



DANISH MEAT
RESEARCH INSTITUTE

Augmented Reality i fødevarerproduktionen

- er virkeligheden ikke virkelig nok?

Lars Bager Christensen
Senior Scientist, MSc, PhD

Augmented Reality

Indhold

Hvad er AR

Hvem bruger det allerede

Fordele ved AR

Platforme

Lidt teknik

En lille demo

Er det relevant for din produktion



DANISH MEAT
RESEARCH INSTITUTE

Hvad er AR?



DANISH MEAT
RESEARCH INSTITUTE

Augmented reality (også kaldet **suppleret, udvidet eller forstærket virkelighed**) er en teknologi, som kombinerer [data](#) fra den fysiske verden med virtuelle data, for eksempel ved brug af [grafik](#) og lyd. Man får et ekstra lag af information. Den [ekstra information](#) vil typisk ikke erstatte virkeligheden, men udvide den på en eller flere måder.



www.telegraph.co.uk

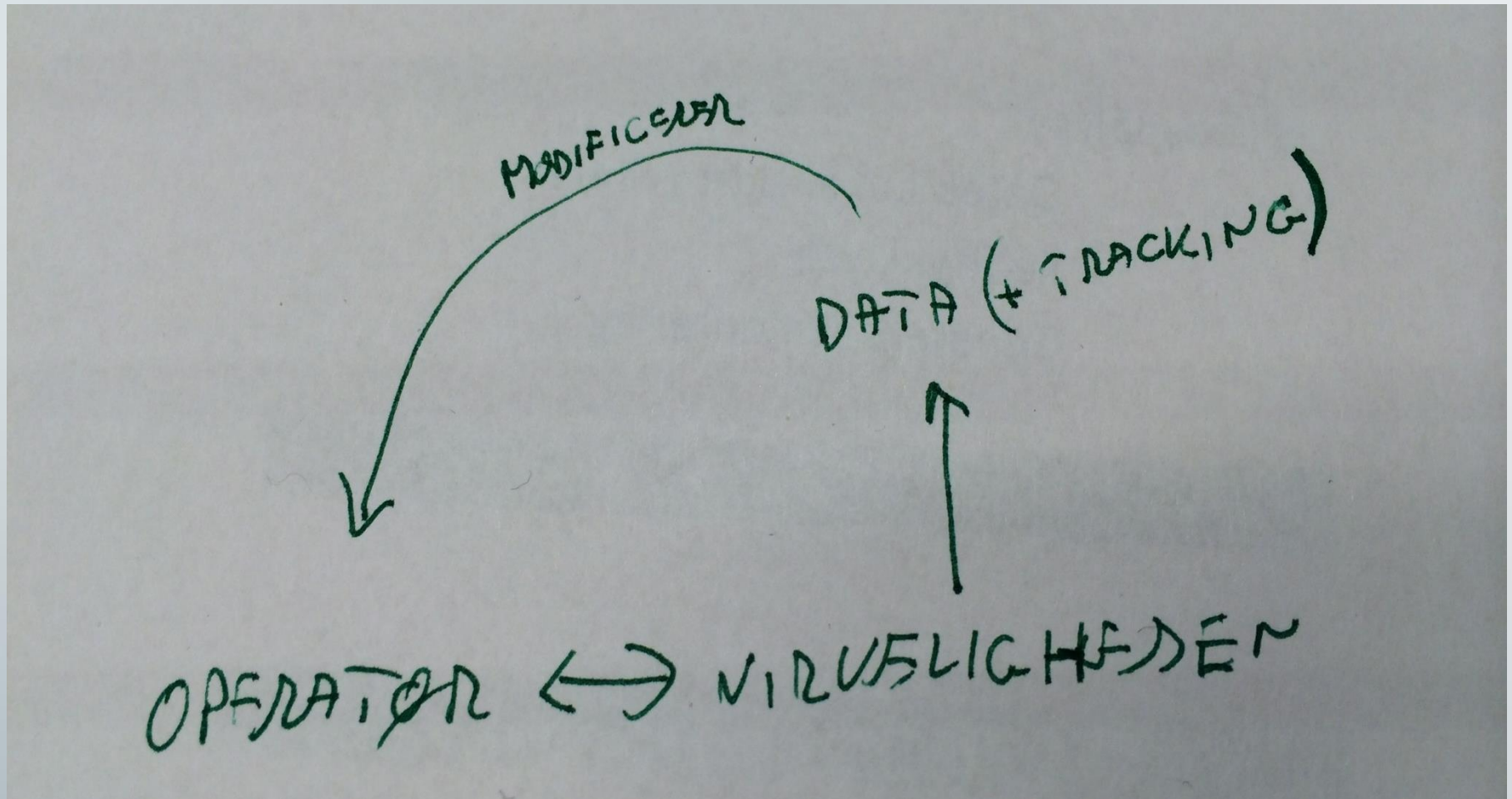


www.mirror.co.uk

AR er bare



DANISH MEAT
RESEARCH INSTITUTE



Hvad bruges det til?



DANISH MEAT
RESEARCH INSTITUTE

- Arkæologi
- Arkitektur
- Kunst
- Detailhandel
- Byggeri
- Uddannelse
- Redningstjenester
- Spil
- Proces assistance
- Industrielt design
- Medico

Fra Wikipedia

TEST RESULTS

Model	Percentage
Vuzix M-100	50%
GOOGLE GLASS	85%
EPSON Moverio BT 200	93%
LUMIS DK-40	83%

AVERAGE OF ALL PARAMETERS

Their answers determined that the Epson Moverio BT-200 provided the perfect solution for Mekerol Company technicians.

inger

Hvem bruger det allerede?

Hvorfor mon?
SAP siger det sådan:

- Accelerate decision making, increase **productivity**, and boost productivity and service **quality**
- Incorporate enterprise-ready wearables and **smart glasses** across your value chain
- **Narrow knowledge gaps** quickly through remote expert calling, visualization, and animation
- Empower employees to **work hands-free** using **gestures** and **voice recognition** to access information



DANISH MEAT
RESEARCH INSTITUTE

Boost Your Workplace Safety and Reliability with Mobile

Mobile Transforms Enterprise Asset Management



Best-in-class companies are **2.5 times** more likely than the industry average to use mobile devices while making their maintenance rounds¹

Companies that use mobile apps for inventory management can reduce their manpower hours by

75%²



SAP customers have experienced these types of improvements in their workforce:²

Safety incidents reduced to near **zero**

Work capacity increased by **10 to 20%**

Labor productivity increased by up to **50%**

Idle time and overtime reduced by **40 to 60%**

Rework reduced by **15 to 20%**

In respect to their assets, SAP customers have seen these kinds of improvements:²

Downtime and production delays reduced by **20 to 30%**

Preventable failures reduced by up to **90%**

Maintenance backlog reduced by up to **60%**

Inventory carrying costs reduced by **5 to 10%**



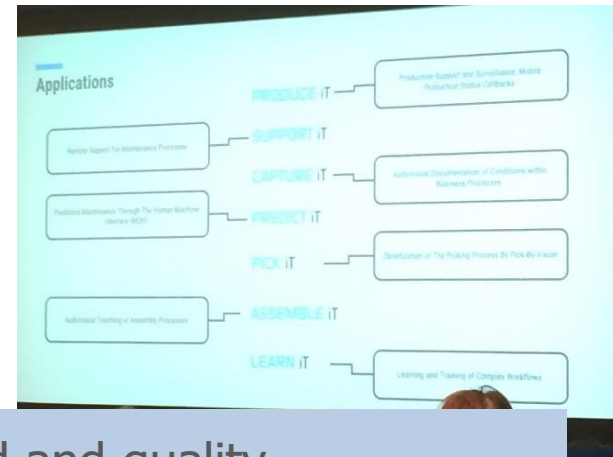
Learn more about how to integrate mobile enterprise asset management apps into your organization in the Mobile Transforms Enterprise Asset Management e-book at www.sap.com/mobile/EAMobile and enterprise asset management mobile apps by SAP at www.sap.com/mobile/EAM. For more information on Enterprise Asset Management visit www.sap.com/eam.

Itizzimo

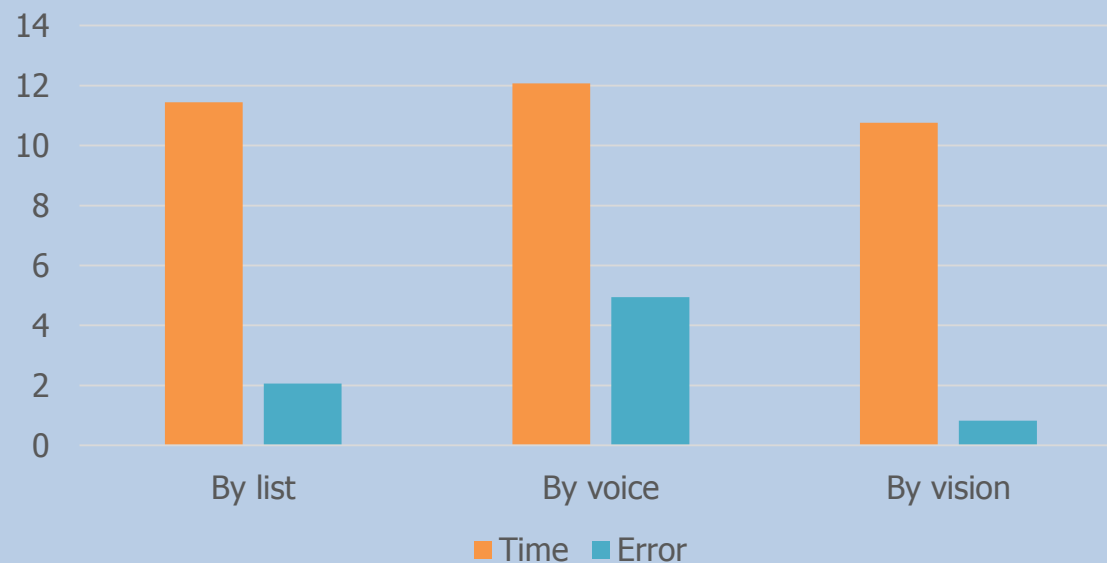


DANISH MEAT
RESEARCH INSTITUTE

- ProduceIT
- SupportIT
- CaptureIT
- PredictIT
- PickIT
- AssembleIT
- LearnIT



Picking speed and quality



VW opsummerer det sådan



DANISH MEAT
RESEARCH INSTITUTE

Resume

- Virtual Technologies are integrated into industrial processes
- Virtual Technologies save time, cost and increase quality

But

- There are further challenges
- We need persons who take the challenge

The screenshot shows a presentation slide from Volkswagen. At the top, it says 'VOLKSWAGEN'. The main title is 'Resume and Outlook'. Under 'Resume', it lists: 'Virtual Technologies are integrated into industrial processes' and 'Virtual Technologies save time, cost and increase quality'. Under 'Outlook', it lists: 'Change of paradigm: Visualization > Simulation', 'Breakthrough of markerless tracking', 'HMDs getting used', and 'Increasing number of AR applications'. There are three small images: a car, a person wearing an HMD, and a VR headset. Under 'BUT', it lists: 'There are further challenges' and 'We need persons who take the challenge'. At the bottom, it says 'Stand: 01.09.2014' and 'Konzeption: ...'.

Opsummering på **insideAR 2014**
af Prof. Dr. Werner Schreiber

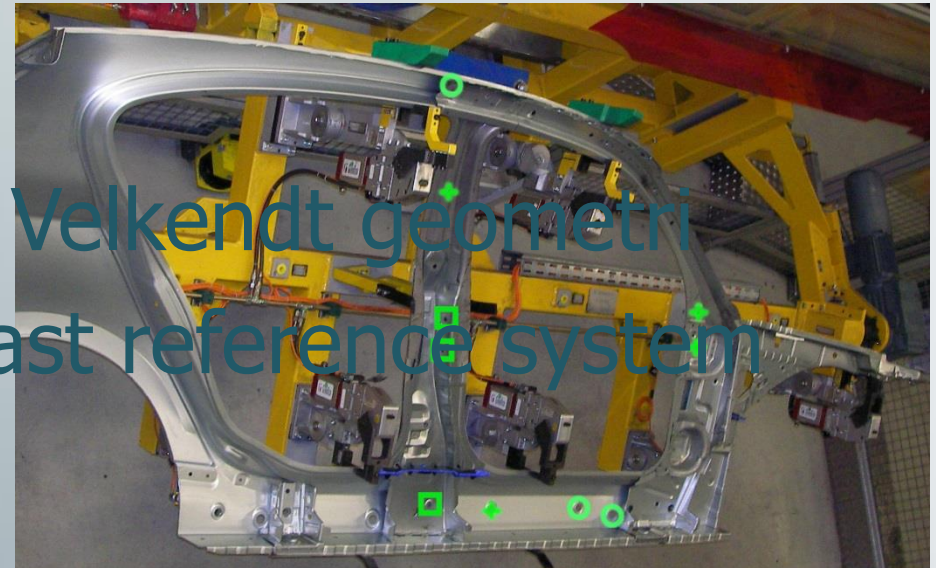
<http://www.insidear2014.com/>

Hjælpeværktøj til QC

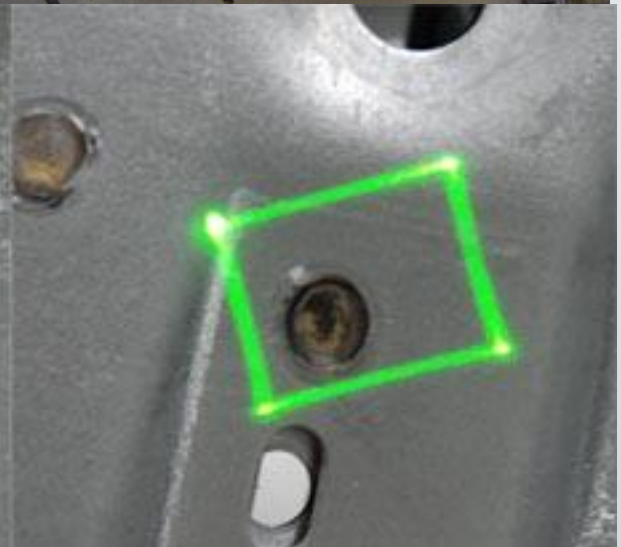
- augmented reality i bil industrien



DANISH MEAT
RESEARCH INSTITUTE



Velkendt geometri
Fast reference system



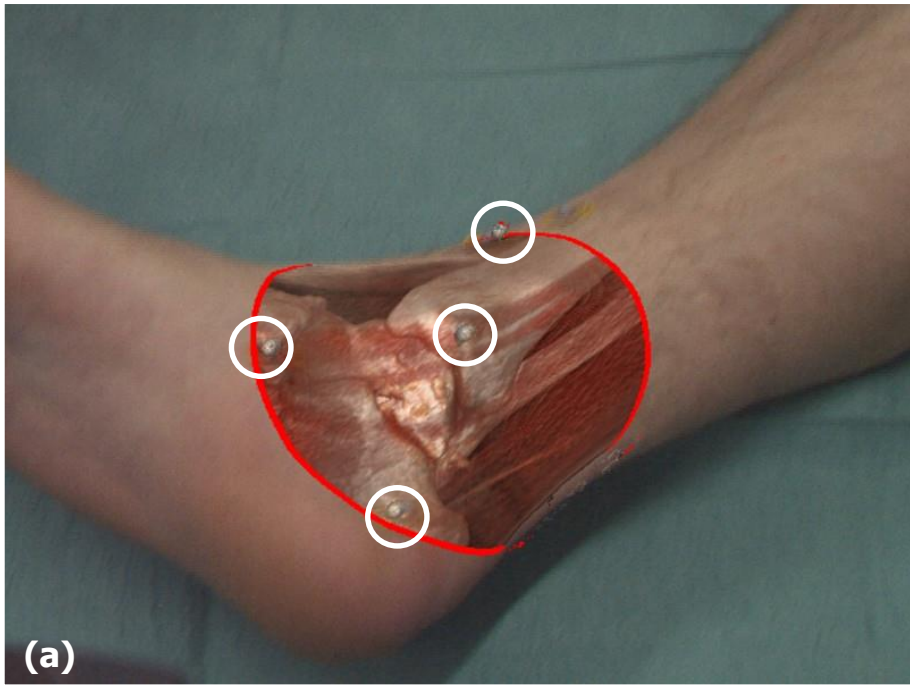
Hjælpeværktøj til kirurgi

- Minimally Invasive Surgery



DANISH MEAT
RESEARCH INSTITUTE

- Hurtigere restitution
- Pre-operativ planlægning
- Optimering af arbejdsgang



(a)

- Ukendt geometri
- Ingen reference system
- Brug af fiducial marks

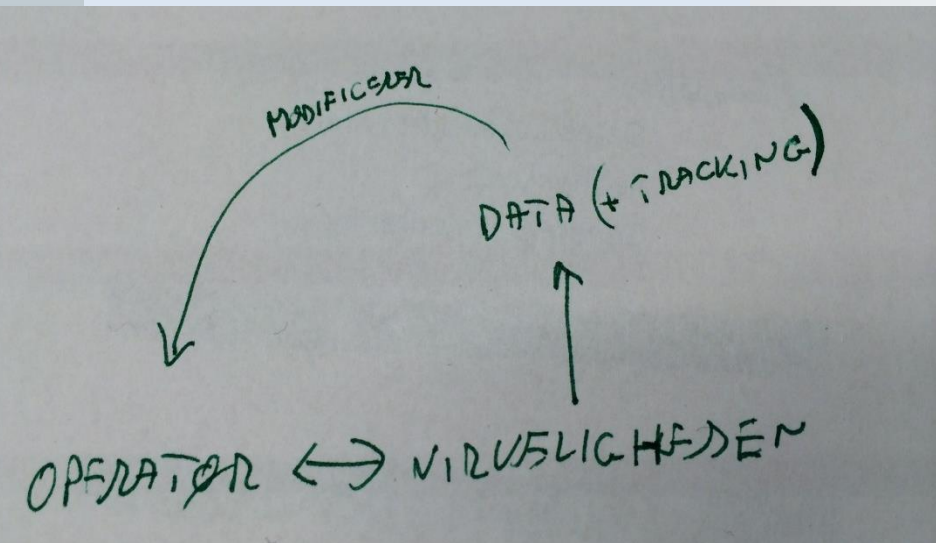


(b)

Lidt teknik



DANISH MEAT
RESEARCH INSTITUTE



<http://www.junaio.com/download/>

Smart glasses

- en håndfri smart phone



DANISH MEAT
RESEARCH INSTITUTE

>10 m
Batt
Kon
FoV



“I think there is a worldwide market for maybe five computers.”



IBM president
Thomas J. Watson
1943

A VERY BRIEF HISTORY OF AUGMENTED REALITY GLASSES

1968.....2008.....2014.....?



From Stunning Genesis to
Lingering in the Middle Ages



The Smartphone-Driven
Renaissance



The Dawn of the
Glass Enlightenment



Meta Pro

ODG F6

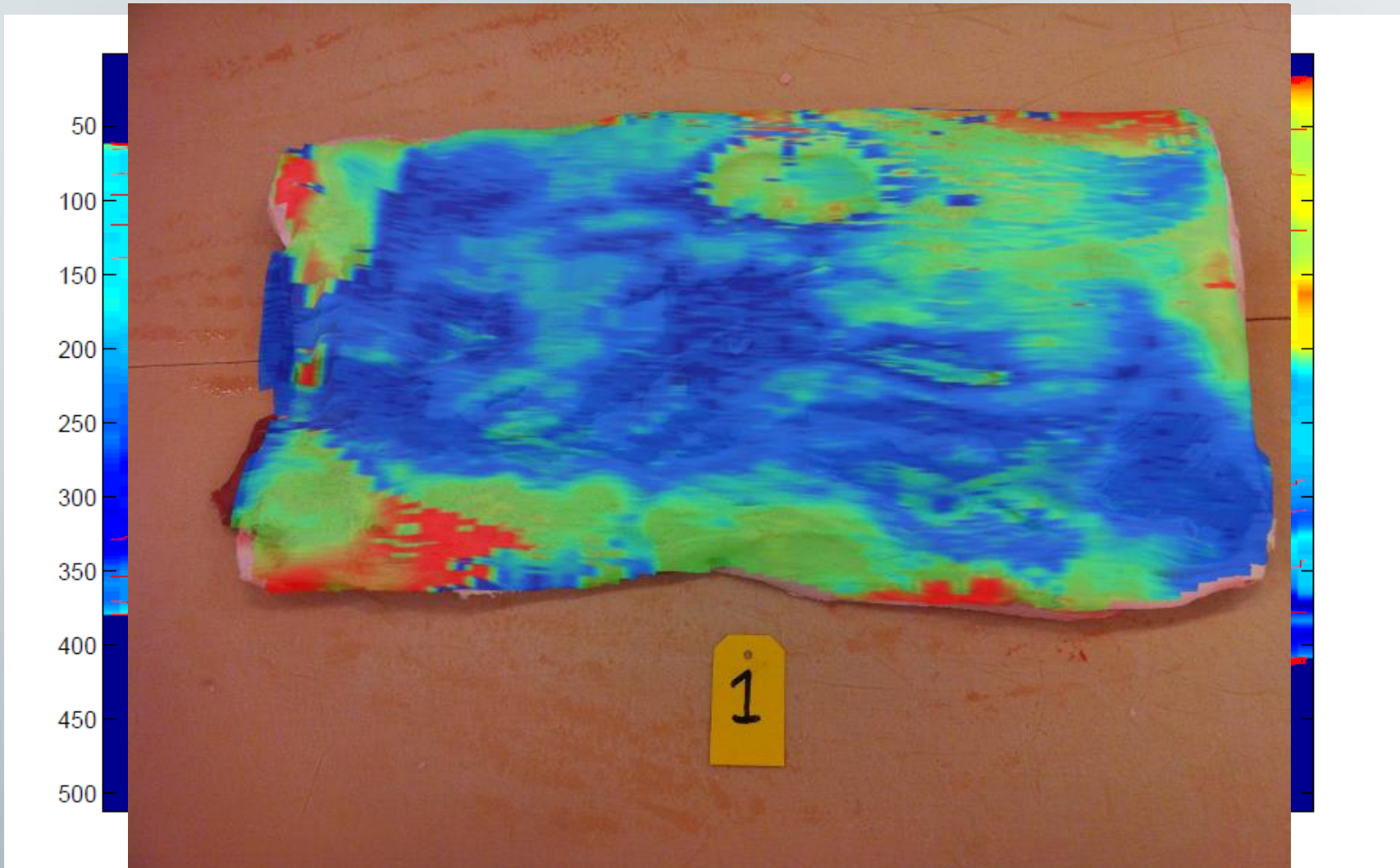


Ken Olson,
President of Digital Equipment Corporation 1977

Anvendelse type 1: Trimme operation



DANISH MEAT
RESEARCH INSTITUTE

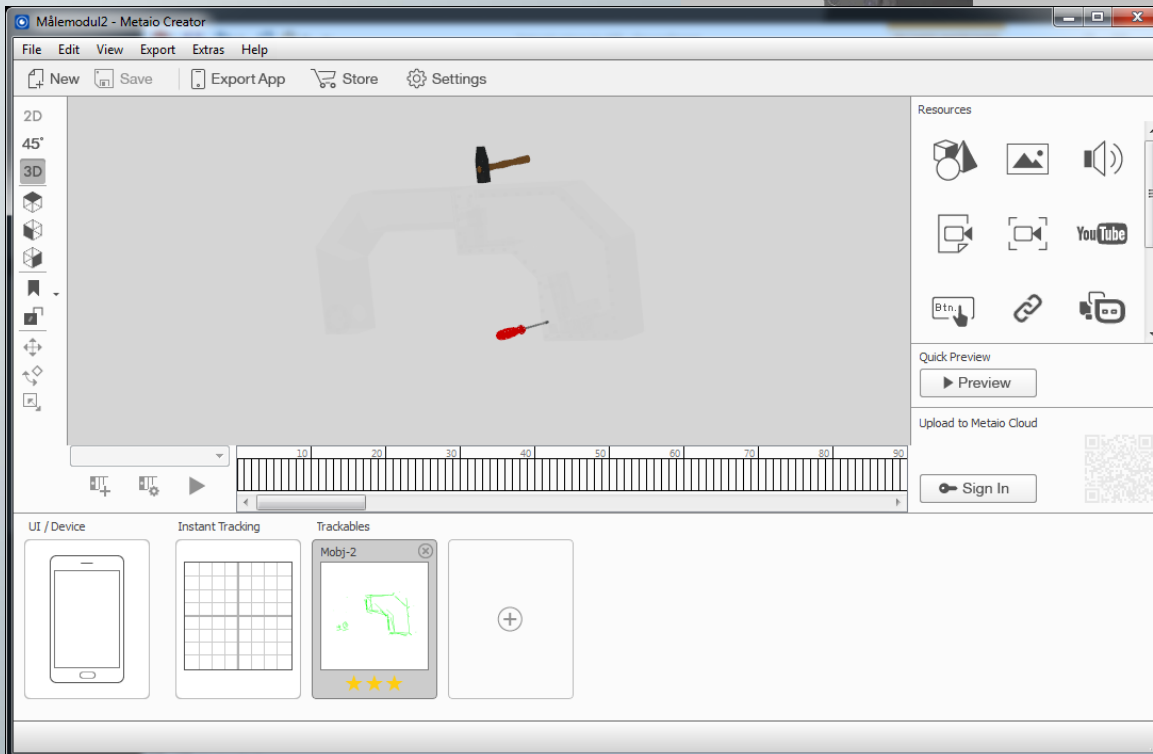
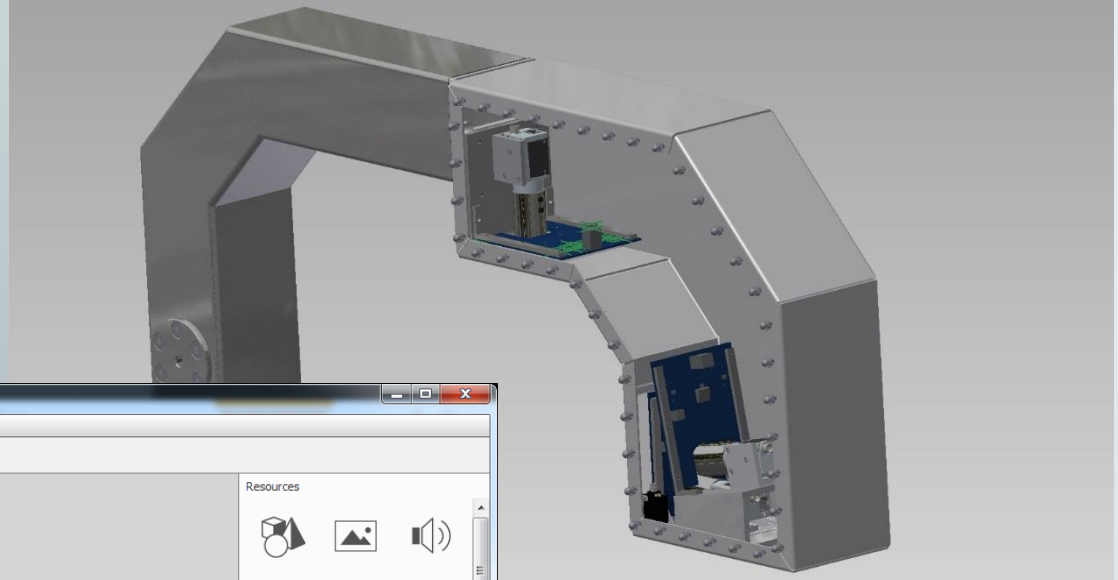


Anvendelse type 2: Målemodul service



DANISH MEAT
RESEARCH INSTITUTE

3D tracking CAD modeller



Et eksempel



DANISH MEAT
RESEARCH INSTITUTE

- Anvendelse
- Hvilke data
- Hvordan videregives de
- Hvad skal trackes
- Hastighedskrav



<http://www.insidear2014.com/>

Kan AR give dig en fordel?



DANISH MEAT
RESEARCH INSTITUTE

Producerer du kompliceret udstyr?

Bruger du sidemandsoplæring?

Producerer du sammensatte ordrer?

Bruger du samleprocesser?

Bruger du skilleprocesser

AR kan bidrage med:

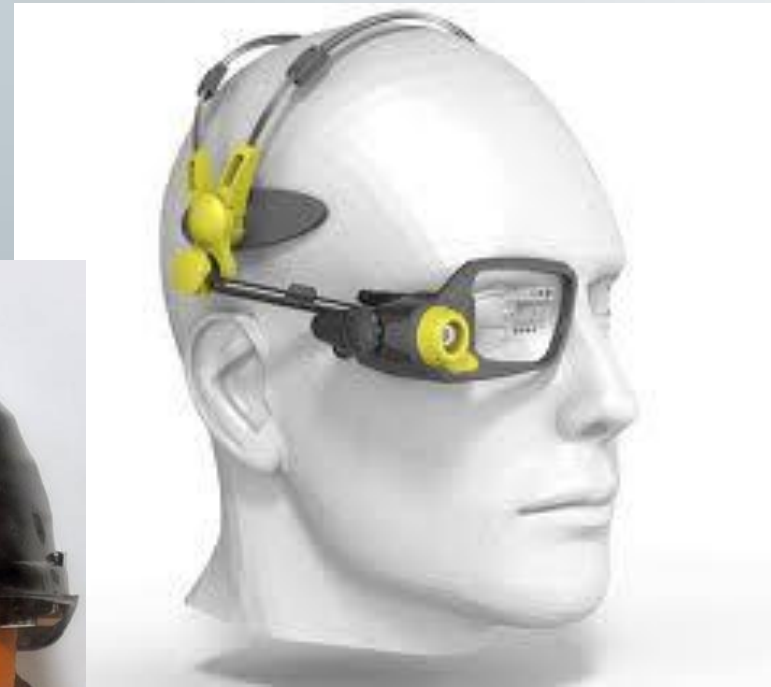
Fejl reduktion

Interaktiv information

Spørgsmål



DANISH MEAT
RESEARCH INSTITUTE



<http://www.junaio.com/download/>