Tampere University

Factory Belt:

Secure and Trusted Industry 4.0 Architectures

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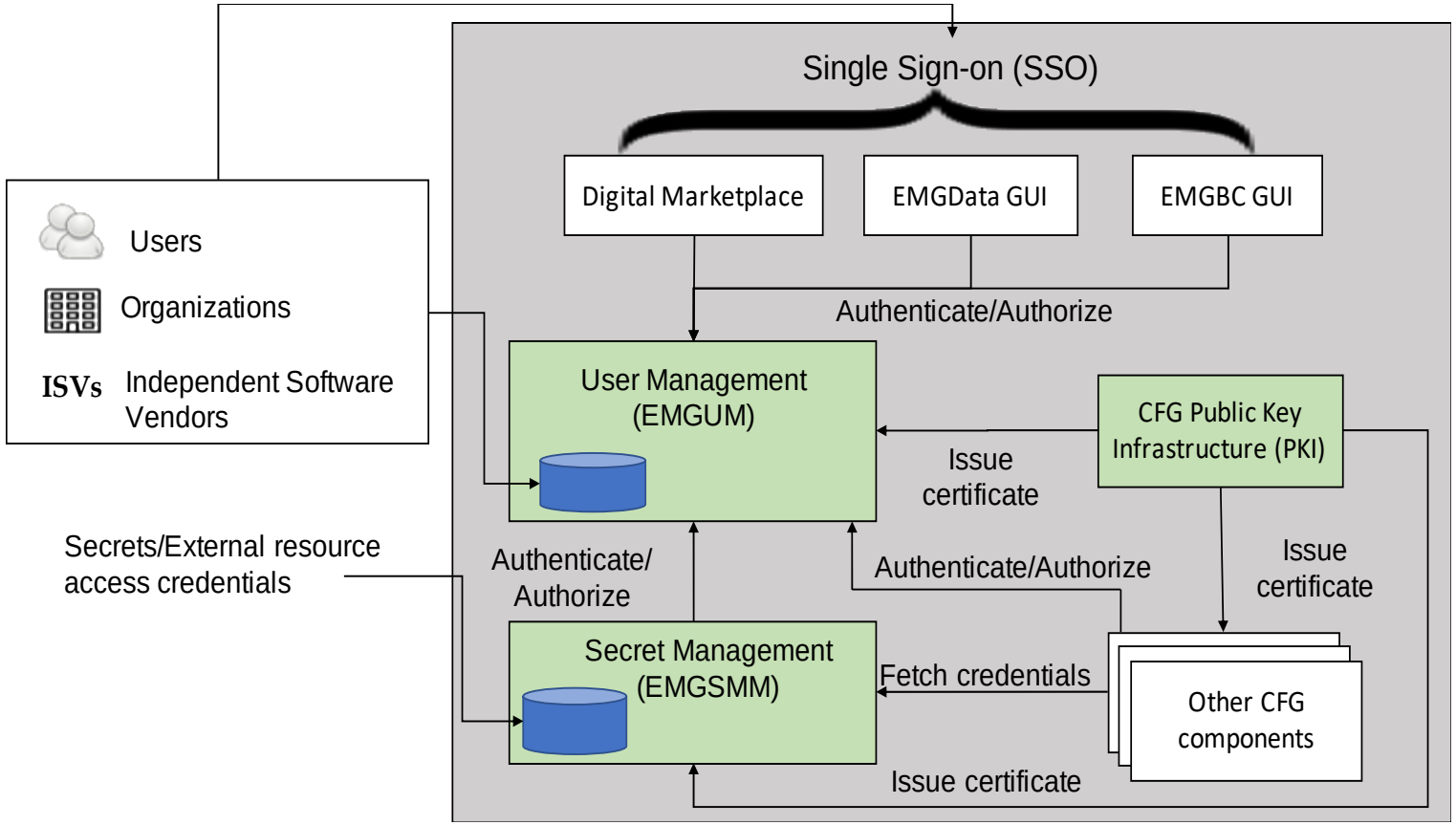
Contribution

- Security Requirements when building smart factories
- Security mechanisms in the CloudiFacturing Project
- Security in the DIGITBrain project
- Help protocol designers to build novel security protocols that can squarely fit the specific needs of Industry 4.0

Key security requirements of CloudiFacturing

- Confidentiality and integrity of manufacturing process and simulation data
- Single sign-on access to all services of CFG solution
- Authenticated and secure connections between the manufacturing process or simulation data owner and the cloud provider
- Authenticated and authorised access to services and processing of data
- Secure transfer of input and production data to/from end-user to compute and storage resources
- Secure storage and handling of external resources' credentials

CloudiFacturing Security Framework

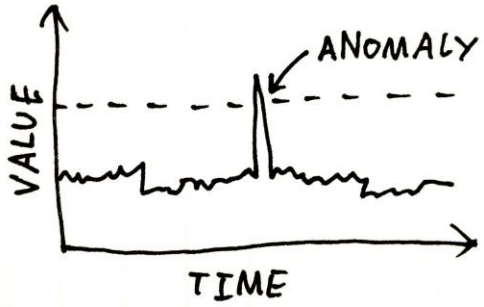


- EMGUM
  - Responsible for authentication, authorization and security policy management
  - Based on OpenID Connect (OIDC) standards
- CFG PKI
  - Secure mutual authentication between certified CFG components
- EMGSMM
  - Secure storage and retrieval of credentials for platform external resources

Identified Security Requirements

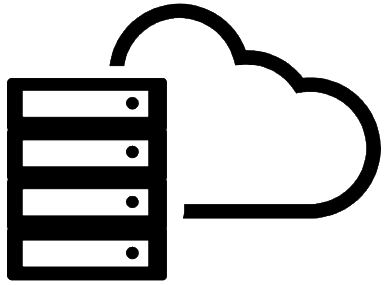
Secure Execution Layer

Crypto Layer



Anomaly Detection Layer

Analytics Layer



Edge Multicloud Layer

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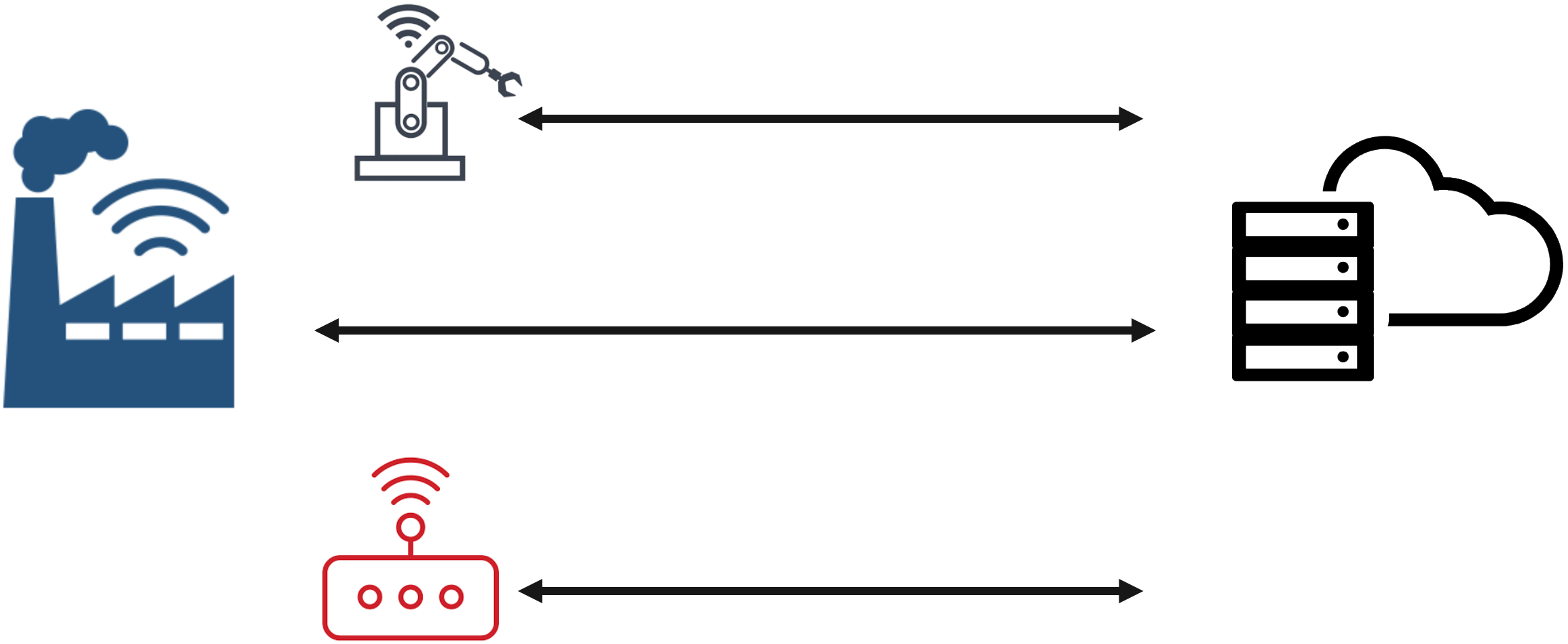
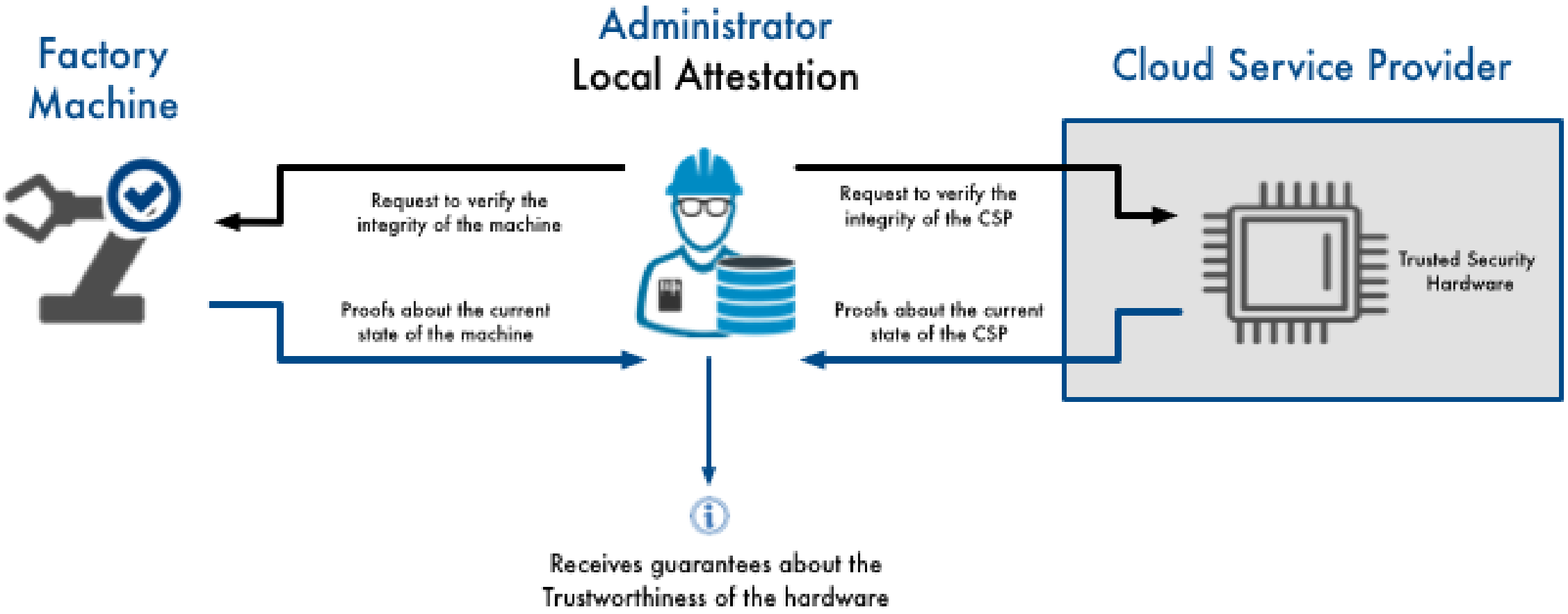
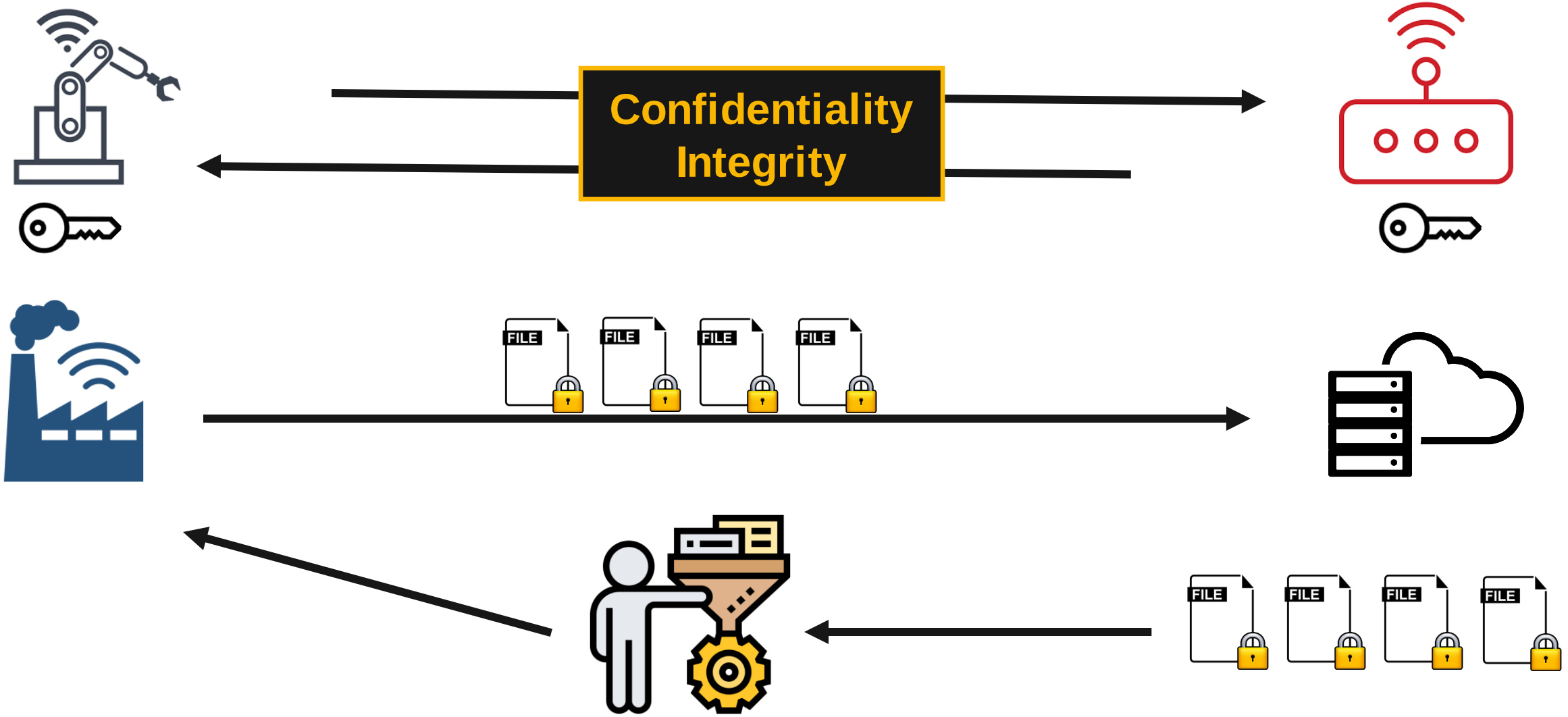
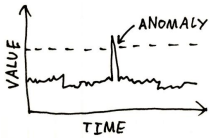


Secure Execution Layer

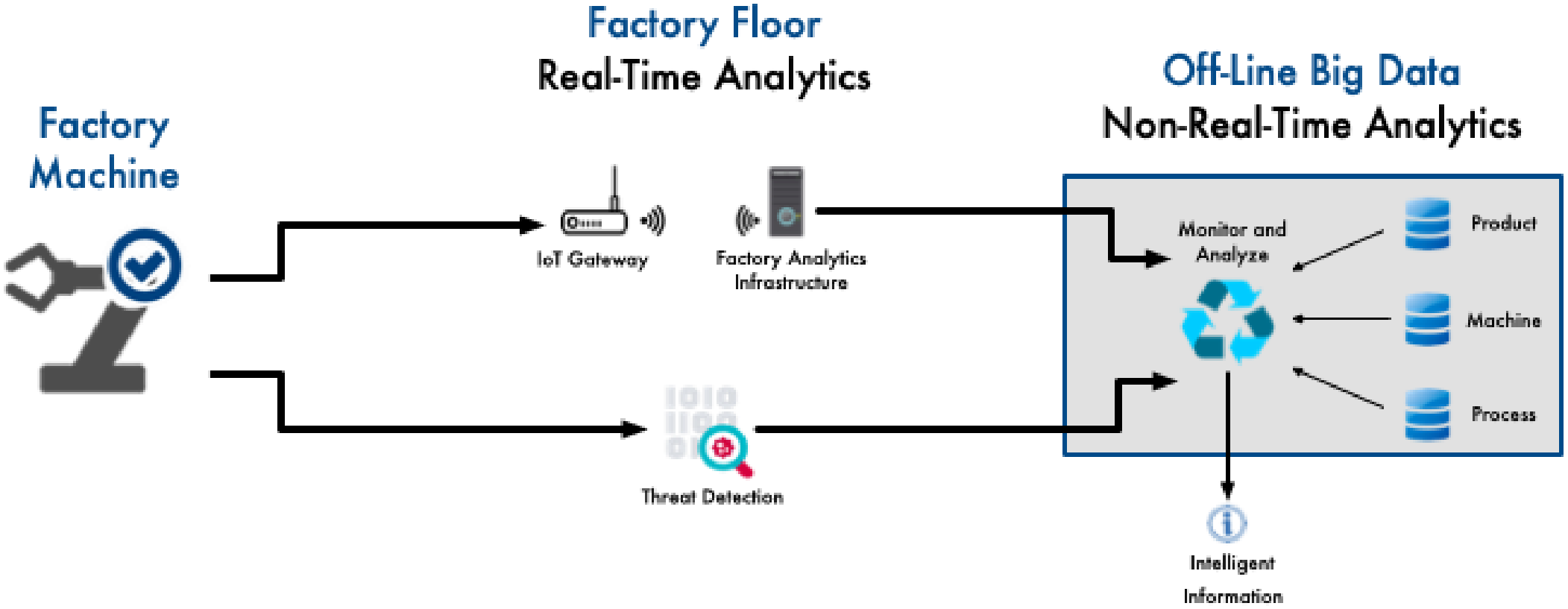
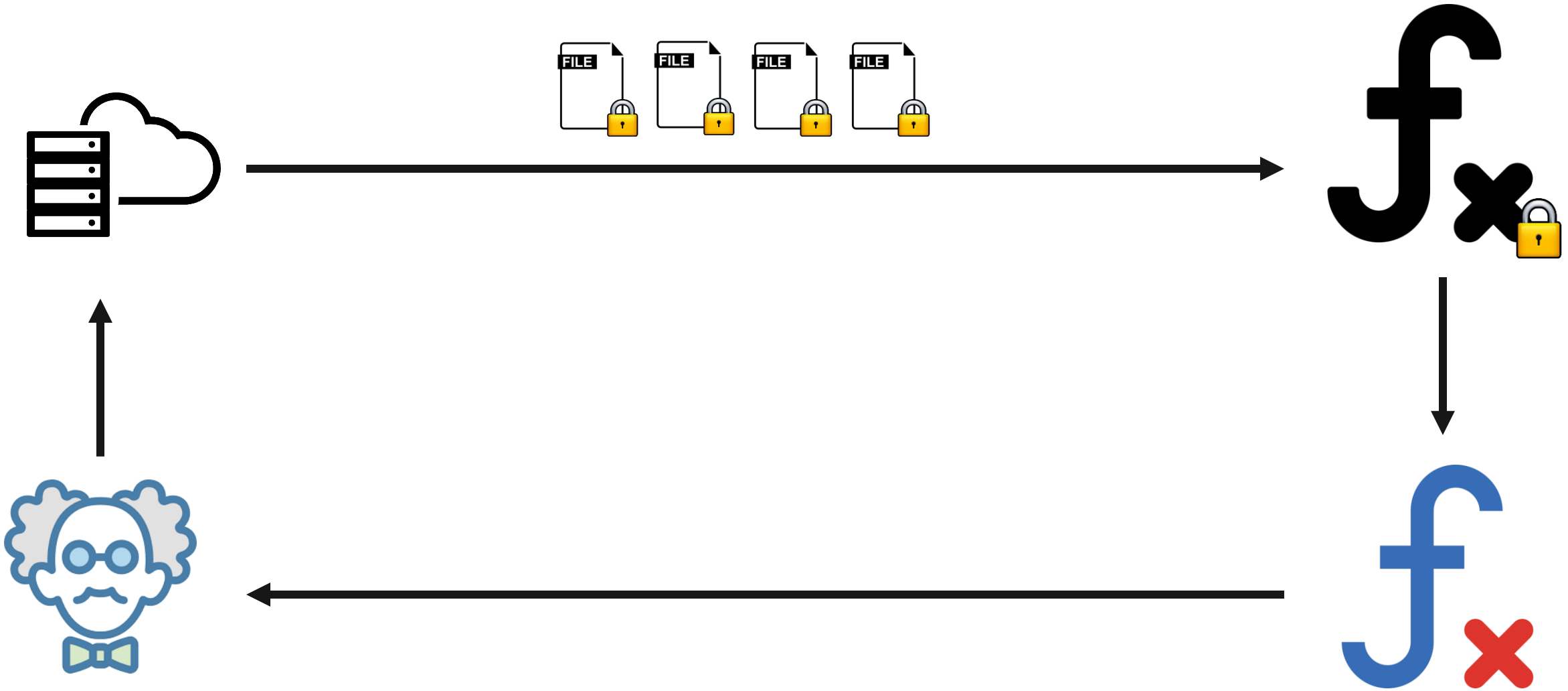


Crypto Layer





Anomaly Detection Layer



Analytcis Layer