

**ProMa**

# **AI<sup>+</sup> Glasses Free 3D Medical Monitor**



# 01 Highlights



## Optical performance

The glasses free 3D visualization (autostereoscopic) releases the burden for surgeons from wearing glasses at minimally invasive 3D endoscopic and laparoscopic surgery.



## Simplicity

Installation as simple as just plug and play, thanks to the built-in computer with preloaded drivers of real time eyetracking as well as depth map of 3D imaging.



## Integration

Seamlessly integrates with AI deep learning algorithm to assure the real time eye tracking for the best 3D effect, no cause any unpleasant feeling to the doctors.



# 02 Application

Giving patients maximum physical and psychological recovery has become the ultimate goal of surgical treatment, and minimally invasive surgery is widely used because of less trauma, less pain, and faster postoperative recovery.

## AI+ Glasses Free 3D Laparoscopic Minimally Invasive Surgery

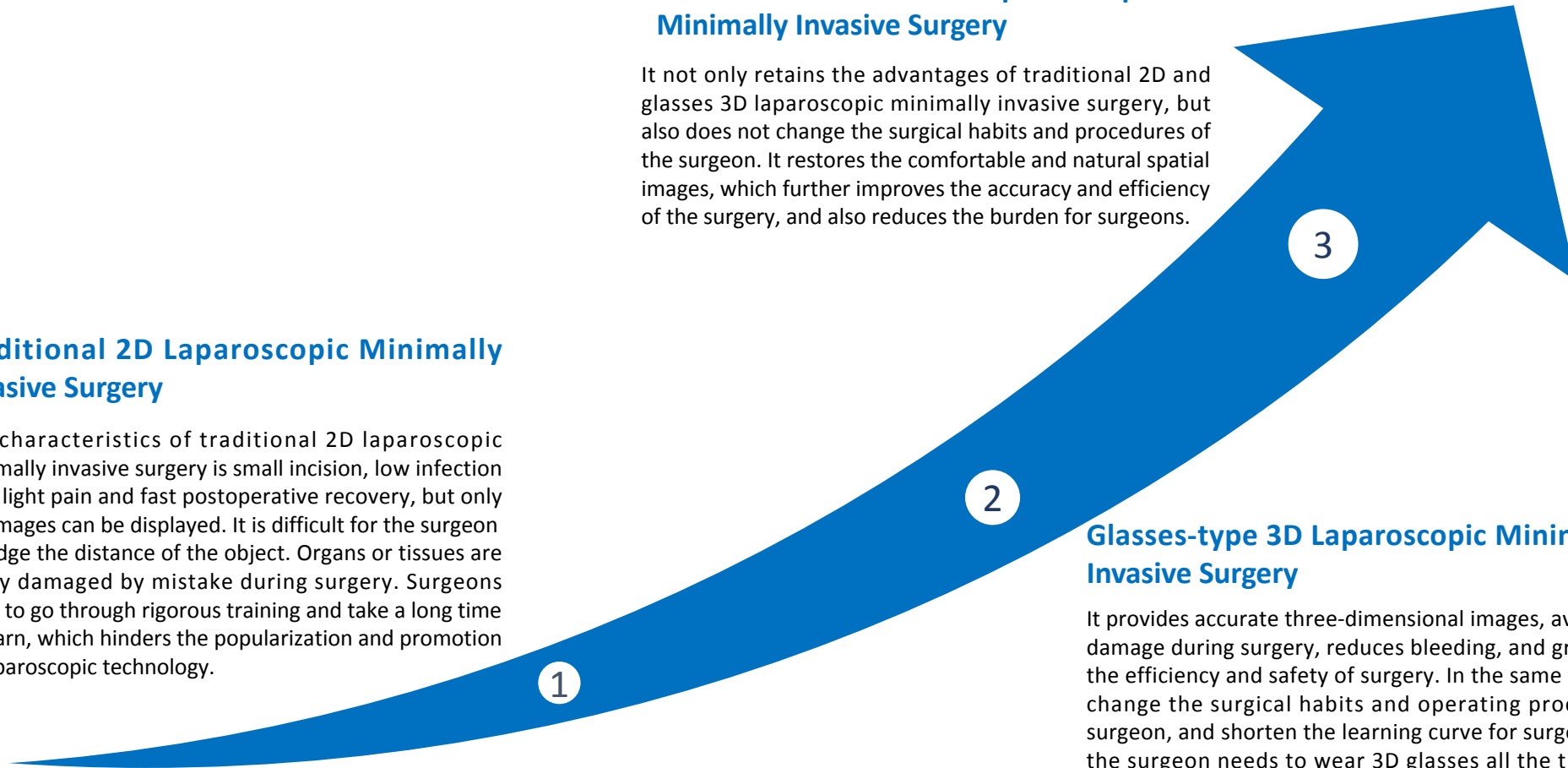
It not only retains the advantages of traditional 2D and glasses 3D laparoscopic minimally invasive surgery, but also does not change the surgical habits and procedures of the surgeon. It restores the comfortable and natural spatial images, which further improves the accuracy and efficiency of the surgery, and also reduces the burden for surgeons.

## Traditional 2D Laparoscopic Minimally Invasive Surgery

The characteristics of traditional 2D laparoscopic minimally invasive surgery is small incision, low infection rate, light pain and fast postoperative recovery, but only flat images can be displayed. It is difficult for the surgeon to judge the distance of the object. Organs or tissues are easily damaged by mistake during surgery. Surgeons need to go through rigorous training and take a long time to learn, which hinders the popularization and promotion of laparoscopic technology.

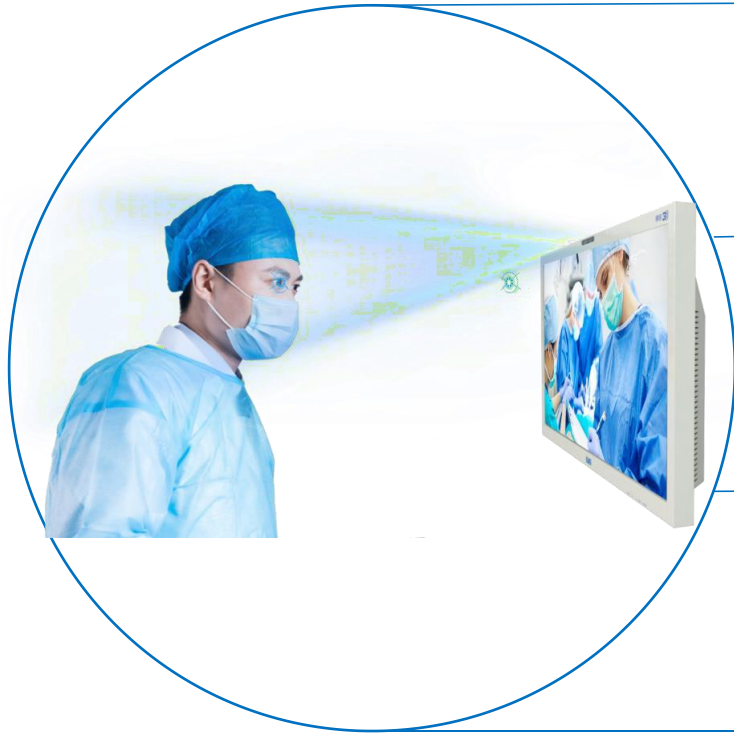
## Glasses-type 3D Laparoscopic Minimally Invasive Surgery

It provides accurate three-dimensional images, avoids accidental damage during surgery, reduces bleeding, and greatly improves the efficiency and safety of surgery. In the same time, it doesn't change the surgical habits and operating procedures of the surgeon, and shorten the learning curve for surgeons. However, the surgeon needs to wear 3D glasses all the time during the operation, which brings certain limitations.



# 03

## Technical characteristics



01

- The surgeon does not need to wear any auxiliary equipment to view 3D monitor.

02

- To provide the surgeon with 3D spatial position tracking in real time, and the position can be adaptively obtained for the best stereoscopic image.

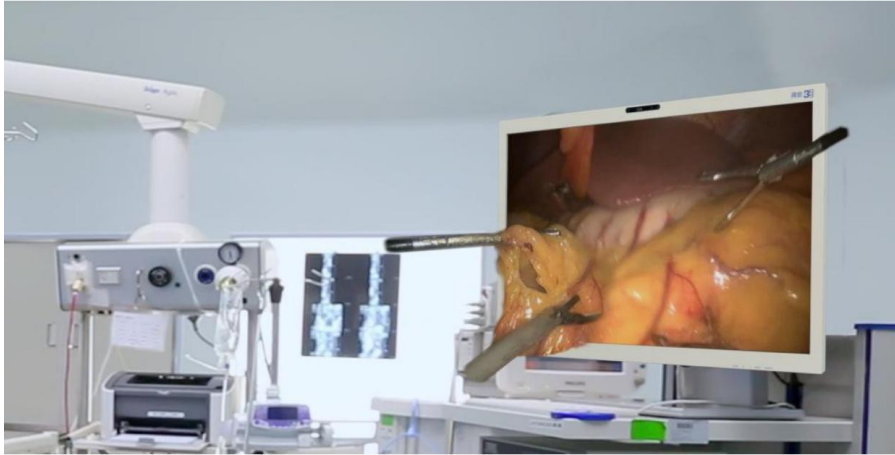
03

- 3D image without crosstalk, tracking without delay and jitter.

04

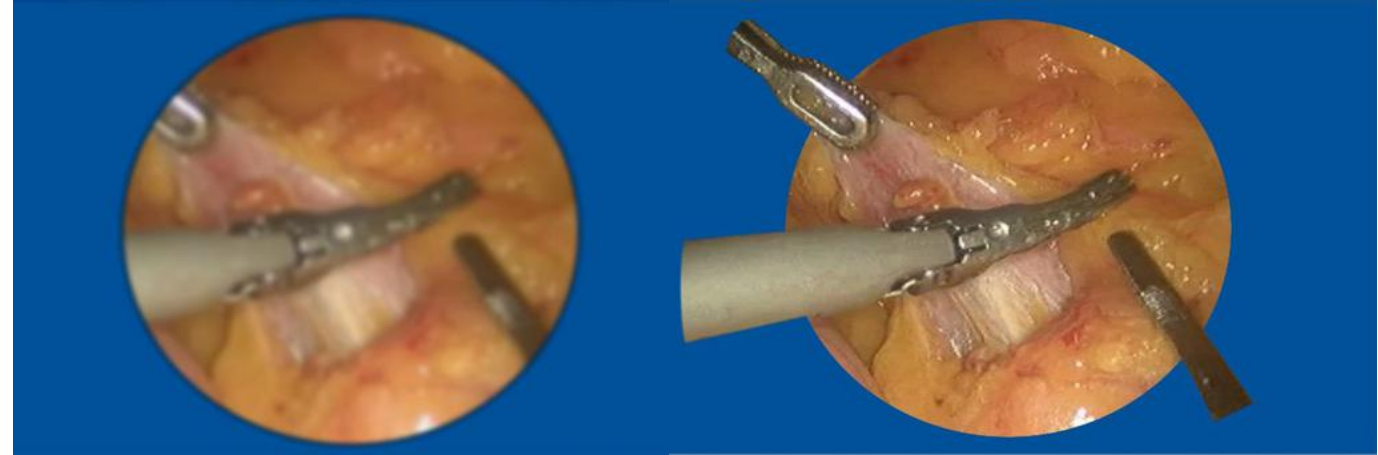
- 3840\*2160 resolution 3D imaging system, the image is clearer and more natural.

# 04 Advantages



## 1. Provide Precision Surgery

The 3D depth sense in the real high-definition reduction provides the surgeon with accurate spatial positioning, which is safe and reliable to operate, and greatly reduces the side injury of patients.



## 2. Improve Surgical Efficiency

The tissue anatomy level is more intuitive, and the surgical separation and cutting are more accurate. It is beneficial to laparoscopic peripheral blood vessel nakedness, lymph node dissection, and digestive tract reconstruction. In addition, it can accurately determine the depth of the suture position, and the main effects it presents can improve the efficiency of Surgeons' suture and knotting.

# 04 Advantages

**Table 1** Student objective assessment of total scores and individual scores (score) <sup>↕</sup>

Project	3D group (n=20)	control group (n=20)	P <sup>↕</sup>
↕			
Basic knowledge of thoracic surgery	33.4	32.4	0.062 <sup>↕</sup>
Chest anatomy	25.6	21.4	<0.05 <sup>↕</sup>
Chest imaging	27.3	24.4	<0.05 <sup>↕</sup>
Overall result	86.3	78.2	<0.05 <sup>↕</sup>

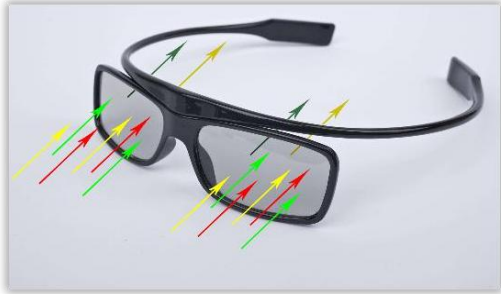
**Table 2** Student survey questionnaire statistics (people)<sup>↕</sup>

Project	3D group (n=20)	control group (n=20)	P <sup>↕</sup>
Improve local anatomical memory	19	12	<0.05 <sup>↕</sup>
Enhance memory during surgery	10	9	0.752 <sup>↕</sup>
Enhance surgical operation perception	19	11	<0.05 <sup>↕</sup>
Improve CT reading ability	17	16	0.677 <sup>↕</sup>
Stimulate interest in learning	19	8	<0.05 <sup>↕</sup>

## 3. Shorten the Learning Curve for Beginner Surgeons

It provides a clearer surgical field of vision and a clearer anatomical level, which accelerates the speed of tissue separation and resection without changing the operator's surgical habits and surgical procedures, significantly shortening surgeons' laparoscopic learning curve and improving beginner surgeons' interest and enthusiasm for learning laparoscopic surgery. It can speed up the application and popularization of laparoscopic surgery.

# 04 Advantages



Light attenuation which caused by wearing polarized 3D glasses leads to image distortion.



Conflict of convergence adjustment which caused by wearing glasses for a long time leads to visual fatigue of surgeons.



Water vapor from breathing condenses on 3D lenses leading to image distortion

## 4. Solve the traditional 3D pain points

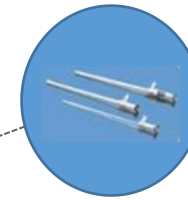
Using AI+ glasses free 3D medical monitor can effectively solve the above problems and reduce the burden of surgeons, and in the same time it retains the advantages of glasses-type 3D laparoscopy.

# 05 System composition

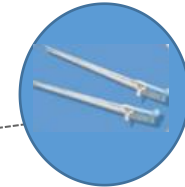
The glasses free 3D minimally invasive surgery system consists of 3D laparoscope, AI+ glasses free 3D medical monitor and auxiliary medical monitor.



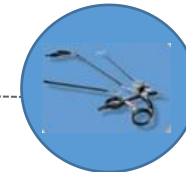
The glasses free 3D medical monitor is seamlessly compatible with mainstream 3D laparoscopic systems such as Karl Storz, Olympus, AESCULAP, SCHOELLY and Stryker etc.



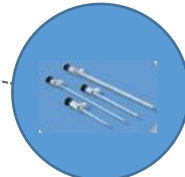
Karl Storz



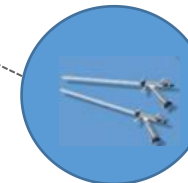
Olympus



Aesculap



Schoelly



Stryker

# 06 Solutions

01

## Solution 1

3D laparoscope + glasses free 3D medical monitor (Chief surgeon) + 2D medical monitor (Assistant surgeon)



02

## Solution 2

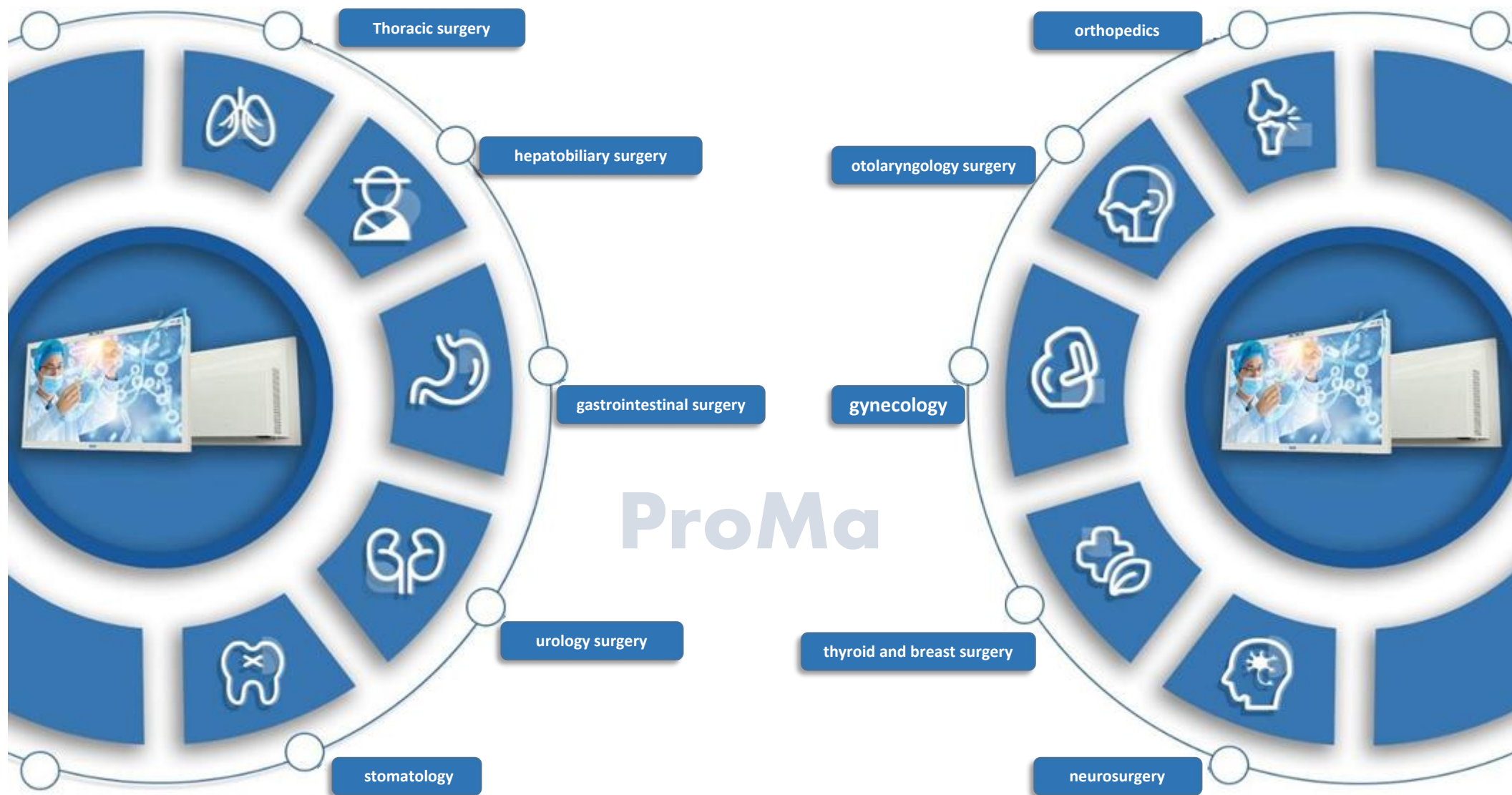
3D laparoscope + glasses free 3D medical monitor (Chief surgeon) + glasses free 3D medical monitor (Assistant surgeon)

03

## Solution 3

3D laparoscope + glasses free 3D medical monitor (Chief surgeon) + glasses type 3D medical monitor (Assistant surgeon)

# 07 Applicable departments



# Thank you

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