



Depuis 80 ans, nos connaissances  
bâtissent de nouveaux mondes

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# AURA-T-ON ENCORE BESOIN D'INTERAGIR AVEC LES ORDINATEURS ?

MICHEL BEAUDOUIN-LAFON  
UNIVERSITÉ PARIS-SUD



# LES STYLES D'INTERACTION ACTUELS

## GRAPHIQUE (SURTOU)



MacBook Air

# XEROX 6085 Workstation

## User-Interface Design

To make it easy to compose text and graphics, to do electronic filing, printing, and machine oil at the same workstation, requires a revolutionary user interface design.

**Bit-map display** - Each of the pixels on the 19" screen is mapped to a bit in memory. Thus, arbitrarily complex images can be displayed. The 6085 displays all fonts and graphics as they will be printed. In addition, familiar office objects such as documents, folders, file drawers and in-baskets are portrayed as recognizable images.

**The mouse** - A unique pointing device that allows the user to quickly select any text, graphic or office object on the display.

## See and Point

All functions are visible to the user on the keyboard or on the screen. The user sees listing and retrieval by selecting them with the mouse and touching the MOVE, COPY, DELETE or PROPERTIES command keys. Text and graphics are edited with the same keys.



## Shorter Production Times

Experience at Xerox with prototype workstations has shown shorter production times and thus lower costs, as a function of the percentage of use of the workstations. The following

# LE XEROX STAR 1981

Year	Method	Percentage
1978	Keyboard	80
1980	Keyboard	61.3
1982	Keyboard	45
1984	Keyboard	30
1986	Keyboard	10
1988	Keyboard	5

Table 1 - Percentage of use of methods

Activity under the old and the new

0 50 100

1978

1980

1982

1984

1986

COS & Left-Data Close Redisplay

NAME	EXTENSION	SIZE	DATE
COMMAND	COM	22677	15-9-81
ATTRI	SYS	2956	18-3-81
ASSIGN	COM	364	28-7-81
ATTRIB	EXE	15091	14-7-81
BACKUP	COM	17024	28-4-81
CHKOSK	COM	7435	24-6-81
CHMOD	COM	6528	27-7-81
COMP	COM	5018	10-5-81
DEBUG	EXE	15364	19-8-81

Figure 1 - Data from Table 1 drive

20/20 44.47%

Workstation usage percentages Table 1 and illustrated in Figure 6085 users are likely to do the composition and layout, master process including printing and distribution.

### Text and Graphics

To replace typesetting, the 6085 offers a choice of type fonts and sizes from 6 point to 36 point:

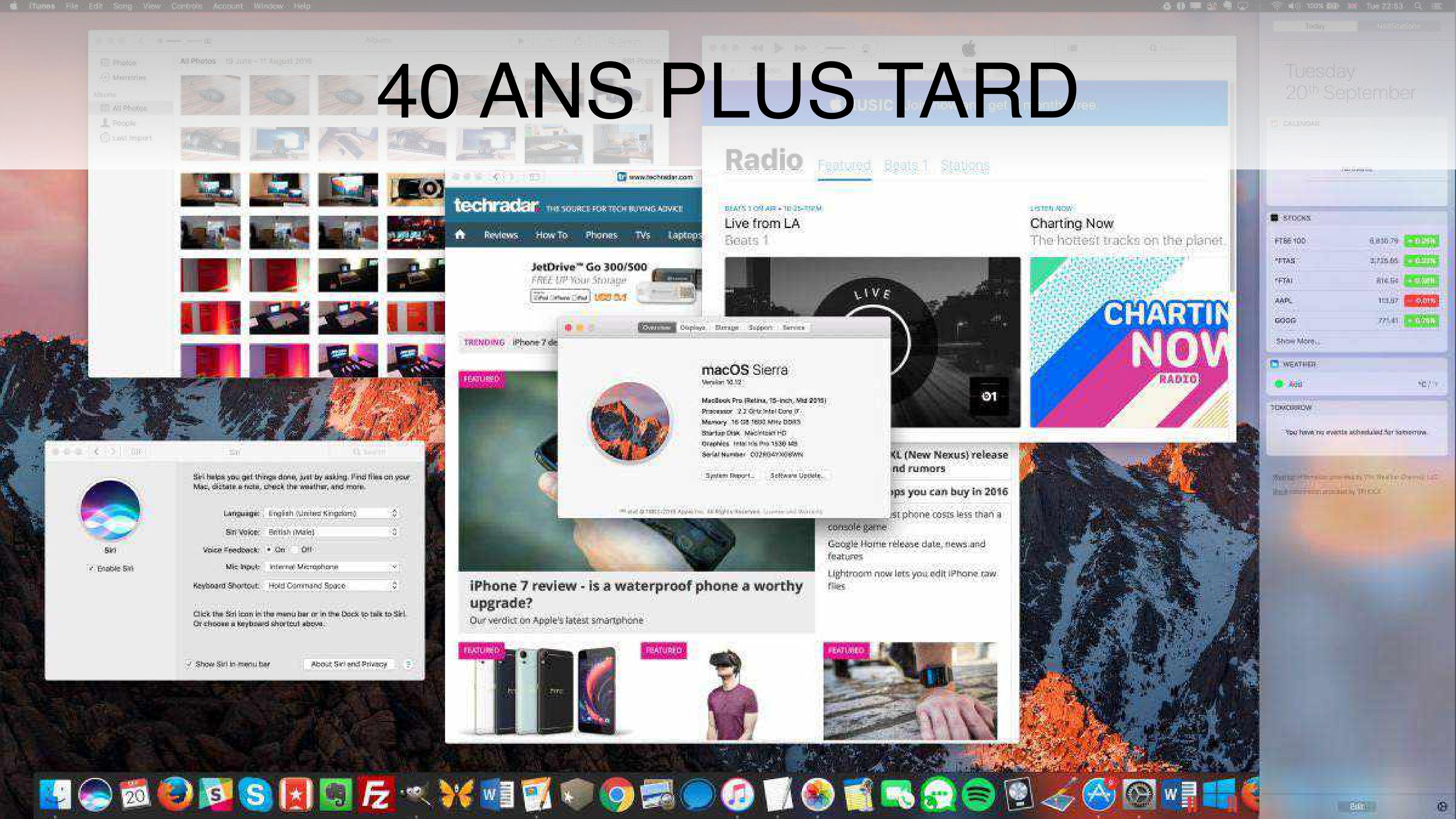
6-point text

Here is a sentence of 14-point text.

Here is a sentence of 12-point text.

18-point text

24-point text



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## LES STYLES D'INTERACTION ACTUELS

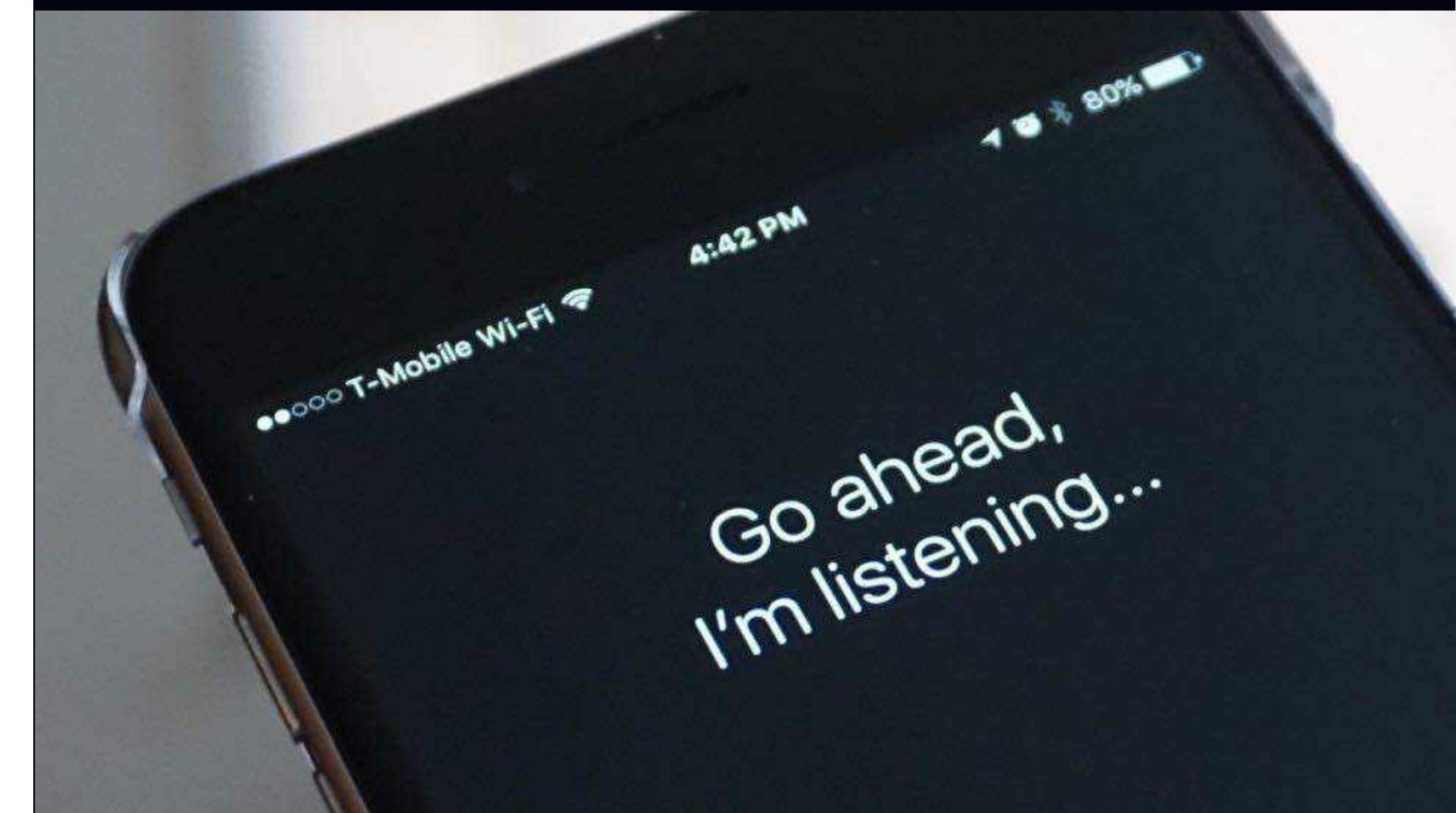
### TACTILE (BEAUCOUP)



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# LES STYLES D'INTERACTION ACTUELS

## VOCAL (UN PEU)



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## LES STYLES D'INTERACTION ACTUELS

### VIRTUEL (ÉMERGENT ?)



A man with dark hair and a beard is driving a car. He is looking forward, focused on the road. The car's interior is visible, including the steering wheel and dashboard. The background is blurred, suggesting motion. The overall atmosphere is one of travel and movement.

CE QUE L'ON NOUS PROMET



CE QUI NOUS ATTEND

# Technology Intelligence

Gadgets | Innovation | Big Tech | Start-ups | Politics of Tech | Gaming | Podcast |

Home > Technology Intelligence

## Amazon reveals 'anti-robot vest' to protect workers from machines



Save 2  
Share 2



Amazon has invested in high tech vests to help warehouse workers avoid collisions with robots  
CREDIT: RALPH D. FRESO SOURCE: REUTERS

A mazon has given its warehouse workers new tech-enabled vests to protect them from robot-related crashes.

The e-commerce giant's new "Robot Tech Vest" is equipped with sensors to alert Amazon's robots to a human's presence forcing them to slow down to avoid collisions.

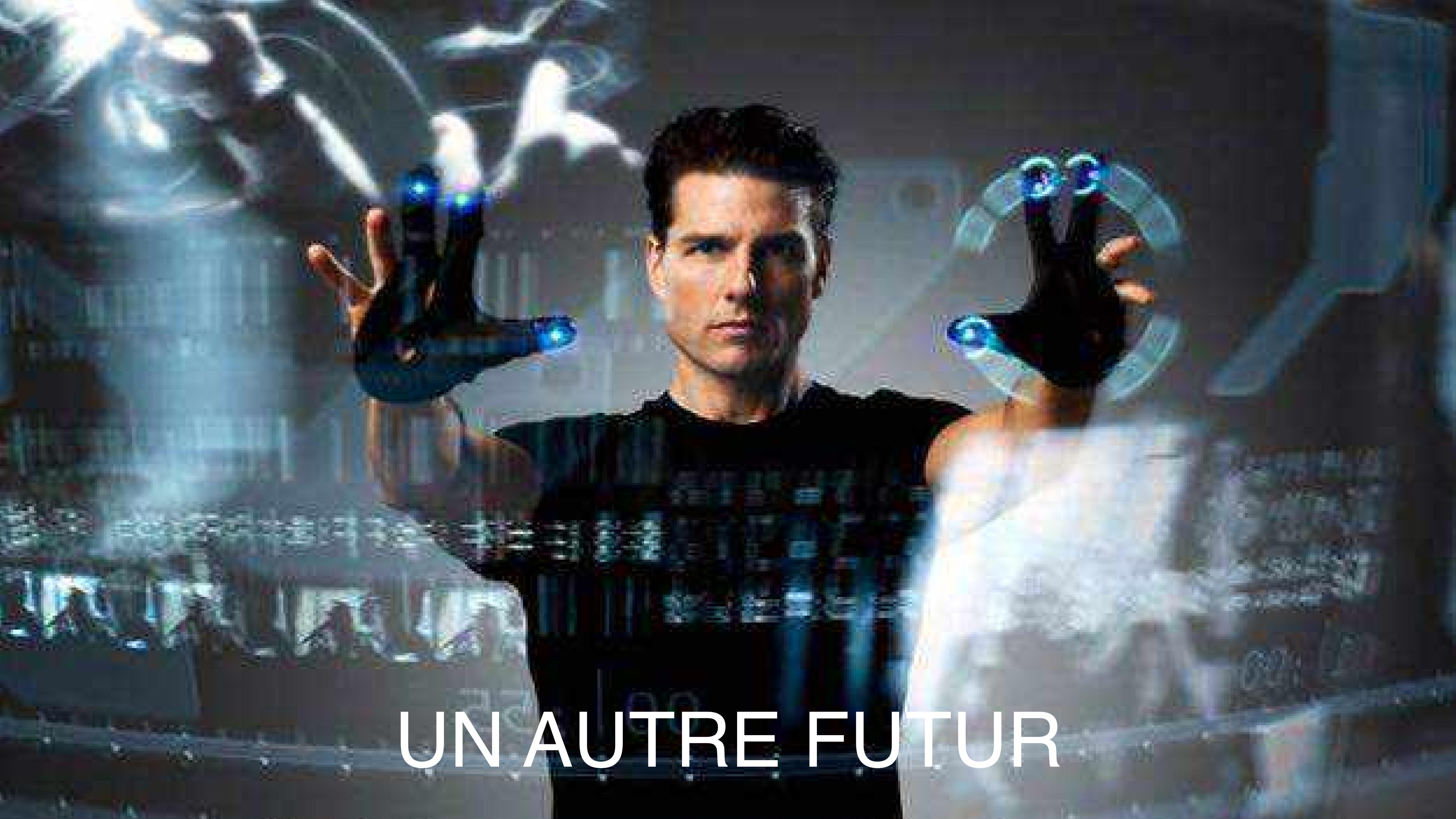
The vests, which look similar to a utility belt, were designed to allow warehouse workers and engineers to easily retrieve fallen items within tightly packed aisles and repair robotic systems.



© Amazon / Tech Crunch

A man in a red suit and glasses looks through binoculars at a colorful carnival or fairground. The background is filled with various attractions like a Ferris wheel and a roller coaster under a clear blue sky.

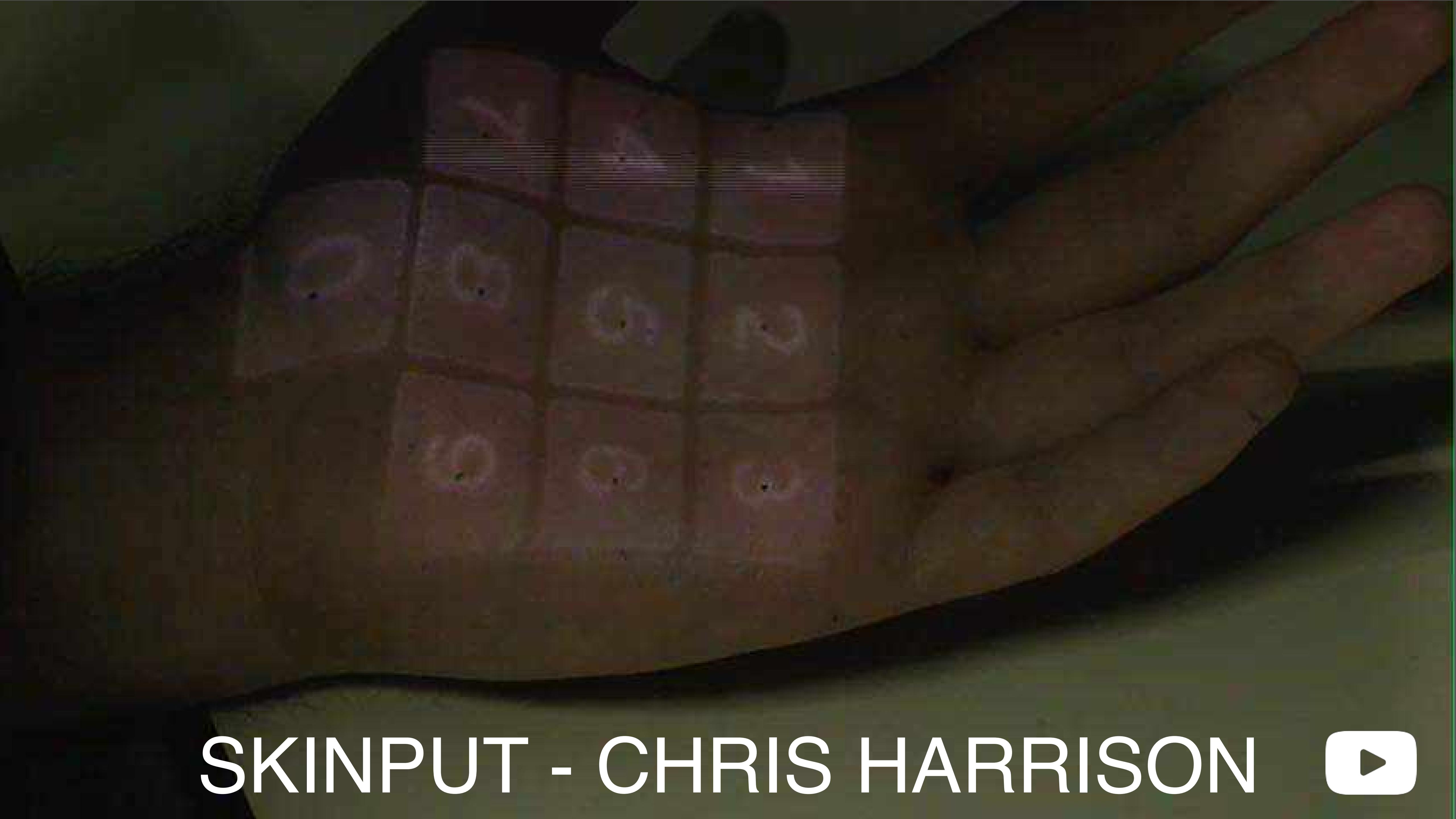
CE QUI NOUS ATTEND

A man with short brown hair and a slight beard is looking directly at the camera. He is wearing a dark, long-sleeved t-shirt. He is surrounded by several glowing blue spheres of varying sizes, some with internal patterns. The background is a dark, textured surface.

UNAUTRE FUTUR

A close-up portrait of Tony Stark (Robert Downey Jr.) wearing his Iron Man suit. He is looking directly at the camera with a serious expression. The suit is primarily red and gold, with glowing blue arc reactor energy on his chest and repulsor beams emanating from his gauntlets. The background is dark and moody.

UN AUTRE FUTUR



SKINPUT - CHRIS HARRISON



A close-up photograph of a person's hands interacting with a futuristic, glowing interface. The hands are wearing orange gloves and are positioned over a dark, curved surface that appears to be a desk or a piece of furniture. On the surface, there are several glowing, translucent objects: a green cube-like shape, a white sphere, and a smaller green sphere. The background is dark and out of focus, emphasizing the glowing elements.

HOLODESK - OTMAR HILLIGES



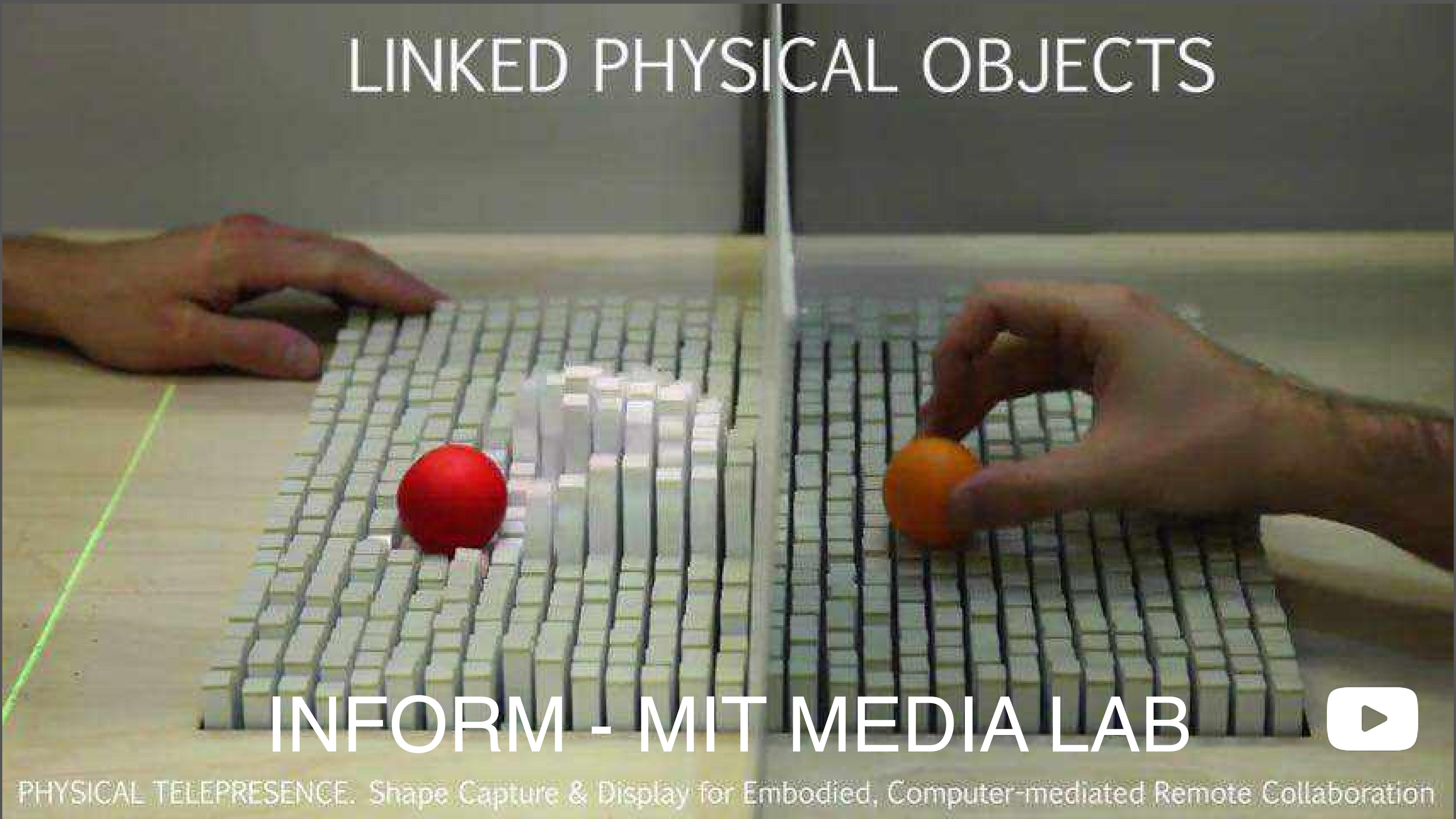
# ROOMALIVE - MICROSOFT



With RoomAlive, users can touch, shoot, and dodge augmented content.



# LINKED PHYSICAL OBJECTS



INFORM - MIT MEDIA LAB

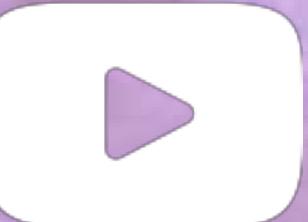


PHYSICAL TELEPRESENCE: Shape Capture & Display for Embodied, Computer-mediated Remote Collaboration

# Zoooids: Building Blocks for Swarm User Interfaces

*Mathieu Le Goc<sup>1,3,4</sup>, Lawrence H. Kim<sup>2</sup>, Ali Parsaei<sup>2</sup>, Jean-Daniel Fekete<sup>1,4</sup>, Pierre Dragicevic<sup>1,4</sup>, Sean Follmer<sup>2</sup>*

<sup>1</sup> Inria, <sup>2</sup> Stanford University, <sup>3</sup> Université Paris-Sud, <sup>4</sup> Université Paris-Saclay



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# PARADIGMES D'INTERACTION

PREMIÈRE PERSONNE  
ORDINATEUR-OUTIL



DEUXIÈME PERSONNE  
ORDINATEUR-PARTENAIRE



TROISIÈME PERSONNE  
ORDINATEUR-MÉDIA



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# PARADIGMES D'INTERACTION

PREMIÈRE PERSONNE  
ORDINATEUR-OUTIL



DEUXIÈME PERSONNE  
ORDINATEUR-PARTENAIRE



TROISIÈME PERSONNE  
ORDINATEUR-MÉDIA



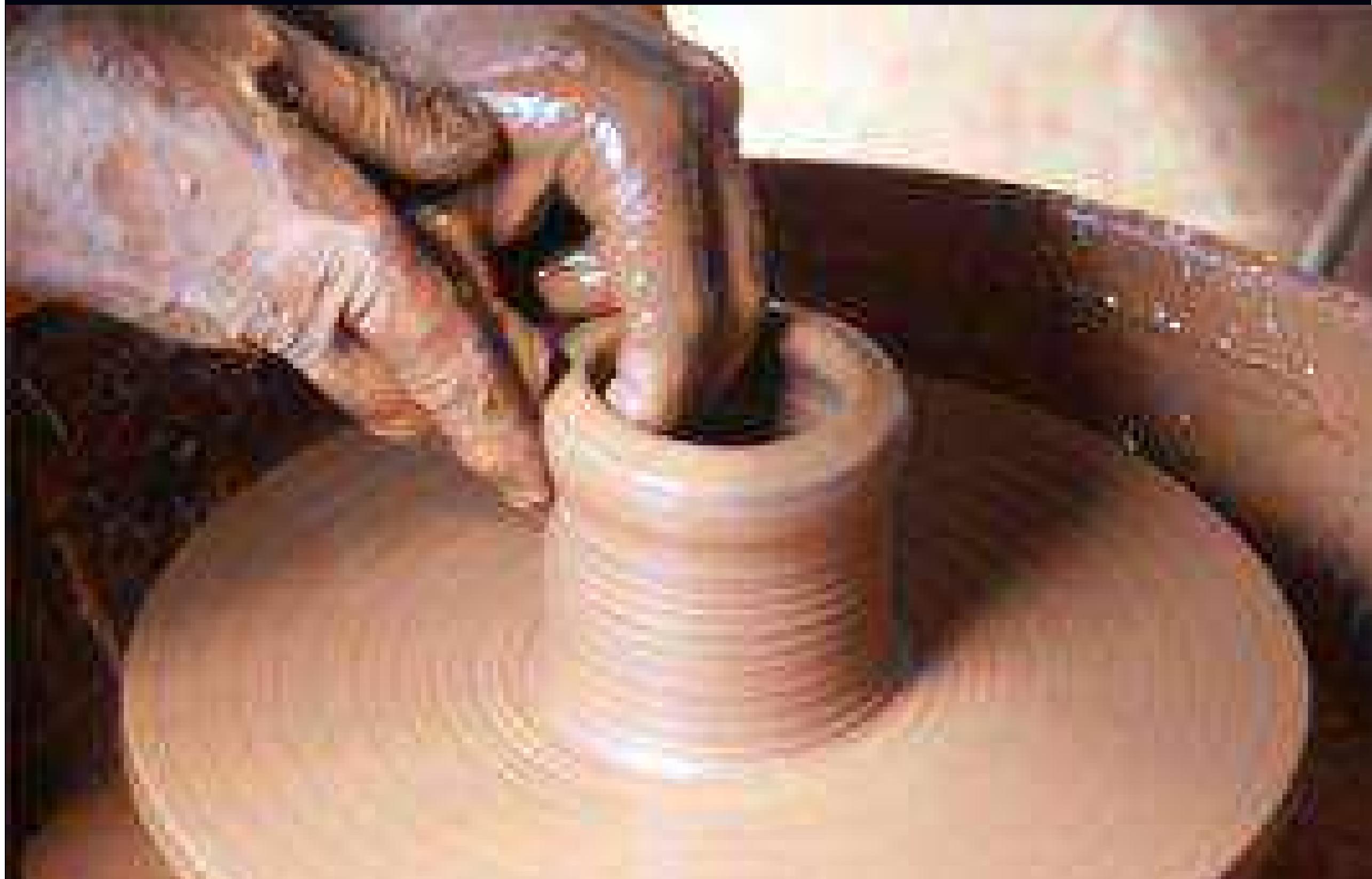
—  
COMMENT  
INTERAGISSEONS  
-NOUS DANS LE  
MONDE  
PHYSIQUE ?

LANGAGE

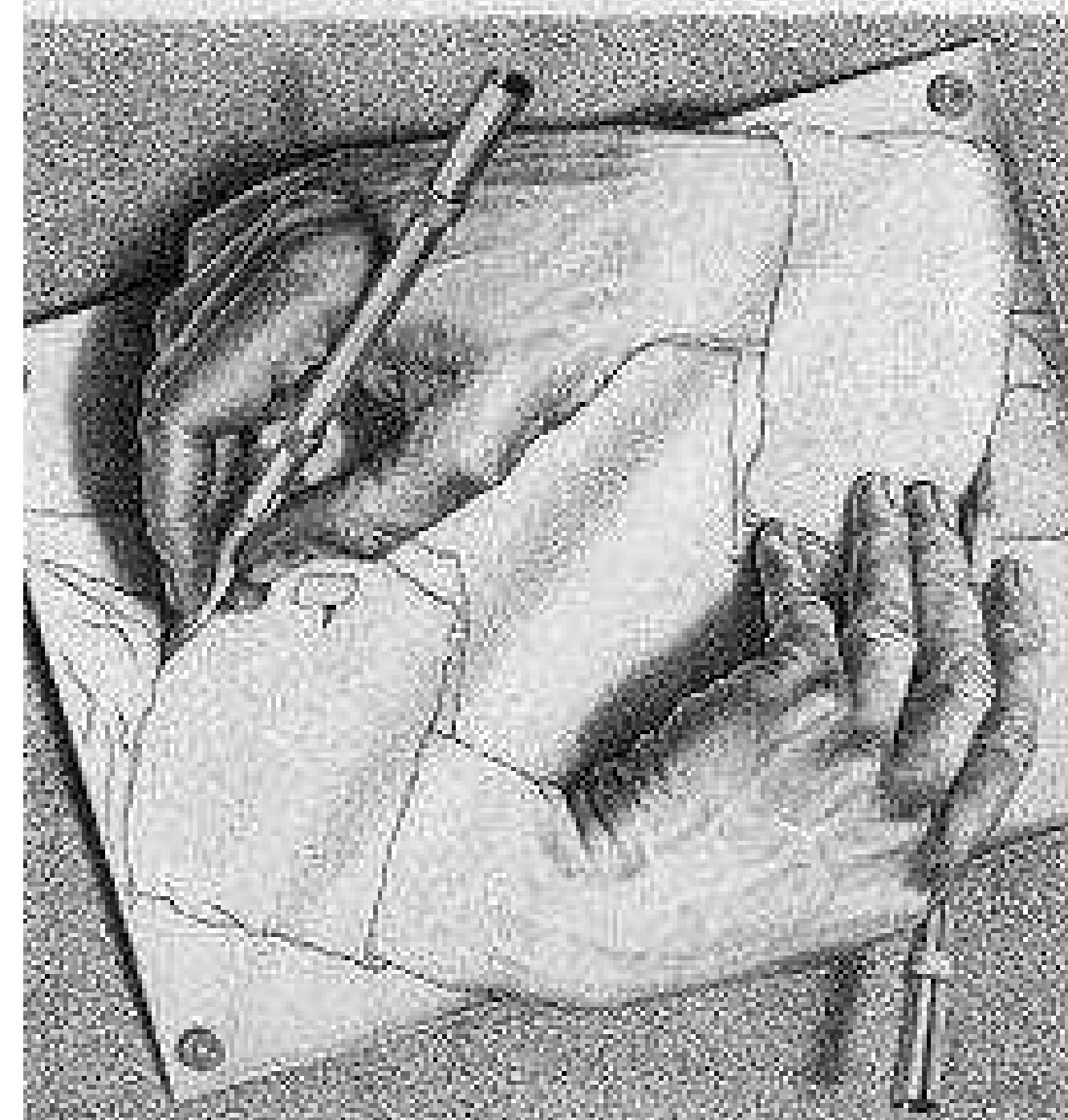


—  
COMMENT  
INTERAGISSEONS  
-NOUS DANS LE  
MONDE  
PHYSIQUE ?

ACTION PHYSIQUE



L'ACTION  
PHYSIQUE  
EST SOUVENT  
AUGMENTÉE  
PAR DES  
OUTILS



# LE POUVOIR DES OUTILS





—  
LE MONDE  
PHYSIQUE  
EST  
FLEXIBLE

UN CRAYON



UNE TASSE



—  
LE MONDE  
PHYSIQUE  
EST  
FLEXIBLE

UNE RÈGLE !



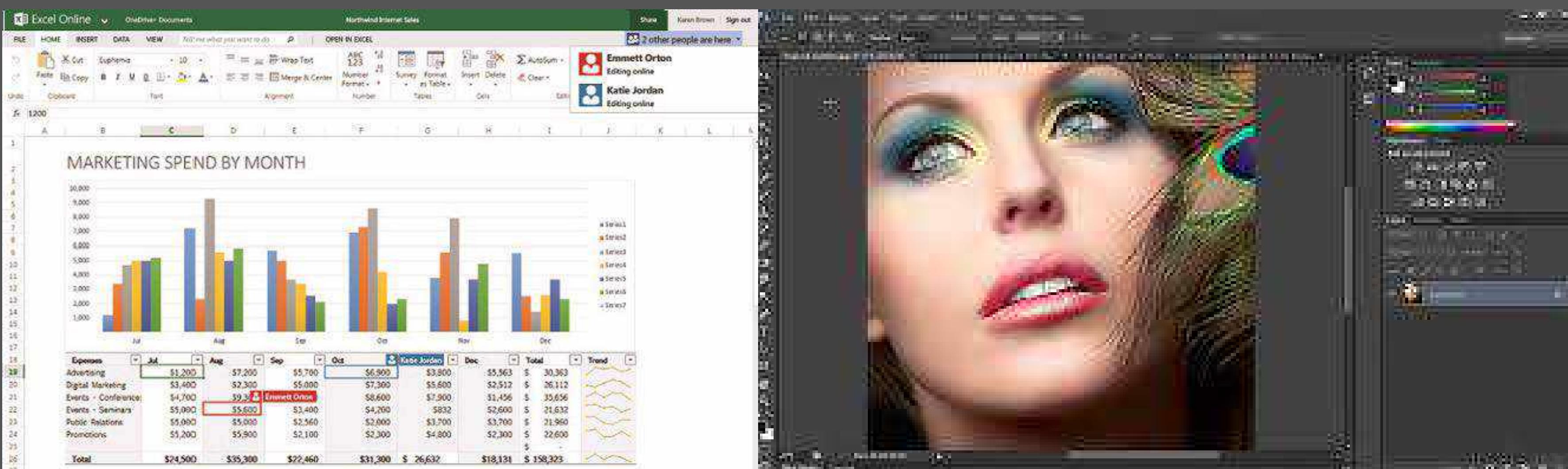
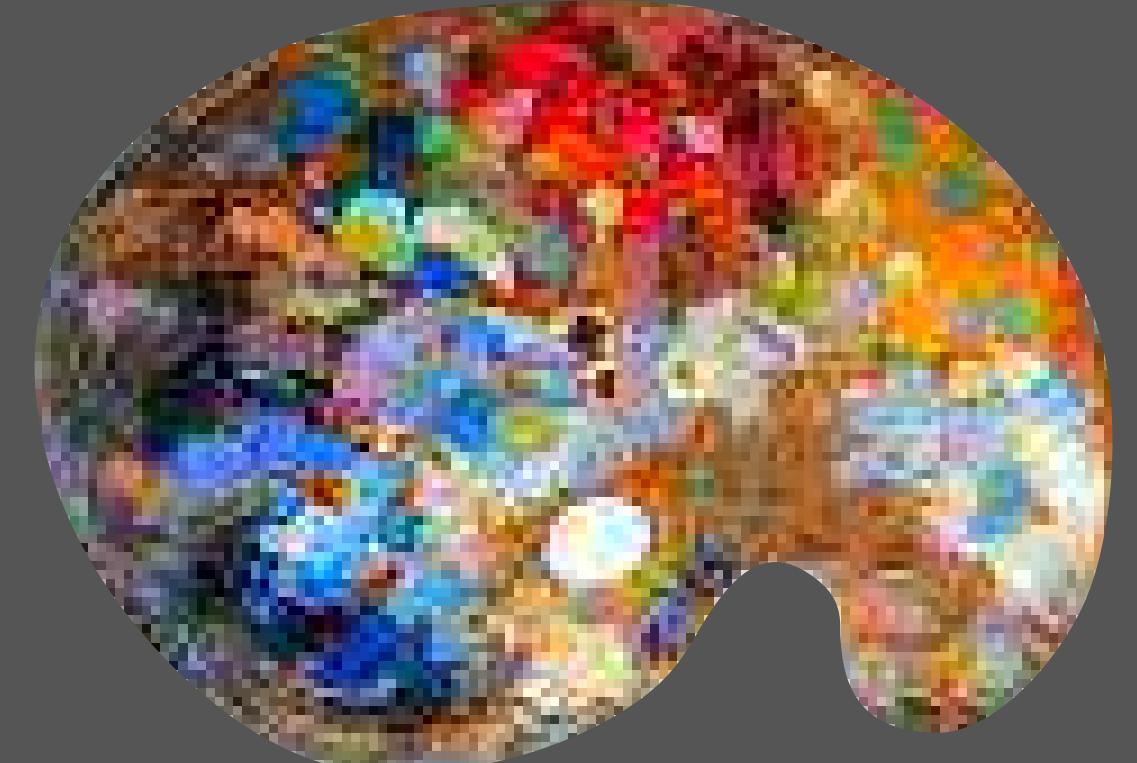
UN PRESSE PAPIER !

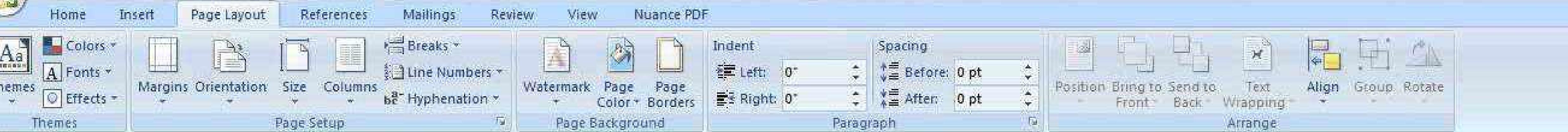


# APPROPRIATION



# LE MONDE NUMÉRIQUE EST RIGIDE





KSRB 0.5-8.1.: Providing fly ash sand mortar of mix 1:1.5:3 (1 cement : 1.5 fly ash : 3 sand) including cost of all materials, labour charges HOM Of machinery complete as per specifications. KSRB 4.2.6: Providing and laying in position reinforced cement concrete of design mix M10 with OPC cement @ 220Kgs, with 40mm and down size graded granite metal coarse aggregates...0.092 cum and fine aggregates @ 0.465 cum, machine mixed concrete laid in layers not exceeding 15 cm, thick vibrated for all works in foundation plinth and ground floor level for retaining walls return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, Posts, struts, buttresses, string or facing courses, piers, abutments, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete as per specifications.

Specifications No. KBS 4.1, 4.6 KSRB 0.5-8.1.: Providing fly ash sand mortar of mix 1:1.5:3 (1 cement : 1.5 fly ash : 3 sand) including cost of all materials, labour charges HOM Of machinery complete as per specifications. KSRB 4.2.6: Providing and laying in position reinforced cement concrete of design mix M10 with OPC cement @ 220Kgs, with 40mm and down size graded granite metal coarse aggregates...0.092 cum and fine aggregates @ 0.465 cum, machine mixed concrete laid in layers not exceeding 15 cm, thick vibrated for all works in foundation plinth and ground floor level for retaining walls return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, Posts, struts, buttresses, string or facing courses, piers, abutments, coping, bed blocks, anchor blocks, plain window cills, fillets etc., including cost of all materials, labour, HOM of machinery, curing, complete as per specifications.

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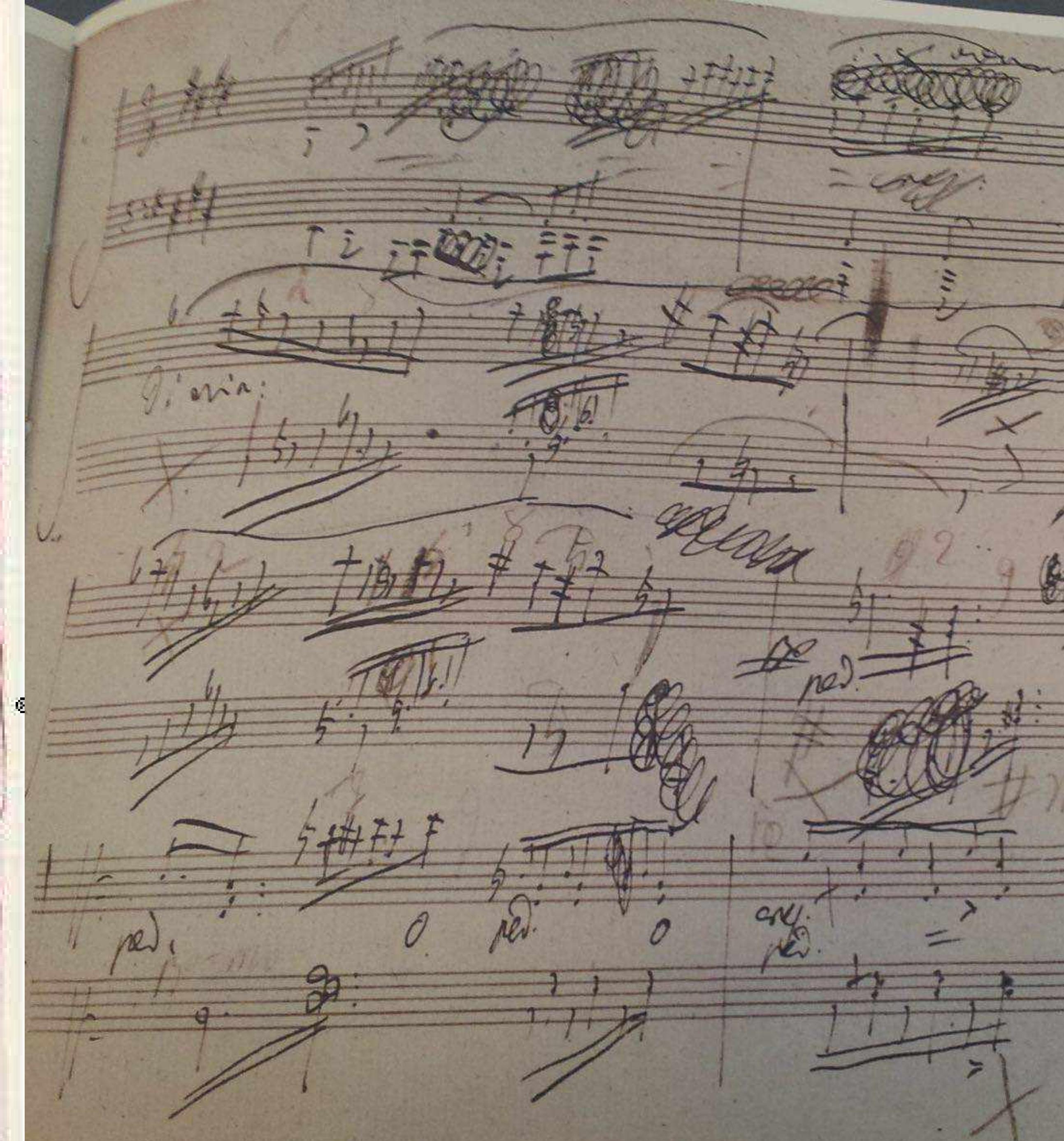
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24 Februar 1884.

24.09.1935 1935  
S. C. 1935  
S. C. 1935

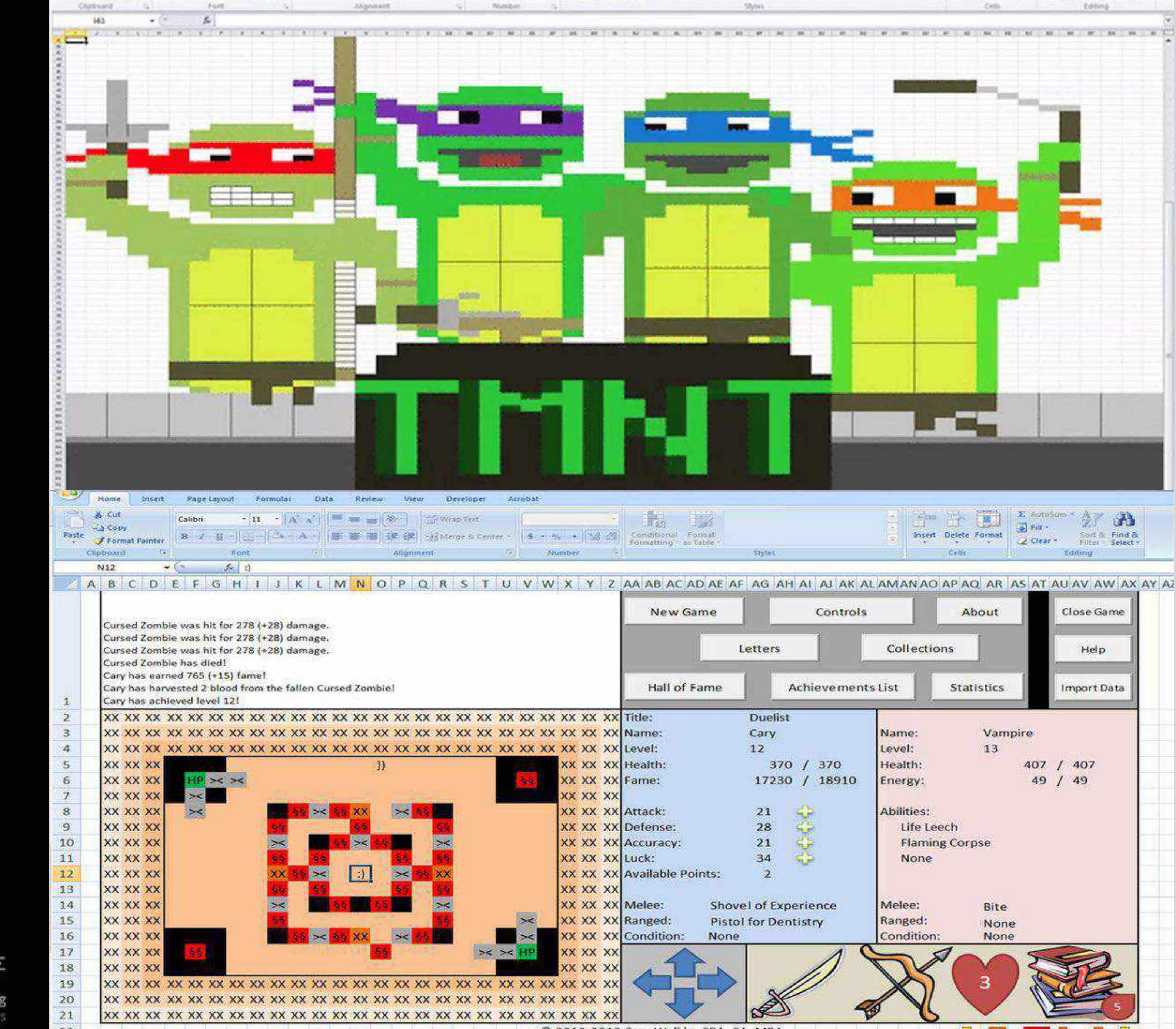




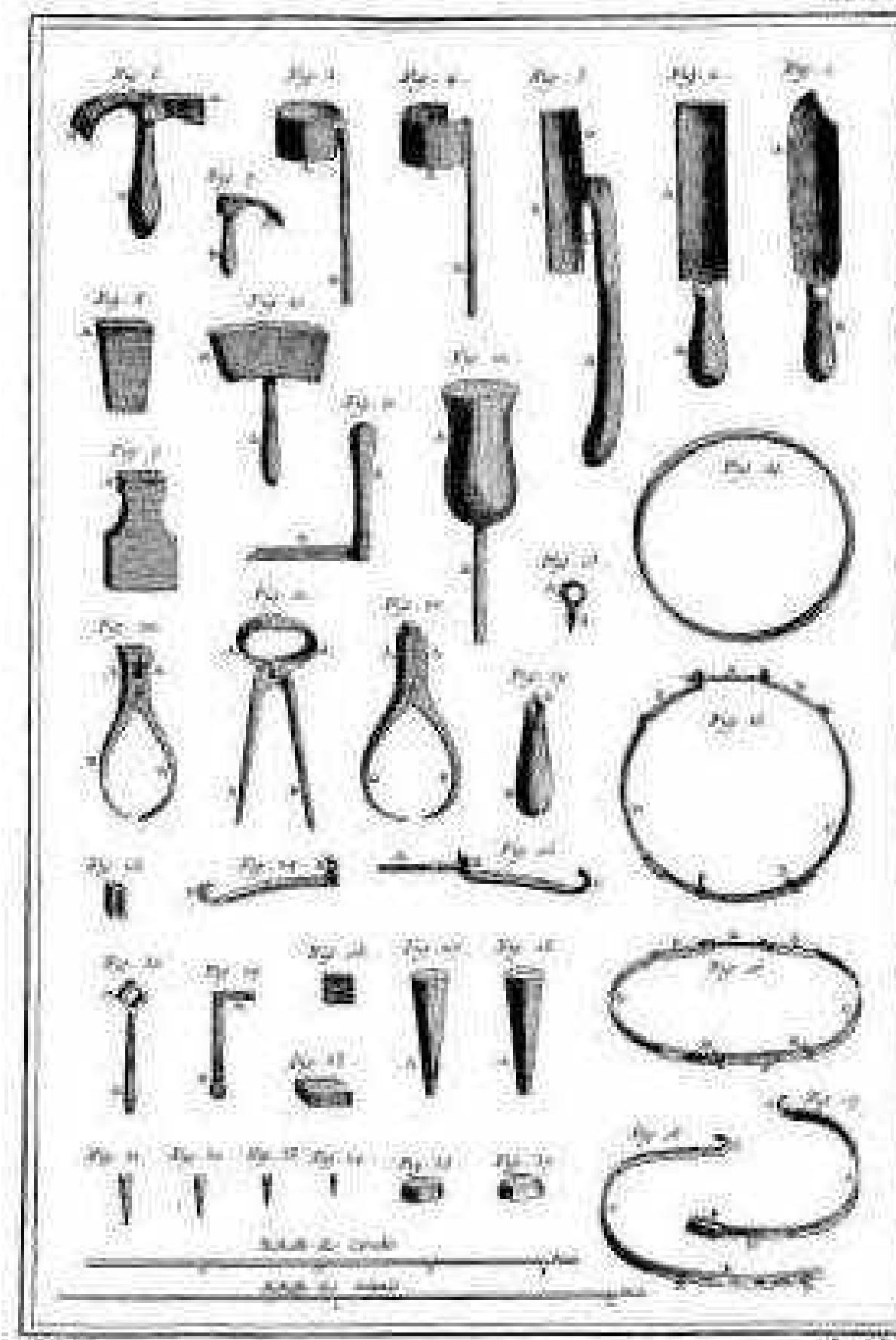
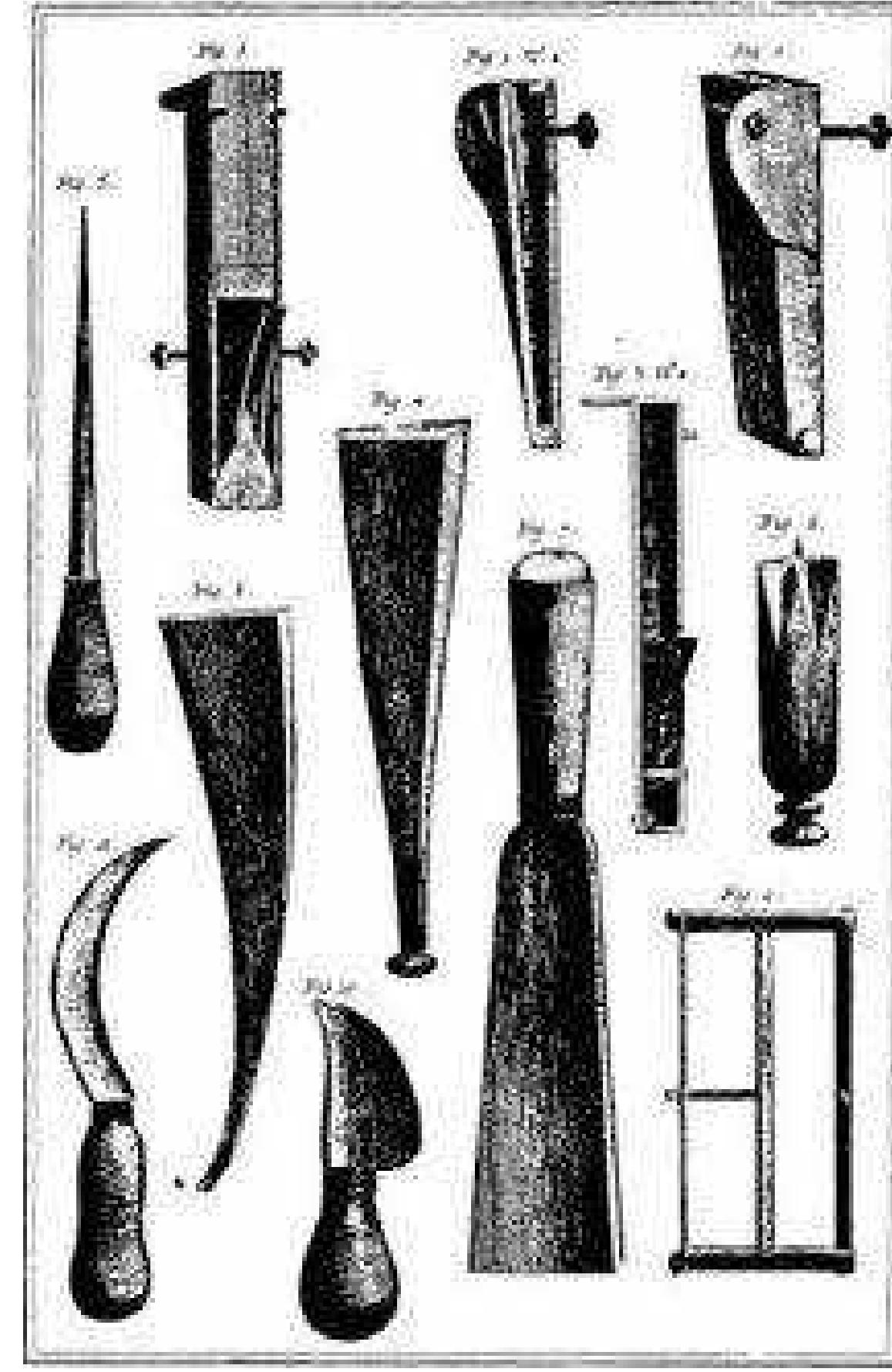
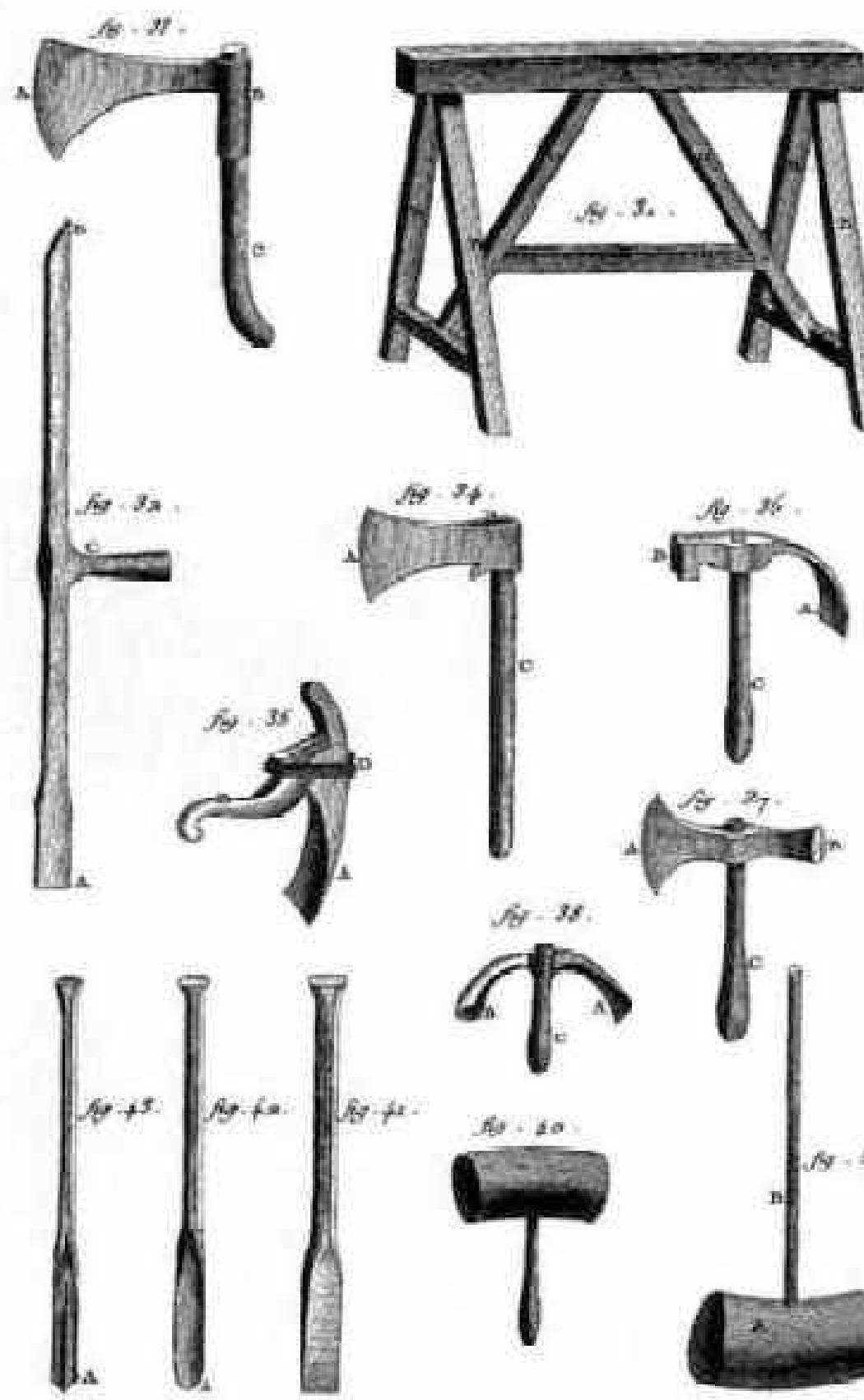
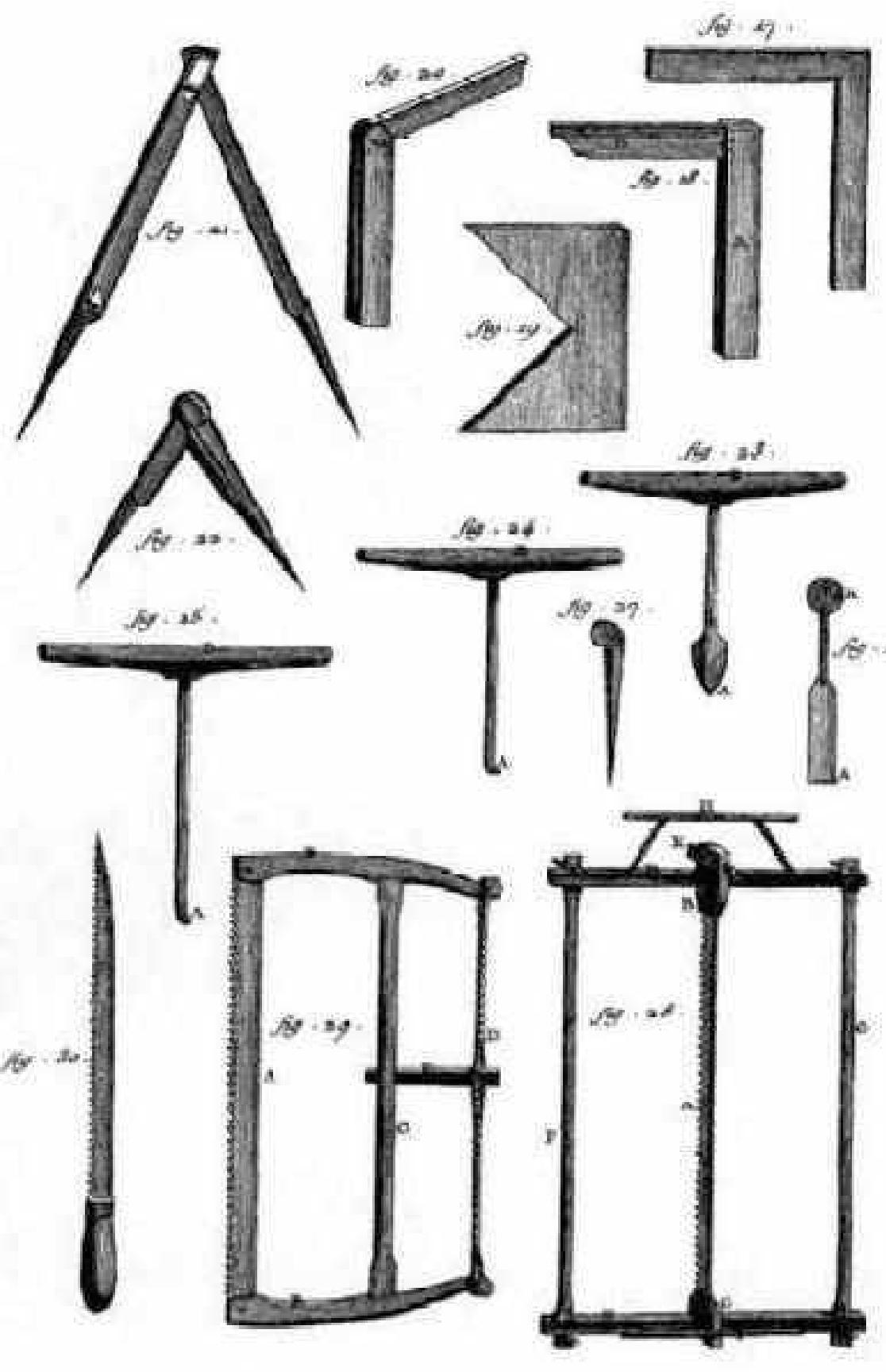


# BREATHING CITY

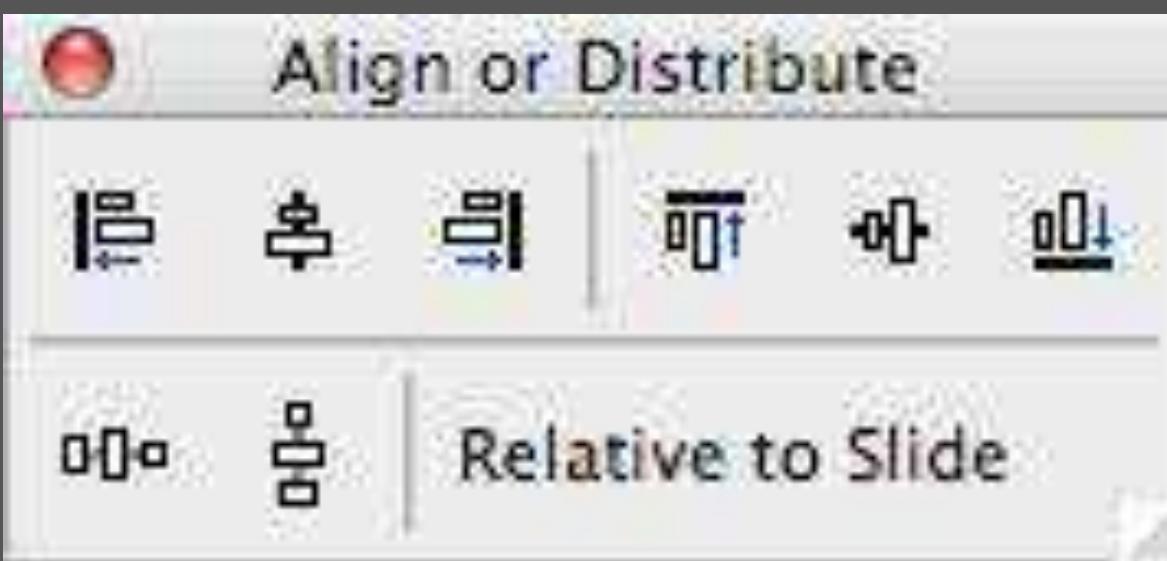
## Manhattan's at Work and Home population by hour



# DE RÉELS OUTILS POUR LE MONDE NUMÉRIQUE



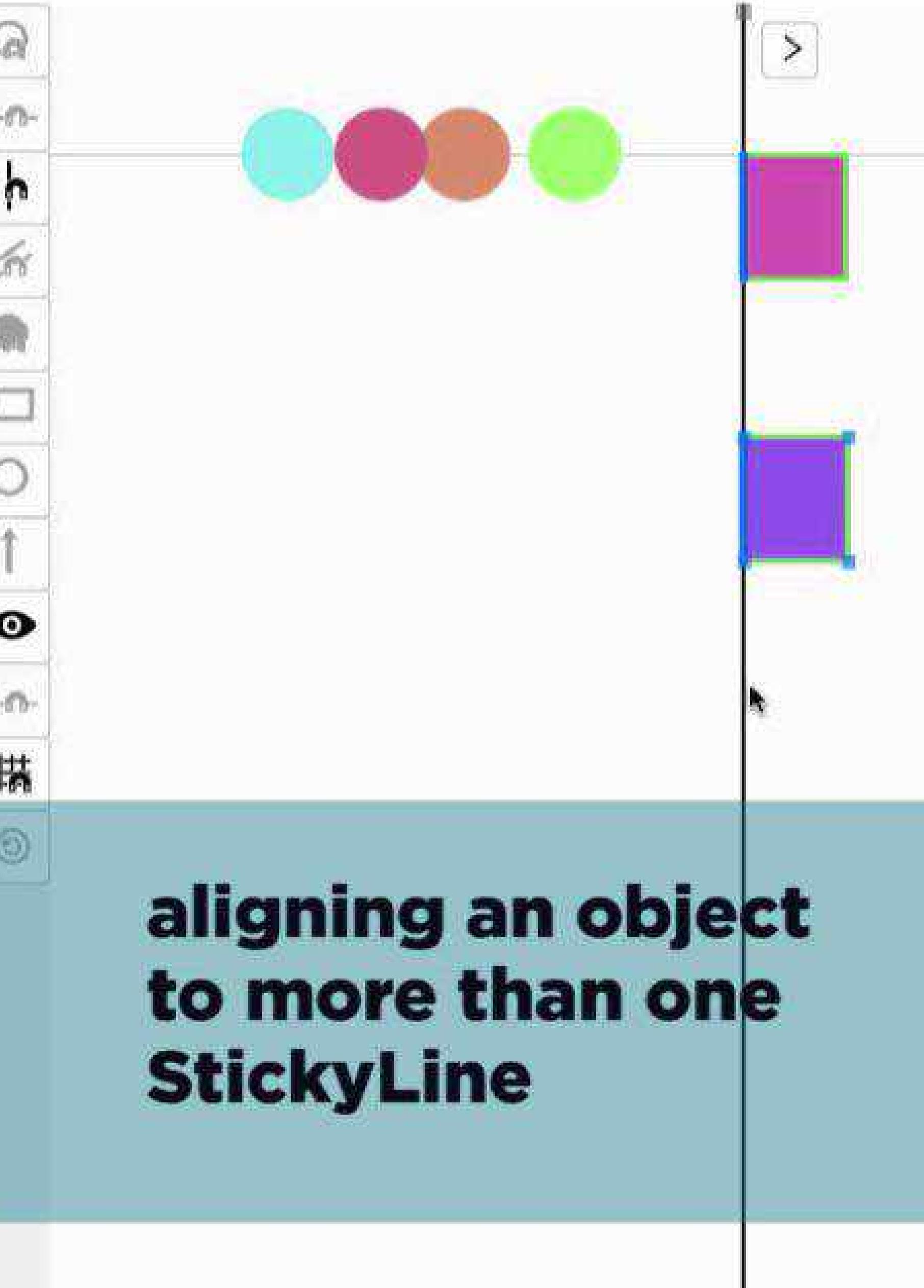
# ALIGNEMENT GRAPHIQUE



GUIDE MAGNÉTIQUE



# STICKYLINES



PARTAGER  
DES  
DOCUMENTS  
  
... ET DES  
OUTILS

PREMIÈRE PERSONNE  
ORDINATEUR-OUTIL



DEUXIÈME PERSONNE  
ORDINATEUR-PARTENAIRE



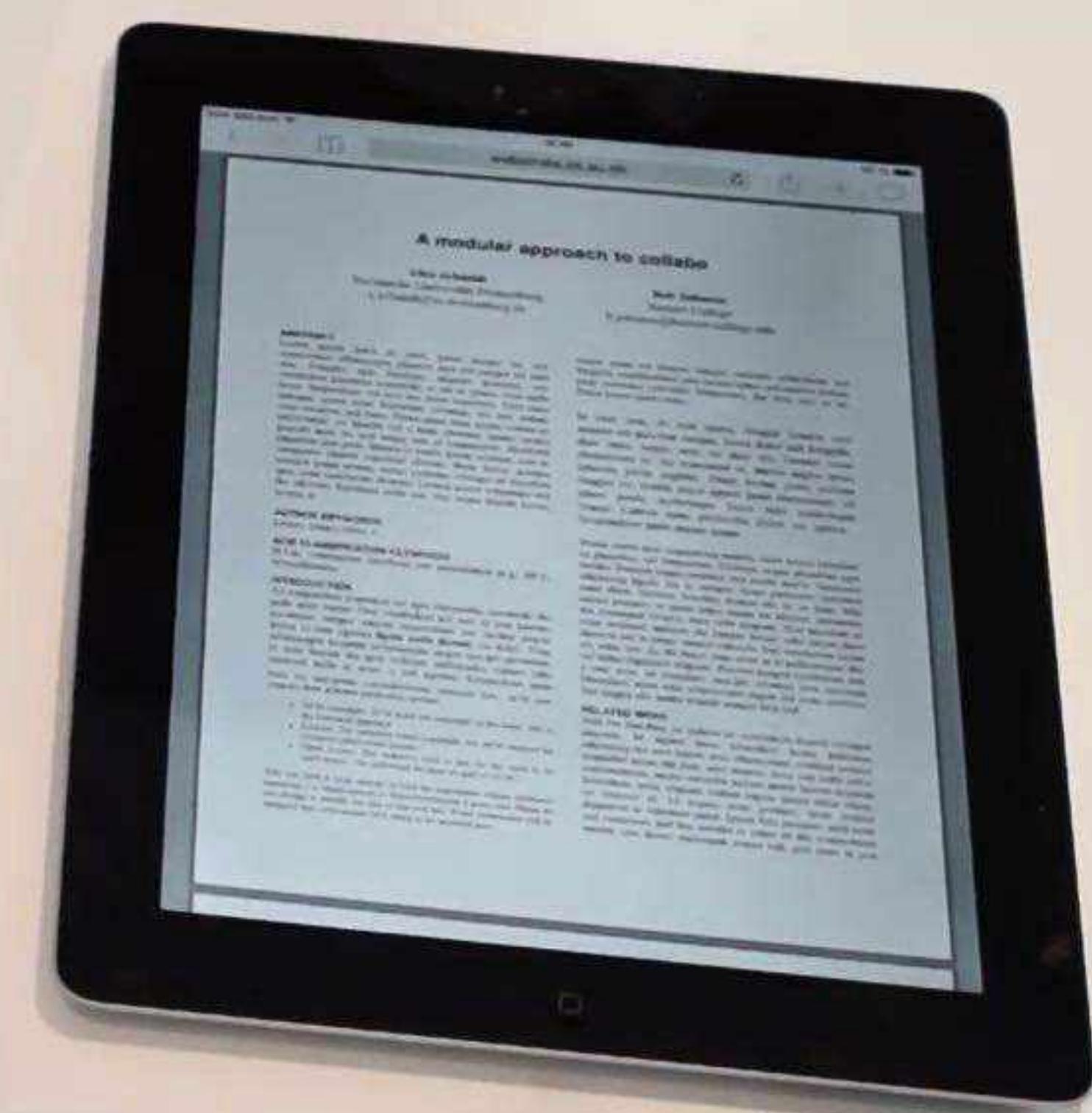
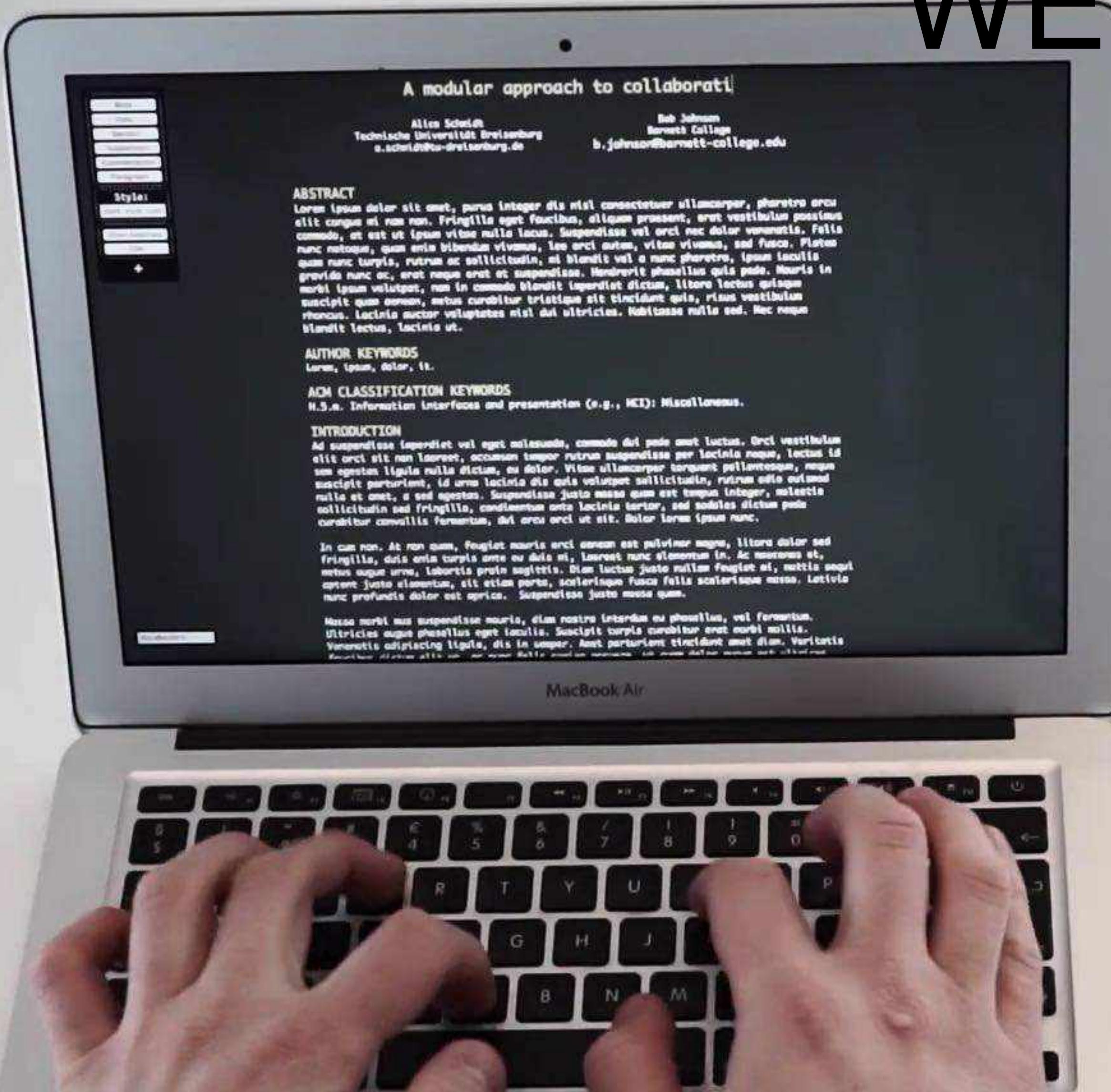
TROISIÈME PERSONNE  
ORDINATEUR-MÉDIA



—  
PARTAGER  
DES  
DOCUMENTS  
... ET DES  
OUTILS



# WEBSTRATES



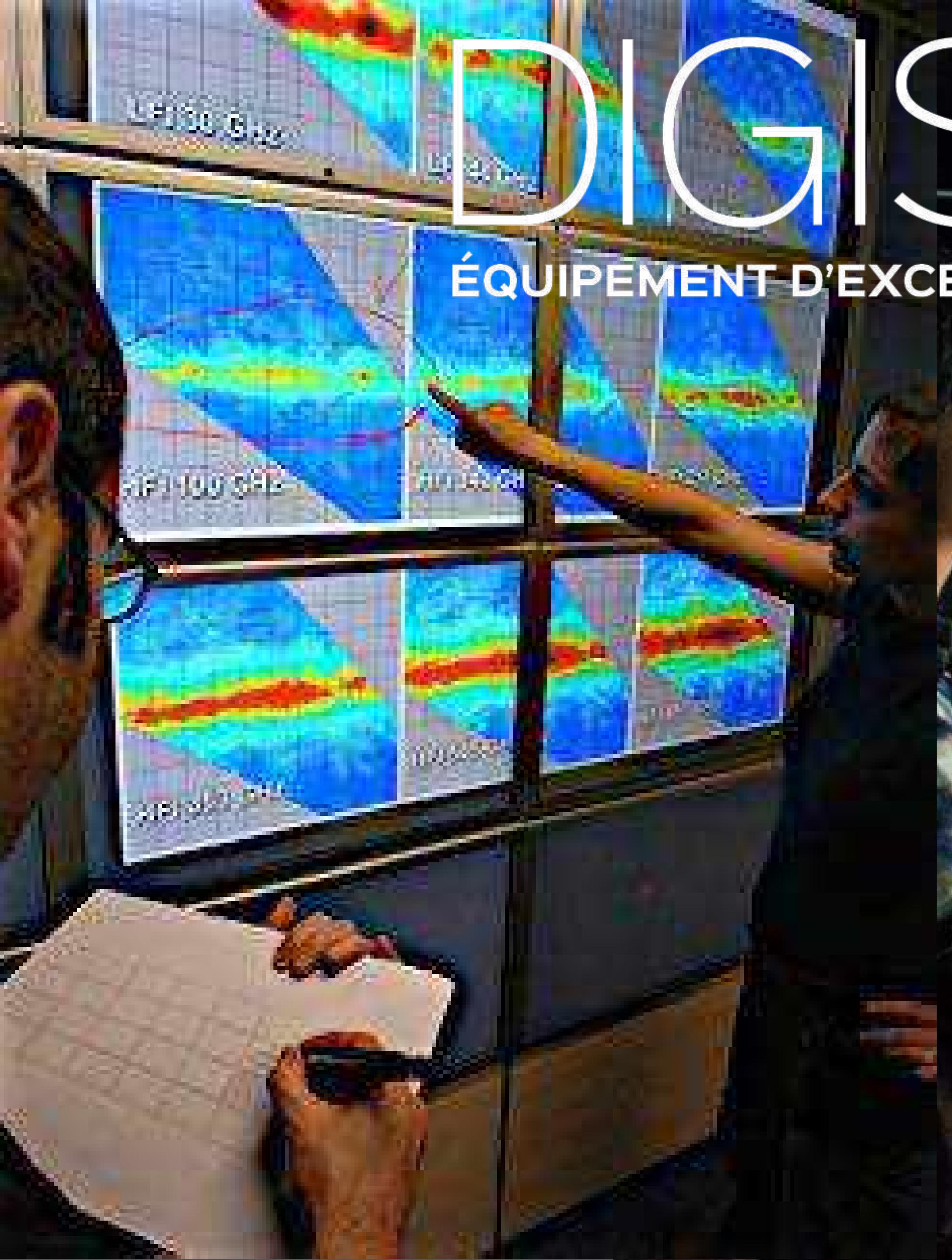
KLOKMOSE, EAGAN, BAADER, MACKAY, BEAUDOUIN-LAFON

# ENVIRONNEMENTS INTERACTIFS

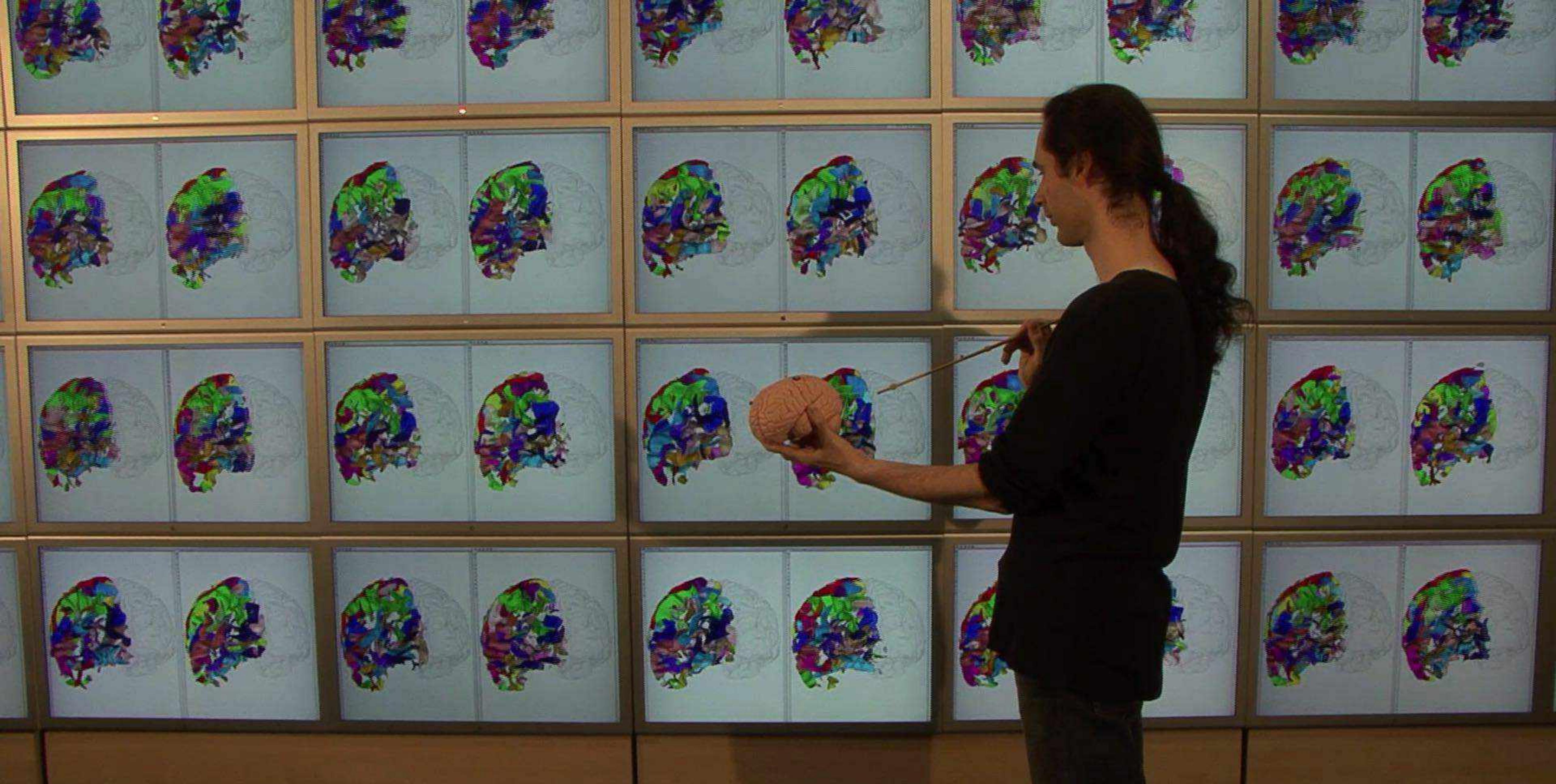


# DIGISCOPE

ÉQUIPÉMENT D'EXCELLENCE







GJERLUFSEN, KLOKMOSE, EAGAN, PILLIAS, BEAUDOUIN-LAFON

# COREACH



## Throw & Catch

LIU, CHAPUIS, BEAUDOUIN-LAFON, LECOLINET

CAMRAY



AVELLINO, FLEURY, MACKAY, BEAUDOUIN-LAFON

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CRÉER DES  
PARTENARIATS  
HUMAIN-  
MACHINE

PREMIÈRE PERSONNE  
ORDINATEUR-OUTIL



DEUXIÈME PERSONNE  
ORDINATEUR-PARTENAIRE



TROISIÈME PERSONNE  
ORDINATEUR-MÉDIA

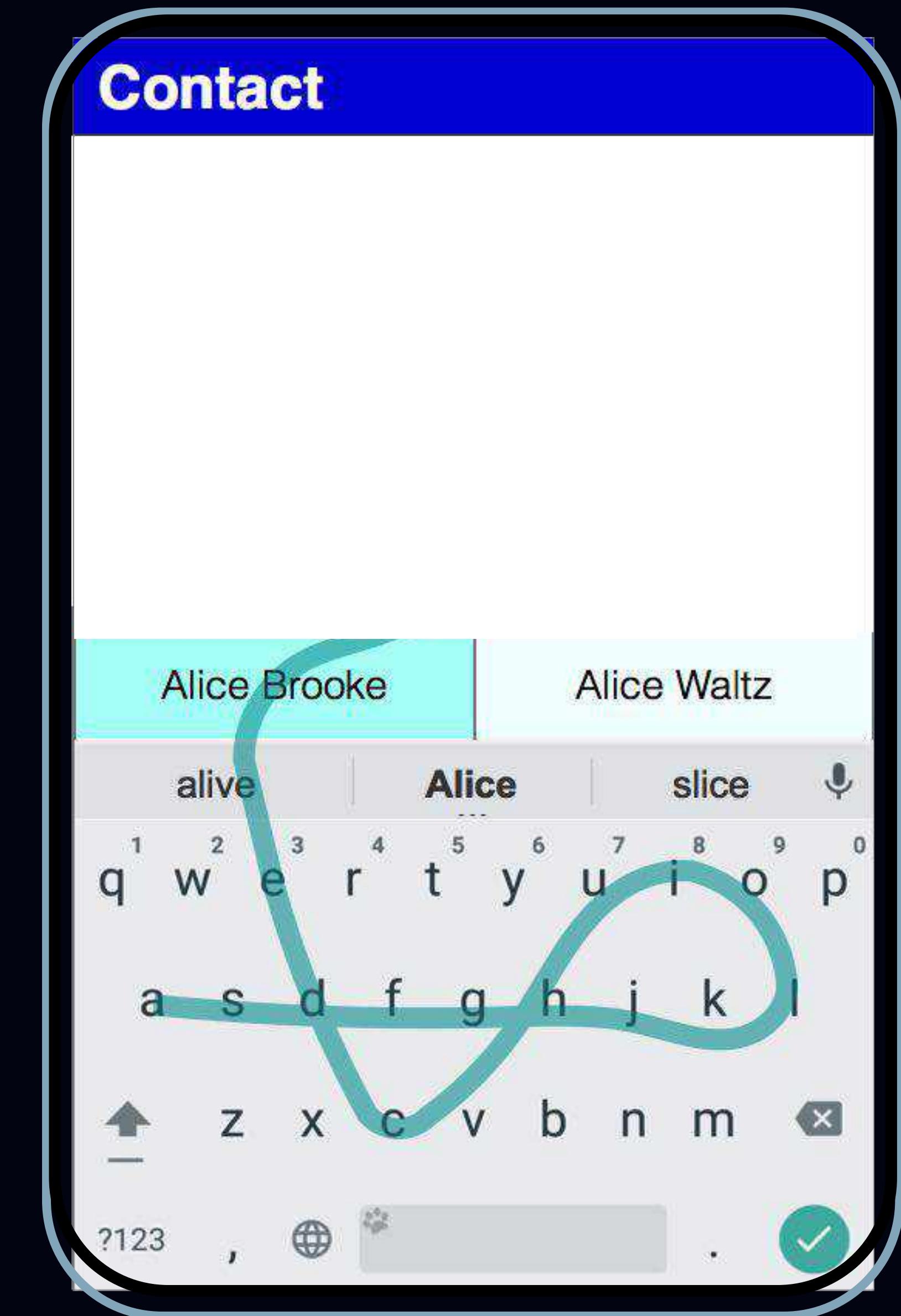


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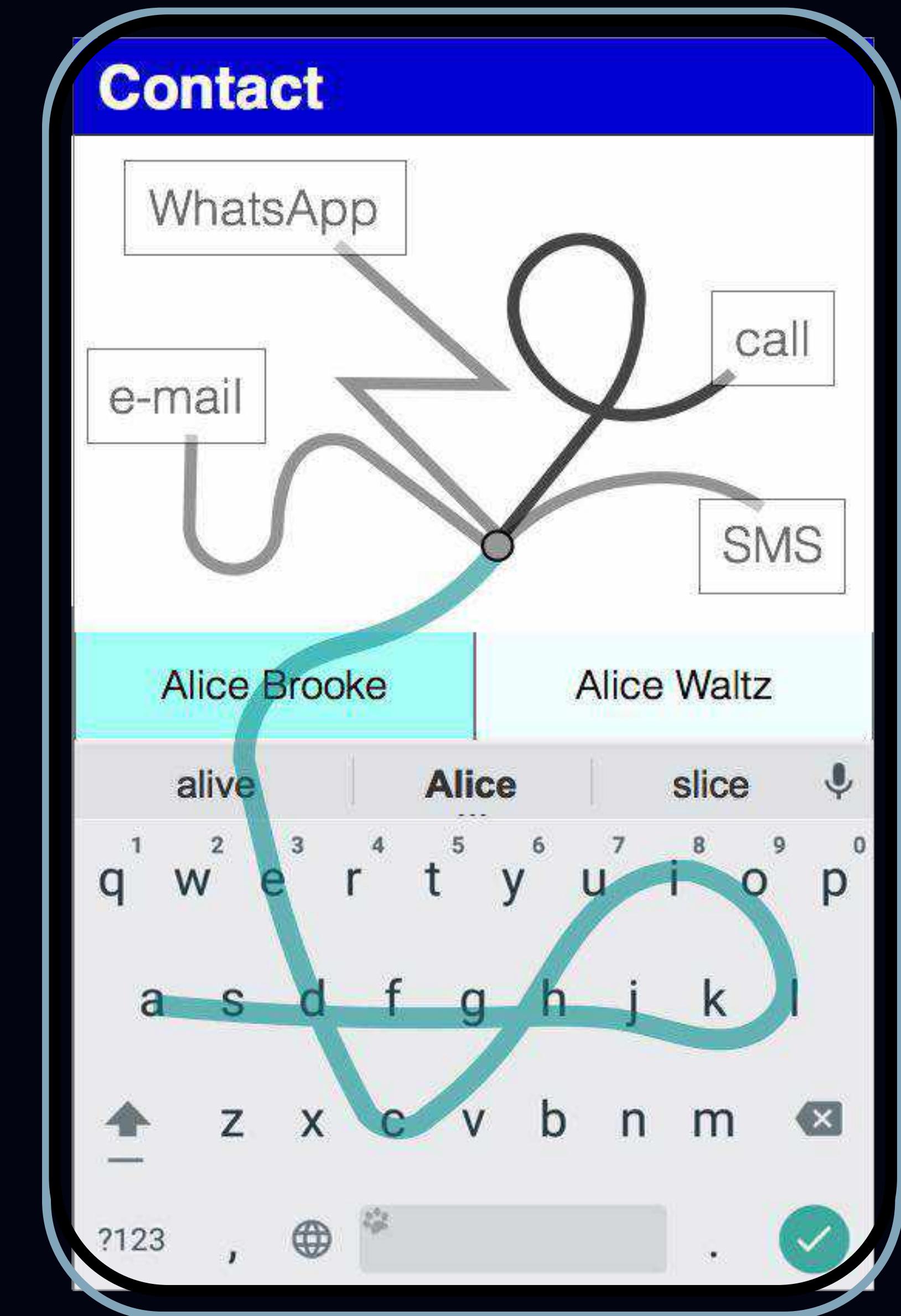
# DÉVELOPPER L'EXPERTISE HUMAINE



# COMMANDES GESTUELLES SUR SMARTPHONE



# COMMANDES GESTUELLES SUR SMARTPHONE



CommandBoard offers a simple, efficient and incrementally learnable technique for issuing gesture commands from a soft keyboard.

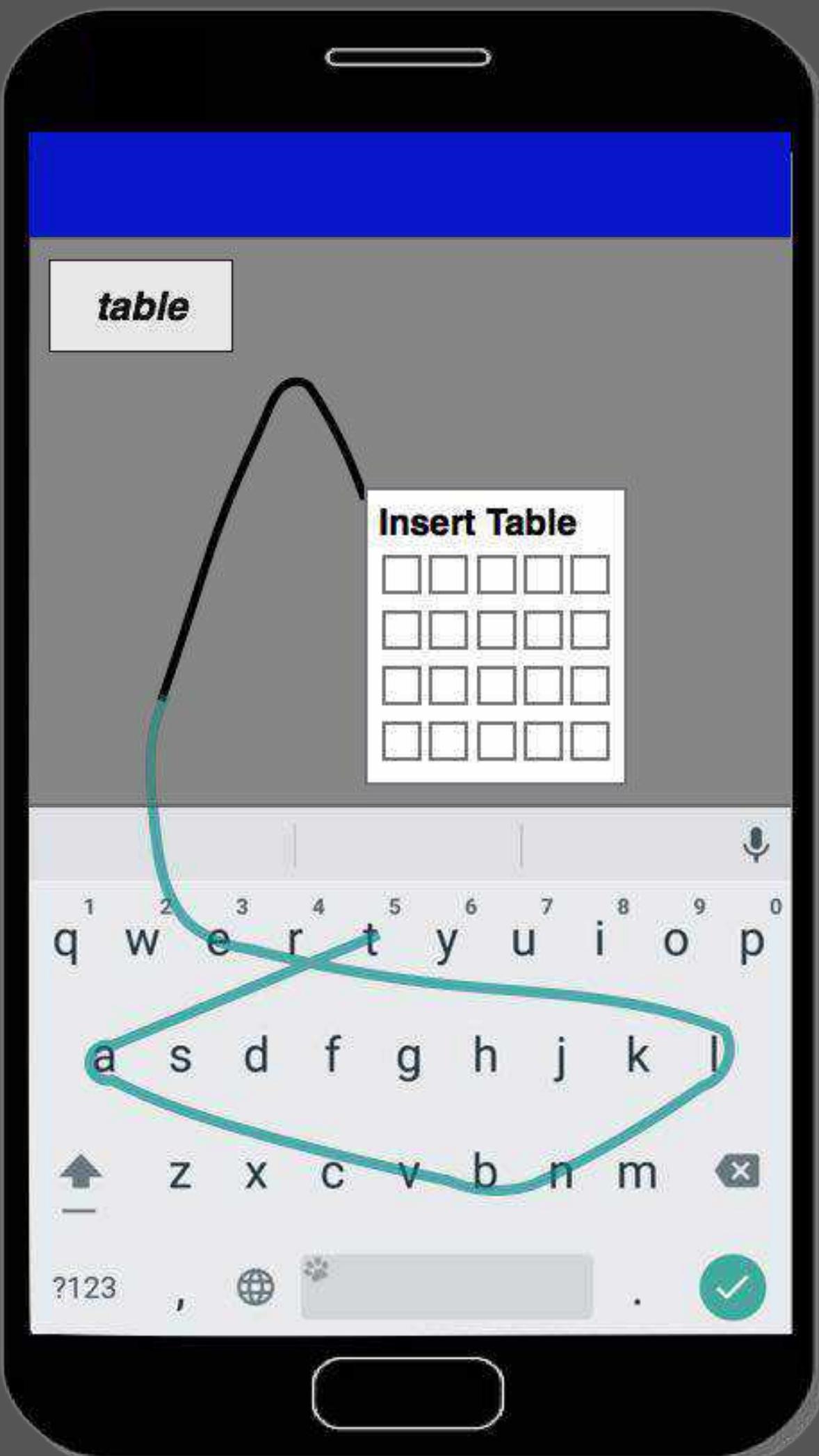
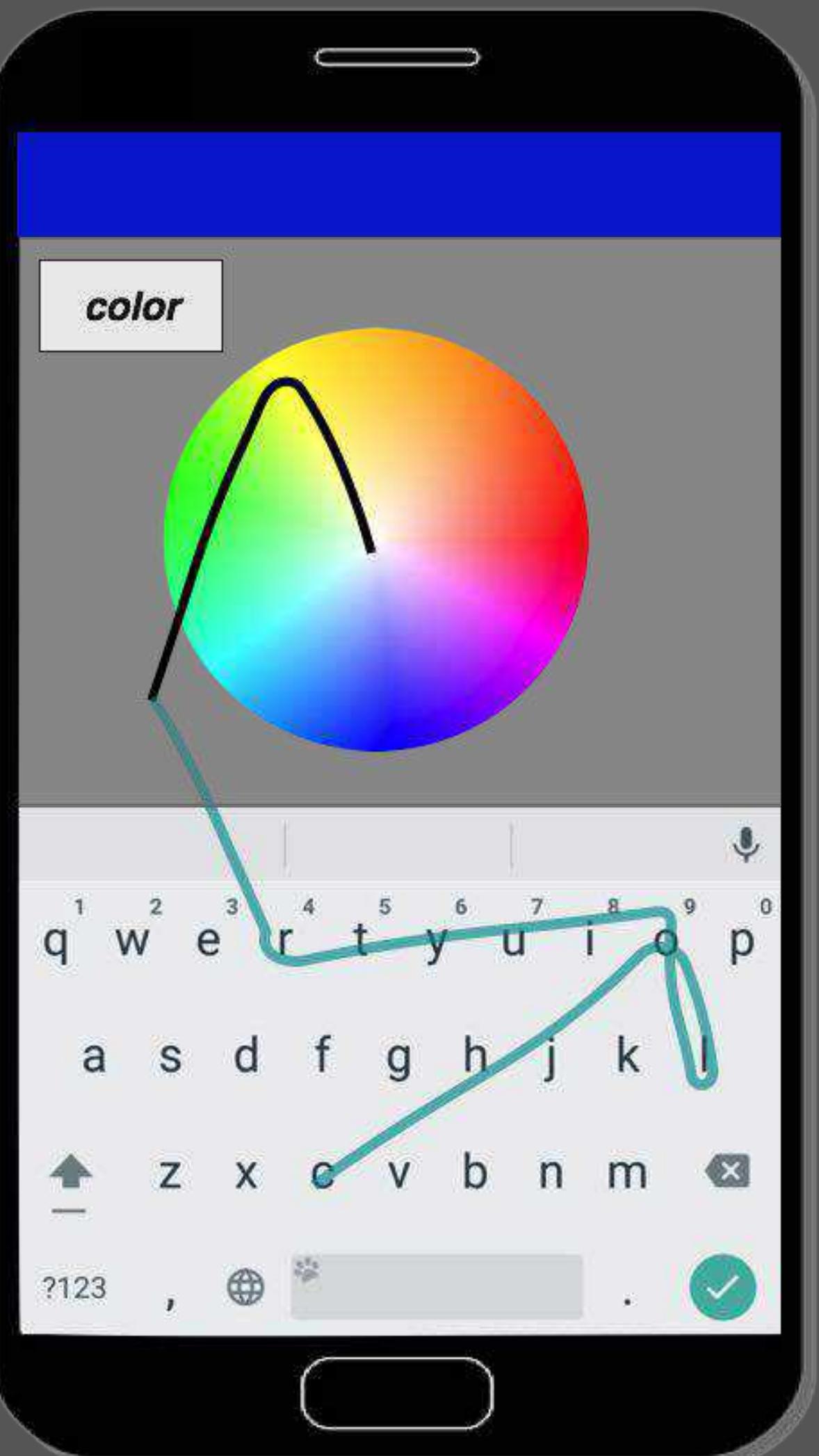
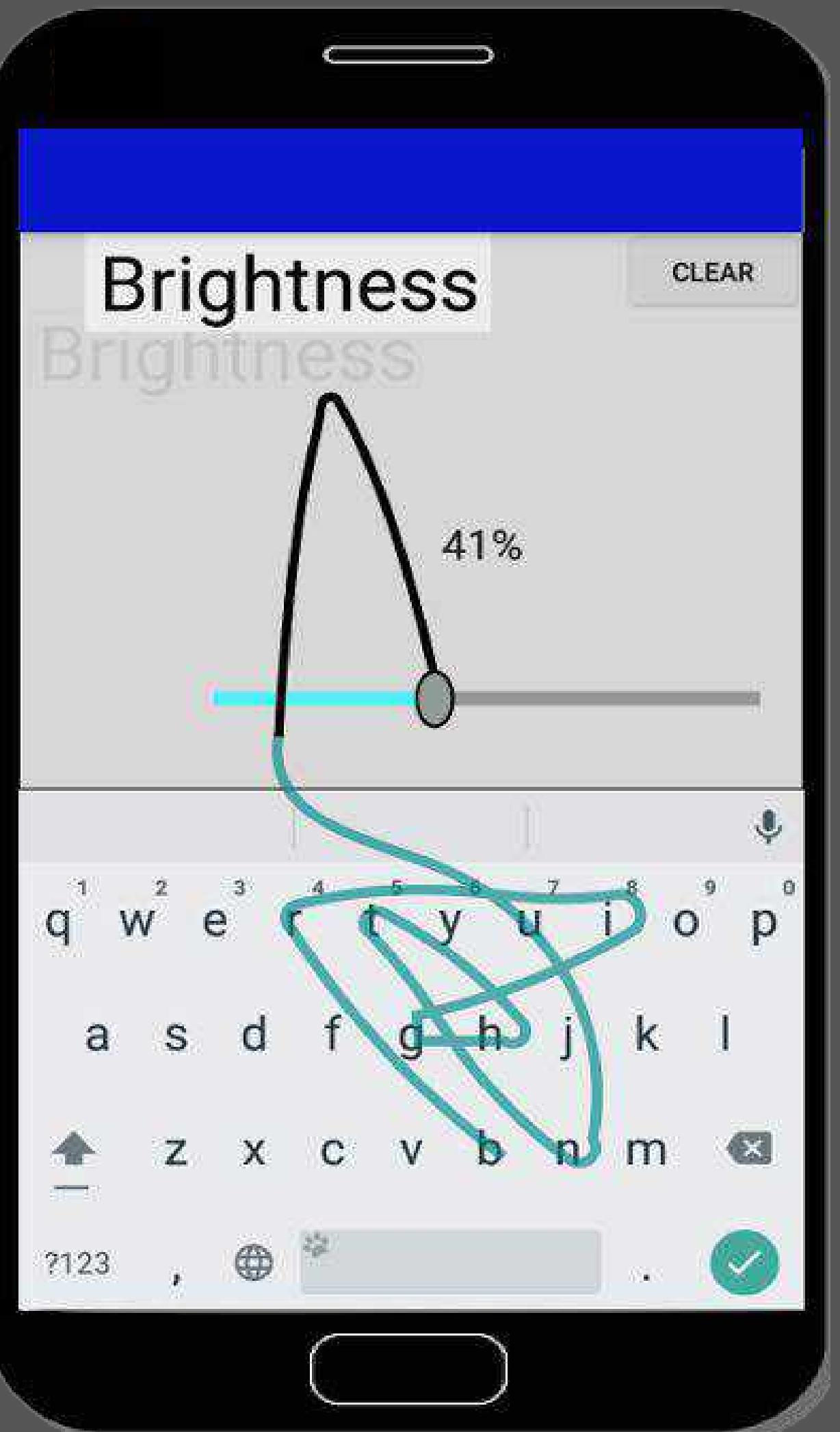
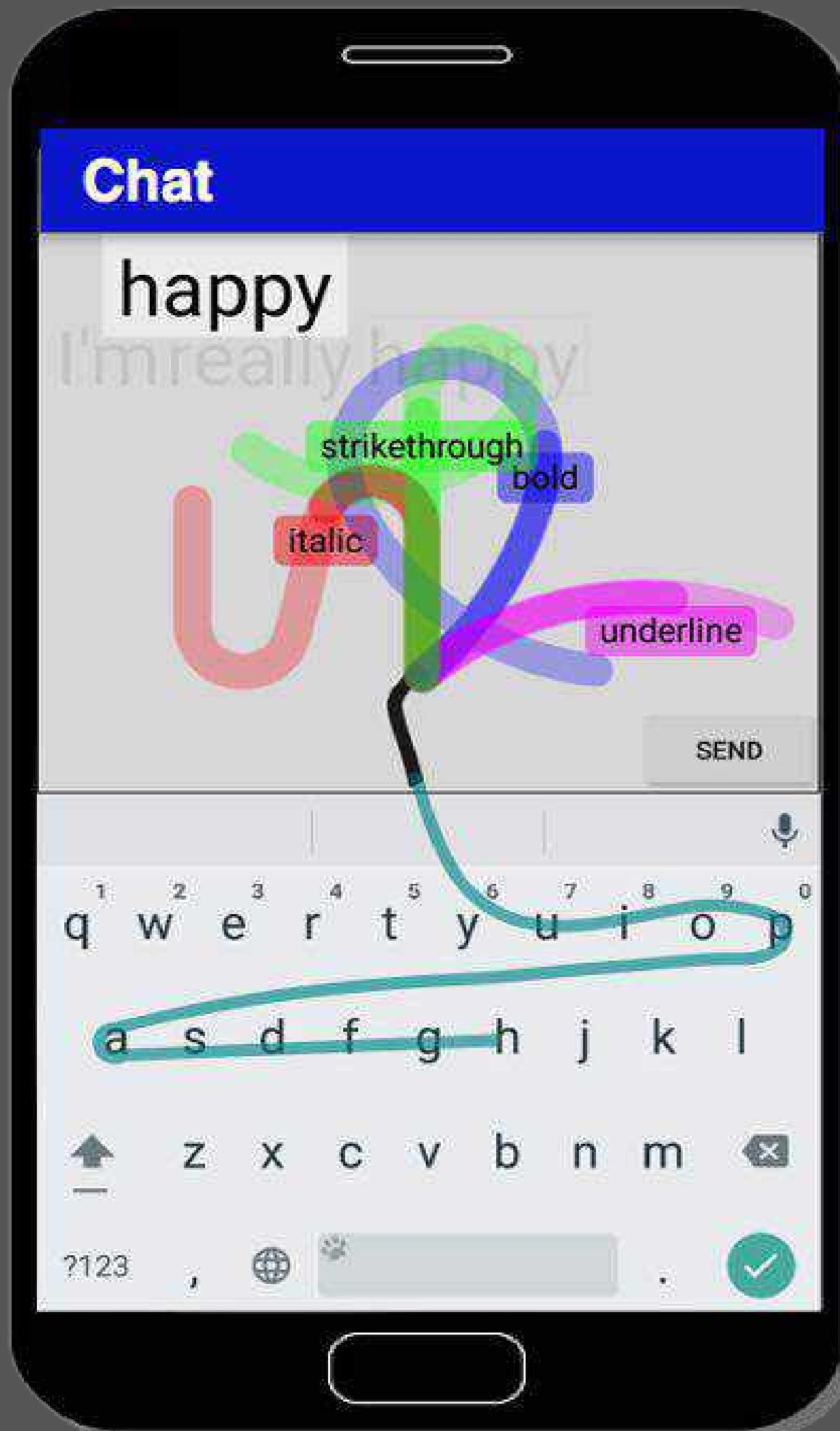


COMMANDBOARD



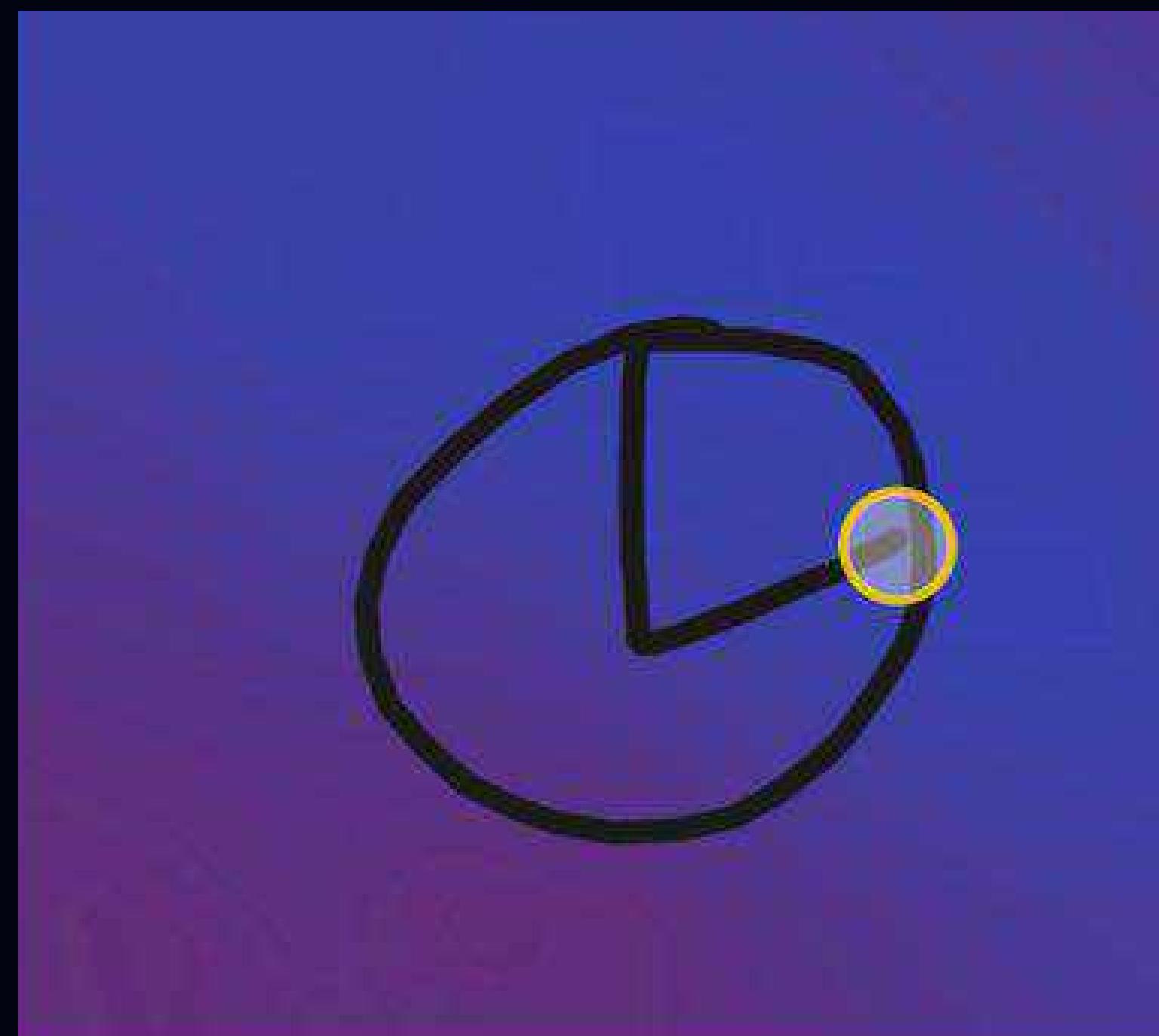
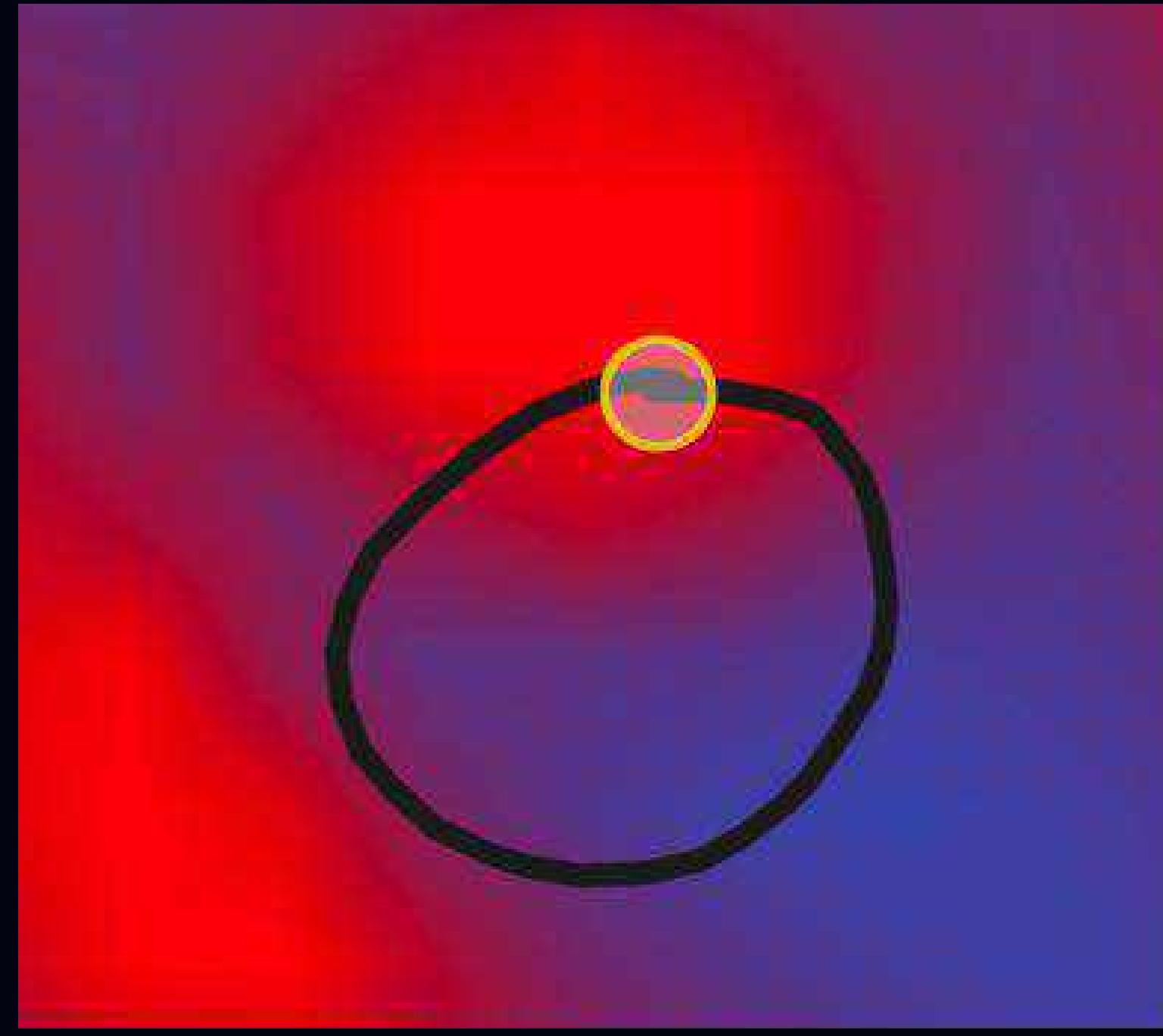
ALVINA, GRIGGIO, BI, MACKAY

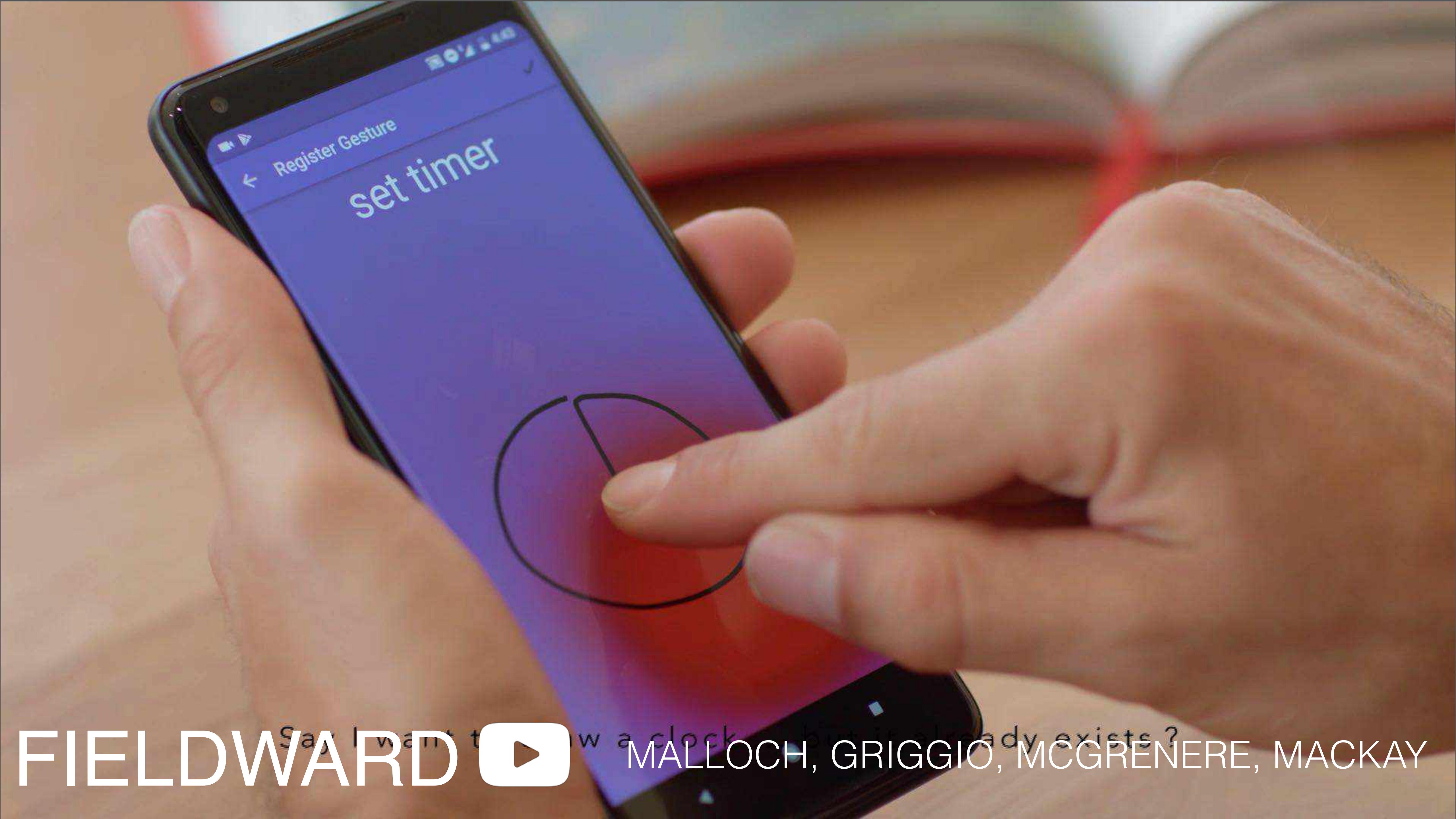
# PUISANCE D'EXPRESSION



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# CRÉER DE NOUVELLES COMMANDES





FIELDWARD  MALLOCH, GRIGGIO, MCGRENERE, MACKAY

# AJOUTER DE L'EXPRESSIVITÉ

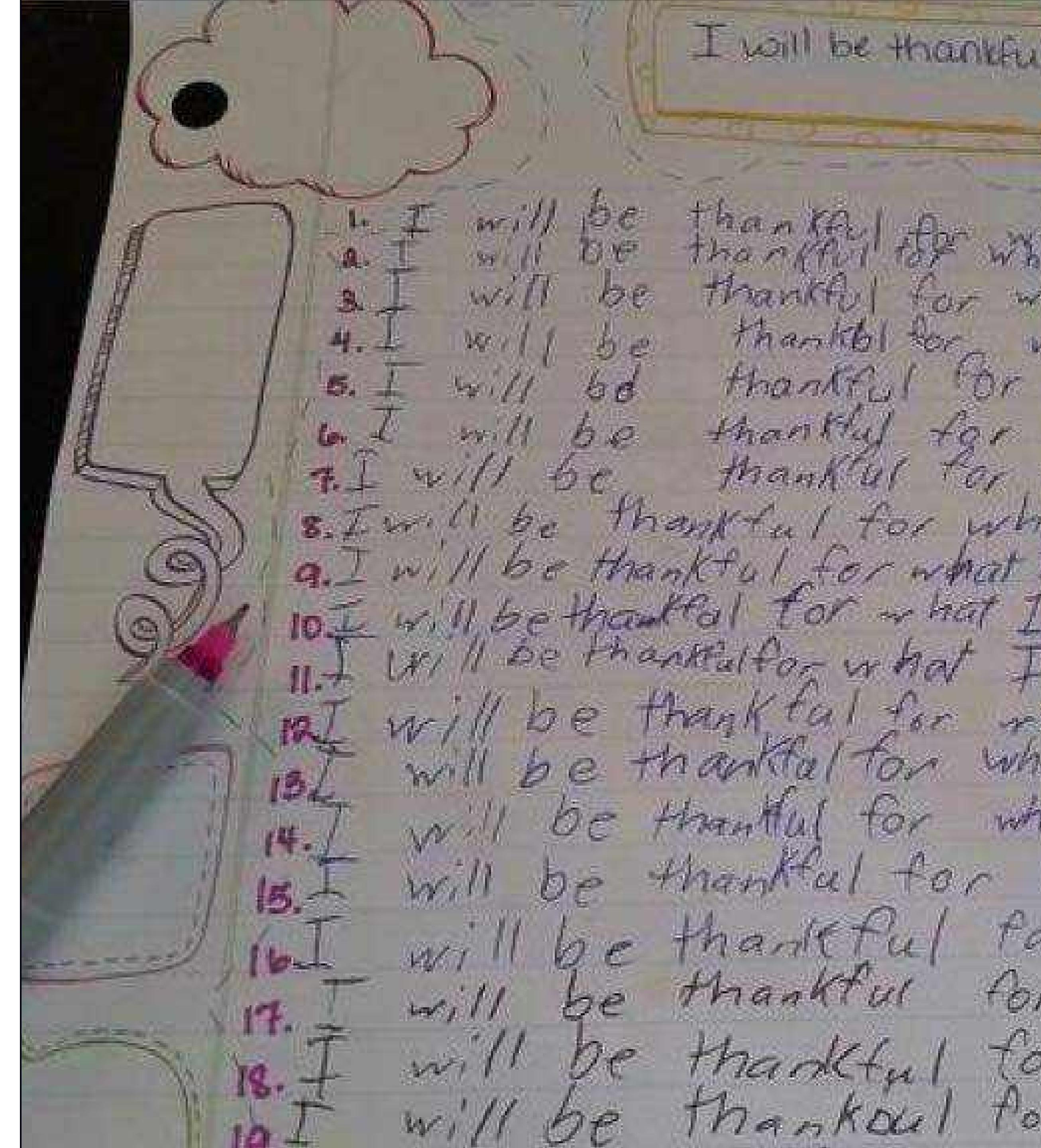
Hi

Can you talk?

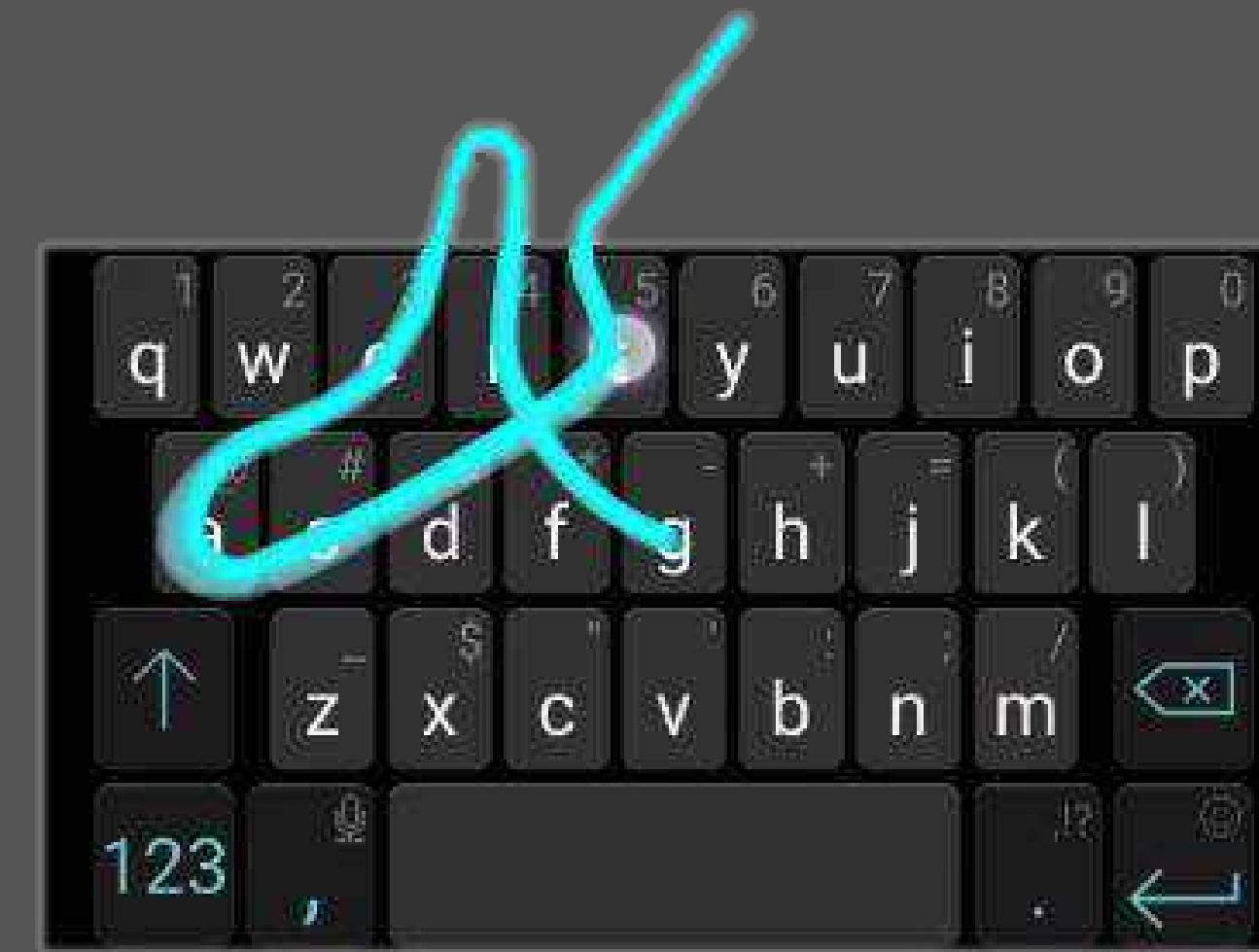
Give me a minute

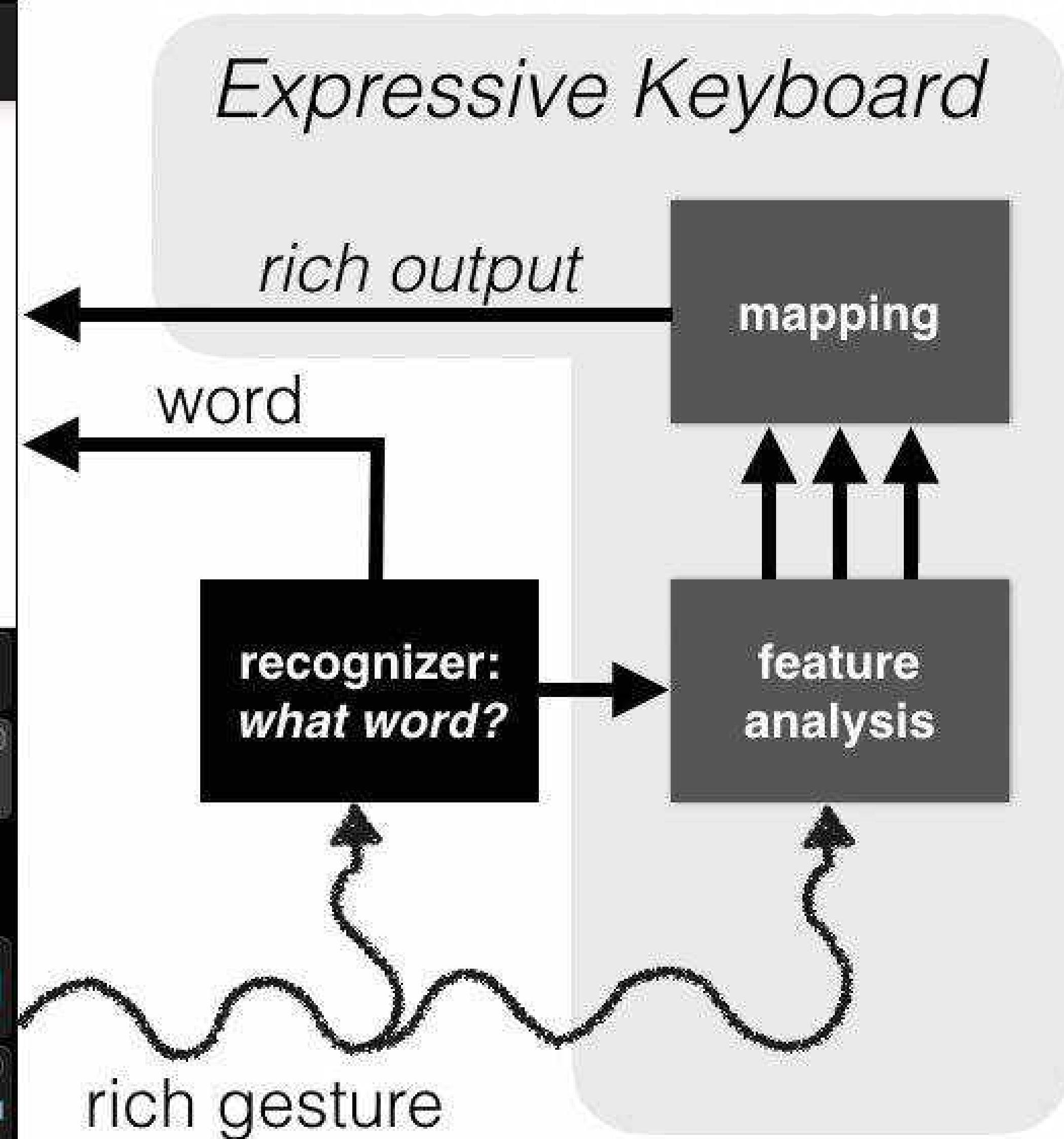
Ok

You can call



# 4 GRAPHIES DU MOT “GREAT”





These features can be mapped to color,  
change the expression of an emoji,

ALVINA,  
MALLOCH,  
MACKAY

# CONCLUSION

## CRÉER DES OUTILS NUMÉRIQUES

AUGMENTING HUMAN INTELLECT  
DOUGLAS ENGELBART

PRODUCE  
2A) CARROTS  
2B) BANANAS  
2B1) SKINLESS  
2D) ORANGES  
2D) APPLES  
NEMS  
LETTUCE  
FRENCH BREAD  
BEAN SOUP  
TONATO SOUP  
PAPER TOWELS  
ASPIRIN  
NOODLES (ELBOW FUND)  
BEANS  
SCOTCH TAPE



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# CONCLUSION

HUMAIN DANS LA BOUCLE



# CONCLUSION



HUMAIN DANS LA BOUCLE  
VS  
ORDINATEUR DANS LA BOUCLE



# CONCLUSION

CRÉER DES  
PARTENARIATS  
HUMAIN-  
MACHINE

HUMAIN DANS LA BOUCLE  
VS  
ORDINATEUR DANS LA BOUCLE





<http://ex-situ.fr>

MERCI !  
QUESTIONS ?

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