

● ThinkPads

Input devices and curiosities (Part Two)

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- IT consultant and trainer 🧑🏫
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- Podcaster 🎙️
 - [FOCUS ON: Linux](#) 🐧
 - [Faxinformatiker](#) 📠
 - [ThinkPad-Museum](#) 💻

ThinkPad museum

- Online museum as **blog**
- lists collection details
 - **55** different notebooks
 - 3 PDAs
 - 8 Docking stations
- **WIP**: photo galleries and additional post series
- monthly **podcast** (🇩🇪)
- ● thinkpad-museum.com



ThinkPad museum







Part of the collection



Transporting the collection

Agenda

1. What happened so far... 
2. Short TrackPoint history 
3. Keyboards 
4. More curiosities and Japanese exclusives 

- ThinkPads are frequently encountered in business and hacker circles
- **1992 to 2005** produced by IBM, since then by Lenovo
- stand for **robust** and durable devices
- **timeless** design, practical
- different **series** with many models



POV: You've watched [part one](#) ()

Timeless design that is still recognizable today



IBM ThinkPad T23 (2001)



Lenovo ThinkPad T470p (2017)

Important people in the ThinkPad cosmos

- Arimasa Naitoh
 - Father of ThinkPad
 - Japanese Engineer
- **Richard Sapper**
 - since 1979 senior design consultant at IBM
- David Hill
 - ThinkPad-Designchef
- **Dr. Ted Selker**
 - **TrackPoints** inventor
- Tom Hardy
 - IBM industrial designer
- **George Karidis**
 - **TrackWrite Keyboard** designer
- Mark Pearson
 - maintains Linux support

Richard Sapper (1932 - 2015 †)

- one of the most important product designers of the second half of the 20th century
- known for numerous innovative designs, e.g.
 - Artemide Tizio table lamp
 - Alessi kitchen appliances
 - ...
- from 1979 **leading design consultant** at IBM
- shaped and standardized IBM designs
 - **black** color for ThinkPads
 - **red** TrackPoint





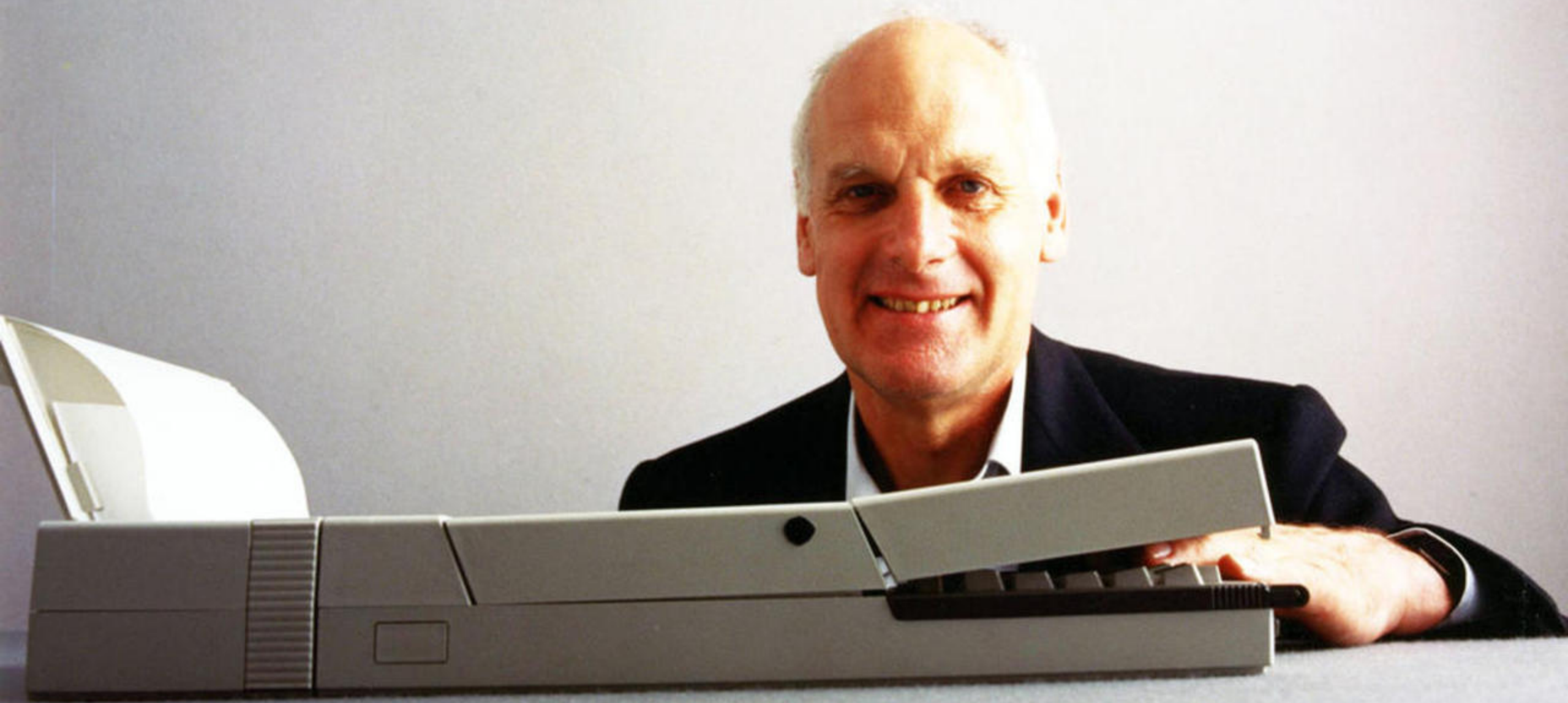
Artemide Tizio

[2], [3]



IBM PC Convertible Model 5140

IBM PC Convertible Model 5140 (1986)





- there were a lot of experiments
 - PDAs (**IBM WorkPad**)
 - PowerPC notebooks (**8xx**)
 - curious **UltraBay** modules
 - Notebooks with two displays
- Anniversary models every 5-10y
- popular due to good Linux support, among other things
- also **memetically** and **popculturally** relevant



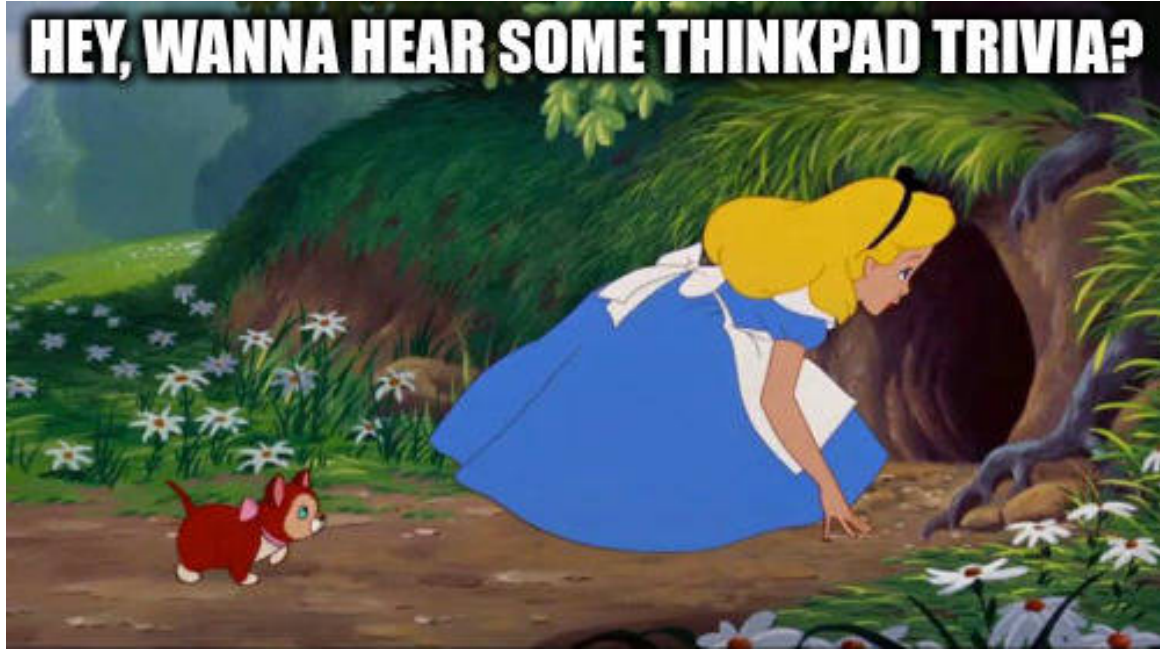
Memetic relevance



ThinkPad T61 in Knives Out (2019)

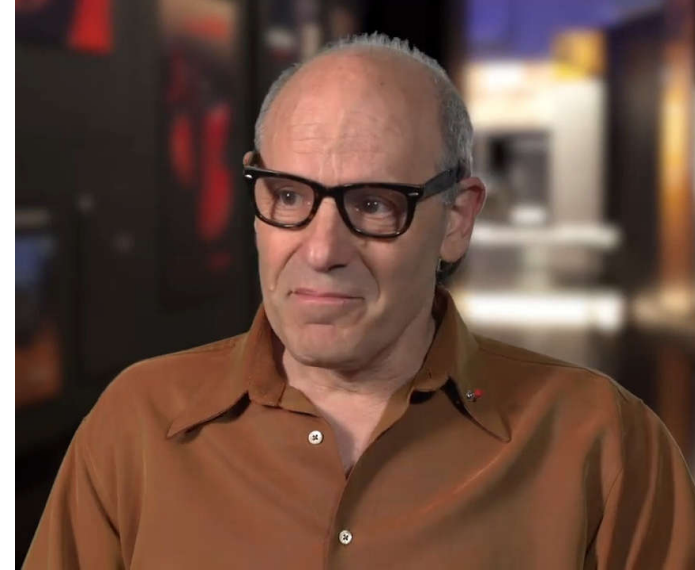


Ready?



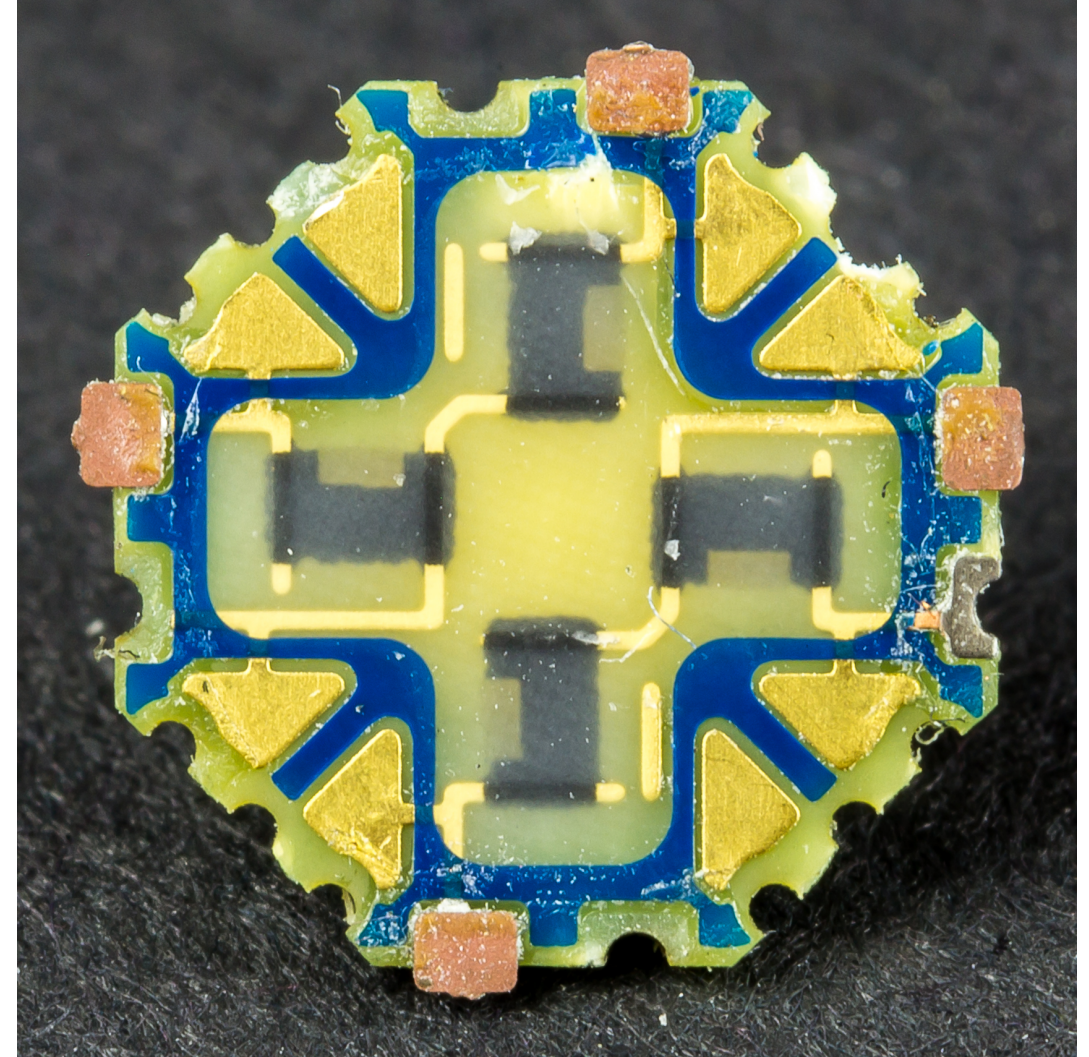
Short TrackPoint history

- invented in the late **1980s** by **Dr. Ted Selker** as a mouse replacement*
- Rubber surface between the **G, H** and **B** buttons
- **precise** operation, reminiscent of **joystick**
 - Finger can remain on the keyboard
 - no “touchpad rowing”
 - requires training
- went into production with the ThinkPad 700
 - also inspired other manufacturers

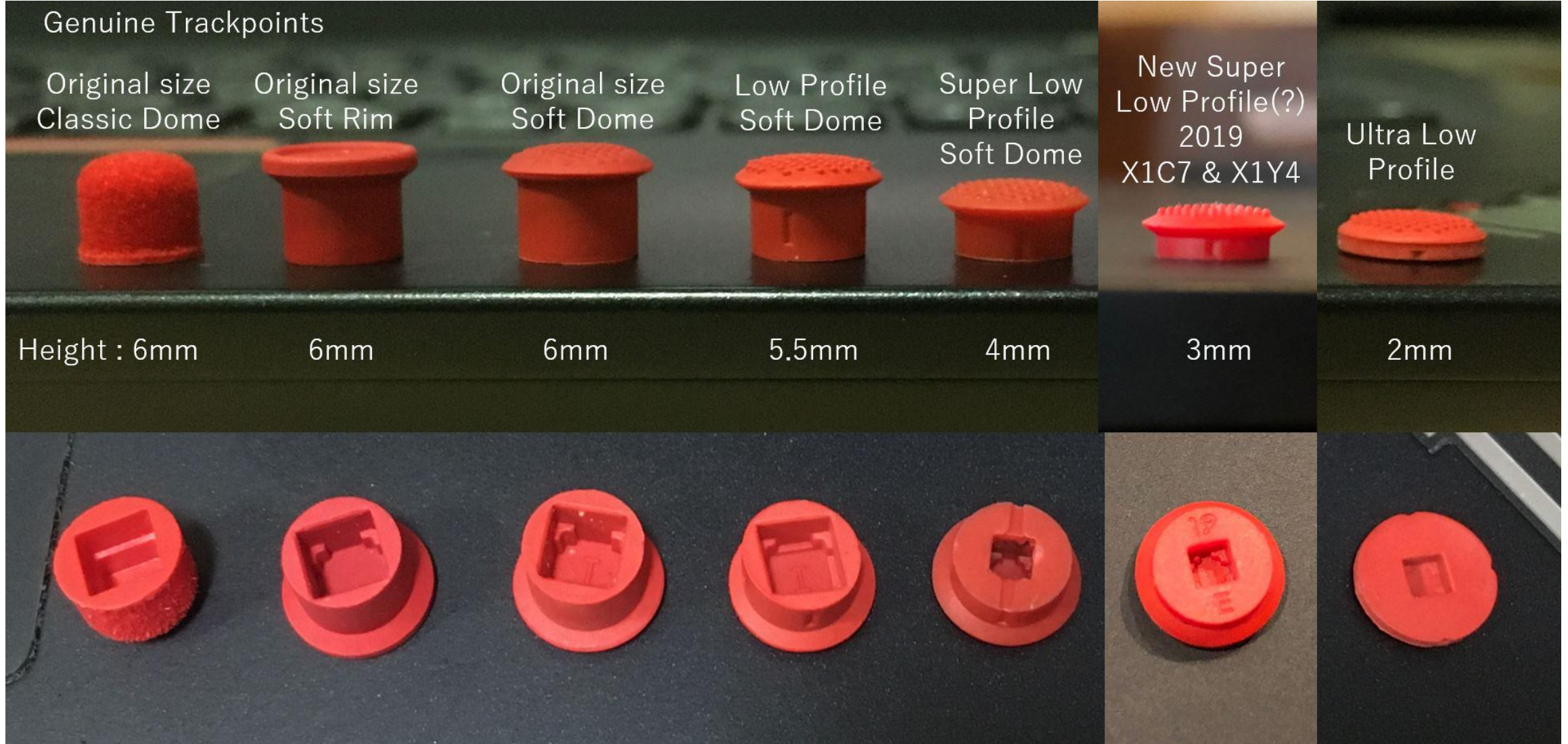


Short TrackPoint history

- Function is based on **measurement** of the force exerted via **stretch marks**
- these are **elastically** deformed, permanently applied **tension** thus changes
- integrated circuit converts these analog signals
- can now also be found in other keyboards



Trivia: Different TrackPoint types



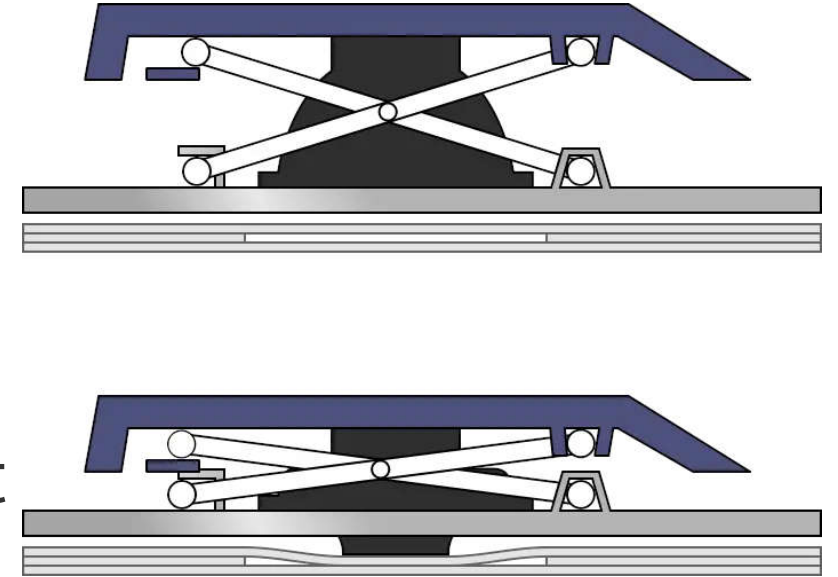
Keyboards

- were **USP** for ThinkPads for a long time
 - pleasant tactile feedback
 - indestructible quality
 - easy to change
- IBM built high-quality keyboards for a long time
 - e.g. Model F 🎤 and Model M 🎤
- numerous changes over the years
 - no longer anything special



Keyboards

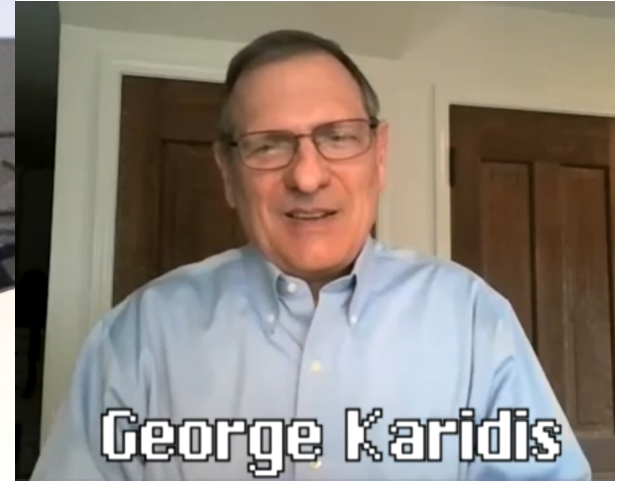
- all generations have **scissor switches**
 - formerly NMB, Chicony, ALPS, now only Chicony and LiteOn
- Opposite stabilizers, connected via a hinge
- enables scissor mechanism with low height
- the **key travel** decreased over the years
 - 3mm (199x), 2.5mm (2000-2012), 2.1mm (2013-2017), **1.8mm** (2016-2021), 1.5mm (2021-2024), 1.35mm (since 2021)



TrackWrite keyboard (1995 - 1996)

- Keyboard of the **701**, which was originally to be called **Butterfly**
- approx. **24.7 cm** wide keyboard, extends to **29.3 cm**
 - about as wide as the keyboard of a T60, remarkably comfortable
 - Keyboard folds out **diagonally**
- Production of the device **delayed** several times
 - partly due to the keyboard
 - when it was released in 1995, the 80486 was hopelessly outdated
- device won numerous awards
 - but wasn't a commercial success
- most iconic ThinkPad of all time

TrackWrite keyboard (1995 - 1996)



OG keyboard (here: 760EL, 1996)

- 7-row design, only 6 rows on small devices (e.g. 240)
- no special keys or LEDs, from the 700 (1992) to the 600X (2000)



Classic keyboard (here: T23, 2002)

- introduced with the A/T/X20, needed, among other things, **middle mouse button**
- **special buttons** (volume, setup), status **LEDs** and on/off button



Classic keyboard (here: T30, 2003)

- Slightly different design from the T/R/X30 onwards
 - blue and grey colors, smaller mouse buttons (**UltraNav** preparation)



Classic keyboard (here: R40, 2003)

- No more status LEDs from the T/R/X/G40 , **Access IBM** button



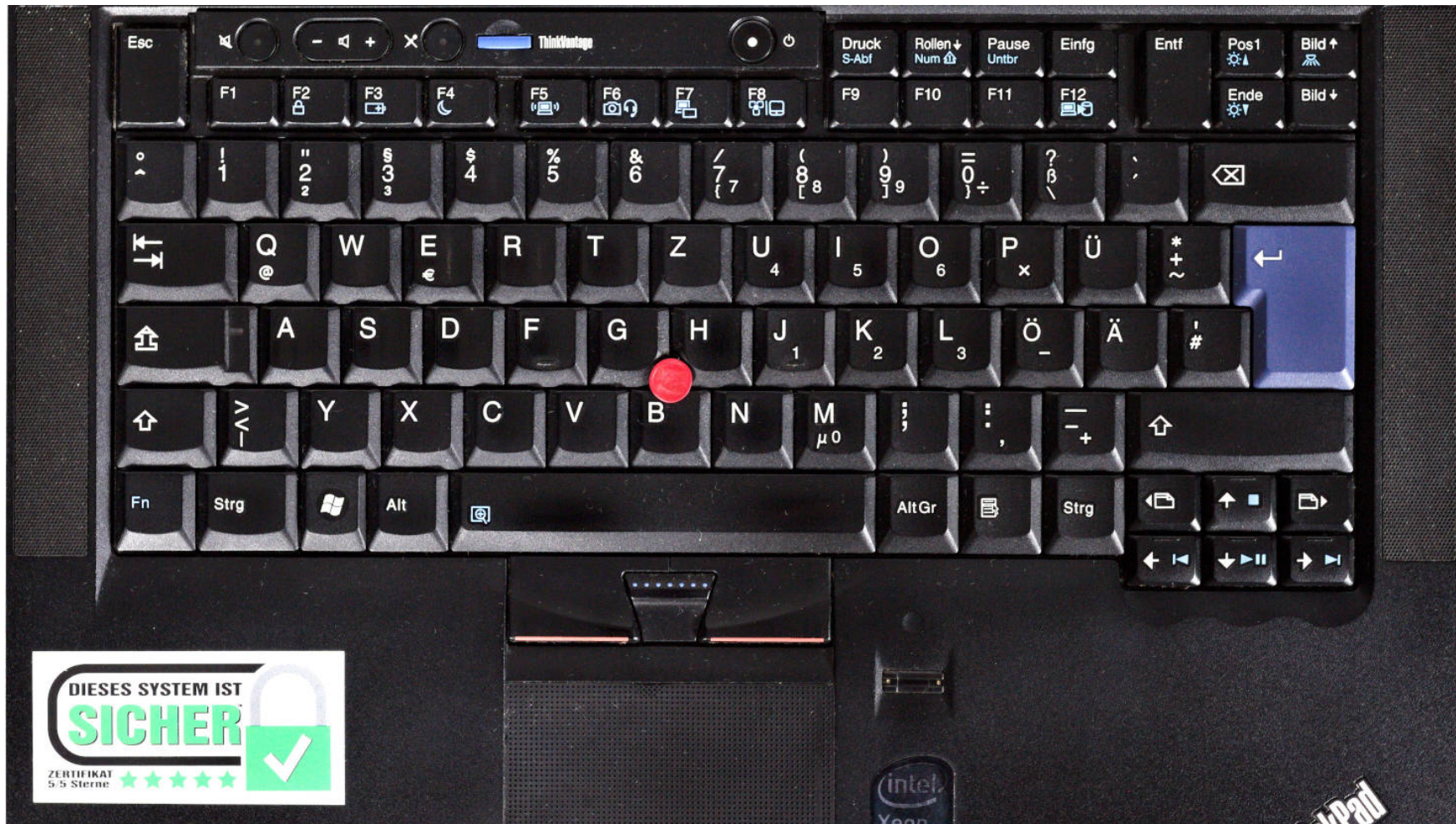
Classic keyboard (here: T60p, 2007)

- No more gray contrast as of T/R/X60
- TrackPoint buttons no longer have colors



Classic keyboard (here: T410, 2010)

- from the T410/X220 **illuminated** function keys, **rocker switch** for volume and **double height** of the ESC/ENTF key



Precision keyboard

- **2012** introduced in **T**, **W**, **X** and **L** series
 - installed in the **X1** for the first time
 - further tests in the Edge and X1xxe series
- **Chiclet** or Island Style keyboard
 - flat square keys with rounded corners
 - remembers of american chiclet **chewing gum**
- **6** instead of 7 rows, even on large devices
 - more **space** between the keys
 - **larger** keys, to prevent typing errors
 - no more separate function keys



Precision keyboard (X230, 2012)



Precision keyboard

- Page forward/next moves image down/up
- no more Num and context menu buttons
- no more blue color elements
- Buttons now only **2mm** instead of 2.5mm **high**
- **mechanism** unchanged
- **Backlight**, thus elimination of the **ThinkLight**
- Keyboard coating varies depending on the variant
 - without backlight: matt, non-slip, opaque
 - with backlight: smooth, slightly slippery finish



Classic keyboard revival (T25, 2017)



IBM Palm Top PC110 (1995)

- Palmtop with **4.7" DSTN** display
 - 640x480 and 256 colors
- 4 MB Flash + PCMCIA/CF
- narrower but thicker than a VHS cassette, **630g** weight
- Mini keyboard and touchpad
 - **TrackPoint** in top left
- Microphone and loudspeaker
 - Can also be used as a **telephone** via modem



IBM Palm Top PC110 (1995)



Docking station

[[14](#)], [[15](#)].



PC110 as phone

ThinkPad TV tuner (1994/1995)

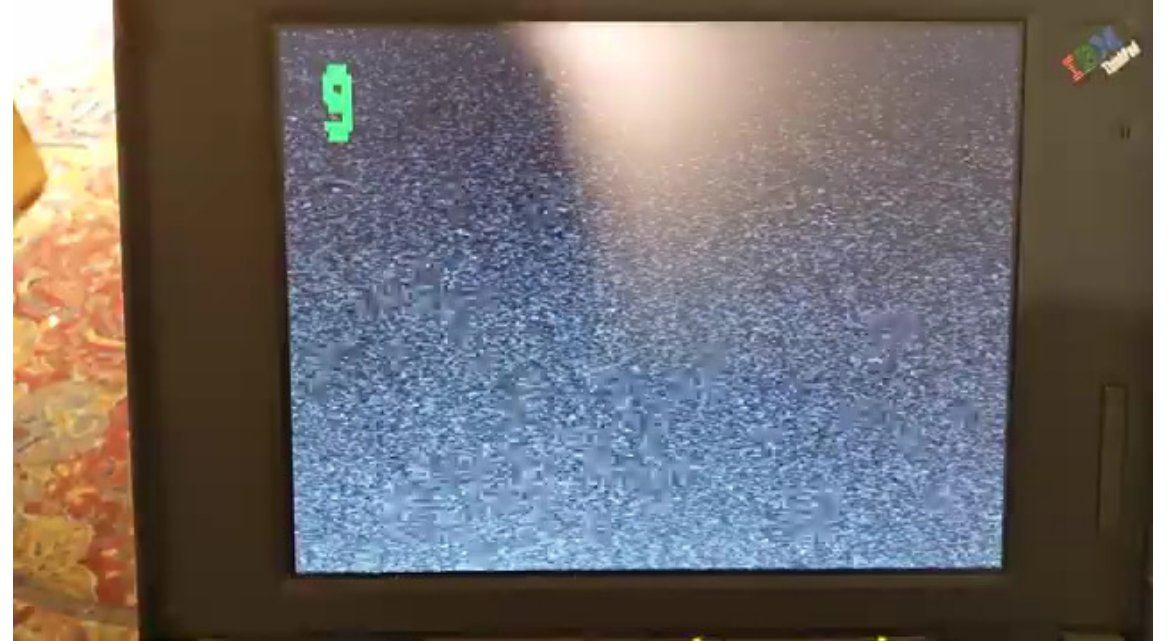
- for **355, 360, 370** and **750**
- replaces the floppy
- external antenna and additional **composite port**
- Buttons for control*
- module was switched on after the notebook, took over **TFT** control
 - Operating system continued to run in the background



ThinkPad TV tuner (1994/1995)



External antenna



TV picture with integrated channel display

ThinkPad 360P/PE Tablet (1994 - 1996)

- **9.5" Convertible Tablet**
 - Screen rotatable **in the frame**
- Intel 80486 with 33 or 50 MHz
- 4 to 20 MB RAM
- 170 to 540 MB HDD
- **DIN A4** format, **~3.1kg** weight
- came with Windows 3.1 or 95
 - 3.1 already had optional pen support (**Windows for Pencomputer 1.0**)



ThinkPad 360P/PE Tablet (1994 - 1996)

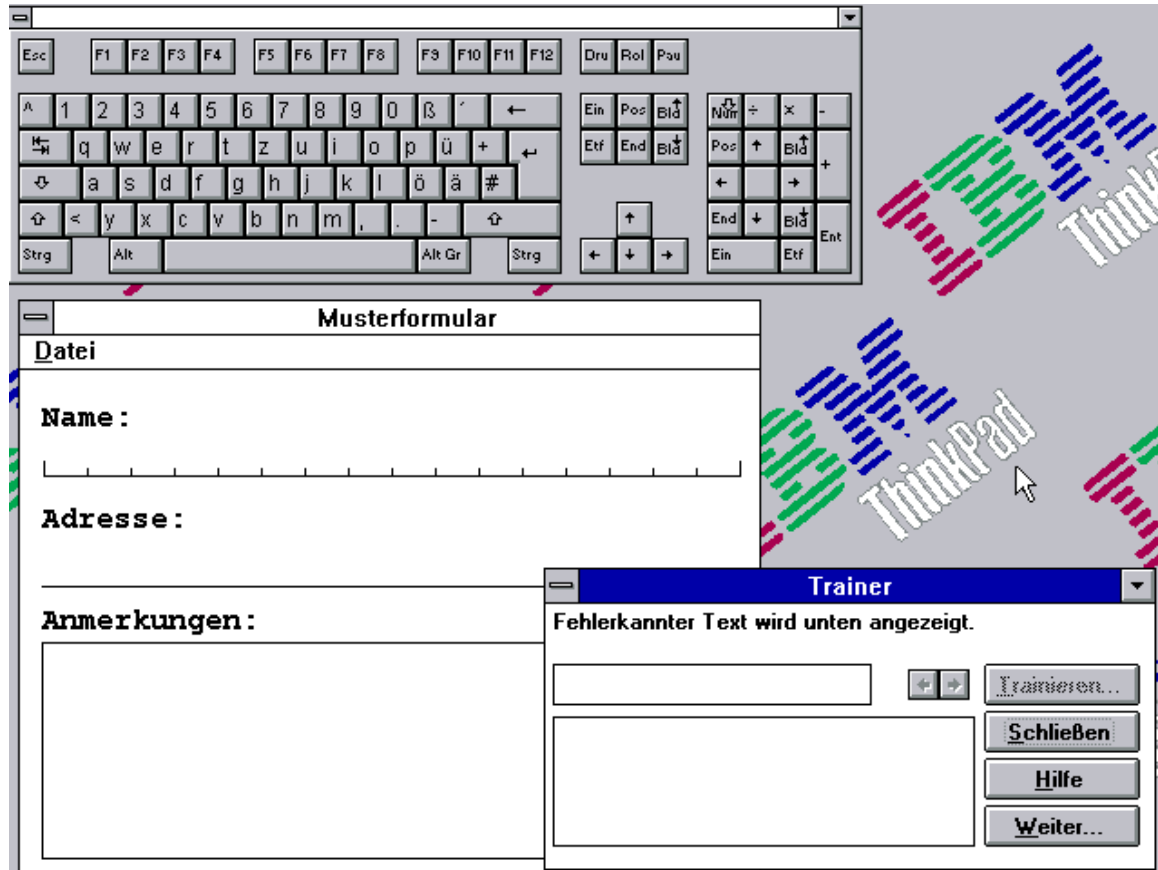


In frame rotation

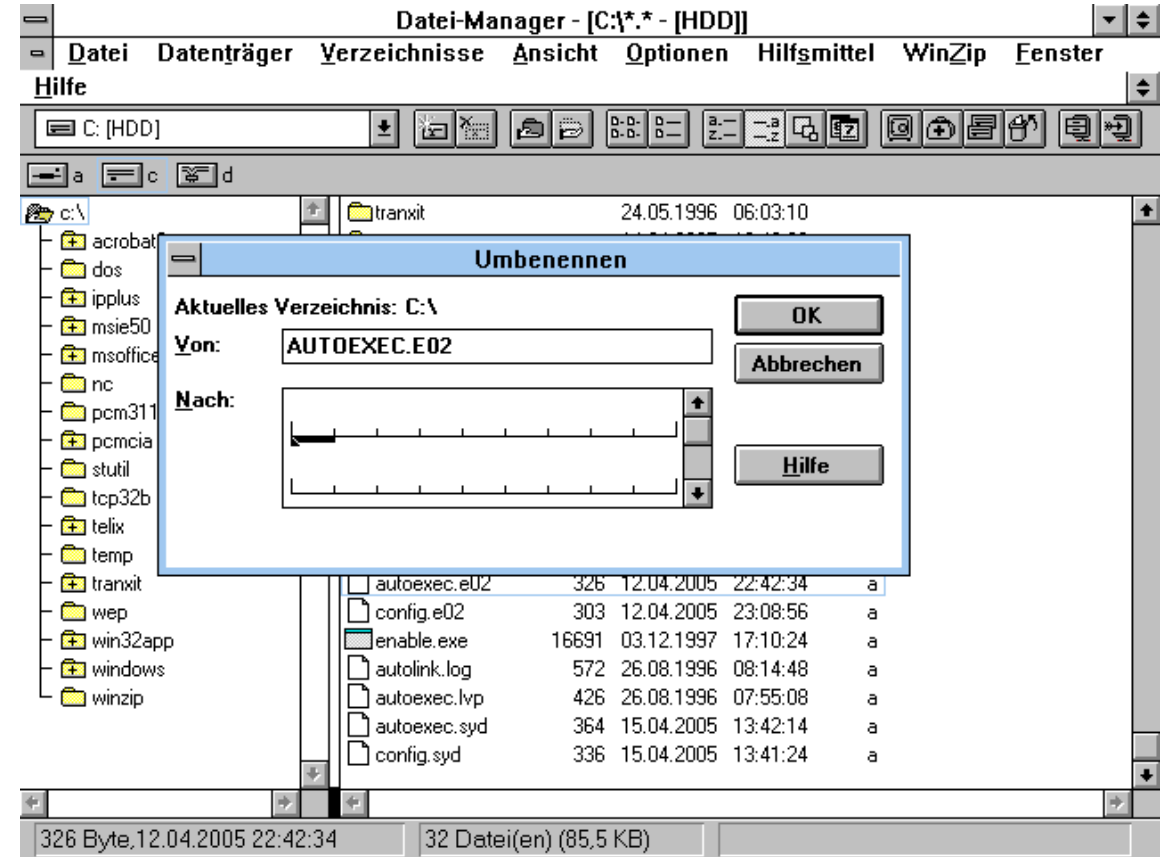


Tablet mode

Excursus: Windows for Pencomputer 1.0 (1992)



On-Screen keyboard



System dialog input field

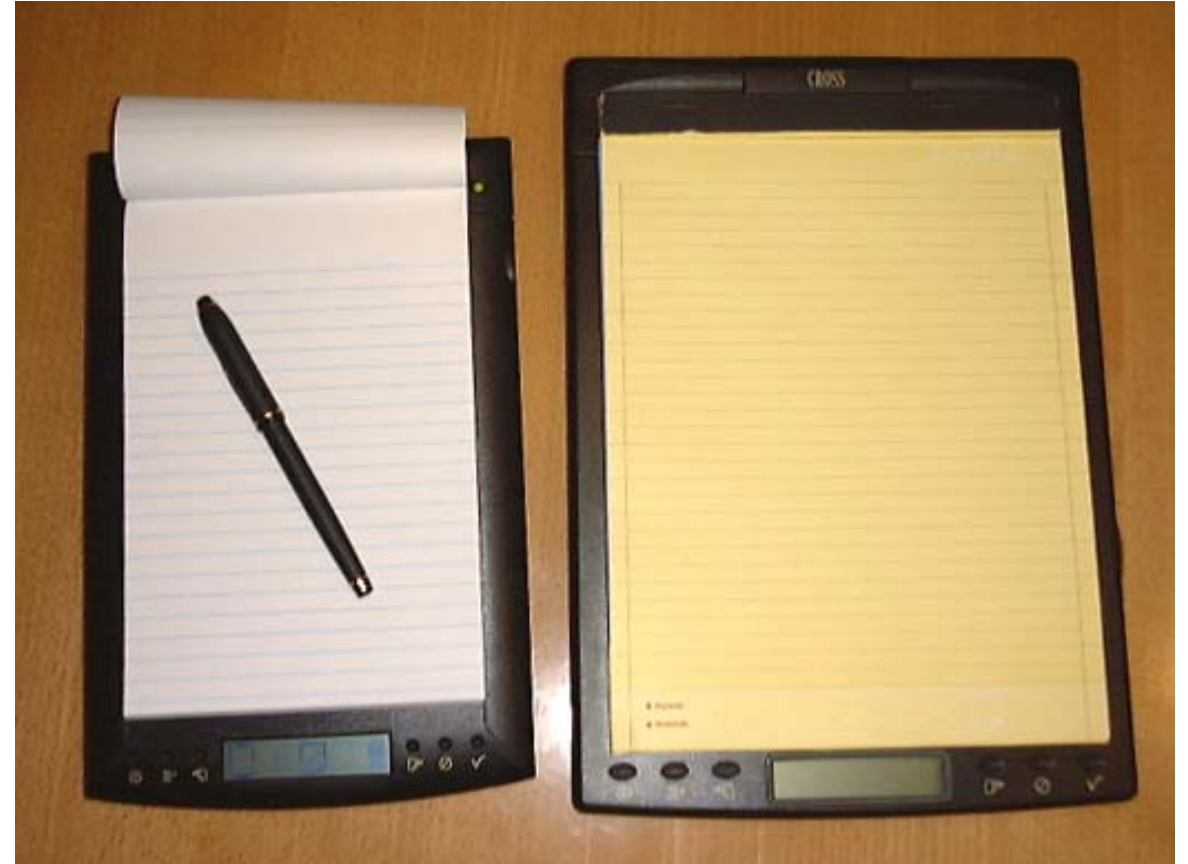
IBM TransNote (2001 - 2003)

- ThinkPad with digital writing pad (**ThinkScribe**)
- transfers handwriting and drawings as **bitmap**
- Can also be used when the notebook is switched off
- requires special **pen**
 - transfers position via **radio**
 - also writes with ink
- partly based on the **X21***



IBM TransNote (2001 - 2003)

- there was even a **left-handed** conversion kit
- based on the **CrossPad***
 - Collaboration between IBM and **A.T. Cross**
 - external writing pad
- very complex design
 - especially the pen required a lot of housing adjustments
- Price: ~3,000 USD (**4,780 EUR**)



CrossPad XP and CrossPad

IBM TransNote (2001 - 2003)



Left-handed version

[22], [23].



Different display positions

ThinkPad Tablet (2011 - 2012)

- only **Android** tablet*
- Android 3.1 and 4.0.3
 - hardly any alternative ROMs
- Headphones and **input pen**
- optional docking and case with built-in keyboard
- Pre-installed business applications
- heavy (753g) and expensive (~899 EUR)

[24], NVIDIA Tegra 2, 1 GB RAM, 10.1"-TFT (1280x800)



Japanese exclusives

- there were special models for the Asian region early on
- small devices and **collaborations**
 - Canon (**550BJ**, **555BJ**)
 - Ricoh (**235**)
- still exist today
 - e.g. keyboard with more keys
 - T14p, R14, S2, ThinkPad neo



550BJ with integrated printer

ThinkPad 220 (1993)

- early Ultra Portable*
- Intel 386SL with 16 MHz
- 2 to 10 MB RAM
- 7.7" STN grayscale display
 - 640x480, color via VGA
 - **without backlight**
- 80 MB HDD
- could also be operated with 6x AA batteries



ThinkPad 220 (1993)



ThinkPad 235 / Ricoh Magio* (1998)



[27], aka: Hitachi VisionBook Traveler, Epson Endeavor TK-300/400, Hitachi Flora Prius Note 210 **48/58**

ThinkPad 235 / Ricoh Magio* (1998)

- **9.2" subnotebook** (800x600)
 - Intel Pentium 166 to 266 MHz
 - 32 to 96 MB RAM
 - **3x PCMCIA/CardBus**
 - 2x standard **Camcorder batteries**
- only available as a third-party brand outside Japan
- manufactured by **RIOS**
 - Joint venture between Ricoh and IBM Japan



Keyboard of the 350

ThinkPad 235 / Ricoh Magio* (1998)



Standard Li-Ion batteries



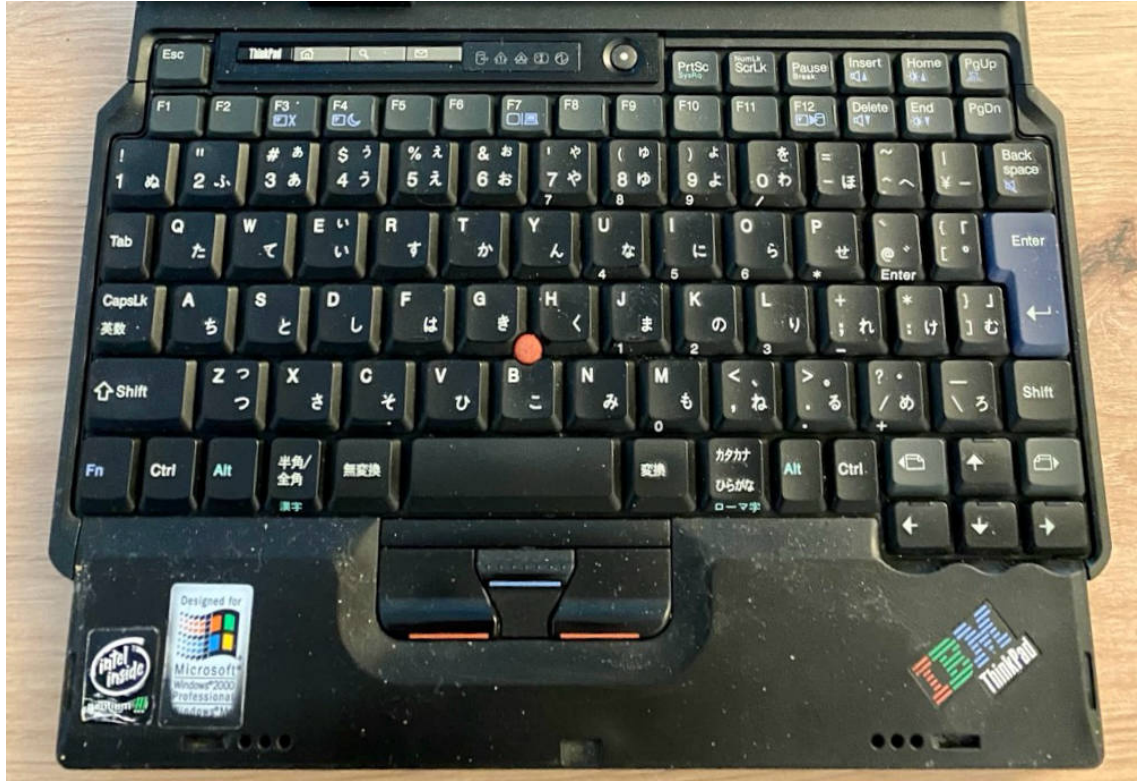
The 235 even has USB 1.1, other brands do not

ThinkPad S30 / S31 (2001)

- only models in the S series
- **last** 10.4" subnotebooks
 - X-series became more compact
 - closely related to the **X20**
- S30 for Japan, S31 for the rest of Asia
- S31 is also the special model for the 10th **anniversary**
- usually shiny cover
 - later taken up in **SL** series



ThinkPad S30 / S31 (2001)



Bellied housing adapts to the keyboard



Matt display cover, but the base in the battery is always shiny



Links

- [FrOSCon 2024: ThinkPads - Geschichte und Nerdkultur](#) 🎥 🇩🇪
- [ThinkPad-Forum](#) 🇩🇪
- [ThinkPad-Wiki](#) 🇩🇪
- [International ThinkWiki](#)
- [Notebookcheck posts about ThinkPads](#) 🇩🇪
- [Laptop Retrospective](#) 🎥 📖
- [HK003 - ThinkPads](#) 🎤 🇩🇪
- [BW099 - Ein denkwürdiges Notebook](#) 🎤 🇩🇪
- [ThinkPad museum](#)
- [ThinkPad museum database](#)

There are suitable **books** on these topics:

- How the ThinkPad Changed the World - and Is Shaping the Future
 - Arimasa Naitoh, William J. Holstein
- The Race for Perfect
 - Steve Hamm, Story über das X300
- ThinkPad: A Different Shade of Blue
 - Deborah A. Dell, J. Gerry Purdy
- **Richard Sapper, Edited by Jonathan Olivares**
 - Hardcover book with a lot of photos

ThinkPad museum podcast (🇩🇪)

- published every ~4 weeks
- deals with the past and present
- News, models, techniques and personalities
- **interactive** format, guests welcome!
- available wherever you get your podcasts™
 - [Feed](#), [fyfd](#), [Apple Podcasts](#), [Spotify](#).



Image sources

- [Richard Sapper](#)
- [Artemide Tizio](#)
- [IBM Model 5140](#)
- [Tizio und T430](#)
- [Lenovo BIOS logo](#)
- [Knives Out](#)
- [Ted Selker](#)
- [TrackPoint PCB](#)
- [TrackPoint types](#)
- [Scissor switch](#)
- [TrackWrite keyboard](#)
- [George Karidis](#)
- [Chiclet gum](#)
- [IBM PC110](#)
- [IBM PC110 phone](#)
- [ThinkPad 750 TV tuner pack](#)
- [ThinkPad 750 TV tuner demo](#)
- [360PE](#)
- [Windows for Pencomputer 1.0](#)
- [IBM TransNote](#)
- [CrossPad XP](#)
- [TransNote Left-handed](#)
- [TransNote stages](#)
- [ThinkPad Tablet](#)
- [550BJ](#)
- [220](#)
- [235 vs. Ricoh Magio](#)
- [235](#)
- [S30 / S31](#)
- [T14p](#)

● **Thank you for your attention**