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CONTINUOUS INNOVATION AND CHALLENGE

with the continuous innovation and challenge, MCNEX makes dreams come true as differentiating in technology and its value



THE EYE OF IT WORLD. MCNEX

PROLOGUE

4

5



THE EYE OF IT WORLD. MCNEX PROLOGUE 6



THE EYE OF IT WORLD. MCNEX

PROLOGUE

8

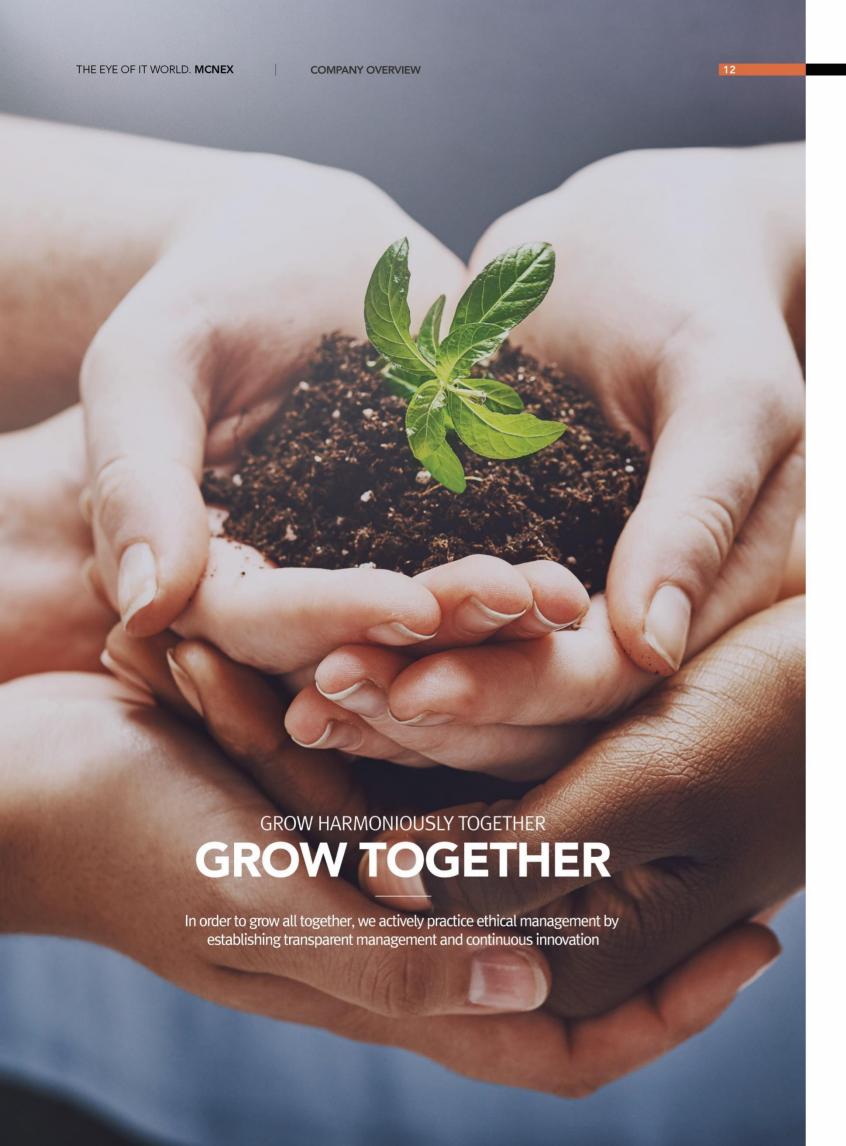


INNOVATION

MAKING TOMORROW BETTER WITH A PURSUING VALUE OF INNOVATION ON A BASIS OF TRUST AND FAITH

CHALLENGE

CONTINUING THE CHALLENGE TO MAKE TOMORROW BETTER WITH CREATIVE THINKING AND BOUNDLESS PASSION



"CONTINUOUS INNOVATION AND CHALLENGE"

MCNEX is growing as a reliable and believable partner of the clients in the world by continuous challenge and technical innovation

With Continuous research and development, MCNEX is becoming the leader in the future industry and contributing to the better human life

MCNEX, LEADING THE TECHNOLOGY AND INNOVATION WITH CONTINUOUS RESEARCH AND DEVELOPMENT

NAME	MCNEX
CEO	DONG WOOK MIN
ESTABLISH	22ND DEC 2004
HQ	HANSHIN IT TOWER 2, 47 DIGITAL-RO, 9-GIL, GEUMCHEON-GU, SEOUL, SOUTH KOREA

BUSINESS AREA



THE EYE OF IT WORLD. MCNEX MESSAGE FROM CEO

HERE IS MCNEX AS A LEADER OF CHALLENGE AND INNOVATION, IS MAKING MORE CONVENIENT PROSPEROUS HUMAN LIFE.

Since founded in 2004, MCNEX is a leading manufacturer of global component and material specialized company as developing with 2M camera module and the smallest VGA camera module as well as high pixel auto focusing camera module for mobile and automotive camera and security applications.

As a manufacturer, dreaming of technical innovation by continuous research and development, MCNEX will grow to a global leader of camera module manufacturer which is ranked #1 in Korea, #5 in the world market.

MCNEX is doing its best to take the responsibility in social contribution such as job creation, industrial growth invigoration on the basis of continuous camera module market growth.

In order to be a creative and capable manufacturer which is contributing to the multimedia industry in the 21st century, all MCNEX executives and staffs will not be satisfied but will be their best to make the customer impression

Please give us your big interests and supports

CEO. DONG-WOOK MIN

PRESIDENT OF LEADING ENTERPRISE LEADERS CLUB	
2017. Best Industrial medal	2015. Presidential prize of best Job creation
2009 . Prize of ministry of Knowledge Economic	2008. Presidential prize of new job creation
2006. Presidential prize	

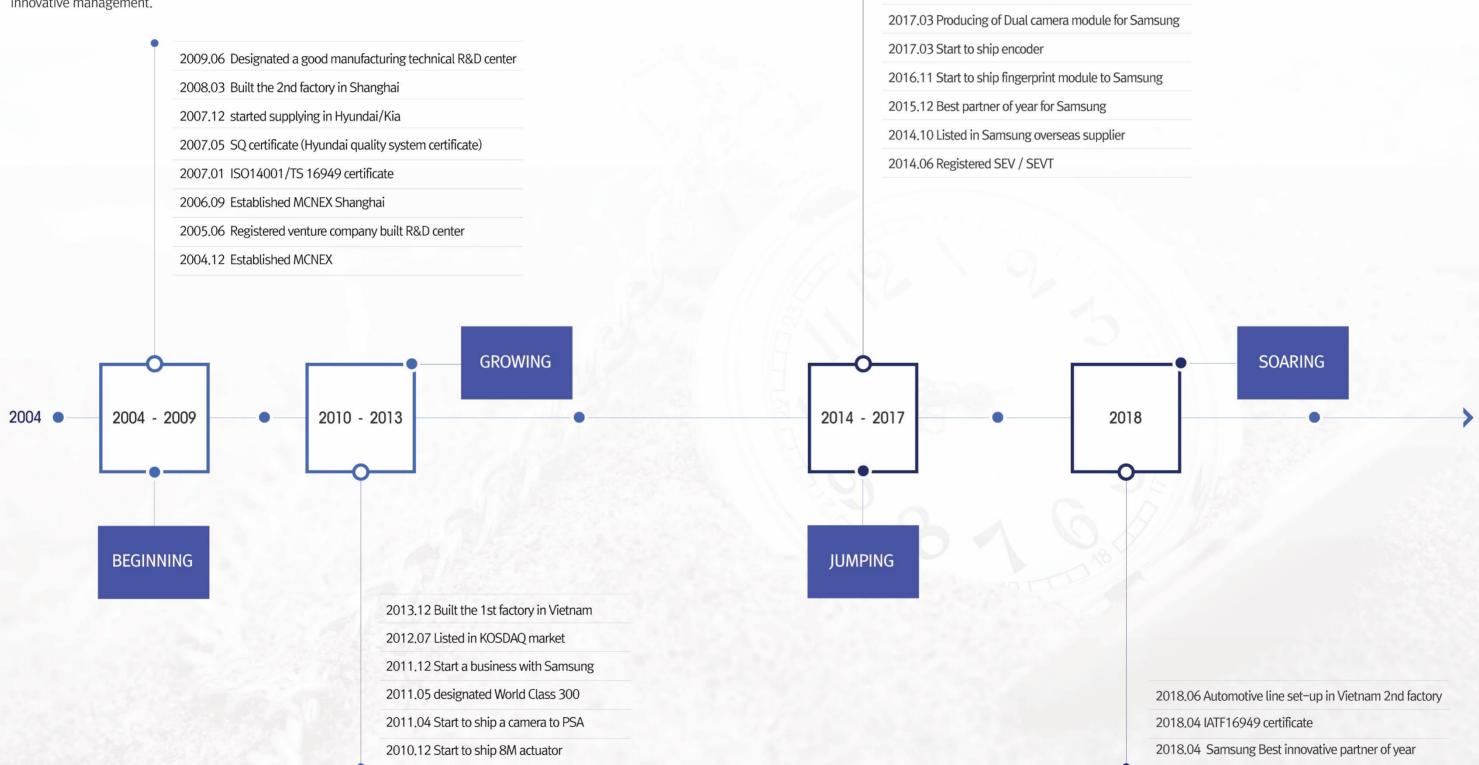


THE EYE OF IT WORLD. MCNEX MCNEX HISTORY

2017.12 Established 2nd factory in Vietnam

ITINERARY OF MCNEX TO BE A GLOBAL LEADER

MCNEX is ongoing to make a history to lead the best camera module manufacturer with continuous enhancing competitiveness and innovative management.



MANAGEMENT PRINCIPLES



Pursuit of people-oriented and people first management

MCNEX's family will come together with company's growth

Pursuit of innovative value creation on basis of expert knowledge

MCNEX will contribute to the better human life as creating new value through continuous technical development and improving customer service. Advanced technology Management

MCNEX will be the world leading technical company to satisfy the customer's requirement and to develop more advancing technology

•

THE EYE OF IT WORLD

MCNEX, OPENING NEXT GENERATION OF IT WORLD

Through continuous research and development with challenge and innovation, MCNEX is growing to a global leading company to make human life prosperous as leading the industry change and next generation of IT world.



MISSION

By having a strong leadership in economic & social section, contribute to the better human life

SYSTEM

System management
Systematic organization
Reinforcing network with a customer



SATISFACTION

Customer satisfaction Social contribution Make an enterprise value

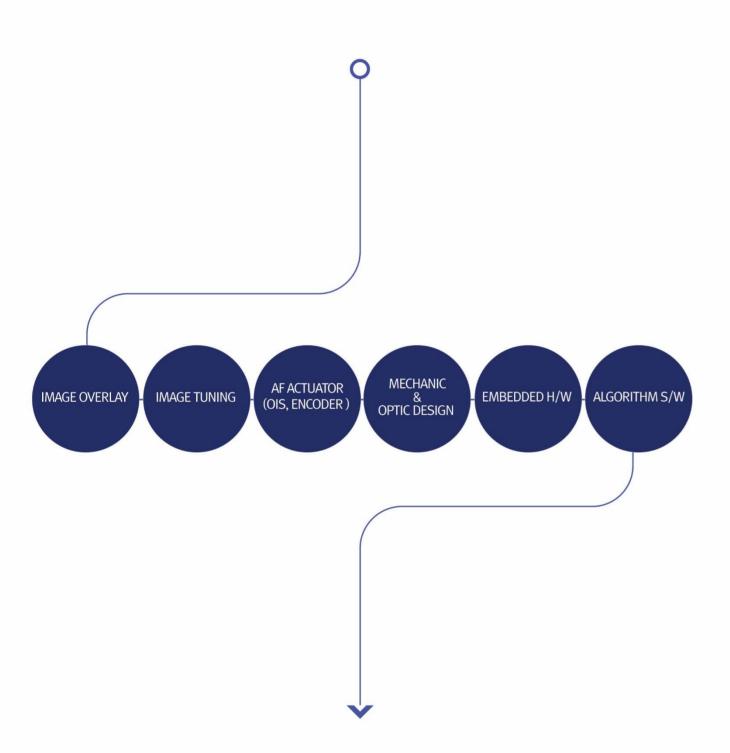
SUSTAINABILITY

MCNEX makes continuous growth and improvement with people-oriented, value creation and Technology leading management through ethical management for making prosperous future.

THE EYE OF IT WORLD. MCNEX R & D

MCNEX R&D CENTER

Continuous development of new technology with experience engineers



TOTAL SOLUTION

Provide total solution of image technology from H/W to S/W in house

QUALITY MANAGEMENT

CONTINUOUS QUALITY MANAGEMENT FOR CUSTOMER SATISFACTION

The primary value that MCNEX aims for is customers satisfaction. The best quality, engineers and experiences create the synergy to make a continuous innovation.

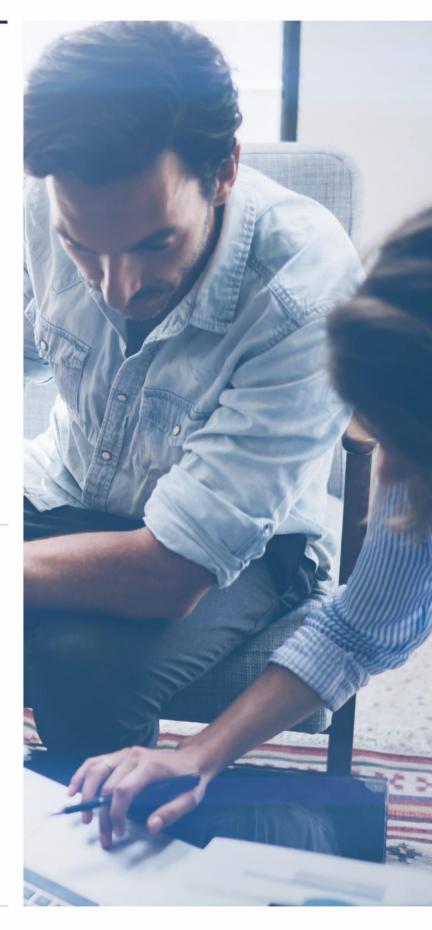
MCNEX promises to make the most innovative and stable solution as creating a future value

Bring confidence over the satisfaction for the customers' choice.

DIFFERENTIATED COMPETITIVENESS BY EFFICIENT RESEARCH & DEVELOPMENT

Leading the camera module market by continuous research and speedy decision making that maximize the the future value

Continuous research & development make more innovative, comfortable tomorrow

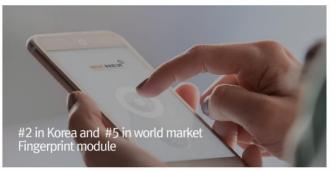


THE EYE OF IT WORLD. MCNEX GROWTH STATUS 22 23

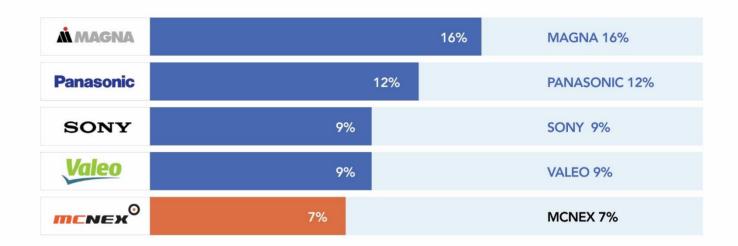




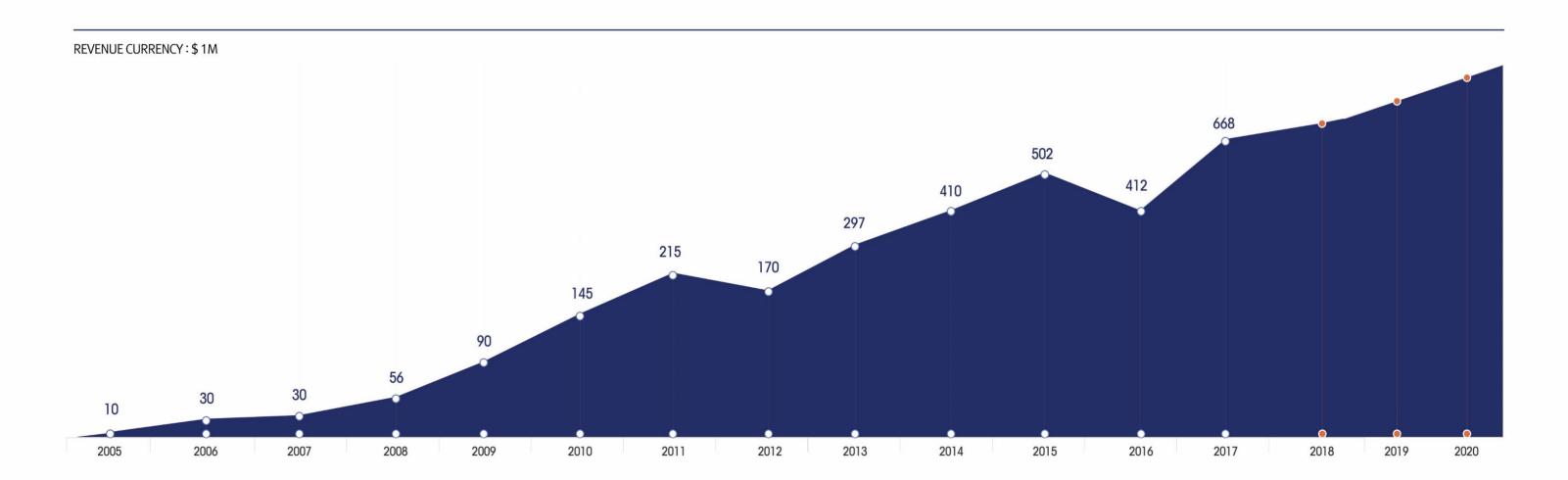




AUTOMOTIVE WORLD MARKET SHARE MCNEX-AUTOMOTIVE CAMERA #1 IN KOREA AND #5 IN WORLD MARKET



MARKET ANALYSIS BY TSR(FEBRUARY 2017)



THE EYE OF IT WORLD. MCNEX

CERTIFICATION

24

25



SHANGHAI / CHINA

ISO/TS16949:2009 ISO9001:2008 ISO14001:2004 IECQ HSPM Quality management system Quality management system Quality management system Harmful substance process management system



SEOUL / KOREA HEADQUARTER • ISO/TS16949:2009 Quality management system

Environment management system

NEW technology certification

Quality management system

Environment management system

OHSAS18001:2007 Safety and health management system

ISO14001:2004

ISO9001:2008

ISO14001:2004

NINHBINH / VIETNAM •



BUSINESS AREA INNOVATIVE SOLUTION

GROWTH

BE THE GLOBAL NO.1 IMAGE SOLUTION LEADING COMPANY ON A BASIS OF CONTINUOUS RESEARCH AND DEVELOPMENT

BUSINESS AREA

TOTAL MOBILE SOLUTION | AUTOMOTIVE SOLUTION | SYSTEM SOLUTION

. . .

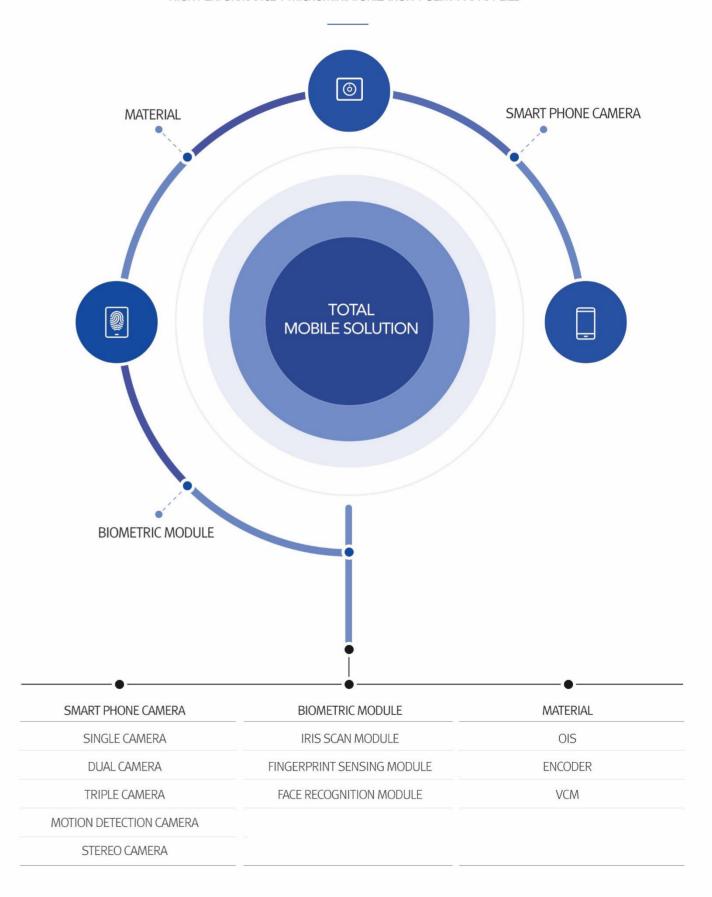
TOTAL MOBILE SOLUTION

Make a dream come true on a basis of change and innovation



"VARIOUS CAMERA MODULE (2M FF ~ 20M AF) WITH STABLE YEILD"

HIGH PERFORMANCE I MICROMINIATURIZATION I SLIM I AF APPLIED



TOTAL MOBILE SOLUTION

SMARTPHONE CAMERA

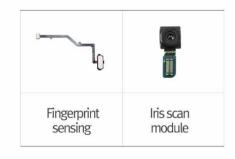
Smart Phone camera Single camera Dual camera Triple camera Motion Detection Stereo camera

VARIOUS CAMERA MODULE (2M FF ~ 20M AF) WITH STABLE YIELD



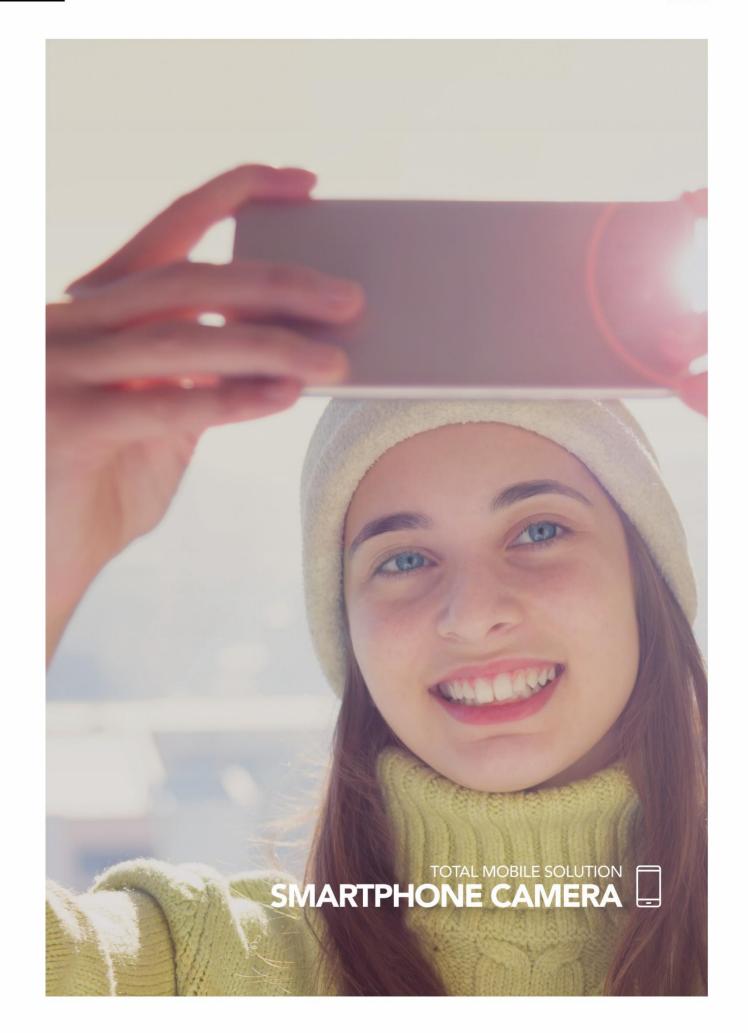
HIGH PERFORMANCE I THIN I SLIM I AF APPLIED

MINIMIZING THE SENSOR PIXEL SIZE (3.3-)2.8-)2.2-)1.1-)0.1)









OIS. ENCODER. VCM

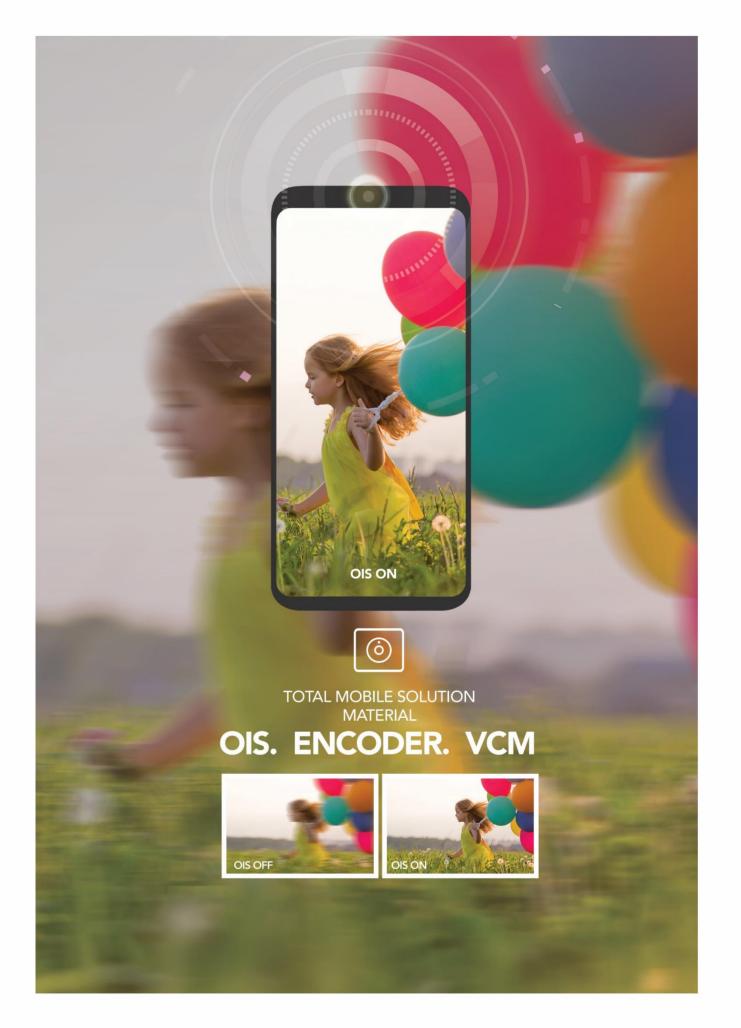
OIS (OPTICAL IMAGE STABILIZATION)

OIS is a technology to prevent from image shaking or compensate for image shaking caused by unstable fixture or hand tremor.

Generally if taking a picture right before or after sunset or sunrise or dark room without a flash, because of slow shutter speed, image comes out dimly. This is because of hand tremor during a taking a picture. OIS is to develop to reduce a n image shake.

8M/13M HIGH RESOLUTION AF ACTUATORS

OIS		ENCODER		
MCSO-104661(OIS/13M)		MCE85-D1 (ENCODER/8M)		
VCM				
MCA-853961 (13M)	MCA-S85	MCA-S854653 (8M) MCA-S85466		
MCE85-D1 (ENCODER/8M	MCE85-D1 (ENCODER/8M)		MCSO-104661(OIS/13M)	



TOTAL MOBILE SOLUTION

IRIS CAMERA MODULE

FEATURES

Optimized Solution for "ALL EYE COLOR"

Applied IR-LED & Band pass filter of 810nm wavelength range

Running VT / IRIS Camera via Switching function

High recognition rate regardless of light from indoor-outdoor

HIGH SECURITY / HIGH RECOGNITION RATE

Unable to forge / falsify using photo, video, etc

Low rate of error recognition

Impossible to find same patterned iris

After infancy, iris is no longer changed

SMART SECURITY











BIOMETRIC FINGERPRINT

What's biometric fingerprint technology?

Take a fingerprint digital image by specialized sensor to identify user

Classify capacitive overlay / optical mode / ultrasonic sensor

Biometric fingerprint module strengths

Fast recognition speed

High recognition rate (less than 0.002% error rate)

Easy to miniaturize (can be applied to various applications)

Various applications of BFM (Biometric fingerprint module)

Mobile & PC (smart phone)/Laptop

Automotive

Security devices (smart card/ private device/ door lock/ USB)

MCNEX STRONG POINT

DEVELOPMENT ABILITY	MANUFACTURING ENVIRONMENT		
Well-experienced engineers	Clean environment construction		
Consultant development ability in LIAA	(1,000 CLASS CLEAN ROOM)		
Excellent development ability in H/W	Automatic technology		
Excellent development ability in instrument	(Package assemble process automation)		
	Mass-production ability (various factories overseas)		
SW F/U			
Quick action on client's model development			

MANUFACTURING TECHNOLOGY

SPECIAL COATING technology (NON-SPRAY COATING)

WIRE BONDING technology for Low Loop control

Specialized process for fingerprint sensor module

Great package processing and internalized package



BIOMETRIC FINGERPRINT MODULE

TOTAL MOBILE SOLUTION

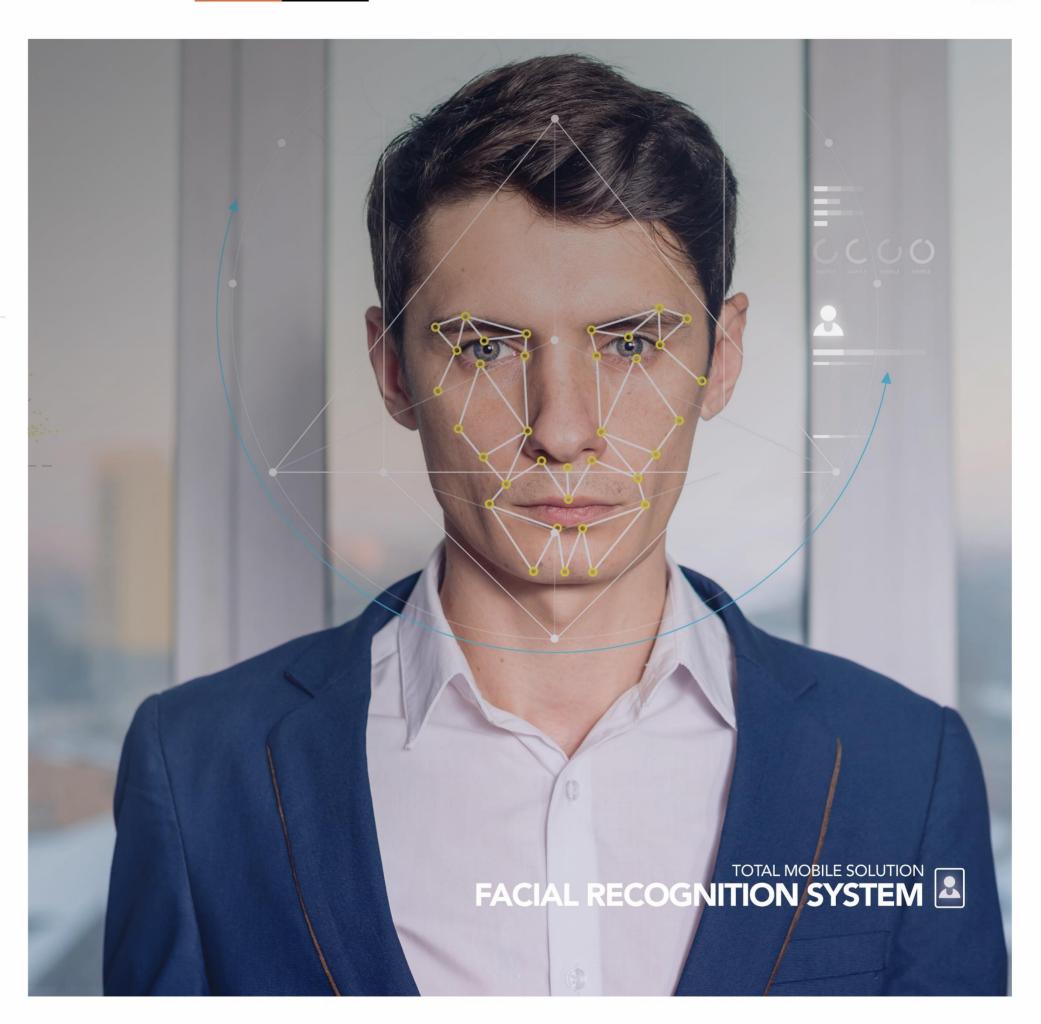
FACIAL RECOGNITION SYSTEM

Facial recognition is a technology which is capable of identifying or verifying a personnel face from a digital camera image.

3D facial recognition is more accurate in comparison to 2D facial recognition

3D facial recognition is to reduce errors on 2D facial recognition algorithm such as difference in light, head direction, facial expression, cosmetic face, etc.





BUSINESS AREA

AUTOMOTIVE SOLUTION

IN-CABIN SYSTEM

DSM CAMERA EYE-TRACKING SYSTEM FINGERPRINT SENSING SYSTEM DVRS(DASHCAM) SYSTEM **GESTURE CAMERA**

OUT-CABIN SYSTEM

360 DEGREE CAMERA SVM CAMERA CMS SYSTEM SRM / BVM SYSTEM

AUTONOMOUS DRIVING SYSTEM

MFC / STEREO CAMERA TRI-FOCAL CAMERA MOD CAMERA

TOTAL 820 CAMERA MODELS ANNUAL SHIPPING 4.0MIL MODULES

820 MODEL CAMERA MODULES DEVELOPMENT (SUPPLYING FOR ALL PREMIUM VEHICLES IN HYUNDAI, KIA)











GEELY

27 VEHICLE MODEL

18 VEHICLE MODEL

2 VEHICLE MODEL

5 VEHICLE MODEL









GENESIS G70

GENESIS EQ900

IG GRANDEUR

K9

MILITARY VEHICLE

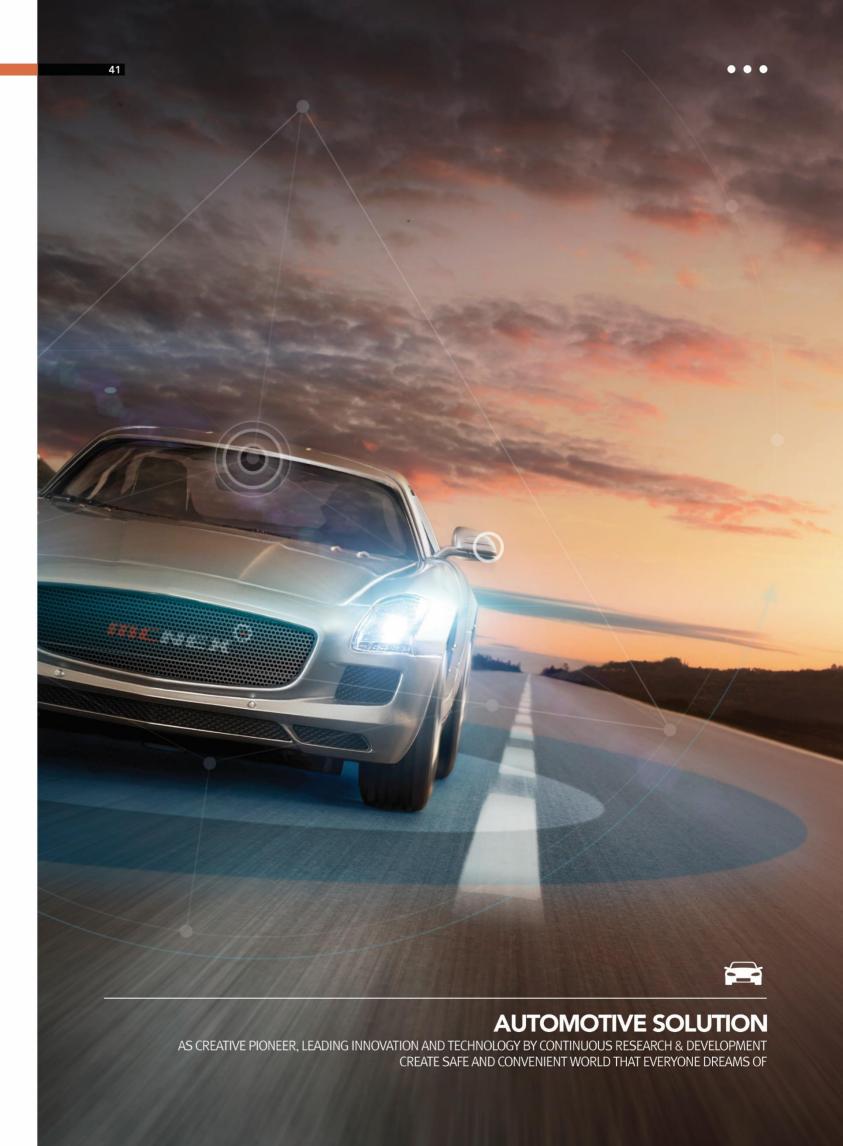
HEAVY EQUIPMENT











BUSINESS AREA

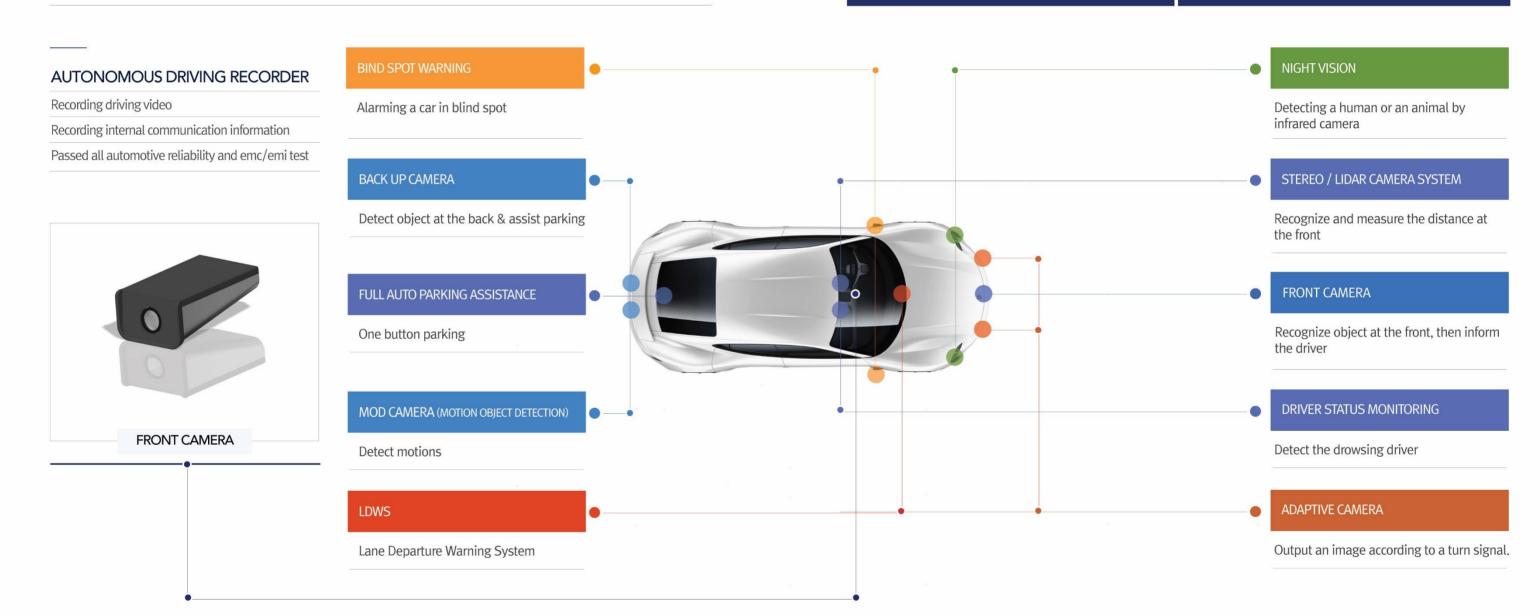
AUTOMOTIVE SOLUTION

MCNEX OWNED TECHNOLOGY FOR AUTONOMOUS DRIVING

Korea 1st production: MEGA AVM / LVDS Camera Applying to all kinds of camera applications like front/back-up camera, dashcam, security camera, etc. Obtaining next cash-cow technologies through ADAS and advanced automotive technologies. EQ900 | GENESIS II | K9 | GRANDEUR AVM SYSTEM

4 EA OF 360 DEGREE AROUND VIEW CAMERAS

LDWS



ADVANCED DRIVING ASSISTANCE SYSTEM



SYSTEM CONCEPT

BUSINESS AREA

AUTOMOTIVE ADAS SOLUTION

Front & Rear Image sensor module for Autonomous Driving

FORWARDING IMAGE MONITORING SYSTEM FOR AUTONOMOUS DRIVING LEVEL 3.

SYSTEM APPROACH

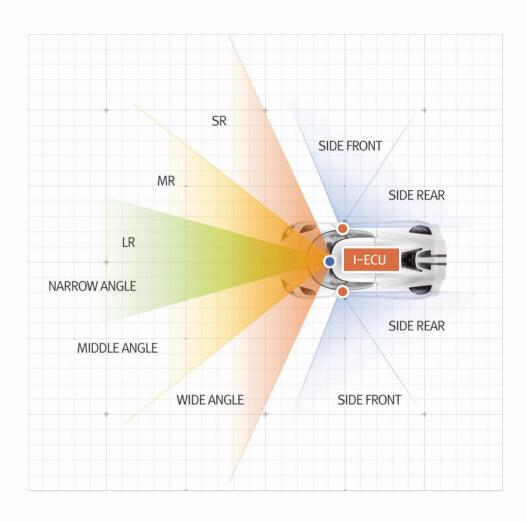


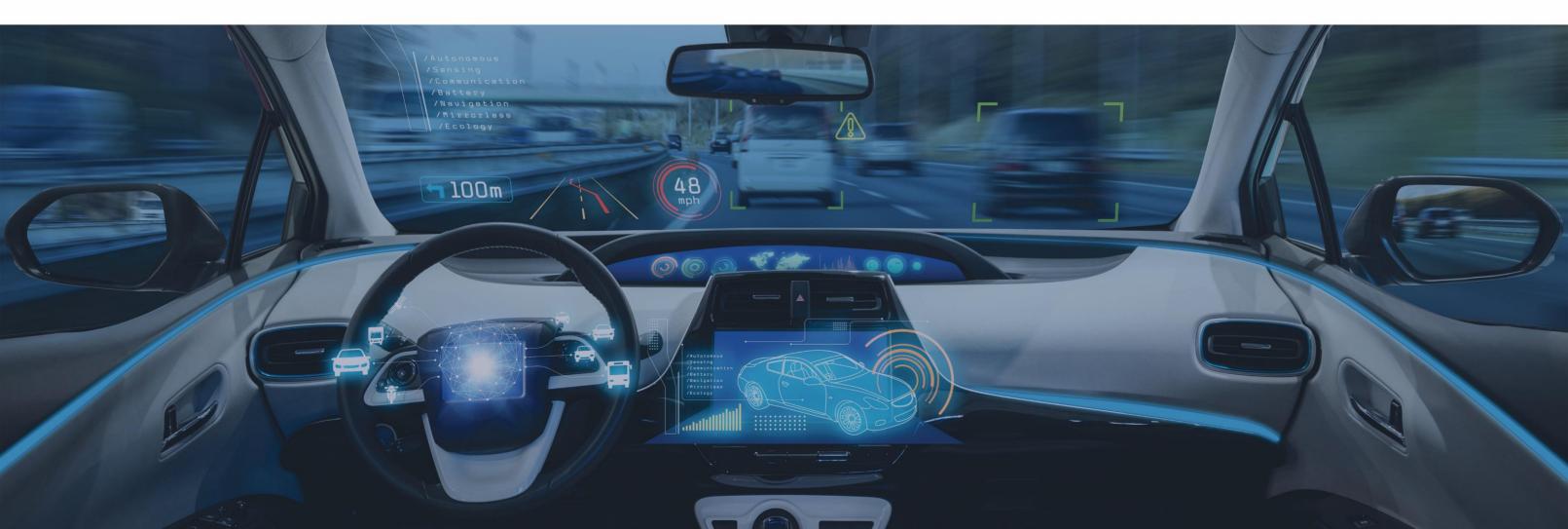
Detect multiple lanes

LDWS

Passenger, vehicle 2wheel vehicle recognition

Traffic sign recognition







BUSINESS AREA

AUTOMOTIVE SOLUTION

AVM(AROUND VIEW MONITORING) + SRM(SMART ROOM MIRROR) SYSTEM

PARKING / DRIVING MASTER ASSISTANCE SERVICE

Parking assistance through combined image	Blind spot alert		
Side & rear camera monitoring through room mirror	Lane departure warning		













SYSTEM SOLUTION

DASH CAM | NETWORK CAMERA | SMART MEDIA(SMART DID) | VR | AR | MR SOLUTION

MCNEX, with the technical convergence based on IOT, is leading the image system solution and connected future industry by continuous research and development in the fourth industrial revolution which focuses on turning the situation awareness into autonomous intelligence technology. MCNEX has been launching a number of products in CES which is being held in Las Vegas since 2015.

MCNEX will keep the continuous research and development with its products in order to create the world more convenient on a basis of convergent service.





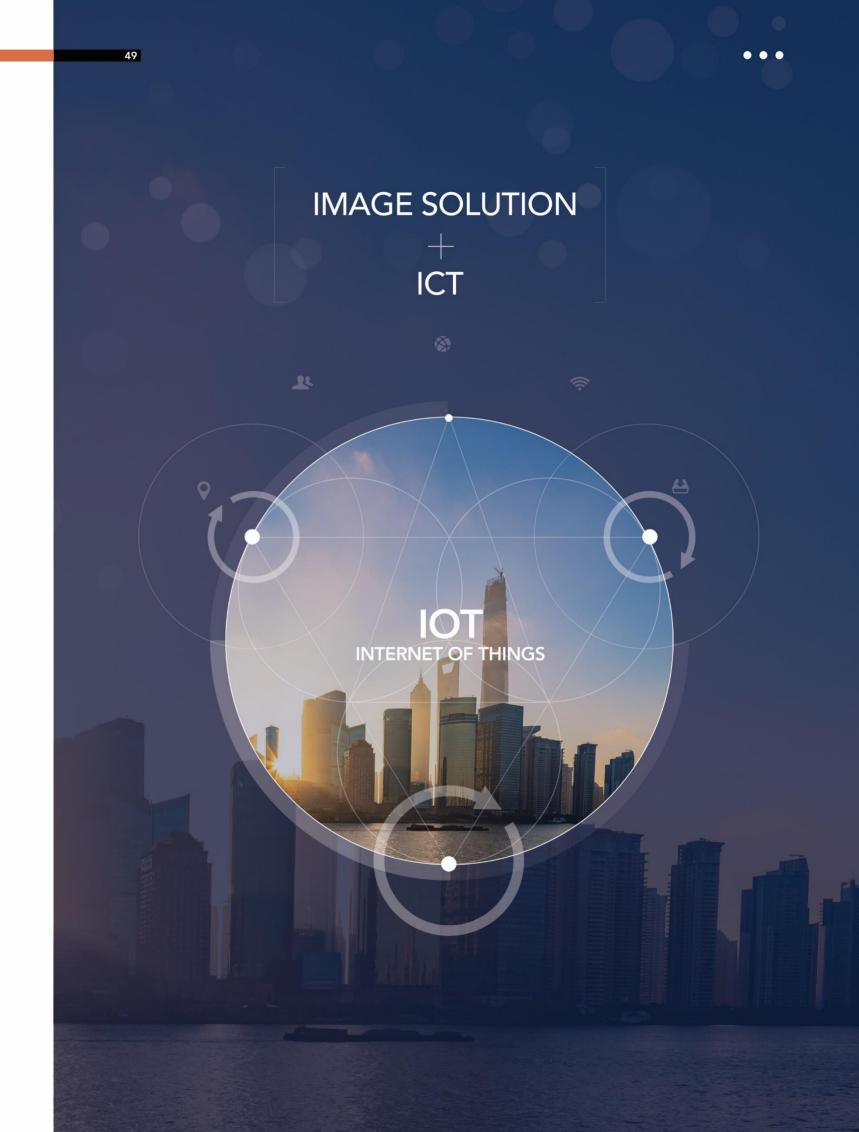
CES BOOTH IN 2018





MCNEX's core value is to let the world experiencing the best image system solution for more convenient world

Eyeclon is the brand made by MCNEX Co. Ltd. with the technical competence in the camera module industry.



SYSTEM SOLUTION

DASH CAM

MCNEX with No.1 camera module technology in Korean market, is the first brand that launching LTE connection based dashcam to deliver a driver a chance to monitor owned vehicle by a smart phone as well as other functions such as ADAS for driver's safety and convenience.







TECHNOLOGY FOR PERFECTION

Harsh quality test (344 items) for making seamless qualified product

VALUE CREATING DESIGN

Stylish and simple UX design for combination of performance and convenience.



DASH CAM

Stabilize a system division as full line-up of products.







SYSTEM SOLUTION

NETWORK CAMERA - E3

RESOLUTION: FHD (1920X1080)

IMAGE SENSOR: SONY EXMOR 1/2.9" 2M CMOS

LENS: F2.0, FOV 125DEGREE

STORAGE MODE: MICRO SD CARD/ CLOUD WIRELESS: WIFI 802.11 B/G/N (2.4GHZ/5.0GHZ)

NIGHT VISION: TRUE D/N FILTER (MAX 10M)

MOTION DETECT DOOR SENSOR

TWO-WAY AUDIO

POWER: MICRO USB-B TYPE/5V/1.5A



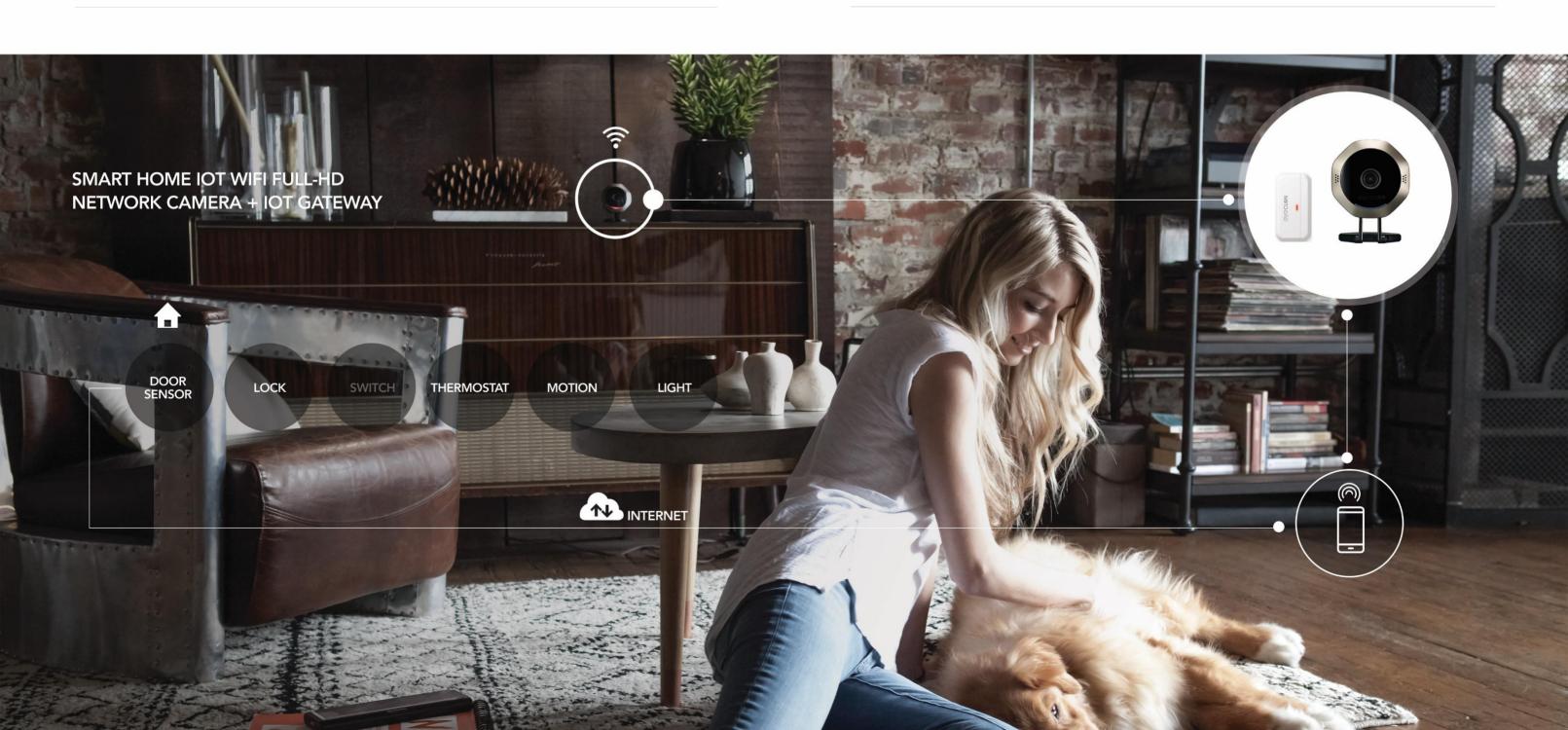


TECHNOLOGY FOR PERFECTION

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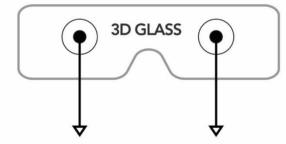
SYSTEM SOLUTION

3D CAMERA

2 cameras can be actuated by one controller. This controller can mix 3D image without any other software

2D or 3D is optional



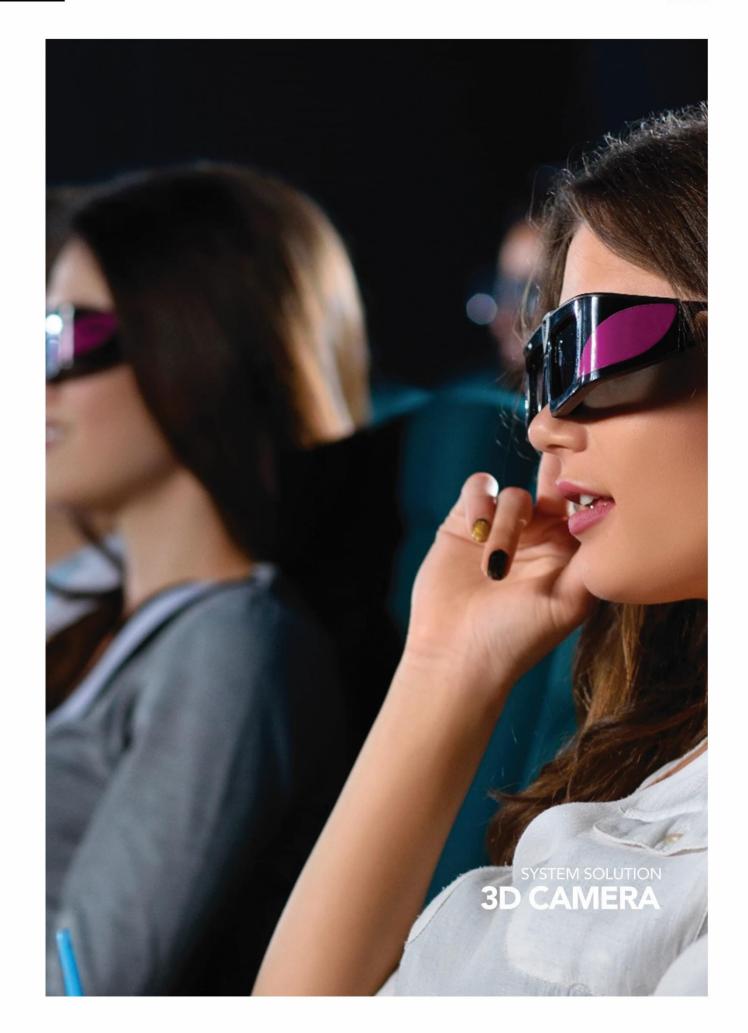






SIDE BY SIDE (SHUTTER GLASS) IMAGE

As displaying right&left frame side by side, open and close a crystal shutter side by side to balance both sides of the frame timing





SYSTEM SOLUTION

VR. AR CAMERA

Co-developed with Leapmotion, leading developer of gesture recognition s/w







MODULE SIZE	105 X 10 X 6.5	PIXEL SIZE	1/4" CSP
	1M	I/F	USB3.0 & MIPI
FOCUS TYPE	FIXED FOCUS	F#	2.0
VIEW ANGLE	180°	IR LED	850NM 150 °

SYSTEM DIVISION

SMART MEDIA

Create a new value with service platform based on the multimedia which is convergenced of ICT and Image Solution

SMART DID







IOT. ICT

CONVERGENCE OF IMAGE SOLUTION AND ICT TECHNOLOGY

INFORMATION COLLECTION

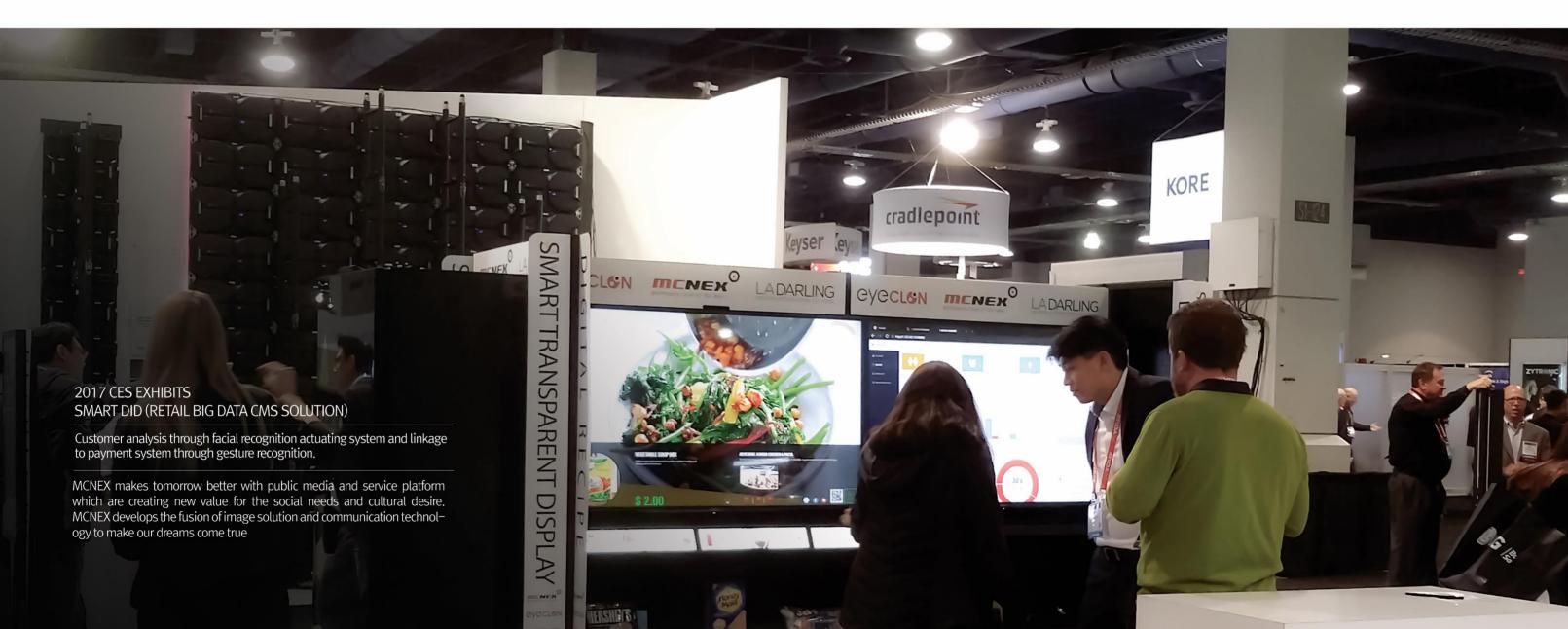
Gender, Age, number of visitors, Preference, purchase pattern, etc

INFORMATION ANALYSIS

Log server save, report date collection, data extraction

INFORMATION SEND

Emergency prevention, translating service, purchase service, visitor data, sales data provide, security, control, suggested service



GLOBALIZATION

GROWING AS GLOBAL PIONEER BY BUILDING GLOBAL NETWORK

CHALLENGE

THE CHALLENGE FOR BETTER TOMORROW IS STILL ONGOING WITH CREATIVE THINKING AND BOUNDLESS PASSION.

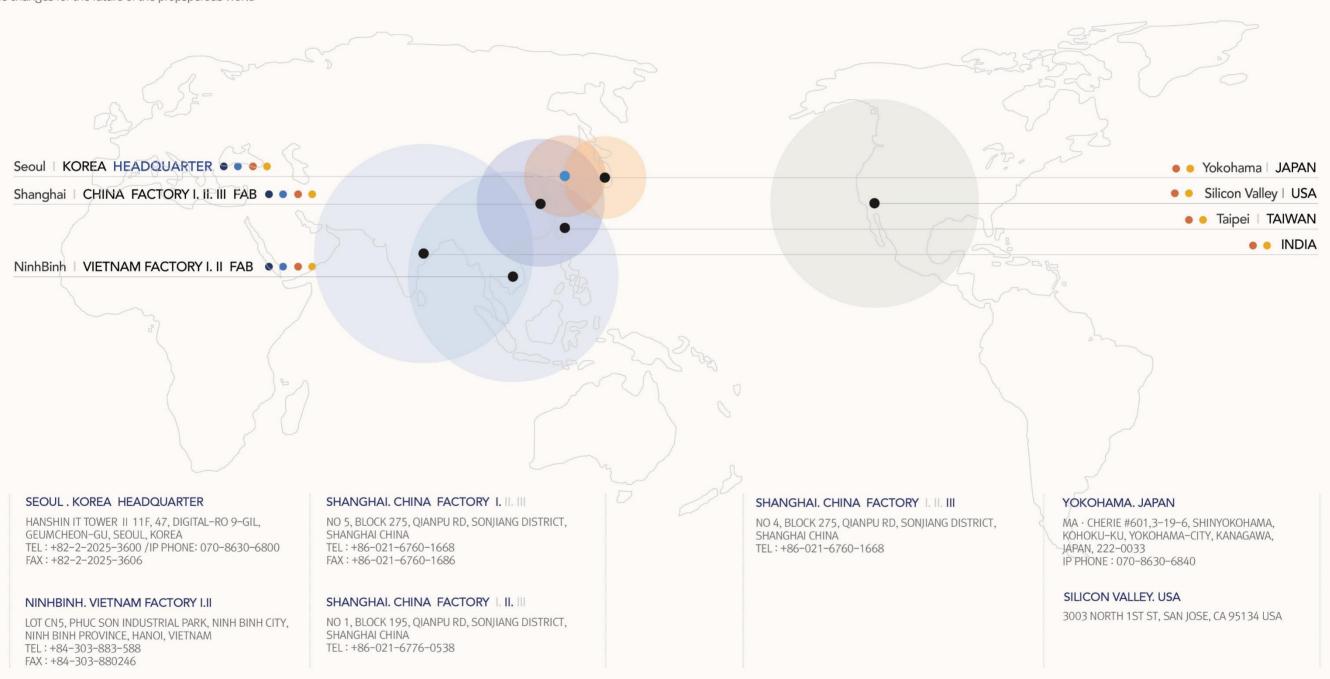
■ R&D
 ■ MANUFACTURING
 ■ SALES
 ■ FAE(FIELD APPLICATION ENGINEER)

GLOBAL NETWORK

GLOBAL NETWORK

MCNEX IS EXPANDING ITS GLOBAL NETWORK ALL OVER THE WORLD.

Contribute to human culture development by leading the IT industry. We lead the changes for the future of the propsperous world



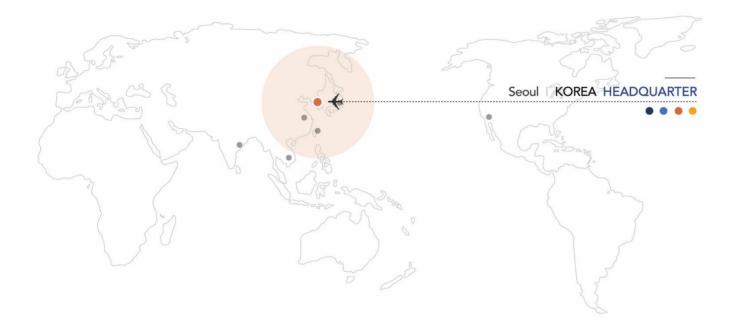


THE EYE OF IT WORLD. MCNEX GLOBAL NETWORK 64

GLOBAL NETWORK

SEOUL. KOREA.

• R&D • MANUFACTURING • SALES • FAE(FIELD APPLICATION ENGINEER)



ORGANIZATION

O ADMIN O MOBILE BUSINESS AUTOMOTIVE BUSINESS O SYSTEM BUSINESS MOBILE R&D R&D SYSTEM SALES H/R SENSOR MODULE **PRODUCTION** SALES SUPPORT ACCOUNTING **FINANCE** SENSOR MODULE R&D QUALITY COMPUTATIONAL TEAM PRODUCTION ENGINEERING SALES **ENGINEERING QUALITY** PRODUCTION MANAGEMENT **IQC TEAM** AUTOMOTIVE PURCHASING **CUSTOMER QUALITY** SCM **PROCURING** SENSOR MODULE QUALITY ACTUATOR COMPONENT QUALITY

HEADQUARTER

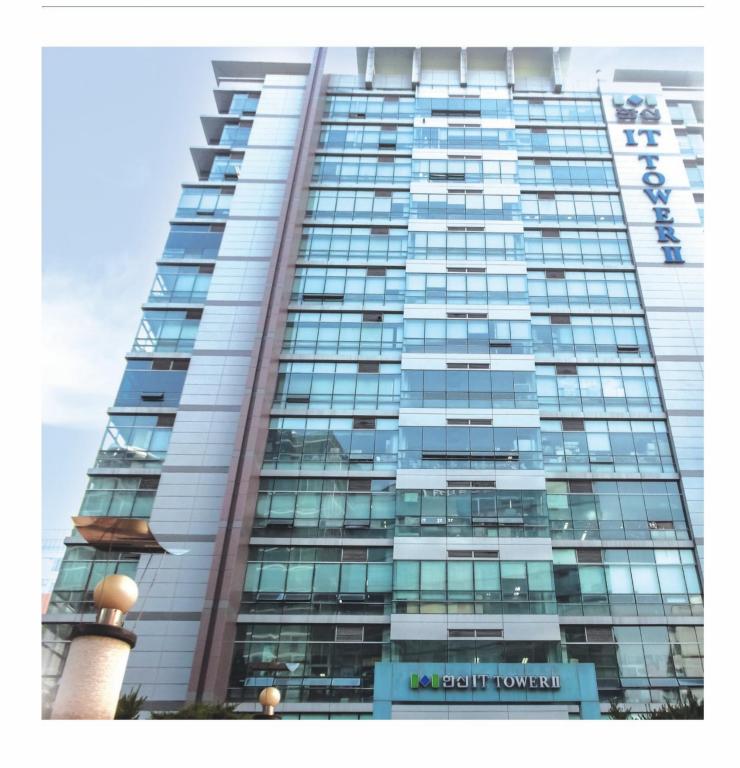
SEOUL / KOREA HEADQUARTER

ADDRESS. HanShin IT Tower II 11F, 47, Digital-ro 9-gil, Geumcheon-gu, Seoul, KOREA

TEL: +82-2-2025-3600 / IP Phone: 070-8630-6800

FAX . +82-2-2025-3606

MANUFACTURING / R&D/ RELIABILITY TEST LAB/ SALES



THE EYE OF IT WORLD. MCNEX

GLOBAL NETWORK

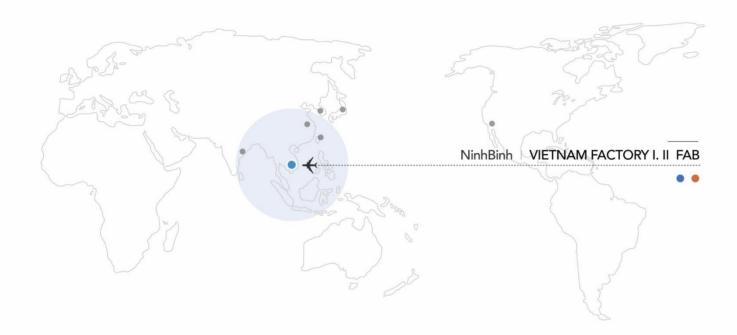
66

67

GLOBAL NETWORK

NINHBINH. VIETNAM.

• R&D • MANUFACTURING • SALES • FAE(FIELD APPLICATION ENGINEER)



TYPE	Dependent on headquarter		LOCATION	Phuc Son Industrial Park, Ninh Binh City	
TOTAL AREA	87,000 m²	BUILDING AREA	47,000 m²	NUMBER OF STAFF	4997

ESTABLISHED MARCH 28TH 2013

ORGANIZATION

O ADMIN

ACCOUNTING H/R GENERAL AFFAIR GOVERNMENT AFFAIR

O FINGERPRINT SENSING MODULE BUSINESS

PRODUCTION ENGINEERING PRODUCTION QUALITY

O SCM

SALES PRODUCTION MANAGEMENT PURCHASE COMPUTATIONAL TEAM LOGISTICS

O ACTUATOR BUSINESS

PRODUCTION ENGINEERING PRODUCTION QUALITY

O CAMERA MODULE BUSINESS

PRODUCTION ENGINEERING PRODUCTION QUALITY

O AUTOMOTIVE BUSINESS

PRODUCTION ENGINEERING PRODUCTION QUALITY

FACTORY I. II

NINHBINH / VIETNAM FACTORY I, II

ADDRESS. Lot CN5, Phuc Son Industrial Park, Ninh Binh City, Ninh Binh Province, Hanoi, VIETNAM

TEL: +84-303-883-588

FAX . +84-303-880246

MANUFACTURING / SALES







THE EYE OF IT WORLD. MCNEX GLOBAL NETWORK

GLOBAL NETWORK SHANGHAI. CHINA.

R&D
 MANUFACTURING
 SALES
 FAE(FIELD APPLICATION ENGINEER)



TYPE	Dependent on headquarter		LOCATION	Plant 275 Qianpu Road Songjiang District Shangha	
TOTAL AREA	7,061 m²	BUILDING AREA	7,061 m²	NUMBER OF STAFF	300

ESTABLISHED MARCH 28TH 2013

ORGANIZATION

ACCOUNTING

GENERAL AFFAIR

GOVERNMENT AFFAIR

O ADMIN

O SCM

MOBILE PURCHASE **AUTOMOTIVE PURCHASE** PRODUCTION MANAGEMENT

O FINGERPRINT SENSING MODULE O AUTOMOTIVE BUSINESS BUSINESS PRODUCTION ENGINEERING **PRODUCTION**

QUALITY RESEARCH

PRODUCTION ENGINEERING

O SALES

SHANGHAI

PRODUCTION QUALITY ENGINEERING SHANGHAI. CHINA

FACTORY I.II.III

SHANGHAI / CHINA FACTORY I. II. III

ADDRESS. No 5, Block 275, Qianpu Rd, sonjiang District, Shanghai CHINA

TEL. +86-021-6760-1668

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MANUFACTURING / SALES / LOGISTICS / R&D

SHANGHAI / CHINA FACTORY | . II. |||

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MANUFACTURING / SALES / LOGISTICS / R&D

SHANGHAI / CHINA FACTORY |. ||. |||

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MANUFACTURING / SALES / LOGISTICS / R&D

01. SHANGHAI / CHINA FACTORY II



02. SHANGHAI / CHINA FACTORY I, III



