



# REGIONAL HIGHER EDUCATION POLICY FORUM ON UNIVERSITY LINKS FOR INDUSTRY ENGAGEMENT

Manila, Philippines | 7-8 March 2019

Supported by



INKA as a strategic technology-based government industry  
And the one and only integrated facilities industry in SOUTHEAST ASIA since 1981



Manufacture office : 22.5 HA  
Employee : 868 person



Preparing  
Branch New workshop at 2020

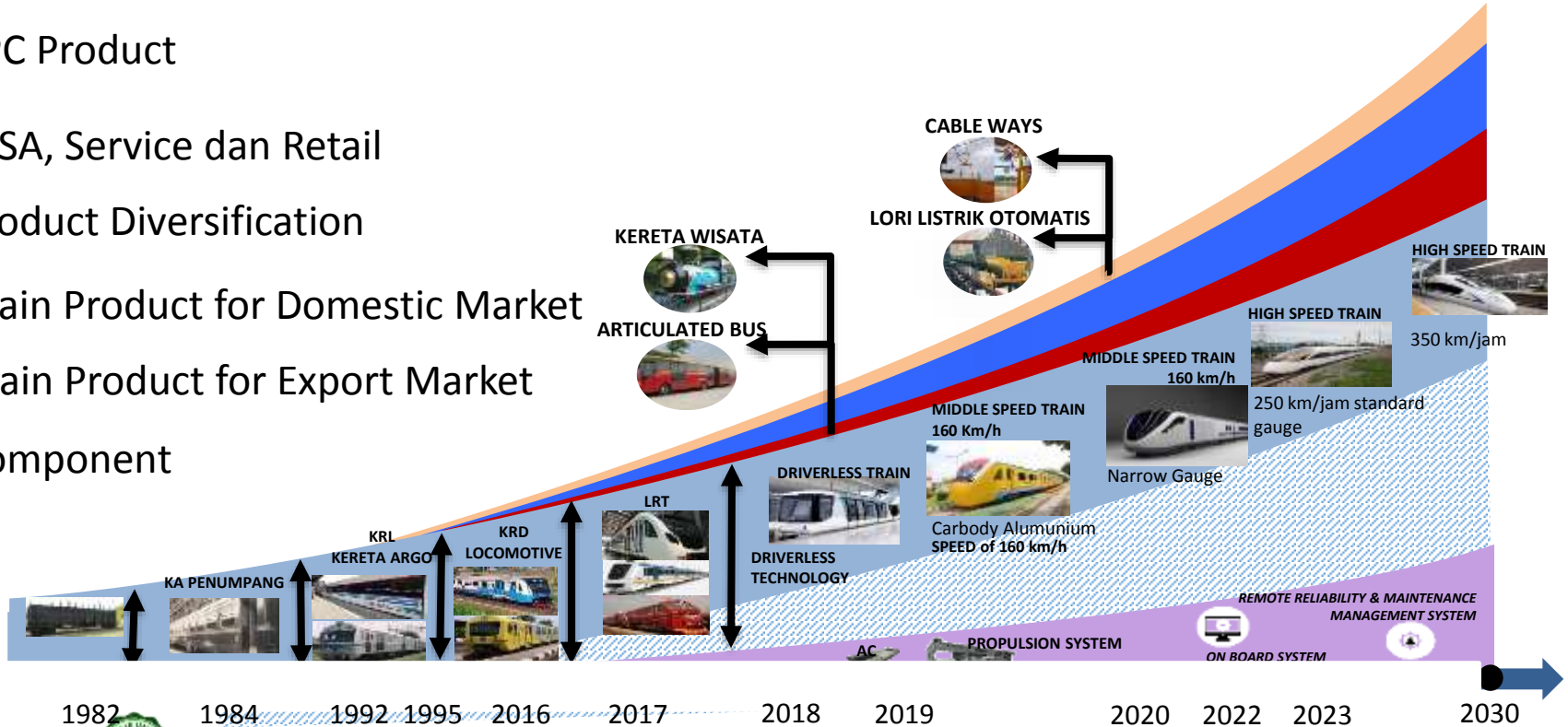
: -/+ 80.0 HA

**SCOPE BUSINESS :**

- Rollingstock Manufacturing
- Re-Engineering
- Trading, Transportation Product, Project epc, Maintenance and Service

# ROADMAP PRODUCT INKA 1981 – 2030

- EPC Product
- MSA, Service dan Retail
- Product Diversification
- Main Product for Domestic Market
- Main Product for Export Market
- Component



FREIGHT WAGON



EMU for AIRPORT

(Electric Multiple Unit)



LOCOMOTIVES



PASSENGER COACH

Export



REGIONAL TRANSPORT



LRT

(Light Rapid Transit)




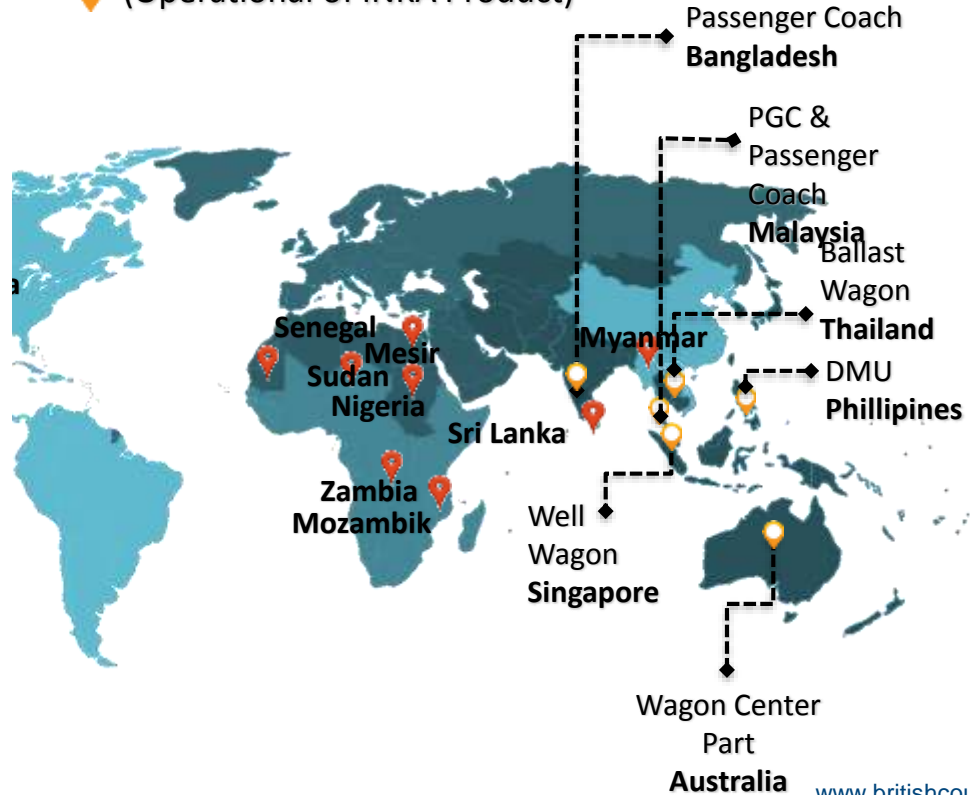
SPECIAL VEHICLE,

DMU



 (Potensial Customer)

 (Operational of INKA Product)



# ADVANTAGE COLLABORATION INDUSTRY - UNIVERSITY



## S-CURVE I

- FREIGHT WAGON
- PASSENGER COACH

80' – 90'



## S-CURVE II

- MOVEMENT CAR
- LOCOMOTIVE

2000 - 2010



## S-CURVE III

- HIGH SPEED TRAIN
- MEDIUM SPEED TRAIN

2010 - 2030



UNIVERSITY  
RESEARCH, ANALYSIS



INKA  
TRANSPORTATION TECHNOLOGY

OUTPUT FOR TECH AND

- Research and development
- Problem solving
- Efficiency engineering and process
- Preparing professional employee



OUTPUT FOR HUMAN CAPITAL

- Internship
- Preparing professional employee for industry and manufacture

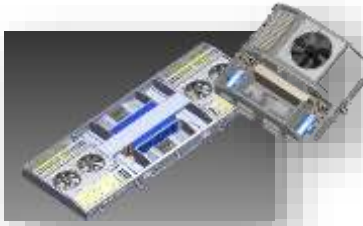


TECHNOLOGY AND STRATEGIC  
BASED  
TRANSPORTATION

Supported by



[www.britishcouncil.ph](http://www.britishcouncil.ph)



## IMPLEMENTATION INDUSTRI 4.0 AIR CONDITIONER HVAC WORKSHOP

Analysis and optimality takt system at PT INKA, system sensor design, communication sensor and smart system communication



## RESEARCH AND DEVELOPMENT TEST TOOL *ROLLER RIG FOR BOGIE*



## DESIGN OF TRAIN CONTROL AND MANAGEMENT SYSTEM DEVICES

Scope: control and management systems includes the creation of software, sensors, actuators and wiring diagrams



## AUTOMATIC FARE COLLECTION DEVICE DESIGN

Scope: Designing an automatic payment system for trains, including making software and network systems



**DESIGN OF BOGIE SYSTEM FOR TRAM**  
dynamic analysis, structure, detailed design, process, up to finished products and testing



**ALUMINUM AXLE BOX DESIGN FOR LRT AND TRAM**  
Structure Analysis, Dynamic, DFMA, Mass Production, Testing



**DESIGN AND PRODUCTION OF TRACTION MOTORS FOR LRT AND TRAM**



**LIGHT WEIGHT DAN MODULAR COUPLER FOR LRT AND TRAM**

## EXTRUSION OF CAR BODY ALUMINUM

dynamic analysis, structure, detailed design, manufacturing process, finished products and testing.



## GANGWAY SYSTEM FOR LRT AND TRAM

Structure, Dynamic Analysis, DFMA Analysis, Mass Production & Testing Documents

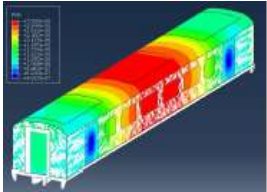


## INTEGRATED WASTE MODEL AND TOILET DESIGN



## CAR BODY BASED STAINLESS STEEL AT PT INKA





## ANALYSIS NOISE, VIBRATION & HARSHNESS (NVH)



## CRASHWORTHINESS & CRASH BOX

Crashworthiness analysis, optimization of train car body structure, crash box design



## MASK OF CAR

Aerodynamic analysis, material selection.



## STIR WELDING FOR ALUMINUM STRUCTURE

## TECHNOLOGY TRANSPORT PRODUCTS OF TRAIN CHAIRS AND TRAIN INTERIOR COMPONENTS



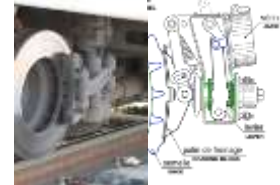
## DEVELOPMENT OF LIGHTWEIGHT MATERIALS BASED ON SANDWICH COMPOSITES FOR TRAIN INTERIOR



## PROPULSION ENGINE: Designing traction motors, inverters, system drivers, battery chargers



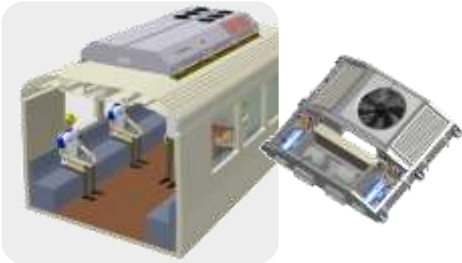
## BRAKE SYSTEM DEVELOPMENT FOR TRAIN





## IMPLEMENTATION INDUSTRI 4.0 WORKSHOP (HVAC) HIGH VOLTAGE AIR CONDITIONER

DESIGN



DATA AND IT



WORKSPACE AND SYSTEM



WORKSHOP 4.0

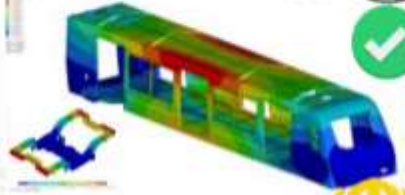


**Production line and machine**

- Collect production data/information automatically without disturbing operator
- Can be controlled from office  
Exp: CAD - CAM - Shopfloor
- Monitoring production status and position
- Monitoring production time
- Monitoring components status - predictive maintenance
- Real time material stock monitoring

## LIGHT RAPID TRANSIT (LRT)

Review & Engineering Design  
Struktur Carbody & Bogie



Review & Engineering Design  
Prototyping Model & Mask of Car



Review & Engineering Design  
Air Conditioning Cabin



Review & Engineering  
Procedure of alluminium

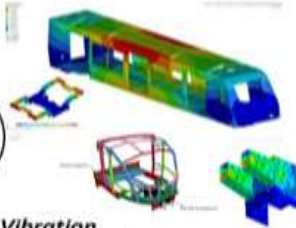


Universitas Gajah Mada



Review & Engineering Design  
Inverter Statis & Baterai Charger

**MEDIUM - HIGH SPEED TRAIN**



- Analisis Vibration
- Analisis Crash Worthiness
- Analisis Noise & Vibrasi
- Analisis Static Bogle



**Review Engineering Control VVVF**



**ITS**  
Institut Teknologi Sepuluh Nopember  
**Carbody and Instalation componen**  
- Interior Design



- Review Analysis strength Structure Aluminium Carbody
- Review Analysis Fatigue Carbody Alluminium
- Review Engineering Desain AC (HVAC)



**UNS**  
UNIVERSITAS SEBELAS MARET



- Fire retardant Testing
- Review Welding Metode



- TechnologAudit
- Controlling Project Management
- RAMS Analysis
- Fatigue Bogle Testing
- Structure Carbody
- EMI Testing



**Review Engineering Battery & SIV (Auxiliary Power Supply)**



THANK YOU

