

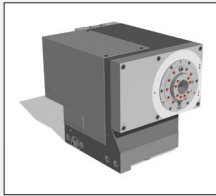
# KELLENBERGER 10

STANDARD UNIVERSAL  
CYLINDRICAL GRINDING MACHINE



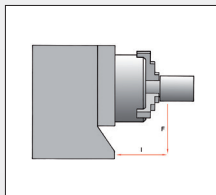
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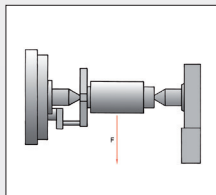
## UNIVERSAL WORKHEAD

- Applications Live and Dead centers spindle
- Rotating speed 1-1000 rpm
- Roundness accuracy  $< 0.4 \mu\text{m}$  (optional  $< 0.2 \mu\text{m}$ )
- Micro adjustment  $\pm 0.01^\circ$
- Positioned spindle stop for thread grinding



## LOAD WITH CHUCKED WORK

- 100 Nm



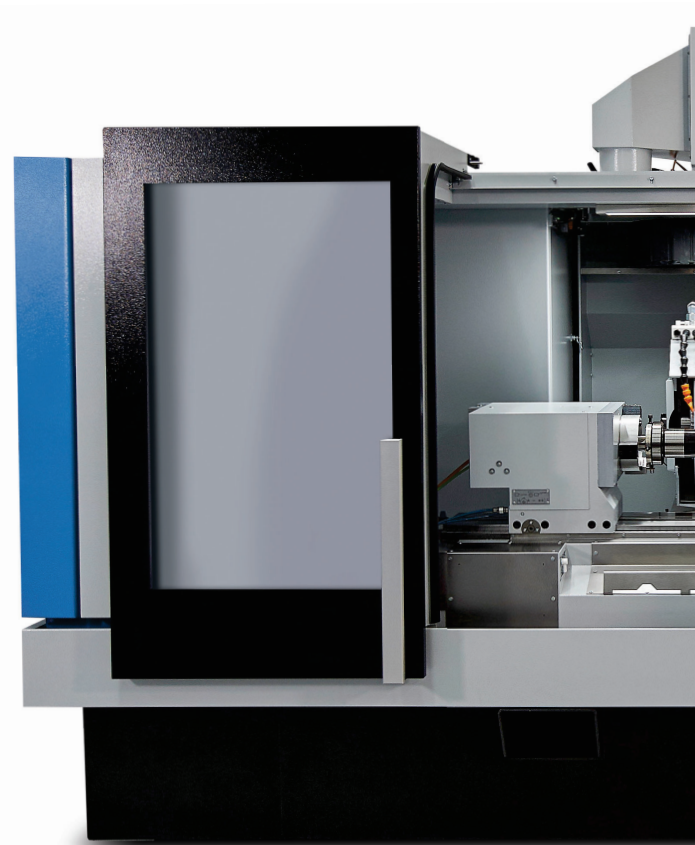
## LOAD BETWEEN CENTERS

- 100 kg



## TAILSTOCK 100

- Workpiece weight up to 100 kg
- Morse taper 4
- Retraction of sleeve 49 mm
- Micro-adjustment  $\pm 60 \mu\text{m} / \varnothing$
- Pneumatic lifting



## PERFECTION AT A GLANCE

- High process reliability
- Wide range of parts
- Easy setup
- No external influences on the machining process
- High productivity and flexibility
- Fast startup
- Short delivery period
- High availability and trustworthiness
- Reduced maintenance costs
- Excellent price-performance ratio

## BASIS

- FEM-optimized cast bed for the highest quality and the longest durability
- Mechanical separation of machine and periphery for thermal stability and minimization of vibration influences

## TABLE/SLIDE

- Linear guide on X-axis tested 1,000 times for low maintenance and high precision
- Low-wear slideway on Z-axis
- 50 Nm glass scales on X- and Z-axes
- High dynamic through speed up to 20 m/min in Z- and 10 m/min in X-axis

# KEY FEATURES

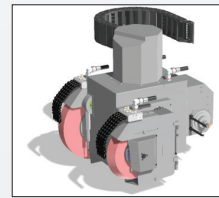


## CONTROLLER CNC FANUC Oi PLUS

- 19" LCD color monitor with touch-screen function
- BLUE Solution teach-programming with OBJECT Guide for guided and simple program creation on workpiece
- IPC operating system Windows 10 IoT
- Hand-held panel with axis and speed selector switches

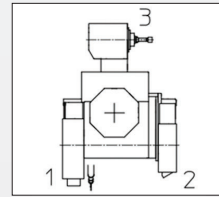
## ERGONOMICS

- Visually and ergonomically advanced design
- Good overview of the grinding process
- Centrally arranged and easily accessible Interfaces for table superstructures
- Swiveling control panel for optimized operating comfort
- Intelligent accessibility for cost-effective maintenance and service

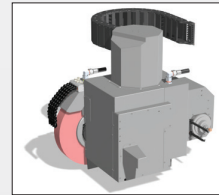


## UR WHEELHEAD

- A grinding head for external cylindrical, internal cylindrical and face grinding



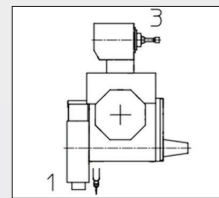
- Internal grinding with variable circumferential speed



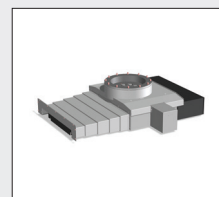
- Automatic 1° indexing of a swivel device

- Thermal stability due to optimized spindle bearings and water-cooled motor

- Drive power of 7.5 kW



- Max. wheel diameter of  $\varnothing 500 \times 80 \times 203\text{mm}$



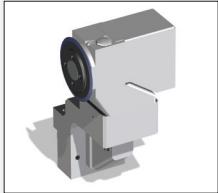
## SWIVEL DEVICE

- Automatic indexing 1°





# OPTIONAL CONFIGURATIONS



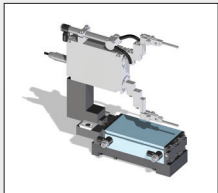
## DRESSING DEVICE

- Static diamonds
- Rotating



## STEADY REST

- Support for long workpieces



## MEASUREMENT CONTROL

- In-process gage system



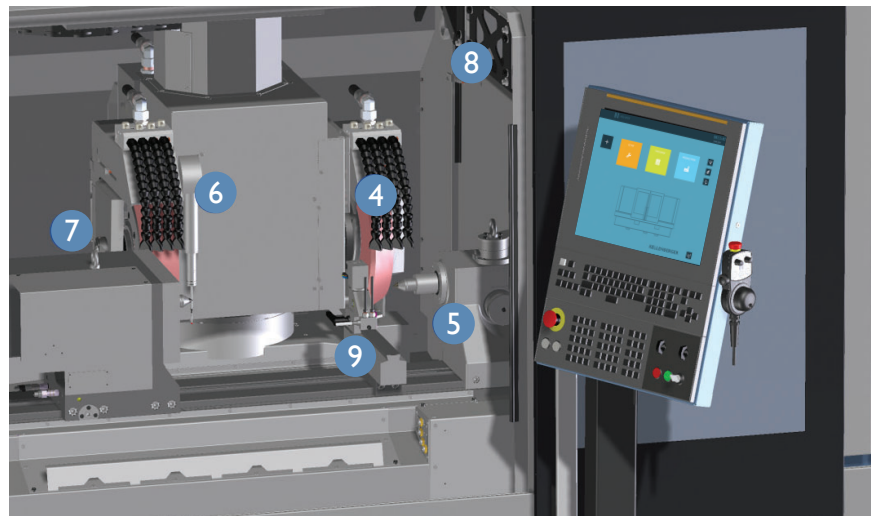
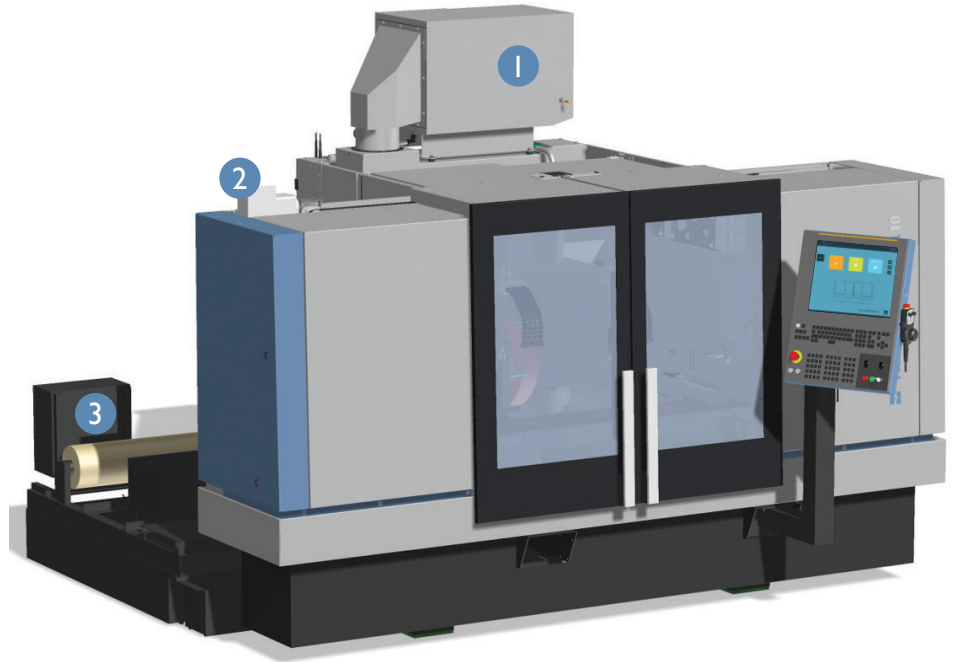
## INTEGRATED LIFTING SYSTEM

- Ergonomic lifting system for table assemblies and grinding wheels



## TRANSPORT

- Hooked machine
- Fast and easy initial setup

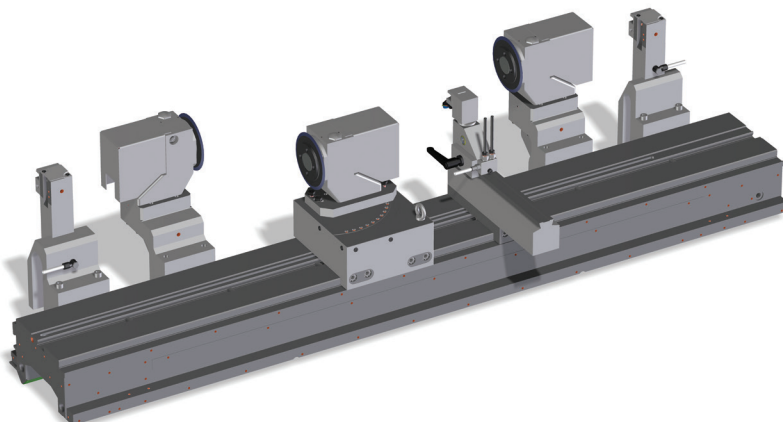


# CYLINDRICAL GRINDING MACHINE

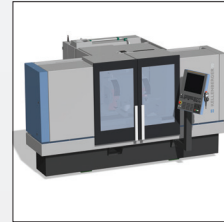
- 1 Mist-extraction unit
- 2 Automatic sliding doors
- 3 Coolant-based filter system
- 4 External grinding wheel T2
- 5 Tailstock
- 6 Active flagging device
- 7 Gap control and balancing sensors
- 8 Integrated lifting system
- 9 Wide range of table superstructures
  - Dressing devices
  - Steady rest
  - In-process measurement

## VARIOUS DRESSING OPTIONS

Fixed dressing unit on table superstructures in the standard accessories with fixed and rotating dressing devices.

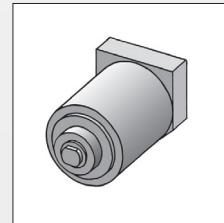


## ACCESSORIES



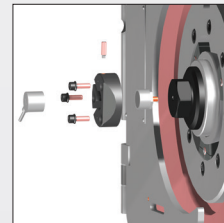
### AUTOMATIC SLIDING DOORS

- Relief for the operator
- Faster workpiece changeover times



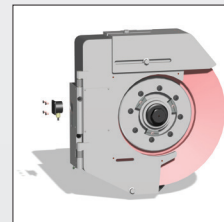
### INTERNAL GRINDING ATTACHMENT

- Grease-lubricated HF internal grinding spindle  
6'000 - 40'000 min<sup>-1</sup>  
10'000 - 60'000 min<sup>-1</sup>
- Inexpensive & compact



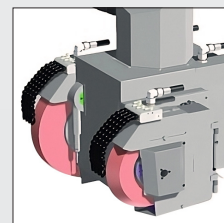
### GAP CONTROL

- Optimized process time



### SEMI-AUTOMATIC BALANCING

- Faster setup
- Monitoring of the balance quality



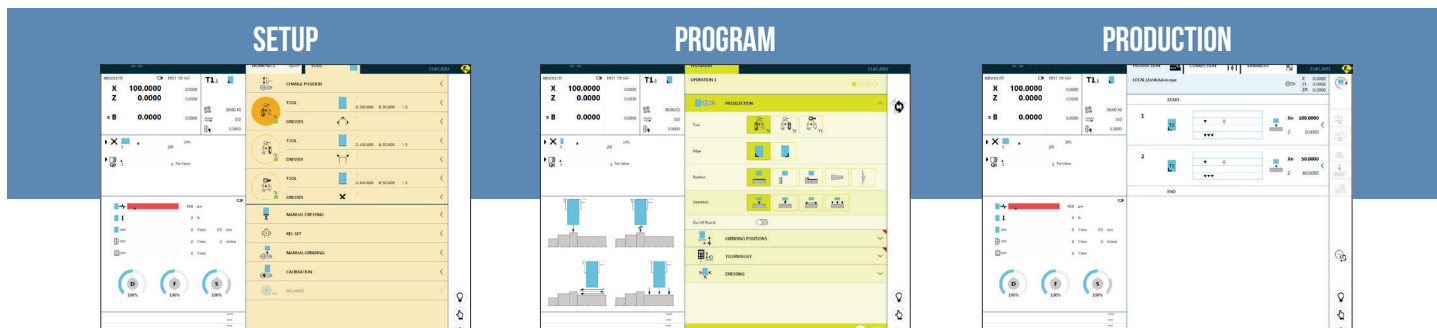
### ACTIVE FLAGGING DEVICE

- Active measurement in external machining
- Calibration of a workpiece position in Z-position
- Mounted on the grinding head

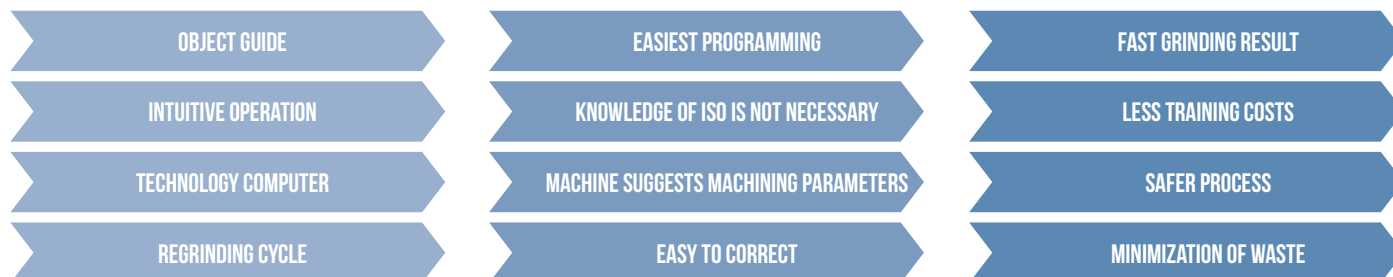
# FANUC CONTROL SYSTEM 31i-B WITH KELLENBERGER HMI

The BLUE Solution user interface from KELLENBERGER has the central focus on simple and intuitive operation. All interactions are carried out by gestures on the 19" touch display. The latest generation of a reliable FANUC 0i-F Plus control runs in the background.

## BLUE SOLUTION



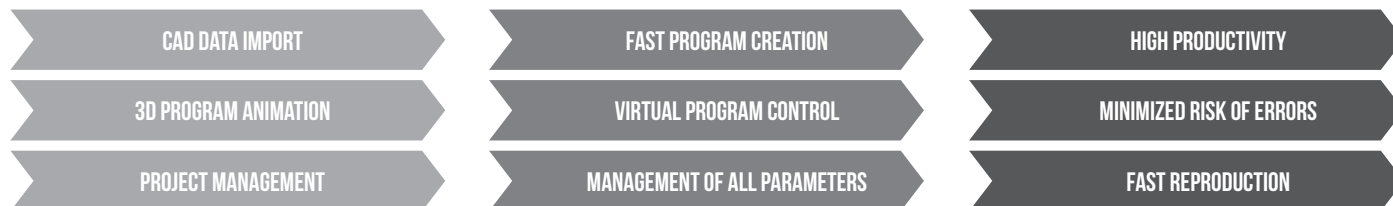
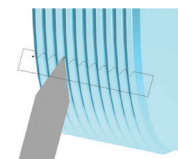
The user interface was developed explicitly for grinding by our specialists in cooperation with customers. BLUE Solution supports users regardless of their level of experience in all important steps from setup to production.



## BLACK CAM SOLUTION

With the additional BLACK CAM Solution software, NC programs for grinding and dressing of profiles and threads can be generated, simulated and analyzed.

The CAD-CAM software supports the structured creation, processing and management of all documents belonging to a workpiece.



## INDUSTRY 4.0

The Security Interface ensures communication according to the highest IT security standard between the machine and the production network.

The optional Remote Diagnostic module simplifies efficient diagnosis in case of service and thus reduces downtimes.

The machine is prepared for Industry 4.0. With the ComGateway, which has a standard OPC-UA server, extensive information on process and machine status can be exchanged.

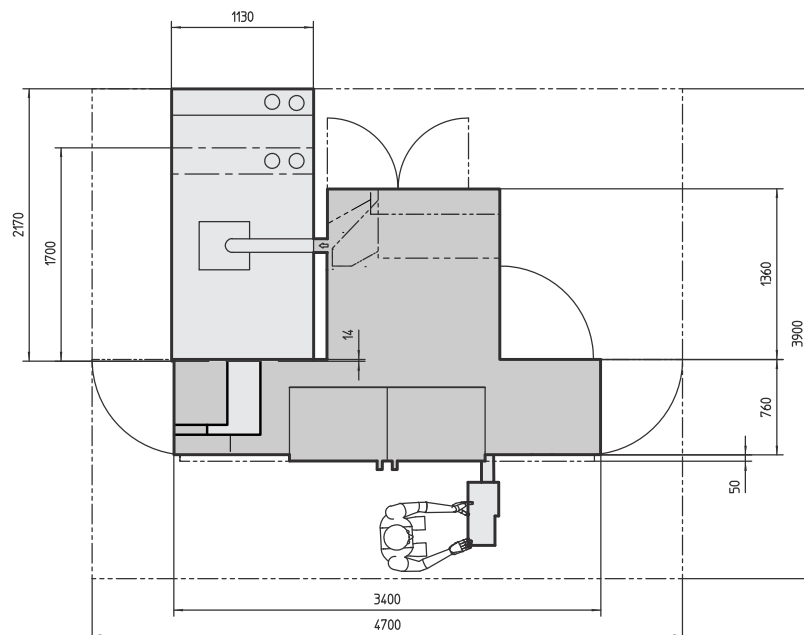


# TECHNICAL DATA

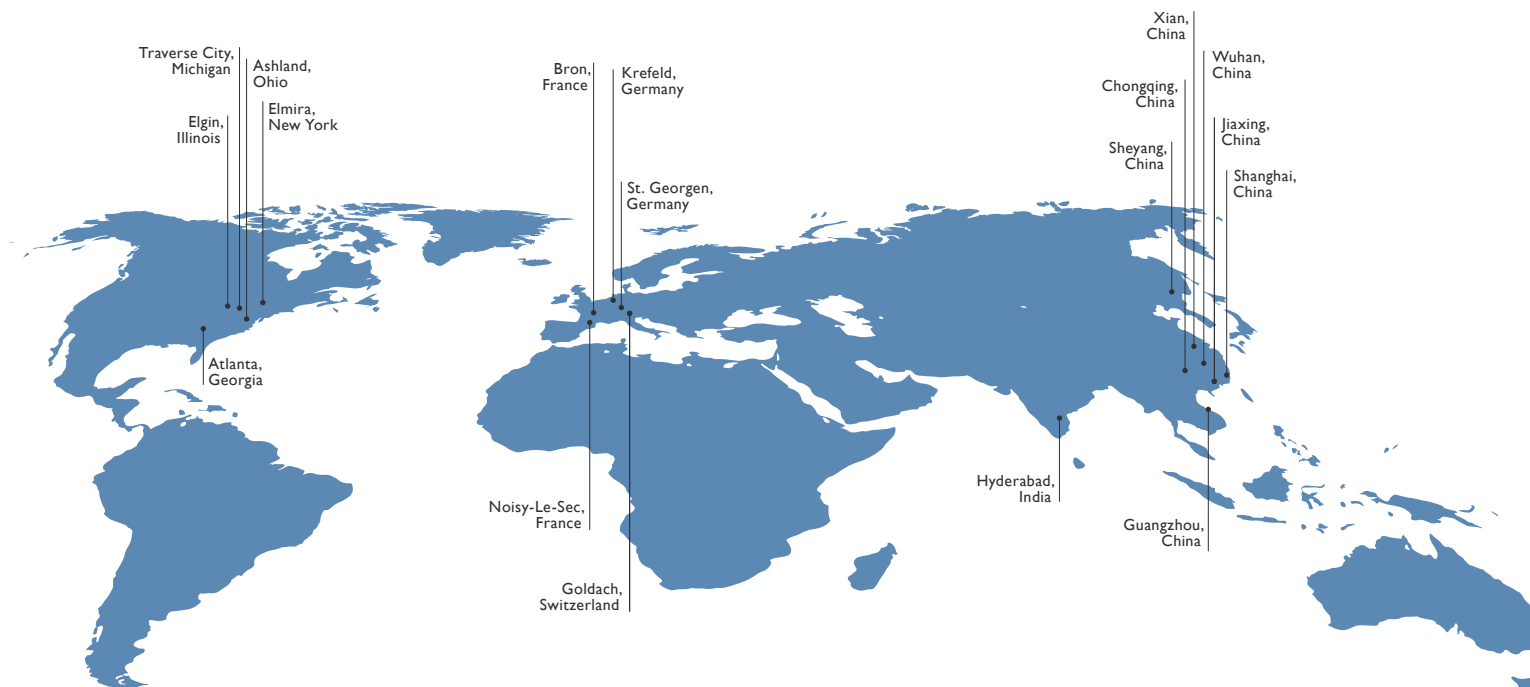
Characteristics		
Distance between centers	1.000	mm
Center height	200	mm
Weight of workpiece between centers	up to 100	kg
Load on chucked work	up to 100	Nm
Mains voltage required	400 / 460	V
Power consumption depending on equipment	up to 40	A
Space required (length x width)	2.7 x 2.2 / 3.5 x 2.2	m
Total weight	4500	kg
Table/Slide Z-axis		
Travel	1.150	mm
Rapid traverse speed	up to 20	m/min
Resolution	0.00001	mm
Wheelslide X-axis		
Travel	365	mm
Rapid traverse speed	up to 10	m/min
Resolution	0.00001	mm
Swivel devices		
Swiveling range	240	degree
automatic indexing of resolution	1	degree
Wheelhead		
Water-cooled drive motor	7.5	KW
Performance peripheral speed	up to 50	m/s
Grinding wheel dimensions	up to Ø500x80	mm
Internal grinding device		
Bore for spindles up to	150	mm
Power, HF spindles	up to 7.5	KW
Rotation speed	up to 60.000	rpm
Workhead		
Rotation spindle speed	1 - 1,000	rpm
Interface	ISO 702 <sup>-1</sup> , Size 5/MT5	
Roundness accuracy in chucked work	0.4 (optional 0.2)	µm
Tailstock		
Internal taper	MT4	
Retraction of sleeve	49	mm
Micro-adjustment	± 30	µm

All specifications and designs are subject to alterations without notice

## SETUP PLAN



# HARDINGE WORLDWIDE



Hardinge is a leading international provider of advanced metal-cutting solutions. We provide a full spectrum of highly reliable CNC turning, grinding, and honing machines as well as technologically advanced workholding accessories.

The diverse products we offer enable us to support a variety of market applications in industries including aerospace, agricultural, automotive, construction, consumer products, defense, energy, medical, technology, transportation and more.

We've developed a strong global presence with manufacturing operations in North America, Europe, and Asia. Hardinge applies its engineering and applications expertise to provide your company with the right machine tool solution and support every time.

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