1. Joint Research Centre (JRC), the European Commission’s science and knowledge service
   1. concept of **self-sovereign identity----**user stores their own personally identifiable information on a personal device. (token)
   2. certification as token, transfer on blockchain
   3. private/permissioned chain due to growth in size
   4. person is identified by their public key.
   5. Blockcert for issuing and verification
2. Sony/ Sony Corporation and Sony Global Education

(https://www.sony.net/SonyInfo/News/Press/201602/16-0222E/index.html)

* 1. built on IBM Blockchain, which is delivered via the IBM Cloud and powered by Hyperledger Fabric 1.0
  2. 1) a function that authenticates and controls usage rights to educational data, and 2) an application programming interface for handling these rights aimed at educational institutions.

1. **Attores/Open Certificates**
2. **Gradbase** and **Stampery**
3. CCEG(Centre for citizenship enterprise and governance) Blockchain UN Lab

Seratio: Blockchain Educational Passport: Decentralised Learning Ledger (DLL)

* 1. the DLL will account for traditional certificates, but also for the acquisition of students and staff learning taking place in informal contexts, at the workplace and through outreach activities, such as volunteering. Each student and member of staff will have a personal L-wallet (Learning wallet) attesting contribution to learning set against the knowledge procurement framework.
  2. It digitally captures the intangible and non-financial value through the Social Earnings Ratio (S/E Ratio) which has the ability to digitize value, turns sentiment into tokens, and uses Fast Data (typically less than 10 seconds) – perfect for blockchain transactions to complete.
  3. Seratio blockchain（have not clear）.

1. e Institute for the Future (IFTF) and the ACT Foundation
   1. learning like a currency that can be exchange

Questions to answer:

1. What is the benefit to build educational passport on blockchain
2. **Mining costs –** the current high costs and energy wastefulness of the process of mining.

User case:

