



DEDICATED TO THE TRUE  
PIONEERS OF SURGERY.

NEUROSURGERY

# SEE MORE. STAND TALL.

Aesculap Aeos®  
ROBOTIC-ASSISTED DIGITAL SURGICAL  
MICROSCOPE PLATFORM

# CHALLENGES OF TRADITIONAL OPTICAL MICROSCOPES



FOR EVERY INCH THE HEAD MOVES FORWARD, THE HEAD, NECK AND UPPER BACK MUSCLES MUST SUPPORT AN ADDITIONAL

**10 POUNDS OF WEIGHT. (1)**

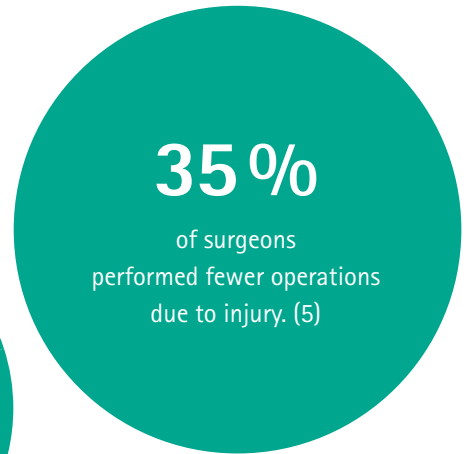
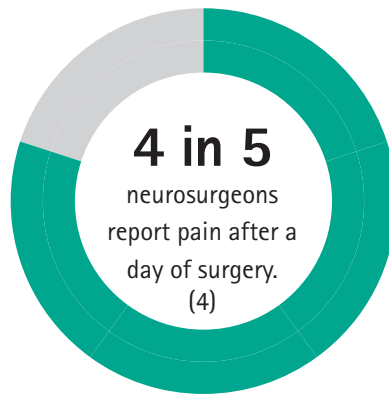
Torso positions, such as forward flexion, lateral bending and axial twisting are associated with back pain. (2)

- (1) Kapandji A. *The Physiology of the Joints*. Volume 3. 6th ed. London: Churchill Livingstone; 2008.
- (2) Keyserling WM, Punnett L, Fine LJ. Trunk Posture and Back Pain: Identification and Control of Occupational Risk Factors. *Applied Industrial Hygiene*; 3(3):87–92.
- (3) Kerstin Pingel. 7 Tips For Better Ergonomics in Neurosurgery. Leica Science Lab. 2014.
- (4) Kerstin Pingel. Ergonomically Designed Surgical Microscopes Support Performance. Leica Science Lab. 2014.
- (5) Epstein S, Sparer EH, Tran BN, et al. Prevalence of Work-Related Musculoskeletal Disorders Among Surgeons and Interventionalists: A Systematic Review and Meta-analysis. *JAMA Surg*. Published online February 01, 2018;153(2):e174947. doi:10.1001/jamasurg.2017.4947

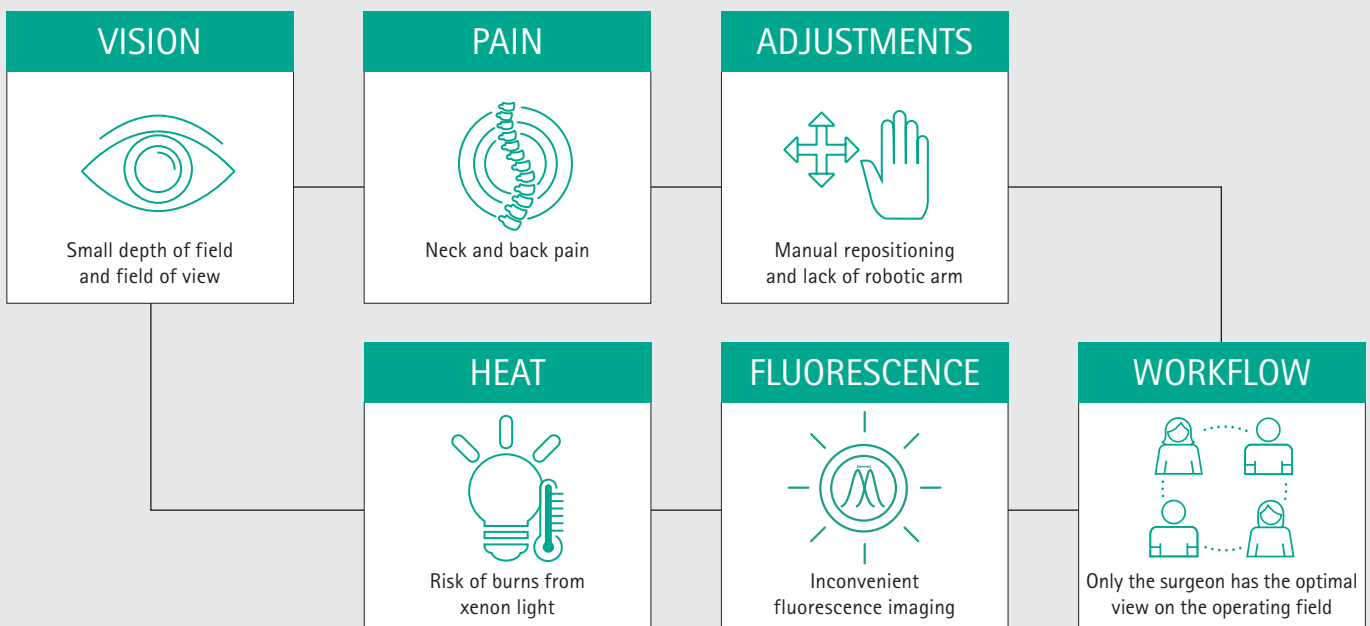
## FLAWED ERGONOMICS TAKE A TOLL ON THE HEALTH AND PERFORMANCE OF SURGEONS.

Potential consequences of this physical stress: Headaches, Chronic pain Exhaustion (3)

Muscular pain in the head, neck and back which can radiate down the arms (3)



## THE SURGEON FACES SEVERAL CHALLENGES WITH THE CURRENT TECHNOLOGY



# Aesculap Aeos®

ROBOTIC-ASSISTED DIGITAL SURGICAL MICROSCOPE PLATFORM  
SURGICAL DIFFERENTIATORS

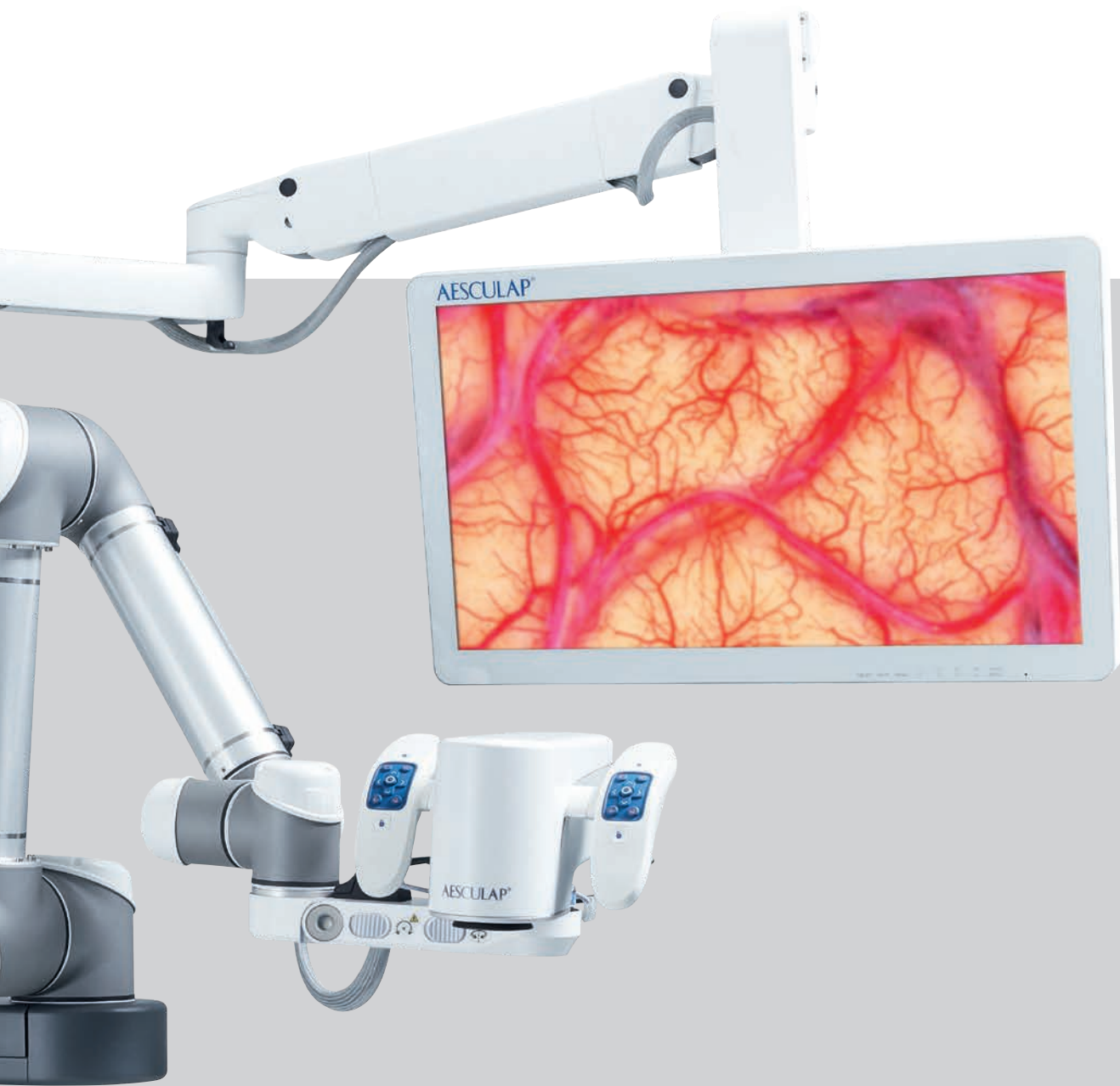
## WELCOME TO THE NEXT GENERATION SURGICAL VISUALIZATION SYSTEM

The user experience and overall concept of traditional optical microscopes have remained materially the same for over 20 years. Surgeons are tethered to their oculars which often forces them to choose between the view they need versus the view that's comfortable. Aesculap Aeos® upends all of that with an innovative design ushering in a new era of intraoperative workflows and a new, more ergonomic way for surgeons to see their patients.

The Aesculap Aeos® Digital Surgical Microscope combines the ergonomic and educational benefits typically found in digital systems with the high-quality imaging and fluorescence capabilities of traditional optical microscopes along with proprietary digital and robotic functionalities.



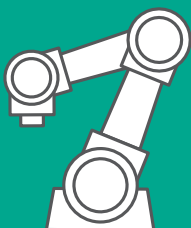




## » IMPROVEMENTS IN



Ergonomics



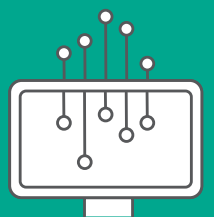
Robotics



3D Imaging



Fluorescence



Digital Platform

# Aesculap Aeos®

ROBOTIC-ASSISTED DIGITAL SURGICAL MICROSCOPE PLATFORM  
ADVANTAGES

## UPGRADE YOUR ERGONOMICS



- ▮ Heads-up positioning frees the surgeon from the microscope ocular tether allowing the surgeon, not the microscope, to dictate ergonomics
- ▮ Due to the integrated 3D monitor on the flexible boom arm, the surgeon is able to work more ergonomically and gains flexibility regarding the OR set-up
- ▮ Good repositioning with look over design paired with robotic arm
- ▮ Option for hands-free, full functionality with wireless foot switch
- ▮ Handgrip and wireless foot switch controls are custom tailored for each user

## WHO BENEFITS?

### SURGEONS



Potential to work more ergonomically (1)

### TRAINING



Optimize hands-on opportunities for residents and fellows

### OR TEAM



Multiple 3D monitor setup ensures full OR team involvement as everybody can see the same

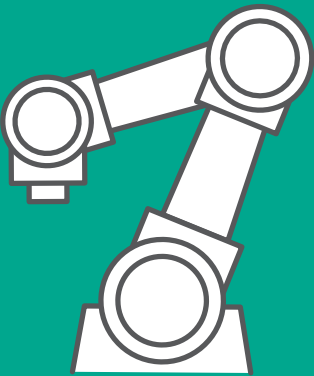
### HOSPITAL



Help mitigate risk of ergonomic-related injuries to surgeons


(1) According to feedback within the scope of a survey of 24 surgeons that used the Aesculap Aeos® clinically conducted by AESCULAP®


## SURGEON-CONTROLLED PRECISION ROBOTICS





- Fully robotic arm features six degrees of freedom and provides a range of repositioning options:
  - Assisted drive
  - Micro movements
  - Waypoints
  - Lock-on target
  - Hands-free via wireless foot switch
- Handgrip and wireless foot switch controls are custom tailored for each user

## WHO BENEFITS?

SURGEONS	
	Convenient manual positioning (1)

TRAINING	
	View angles previously challenging with traditional optical microscopes

OR TEAM	
	Easy draping

HOSPITAL	
	Ability to incorporate robotic neurosurgery into hospital's patient marketing strategy

(1) According to feedback within the scope of a survey of 24 surgeons that used the Aesculap Aeos® clinically conducted by AESCULAP®

# Aesculap Aeos<sup>®</sup>

ROBOTIC-ASSISTED DIGITAL SURGICAL MICROSCOPE PLATFORM  
ADVANTAGES

## SEE WHAT YOU'VE BEEN MISSING



- 3D 4K imaging paired with High Dynamic Range (HDR)
- Full-time 3D allows surgeons to focus on the task at hand without worrying about 2D-to-3D magnification requirements
- 10x optical zoom delivers full resolution, regardless of magnification level
- Cool field due to direct LED illumination, coaxial illumination leads to superior illumination in deep and narrow cavities (1)

## WHO BENEFITS?

### SURGEONS



Excellent depth of field enhances focus on the patient (1)

### TRAINING



Great teaching tool as everybody can see the same (e.g. for residents and fellows)

### OR TEAM



Optimized communication and surgical workflows

### HOSPITAL



Ability to incorporate 3D neurosurgery into hospital's patient marketing strategy

(1) According to feedback within the scope of a survey of 24 surgeons that used the Aesculap Aeos<sup>®</sup> clinically conducted by AESCULAP<sup>®</sup>



## FLUORESCENCE-GUIDED SURGERY IN A WHOLE NEW LIGHT



- 3D digital fluorescence in DUV400 ultraviolet and DIR800 infrared light modes
- Backlight illumination aids visualization of nearby non-fluorescing structures without switching back to white light
- Augmented Reality (AR) capabilities in DUV400 ultraviolet light mode provide additional insights from combined fluorescence and white light images

### WHO BENEFITS?

#### SURGEONS



Enhanced working comfort without toggling between fluorescence and white light (1)

#### TRAINING



Optimized hands-on opportunities for residents and fellows

#### OR TEAM



Full OR team involvement as everybody can see the same

#### HOSPITAL



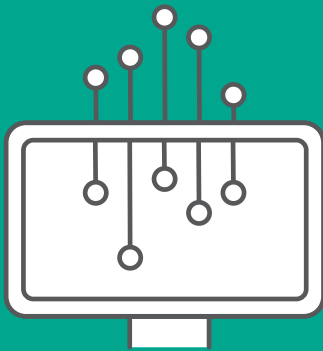
Ability to incorporate advancements in imaging technology into hospital's patient marketing strategy

(1) According to feedback within the scope of a survey of 24 surgeons that used the Aesculap Aeos® clinically conducted by AESCULAP®

# Aesculap Aeos<sup>®</sup>

ROBOTIC-ASSISTED DIGITAL SURGICAL MICROSCOPE PLATFORM  
ADVANTAGES

## THE FUTURE IS DIGITAL



- ▮ Digitally augment on-screen images with multiple imaging modes
- ▮ Future-proof your investment with software updates and an upgradeable digital platform
- ▮ Unlimited profiles allow customized user settings for each surgeon and/or procedure
- ▮ Plug-and-play integration with neuroendoscopes and other imaging technologies (2)

## WHO BENEFITS?

### SURGEONS



See more

### TRAINING



Trainees experience the latest technology on an innovative platform

### OR TEAM



Visualization on one or several 3D screens, therefore full OR team involvement

### HOSPITAL



Maximize ownership return on investment and gain financial flexibility

(2) Video output: SDI or HDMI output required

## CLINICAL APPLICATIONS



- ▮ Designed specifically with cranial and spinal neurosurgery in mind
- ▮ For use with patients undergoing microsurgery within its indications for use. It must not be used for ophthalmology. For more details, see IFU



**PPE**  
Versatility

Heads-up surgery design is PPE-friendly, allowing for more freedom of movement and easing the burden of increased PPE requirements.

# Aesculap Aeos® SERVICE

PROFESSIONAL. RELIABLE. TRANSPARENT.



## YOUR ADVANTAGES

- Reliable on-site service
- Safeguards your valuable equipment
- Reducing downtime
- Individual risk covering
- Transparent service agreement
- Clearly defined service scope

## OUR OFFER

A WIDE RANGE SERVICE  
PACKAGE FOR YOUR  
VALUABLE MEDICAL  
EQUIPMENT



### Manufacturer service



Fully trained and qualified service technicians use original equipment to guarantee the quality service of your medical devices. We follow and adhere to all regulatory standards to safeguard patient and user integrity.

### Always at your service



We provide a global network of service hubs which enables our technicians to offer a fast and efficient preventative service process. Our service hubs are located worldwide to guarantee a quick turn around time for your Aesculap Aeos® system. You will find your nearest service hub, response times and contact details in your service contract.

### Adherence to budget



We offer full transparency on the overall project cost. You decide by choosing which service level is required depending on your budget. For each option you will receive a transparent forecast of your expenses.

### Economic and efficient



Optimum performance of our equipment is our highest priority in the operating theatre. Through preventive maintenance we avoid any unexpected breakdowns which can cause many inconvenient problems for the hospital. We handle each service contract customer with the highest priority should assistance be required.

### Value preservation service



Regular service prevents any unplanned downtime or major damage to your equipment. Whether you require regular maintenance or repair, we always update your system to the latest standards. This ensures you have a fully up to date and reliable system in the hospital.

### Original spare parts



In this case, we exchange any defects with reworked parts. Each of these parts have underwent AESCULAP® quality controls and are refurbished according to manufacturing standards.



# Aesculap Aeos<sup>®</sup> SERVICE

PROFESSIONAL. RELIABLE. TRANSPARENT.

INSTALLATION	BASIC	ADVANCED	PREMIUM
Installation of Aesculap Aeos <sup>®</sup> by a service technician on-site with the customer, including technical documentation	✓	✓	✓
Integration of DICOM, if required	✓	✓	✓
Set-up of activated software modules	✓	✓	✓
User training	✓	✓	✓
PREVENTIVE MAINTENANCE			
Proactive reminder for annual inspection	✓	✓	✓
Annual inspection (visual, functional and electrical safety check), including travel and labor	✓	✓	✓
Technical documentation of annual inspection	✓	✓	✓
Safety relevant software updates	✓	✓	✓
SERVICE SUPPORT			
Reaction time	72h	48h	24h
Service hotline	✓	✓	✓
Software updates – improved functionality		✓	✓
Backup for OR data, incl. external hard drive during annual inspection		✓	✓
REPAIRS			
Cost covering on-site (repair & support) visits		1 visit	2 visits
Cost covering defective components*	10% <sup>**</sup>	25% <sup>**</sup>	100% <sup>**</sup>
ADDITIONAL SERVICES			
Update/refresher training for OR staff into handling of the Aesculap Aeos <sup>®</sup>		1 visit	2 visits

\* self-inflicted and misuse repair cases are excluded

\*\* discount on list price

## FINANCIAL TURNKEY SOLUTIONS

We offer individual finance solutions. For any further information please contact your B. Braun representative.

# AESCULAP® – a B. Braun brand

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Aesculap AG | Am Aesculap-Platz | 78532 Tuttlingen | Germany

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