

Digital Twin: Cocktail Bar Mixing Unit

LMTec Group; Gabrielle Walker (UTS), Nour-El Houda Khelifi (HTW), Julian Hemsing (HTW), Aya Khaleel (HTW), Pooja Darji (UTS)

INTRODUCTION

PROBLEM SPACE

PROJECT TARGET

SOLUTION
DEMONSTRATION

CONCLUSION



Gabrielle Walker (Dev Lead), UTS



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Julian Hemsing (Scrum Master), HTW

LMTEC DIGITAL SOLUTIONS

is a global consulting & systems integration alliance and also channel partner of Siemens Digital Industry Software



Pooja Darji (Developer), UTS

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PROBLEM SPACE

lack of open/non-proprietary standards
for exchanging data and/or linking
different systems

INDUSTRY 4.0

ASSETS &
DIGITAL TWINS

DATA
MANAGEMENT



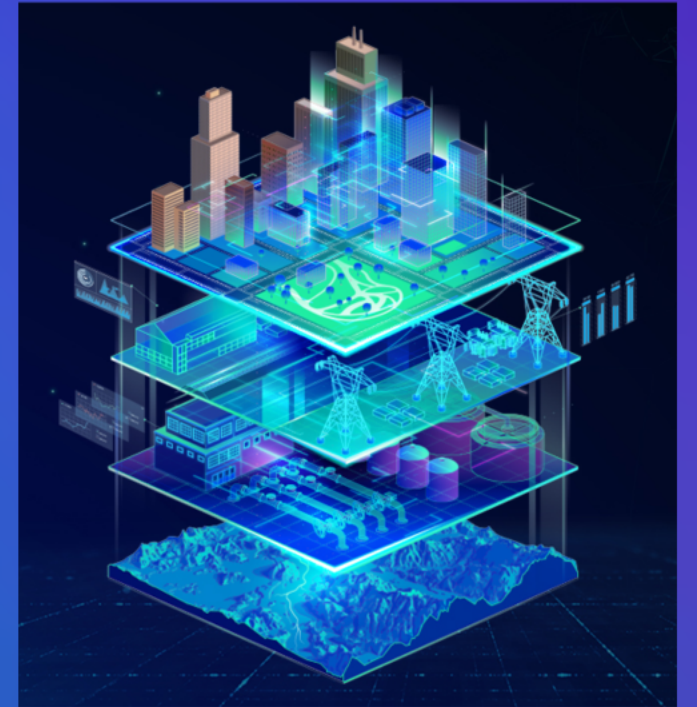
INDUSTRY 4.0: DIGITIZATION OF THE INDUSTRIAL SECTOR

- Occured through the rapid networking of industry machines and processes assisted by advances in information and communication technology
- Has lead to increased automation, predictive maintenance, self-optimazation of process improvements, new levels of efficiencies and responsiveness to customers

WHAT'S AN ASSET AND A DIGITAL TWIN?

Asset: Anything of value to a company e.g. parts, components, requirements, documents, processes, etc etc

Digital Twin: a digital copy of an asset with the objective of data exchange between real and digital world



WHAT DO WE DO WITH SO MUCH DATA?

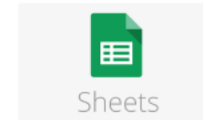
Poorly interconnected system environments may lead to:

- data inconsistencies
- data loss
- data redundancy

WHERE'S ALL MY DATA?



Teamcenter



Google Sheets



Polarion

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WHAT SHOULD BE IMPLEMENTED?

- unified data retrieval system that connects all data management sources using the Asset Administration Shell (AAS)

AAS

MICROSERVICES

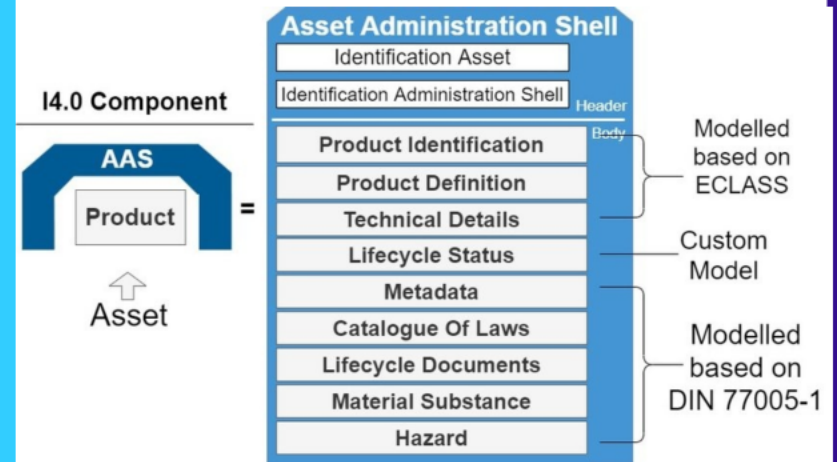
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AAS

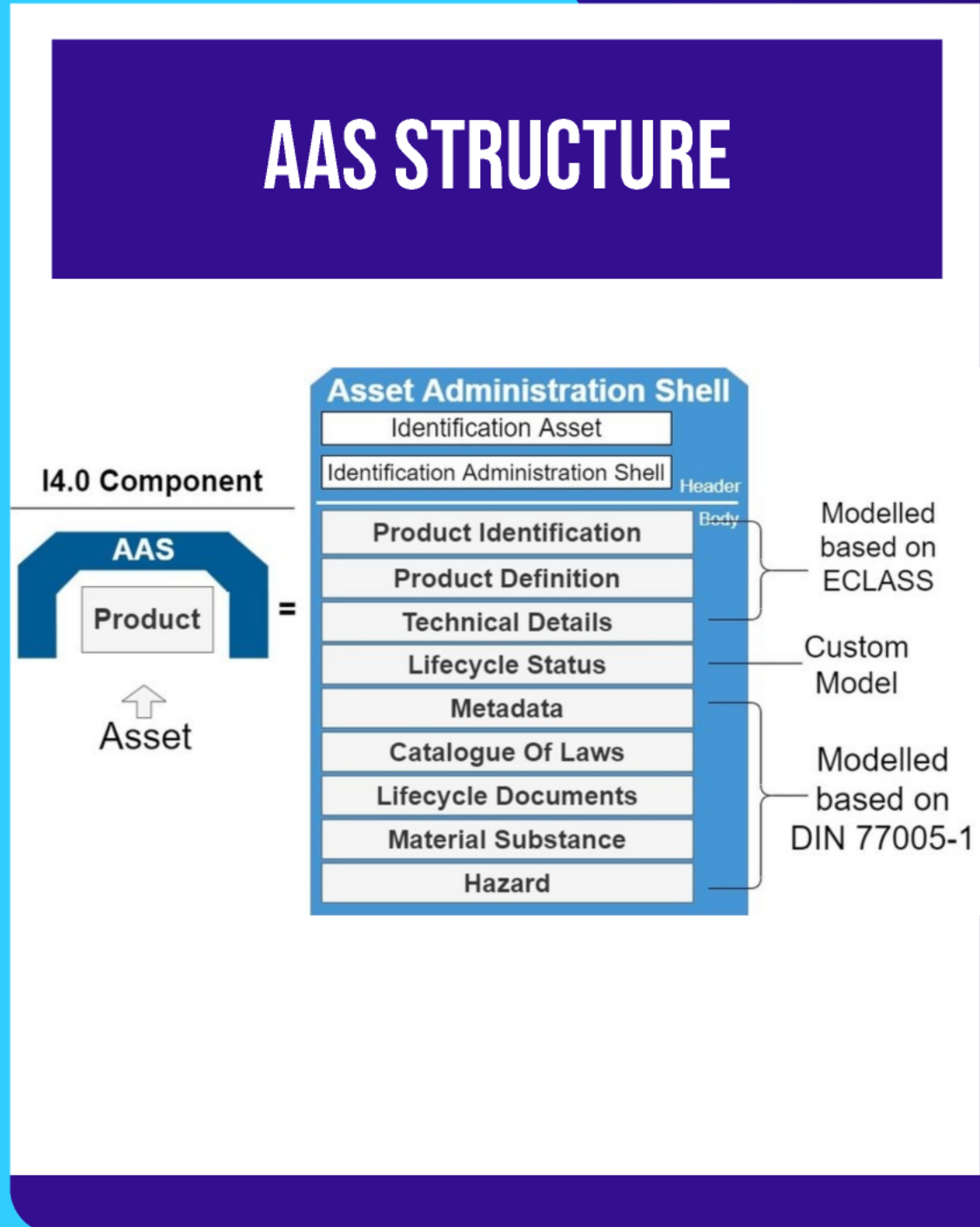
- represents digital copy of an asset in a standardized way
- AAS repositories contain & provide data as well as incoming requests
- Our target: use AAS properties to build request URLs to further data sources. Use the AAS to hold asset relation information as well as asset meta information from authoring systems

AAS STRUCTURE



AAS

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MICROSERVICES

- should deliver:
 - *Teamcenter* data as requested
 - data distribution from authorizing system to recipient
 - access to data from anywhere
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Solution
Demonstration

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CONCLUSION

- data handler enables fast & efficient processing of data
- provider of a central platform for data sources integration
- significant contribution to realization of *Industry 4.0 & Internet of Things (IoT)*

FUTURE DEVELOPMENT

FUTURE IMPROVEMENTS



- **integration of machine learning algorithms:**
 - predict conditions & optimize production processes
- **blockchain technology:**
 - security for decentralized storage of AAS data
- **integration of human machine interface (HMI):**
 - easier user interaction via augmented/virtual reality

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