

CORSO DI LAUREA  
TECNICHE DI RADIOLOGIA MEDICA, PER IMMAGINI E RADIOTERAPIA

CORSO INTEGRATO  
«**FISICA E APPARECCHIATURE TC E RM – RMX012**»

ANNO ACCADEMICO 2023/2024



# Gemelli



Insegnamento:  
**APPARECCHIATURE RISONANZA MAGNETICA**  
**RMX054 - 13 ore MED/50 CFU 1**



gen. '24

2° anno I semestre

Fondazione Policlinico Universitario Agostino Gemelli IRCCS  
Università Cattolica del Sacro Cuore



Insegnamento:  
**APPARECCHIATURE RISONANZA MAGNETICA**  
**RMX054 - 13 ore MED/50 CFU 1**

# MRI – L'ESAME MR



# Gemelli



This work is licensed under a Creative Commons Attribution 4.0 International License.

gen. '24

Fondazione Policlinico Universitario Agostino Gemelli IRCCS  
Università Cattolica del Sacro Cuore



Insegnamento:  
APPARECCHIATURE RISONANZA MAGNETICA  
RMX054 - 13 ore MED/50 CFU 1

*TSRM Marino Gentile*  
*Radiographer*

Gemelli

+39 3280077833

✉ marino.gentile@outlook.com

✉ marino.gentile@policlinicogemelli.it

gen. '24  
www.variodyne.it

Fondazione Policlinico Universitario Agostino Gemelli IRCCS  
Università Cattolica del Sacro Cuore



# Argomenti del Corso

- ⌘ Introduzione
- ⌘ Sicurezza in RM
- ⌘ MdC e sicurezza
- ⌘ Passato, presente e futuro della RM
- ⌘ Fenomeno «RM» e principi fisici di base
- ⌘ Magnete e i vari componenti
- ⌘ Radiofrequenza e Bobine
- ⌘ Gradienti
- ⌘ Generazione di un'immagine RM
- ⌘ Tecniche di acquisizione – *Parallel Imaging*
- ⌘ Intelligenza artificiale – *Deep Learning*
- ⌘ Artefatti
- ⌘ **Esame RM**
- ⌘ Apparecchiature Fondazione





Dove è il  
locale  
tecnico??  
?



GE Healthcare



Individuare  
l'armadio PDU-  
GRADIENT ...



GE Healthcare







GE Healthcare





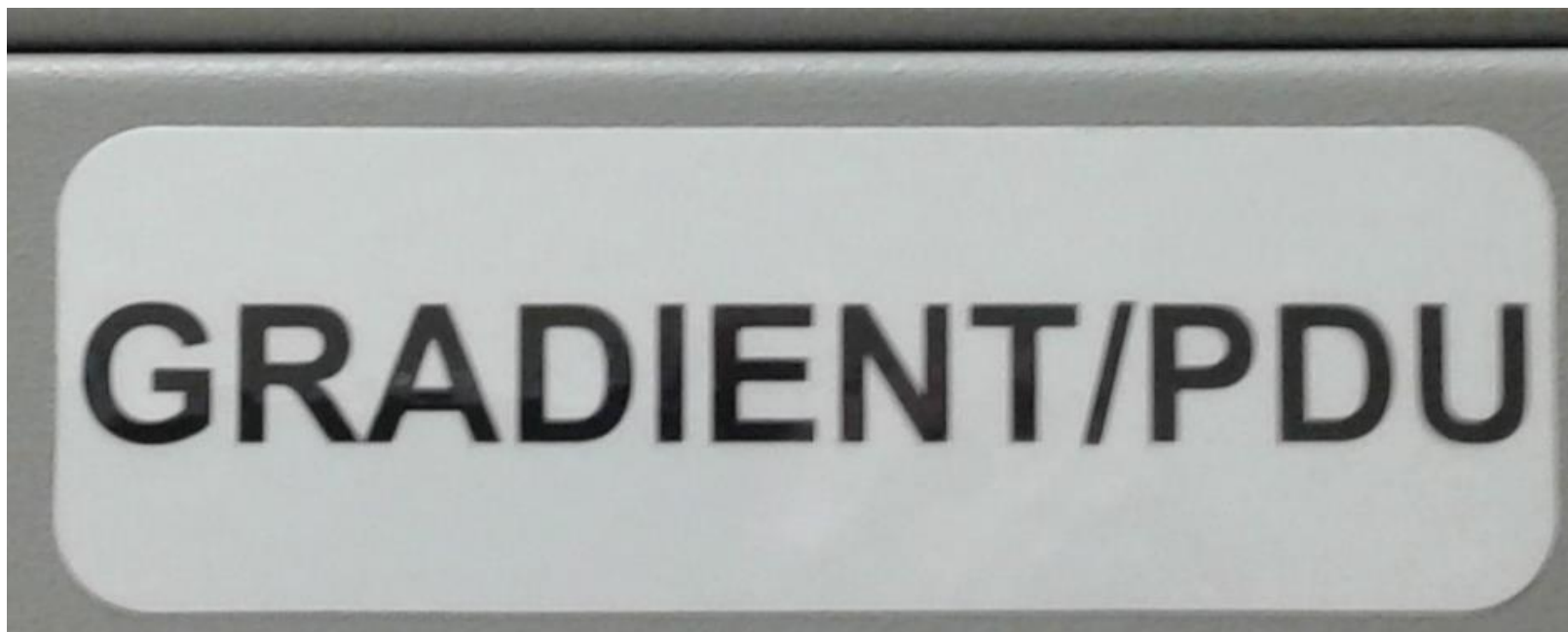




GE Healthcare

Gemelli 







# Accensione RM

GRADIENT/PDU



GE Healthcare

# Accensione RM

## GRADIENT/PDU



Portare la  
leva su «I»



GE Healthcare





1. Dall'ISC, eseguire i seguenti passaggi:
    - a. Aprire la piccola porta di accesso per visualizzare l'interruttore principale e il pulsante EMO. Vedere 1 nella Figura.
    - b. Reset dell'interruttore. Spostare l'interruttore dalla posizione orizzontale a quella di On (completamente verticale). Vedere 2 nella Figura.
    - c. Premere il pulsante di **reset EMO**. Vedere 3 nella Figura.
- Il pulsante di reset EMO attiva l'alimentazione ai componenti ad alta tensione e provoca un rumore di aria e di relè.
- Il computer del sistema deve accendersi automaticamente.

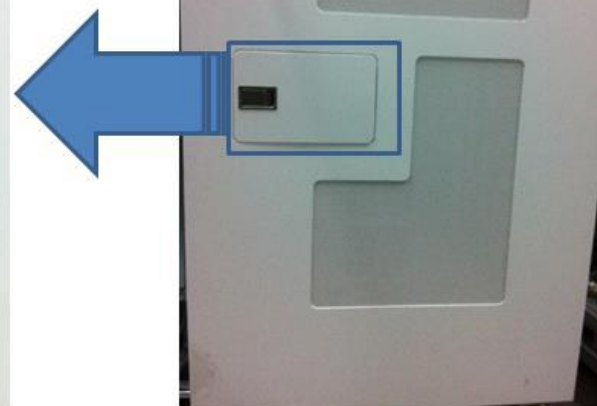


GE Healthcare

# Accensione RM 3-4-5



GE Healthcare

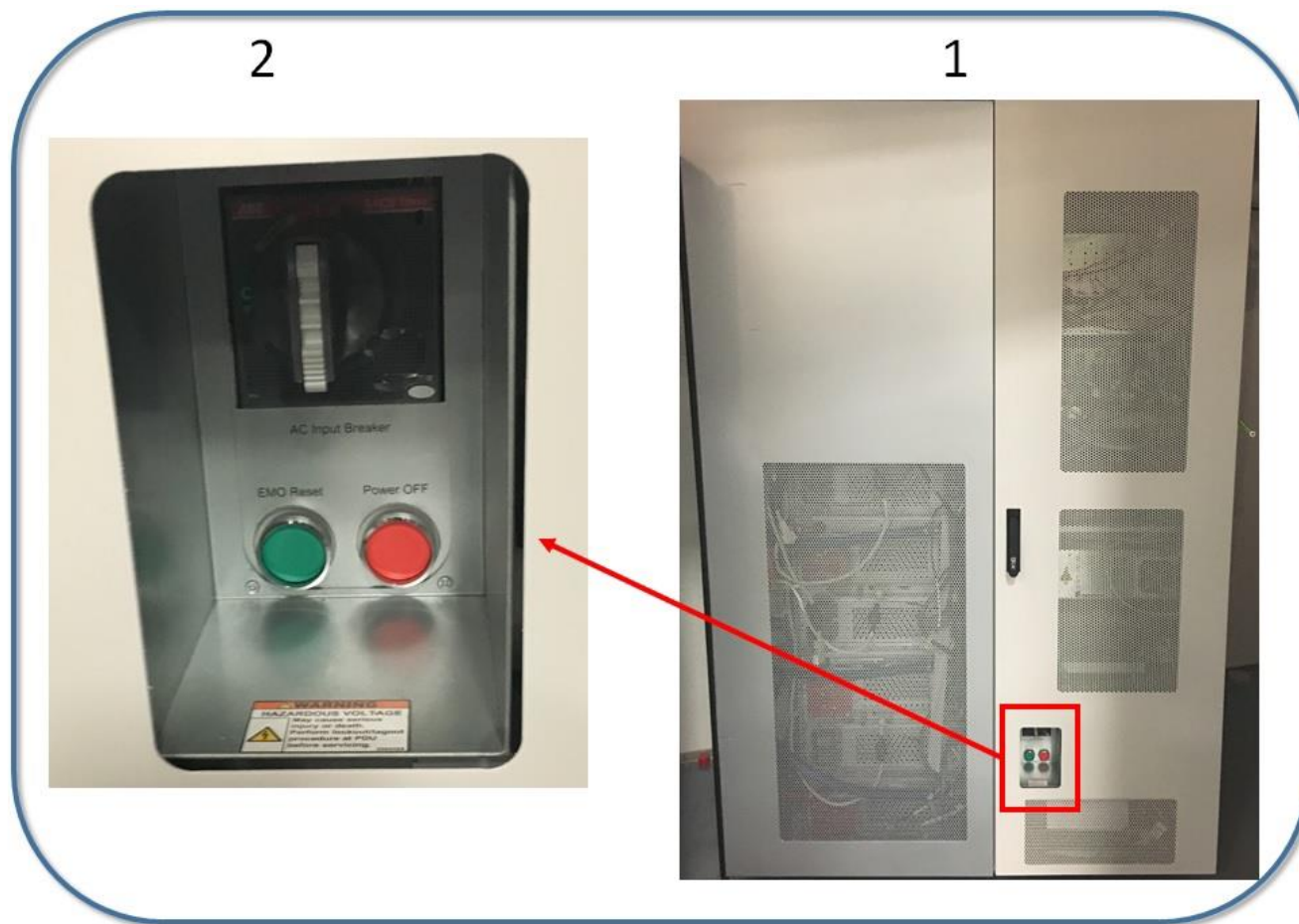




# Accensione RM 3-4-5



GE Healthcare





GE Healthcare

Usare questa procedura per avviare il sistema RM.

1. Premere il pulsante di accensione/arresto per accendere il **computer**.

Quando la macchina è accesa, anche la spia dell'alimentazione è accesa.

Viene visualizzato un messaggio con conto alla rovescia per il collegamento.

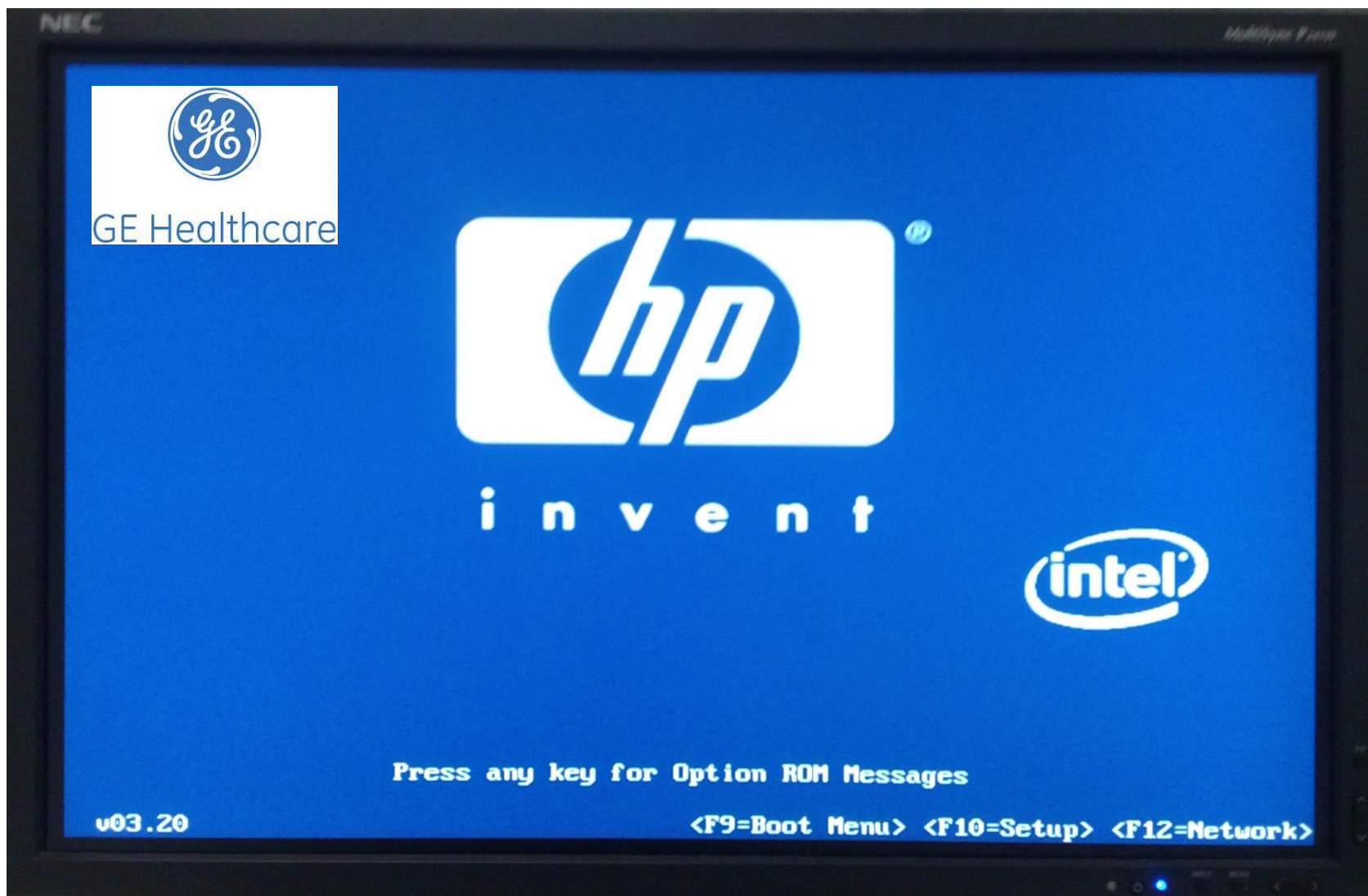
Se si decide di spegnere il computer a questo punto, dalla schermata di collegamento, fare clic su **System >Halt** (Sistema > Arresta).

2. Per inserire il nome e la password di accesso attendere fino a quando vengono rimossi dallo schermo tutti i messaggi.

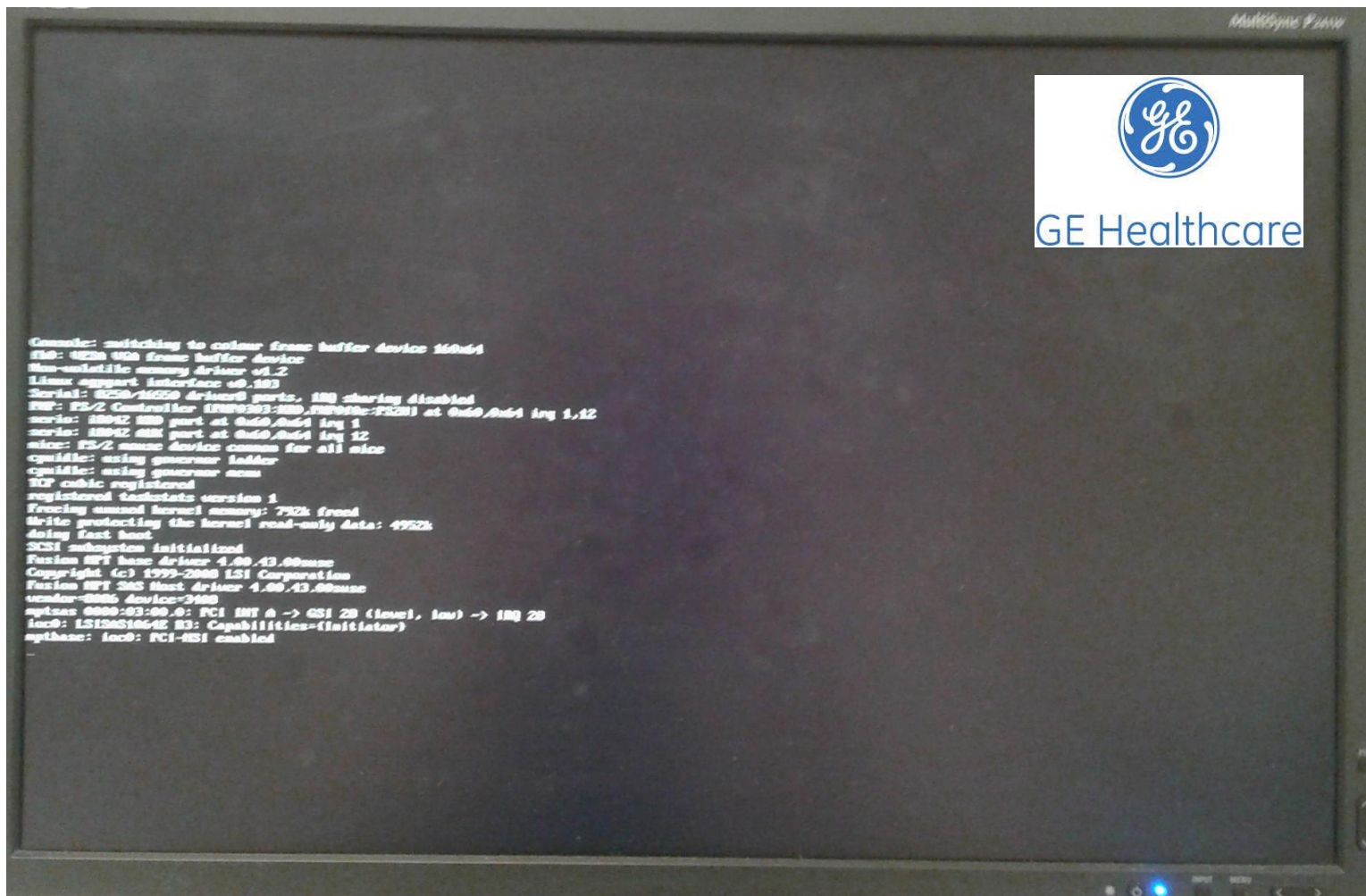
a. Nel campo Logon Name (Nome di accesso), digitare \*\*\*.

b. Nel campo Password, digitare la propria password.

La password predefinita di sistema GE è \*\*\*\*\*.







```
NEC MultiSync P330W
sdev on /dev type tmpfs (rw)
loop: module loaded
devpts on /dev/pts type devpts (rw,mde=0520,gid=5)
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda3, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
/dev/sda3 on /export/home type ext3 (rw,acl,user_xattr)
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda5, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
/dev/sda5 on /export/home/signa/research type ext3 (rw,acl,user_xattr)
kjournald starting. Commit interval 5 seconds
EXT3 FS on sda6, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
/dev/sda6 on /export/home/snap type ext3 (rw,acl,user_xattr)
kjournald starting. Commit interval 5 seconds
EXT3 FS on md0, internal journal
EXT3-fs: mounted filesystem with ordered data mode.
/dev/md0 on /export/home1 type ext3 (rw,smntime)
Retry device configuration:
Setting current systemctl status from /etc/systemd.conf
net.ipv4.icmp_echo_ignore_broadcasts = 0
net.ipv4.conf.all.rp_filter = 1
fs.notify_max_user_watches = 65536
net.ipv4.conf.default.promote_secondaries = 1
net.ipv4.conf.all.promote_secondaries = 1
kernel.core_pattern = /export/home/service/log/core.%s.%t.jp

Enabling syn flood protection
Disabling IP forwarding

Activating remaining swap-devices in /etc/fstab...
fuse init (API version 7.9)
Loading fuse module
Mounting fuse control filesystem
Creating /var/log/boot.msg
Mounting securityfs on /sys/kernel/security
Loading AppArmor profiles

Setting up hostname 'ix-nr'
Setting up loopback interface lo
lo IP address: 127.0.0.1/8
lo IP address: 127.0.0.2/8

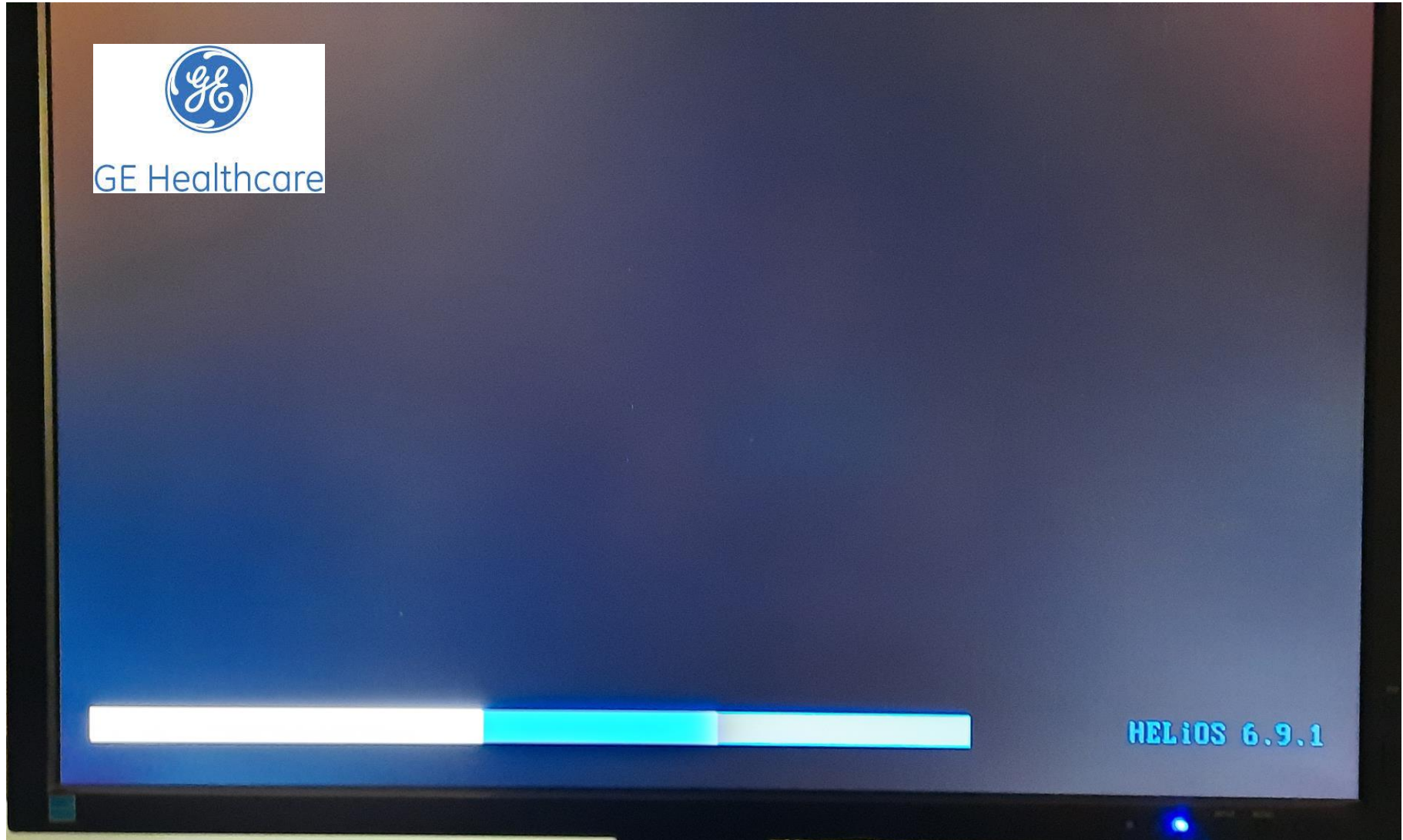
Starting ldconfig
System Boot Control: The system has been
Skipped features:
System Boot Control: Running /etc/init.d/boot.local
INIT: Entering runlevel: 5
Boot logging started on /dev/tty1(/dev/console) at Tue Jan 19 07:01:59 2016
Master Resource Control: previous runlevel: N, switching to runlevel:
acpid: starting up

Starting acpid
Initializing random number generator
acpid: 2 rules loaded

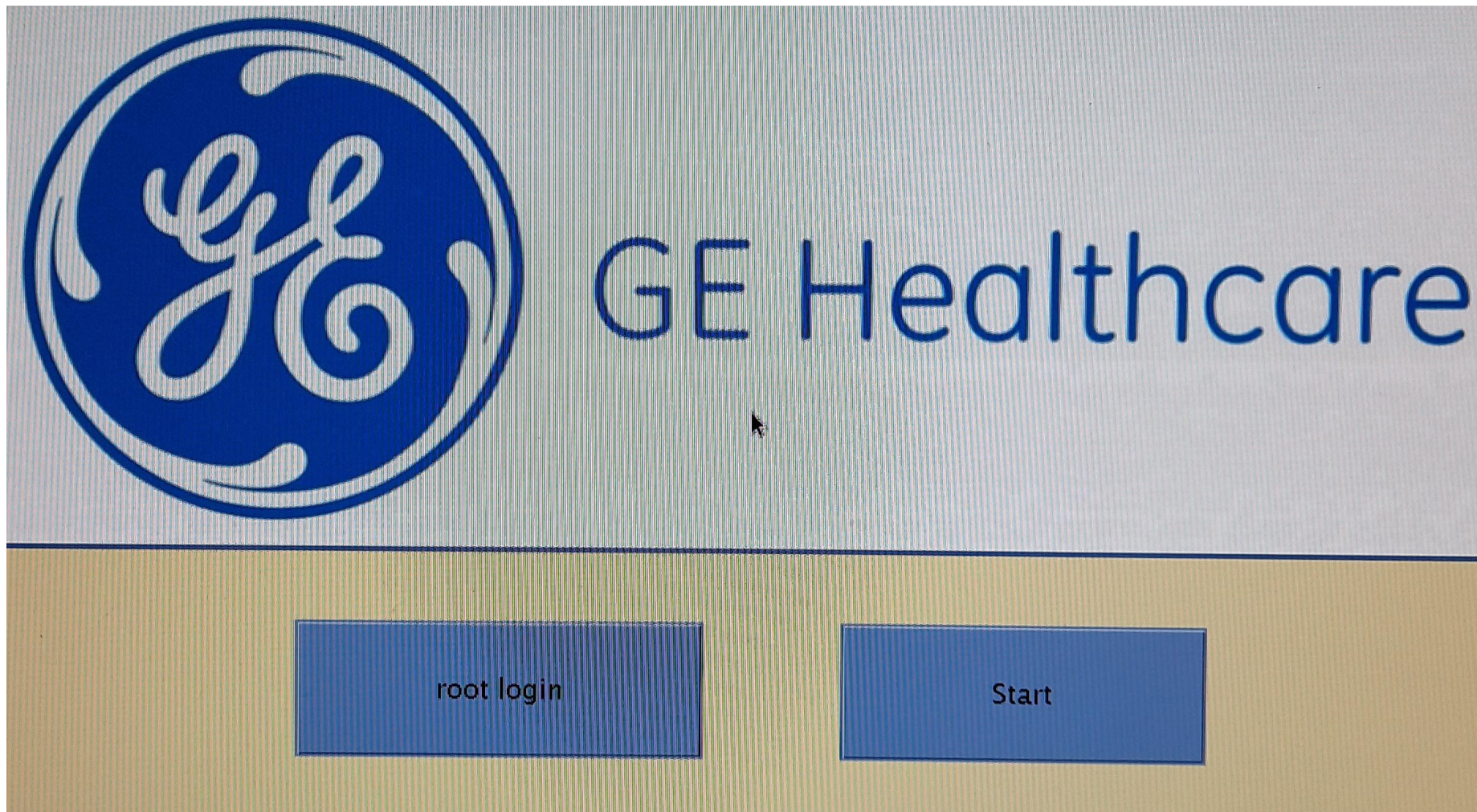
Starting srodUSB
Checking/Updating CPU microcode
Starting syslog services
Starting D-Bus daemon
Starting timeZoneStartupScript
Loading CPUFreq modules
Starting INL daemon_
```







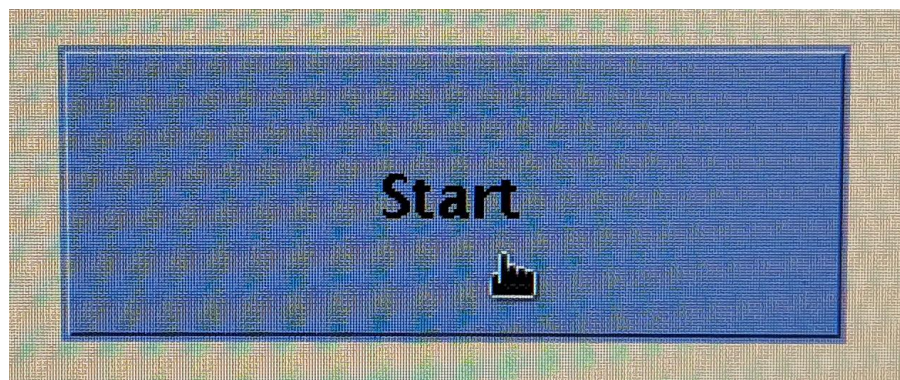








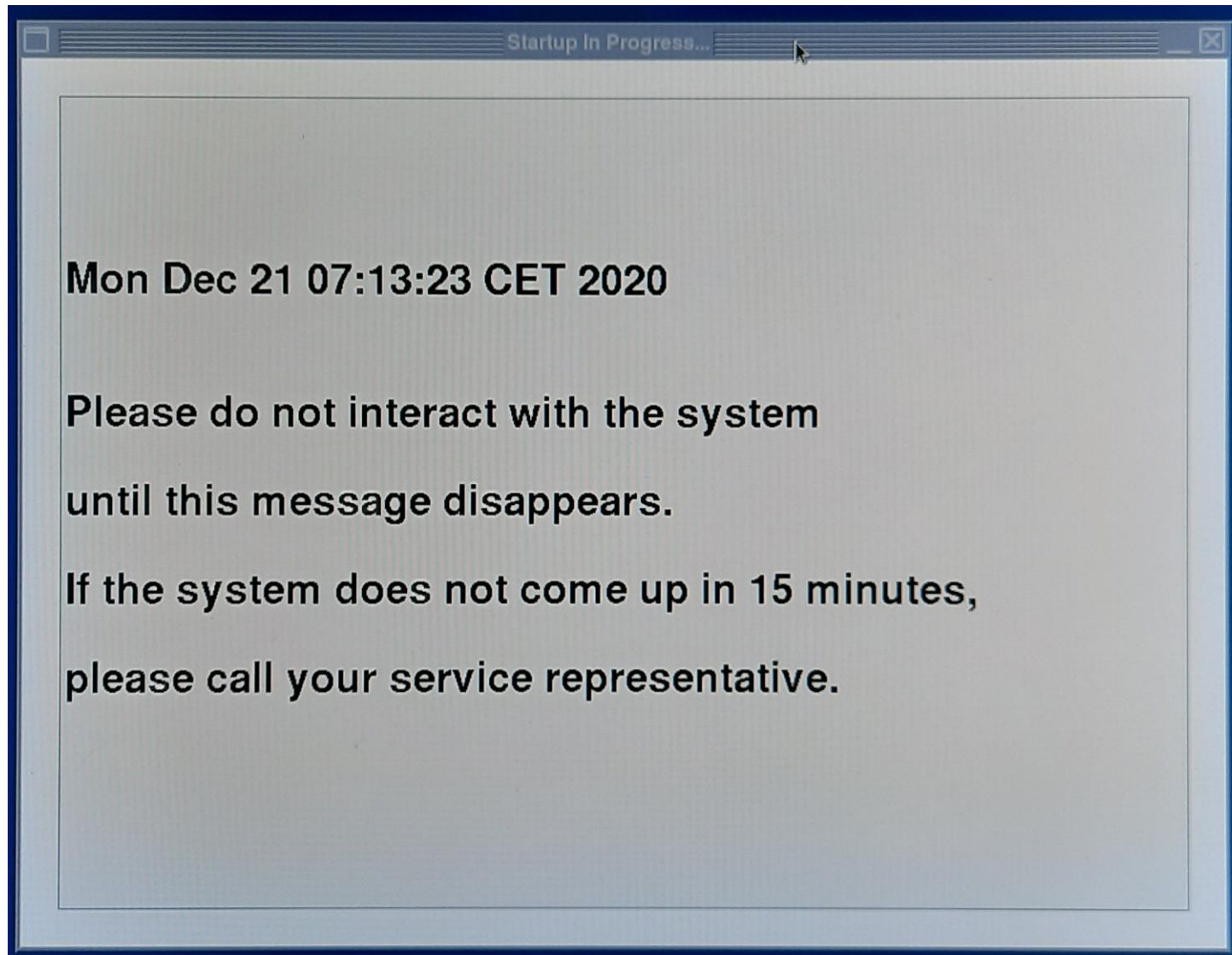
Fare clic su  
«start»...



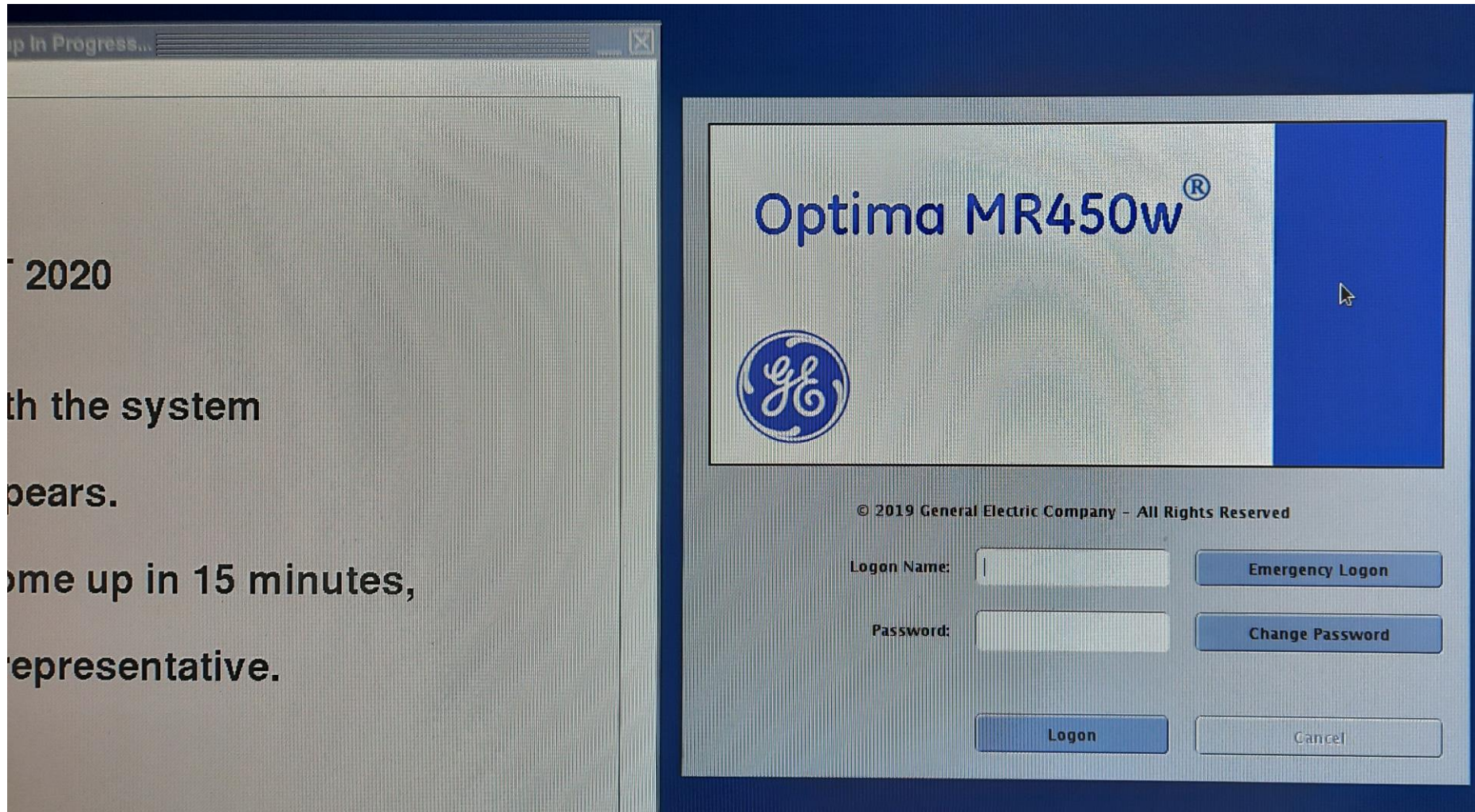
Aspettare  
che  
scompaia  
questo  
messaggio..



GE Healthcare







Spostare la schermata a sin per potere accedere alla schermata di login ...





Inserire login  
e password...

**SIGNA™ Premier**

© 2020 General Electric Company - All Rights Reserved

Logon Name:

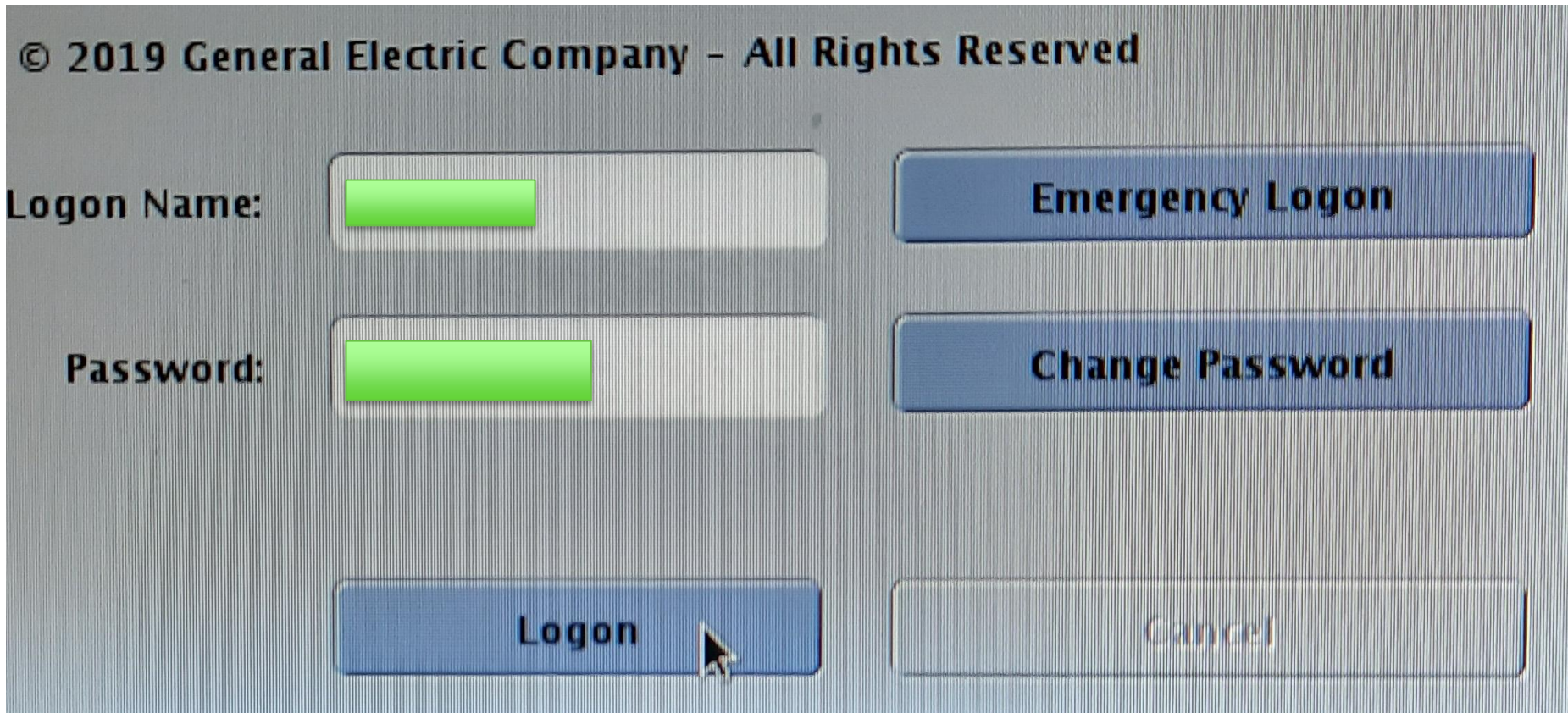
Password:  **Change Password**

**Logon** **Cancel**



Inserire login  
e password...

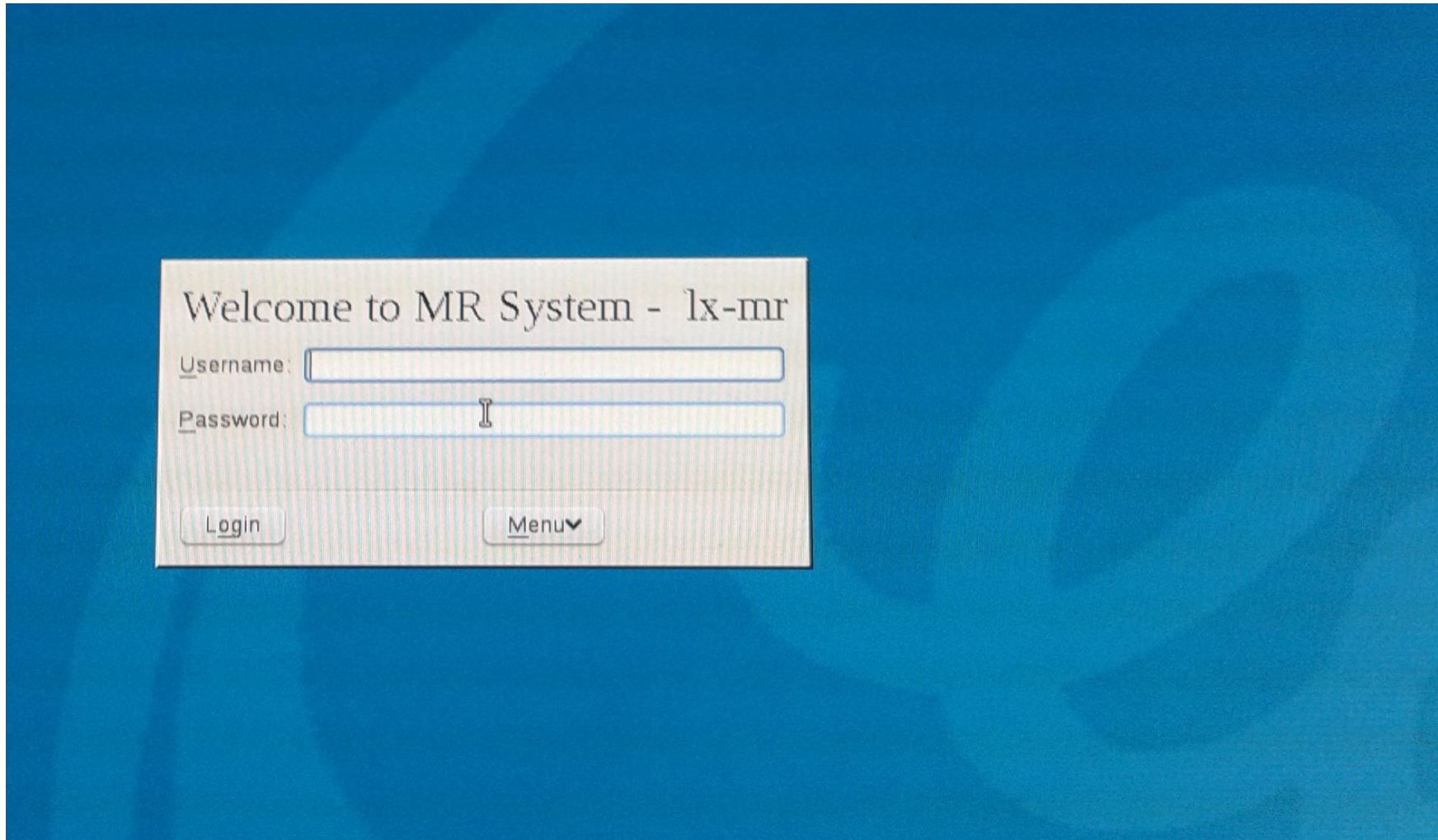




E fare clic su  
«logon»



GE Healthcare





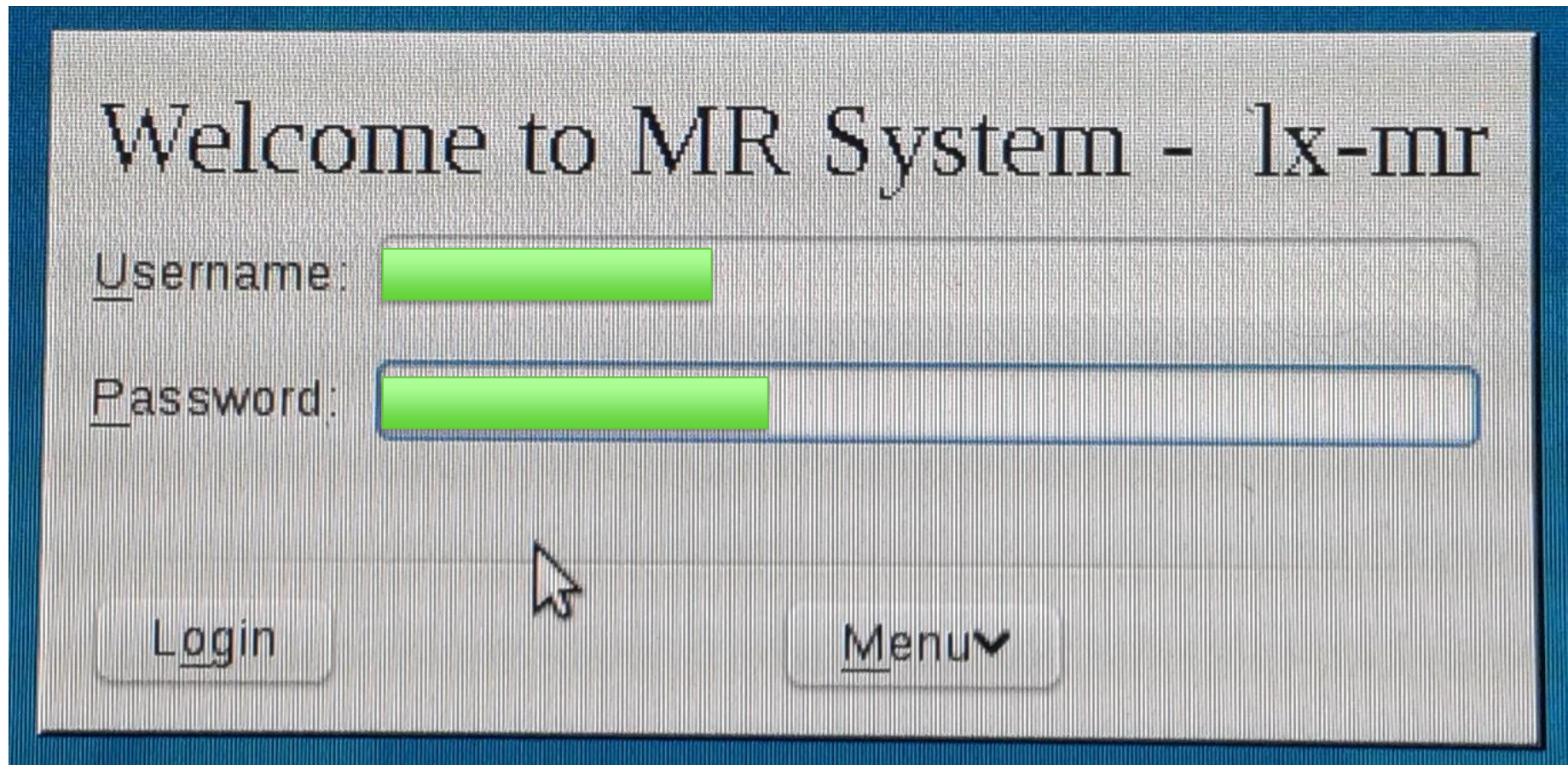
Welcome to MR System - lx-mr

Username:

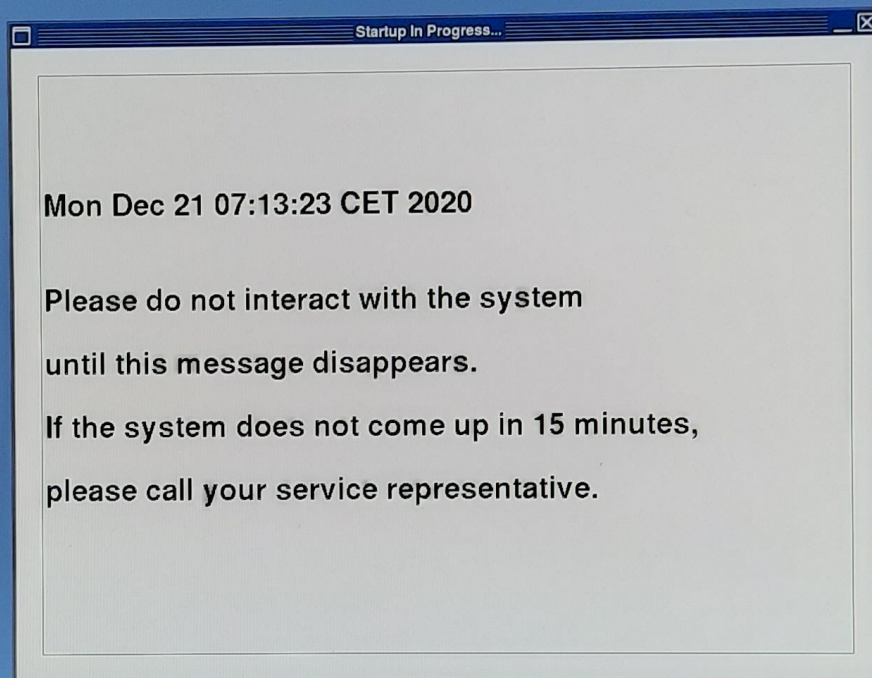
Password:

Login

Menu ▾

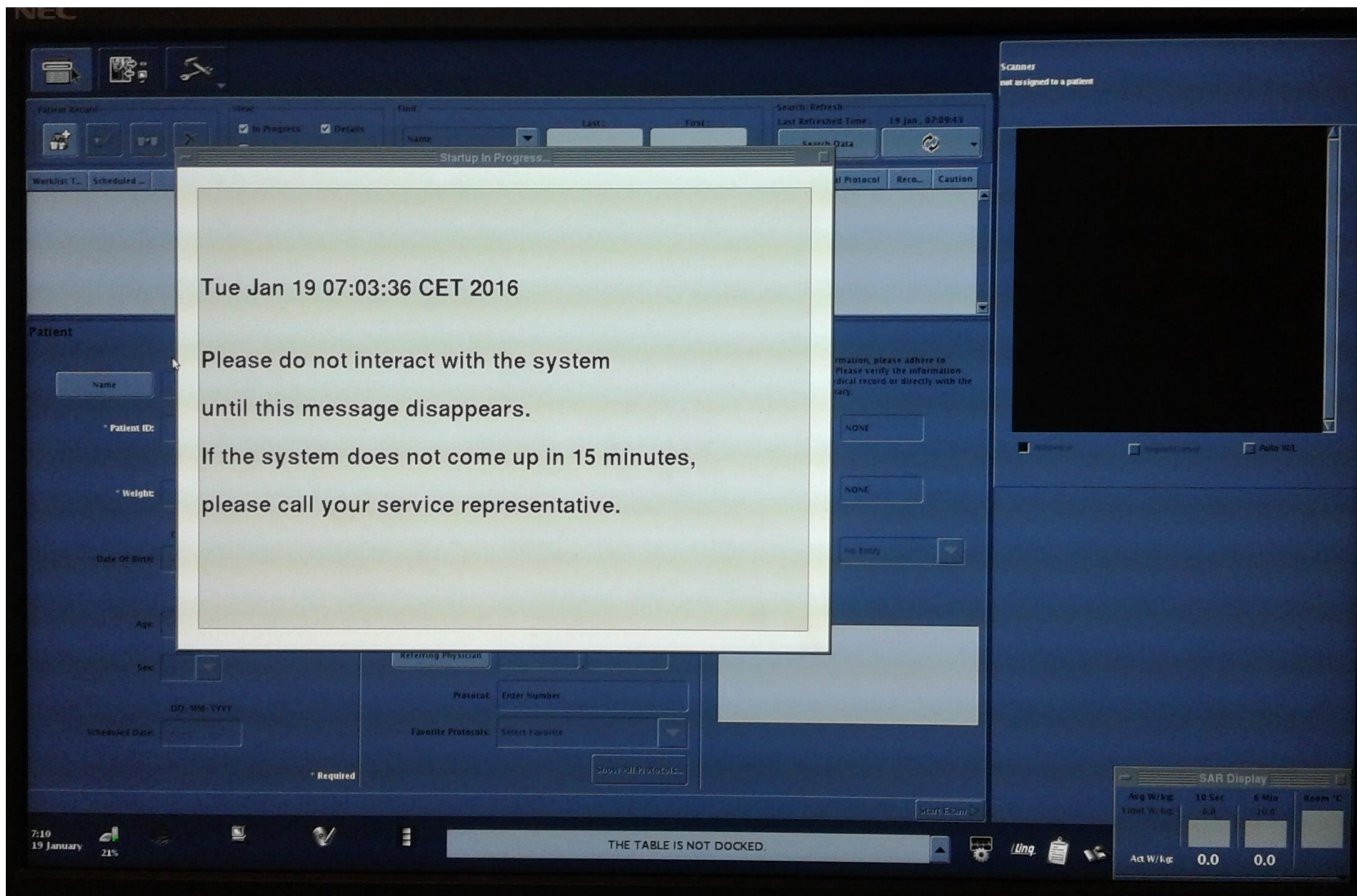






Aspettare che finisca il processo di avvio...





NEC MultiSync P241W

Patient Record: Name: Find: Search/Refresh Last Refreshed Time: 19 Jan, 07:28:43

Worklist T... Scheduled... Name & Patient ID Accession SPS Description Modal... Referring P... Scheduled... Status Local Protocol Refs... Caution

**Patient**

Last Name First Name  
Name

Patient ID:

lbs Kgs  
Weight

DD-MM-YYYY  
Date Of Birth:

Year Month Weeks Days  
Age:

Sex:

DD-MM-YYYY  
Scheduled Date:

\* Required

**Exam**

Accession:

Exam Description:

SPS Description:

Procedure ID:

Last Name First Name  
Operator

Last Name First Name  
Radiologist

Last Name First Name  
Referring Physician

Protocol: Enter Number

Favorite Protocols: Select Favorite

Show All Protocols...

**Other Information**

This is patient sensitive information, please adhere to patient confidentiality rules. Please verify the information using either the patients medical record or directly with the patient to guarantee its accuracy.

Allergies: NONE

Pre-Med: NONE

Pregnancy Status: No Entry

History:

SAR Display

	1.0 Sec	5 Min	Room °C
Avg W/kg			
Limit W/kg	6.0	10.0	
Act W/kg	0.0	0.0	

7:10 19 January 21%

THE TABLE IS NOT DOCKED.



Scanner  
not assigned to a patient

**Patient Record**  
 In Progress    Details  
 Completed

**Find:**    Last:    First:

**Search/Refresh**  
 Last Refreshed Time: 21 Dec, 07:16:31

SPS Description	Schedul...	Worklist...	Name ▲	Patient ID	Accession	Status	Modality	Schedu...	Local Pr...	Referr...	Recom...	Caution
[Empty Table Area]												

**Patient**  
 Last Name:     First Name:   
 Patient ID:   
 Weight:  lb     kg  
 Date Of Birth:  DD-MM-YYYY  
 Age:  year(s)    month(s)    week(s)    day(s)  
 Sex:

**Exam**  
 Accession:   
 Exam Description:   
 SPS Description:   
 Procedure ID:   
 Operator:  Last Name    First Name  
 Radiologist:  Last Name    First Name  
 Referring Physician:  Last Name    First Name  
 Protocol:  Enter Number  
 Favorite Protocols:  Select Favorite

**Other Information**  
 This is patient sensitive information, please adhere to patient confidentiality rules. Please verify the information using either the patients medical record or directly with the patient to guarantee its accuracy.  
 Other Patient ID:   
 Current Location:   
 Special Needs:   
 Requested Contrast Agent:   
 Allergies: NONE  
 Pre-Med: NONE  
 Pregnancy Status:  No Entry  
 History:

Full View     Report Cursor     Auto W/L  

## GE Healthcare

**SAR Display**

Avg W/kg	10 Sec	6 Min	Room °C
Limit W/kg:	6.0	10.0	18.0
Act W/kg:	0.0	0.0	18.0

7:18  
21 December  
47%

THE TABLE IS NOT AT SCANNING HEIGHT.



The image displays five screenshots of an MRI console interface, numbered 1 through 5:

- 1:** Patient information screen. Fields include Patient Name (Doe Jane), Patient ID (1234567), DOB (11-12-2000), Exam, Patient Weight (123 lbs.), Patient Position (diagram), and Landmark (diagram). A timer shows 00:00.
- 2:** Vital signs monitoring screen. Shows ECG, SpO2 (80%), and Respiration (15). A timer shows 01:47.
- 3:** Scan parameters screen. Shows a large '12 mm' and a timer of 01:47.
- 4:** Coil selection screen. Lists 'Port 1 Flex Large 16ch' and 'Port E Spine Posterior 60ch'. Includes a 'Notes' section with a 'Port Compatibility Key' (16 Ch. or less, 16 to 32 Ch.) and a T/R indicator. A timer shows 01:47.
- 5:** Fan/Light Control screen. Shows controls for fan and light with a timer of 01:47.

## MR Systems Ingenia

Ingenia (2017-09-19)



Philips Medical Systems Nederland B.V.  
Veenpluis 4-6, 5684 PC Best, The Netherlands.

Logon

Name

Password

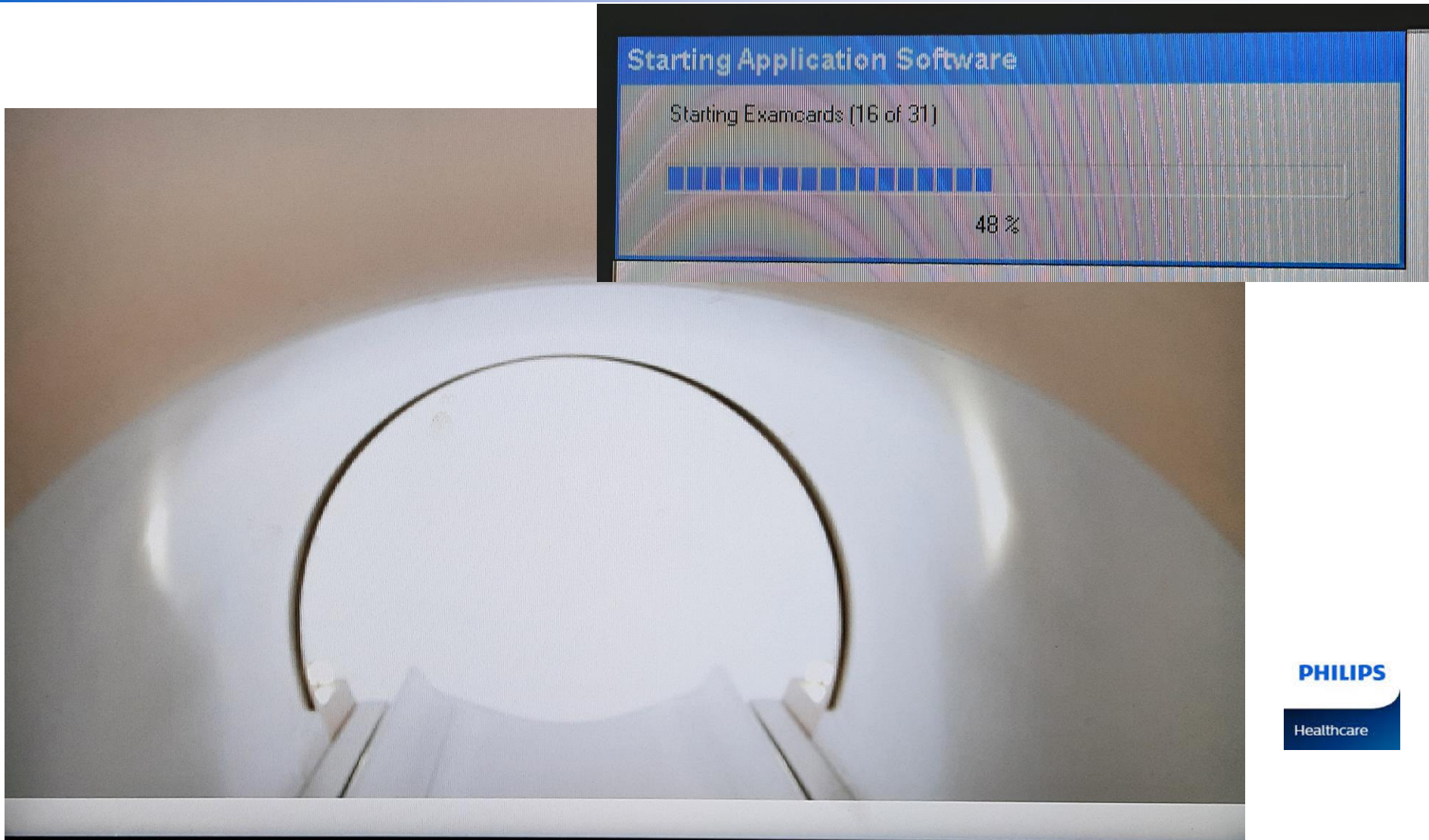
OK

Cancel

PHILIPS

Healthcare





PHILIPS

Healthcare



Patients Examination Review Analysis System Help

Registration ID: Plan  
Date of Birth: Review  
Gender:

00:00:00

Add new scan item...

PHILIPS  
Healthcare

Voxel Rel SNR TE TR Accept SAR PNS Cancel

Summary

FOV x mm x mm  
Voxel x mm x mm  
Matrix x x slices  
Gap  Default mm

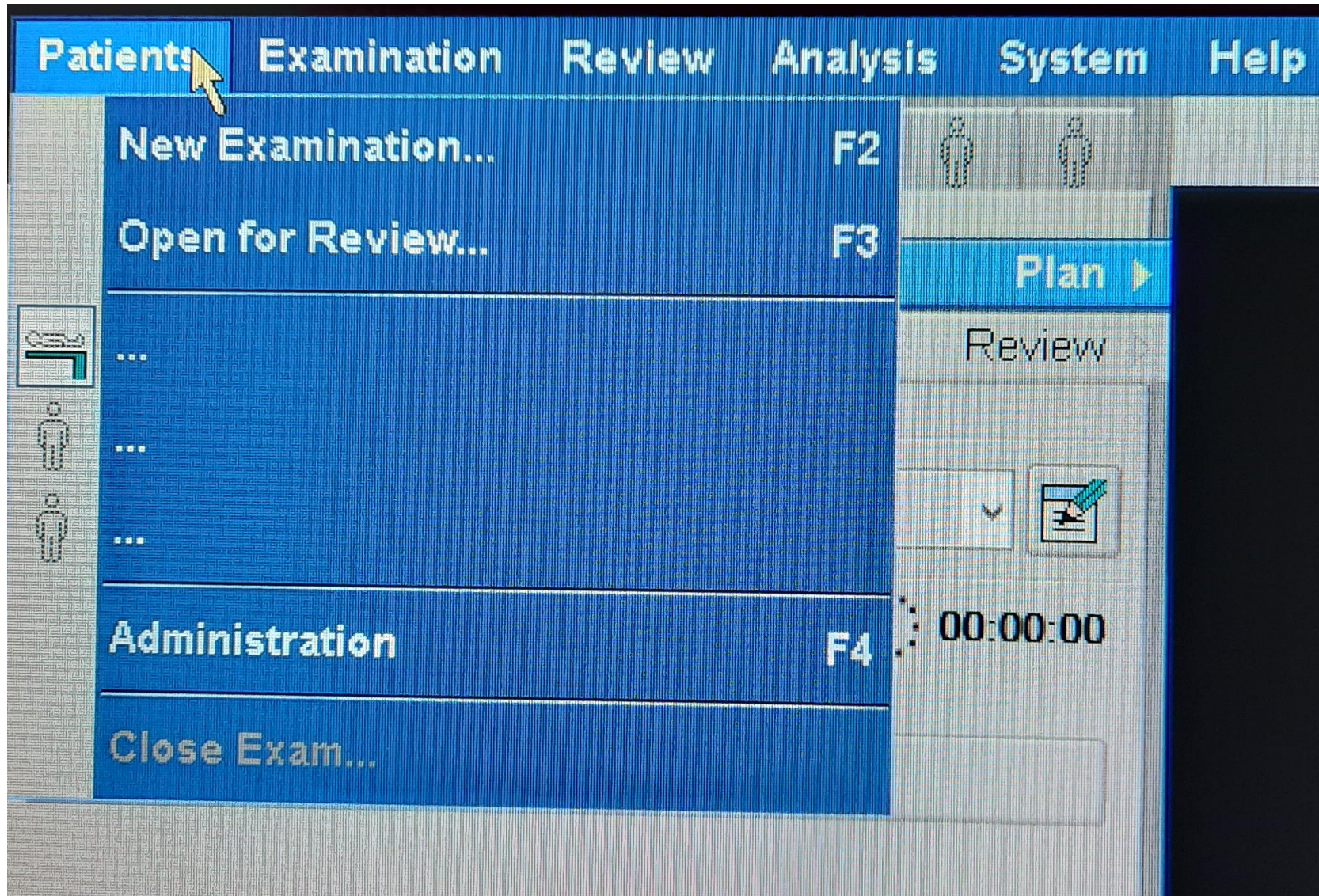
NSA  
Fat saturation  SPIR  
Low SAR mode

Info Assistance AutoView

Start Scan Stop Scan

2023  
BEST HOSPITALS  
Newsweek  
1° OSPEDALE IN ITALIA  
statista  
POLICLINICO UNIVERSITARIO A. GEMELLI





PHILIPS

Healthcare



### New Examination

**Patient**

Patient name: \*

Registration ID: \*

Date of birth: \*  dd-mm-yyyy

Age:

Gender: \*

Patient weight: \*  kg

**Examination**

Exam name:

Accession number:

Examination date:   21-12-2020

Referring Physician:

Performing Physician:

Study Comments:

Allowed SAR mode:

**Patient conditions**

Pregnant \*

Implant \*

Medical alerts:

Allergies:

Start Date	Start TI...	Patient Name	Registration ID	Accession N...	Date Of Bl...	Gender	Procedure Step
------------	-------------	--------------	-----------------	----------------	---------------	--------	----------------

No exams scheduled.



fenix  
the healthcare solution by elco

**Autenticazione**

Utente

Password

Cambio Pwd Login

FenIX

Worklist

Worklist Paz. Cognome, Nome e Data Paz. Codice Fiscale Ricerca Esami

CDC: UCRIS,ALPI,PET-TAC,GMC

Sala: RM2

Metodica: ANG,BIOPSIE,DENS,ECO,GEN,GINE,INTERV,PET-TAC/MEDNUC,RM,RX,SEN,TC

Stato: Inviata,Prenotato,Accettato,Inizio Esecuzione

UDC: ESTERNO,INTERNO,LIBERA PROFESSIONE,ALTRI (

Medico: Tutti

Da Data: 21/12/2020

A Data: [REDACTED]

Tipo Ricovero: SCONOSCIUTO,RICOVERO ORDINARIO IN CORSO,RICOVERO ORDINARIO IN LISTA,RICOVERO

Urgenze: Tutte

Applica

N.	Ricovero	S. R.	Urg	Info	C. S.	Paziente	Stato Esame	Sala	Data Ora Esame	Descrizione Esame	ID Diagnosi	UDC	ULD	CDC
1	+					[REDACTED]	Prenotato	RM2	21/12/2020 08:00	RM ENCEFALO (S/C MDC) IN ANESTESIA	[REDACTED]	NEUROPSICHIATRIA INFANTILE	03M PIANO 3 - ALA M	UCRIS
2	+					[REDACTED]	Prenotato	RM2	21/12/2020 08:00	RM ENCEFALO IN ANESTESIA	[REDACTED]	PEDIATRIA	05M PIANO 5 - ALA M	UCRIS
3	+					[REDACTED]	Prenotato	RM2	21/12/2020 08:00	RM ENCEFALO (S/C MDC) IN ANESTESIA	[REDACTED]	NEUROPSICHIATRIA INFANTILE	03M PIANO 3 - ALA M	UCRIS
4	+					[REDACTED]	Inizio Esecuzione	RM2	21/12/2020 08:30	RM ENCEFALO (S/C MDC) IN ANESTESIA	[REDACTED]	MALATTIE INFETTIVE	04U PIANO 4 - ALA U	UCRIS
5	+					[REDACTED]	Prenotato	RM2	21/12/2020 10:00	RM ENCEFALO (S/C MDC) IN ANESTESIA	[REDACTED]	CENTRO CLINICO NEMO ADULTI	04M PIANO 4 - ALA M	UCRIS
6	+					[REDACTED]	Prenotato	RM2	21/12/2020 12:00	RM ENCEFALO IN ANESTESIA	[REDACTED]	CARDIOLOGIA INTENSIVA	08C PIANO 8 - ALA C	UCRIS
7	+					[REDACTED]	Prenotato	RM2	21/12/2020 14:00	RM CUORE (S/C MDC)	[REDACTED]	CARDIOLOGIA INTENSIVA	08C PIANO 8 - ALA C	UCRIS
8	+					[REDACTED]	Prenotato	RM2	21/12/2020 14:00	RM CUORE (S/C MDC)	[REDACTED]	CARDIOLOGIA INTENSIVA	08C PIANO 8 - ALA C	UCRIS
9	+					[REDACTED]	Prenotato	RM2	21/12/2020 15:00	RM CUORE (S/C MDC)	[REDACTED]	GERIATRIA	08M	UCRIS
10	+					[REDACTED]	Prenotato	RM2	21/12/2020 16:00	RM GINOCCHIO SN (S/C MDC)	[REDACTED]	RADIOLOGIA (RADIOLOGIA)	RADIOLOGIA (RADIOLOGIA)	UCRIS

<input checked="" type="checkbox"/>	<b>Inviata</b>	<input checked="" type="checkbox"/>	<b>Prenotato</b>	<input checked="" type="checkbox"/>	<b>Accettato</b>
<input checked="" type="checkbox"/>	<b>Inizio Esecuzione</b>	<input type="checkbox"/>	<b>Fine Esecuzione</b>	<input type="checkbox"/>	<b>Refertato</b>
<input type="checkbox"/>	<b>Sospeso</b>	<input type="checkbox"/>	<b>Validazione pesante</b>	<input type="checkbox"/>	<b>Validazione Referto Annullato</b>
<input type="checkbox"/>	<b>Non erogato</b>				



<input type="checkbox"/>	URGENZE PS	<input type="checkbox"/>	SALA ORTOP 7P	<input checked="" type="checkbox"/>	RM2
<input type="checkbox"/>	URGENZE DEA	<input type="checkbox"/>	20 BIS	<input type="checkbox"/>	41
<input type="checkbox"/>	DEA RX	<input type="checkbox"/>	08	<input type="checkbox"/>	11
<input type="checkbox"/>	URGENZE DEA REP	<input type="checkbox"/>	16	<input type="checkbox"/>	DIAGSEN
<input type="checkbox"/>	DEA TC 1	<input type="checkbox"/>	02	<input type="checkbox"/>	RADSEN1
<input type="checkbox"/>	DEA TC 2	<input type="checkbox"/>	03	<input type="checkbox"/>	RADSEN2
<input type="checkbox"/>	DEA ROSSA	<input type="checkbox"/>	04	<input type="checkbox"/>	RADSENM
<input type="checkbox"/>	DEA RM	<input type="checkbox"/>	05	<input type="checkbox"/>	ECO ALPI
<input type="checkbox"/>	SALAOB RAD 2P	<input type="checkbox"/>	06	<input type="checkbox"/>	MAMMO ALPI
<input type="checkbox"/>	ANGIO01 (SIEMENS)	<input type="checkbox"/>	07	<input type="checkbox"/>	RM ALPI
<input type="checkbox"/>	ANGIO02 (PHILIPS)	<input type="checkbox"/>	24	<input type="checkbox"/>	TC ALPI
<input type="checkbox"/>	RX TORACE 1	<input type="checkbox"/>	24 BIS	<input type="checkbox"/>	GMC-ECO
<input type="checkbox"/>	14	<input type="checkbox"/>	28	<input type="checkbox"/>	GMC-MAMMO
<input type="checkbox"/>	17	<input type="checkbox"/>	29	<input type="checkbox"/>	GMC-RM
<input type="checkbox"/>	18	<input type="checkbox"/>	38	<input type="checkbox"/>	GMC-TC
<input type="checkbox"/>	19	<input type="checkbox"/>	RM1	<input type="checkbox"/>	SPORTELLLO
<input type="checkbox"/>	PET_TAC1	<input type="checkbox"/>	PET_TAC2	<input type="checkbox"/>	PET_TAC3
<input type="checkbox"/>	PET-TC BIOGRAPH	<input type="checkbox"/>	PET-TC DUAL	<input type="checkbox"/>	PET-TC GXL
<input type="checkbox"/>	PET-TC VISION				



Scanner  
not assigned to a patient

ch/Refresh

Refreshed Time : 19 Jan , 07:09:43

Search Data



Fetch the RIS and the locally scheduled worklists.

Local Protocol

Reco...

Caution



GE Healthcare

Patient Record

View:  In Progress  Details  Completed

Name: [Dropdown] Last: [Text] First: [Text] Search Data [Button]

Worklist T... Scheduled ... Name ▲ Patient ID Accession SPS Description Modal... Referring P... Scheduled ... Status Local Protocol Reco... Caution

08:00:00 [Text] [Text] [Text] RM cranio con MDC in anestesia MR 19-01-2016

### Patient

Last Name: FONTANA First Name: GIOELE

\* Patient ID: 28973899

Lbs: [Text] Kgs: [Text]

\* Weight: [Text] [Text]

DD-MM-YYYY

Date Of Birth: 11-04-2013

Year: [Text] Month: [Text] Weeks: [Text] Days: [Text]

Age: 2

Sex: M

DD-MM-YYYY

Scheduled Date: 19-01-2016

\* Required

### Exam

Accession: IU116GG3DXCX

Exam Description: RM cranio con MI

SPS Description: RM cranio con MI

Procedure ID: REQ2016001752

Operator: Last Name: [Text] First Name: [Text]

Radiologist: Last Name: [Text] First Name: [Text]

Referring Physician: Last Name: [Text] First Name: [Text]

Protocol: Enter Number

Favorite Protocols: Select Favorite

Show All Protocols...

### Other Information

This is patient sensitive information, please adhere to patient confidentiality rules. Please verify the information using either the patient's medical record or directly with the patient to guarantee its accuracy.

Allergies: NONE

Pre-Med: NONE

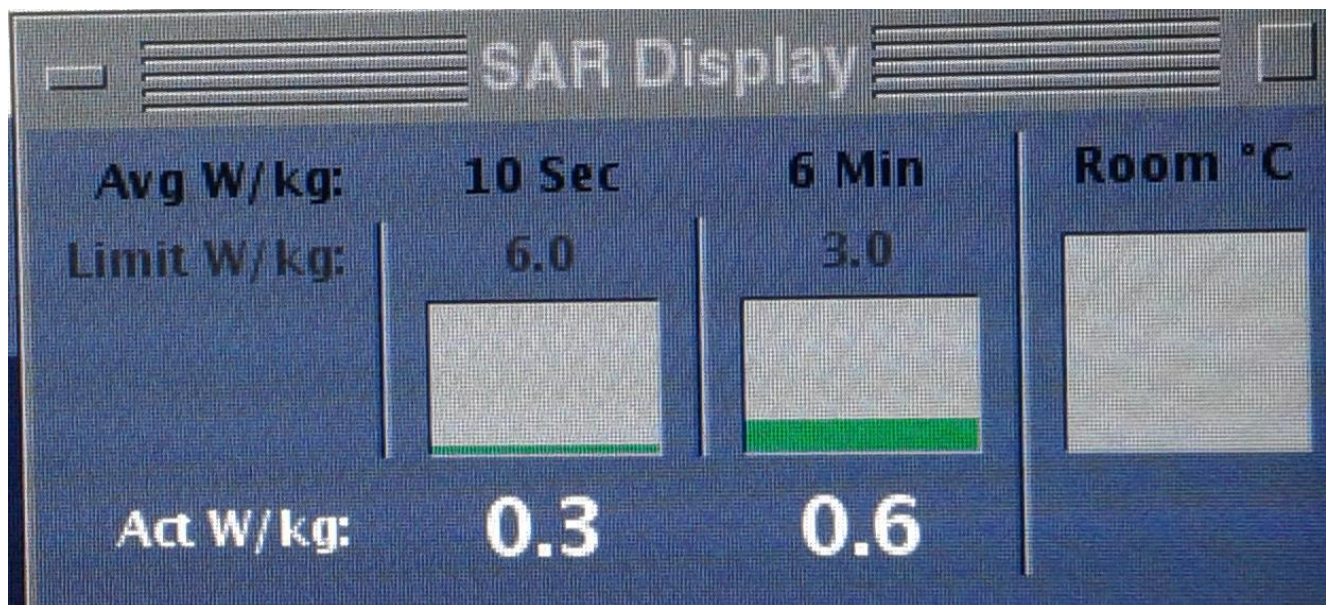
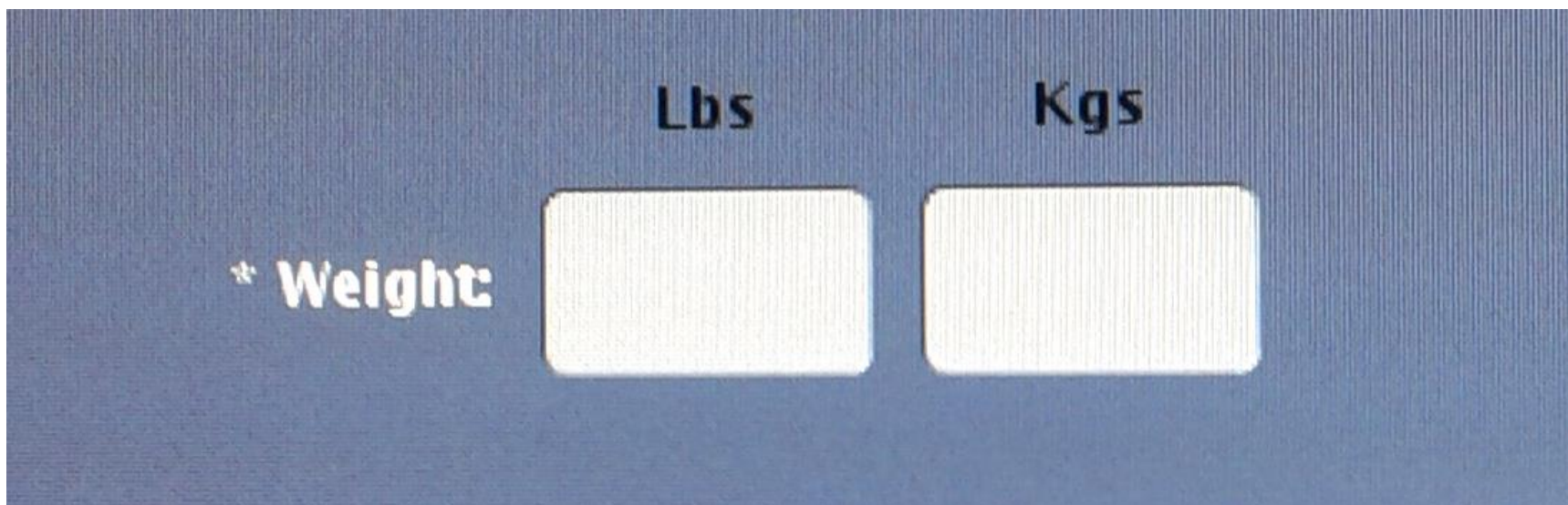
Pregnancy Status: No Entry

History:

[Text Area]

Start Exam [Button]





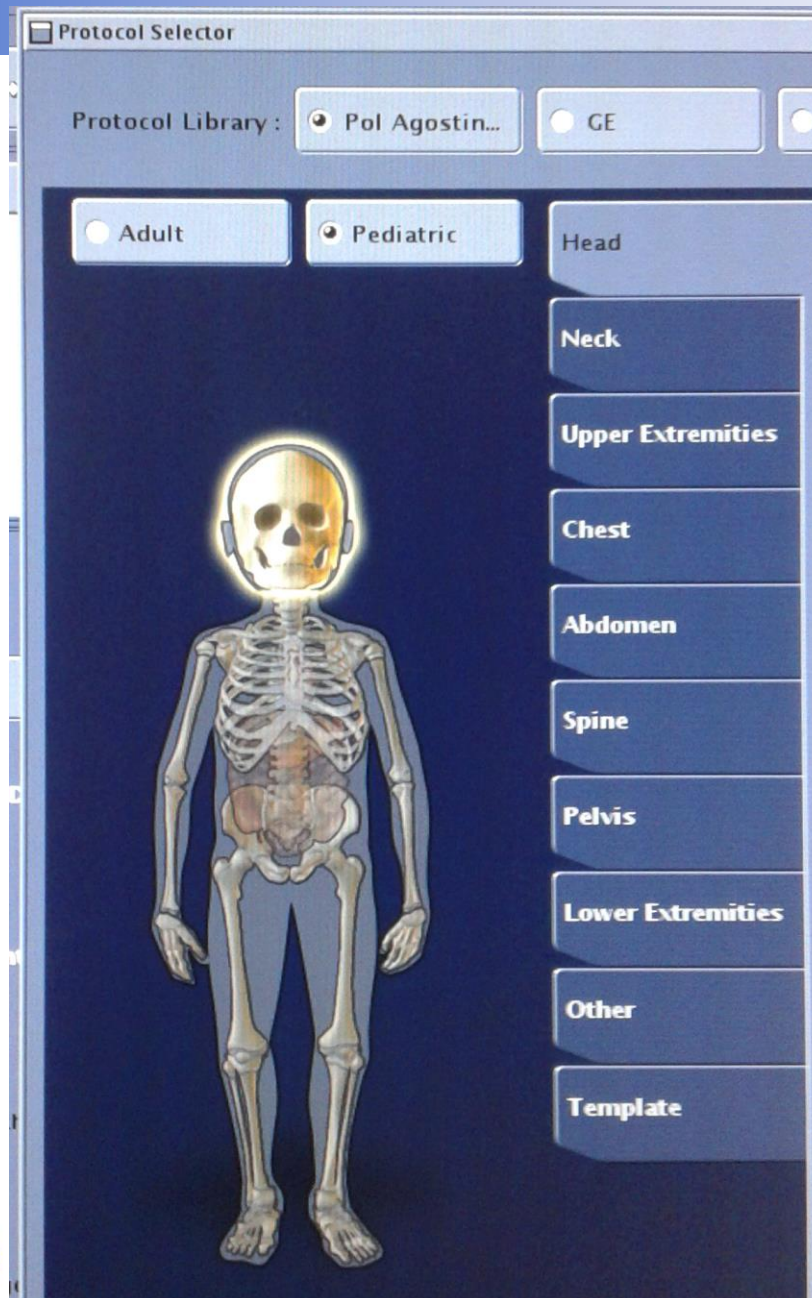
GE Healthcare



<b>Radiologist</b>	<b>Last Name</b>	<b>First Name</b>
	<input type="text"/>	<input type="text"/>
<b>Referring Physician</b>	<b>Last Name</b>	<b>First Name</b>
	<input type="text"/>	<input type="text"/>
<b>Protocol:</b>	<input type="text" value="Enter Number"/>	
<b>Favorite Protocols:</b>	<input type="text" value="Select Favorite"/> ▼	
	<input type="button" value="Show All Protocols..."/>	

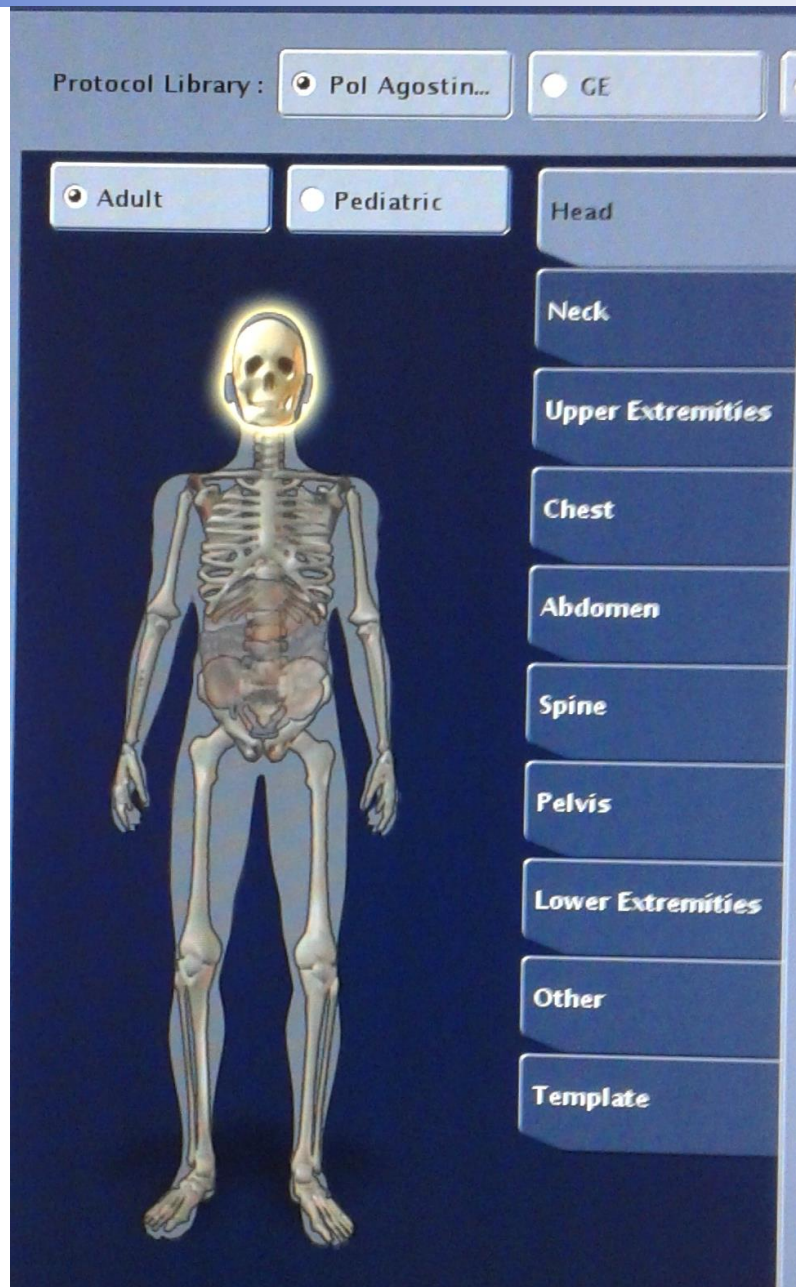
**History:**







GE Healthcare







GE Healthcare

The screenshot displays a software interface for configuring an MRI protocol. At the top, there is a 'Service' button. Below it, a 'Filter List by:' section contains several checkboxes: 'Standard', 'Express', 'Advance', 'Vascular', 'Contrast', and 'Other'. A central window titled 'Sorted by Alphabetical ▲' lists various MRI sequences, including 'LOCALIZER', 'ASSET Cal', 'Sag T2 FSE', 'Ax T2 FSE', 'Ax T1 FSE', 'Ax T2 FLAIR 4 min', 'Cor T2 FSE', 'Ax DWI TETRA B1000', 'AX 3D SWAN', 'AX 3D FSPGR + C', 'Cor T1 FSE + c fs', 'Sag T1 FSE + c fs', 'Ax T1 FSE + c fs', 'Perfusion', 'DTI (25 Directions)', 'Ax T2 FSE spettro', 'PROBE-SV 144', and 'PROBE-SI 144 Multi voxel'. A 'Multi Protocol Basket' window is empty on the right. At the bottom, a 'Protocol Description' field shows '11.15-\*\*\*Enc Neoplasie Pediatrico 2015' and 'Protocol Description: Protocollo Ottimizzato'. Below that, 'Tasks' are listed as 'LOCALIZER' and 'ASSET Cal'. At the very bottom, patient information is visible: 'ID: 28973899', 'Age: 2Y', 'Lbs/Kgs', and 'Description: RM cranio con MDC in anestesia'. 'Accept' and 'Cancel' buttons are at the bottom right.

**Exam dB/dt and SAR Limits**

Select the desired Operating Mode:

**dB/dt:**

- Normal dB/dt
- First Level dB/dt

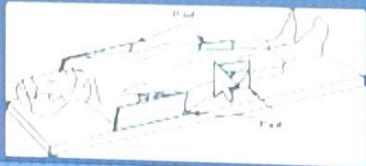
Entering First Level for dB/dt.  
Operator/Physician confirms awareness of potential risks and accepts the responsibility.

**SAR:**

- Normal SAR
- First Level SAR

Entering First Level for SAR.  
Operator/Physician confirms awareness of potential risks and accepts the responsibility.

Follow proper patient padding and positioning instructions to prevent patient warming.



**Accept** **Normal Mode**



GE Healthcare





GE Healthcare

5016 \*\*\*Enc Neoplasie Pediatrico 2... 72:05

Exam Edit End

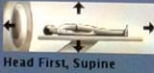
Task	Series Data
InRx	LOCALIZER 00:32
	ASSET Cal 00:12
	Sag T2 FSE 03:25
	Ax T2 FSE 03:40
	Ax T1 FSE 02:33
	Ax T2 FLAIR 4 mm 04:01
	Cor T2 FSE 04:11
	Ax DWI TETRA B1000 03:21
	AX 3D SWAN 04:06
	AX 3D FSPGR +C 04:19
	Cor T1 FSE +c fs 04:02
	Sag T1 FSE +c fs 03:01
	Ax T1 FSE +c fs 03:33

Setup Add Task ▶ Run

View

Auto Start  Auto Scan Scan

Save Rx

Coil...  BHRBRAIN Head First, Supine

Imaging Options... 2D Spin Echo Seq, EDR, Fast, SS

### LOCALIZER

Scan Plane: 3-Plane  
Freq. FOV: 32.0  
Phase FOV: 1.00  
Slice Thickness: 8.0

	S/I	R/L	A/P
Center:	0.0	0.0	A15.0
Spacing:	15.0	3.0	3.0
# Slices:	7	11	11

Chem SAT: None

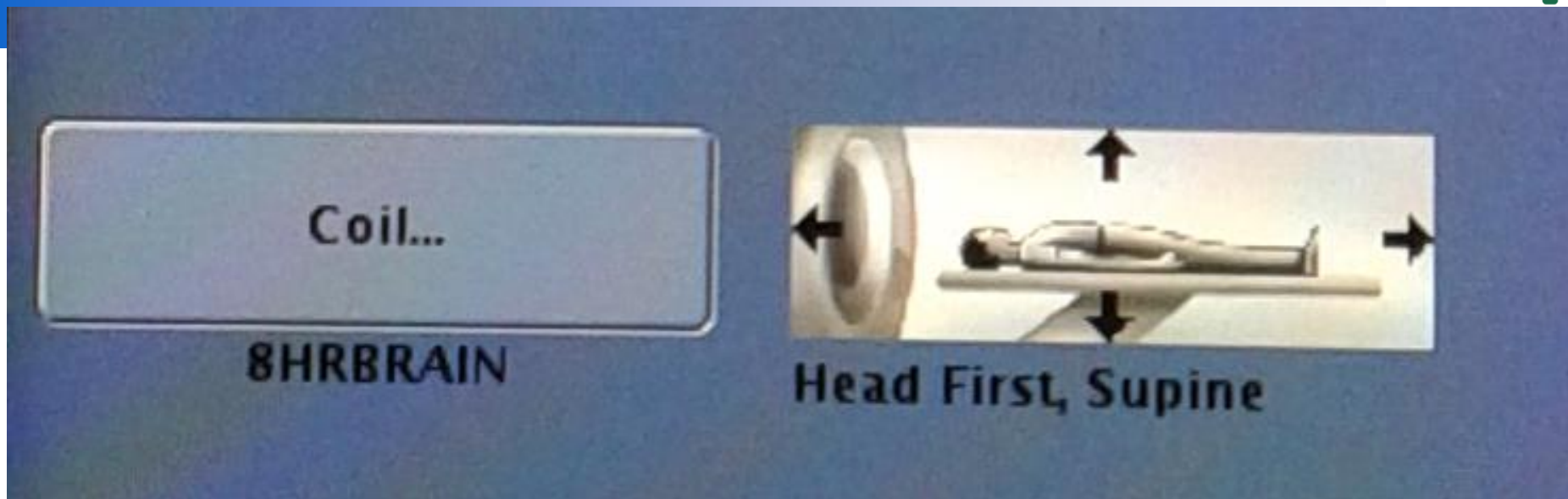
Contrast

SAR Est: 1.26 Peak: 2.51 B<sub>1</sub> RMS: 3.60μT

12:15 19 January 21% 5015/11/35 38/38 Sent 5015/11 (ArchivioCSAP) Commitment completed 5015/11 (ArchivioCSAP)

# Siamo pronti ad iniziare l'esame

...



Facciamo sempre  
attenzione alla corretta  
impostazione della  
posizione del Paziente...



GE Healthcare



## ExamCard Properties

### General

### Push Nodes

Patient Position	Supine
Patient Orientation	Head First
Laterality:	Unpaired
Anatomy:	Head
Anatomic Region:	Brain
Table Usage	Use
Heart Rate (beats/min)	60
Align Overlap (mm)	30
GeoLink Propagation	No
Geometries	AXX
Disengage posterior coil	No

PHILIPS

Healthcare



## Per il controllo del livello dell'Elio ... cfr. lezione n.5 MRI – Magnete e componenti





When prompted, click on the reason for the system shutdown: ***Daily, Service, Other*** or ***Cancel*** to exit the shutdown of your system.

Se è stato premuto il pulsante di emergenza ...

## ACCENSIONE E SPEGNIMENTO

# SIGNA™ Premier: procedura di ripristino da arresto di emergenza

Utilizzare questa procedura per ripristinare il normale funzionamento del sistema, in seguito a un arresto di emergenza. Per i dettagli sull'arresto di emergenza, vedere **Procedura di arresto di emergenza**.


1. Recarsi nella sala apparecchiature e individuare l'armadio ISC.
  - Generalmente solo i tecnici dell'assistenza utilizzano la sala apparecchiature per effettuare l'assistenza delle apparecchiature. Prestare attenzione all'interno della sala apparecchiature.
  -  **NON** aprire nessun armadio o protezione del sistema MRI GE. Negli armadi sono presenti tensioni elevate.
2. Dall'armadio ISC, premere il pulsante verde **EMO Reset** (Ripristina EMO).



Figura 3-11: Armadio ISC

