learners' academic progression, authorship and authentication during the whole learning process.

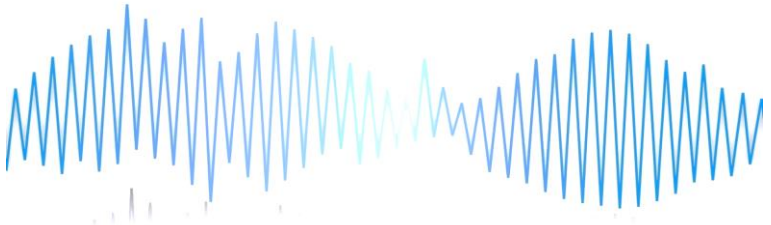
Instruments used

- Biometric instruments
- Text Analysis instruments

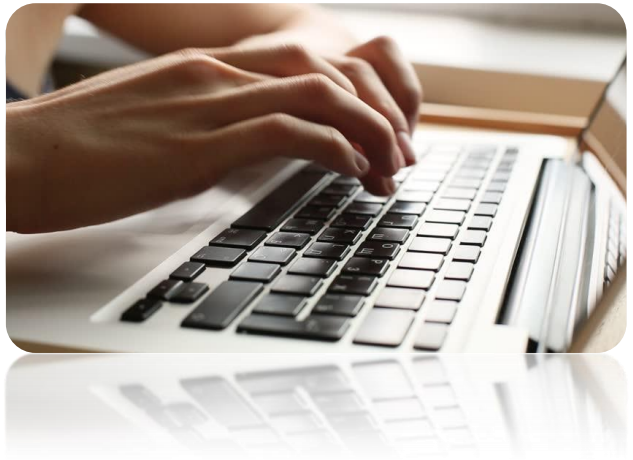
Face Recognition



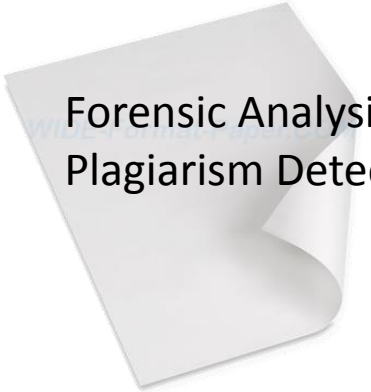
Voice Recognition



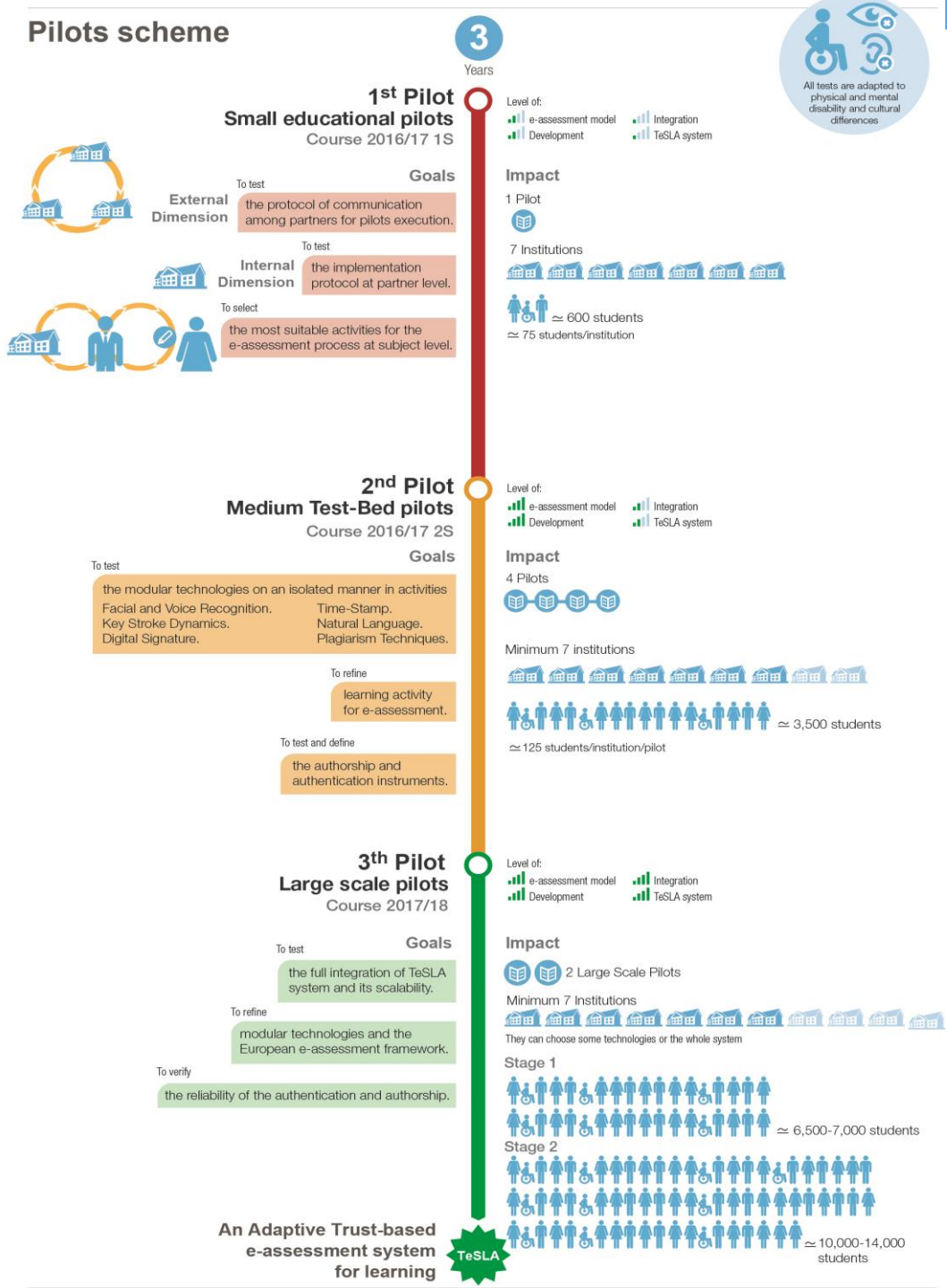
Keystroke Dynamics



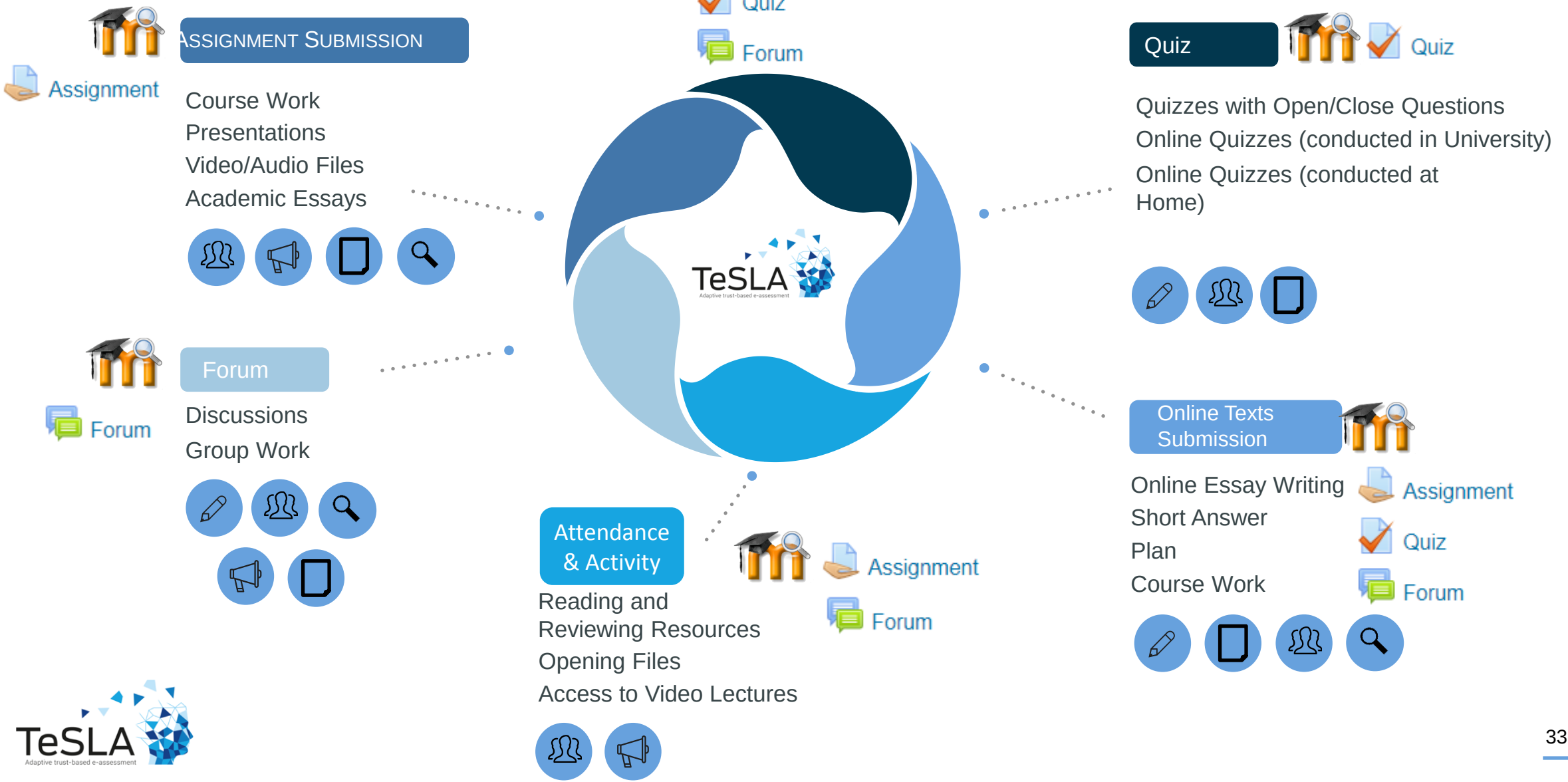
Forensic Analysis
Plagiarism Detection



Large Scale Pilots scheme



ACTIVITIES WHERE TESLA IS INTEGRATED



LEARNERS

In order to work with TeSLA system, learners have to follow these steps.

A)

Signing the Informed Consent

B)

Enrolling in TeSLA (only for biometric instruments)

C)

Complete an Assessment Activity

TeSLA results. -

Tesla Instructor Tool / TeSLA results. -

Search student

- Antoni
- pilot3a_user5 pilot3a_user5
- pilot3a_user3 User3
- Анна-М
- Герган
- Ивета
- Мария
- Мария
- Аделин
- Светла

It will be visible only the configured instruments or the corresponding alternatives, if any

Evaluation result	Start date	End date	Audit
0.0%	May 18th 2018, 11:42:36 am	May 18th 2018, 11:42:49 am	More info
67.3%	May 18th 2018, 11:42:44 am	May 18th 2018, 11:42:55 am	
74.4%	May 18th 2018, 11:42:53 am	May 18th 2018, 11:43:00 am	
81.2%	May 18th 2018, 11:43:02 am	May 18th 2018, 11:43:38 am	
80.0%	May 18th 2018, 11:43:09 am	May 18th 2018, 11:43:43 am	
0.0%	May 18th 2018, 12:04:08 pm	May 18th 2018, 12:04:30 pm	More info
70.1%	May 18th 2018, 12:04:15 pm	May 18th 2018, 12:04:34 pm	
71.6%	May 18th 2018, 12:04:23 pm	May 18th 2018, 12:04:38 pm	

Consortium

- TeSLA consortium is composed by Higher Education institutions and research centers in collaboration with technological companies as well as accrediting quality agencies.

It is formed by 18 partners:

- 8 universities
- 3 quality agencies
- 4 research centers and
- 3 companies.

Universities

- Universitat Oberta de Catalunya – Spain
  http://www.uoc.edu/portal/en/index.html
- University of Namur ASBL – Belgium
  http://www.unamur.be/en
- Open Universiteit of the Netherlands- Netherlands
  https://www.ou.nl/web/english/home
- Sofia University – Bulgaria
  https://www.uni-sofia.bg/index.php/eng
- Open University – UK
  https://www.uni-sofia.bg/index.php/eng
- Imperial College London – UK
  https://www.imperial.ac.uk/
- Technical University of Sofia – Bulgaria
  http://www.tu-sofia.bg/
- Anadolu University (AU) – Turkey
  https://www.anadolu.edu.tr/en
- University of Jyvaskyla (JYU) – Finland
  https://www.jyu.fi/en
- Institut Mines-Telecom (IMT) – France
  https://www.mines-telecom.fr/en/

Quality Assurance Agencies

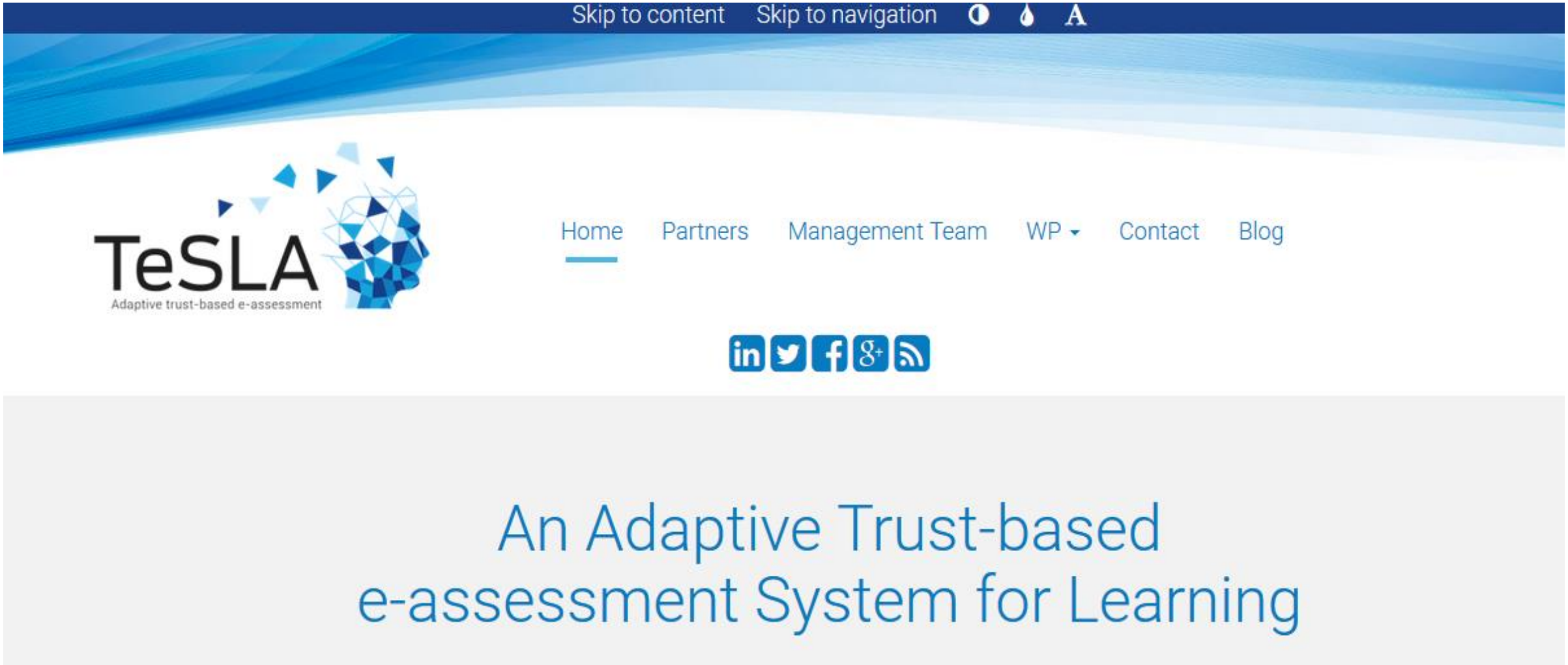
- European Association for Quality Assurance in Higher Education AISBL (ENQA) – Belgium
- Catalan University Quality Assurance Agency (AQU Catalunya) - ИспанияOpen Universiteit of the Netherlands – Netherlands
- European Quality Assurance Network for Informatics Education EV (EQANIE) – Germany

Technology companies

- LPLUS GmbH – Germany
- Protos Sistemas de Información S.L. (protOS) – Spain
- WFSW SA (Watchful) – Portugal

Site of the TeSLA project

http://tesla-project.eu/



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