

Persona C



Back to Basics...

The Role of C-Arms...



Live image guidance on demand

- means to an end
- radiology tech must position as the surgeon needs at all times

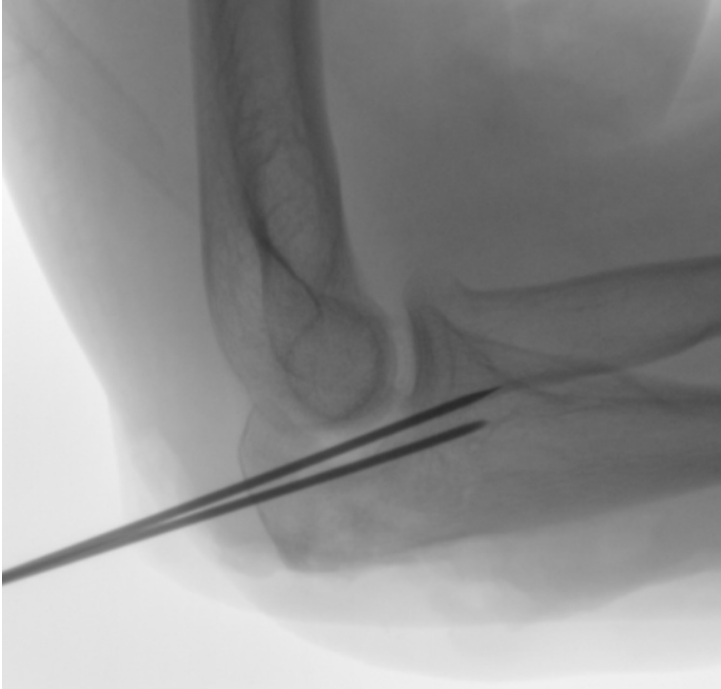
Each person in the room exposed to scatter radiation

- lead gowns for all (up to several hours)
- dose limits and reporting requirements (increased physicist involvement)

Tight positioning, close to sterile field

- sterile drapes and shields required, awareness of positioning

Fluoro Fundamentals



Inverted X-ray appearance compared to radiography

- Bone is dark
- Primary Beam is light

Live imaging. Up to 25-30 frames per second

- Faster Frame rate = More images = More dose
- 'Sub-Frame' rates help save dose. Systems are often configured below their full capacity (eg. 1, 3, 6, 12, **25** / 1, 2, 4, 8, **15**)

Pulsed vs. Continual Fluoro

- Pulsed Fluoro- synchronization of x-ray exposure and detector acquisition. No 'wasted' radiation
- Continual Fluoro- tube is always on. Detector and human eye cannot refresh continually → wasted radiation

DSA- Digital Subtraction Angiography

- Image subtraction – old vs. new → only shows what's changed
- Used for vascular and neuro

Common uses



Orthopedics

- Positioning of prostheses and the installation of plates
- Fracture repair

General Surgery

- General intra-operative procedures,
- Pace-Maker or catheter implant in thoracic region
- ERCP procedures

Neuro and pain management

- Neuromodulation and laser nucleolysis procedures
- Electrophysiology procedures
- Pain therapy procedures

Cerebral, thoracic and peripheral vascular procedures using Digital Subtraction Angiography(DSA)

Urology and hystero procedures

Considerations and Priorities



Ease and flexibility of use

- system dimensions and spec
- weight and maneuverability
- familiarity, user confidence and controls
- startup and shutdown time

Image quality

- dose efficiency
- contrast / density / detail
- frame rate
- digital subtraction angiography

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Introduction

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A powerful mobile fluoroscopy system
with new generation dynamic flat
panel, designed for the full range of
surgical applications

Persolna C

SYSTEM OVERVIEW



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Surgical C-Arm for intraoperative fluoro and radiographic imaging



Next generation C-Arm engineering- built from the ground up for Flat Panel detector technology

Dual layer detector- aSi and CsI layers for maximum dose efficiency for both cine and static imaging

Room to move with 81cm of free space

Lightweight yet sturdy system engineering- just 617lbs



High Quality Surgical Guidance

Automated organ programs combine with flat panel detector technology

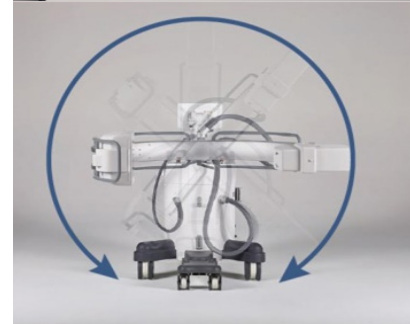
- High-quality and low-dose fluoro modes for balancing of dose and image quality
- Vascular package with Digital Subtraction Angiography (DSA)
- Dedicated Radiography mode for radiographic-level image quality

Designed for

- Surgery Suite and Ambulatory Surgery Centers
- Orthopedic, Vascular and General Surgery
- Pain Management Centers
- Radiology, Interventional Radiology

Maximum maneuverability

- New platform perfectly balanced and designed for FPD detector imaging
- Color-Coded Brake Axes for max user control and confidence
- Ease of positioning with wide Range of Motion
- Laser Centering for no-dose system positioning
- User Removable 8:1 Grid for optimal image quality





Main C-arm applications

- Positioning of prostheses and the installation of plates
- General intra-operative procedures,
- Fracture repair in various anatomical regions
- Pace-Maker or catheters implant in thoracic region
- ERCP (Endoscopic retrograde cholangiopancreatography) procedures
- Neuromodulation and laser nucleolysis procedures
- Electrophysiology procedures
- Pain therapy procedures
- Urology and histero procedures
- Cerebral, thoracic and peripheral vascular procedures using DSA function.

Flat Panel Detector



New generation detector developed specifically for mobile fluoro

- CsI coupled to TFT matrix aSi with 154um resolution
- DQE: 0 lp/mm - 77%, MTF: 1 lp/mm- 59%

Choice of Two detector sizes depending on clinical need

- 30x30cm with 3.8 million pixels for high-resolution and low dose images
- 21x21cm with 1.8 million pixels

Advantages over older Image Intensifier technology

- Increased dose efficiency
- Thinner profile detector with square field of view
- Stable image performance over time

Exposure Modes



High quality pulsed fluoroscopy



Low dose pulsed fluoroscopy



Fluoroscopy in Road Mapping mode



Pulsed DSA fluoroscopy



Low dose digital radiography (direct to FPD)



'Normal' Fluoro



Optional Vascular Package

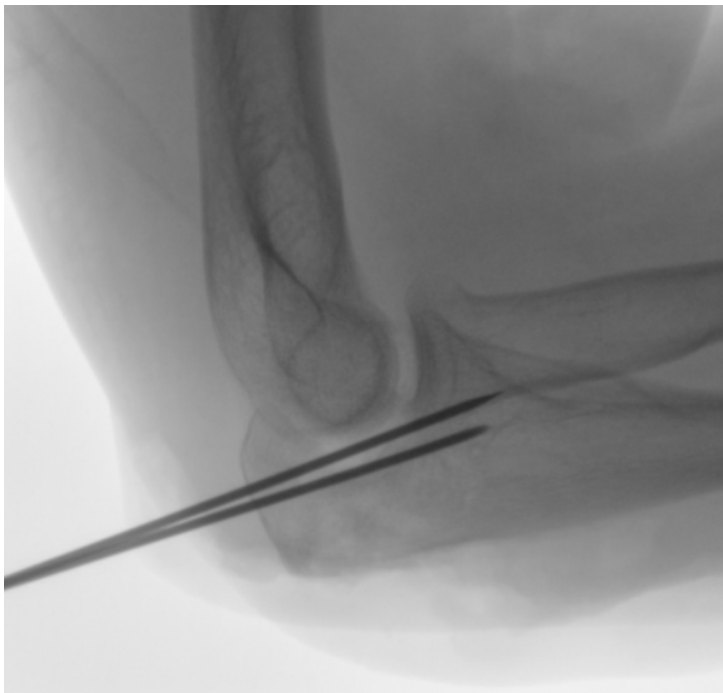


Dedicated Radiography Mode

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Fluoroscopy Modes

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High quality pulsed fluoroscopy



Low dose pulsed fluoroscopy

Live imaging. Pulsed Fluoro

Max frame rate of 15 or 25 frames per second configurable at installation

- 1, 2, 4, 8, 15 or 1, 3, 6, 12, 25

Different dose tables for different IQ priorities

Radiography Mode



NOTE: Phantom Image

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Low dose digital radiography (direct to FPD)

Full radiology image quality image and dose

Minimize need for mobile x-ray images in recovery

Vascular Package Option

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Fluoroscopy in Road Mapping mode



Pulsed DSA fluoroscopy

DSA for blood flow analysis and catheter/stent placement

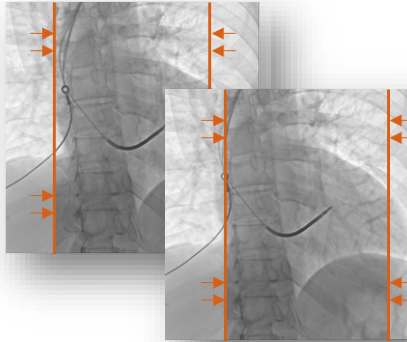
Automatic mask selection (can be manually adjusted)

Injector Integration available for auto mask and x-ray acquisition

Dose optimization features



Dual Laser localisers for dose free positioning



Virtual and asymmetric collimation



8:1 removable grid for pediatric and extremity applications

Lightweight design

Lightweight c-arm design of less than **617lbs** featuring smooth and easy movements.

Easy lift front wheels for overcoming obstacles when moving between operating rooms

Designed for ease of movement; especially where the C-arm is in continuous movement (e.g. ortho, urology, peripheral angio procedures, etc.).



Ergonomic handles for precise positioning and safe movement

Soft bumpers on base to prevent painful knocks and mechanical damage.

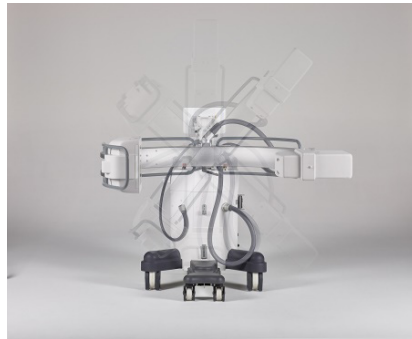


Extended Range of Motion



WIG-WAG

12° in both directions



ANGULAR ROTATION

Rotation along the horizontal axis: > 300°



ORBITAL ROTATION

Rotation along the vertical axis: + 95° - 65°



UP/DOWN MOVEMENT

Up/down movement: 45 cm, motorised at controlled speed

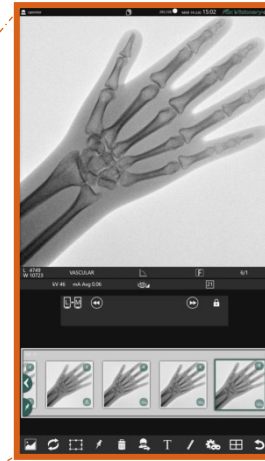
Brake / axis color coding for fast repositioning →



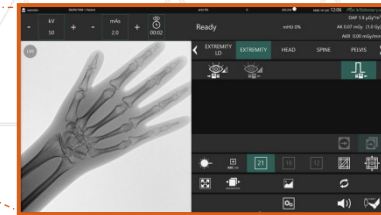
Role Based Design

Dual viewing and control interfaces with role-specific functionality

- Operator Control Workstation
- Surgical Viewstation



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Surgical Viewstation



Operator C-Arm Control

Operator C-Arm Control

- 12" Multi-touch console
- Operator always has direct control over the surgical procedure
 - Exposure mode selection (Fluoro, DSA, Radiography mode)
 - Dose selection (kV/mAs)
- Remote control of Surgical Viewstation screen as required
- Live or saved images shown alongside selection commands
 - select, edit, move, send, drag, compress, reduce, expand)
 - touch the icon to enable the function



Infrared Remote Control



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Surgical Viewstation

Touch-screen technology for easy image and document call-up and management

- Large images and thumbnail in portrait mode with customizable layout
- Screen lock function to avoid accidental display change
- Remote control possible from operator console and/or remote

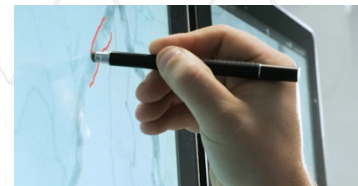
Two 21,5" LCD touch screen

- Ultra sharp details, max zoom 1920x1920 pixels.

Input and output ports for IT network integration and image transmission

Easy adjustment of monitor height and rotation

Direct Image Markup and measurement



Operator controls

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NFC technology, for smart card login



X-ray control via wired or wireless footswitch* and multi-function hand switch



Brake / axis color coding for fast repositioning

*Wireless functionality not yet for sale in the U.S.A

Persona CS

A versatile, small footprint mobile c-arm,
with twice the generator power of other
compact systems*



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High powered c-arm for multifunction use

- 30cm or 21cm detector
- **20kW** generator
- Dedicated monitor bank for surgical viewing

Persona Cs



Orthopedic-focused compact c-arm*

- 30cm or 21cm detector
- **5kW** generator
- Viewing monitors integrated on the imaging unit

Persona Cs Lite



Orthopedic-focused compact c-arm*

- 21cm detector
- **4kW** generator – Fixed Anode
- Viewing monitors integrated on the imaging unit

Persona CS

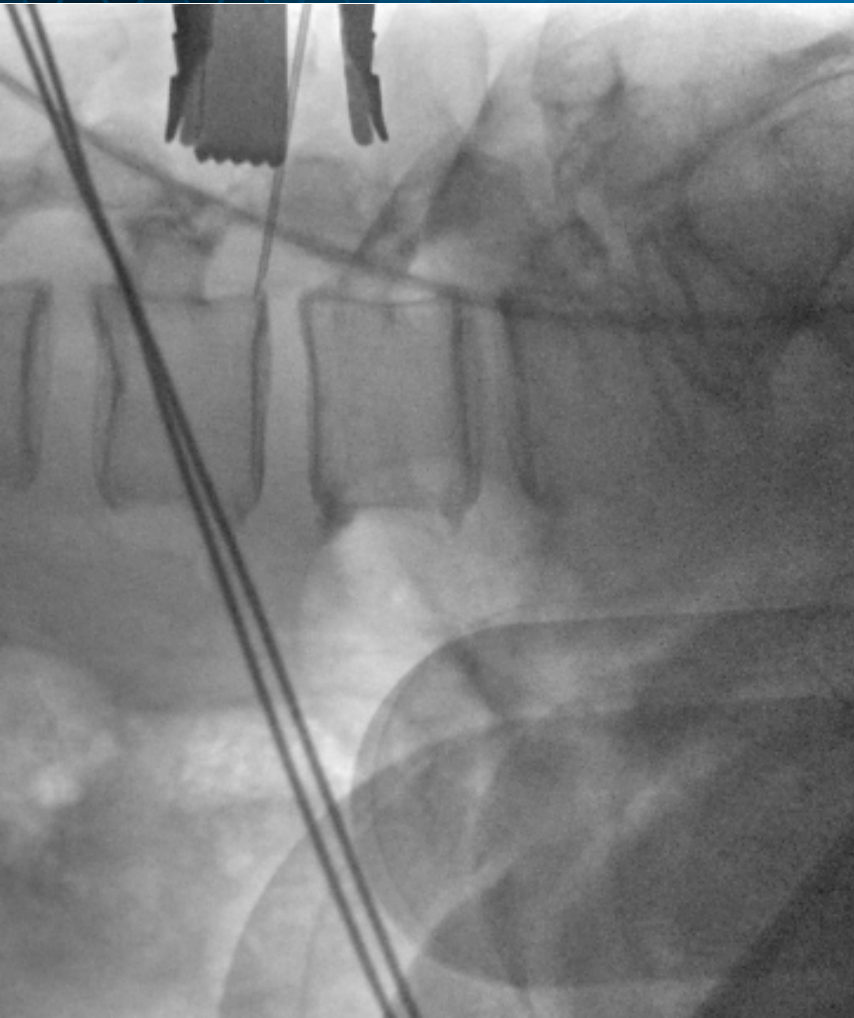
Powerful imaging performance on a compact footprint



All in one fluoro imaging with unprecedented 5kW generator power

Dual layer detector- aSi and CsI layers for maximum dose efficiency for both cine and static imaging

Dedicated Vascular, Orthopedic and Main Management imaging profiles for seamless fluoroscopic workflow



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Powerful all-in-one imaging

Automated organ programs leveraging 5kW generator power

- High quality and low dose fluoro modes for balancing of dose and image quality
- Vascular package with Digital Subtraction Angiography (DSA)
- Dedicated Radiography mode for radiographic level image quality

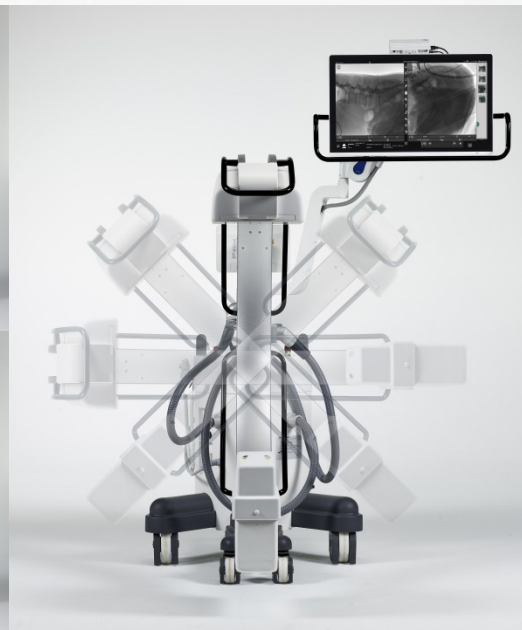
Designed for

- Surgery Suite and Ambulatory Surgery Centers
- Pain Management Centers
- Orthopedic, Vascular and General Surgery
- Radiology, Interventional Radiology

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Immediate maneuverability

- Single platform imaging without need for secondary viewing unit
- Color-Coded Brake Axes for max user control and confidence
- Ease of positioning with wide Range of Motion
- Laser Centering for no-dose system positioning
- User Removable 8:1 Grid for optimal image quality



Flat Panel Detector



New generation detector developed specifically for mobile fluoro

- CsI coupled to TFT matrix aSi
- DQE: 0 lp/mm - 80%, MTF: 1 lp/mm- 60%

Choice of Two detector sizes depending on clinical need

- 30x30cm
- 21x21cm

Advantages over older Image Intensifier technology

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Exposure Modes



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Fluoroscopy in Road Mapping mode



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'Normal' Fluoro



Optional Vascular Package



Dedicated Radiography Mode

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Fluoroscopy Modes



High quality pulsed fluoroscopy



Low dose pulsed fluoroscopy

Live imaging. Pulsed Fluoro

Live imaging at 30fps with down sampling for reduced dose
- choose from 1, 2, 4, 8, 15 or 30 fps

Different dose tables for different IQ priorities



NOTE: Phantom Image

Radiography Mode



Low dose digital radiography (direct to FPD)

Full radiology image quality image and dose

Minimize need for mobile x-ray images in recovery



Vascular Package Option



Fluoroscopy in Road Mapping mode



Pulsed DSA fluoroscopy

DSA for blood flow analysis and catheter/stent placement

Automatic mask selection with manual adjustment option

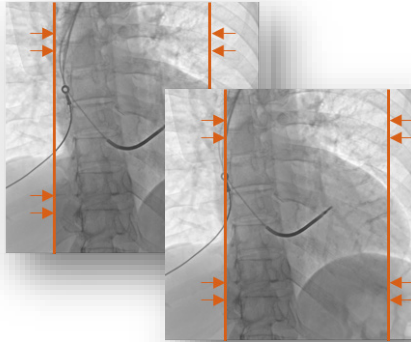
Live imaging at up to 30fps with multistage acquisition;
matching frame rate to clinical need

Injector Integration option

Dose optimization features



Dual Laser localisers for dose free positioning*



Virtual and asymmetric collimation

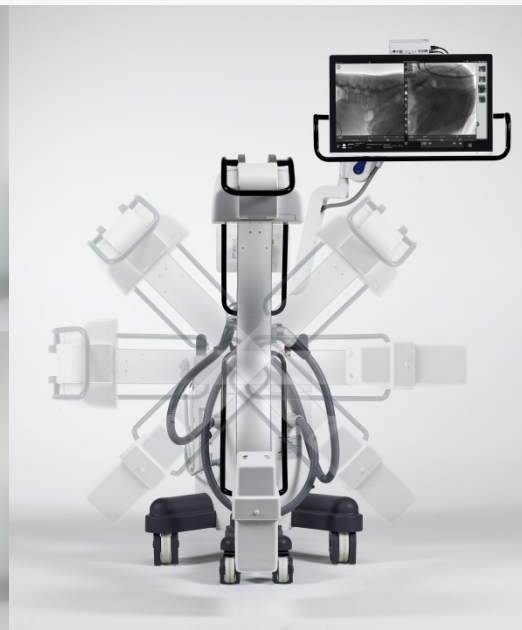


8:1 removable grid for pediatric and extremity applications

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Immediate maneuverability

- Single platform imaging without need for secondary viewing unit
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- User Removable 8:1 Grid for optimal image quality



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Single unit positioning

Integrated unit with onboard viewing monitors for single unit positioning and reduced footprint

27" color LCD monitor with flexible positioning arm and touchscreen control

Soft bumpers on base to prevent painful knocks and mechanical damage.



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Extended Range of Motion



WIG-WAG

12° in both directions



ANGULAR ROTATION

Rotation along the horizontal axis: $\pm 275^\circ$



ORBITAL ROTATION

Rotation along the vertical axis: $+ 95^\circ - 65^\circ$



UP/DOWN MOVEMENT

Up/down movement: 45 cm, motorised at controlled speed

Brake / axis color coding for fast repositioning →



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Operator C-Arm Control

12" Multi-touch console

Operator always has direct control over the surgical procedure

- Exposure mode selection (Fluoro, DSA, Radiography mode)
- Dose selection (kV/mAs)

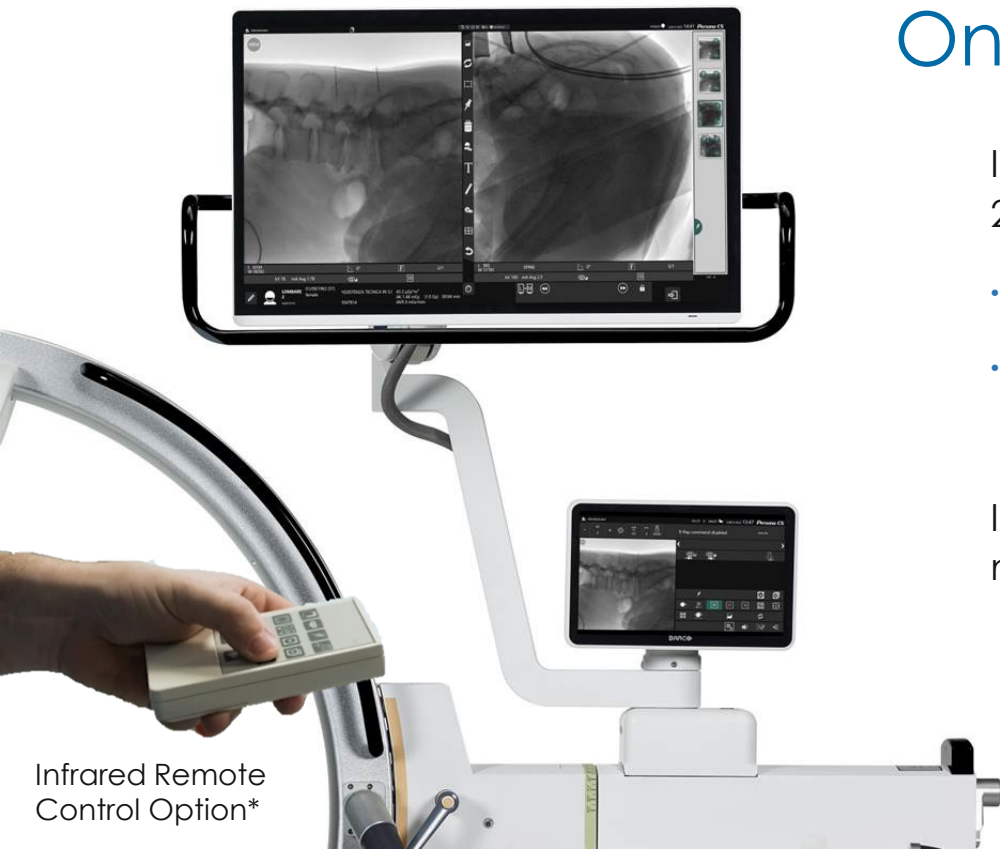
Remote control of Viewing Monitor as required

Live or saved images shown alongside selection commands

- select, edit, move, send, drag, compress, reduce, expand)
- touch the icon to enable the function



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Infrared Remote Control Option*

Onboard 27" monitor

Improved image viewing with a c-arm mounted 27" LCD viewing monitor with multi touch control

- Variable Display height: 186-144cm
- Display rotation: $\pm 180^\circ$

Infrared remote-control option allows for remote manipulation of the onscreen display

Supplementary Wireless Display*

Fully wireless slave view station with 10m operating range and 22" Medical Grade Display

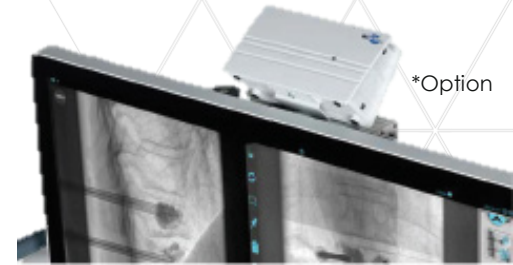
Battery operated up to 8 hours with wired power backup

Connectable to multiple PersonaCS main units

Wireless image transmitter and receiver option allows wireless transmission to non-proprietary displays



*Option



*Option

Accessories



NFC technology, for smart card login*



X-ray control via wired or wireless footswitch* and multi-function hand switch



Onboard thermal printer for immediate hardcopy image output*

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Persona CS

Compact Surgical C-Arm for Pain Management and comprehensive surgical imaging

21x21cm or 30x30cm CsI/aSi detector

Smart touch user interface

- 12" operator control panel
- Onboard Surgical view station 27" 4MP touchscreen

High frequency generator for optimal penetration & image quality

- 5kW opt. 100kV-50mA

Rotating Anode w/variable pulse width

- Up to 30 frames/sec

Removable Grid 8:1, 80 lines/cm, 107cm FFD

Automated organ programs promote low dose

Supplementary Wireless Display Option



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Additional slides
for crossover w.
PersonaC deck

Clinical Protocols



PROTOCOL	CORE APPLICATIONS
EXTREMITY	Fracture repair for extremities and other bones
HEAD	Neuromodulation, Spine Fixation, Laser Nucleolysis and Pain management procedures
SPINE	Vertebral fracture repair, Pain management and Scoliosis-Lordosis correction procedures
PELVIS	Examination of pelvic bony structures, especially for fracture repair
THORAX	Insertion of catheters in the thoracic region
PACEMAKER	Implantation of Pacemaker or Resuscitation device
ERCP	ERCP and abdominal imaging where high contrast is required due to organ movement
VASCULAR	Peripheral arterial bypasses (femoral, popliteal arteries etc.), Endarterectomy procedures
VASCULAR HQ	Abdominal Aortic Aneurysm procedures and other abdominal vascular procedures
VASCULAR CEREBRAL	Control of Intracranial aneurysms
PAIN MANAGEMENT	Imaging of bony structure; Neuromodulation procedures (incl. image subtraction)
UROLOGY	Urological and pelvic region intervention
ELECTROPHYSIOLOGY	Electrophysiology procedures with significant organ movement and long procedure times
DAILY TEST	Quality assurance procedures for verification of correct equipment functioning



Vascular Package Option

Roadmap function, Digital Subtraction Angiography (DSA) and Injector Integration

Dedicated protocols by application with up to 25fps

- Vascular- for peripheral vascular work. Designed for smaller body part thicknesses, incl. femoral, popliteal bypass and endarterectomy procedures
- Vascular HQ- for trunk and abdominal vascular. Designed for large body part thicknesses and abdominal aortic imaging
- Vascular Cerebral- for neurologic and cerebral vascular

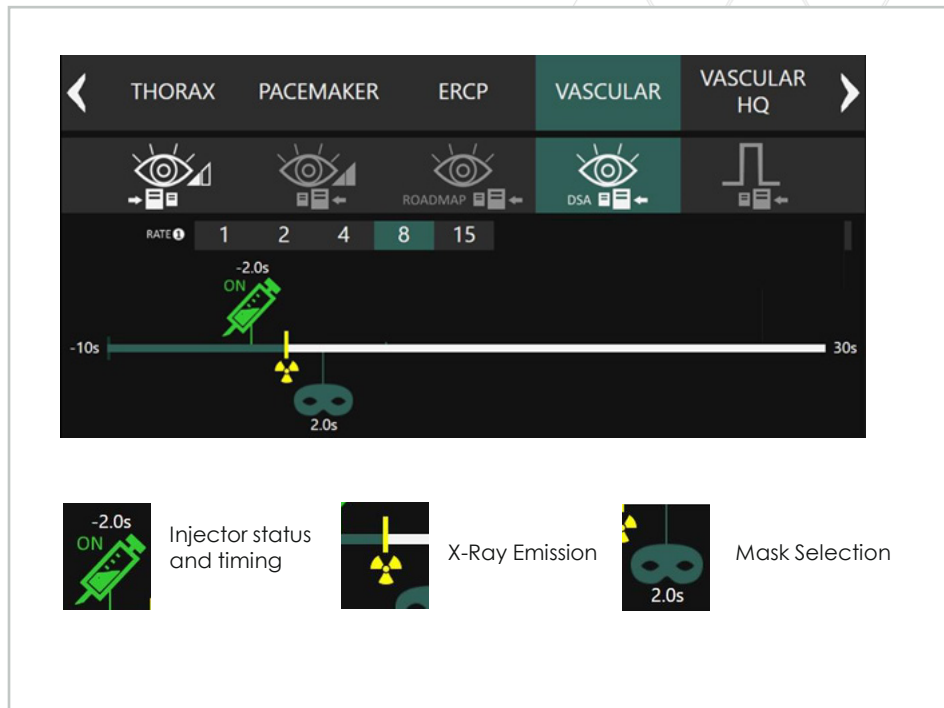
Dual phase acquisition capability for maximum dose reduction

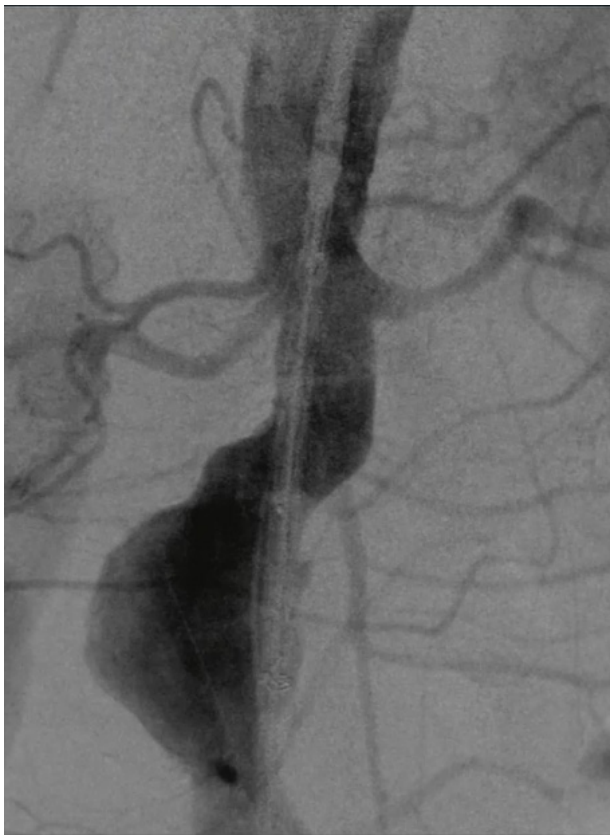
Automated Workflow

Automatic injector integration/trigerring, mask selection and DSA image display

Interactive Acquisition timeline. Drag and drop milestones to adjust on the fly

Retrospective correction of Mask and DSA settings as required





DSA Image Postprocessing



Mask Location

Adjust mask image to allow for poor contrast timing/flow



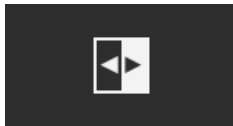
Display toggle

Swap between regular cine and DSA view



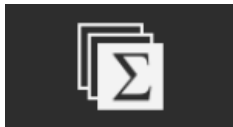
Pixel Shift

Shift mask position to compensate for patient movement



Landmarking

Inclusion of some background info from mask (0-100%)



Vascular Tracing / Peak Opacification

Create sum of multiple subtracted images for one up display of entire vessel opacification

Multi-stage DSA

Choose acquisition sequencing for DSA

- Single frame rate for basic imaging
- Dual phase 'autosequence' for variable contrast flow exams

Selection of frame rate by vascular phase and anatomy of interest

- arterial phase → fast frame rate
- venous infiltration → reduced frame rate

Potential for massive dose reduction in exams with a long infiltration phase

- up to 70% using in protocol shown



1st Phase
Single frame rate



1st Phase 2nd Phase
'Autosequence' variable frame rate

Operator Touchscreen Controls

Dose Control

Direct manipulation of dose, frame rate and anatomical protocol

Dose Display

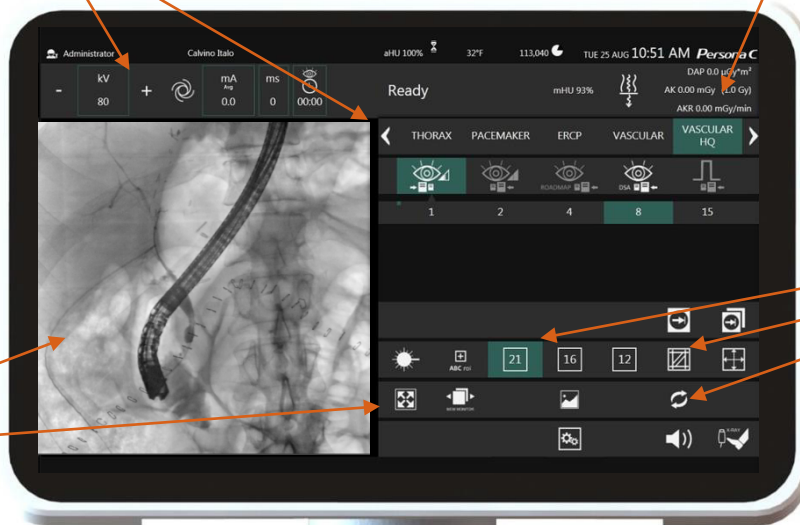
Display of exam dose (w. or w/o DAP). Results are output as DICOM RSDR

Image Control

Image viewing and manipulation of surgical displays

Image orientation, FOV and collimator

Manipulation of key image parameters on demand, selections carry to subsequent images while activated



Markup and Measurement



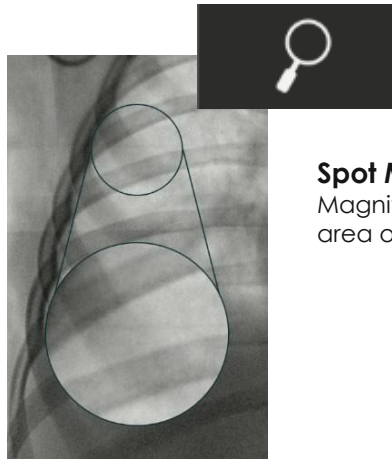
Line drawing/image markup

Mark areas of interest on live image. Markings will carry over to subsequent images for reference



Ruler

Measure linear segments w. correction for geometric magnification using an object of known size



Spot Magnify

Magnify a selected area of the image

Image assessment tools

Ruler			Frame
Line			Rectangle
Arrow			Angle
Pixel Manager			Spot Magnify

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Competitive
and Positioning

Hospital Operating Room



Core Applications: General Surgery, Ortho, Cardiac, Vascular
 Pricepoint: 170-190k
 Core features: High power, Go-anywhere, do anything
 Cautions: too expensive for smaller operators



ASC/Pain Management



Core Applications: General Surgery, Ortho, Cardiac, Vascular
 Pricepoint: 120-150k
 Core features: Price sensitive, single component. Highest power for segment
 Cautions: insufficient power for full OR, does not meet status quo









Emergency Room / ICU / Regenerative Medicine



Core Applications: Line placement, bedside interventional, mobile x-ray
 Pricepoint: 120-160k
 Core features: Large detector sizes, large FOV, still imaging
 Cautions: insufficient power for full OR, small onboard monitor, no wig-wag



Conventional C-Arm Systems

	CONVENTIONAL (87% of market interest)					
	Persona C	GEOEC Elite CFD	PhilipsVeradius Unity	PhilipsZenition 70	Siemens Cios Alpha	GEOEC Elite
						
Market Interest*	-	60%	3%	5%	6%	13%
Warranty	1 year	1 year	1 year	1 year	1 year	1 year
Image Detector Type	Flat Panel	Flat panel	Flat panel	Flat Panel	Flat panel	Image Intensifier
System Design	Conventional	Conventional	Conventional	Conventional	Conventional	Conventional
3-D Cone Beam CT Acquisition	NA	Not Specified	NA	NA	NA	Not Specified
C-Arm Depth, inches	31.9	26.5 Ergo C 33 super C	28.7	28.7	28.7	28 inch 12-inch I.I.
X-Ray Tube Heat Capacity	315,000 HU	300,000 HU	300,000 HU	315,000 HU	365,000 HU (anode) 91,000 HU/min (anode)	300,000 HU
X-Ray Tube Heat Dissipation Rate	63,000 HU/min	85,000 HU/min	73,000 HU/min	73,000 HU/min	73,000 HU/min	85,000 HU/min
X-Ray Generator, kW	20	15	15	15	12 or 25	15
Fluoroscopic mA Range	≤200	≤150	2-60	2-60	3-250	≤75
Orbital Rotation, degrees	160 (95/65)	150 (97/55) Ergo C 145 (90/55) super C	140 (+90/-50)	140 (+90/-50)	148 (-51.5/+96.5)	115 (90/25) 9-inch I.I. 125 (90/30) 12-inch I.I.
Pivot Rotation, degrees	360 (180/180)	360 (180/180) Ergo C 360 (90/270) super C	400 (200/200)	400 (200/200)	450 (225/225)	360 (180/180)
C-Arm System Weight	617 lbs	644 lbs Ergo C 635 lbs super C	760.6 lbs	740.7 lbs (10.3" FPD)	792 lbs	610 lbs

60 second Pitch: Exceptional image quality & dose efficiency on a maneuverable, lightweight platform. Surgical imaging made easier with automated organ programs to minimize dose to Patient and Staff, allows departments to increase cost efficiencies while extending surgical procedure mix.

Customer Core Need Areas:

- OR/Surgery Suite
- Radiology
- ASCs ambulatory surgery centers
- Pain Management

Targeted Outcomes:

- Cost Efficiency, ROI
- Versatility in positioning & movements
- Minimal surgery hindrance
- High Image Quality, Low Dose
- Departmental Integration

Core Innovation:

- Robust flexible system
- Digital detector technology
- FPD brings IQ & Dose enhancements

Key Product Points:

- All new design for FPD tech
- Fluoroscopic intraoperative imaging, orthopedic procedures
- Smart touch user interface
- Arc & Orbital movements, wide, precise angles $>+/-210^\circ$
- C-arm depth 81cm easy access, vert. trvl. 450mm
- Gen: High freq. pulsing for optimal penetration
- Rotating Anode w/variable pulse width
- Organ programs promote low dose
 - Orthopedic
 - Head & spine
 - Thorax
 - Abdomen
 - Vascular



Target Customers: Vascular & OR Staff (NM> Surgeons, OR Nurse), ASCs, Rad & Interventional Rad Director, Surgery Suite, Orthopedic, Cardiology, Pulmonary

Key Influencers: Surgeons, Radiologist, Procurement Manager, CEO/CFO of Small Hospital, Hospital IDN managers

Competitors:








SIEMENS Carestream



PHILIPS

Compact and Hybrid C-Arm Systems

	HYBRID FDR Cross	COMPACT (8% of market interest)			
		PersonaCS	GEOEC One CFD	Ziehm Solo	GEOEC One
					
Year	2021	2021	2019	2016	2017
Market Interest*	-	-	-	1%	3%
Image Detector Type	Flat Panel (Removable)	Flat Panel	Flat Panel	Flat panel	Image intensifier
Detector Size/s	14x17", 17x17" or 10x12"	30 or 21cm	30 or 21cm	20.5cm	9"
System Design	Compact	Compact	Compact	Compact	Compact
3-D Cone Beam CT Acquisition	NA	NA	Not Specified	No	Not Specified
C-Arm Free space		81cm (31.9")	78 cm (30.7 in)	87 (34)	78 cm (30.7 in)
X-Ray Tube Heat Capacity	85,000 HU	315,000 HU	76,000 HU	85,000 HU	76,000 HU
X-Ray Tube Heat Dissipation Rate	50,400 HU/min	63,000 HU/min	37,000 HU/min	51,000 HU/min	37,000 HU/min
Cooling Type	Passive	Active (Air)*	Passive	?	Passive
X-Ray Generator, kW	2.0	5.0	2.5	2.4	2.2
Fluoroscopic mA Range	≤20	≤40	≤25	0.2-20	≤12
Max Frames per second	15	30	12	?	12
Orbital Rotation, degrees	120 (90/30)	160 (95/65)	150 (95/55)	165 (-120/45)	120 (90/30)
Pivot Rotation, degrees	400 (200/200)	360 (180/180)	410 (205/205)	450 (225/225)	410 (205/205)
Wig Wag	None	24	25	20	25
Onboard Battery	8h (incl. exposure)	None	5min (transport only)	None (TBC)	None (TBC)
C-Arm System Weight	549lbs (249kg)	683lbs	706lbs	765lbs	683lbs
*Option					

60 second Pitch: Portable x-ray and fluoro imaging on a single platform. Compatible with large field of view to allow imaging of whole body parts. No need for multiple pieces of equipment for interventional and verification imaging. Avoid moving patients to the OR for simple procedures

Customer Core Need Areas:

- Emergency Room
- ICU

Targeted Outcomes:

- Portable x-ray plus portable fluoro imaging
- Full body part coverage
- Minimal surgery hindrance
- High Image Quality, Low Dose

Core Innovation:

- Traditional mobile X-Ray and fluoro on a single platform
- Large FOV for full body part imaging/verification
- Removable detector for redundancy and

Key Product Points:

- Full wireless operation with up to 8h battery power
- Large field of view- up to 17x17" for both fluoro and static x-ray
- Removable D-EVOIII detectors allow for bedside mobile imaging
- FUJIFILM image processing and panel technologies- DVII, Virtual Grid, Irradiated side sampling (ISS)
- HydroAG antimicrobial coating on select surfaces (incl. removable panel, handswitch)



Target Customers: Rad & Interventional Rad Director, Anesthetics, Trauma / ER Physicians
Key Influencers: Procurement Manager, CEO/CFO of Small Hospital, Hospital IDN managers

Competitors:



60 second Pitch: Exceptional image quality & dose efficiency on a maneuverable, lightweight platform. Experience the same core characteristics as a full size c-arm but with an onboard monitor for single unit positioning. With this compact unit there's no unnecessary compromise to power and image quality with live imaging, DSA and powerful onboard generator

Customer Core Need Areas:

- ASCs ambulatory surgery centers
- Pain Management
- ERCP

Targeted Outcomes:

- Cost Efficiency, ROI
- Versatility in positioning & movements, single component
- Minimal surgery hindrance
- High Image Quality, Low Dose
- Departmental Integration

Core Innovation:

- Robust flexible system
- Digital FPD brings IQ & Dose enhancements
- Powerful onboard generator

Key Product Points:

- Fluoroscopic intraoperative imaging, orthopedic procedures
- Smart touch user interface
- Arc & Orbital movements, wide, precise angles >+/-210°
- C-arm depth 81cm easy access, vert. trvl. 450mm
- Gen: High freq. pulsing for optimal penetration & image quality
- Rotating Anode w/variable pulse width
- Automated organ programs promote low dose
 - Orthopedic
 - Head & spine
 - Thorax
 - Abdomen
 - Vascular



Target Customers: Vascular & OR Staff (NM> Surgeons, OR Nurse), ASCs, Rad & Interventional Rad Director, Pain management physicians

Key Influencers: Surgeons, OR Rad Techs, Procurement Manager, CEO/CFO of Small Hospital, Hospital IDN managers

Competitors:



PHILIPS

OEC One CFD

Product Overview



GE Healthcare



All-in-one workflow

- Optimize surgical space with connected display on one-piece C-arm
- Synchronize workflow with connected OEC Touch control panel
- Streamline clinical team's communication for timely image adjustments and C-arm positioning

Clear View of anatomy

- 1:1 image detail from CMOS detector to 4K display with Clear View image chain
- Capture anatomy as needed with the choice of 31 or 21 CMOS flat detectors
- View more anatomy* with CFD and Live Zoom, and review last fluoro sequence with Fluorostore
- Easily view large detailed images on 4K monitor adjustable to surgeon's line of sight

Across procedural settings

- Point-and-shoot imaging offered in three configurations to suit clinical demands
- Easy planning with Digital Pen and C-arm positioning with long handles, color-coded radial dial brakes, and green laser aimers**
- Five-minute standby power supports quick transport needs and protects against patient data loss

OEC One CFD

Sales Approach

Pain Management and ASC's

ERCP and low-functionality/low cost hospital deals

Seen quoted instead of OEC Elite FPD where price is an issue
→ check quote if 'Elite' price appears unusually low

Sometimes paired w. 3rd party monitor bank for multimodality image management



GE Healthcare



FUJIFILM

VS.



GE Healthcare

COMPACT (8% of market interest)

PersonaCS

GEOEC One CFD



Year	2021	2019
Image Detector Type	Flat Panel	Flat Panel
Detector Size/s	30 or 21cm	30 or 21cm
System Design	Compact	Compact
C-Arm Free space	81cm (31.9")	78 cm (30.7 in)
X-Ray Tube Heat Capacity	315,000 HU	76,000 HU
X-Ray Tube Heat Dissipation Rate	63,000 HU/min	37,000 HU/min
Cooling Type	Active (Air)*	Passive
X-Ray Generator, kW	5.0	2.5
Fluoroscopic mA Range	≤40	≤25
Max Frames per second	30	12
Orbital Rotation, degrees	160 (95/65)	150 (95/55)
Pivot Rotation, degrees	360 (180/180)	410 (205/205)
Wig Wag	24	25
Onboard Battery	None	5min (transport only)
C-Arm System Weight	683lbs	706lbs
*Option		

Persona CS vs. *OEC One CFD*



Both systems offer a 4K, 27" arm mounted display monitor

Persona CS vs. **OEC One CFD**



FPD seated up within C-Arm: designed for FPD from the beginning
Extra room free space (81 vs. 78cm)

Persona CS vs. OEC One CFD



Rubberized covers at vulnerable locations



Persona C

VS.



OEC One CFD

Fujifilm Advantages:

Power. At 5kW is twice the power of the GE.
 Frame rate- up to 30fps. Live imaging as required (incl. for vascular)

GE OEC One Challenges:

Old looking platform, low power, low frame rate. Designed as a lower functionality solution and will struggle to scale to higher end uses. Manoeuvrability and weight distribution relatively poor.

5 minute holdover battery gives improved management when moving between rooms

Counterpoint – Exposures are not possible and 5mins goes quickly. Startup on the PersonaCS is under a minute so the real world impact is questionable, esp. for pain management where the unit is typically used in a single room.

Experienced in the OR, why take a risk on an unknown

Counterpoint – Persona design is thoughtful and shows experience. Fuji as a company is committed to growth in the OR. We have made rapid inroads in our first year in the OR and for good reason. Try and buy or demo will prove there is really nothing to worry about.

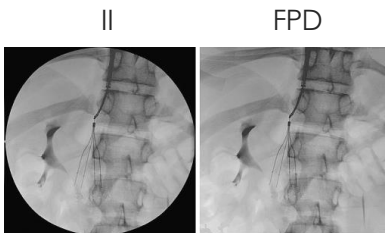


Persona CS

FPD vs IIS
Operational benefits

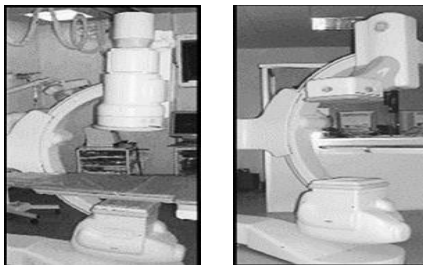
FPD vs IIS: operational benefits

Larger field of view with FPD *For a better patient coverage*



21x21 vs 9": ~ **+20% more FoV**

Better access to patient with FPD *Especially for large patient*



II are large and bulky:
→ 9" II ~ 21 kg w/o camera
FPD are compact and light, allowing more precise movements and more angulations
→ Pixium 2121 EFFICIENCY: <5kg

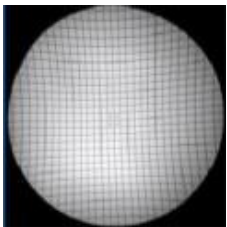
Long term reliability & easy storage *For better services*

- FPD
- very limited image degradation over time: 15% after 100 Gy (10 year use) on Flat Panel no need to increase dose
 - Long-term availability
- II
- Gain decreases gradually:
 - Defocusing drift over time
 - sensitivity degradation
 - Limited spare part availability after 2021
 - Difficult storage due to the need to vacuum pump

FPD vs IIS: image quality enhancements

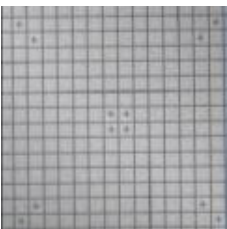
No distortion with FPD

For better precision



IIS

- Geometric distortion due to curved shape
- S-distortion due to electromagnetic field, which depends on C-arm orientation and is never uniform
 - **Cannot be fully corrected**



FPD

No distortion thanks to the flat design

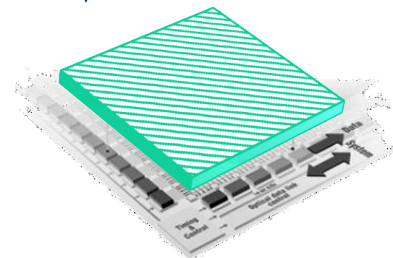
No vignetting with FPD

For a better brightness uniformity

The scintillator layer is put on a curved area which results in lower signal on edges



The scintillator layer is put on a flat area



FPD vs IIS: image quality

16 bits digital image chain with FPD

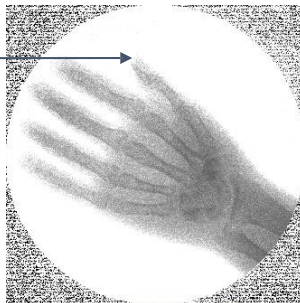
For no saturation

- All anatomical details on same image : no need to adjust gain

Images acquired @ 10 nGy
(dose at detector entrance)

IMAGE INTENSIFIER

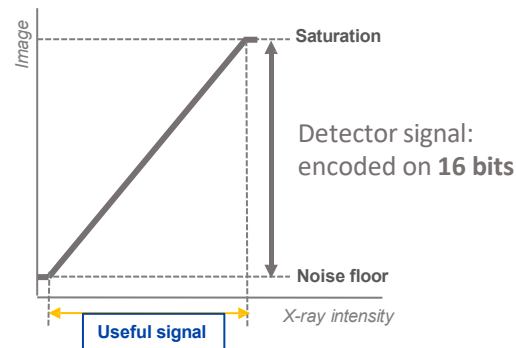
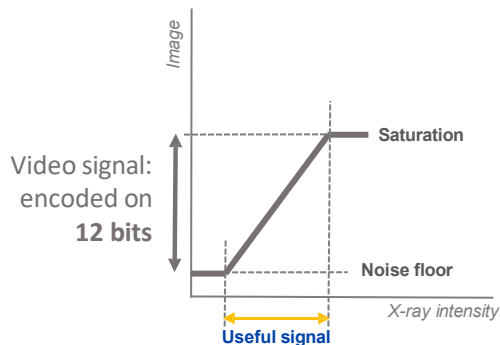
FLARE: Loss of information due to local saturation
Gain must be adjusted to either low OR high absorption areas



FP 2121

with post-processing

NO FLARE: Both low and high absorption areas are visible on same image



FPD vs IIS: more clinical possibilities

Radiography

Possibility to have a good RAD mode with FPD to get 1 image for report purpose thanks to

- high dynamic range (16 bits): an II has not enough dynamic range for RAD (12bits)
- Ability to handle high dose

Flexible acquisitions

More modes possible with FPD thanks to digital electronics integration such as:

- Advanced Pulsed fluoroscopy
- Numerical zoom with rectangular area to optimize dose

FPD Today

- ✓ The latest generation of FPD has a similar price to IIS + camera
- ✓ Existing software solution to support digitalization and image post-processing
- ✓ Similar frame rate to IIR
- ✓ Proven use for 20 years in all high-end systems, including the most stringent procedures (neurology, cardio-vascular)
- ✓ Proven use since 2006 in mobile C-arm with a large adoption worldwide
- ✓ IIR are becoming obsolete: no spare parts in long term, no possibility to refurbish or resell the system



FUJIFILM

Value from Innovation

Thank you.