

2023 FIRST HALF

ZER01NE

ACCELERATOR

STARTUP APPLICATION GUIDE

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ZER01NE ACCELERATOR, open innovation platform for Hyundai Motor Group (HMG), is calling for startup applications. Open calls are conducted semi-annually, and this application guide describes details regarding the program for the first half part of 2023. We aim to connect external startups from all over the world with internal teams in Hyundai Motor Group to execute collaborative projects. Any startups interested in collaborating with HMG are welcome to apply!

PROGRAM

ZER01NE ACCELERATOR is an open innovation program operated by Hyundai Motor and Kia

SUMMARY

- **Connecting Hyundai Motor Group (HMG) internal teams and external startups to create synergy**
 - ① Sourcing external startups based on internal needs derived by HMG internal teams
 - ② Piloting strategic partnerships by executing HMG and startup collaboration projects
 - ③ Reviewing equity investments to consolidate strategic relationships

COLLABORATION w/ HMG

- **HMG internal teams directly participate in the program as shown below**
 - ① Deriving open innovation projects with startups based on internal needs
 - ② Participating in startup review and selection process
 - ③ Executing collaborative projects with selected startups

ACHIEVEMENTS

- **Executing open innovation activities throughout 10 batches**
 - ① Internal Participants : 150 internal teams within 11 subsidiary companies of HMG
 - ② External Participants : 140 startup cohorts
 - ③ Key Activities : 107 collaborative project and 76 startup investments executed

APPLICATION

ZER01NE ACCELERATOR is looking for startups eligible to participate in 18 projects derived by HMG

OPEN CALL TARGET

- Sourcing relevant startups to participate in collaborative projects with HMG may apply
 - ① Target : Startups eligible for partnership with HMG
 - ② Investment Stage : Seed to Series A preferred (above Series B may also apply)
 - ③ Minimum Qualification : Startup must be incorporated, registered, and legal entity

APPLICATION PROCEDURES

- Please select ONE project from the 'Project List' on pages 5 - 9 and apply as shown below
 - ① Submission Period : February 17th - March 12th (KST)
 - ② Process : Submit your application via application URL below (company deck required)
 - ③ Application : <https://zer01ne.zone/en/join-us/startup/> Inquiries : zer01ne.contact@gmail.com

BENEFITS

- Providing collaboration, investment, global network and showcase opportunities to selected startups
 - ① Collaboration with HMG (Max 50K USD development budget provided)
 - ② Investment from HMG (Target startups selected separately)
 - ③ Global network (Via Hyundai CRADLE) and showcase opportunities (Via CES, MIF, etc)

TRACKS

Collaborative projects are divided into **PROJECT TRACK**, **PRODUCT TRACK**, or **PLAN S TRACK**
Investment opportunities will be provided selectively via **FUNDING TRACK**

PROJECT TRACK

(COLLABORATION)

- **New business and technology development PoC (Proof of Concept) projects with HMG**
 - ① Validate new business and technology implementation feasibility
 - ② Collaboration with various teams within HMG
 - ③ Achievements : 88 startup participation in collaborative PoC projects

PRODUCT TRACK

(COLLABORATION)

- **Vehicle USP (Unique Sales Point) product development projects with Hyundai Motor Company & Kia**
 - ① Validate advanced vehicle implementation and mass production
 - ② Collaboration with Product Division of Hyundai Motor Company & Kia
 - ③ Achievements : 14 startup participation in product validation showcase

PLAN S TRACK

(COLLABORATION)

- **PBV (Purpose Built Vehicle) and future business development projects with Kia**
 - ① Validate PBV and future business implementation and commercial application
 - ② Collaboration with eLCV Business Division of Kia, and other future tech related teams within HMG
 - ③ Achievements : 5 startup participation in collaborative PoC projects

FUNDING TRACK

(INVESTMENT)

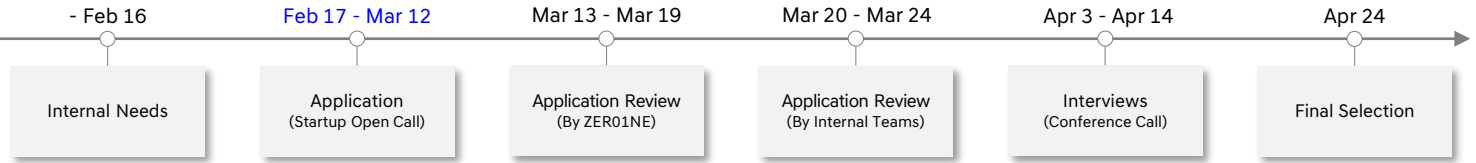
- **Strategic investment opportunities provided by HMG**
 - ① Review equity investment for strategic partnership
 - ② Target startups selected separately after collaborative project completion
 - ③ Achievement : 76 startup investments

PROCESS

Operating structured processes for startup **sourcing & selection**, **collaboration**, and **investment**
Sourcing & Selection dates are subject to change under operational circumstances

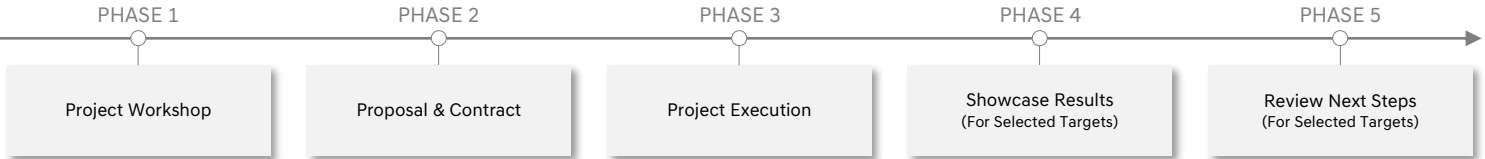
SOURCING & SELECTION

- Startup sourcing and selection based on needs derived directly from internal teams within HMG



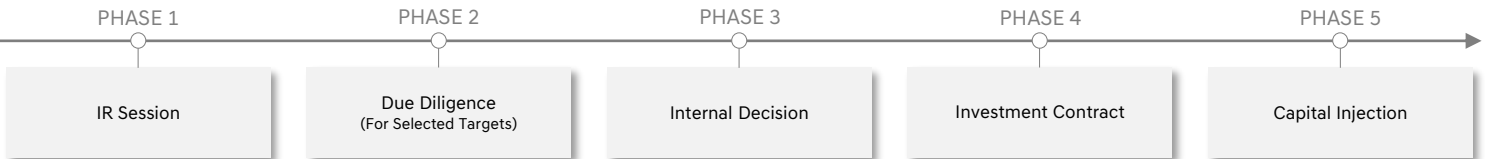
COLLABORATION

- Selected startups and HMG internal teams execute collaborative PoC projects



INVESTMENT

- Review strategic investments selectively after collaborative PoC project completion



PROJECT LIST (Startups may apply to ONE project only)

THEME 1 : AUTOTECH

CODE	TITLE	DESCRIPTION	TRACK	HMG	SOLUTION
GA1	New Battery Solution	<ul style="list-style-type: none"> - Overview : Battery cells that do not react to moisture - Purpose : Improve electric efficiency by enhanced battery element technology in body parts - Requirements : Eligible to apply if ALL the following requirements are met with <ul style="list-style-type: none"> ① Battery cell production with no moisture behavior (dry room unapplied) ② Electrolyte ionic conductivity over 10^{-3} Siemens (small size, low noise) ③ Durability and safety after secondary process (max 160 °C, 10Mpa) ④ Application of carbon fiber current collector - Verification : Test moisture behavior stability, battery life (3000 cycle ↑), fire risks, overcharging/discharging - Application Plan : Utilize as component technology to improve new battery system 	PROJECT	HMC & KIA	HW
GA2	Sensor Cleaning Solution	<ul style="list-style-type: none"> - Overview: Sensor surface cleaning solution - Purpose: Improve sensor cleaning efficiency for autonomous driving - Requirements: Eligible to apply if ONE of the following requirements are met with <ul style="list-style-type: none"> ① Moisture removal using electrowetting ② Dust/water removal using ultrasonic waves ③ Other methods (compressed air/water etc) - Verification: Test cleaning performance and durability on demo vehicle sensors - Application Plan: Implement tech into Lv.4 autonomous vehicle 	PROJECT	HMC & KIA	HW, SW
GA3	Li Metal Battery Solution	<ul style="list-style-type: none"> - Overview: Li-metal battery (LMB) material and cell technology - Purpose : Materials and/or cell level technology that can enhance cycle life of Li metal battery - Requirements : Eligible to apply if ONE of the following requirements are met with <ul style="list-style-type: none"> ① Li metal anode production ② Li metal anode protection ③ Li metal battery electrolyte (liquid) ④ Li metal battery cell production - Verification : Sample production and durability evaluation - Application Plan : Incorporate in internal LMB cell design 	PROJECT	HMC & KIA	HW, SW
GA4	Lighting Solution for UAM	<ul style="list-style-type: none"> - Overview: UX R&D for UAM built-in design using lighting technology - Purpose : Lighting solution to enhance emotional wellness of future mobility passengers - Requirements : Eligible to apply if ALL the following requirements are met with <ul style="list-style-type: none"> ① Propose lighting solution that can be linked with UAM operation and seating ② Equipped with stress relief technology providing psychological stability and wellness ③ Control lighting changes and image control according to driving scenarios - Verification: Verify lighting application on UAM interior trim and seating - Application Plan : Advanced development for UAM application 	PROJECT	Hyundai Transys	HW, SW

PROJECT LIST (Startups may apply to ONE project only)

THEME 2 : MOBILITY SERVICE

CODE	TITLE	DESCRIPTION	TRACK	HMG	SOLUTION
GB1	PBV Ad Solution	<ul style="list-style-type: none"> - Overview : Ad solution development using vehicle exterior - Purpose : Development of ad based BM linkable to PBV - Requirements : Eligible to apply if ONE of the following requirements are met with <ul style="list-style-type: none"> ① HW technology to produce e-ink display products (Wi-Fi enabled) ② SW for Ad data collection & analysis ③ SW for DSP/SSP competency - Verification : Testing e-ink display feasibility and data driven ad effectiveness via taxi application pilot - Application Plan : Advanced development of e-ink for PBV application and regional expansion (US, Dubai, etc) 	PLAN S	KIA	HW, SW, SERVICE
GB2	PBV Social	<ul style="list-style-type: none"> - Overview: Mobility App solution for vulnerable road users - Purpose: Develop a mobility service app for various vulnerable road users - Requirements: Eligible to apply if ALL the following requirements are met with <ul style="list-style-type: none"> ① Mobility hailing app ② Supporting functions for various special needs (e.g. visual, hearing, elderly, pregnant etc.) ③ Develop customized UI/UX to provide facility information for targeted user route and location - Verification: App tailored to UX/UI for each user type - Application Plan: Integrate the app with PBV for vulnerable road users 	PLAN S	KIA	HW, SW, SERVICE
GB3	PBV FMS	<ul style="list-style-type: none"> - Overview : Freight Transport FMS (Fleet Management System) solution - Purpose : Driver matching and routing optimization for Kia PBV freight vehicles - Requirements : Eligible to apply if ALL the following requirements are met with <ul style="list-style-type: none"> ① Automatic matching of logistics orders/drivers and routing optimization ② Integration with existing freight transport platforms ③ Integration with IVI(In-Vehicle Infotainment) - Verification : Integration feasibility to logistics order/driver matching platform and IVI - Application Plan : Commercially apply to Kia PBV freight vehicles 	PLAN S	KIA	SW
GB4	PBV Business	<ul style="list-style-type: none"> - Overview: Linking moving space businesses with PBV, 2nd Life LCV vehicle and battery - Purpose: Develop collaborative business model with startup services - Requirements: Moving space operation (ex : moving offices/libraries, food trucks, pop up stores, logistics) - Verification : Collaborative business model feasibility - Application Plan : Commercially apply to Kia PBV 	PLAN S	KIA	SERVICE

PROJECT LIST (Startups may apply to ONE project only)

THEME 3 : SMART FACTORY

CODE	TITLE	DESCRIPTION	TRACK	HMG	SOLUTION
GC1	High-Speed Metal 3D Printing Solution	<ul style="list-style-type: none"> - Overview : High speed metal 3D printing solution - Purpose : Improving current 3D printing manufacturing speed - Requirements : Eligible to apply if ONE of the following requirements are met with <ul style="list-style-type: none"> ① Cold Spray type ② L-PBF type with powder supply improvement - Verification : Property test of different materials and building directions (ct/microstructure/tensile test) - Application Plan : Apply to auto parts (ex : gear knob) manufacturing 	PROJECT	HMC & KIA	HW
GC2	BAAM 3D Printing Solution	<ul style="list-style-type: none"> - Overview: Large scale 3D Printing Technology S/W to control BAAM process - Purpose : Build hybrid 3D printing production factory - Requirements : Robot-extrusion integrated control, tool path optimization, deposition monitoring and manufacturing - Verification : Technology validation on actual parts - Application Plan : Apply to additive manufacturing system 	PROJECT	HMC & KIA	SW
GC3	3D Human Motion Engine Solution	<ul style="list-style-type: none"> - Overview: Generating 3D human body movement data for training AI algorithms on human activity and manual job recognition - Purpose : Develop AI algorithms for manual job recognition in factory - Requirements : Eligible to apply if ALL the following requirements are met with <ul style="list-style-type: none"> ① Generate any human activity based on skeletal modeling in 3D ② Model erroneous motion to apply uncertainty between real persons ③ Feasibility of PoC project execution in Singapore (travel and English communication required) - Verification : Validate human motion and manual activity recognition via pilot testing in Singapore - Application Plan : Apply to assembly cells in HMGICS (Hyundai Motor Group Innovation Center in Singapore) 	PROJECT	HMGICS	HW, SW
GC4	3D Sensor for Robots	<ul style="list-style-type: none"> - Overview: Fast 3D depth reconstruction and high quality 3D image rendering solution - Purpose : Innovate new vision processing for fast mass volume production and multiple model application - Requirements : Eligible to apply if ALL the following requirements are met with <ul style="list-style-type: none"> ① Position accuracy (0.1mm) ② Fast SW processing (less than 20 sec for whole car body) ③ Reconstruction on moving target ④ Feasibility of PoC project execution in Singapore (travel and English communication required) - Verification : Test on actual car body in assembly process (Approx 2 years of verification) - Application Plan : Apply to assembly cells in HMGICS (Hyundai Motor Group Innovation Center in Singapore) 	PROJECT	HMGICS	HW, SW

PROJECT LIST (Startups may apply to ONE project only)

THEME 4 : ROBOTICS

CODE	TITLE	DESCRIPTION	TRACK	HMG	SOLUTION
GD1	Robot Manipulator Solution	<ul style="list-style-type: none"> - Overview: Universal gripper and arm for fast-processing manipulation of various car parts and HW - Purpose : Picking & Placing automation for logistics - Requirements : Eligible to apply if ALL the following requirements are met with <ul style="list-style-type: none"> ① Fast SW processing within 2 seconds (capturing, object recognition, pick-up object selection, pose estimation) ② Handling various object properties (wrapped/unwrapped by cover, randomly aligned in box, curved surface, fragile, flexible, etc) ③ Fast actuator to perform job within 6 seconds per object including picking/placing activities and arm movement between positions ④ Feasibility of PoC project execution in Singapore (travel and English communication required) - Verification : Test on actual parts and hardwares (about 400 object types) - Application Plan : Apply to assembly cells in HMGICS (Hyundai Motor Group Innovation Center in Singapore) 	PROJECT	HMGICS	HW, SW
GD2	Logistics PBV & Robotics	<ul style="list-style-type: none"> - Overview : PBV and logistics robot linkage solution - Purpose : Development of logistics automation package by linking PBV with robot - Requirements : Eligible to apply if ONE of the following requirements are met with <ul style="list-style-type: none"> ① Item recognition ② Order/stowage maximization ③ Task allocation ④ All in one control system for storage, vehicle, human & robot - Verification : Review PBV and robot integration feasibility and operability via on-site PoC - Application Plan : Implement into total solution package for KIA PBV customers 	PLAN S	KIA	HW, SW, SERVICE
GD3	SPOT Enhancement Solution	<ul style="list-style-type: none"> - Overview : Boston Dynamics SPOT applied robot solution - Purpose : Implementation of new functions and services for SPOT - Requirements : Eligible to apply if ONE of the following requirements are met with <ul style="list-style-type: none"> ① Detection function development ② Human Robot Interaction solution development ③ Other technical functions and implementable business solutions (delivery, pet service, marketing etc) - Verification : Review effectiveness of tech/service via testing SPOT application - Application Plan : Develop BM and commercial application of SPOT service 	PLAN S	KIA	HW, SW, SERVICE

PROJECT LIST (Startups may apply to ONE project only)

THEME 5 : METAVERSE

CODE	TITLE	DESCRIPTION	TRACK	HMG	SOLUTION
GE1	Metaverse Digital Contents	<ul style="list-style-type: none"> - Overview: Metaverse based interactive digital contents development - Purpose : Develop metaverse based digital contents targeting future digital native customers - Requirements : Ability to create immersive contents (VFX, AR/VR/XR, AI) in regard to future mobility trend - Verification : Competency in creating interactive/immersive digital contents and communication using new media tech - Application Plan : Implement to Hyundai Motor Company communication strategy targeting Web 3.0 	PROJECT	HMC	SW, SERVICE
GE2	PBV Metaverse	<ul style="list-style-type: none"> - Overview : Metaverse contents for PBV service simulation for B2B clients - Purpose : Provide PBV (exterior and interior) metaverse experience - Requirements : Ability to develop interactive contents applicable for immersive devices - Validation : Validate metaverse content development capability customized for clients - Application : Demonstrate contents for B2B clients and apply to sales channel 	PLAN S	KIA	SW

THEME 6 : PROPTECH

CODE	TITLE	DESCRIPTION	TRACK	HMG	SOLUTION
GF1	Energy Usage Monitoring Solution	<ul style="list-style-type: none"> - Overview: IoT sensor development for energy usage monitoring - Purpose : Collect and analyze energy usage data for energy saving - Requirements : Automatic meter sensor for electricity/water/gas usage - Verification : Accuracy of collected data and durability of hardware - Application Plan : Integration to building management platforms for sites in Korea 	PROJECT	Hyundai Engineering	HW