

# Wireless ePaper Display Solution

## EPD Product Offering



Embedded Core Group

EPD

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# Saving Trees and Protecting Our Earth

Total Market Volume = **420** Million Tonnes

CAGR = **1-2 %**



**3** Trillions trees on Earth

Losing approx. **15** Billion trees per year

- 420 million tones papers were used in 2015. and we are losing approx. 15 billions trees per year from 3 trillions tree on earth

- If we save 1500pcs of paper every month for 5 years, which 1620 kgCO2 emission will be reduced (1 steak for 20 kg CO2)



Using ground surveys along with satellite data yielded a better estimate of the number of trees in the world. (Photo credit: THOMAS CROWTHER)

Source: Sciencemag.org 2015

**Device Management**

**Sustain for Years**

**Service Management**

**Green Design**

**Reusability**

**Content Design & Delivery**

**Edge Event Feedback**

**Wireless ePaper Solutions**

**Multi-task Capacity**

**Cable-less for Easy Deployment**



# Wireless ePaper Solution Suites



Device Management



EPD Content Delivery



EPD Content Design



Edge Event Feedback



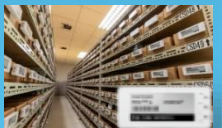
## DeviceOn/ePaper



Full sizes of Solution Suites

2.9"

Inventory Management



Smart Factory

5.6"

Production Cart



Smart Hospital

13.3"

Clinic Information Board



Bedside Card



Smart Hospital

4.37"

Ubiquitous Interactive Device



Smart Building

5.6"

Scheduling Card



Smart Building

26"

Bus Stop



Smart City

31.2"

Smart Lighting



Smart City



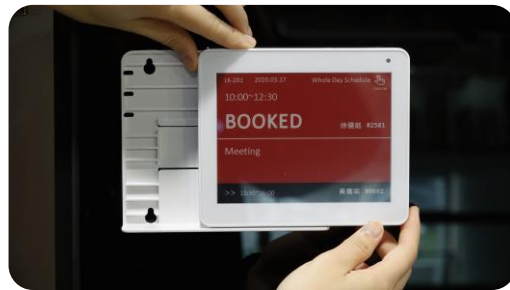
# Wireless ePaper Benefits

## Environmental Friendly



- Save Total Construction Cost
- Lower Electricity Bill
- Good for Eye
- Save Tree
- Reduce CO2 Emissions

## Place & Play



- Reduce Deploying Time with Auto Join Network to
- Easy installation with Cable-less Design
  - ✓ Battery-Powered Display Can Function up to Years
  - ✓ Wireless connectivity

## Digitize Massive Data






- Digitize Massive Hand-written Data
- Reduce Human Error
- Fit in a Variety of Working Scenarios
- Multi-pages to received multi-task at the same Time

# ePaper vs Traditional TFT LCDs

	EPD	LCD/TFT
No power	Image stays	No Image
Power Consumption	Only uses power when changing image. Battery can last for years.	Significant power draw runs the battery down.
Thermal issue	No backlight, no heating	Backlight cause thermal problems
Full reflection	Good under the sunlight	Needs a strong backlight
View angle	180° viewing angle	Limited

	EPD-332 5.6" transmission &reflash times	EPD-230 2.9" transmission &reflash times	EPD-232 2.9" transmission &reflash times
4pcs CR2450	4100	35000	10000

# Industrial ePapers v.s Consumer

Scenario	Industrial	Consumer
Power Capacity & Strong mechanical design	<b>Large (2480mAh)</b>  Stable power design and re-flash image up to 35000 times ,	Small (around 200~400mAh) Power design is not stable and reflash image up to 5000 times ,
Communication Quality	Excellent quality for high-frequency updates in every minute and have the real time access.	One-time weekly or monthly update, no need for real time.
Multiple Tasks	<b>Multi-buttons and LEDs on device</b>  EPD firmware can be adjusted and customized for different user scenarios	No button or LED on device Only receive 1 task at the same time
Operation Temperature & Color	0~50° degree in panel spec.	0~30 degree in panel spec. The color might fade out after 1 year.
Data Storage and long-term solution	Data is physical store in on-site server and full control by authorized user.	Data store in EPD manufacture cloud.
Roaming	<b>EPD can roam in different routers for diverse application scenarios.</b> 	Not support
Server API readiness	Flexible , Open and Completed. User can design it's own application through DeviceOn/ePaper restful API.	Only support few API and not customized

# Smart Factory & Meeting Room Solution Suite



## Warehouse & Logistics

- 2.9" ePaper in Black/White

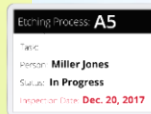


EPD-230/ EPD-232

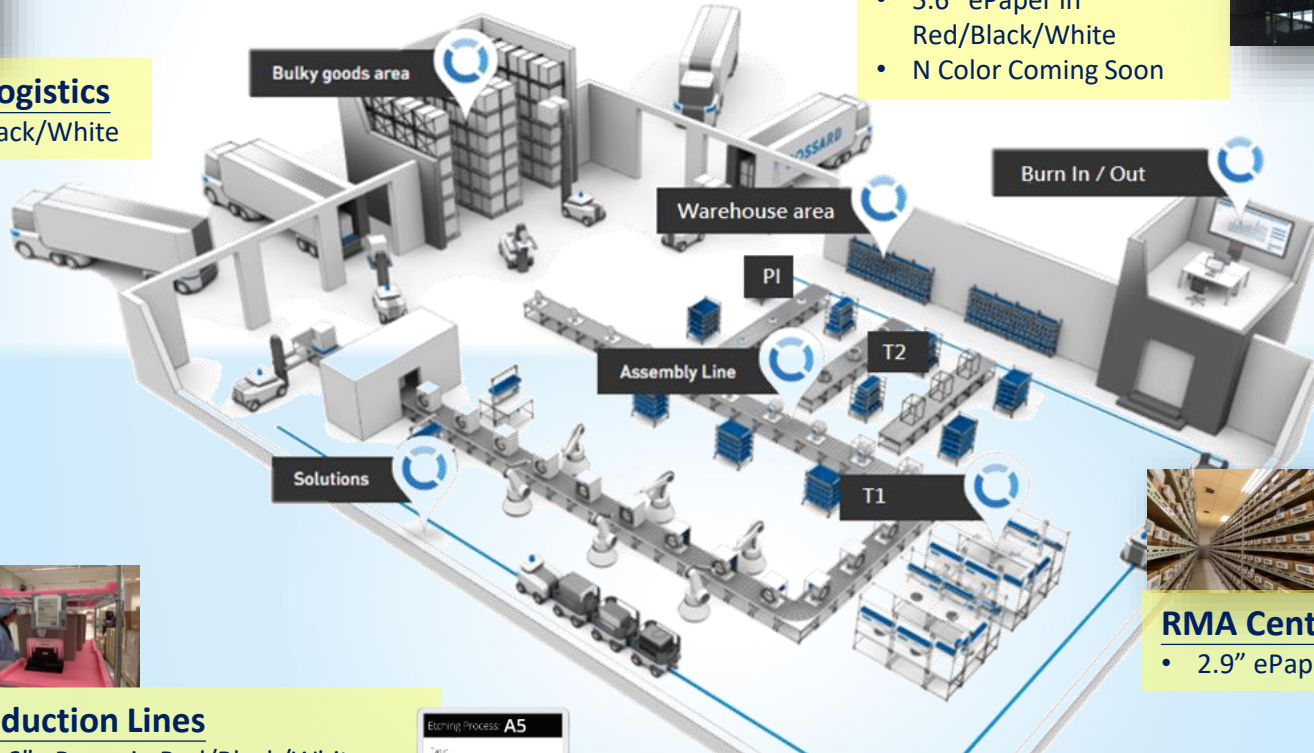


## Production Lines

- 5.6" ePaper in Red/Black/White
- N Color Coming Soon



EPD-330/ EPD-332



## Meeting Room

- 5.6" ePaper in Red/Black/White
- N Color Coming Soon



EPD-330/ EPD-332



## RMA Center

- 2.9" ePaper in Black/White



EPD-230/ EPD-232



# EPD Application Coverage in Smart Factory

## Material Storage EPD-

230,332



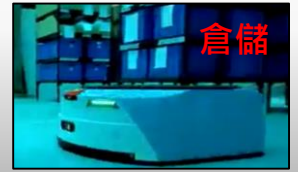
Parts & Components order



Stock warehouse



Pickup material requisition



## Production Process EPD-230,332



Place Order

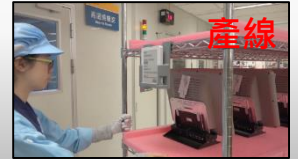
Work Order



Production



Assembly



## Goods Storage EPD-210,211,230



Semi-Finish Goods



Finish Goods



## Logistic EPD-210,211



Stocks



Warehouse Stocks



## Smart Retail EPD-230,332



Smart Retail



Logistic Shipping



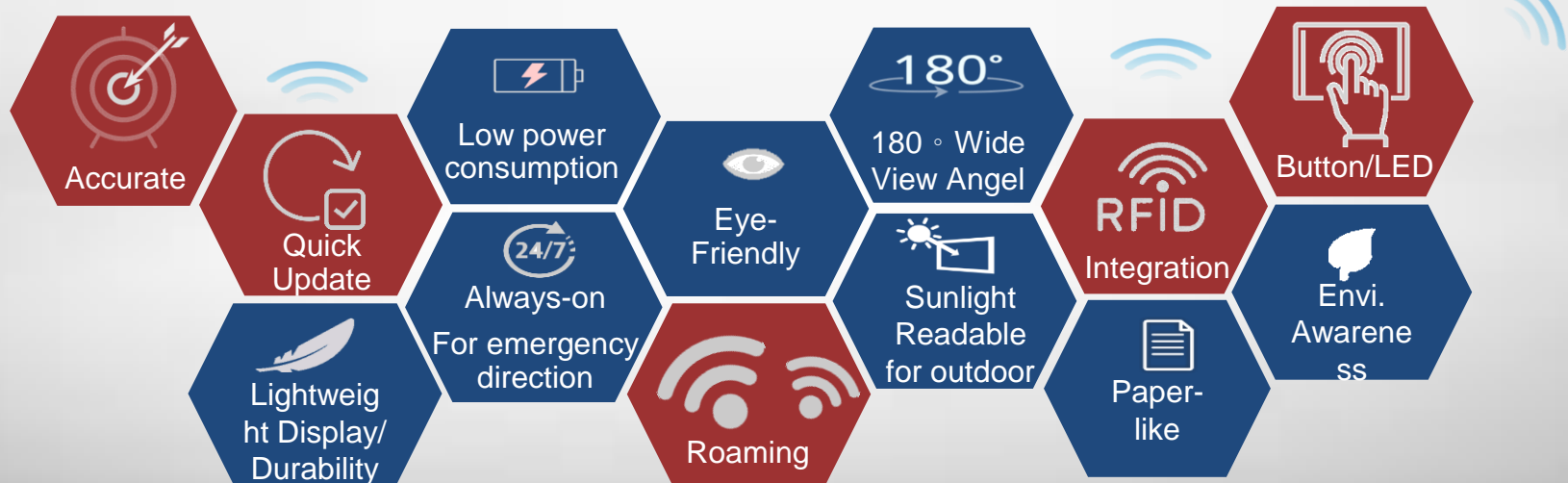
Logistic Picking



# iFactory-Warehouse & In-house Logistic Cart

R&D

- Strong Protection in Battery Power and ePaper
- Provide latest Instruction and warning to field operator
- Multi-button, LED and Page for more interaction
- Roaming between routers for logistic Cart



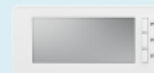
# 2.9" EPD Solution Suite Smart Warehouse Up to 10,000 Storage Bins



ARK-2250L-EP1A2  
1 ARK to 10,000 pcs EPD



WISE-3240 1 router to 400pcs EPD



EPD-230

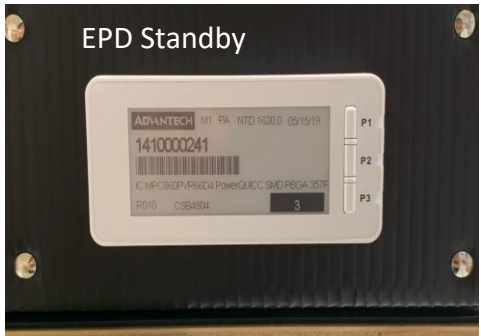
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**ADVANTECH**



# Advantech RMA Warehouse

## EPD Smart Warehouse Working Flow



# Benefit

## What to do

- **Keep Stock Status Updated**
- **Easy to Pick-up Material**

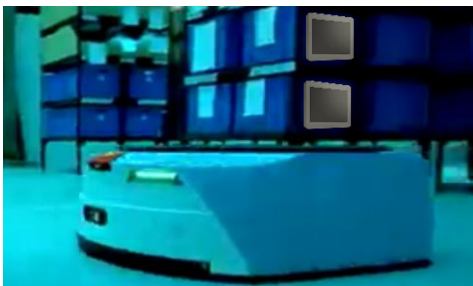
## Benefit

- ✓ **Shorten Repairing working period.**
  - **15 min x 1824 times / month = 27360 mins/60= 456 hours**
- ✓ **Cost down due to Material stock control**
  - **Monthly inventory checking spend 4 hours from 24hours**
- ✓ **Effective Human resource**
  - **Stock operator from 3 to 1 people**



# 5.6" EPD Solution Suite Smart Logistic Cart Up to 10,000pcs

7 colors coming soon



DeviceOn/ePaper



ARK-2250L-EP1A2



WISE-32401 router to 400pcs EPD



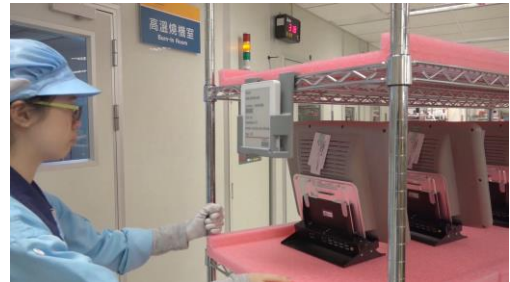
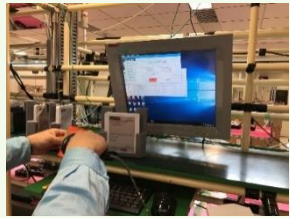
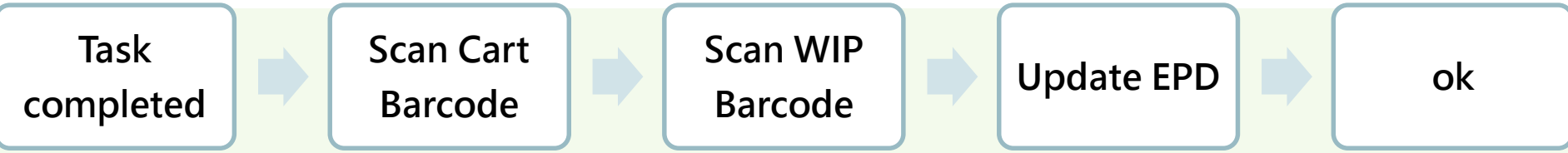
EPD-332

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**ADVANTECH**

# Advantech M9 Assembling Product line

## EPD Cart Management Flow



**Working Station**

Production	Test	T3
<b>CSB-DB30-AGA3E</b>		
TYK700270ZA	/	20
TYK700272ZA	/	10
Arrival: 2020/4/9 下午 02:48:01		
Next: T4		
Rmark: 小心碰撞		
A-9583		
TAG0030	[Barcode]	

**Working Order**

**Control Process**

**Memo**

**Barcode**

# What to Improvement

EPD Solution Suite enables smart factory and warehouse operators to easily locate and verify goods/components according to production instructions. In addition, this solution improves inventory and production management efficiency by automatically updating existing inventory/production control systems using the DeviceOn/ePaper software. This ePaper solution shortens the communication threads in factory either the EPD is staying or running around in the factory. Infact, LEDs and screen provide visualization to help improve picking/production process.

Task	As Is	To Be
Preparing Material data for WIP 備料主要訊息	Manual record 人工紀錄	<ul style="list-style-type: none"> <li>Without RFID reader: OP scan EPD barcode start the work flow and EPD shows the working item</li> <li>With RFID reader: the material with RFID label and Rfid reader will send out the signal to ERP. EPR should send out the data to DeviceOn/ePpaer and then Update EPD</li> </ul>
Working order tacking 台車工單指派 取料提醒與追蹤	Manual record 人工紀錄	<ul style="list-style-type: none"> <li>OP can read EPD screen to know the material name and amount</li> <li>OP follow EPD instruction to pick up the materials and scan QR code to update stock. EPR System can transmit remaining material and received the next working order info on EPD.</li> <li>OP follow the instruction to move the cart the next station.</li> </ul>
Remaining Material Control 台車剩餘料 中控控管	Manual Checking one by one 一台一台檢查	<ul style="list-style-type: none"> <li>OP scan the working order and deduct the amount. The ERP can send the remind data to update EPD</li> <li>Management center can control the overall material status to avoid the mistake.</li> </ul>
Run Cart working hour and location 台車工作時間與位置	Op running around the field 跑片所有樓層	<ul style="list-style-type: none"> <li>Without RFID reader: System can retrieved the signal from WISE-3240. According to WISE-3240 installation, management can know the EPD in which floor and area</li> <li>With RFID reader: the material with RFID label and Rfid reader will send out the signal to ERP and we can know where is the EPD with RFID label. EPR should send out the data to DeviceOn/ePpaer and then Update EPD</li> </ul>

# Benefit

## What to do

- Material data Status Update & Working Order Tracking

## Benefit

- Preparing Material data for WIP
- Run Cart working flow control and location control
  - Operator :  
 $30 \text{ min} \times 100 \text{ operator} \times 20 \text{ day} = 3000 \text{ mins} / 60 = 1000 \text{ hours per month}$
- Working order tacking
- Remaining Material Control
- Run Cart working process hour and location
  - Manager :  
 $60 \text{ min} \times 5 \text{ pm} \times 20 \text{ day} = 6000 \text{ mins} / 60 = 100 \text{ hours per month}$

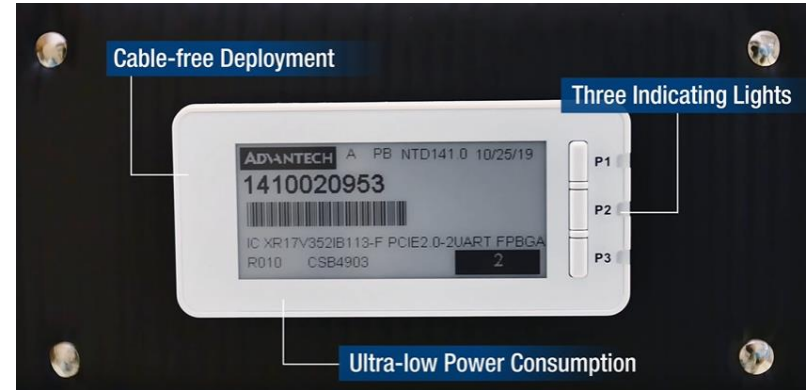
# Case Study

## [Smart Factory View Online](#)



*Wireless ePaper Display Solutions for Smart Factory*

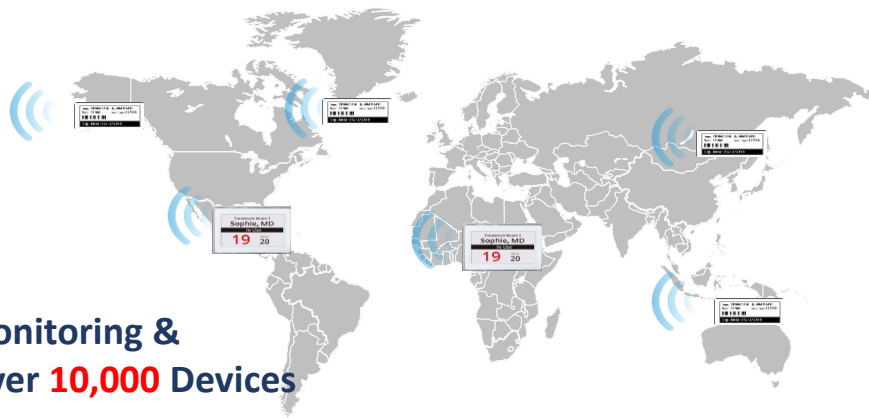
## [Inventory Case Study View Online](#)



*Boost the Order Picking Efficiency by Advantech Wireless ePaper Display Solutions*



# DeviceOn/ePaper Service Offering



Real-Time Monitoring & Firmware OTA for over **10,000** Devices

## Device Management

- Device monitoring
- Battery/Status Report
- Task report
- Remote control

## Service Management

- FW/image to device
- Scheduling execution
- Event management

## Image Generator

- Drag & Drop the image design component
- Image preview
- Data field setting to receive restful API
- Image file transform to system format

## Integration

- Provide API for device update
- Provide sample code for SI integration

# Image generator

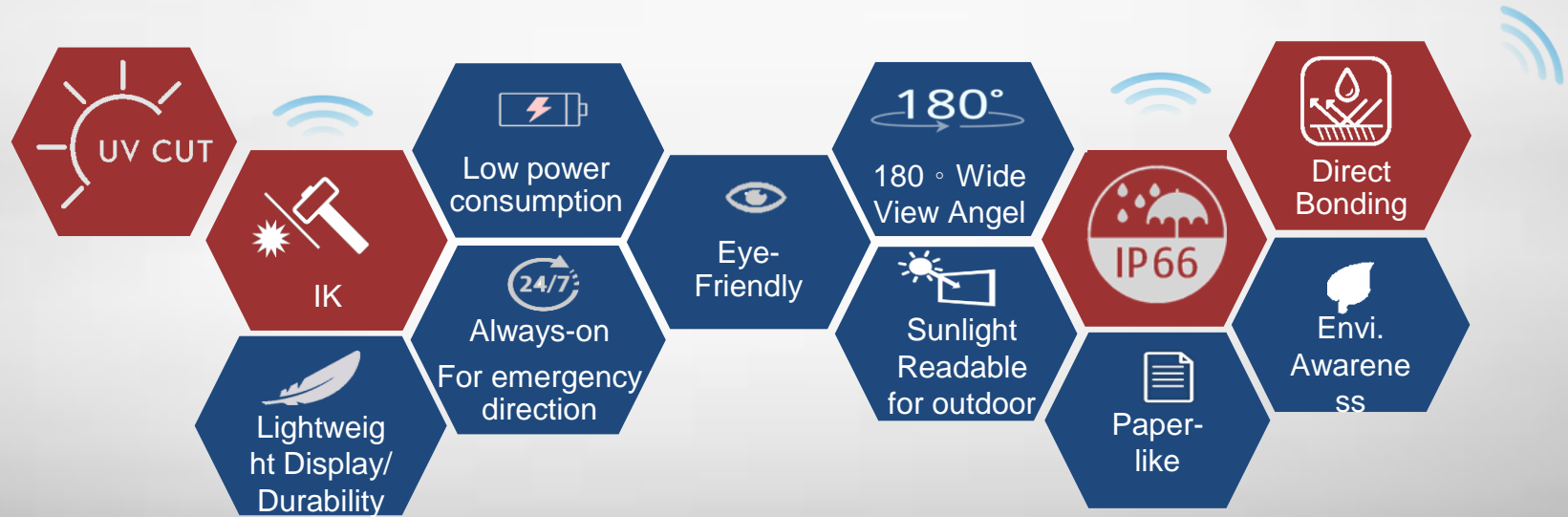
The screenshot displays the ePaper Manager interface for editing a template named 'MeetingRoom-2'. The main workspace is a red canvas with various text elements and a 'Click Me' button. A blue box highlights the top toolbar, which includes icons for undo, redo, zoom, and other editing tools. A 'Label' tooltip is visible over the 'Click Me' button. The right sidebar shows the 'Canvas' settings panel, which includes fields for Name, Item Group, Size, Background color, Grid Line, Direction, Display orientation, and Schematic view.

**Canvas Settings:**

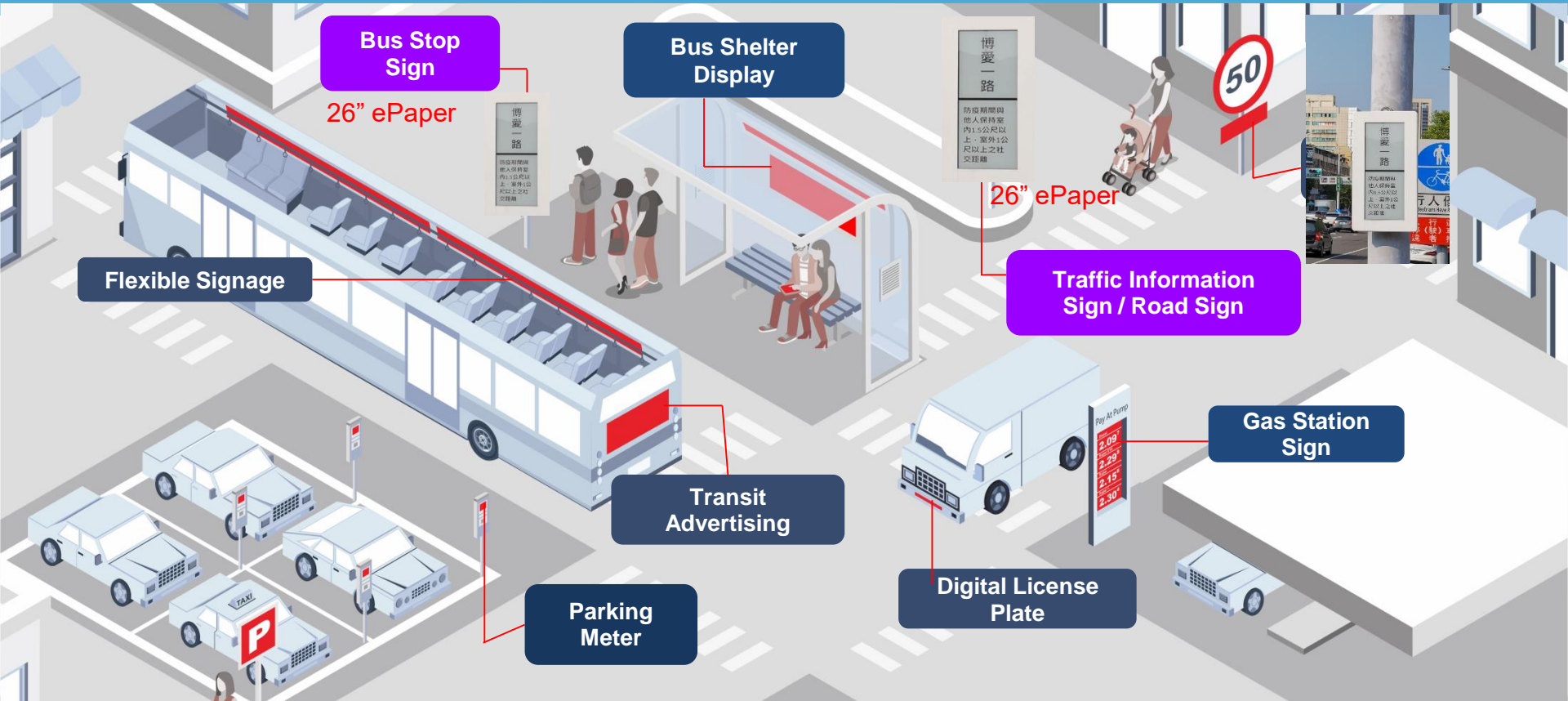
- Name: MeetingRoom-2
- Item Group: MeetingRoom
- Size: EPD-053R - 600\*448
- Background color: White
- Grid Line: [Empty]
- Direction: Landscape
- Display orientation: +180 degree
- Schematic view: [Empty]

# 01 iCity Service

- Strong Protection via IK and IP Mechanical Design
- Direct Bond to avoid the moisture and refraction
- Flexible Configuration for Edge & Cloud installation



# Smart Transportation



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**ADVANTECH**

# 26" EPD Solution Suite Smart Lighting with Edge Computing



1. EPD-780 with 2pcs 13.3" ePaper display

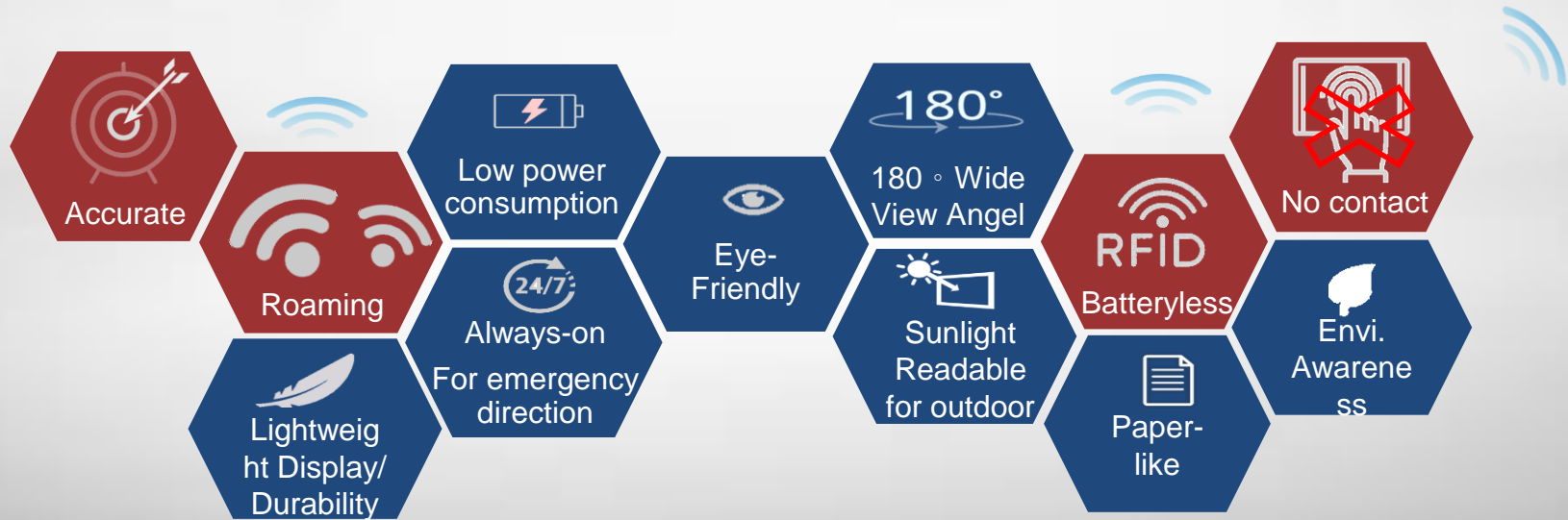
ARK-1123H-EP2A2  
Shipping with ePaper Manager  
Installed in local

2. EPD-770 with 2pcs 13.3" ePaper with 4G/LTE EWM-C117 display



# 02 iFactory –Logistic Box

- Batteryless
- Roaming between reader
- Solution integrated with DeviceOn/ePaper



# EPD-210 , EPD-211 Battery-less Revolution



**NFC**

**UHF**

**APP ready**

Advantech EPD NFC Writer

No contact to change data and detect device

# 2.9" EPD Solution Suite Smart Logistic Bins Battery-less



NFC reader driver  
on PC or mobile



EPD-210

EPR-210

1. Easy to scan QR code
2. Easy to change Data by Reader or mobile phone
3. Change image through Mobile APP

# 2.9" EPD Solution Suite Smart Logistic Bins Battery-less / UHF

Coming Soon 2021 Q3



NFC/UHF reader  
driver on PC



EPD-211



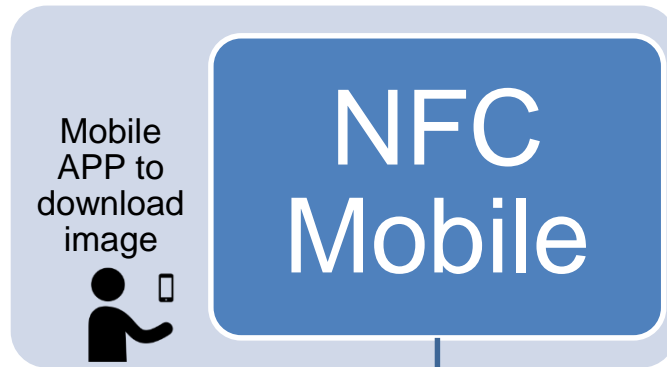
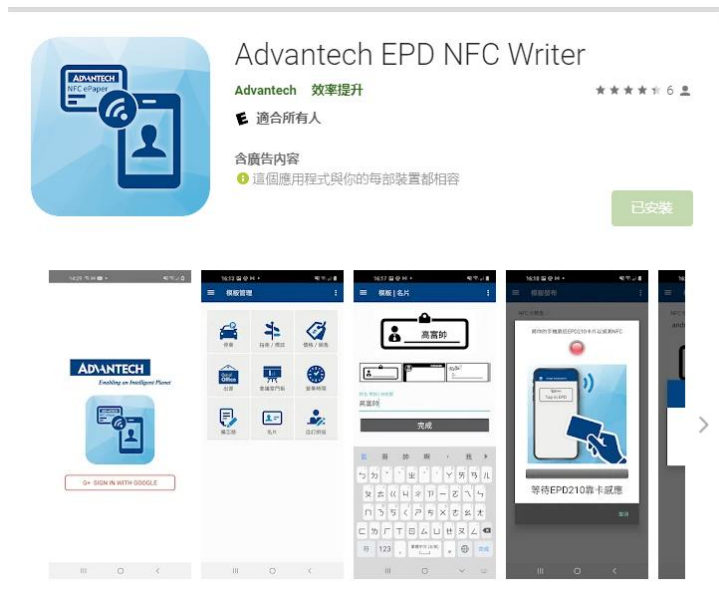
EPR-211

1. Easy to scan QR code
2. Distance between reader and device around 30 cm



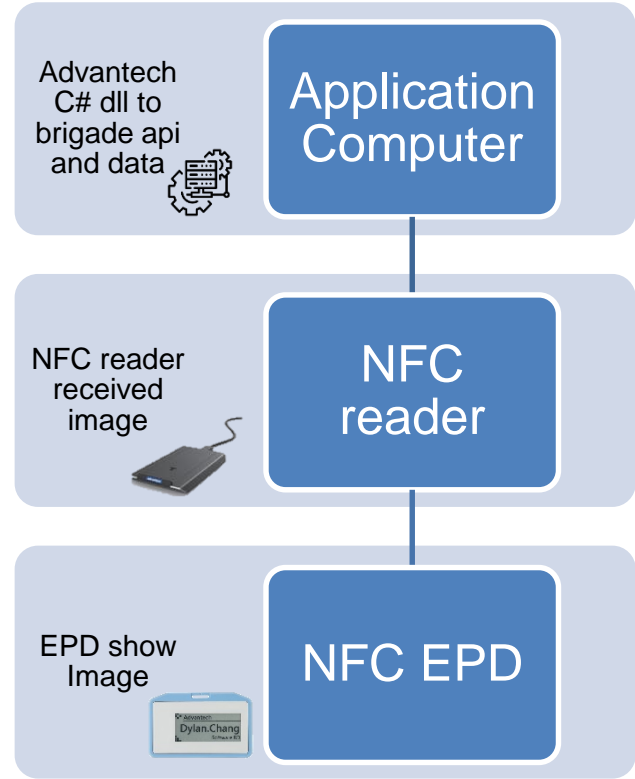
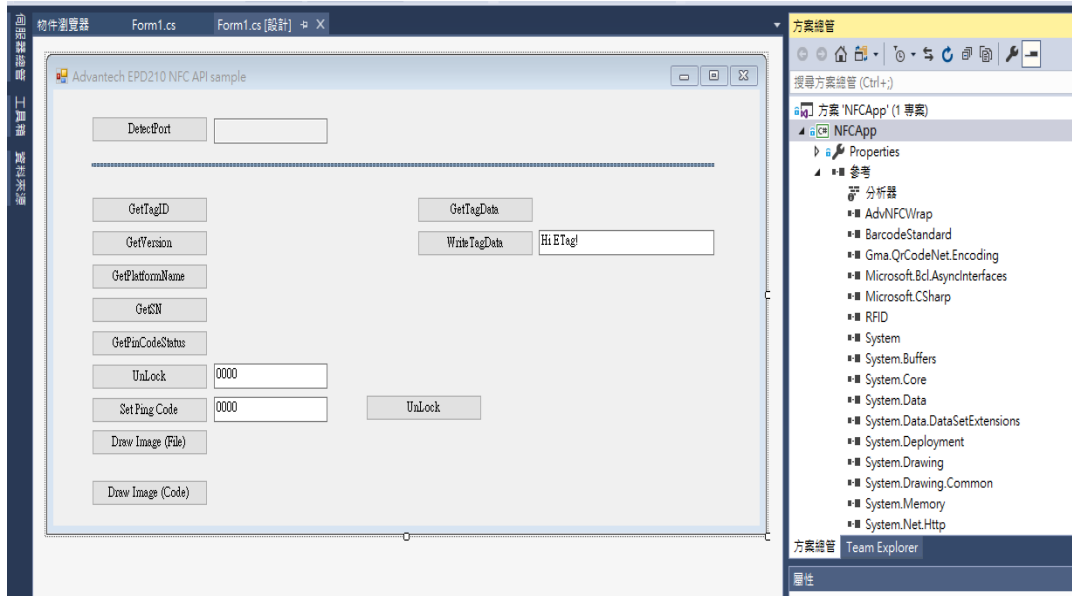
# Android APP for End User to Change

[https://play.google.com/store/apps/details?id=com.advantech.nfcepaper&hl=zh\\_TW&gl=US](https://play.google.com/store/apps/details?id=com.advantech.nfcepaper&hl=zh_TW&gl=US)



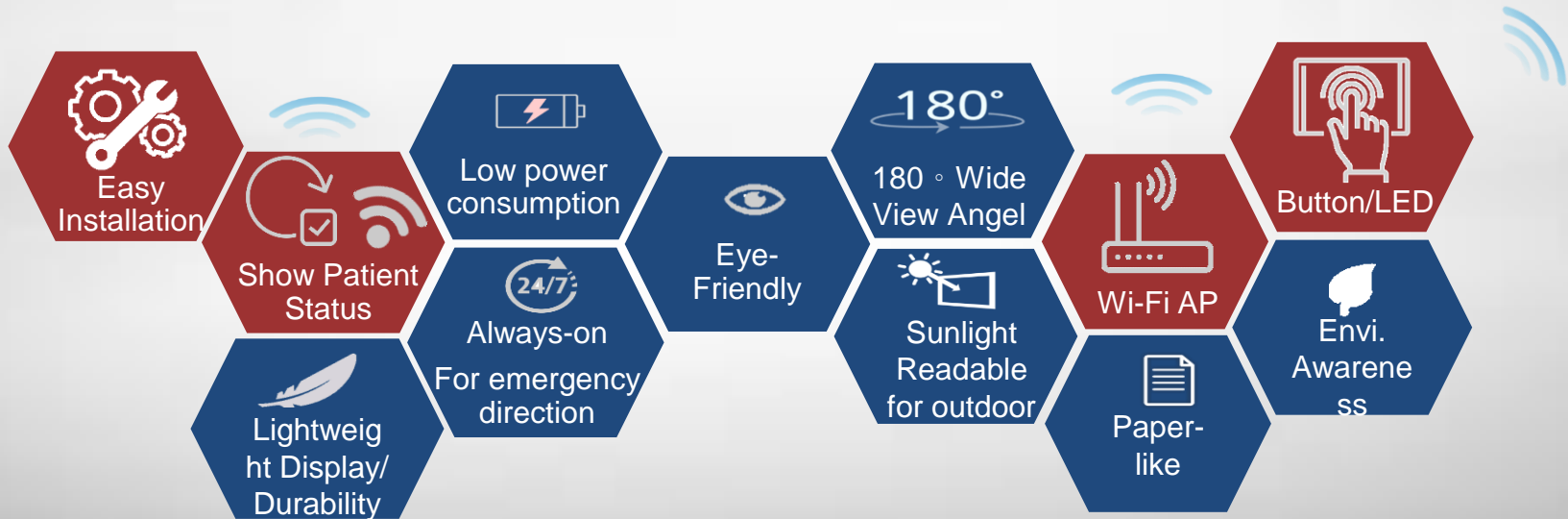


# C# Sample code & dll to develop Application



# 03 iHospital

- Easy installation with battery
- Easy deployment : connect to field Wi-Fi AP
- Power sustain up to 8 months (Update 3 times per day)



# Smart Hospital and Ward Room Solution Suite

2.9" ePaper in Red/Black/White  
For Smart Pharmacy



5.6" ePaper in Red/Black/White  
For Smart Clinic Door Card



2.9" NFC ePaper Name Card



31.2" ePaper in Black/White  
For Smart Operating and Clinic Room

13.3" ePaper in Red/Black/White  
For Smart Ward Room



# Hospital Bedside Card

Construction for power and internet cable  
需要實體電線與網路線



Strong Backlight make patient uncomfortable  
背光造成病人無法充分休息





# 13.3" EPD Solution Suite Smart Bedside Card



DeviceOn/ePaper



ARK-2250L-EP1A2 for 500pcs EPD



WISE-3220 for Config  
SSID/Password



EPD-660 for Black and White color panel  
EPD-662 for Red ,Black and White color panel

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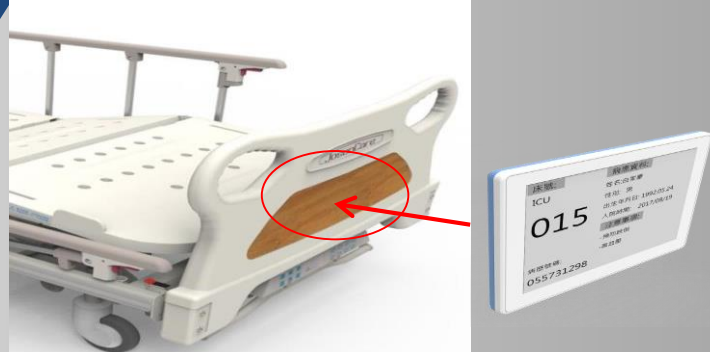




# 5.6" EPD Solution Suite

## 病床卡/急診室病床卡

### Up to 10,000pcs



7 colors coming soon



心臟外科-2A	
入院時間: 2017.08.19	床號:
姓名: 白家豪	015-A
性別: 男♂ -國語-台語	
出生年月日: 1972.05.24	
病歷號碼: 055731298	
主治醫師 魏 暉	護理師 宋哲娜
病徵 特殊狀況	注意事項
-二級護理	-預防跌倒
-流質飲食	-禁油膩
-高血壓	-藥物過敏



ARK-2250L-EP1A2



WISE-32401 router to 400pcs EPD



EPD-332

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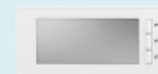
# 2.9" EPD Solution Suite 智慧藥局/智慧藥車標示牌



ARK-2250L-EP1A2  
1 ARK to 10,000 pcs EPD



WISE-3240 1 router to 400pcs EPD



EPD-230

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## EPD-230 2.9" ePaper Help the Picking Medicine in Accuracy and Safety way

In ICU , how the medicine delivery to right ward room. The Medicine will be delivered to the medicine cabinet from pharmacy . Then the nurse will be recognized by facial recognition. The cabinet will provide the medicine automatically after facial recognition.

### Benefits:

- ePaper devices keeps information updated
- Improves indicator and screen for more efficiency and time control.
- Reduces error rate and inquiry time

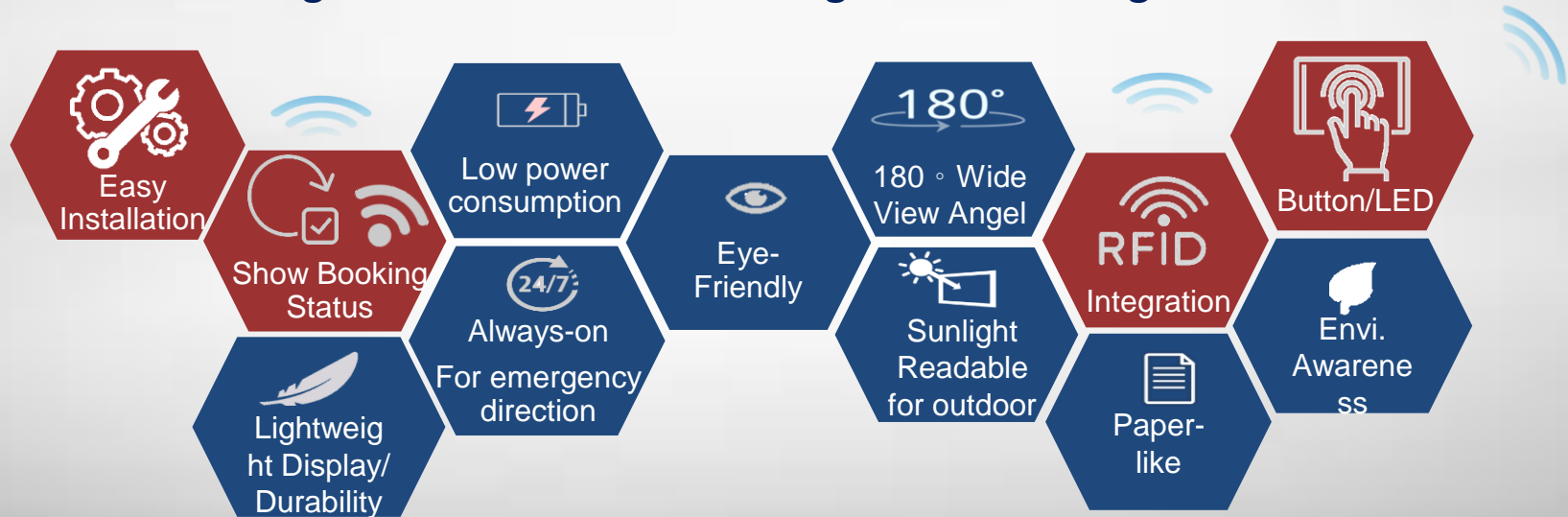


Digital Label



# 04 iBuilding

- Integrated with MS outlook exchange and office365
- Cable-less for Easy installation e.g. stick on glass door or embedded into the wall
- Multi-button, LED and Page to provide more information to end user
- Solution integrated with Sub-1G RF ID e.g. check-in or register







# 5.6" EPD Solution Suite Smart Meeting Room



7 colors coming soon



DeviceOn/ePaper



ARK-1123H-EP2A2



Outlook Agent



WISE-3240



EPD-332

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ADVANTECH



# 5.6" EPD Solution Suite Equipment Management Up to 10,000pcs



7 colors coming soon



DeviceOn/ePaper



ARK-2250L-EP1A2



WISE-3240, 1 router to 400pcs EPD



EPD-332

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**ADVANTECH**

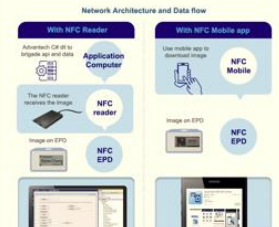
# 2022 ePaper Marketing Package

## FAO\_Oct.

### NFC-powered Logistic Solutions

- Warehouse labels
- Logistic box tags
- Visitor badges

New



Coming in Oct./B

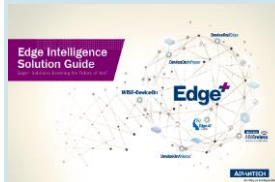
## eCollaterals

### Wireless ePaper eBook



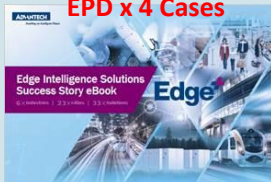
[View Online](#)

### Solution eBook



PN-860000562  
[View Online](#)

### Application eBook EPD x 4 Cases



PN-860000565  
[View Online](#)

## Themed-focused Campaign

### ePaper Online Hands-on Lab

New



Coming in Oct.

### ePaper Star Products AD



[View Online](#)

## New Applications

### Q4 Medical Field

New



Coming in Nov.

ADVANTECH

*Go Together,  
We Go Far and Grow Big*



Co-Creation  
共創

Intelligent Factory  
iFACTORY  
MADE IN CHINA  
2025  
ADVANTECH  
WISE-PaaS  
IoT Edge Intelligence  
INDUSTRY 4.0  
NB-IoT  
EdgeLink  
Ushop+  
Intelligent Transportation  
INTELLIGENT RETAIL  
IoT Edge Intelligence  
Business Solution  
WISE-PaaS Alliance  
Service IoT  
Embedded IoT  
IoT  
Co-Crea  
Enf  
IoT.SENSE  
iLogistics  
UShop+  
Energy & Environm  
WebAcc-ss  
Embe  
Ready A  
IoT.SRP  
IoT.SRP  
Enf

# EPD Naming Rule

1	2	3	4	5	6	7
E	P	D	-	2	3	0

### 3. Product Category

D= System  
M= Module

### 5. ePaper Size

2= 2.9"~5"  
3= 5.6"~9"  
5= 9.7"~13"  
6= 13.3"~25"  
7= 26"~30"  
8= 31.2"~

### 6. RF Spec Data Interface Spec

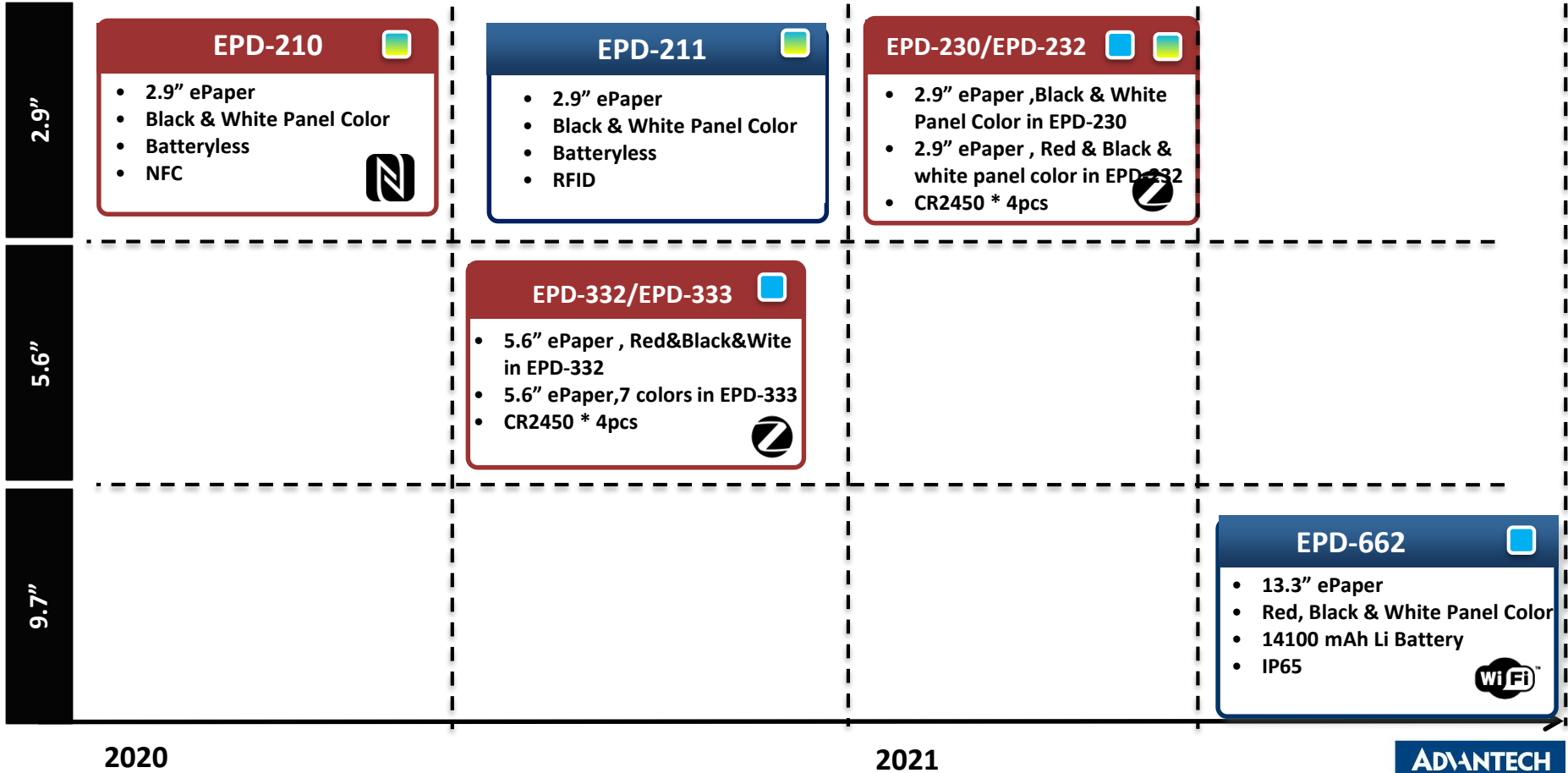
1 = NFC  
3 = ZigBee  
5 = BLE  
6 = Wi-Fi  
7= 4G/LTE/5G  
8 = Wired (e.g. USB/SPI)

### 7. Color, or Product version

0 = Black , White  
2 = Red , Black , White  
3 = 7 colors

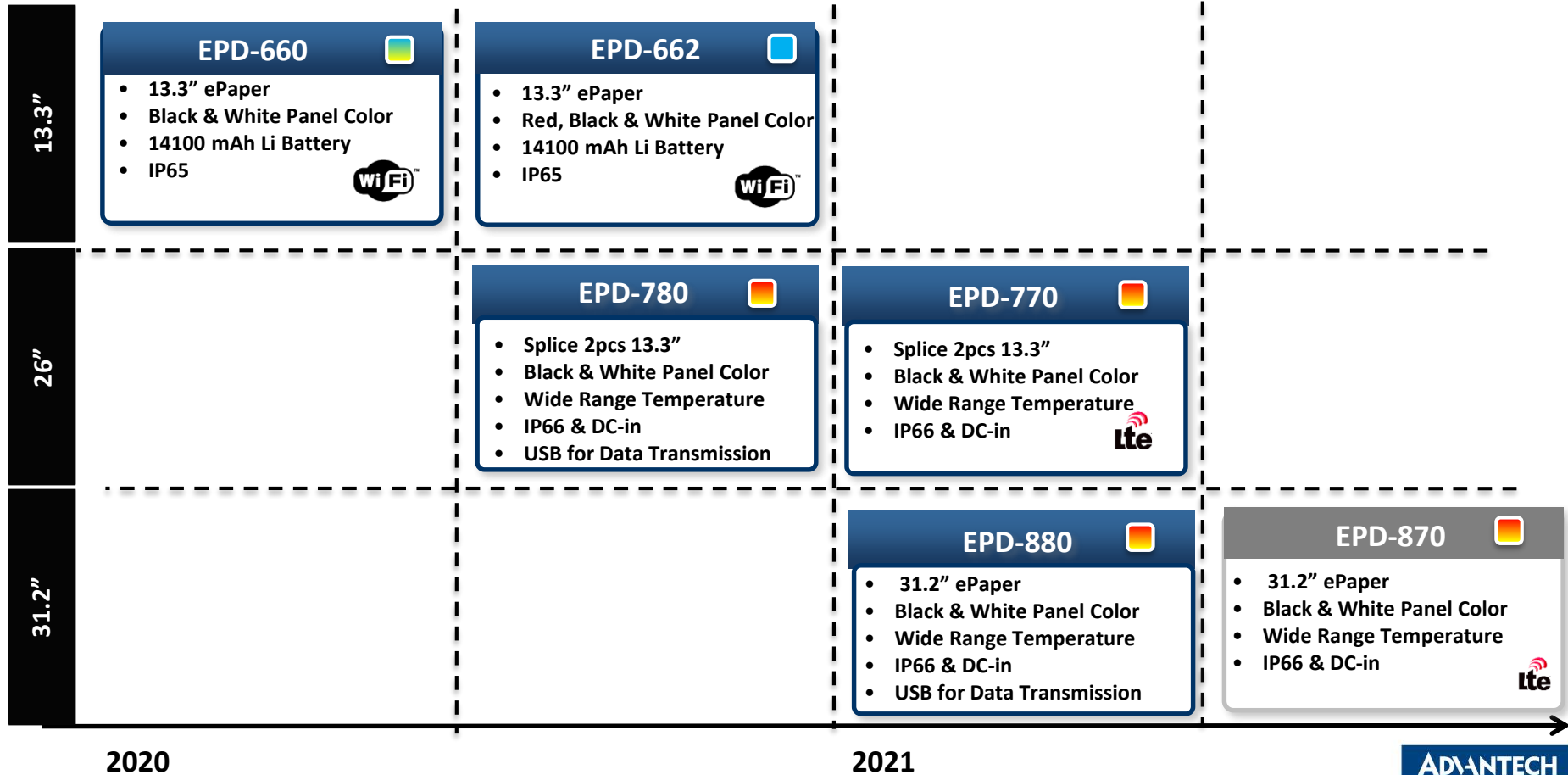
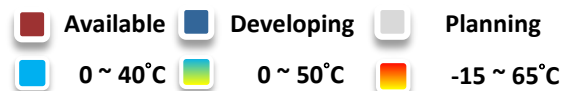
# Hospital & Logistic ePaper Solution

■ Available  
 ■ Developing  
 ■ Planning  
■ 0 ~ 40°C  
 ■ 0 ~ 50°C





# ePaper Signage Solution



2020

2021

# EPD Naming Rule

1	2	3	4	5	6	7
E	P	M	-	8	8	0

### 3. Product Category

D= System  
M= Module

### 5. ePaper Size

2= 2.9"~5"  
3= 5.6"~9"  
5= 9.7"~13"  
6= 13.3"~25"  
7= 26"~30"  
8= 31.2"~

### 6. RF Spec Data Interface Spec

1 = NFC  
3 = ZigBee  
5 = BLE  
6 = Wi-Fi  
7= 4G/LTE/5G  
8 = Wired (e.g. USB/SPI)

### 7. Color, or Product version

0 = Black , White  
2 = Red , Black , White

# ePaper Module

