

# **Business Proposal : Portable X-RAY**

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# Contents

## 1. Product Introduction

- Portable X-Ray Medical appliances : MINE ALNU
- The Strength of MINE ALNU (Portable X-Ray)
- Domestic and International Examples
- An expert's feedback
- Portable X-ray: Filming image

## 2. Business Proposal

- Quarantine Guidelines of the South Korea Government
- Quarantine Guidelines of the Malaysian Government
- Improved Solution to COVID-19
- The rapidly growing 'Global Portable X-ray Market'

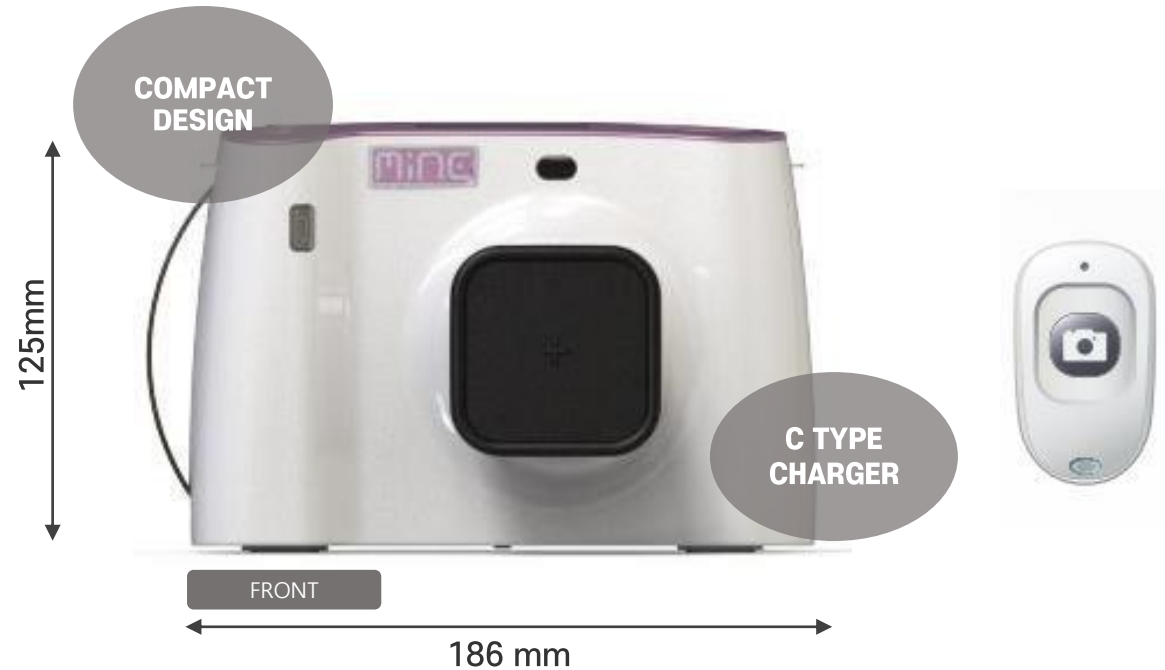


# 1. Product Introduction

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- **Portable X-Ray Medical appliances : MINE<sub>(2,ALNU)</sub>**
- **The Strength of MINE<sub>(portable X-Ray)</sub>**
- **Performance of MINE 2**
- **Domestic and International Examples**
- **An expert's feedback**
- **ENT Review**
- **Portable X-ray : Filming image**

## 2. Portable X-RAY Medical appliances : MINE 2



**Ultra Low Dose Radiation**

**60~70kV**

**2mA**

**120W**

Provides Clear Images / Charges With 120W Power  
No Voltage Instruments Required / Compact & Simple Design

## 2. Portable X-RAY Medical appliances : MINE ALNU



**Low Dose Radiation**  
**60~80kV (Adjustable)**  
**3mA**  
**120W**  
**200 shots per full charge**

Provides Clear Images / Charges With 120W Power Supply  
No Voltage Instruments Required / Light Weight, Compact & Simple Design

## 2. Portable X-RAY Medical appliances : MINE ALNU



Additional  
Filter Inlet

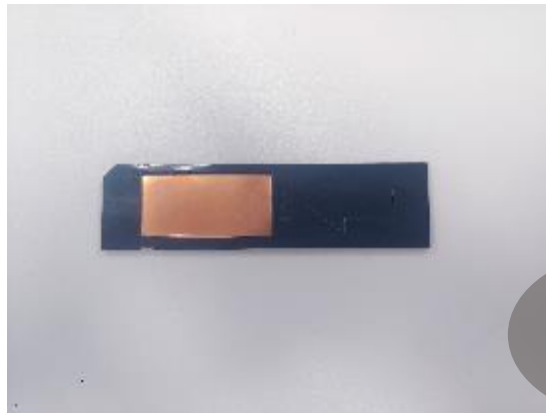


>40cm (Irradiation Activated)



<40cm (Irradiation Inactivated)

Distance  
Measuring  
Sensor



Additional  
Filter for  
Child  
(Reduce  
Radiation)



Battery life  
Indication

Provides Clear Images / Charges With 120W Power Supply  
No Voltage Instruments Required / Light Weight, Compact & Simple Design

## 2. The Strength of MINE (portable X-Ray)



MODEL : MINE ALNU  
Weight : 2.9kg



MODEL : MINE 2  
Weight : 1.8kg

**1) Easy portability**

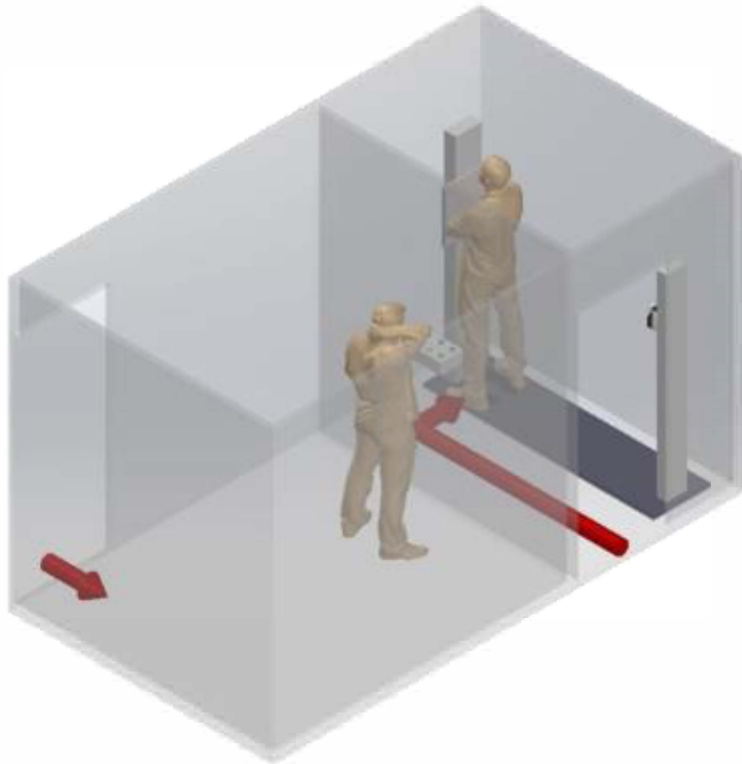
**2) easy installation**

**3) Examination without contact**

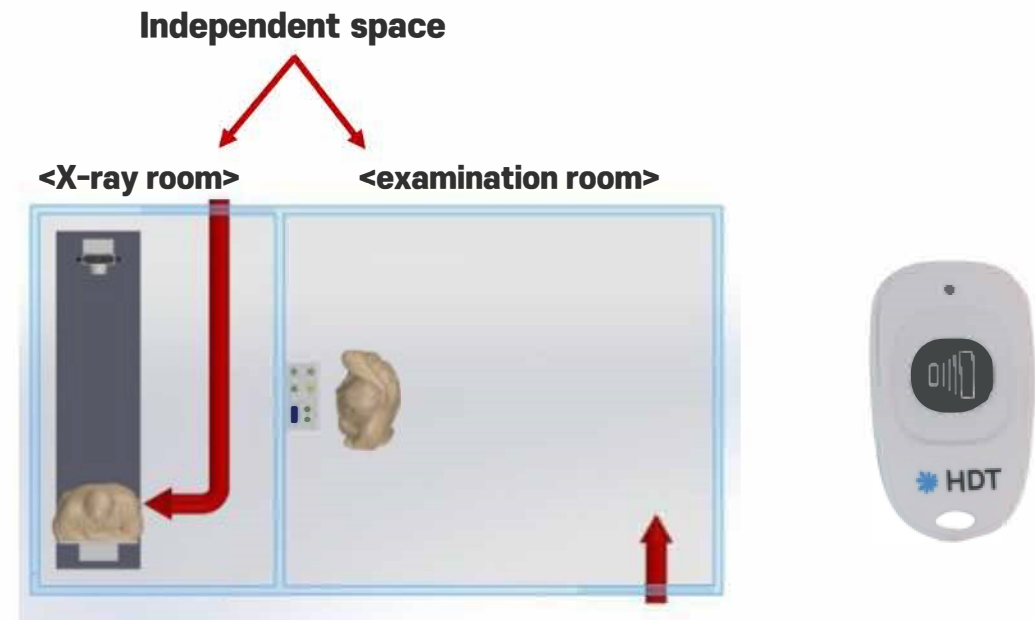
**4) Low Radiation Dose**

**5) Convenient Customer Service**

## 2. The Strength of MINE ALNU: Examination without contact



**Examination without contact**

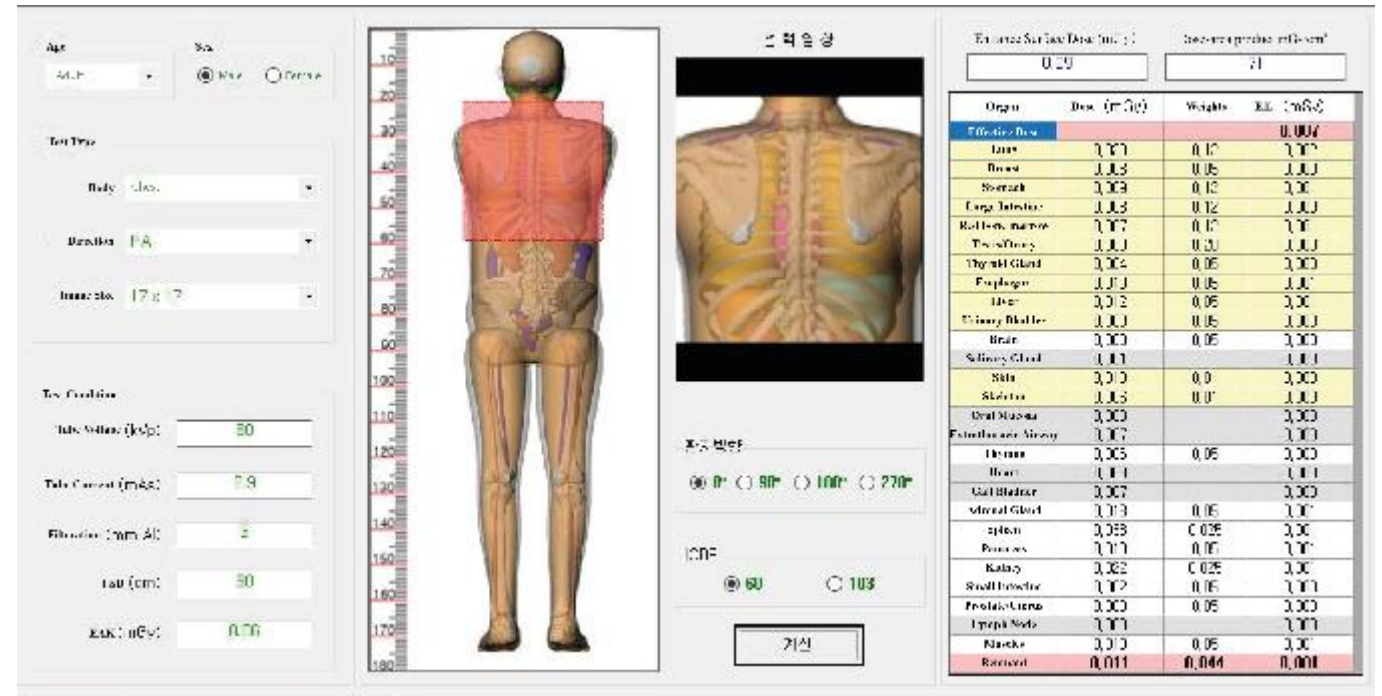


**Remote control operation**

## 2. The Strength of MINE ALNU: Low Radiation Dose

Measuring point	Test Result
Front	94.48 μGy
Right diagonal	178 nGy
Left diagonal	312 nGy
Rear	N/A
Rear left diagonal	106 nGy
Rear right diagonal	71 nGy
Top	77 nGy
Bottom	81 nGy
Right	67 nGy
Left	82 nGy

### Comparative analysis of radiation exposure (Criteria : Mine 2.1 )



# MINE ALNU

HDT's "MINE ALNU" radiates lower radiation than conventional medical X-Ray devices.

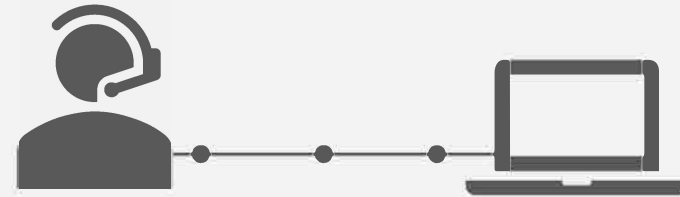
## Low radiation dose : Safer for children

## 2. The Strength of MINE ALNU : Quick Customer Service

<Customer Service : Quick response>



<Contact unnecessary : remote support>



# 2. Performances of MINE 2: Domestic

## <Domestic>



1) Screening Clinics  
Public health centers in every  
25 districts of Seoul, a capital city of  
South Korea

Capital Seoul: District public health center	31 SET in Total (Every district in Seoul)	Jongno-gu Public Health Center	1SET	Feb-20
		Jung-gu Health Center	2SET	Feb-20
		Yongsan-gu District Public Health Center	1SET	Feb-20
		Seodaemun District Public Health Center	1SET	Feb-20
		Mapo-gu Health Center	1SET	Feb-20
		Seongdong-gu Health Center	2SET	Feb-20
		Dongdaemun-gu Public Health Center	1SET	Feb-20
		Eunpyeong-gu Health Center	2SET	Feb-20
		Seongbuk-gu Health Center	2SET	Feb-20
		Gangbuk-gu Health Center	1SET	Feb-20
		Dobong-gu Health Center	2SET	Feb-20
		Nowon-gu Health Center	1SET	Feb-20
		Junngang-gu Health Center	1SET	Feb-20
		Gwangjin-gu Health Center	1SET	Feb-20
		Gangseo-gu Health Center	1SET	Feb-20
		Yangcheon-gu Health Center	1SET	Feb-20
		Guro-gu Health Center	1SET	Feb-20
		Geumcheon-gu Health Center	1SET	Feb-20
		Yeongdeungpo-gu Health Center	2SET	Feb-20
		Dongjak-gu Health Center	2SET	Feb-20
		Gwanak-gu Health Center	1SET	Feb-20
		Seocho-gu Health Center	1SET	Feb-20
Other Region: District public health center	4 SET in districts of other regions	Health Center, Hampyeong-gun	1SET	Feb-20
		Health Center, Muan-gun, Jeollanam-do	1SET	Feb-20
		Damyang County Public Health Center	1SET	Mar-20
		Gangneung Health Center	1SET	Mar-20

## 2. Performances of MINE 2: Domestic

### <MBN National News>



## 2. Performances of MINE 2: Domestic

### <Domestic>



2) Korean Tuberculosis Association  
Every Branch Office in South Korea

Health field	Tuberculosis Association	15 SETS	Tuberculosis Association	
			Seoul	2SET
			Gyeonggi-do	2SET
			Busan	1SET
			Incheon	1SET
			Gangwon-do	1SET
			Chungbuk	1SET
			Daejeon/Chungnam	1SET
			Jeonbuk	1SET
			Gwangju/Jeonnam	2SET
			Daegu/Gyeongbuk	1SET
			Ulsan/Gyeongnam	1SET

## 2. Performances of MINE 2: Domestic

### <Domestic>



3) Armed Forces Capital Hospital

Defense field	Army Management Headquarters	14SET	Armed Forces Daejeon Hospital	1SET
			Armed Forces Guri Hospital	1SET
			Armed Forces Yangju Hospital	1SET
			Armed Forces Goyang Hospital	1SET
			Armed Forces Pocheon Hospital	1SET
			Armed Forces Chuncheon Hospital	1SET
			Armed Forces Hongcheon Hospital	1SET
			Armed Forces Gangneung Hospital	1SET
			Armed Forces Seoul District Hospital	1SET
			Armed Forces Hampyeong Hospital	1SET
			Armed Forces Daegu Hospital	1SET
			Armed Forces Busan Hospital	1SET
			Armed Forces Asan Hospital	1SET
			Armed Forces Jincheon Hospital	1SET

## 2. Performances of MINE 2: International

### <International>

#### 1) Emergency Vehicles



China



Uzbekistan

## 2. Domestic and International Examples

### 2) Stop TB



Cambodian Tuberculosis Association  
(for Respiratory-related diseases such as Covid-19)



Vietnam Tuberculosis Association  
(for Respiratory-related diseases such as Covid-19)

## 2. Experts' feedback

Portable x-ray 사용 설문

본 설문은 현재 Portable X-ray의 사용현황파악을 통해 앞으로의 장비 개발 방향성 설정과 코로나바이러스의 진단 장비 개발의 자료로 쓰고자 함이니 성심껏 답변 부탁드립니다.

1. 장비의 주요 사용 목적은 무엇입니까? (중복 답변가능)  
① 야외 사용 ☒ COVID-19 진단 ☒ 일반 의료용 ④ 기타 사용처  
(기타 사용처 : )

2. COVID-19 진단 장비로 사용하는 이유가 어떤 이유입니까?  
① 상급기관 공문 ② 부대 내 지휘관 판단 ③ 편리함 및 안전성 ☒ 기타요인  
(기타 요인 : 이동이 편리하고 무선으로 결과 판독 가능 )

3. COVID-19 진단용으로 사용하신다면 사용하는 단계는 어떤 단계입니까?  
☒ 의심환자 촬영 ② 확진 환자 상태 확인 ③ 완치 판단 ④ 기타 단계  
(기타 단계 : )

4. COVID-19 진단용으로 Portable X-ray장비의 효과는 어떻습니까?  
☒ 매우적합 ② 적합 ③ 보통 ④ 미흡

5. 기타 추가되었으면 하는 기능 및 개선점이 있다면 자유롭게 서술하여 주십시오

6. 장비 사용이 어느 부분에 가장 적합하다고 생각하는지 자유롭게 기술하여 주십시오  
군부대에서는 이동하는 군중이나 지휘관에게 쉽게 손쉽게 따라 화상 찍어 이동이 편리하여 RAN사용이 가능하여 ~~현장에서~~ 관측할 수 있습니다

7. COVID-19 검사용이 아닌 상황에서 장비사용은 어느 부분이 적합하였습니까?  
☒ 야외 훈련상황 ② 일반 검사용(내부설치) ③ 정기 검진 ④ 기타  
(기타사용처 : portable X-ray 장비의 사용목적은 움직이는 병사나 환자나 지휘관이나 야외 훈련 및 이동이 가능한 모든 환경에 적합

설문에 응해주셔서 대단히 감사합니다 :)

[Original- Armed Forces Capital Hospital,  
Department of Radiology \_ Young Soo, Kim

Q1) What is the main purpose of the equipment?

- : COVID-19 Diagnosis
- : General Medical Use

Q2) What are the main reasons for using this equipment for diagnosing COVID-19?

- : Easy mobility and the fact that it is wireless allows instant diagnosis

Q3) If you are using this equipment for diagnosing COVID-19, what level and purpose is the equipment being used for?

- : Examining suspected patients

Q4) How effective is the Portable X-ray equipment for diagnosing COVID-19?

- : Very Suitable

Q5~6) Please freely describe what you find is best suitable.

- : It doesn't need a LAN cable for connection or other complicated installations. Being able to instantly diagnose the results via wireless imaging is best suitable for mobile COVID-19 screening centers.

Q7) What other environments would you suggest that this equipment would suit well, other than for screening COVID-19?

- : Outdoors training

Other Uses: for patients with difficulty moving, yet requires x-ray examination.

(Suitable for emergency patients during outdoors training and those who are difficult to move)

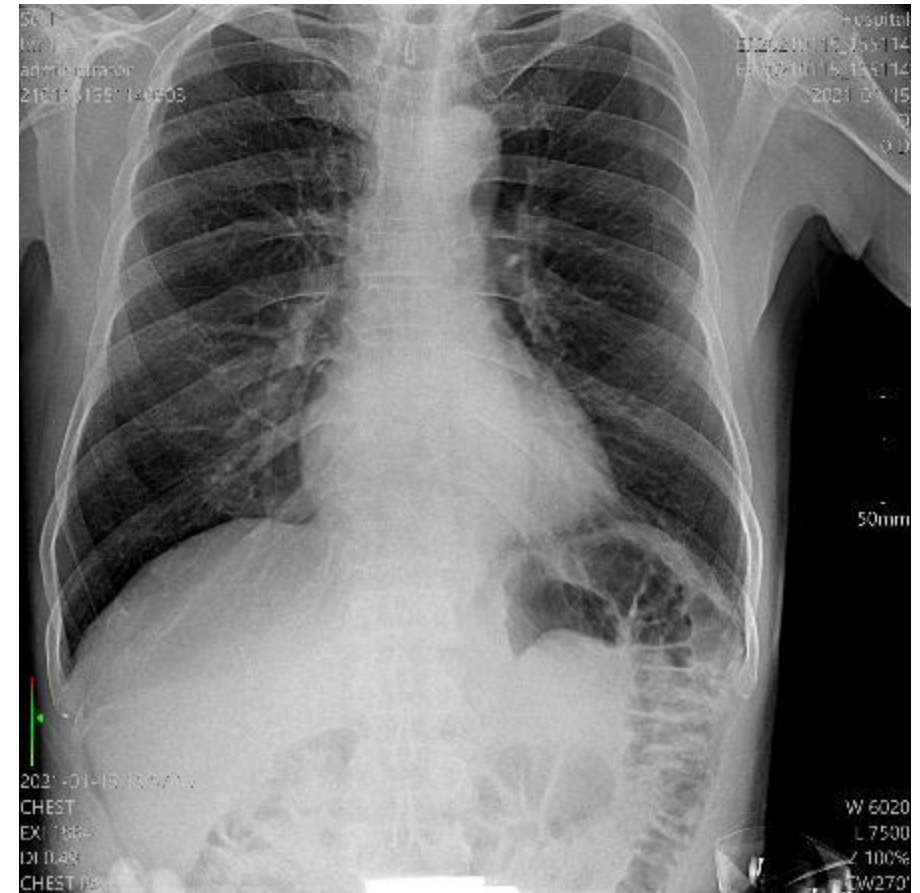
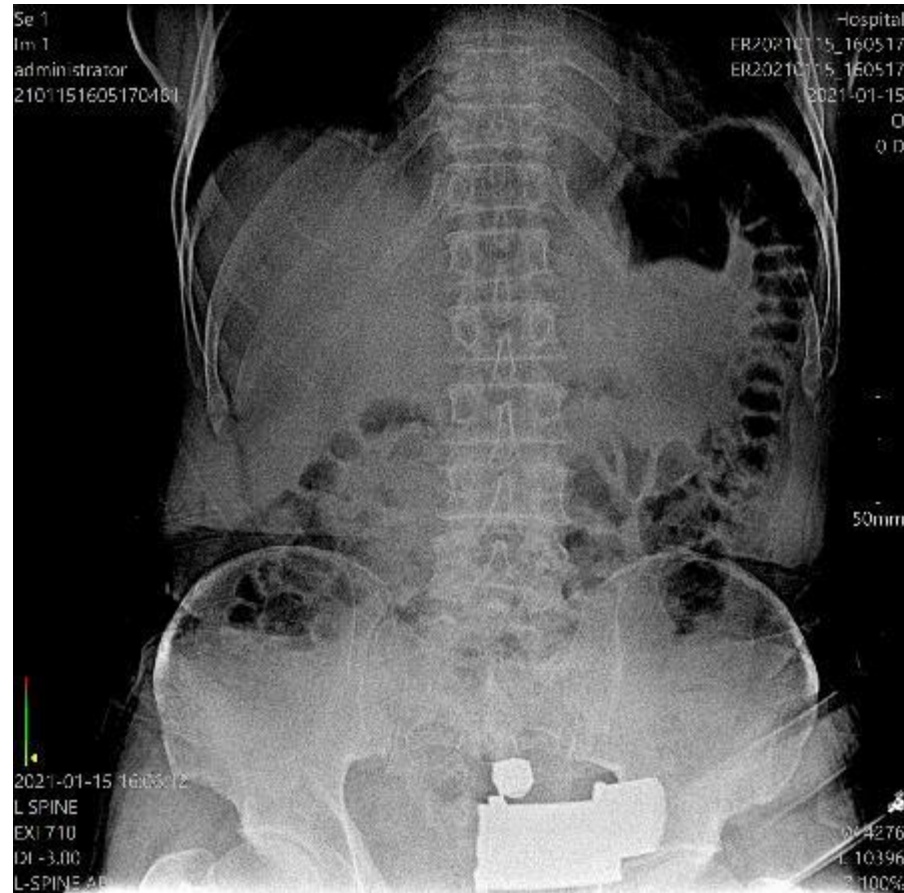
# ENT Review



## 2. Portable X-ray : Filming image (1/2)

### Multiple medical applications

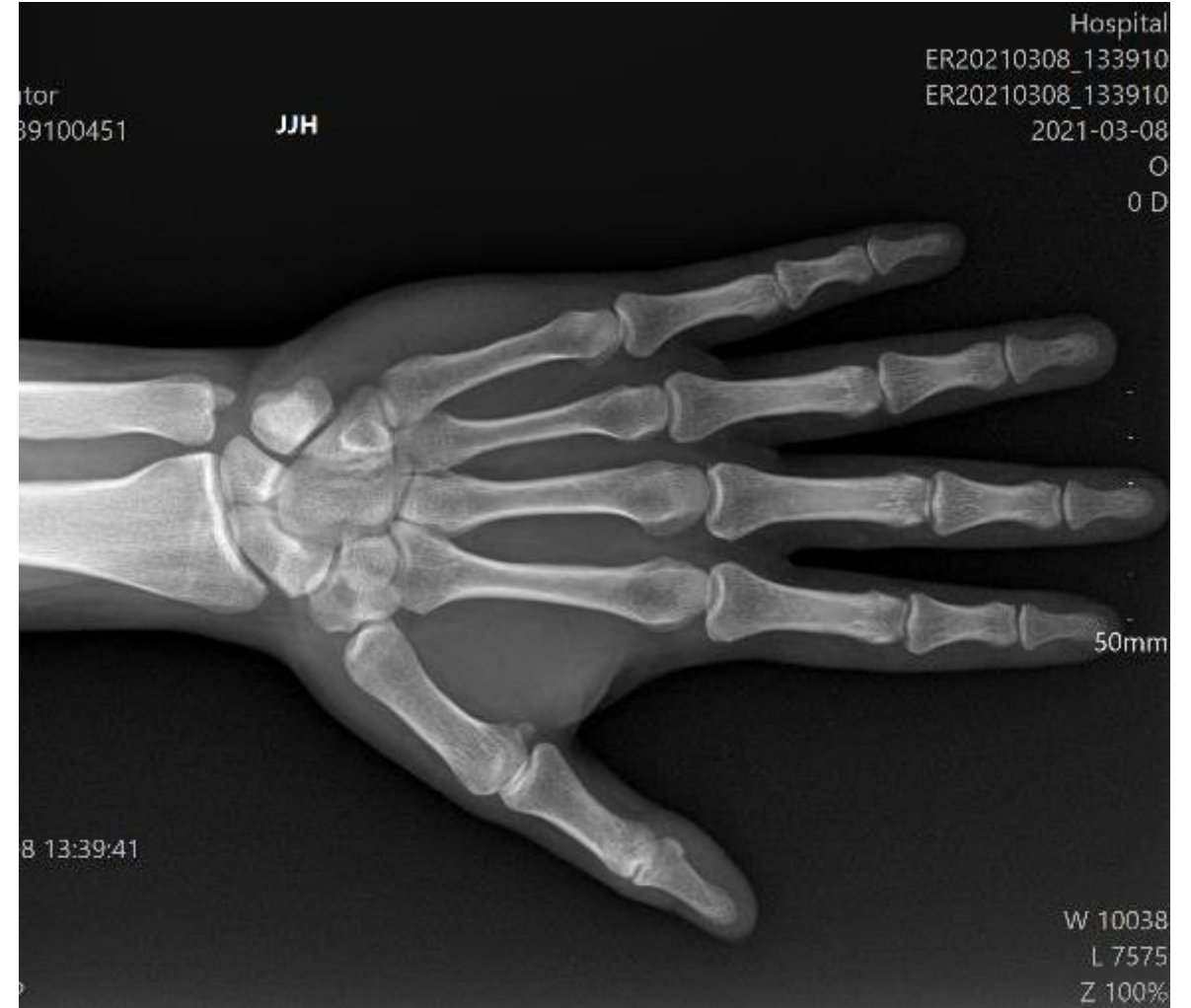
[Portable X-ray : MIN ALNU]



## 2. Portable X-ray : Filming image (2/2)

### Other x-Ray screening applications

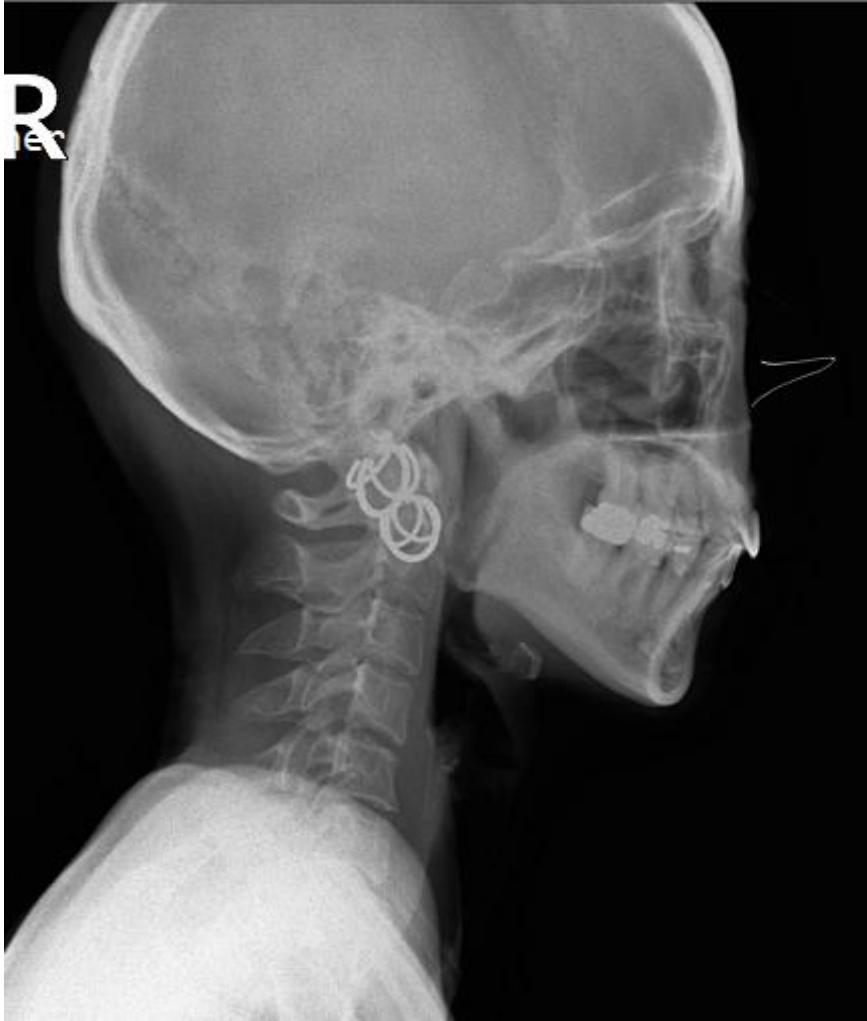
[Portable X-ray : MINE ALNU]



## 2. Portable X-ray : Filming image (2/2)

### Other x-Ray screening applications

[Portable X-ray : MINE ALNU]



### **3. Combat against COVID-19 in Korea**

- Application of Mine 2 against COVID-19**
- Improved solution to COVID-19**
- Recommended uses of MINE ALNU**

### 3. Application of Mine 2 against COVID-19

#### 3 Major COVID-19 Diagnostic/Treatment Facilities Run By the Korean Government

##### 1. Screening Clinics

- A. Anonymous testing
- B. High-risk patient testing: in preparation of an absence of a testing facility at the respiratory clinic

Our portable MINE X-Ray System was installed in every screening clinic in Seoul.



### 3. Application of Mine 2 against COVID-19

## 3 Major COVID-19 Diagnostic/Treatment Facilities Run By the Korean Government

### 2. Respiratory Clinic:

Major facilities utilized for testing

Our portable MINE X-Ray System  
is scheduled to be installed in  
several respiratory clinics



### 3. Application of Mine 2 against COVID-19



#### 3 Major COVID-19 Diagnostic/Treatment Facilities Run By the Korean Government

##### 3. Residential treatment center

:where **positive but asymptomatic patients** are quarantined for monitoring

Frequent PCR tests and x-ray diagnosis are in place to follow-up the conditions of the patients

Our portable MINE X-Ray System, initially installed in the screening clinics have now been transferred to every residential treatment center in Seoul

# 3. Improved Solution to COVID-19

## PCR

1. Diagnosis Time of 30 minutes to 24 hours
2. Inaccuracy : asymptomatic, initial stages of infection
3. Difficult for progress follow-ups due to such factors as the use of disposable consumable kits
4. Due to Malaysia's high temperature and humidity, PCR examination is difficult to proceed.



## Portable X-RAY

1. **Instantaneous imaging verification** with the assistance of A.I. diagnosis, abnormality analysis can be performed immiately.
2. Maximizes probability of screening asymptotic infections that later develop lung abnormality, at its initial stage
3. **Easily available progress follow-ups**
4. Complete Inspection System : **Universal**
5. Less restriction regarding permanency
6. **Can be used with PCR for a more accurate diagnosis**



### 3. Recommended Use of MINE ALNU

#### 1. Infectious Respiratory Disease(COVID-19) SCREENING:

The Way Korean Army bases equipped with our products carry out

X-ray Image + PCR at entrance

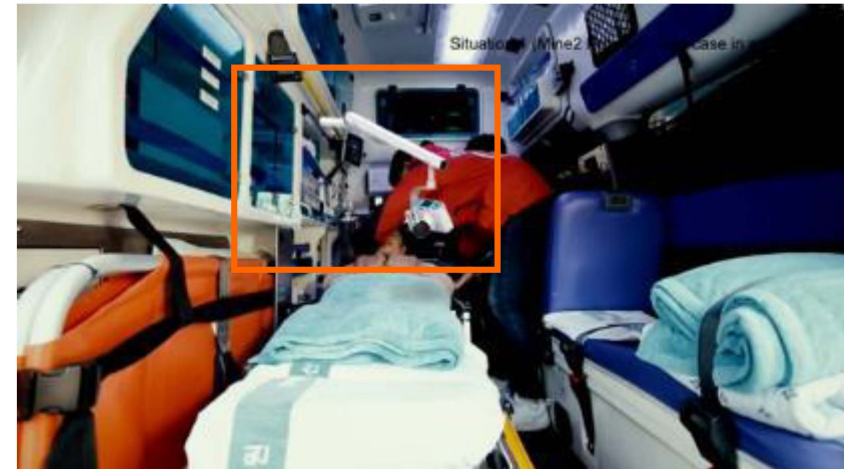
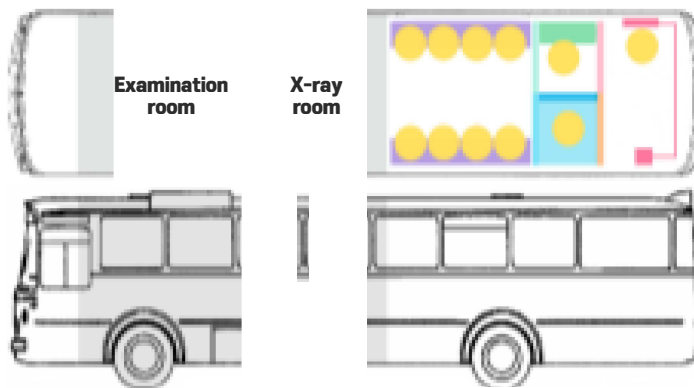
Screen out ones with abnormalities

Immediate Isolation

Wait for the PCR result

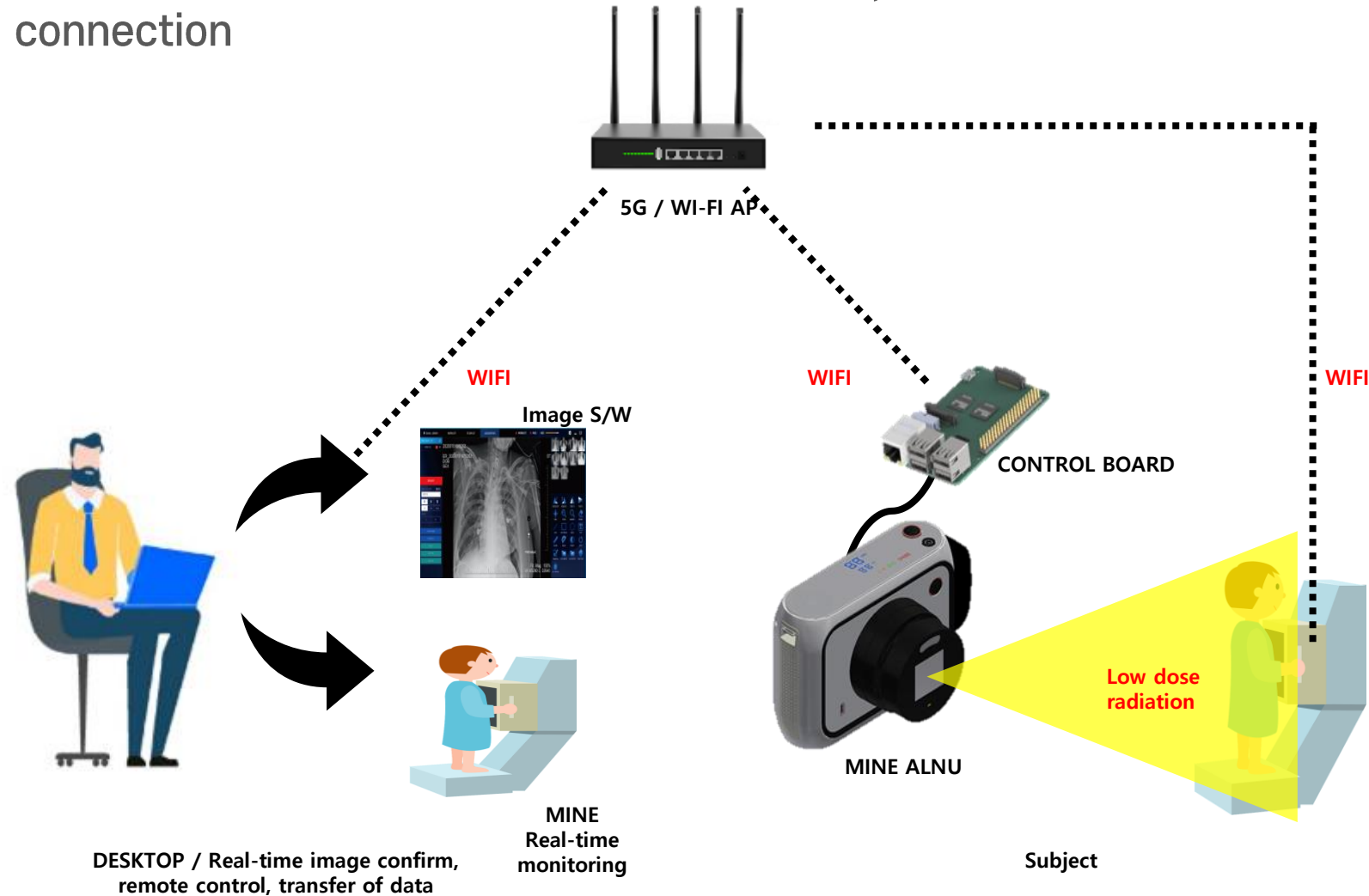
# 3. Recommended Use of MINE ALNU

## 2. Medical VAN/Ambulance



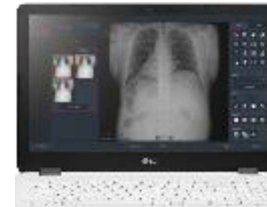
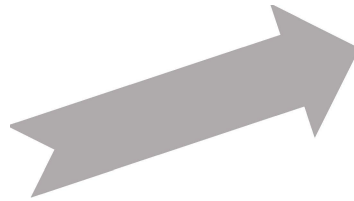
### 3. Recommended Use of MINE ALNU

2. Medical VAN/Ambulance: In combination with AI software, transfer of data to distant location via WIFI connection



### 3. Recommended Use of MINE ALNU

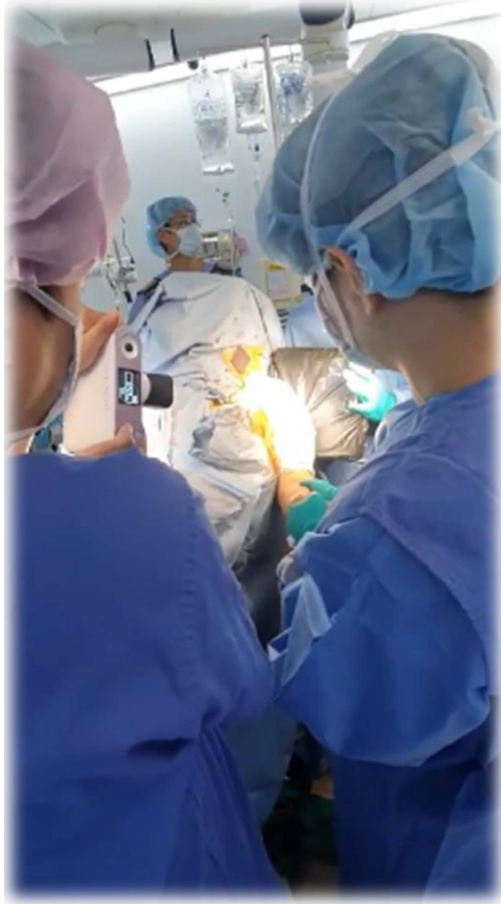
#### 3. House Call: Simple System



Basic Set

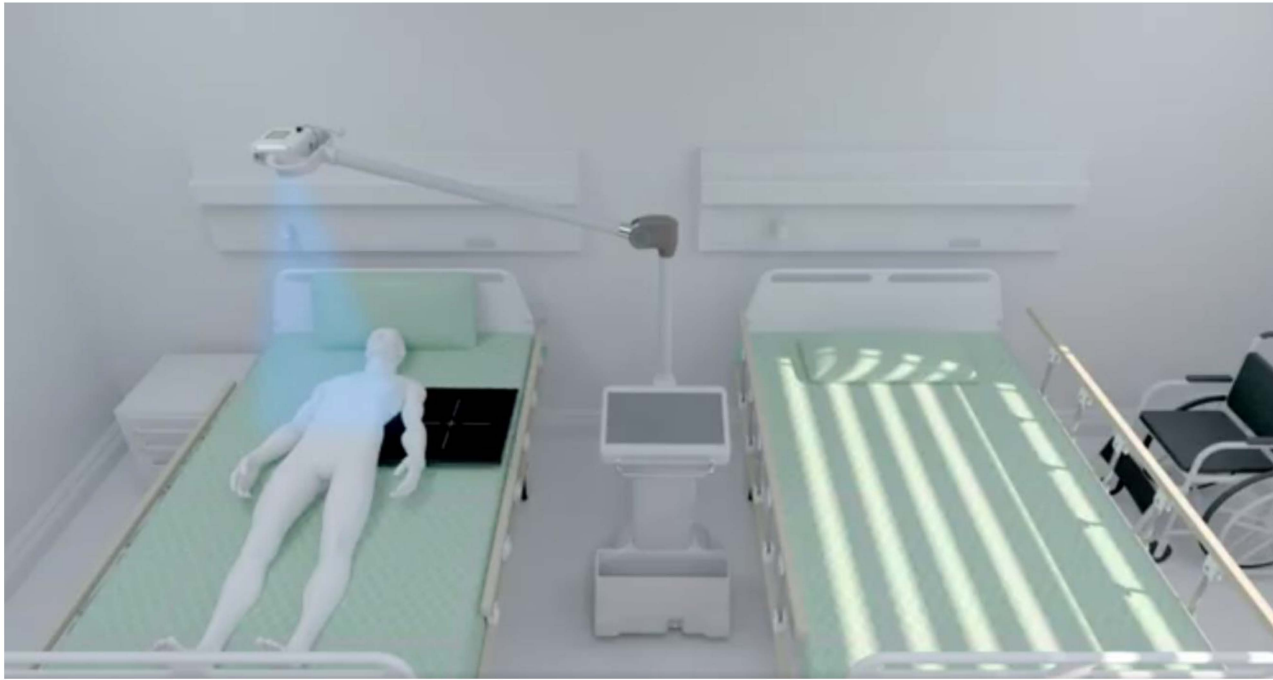
### 3. Recommended Use of MINE ALNU

4. Surgery Room: Replacement of C-ARM to protect surgeons from excessive radiation exposure



### 3. Recommended Use of MINE ALNU

#### 5. Clinics: Secondary X-ray Device

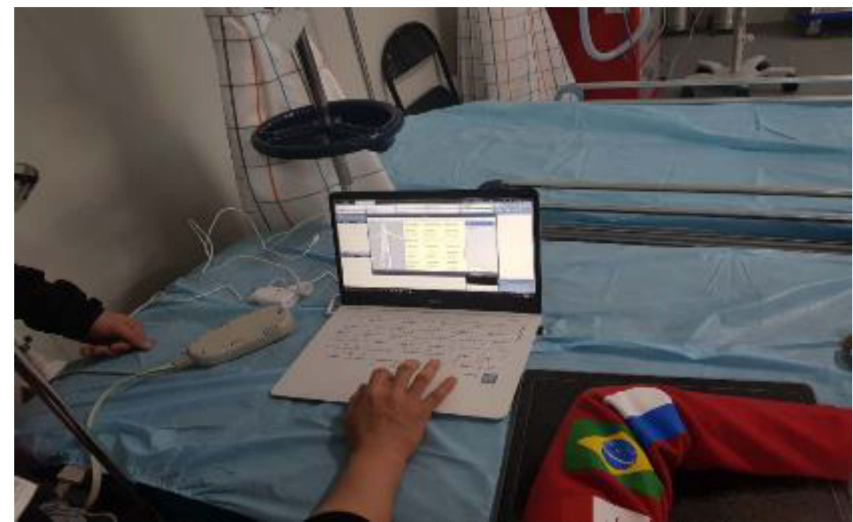
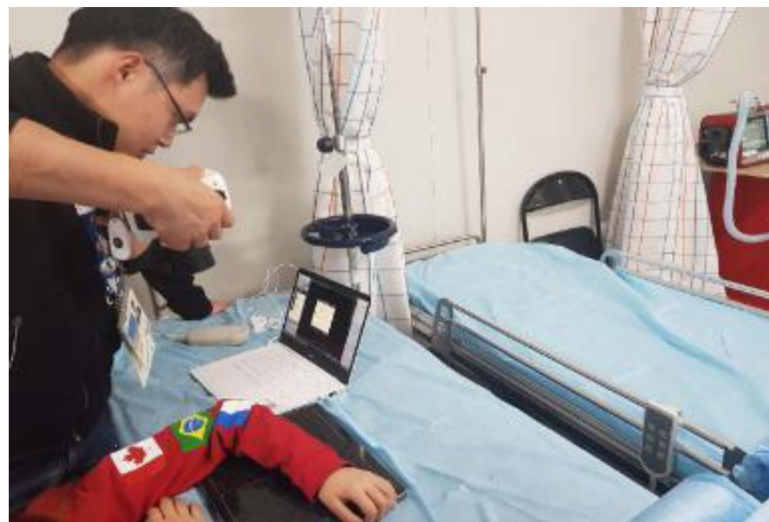
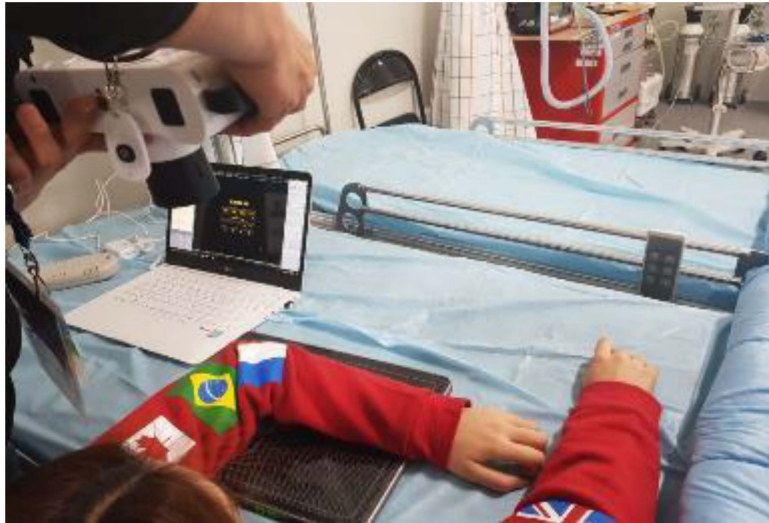


#### Clinical Use

- 1) Constant Monitoring of Treatment Progress
- 2) Minimizing risk of cross-infection during patient transportation
- 3) Immediate response to emergency and time-sensitive patients
- 4) Resolving transport difficulties regarding immobile patients

### 3. Recommended Use of MINE ALNU

6. Athletes: Immediate Diagnosis of Possible Injuries: Diagnostic use of Mine 2 for the 2018 Pyeongchang Winter Olympic Games and Paralympic Games athletes.



# **Thank you**

**“A Companion for a healthy life”**