

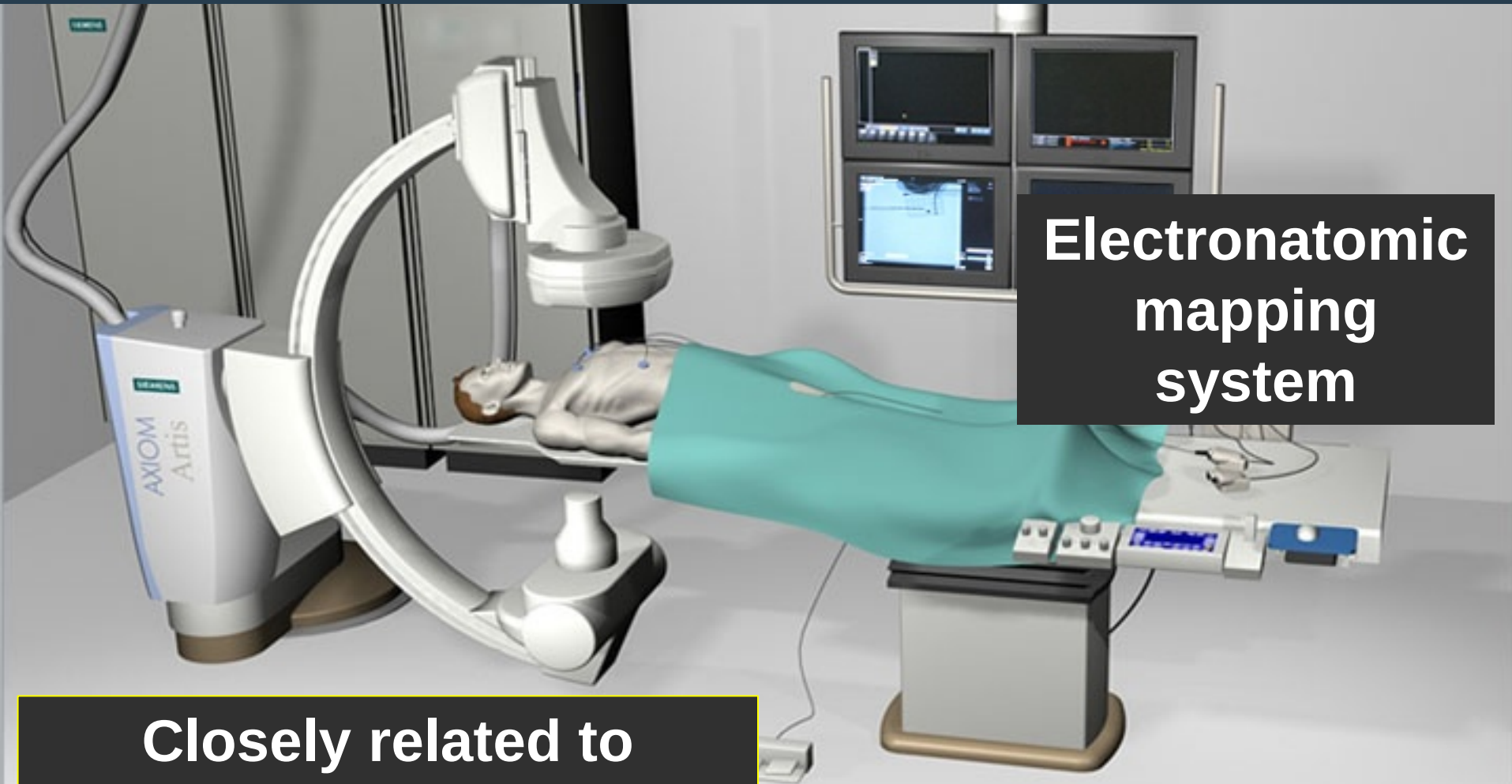


Non fluoroscopic gMPS navigation in EP procedures: current italian clinical experience and future developments

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MEDIGUIDE

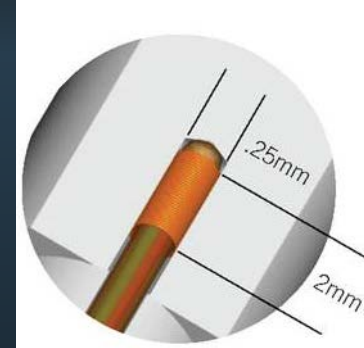


**Closely related to
fluoroscopy**

Mediguide: **Components**



**Magnetic field
generator**

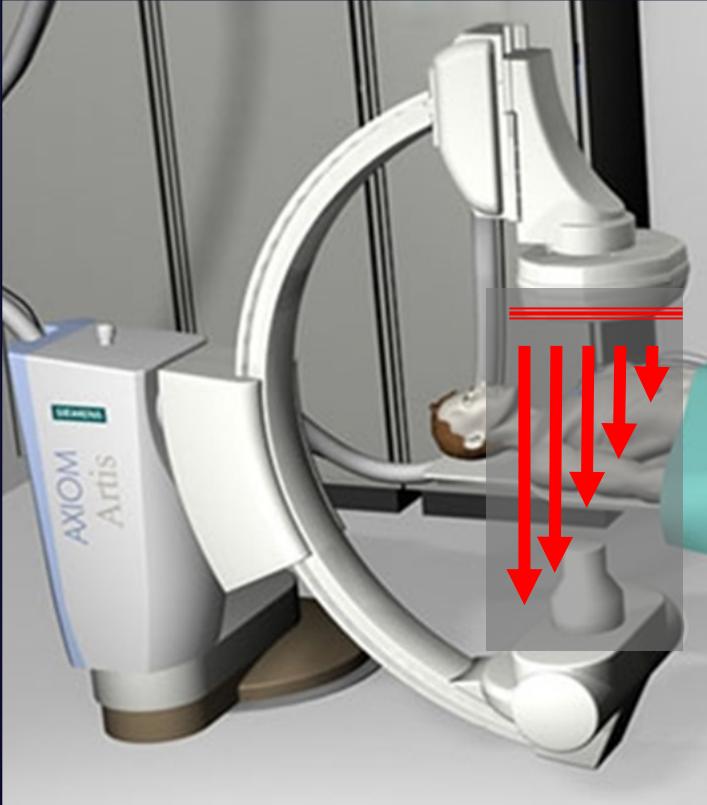


Sensor



Patch

Mediguide: **Magnetic field generator**



**Magnetic field
generator**

Integrated in fluoroscopy
system (Siemens Artis Zee)

Alternating 3d low intensity
dynamic magnetic field

Mediguide: **Magnetic field generator**



**Magnetic field
generator**

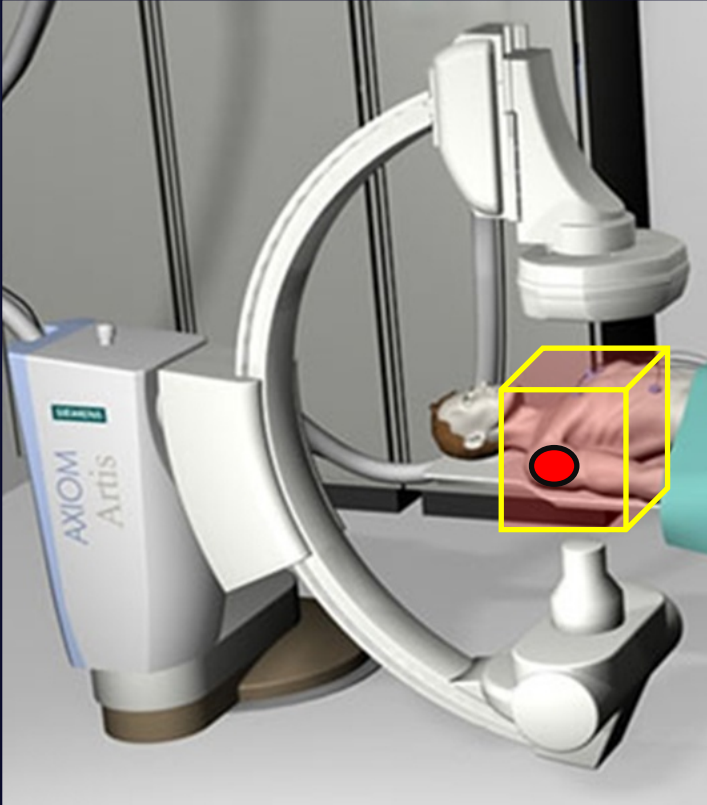
Integrated in fluoroscopy
system (Siemens Artis Zee)

Alternating 3d low intensity
dynamic magnetic field

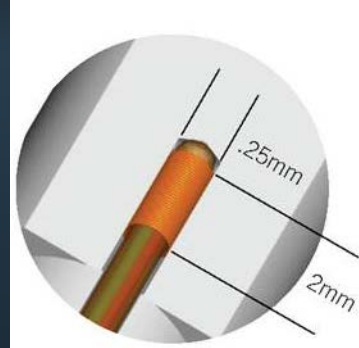
Motion box

20 cm x 28 cm x 34 cm

Mediguide: **Sensor**



**Magnetic field
generator**



Sensor

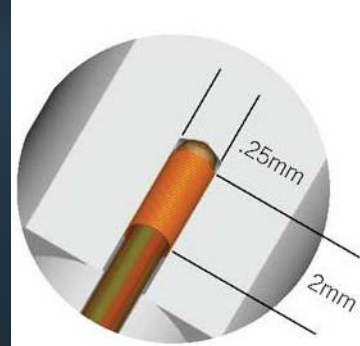
Coil
0.25 x 2 mm

Integrated in tools
(catheters, guides)

Magnetic field generates
electrical current in sensor,
that is then spatially localized

Precision: 0,5 mm

Mediguide: Patch

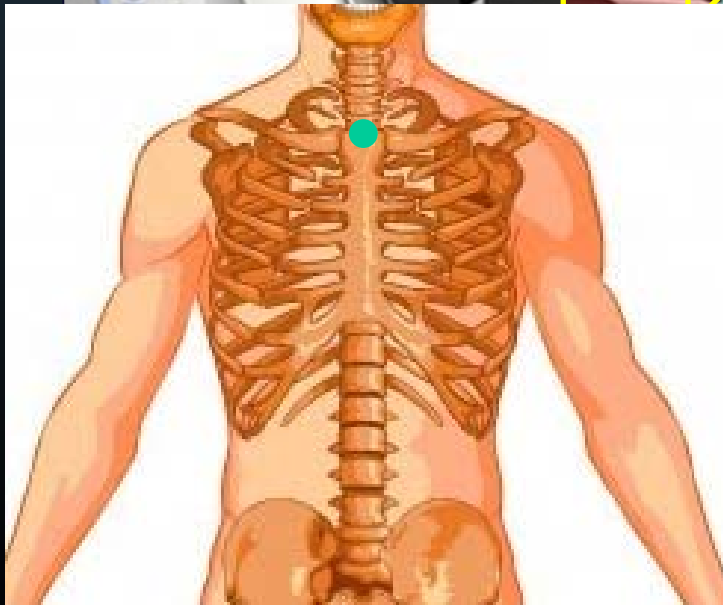


Sensor



Patch

Attached to the chest



Compensate:
Movement
Respiratory variations

Mediguide: Catheter localization



Mediguide: **X-ray integration**

Acquiring ECG-gated cine loop



Fluoroscopy (no need for fluorography)

3 cardiac cycles

Loop repeated, ECG synchronized

Mediguide: Catheter localization

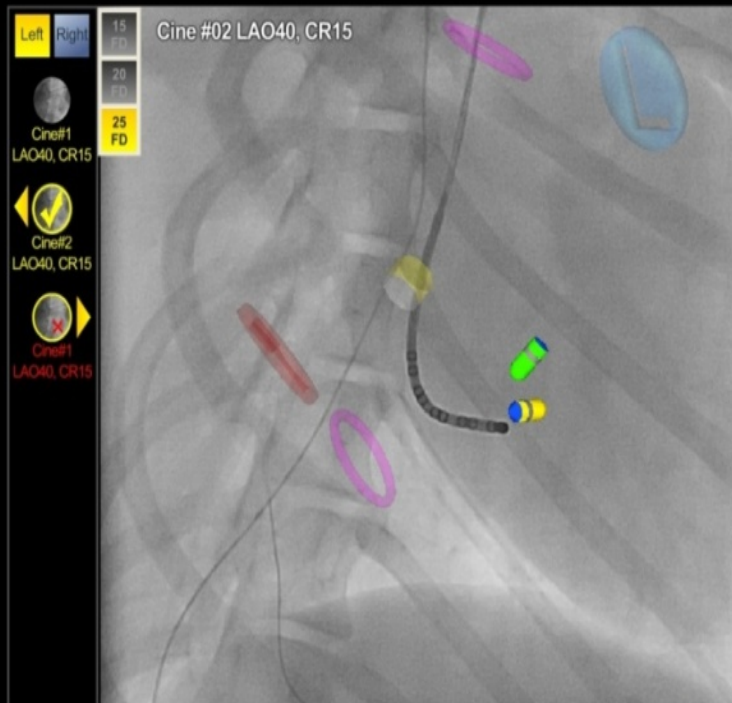


Mediguide: **Projections, Landmark**



Landmarks, on several projections at once

Mediguide: Landmark types



Landmarks

 IVC	 SVC	 RVOT
 CS OS	 CS Park	 RAA
 RIPV Ostium	 RSPV Ostium	 Point Mark
 LIPV Ostium	 LSPV Ostium	 OS
Assign LM	Show LM	Undo Last
Close		

ST. JUDE MEDICAL

Motion Sensor Out of Range
Ready For Cineloop
Detector Out of Range

80 BPM
Smith John
ID# 23456789

Mediguide: **Compensation**

Compensating: **patient movements, respiratory variations, heart cycle variations, C- arm movement**



Mediguide: **Procedures**

Atrial Flutter

Atrial Fibrillation

CRT

Mediguide: **Procedures**

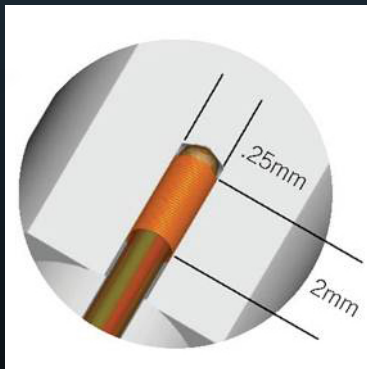
Atrial Flutter

Atrial Flutter: Tools

Diagnostic	OD	Electrodes (Spacing)	Electrode Size	Curve
Livewire Diagnostic Catheter, MediGuide Enabled	6 F	10 (2-5-2)	2 mm tip 1 mm bands	Medium Sweep



Encapsulated
sensor located here



Commonly used to
access and position
in Coronary Sinus

Atrial Flutter: Tools

Diagnostic	OD	Electrodes (Spacing)	Electrode Size	Curve
Livewire Diagnostic Catheter, MediGuide Enabled	6 F	10 (2-5-2)	2 mm tip 1 mm bands	Medium Sweep

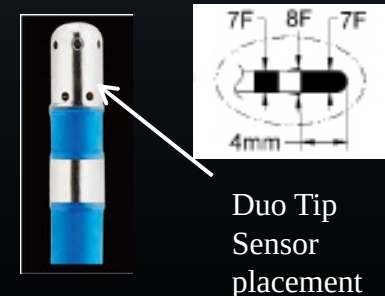


Ablation	OD (Fr)	Electrodes (Spacing)	Electrode Size	Curve
Safire Duo Catheter, MediGuide Enabled (bi-d)	8	1 tip, 3 band (2-5-2)	4 mm tip 2 mm bands	Med & Lrg Curl
				Med & Lrg Sweep
Cool Path Duo Catheter, MediGuide	8	1 tip, 3 band (2-5-2)	4 mm tip 2 mm bands	Med & Lrg Curl
				Med & Lrg Sweep

Safire BLU Duo



Therapy Cool Path Duo



Atrial Flutter: Procedure



Mediguide: **Procedures**

Atrial Fibrillation

Atrial Fibrillation: Tools

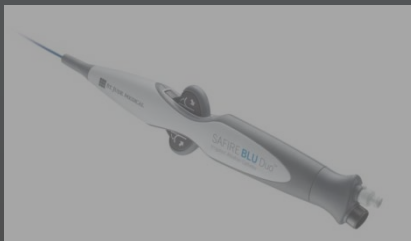
Diagnostic	OD	Electrodes (Spacing)	Electrode Size	Curve
Livewire Diagnostic Catheter, MediGuide Enabled	6 F	10 (2-5-2)	2 mm tip 1 mm bands	Medium Sweep

No circular catheter

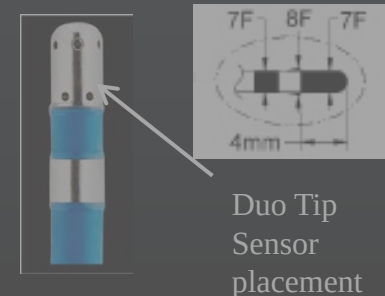
Ablation	OD (Fr)	Electrodes (Spacing)	Electrode Size	Curve
Safire Medi	8	1 tip, 3 band (2-5-2)	4 mm tip 2 mm bands	Med & Lrg Curl
				Med & Lrg Sweep
Cool Medi	8	1 tip, 3 band (2-5-2)	4 mm tip 2 mm bands	Med & Lrg Curl
				Med & Lrg Sweep

Rx acquisition

Safire BLU Duo



Therapy Cool Path Duo



Atrial Fibrillation: cineloop with circular cath



Position circular catheter under fluoroscopy, and record a cine loop with circular catheter in place

Atrial Fibrillation: Tools

Diagnostic	OD	Electrodes (Spacing)	Electrode Size	Curve
Livewire Diagnostic Catheter, MediGuide Enabled	6 F	10 (2-5-2)	2 mm tip 1 mm bands	Medium Sweep

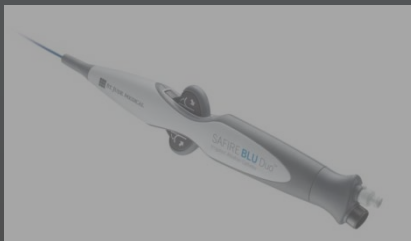
No circular catheter

Ablation	OD (Fr)	Electrodes (Spacing)	Electrode Size	Curve
Safire Mediscript	8	1 tip, 3 band (2-5-2)	4 mm tip 2 mm bands	Med & Lrg Curl sweep
Cool Path Mediscript	8	1 tip, 3 band (2-5-2)	2 mm bands	Med & Lrg Sweep

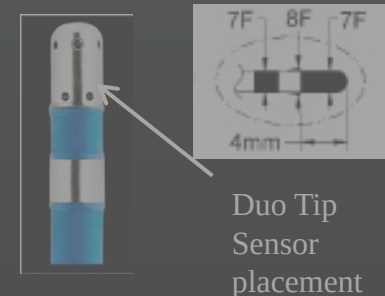
Rx acquisition

Velocity

Safire BLU Duo

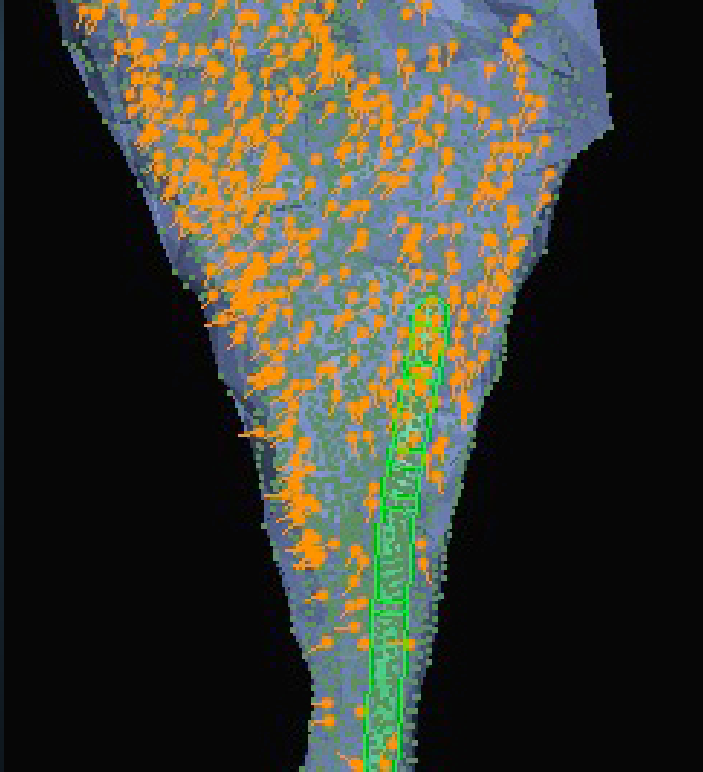


Therapy Cool Path Duo



Duo Tip Sensor placement

Atrial Fibrillation: Velocity



Field scaling

Normal velocity resolution is
interelectrode spacing

Mediguide integration:
resolution is point location

Better quality map

Atrial Fibrillation: procedure



Rotational angiography



Rotational angiography



Angiography superimposition,
automatic orientation

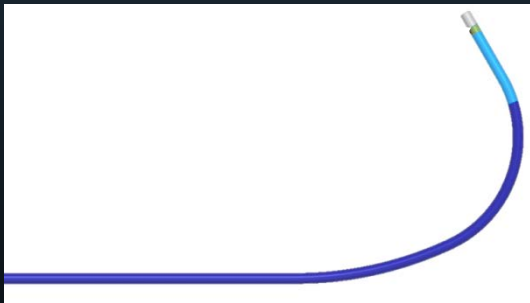


Mediguide: **Procedures**

CRT

CRT : Delivery Tools

Delivery Tool	OD (Fr)	ID (Fr)	Models
CPS Direct +, MediGuide Enabled outer catheter	10.1	8	115°
			135°
			Wide
CPS Aim +, MediGuide Enabled inner catheter	7.9	5.9	90° subselector
			135° subselector
			CSL cannulator



Outer catheter hub



Inner catheter hub

*510K and CE Mark pending

CRT : Guidewire

Delivery Tool	OD	Length	Models
CPS Courier +, MediGuide Enabled, Guidewire	0.014"	195 cm	Soft
			Medium
			Extra Firm

Distal End



Proximal End



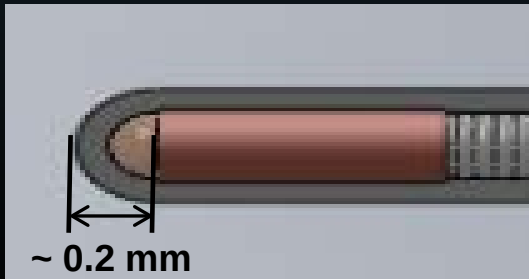
Hypo tube body

Sensor

Flexible coil

Polymer jacket

Electrical contacts



~ 0.2 mm

Soft, Medium, and Extra Firm

CRT : Catheter



CRT : Venography



CRT : catheter



Mediguide: **Data**

Atrial Flutter

Number	Duration	Mean X-Ray	Traditional X-Ray
12	70 min	4,45 min	11 min

Atrial Fibrillation

Number	Duration	Mean X-Ray	Traditional X-Ray
9	140 min	14,27 min	5,09 min

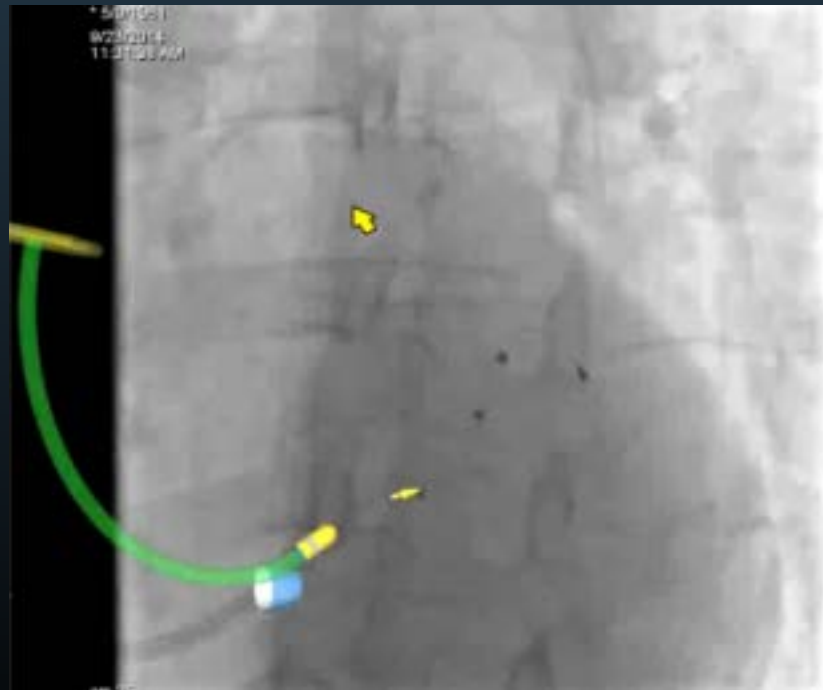
Mediguide: Data

CRT

Number	Mean X-Ray
5	8 min

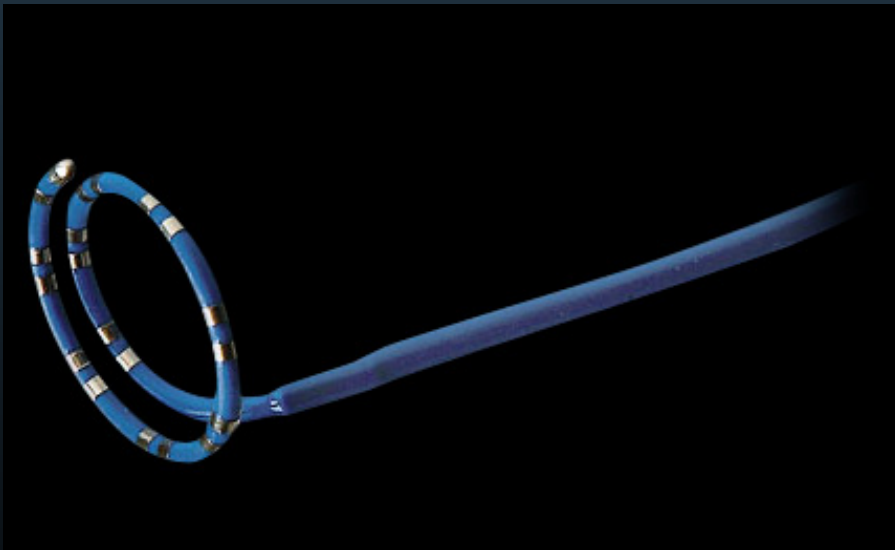
Future developments: EP

Visualization catheter shaft



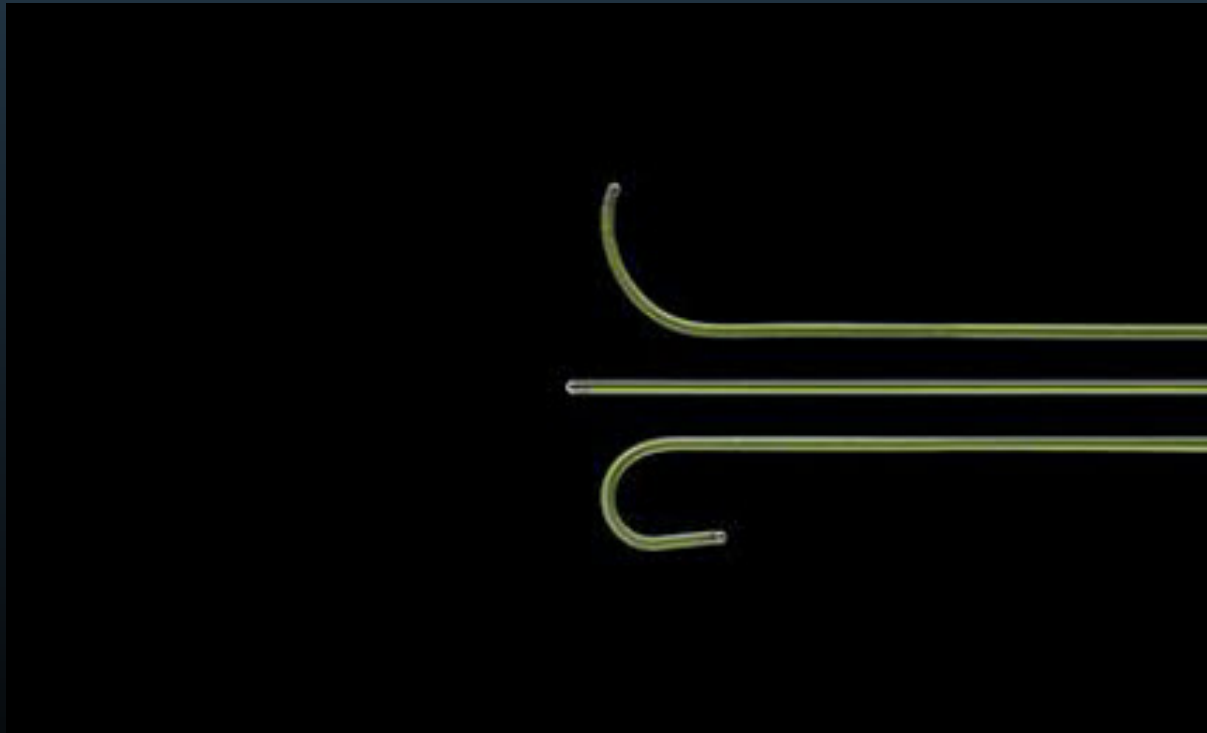
Future developments: EP

Circular and Flexability



Future developments: CRT

Softer guidewire



Future developments: CRT

New delivery and subselector



CONCLUSION

New mapping system integrated to fluoroscopy

High resolution

High compensation ability

New tools will extend application