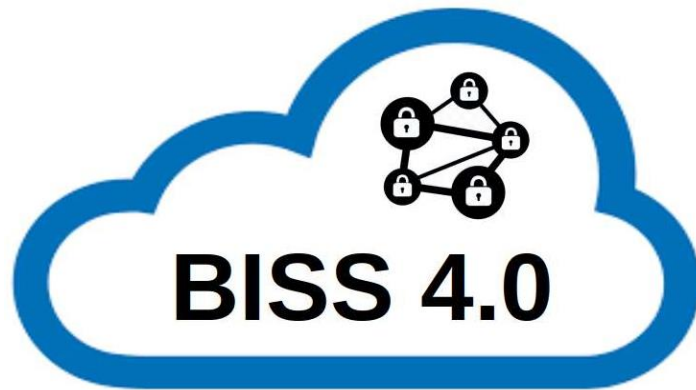


# Blockchain-Technologien im Schaltschrank (BISS) 4.0

Prof. Dr. Christoph Reich (rch@hs-furtwangen.de)

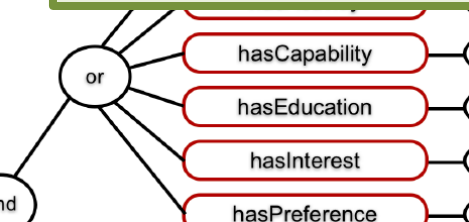


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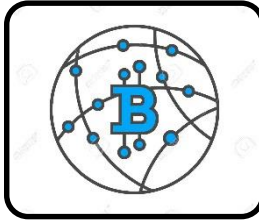
Research Project BISS4.0

[https://www.hs-furtwangen.de/  
forschung/forschungsprojekte/biss40](https://www.hs-furtwangen.de/forschung/forschungsprojekte/biss40)



Cloud  
Computi

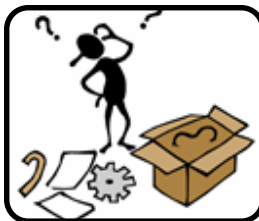




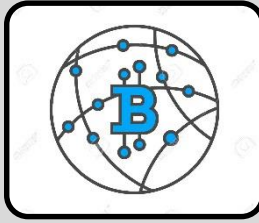
Motivaton/Blockchain



Projektziele



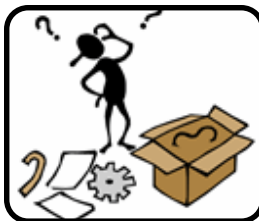
Arbeitspakete



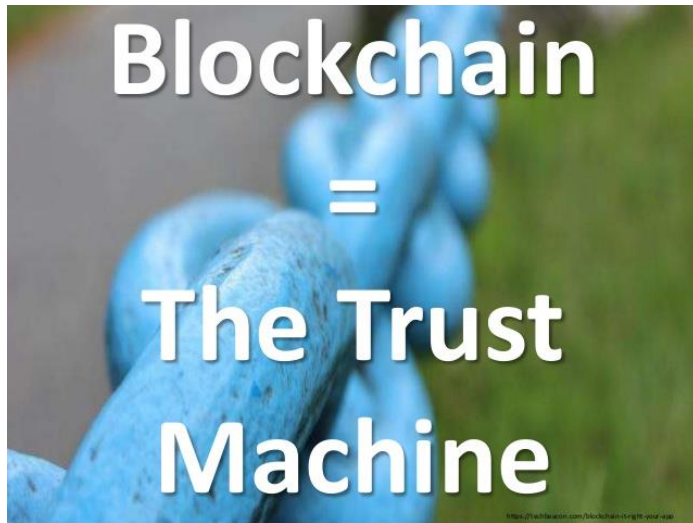
Motivaton/Blockchain



Projektziele

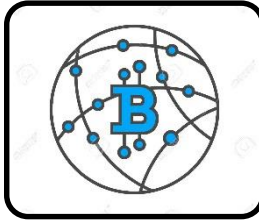


Arbeitspakete



- Decentralized database
- Trusted transfer of assets, value & ownership
- P2P: not owned by a single instance
- State distributed to all nodes

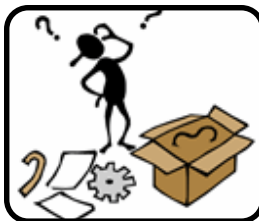
- Any member can add transactions (if others agree)  
Consensus mechanism
- Immutable, tamper-proof
- Smart contracts facilitate, verify, or enforce negotiations between participants



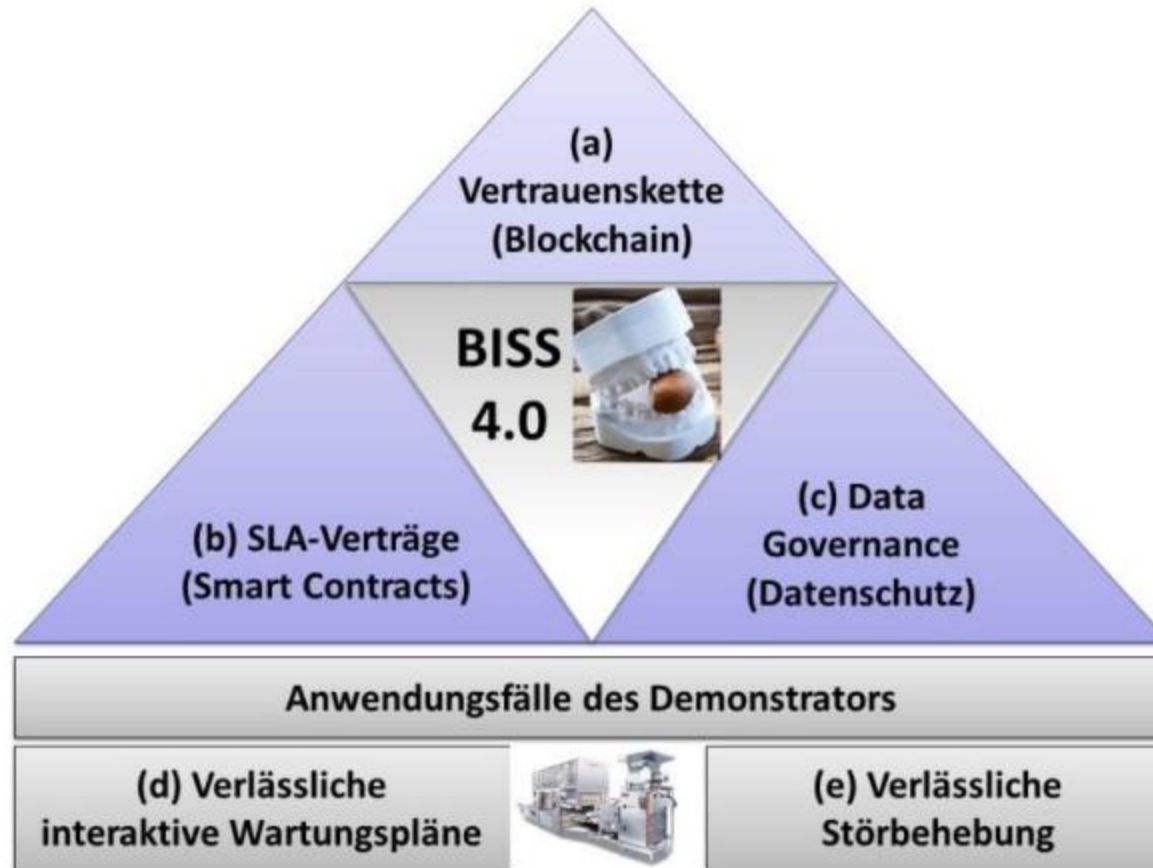
Motivaton/Blockchain



Projektziele



Arbeitspakete

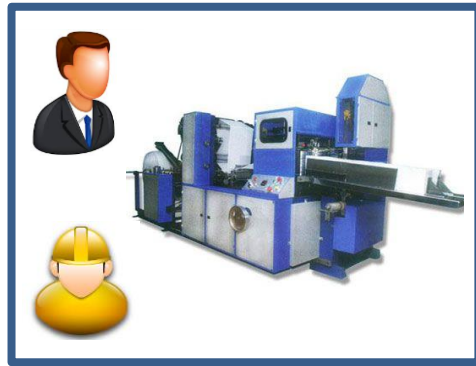


## Maintenance

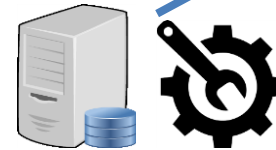
Stakeholder:

Machine Manufacturer

Technician



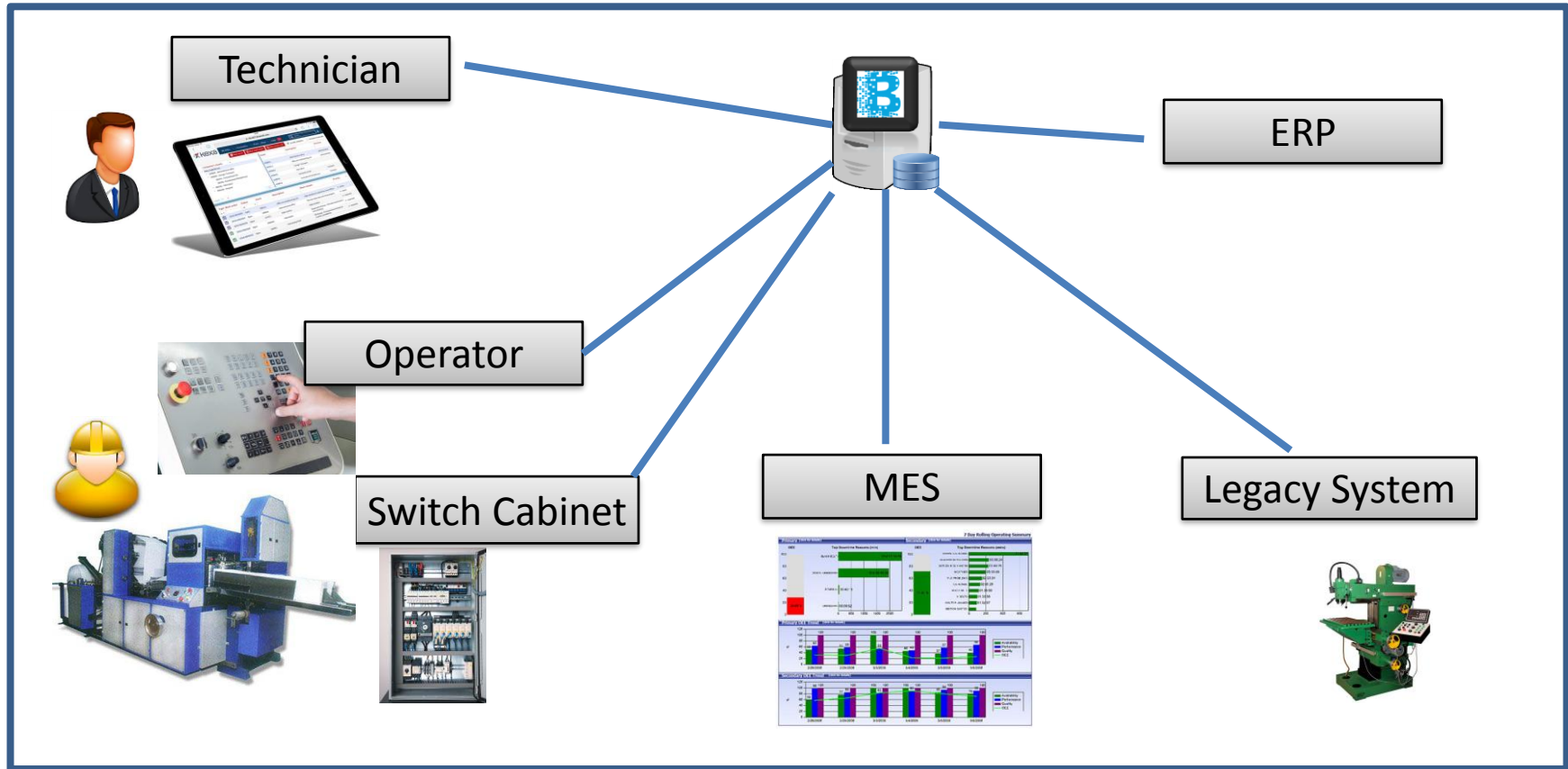
Operator



Spare Part  
Provider

Maintenance Service Provider

# Blockchain Participants inside a smart factory





```

contract Maintenance {
  /* Define */
  boolean productionLineClean;
  int temperatureOfProductionLine;
  boolean accessProductionLine;
  time usageOfProductionLine;
  time remoteCheck;
  bytes publicKey; //ID
  bytes signature;

  /* daily check of cleanliness of production line */
  function cleancheck(bytes id, bytes sig, Boolean clean){
    publicKey = id; signature = sig;
    productionLineClean = clean;
  }

  /* hourly temperature protocol of production line */
  function temp(bytes id, bytes sig, int temp){
    publicKey = id; signature = sig;
    temperatureOfProductionLine = temp;
  }

  /* daily check of production line condition */
  function productionLineCheck(bytes id, bytes sig){
    if(17:00 >= daytime <= 18:00) then {
      call giveRemoteAccess();
      if(ok) then {
        publicKey = id; signature = sig;
        remoteCheck = time;
      }
    }
  }
  .....
}

```



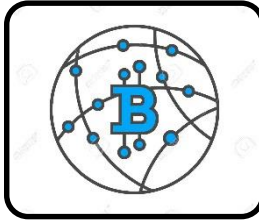
Maintenance Technician



Maintenance Service Provider



Gateway



Motivaton/Blockchain

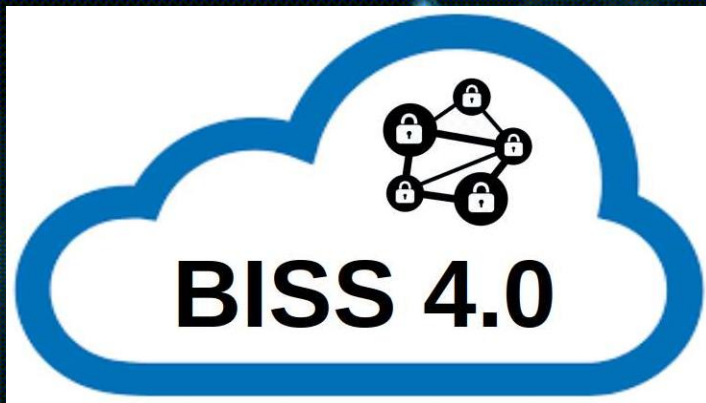


Projektziele



Arbeitspakete





## Research Project BISS4.0

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