



An initiative of the European Union

# CLUSTERS MEET REGIONS

# KITTIILÄ | 25 · 27

FINLAND | APRIL 2023

A SUSTAINABLE APPROACH  
TO RAW MATERIALS

# EUCLUSTERS MATCHMAKING EVENTS

#SingleMarket30





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European Cluster Collaboration Platform

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# Session I: East and North Finland in Industrial Transition – shaping the future together

## Round Table I: Modern Digital Solutions and High Technology

**Moderator: Antonio Novo**, President of the European Cluster Alliance

- **Caroline Amiot**, Project Manager, Photonics Finland
- **Satu Väinämö**, Director, PrintoCent
- **Paavo Niskala**, SVP IMSE Technology, TactoTek



# Round Table I: Modern digital solutions and high technology.

## Caroline Amiot, PhD

Project Manager at Photonics Finland



# Round Table I: Modern digital solutions and high technology.

Caroline Amiot

Presentation of  
 Photonics Finland

[Link to the video](#)



# Round Table I: Modern digital solutions and high technology.

## Photonics Finland services

- Networking
- Events & Exhibitions
- Knowledge Transfer
- Innovation
- Public Relations
- Promote Photonics
- Job board



# Round Table I: Modern digital solutions and high technology.

**Our next event:** Joensuu, Finland, MAY 30<sup>TH</sup> – JUNE 2<sup>ND</sup>

## Industrial thematic sessions

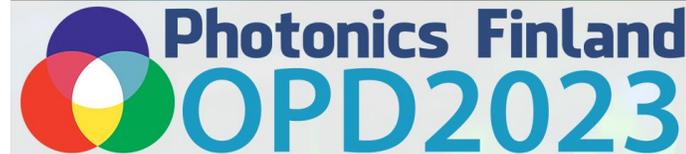
- Spectral & Hyperspectral imaging
- Photonics in Security & Defense
- Nano- & Micro-photonics

## CXC Exclusive dinner on June 1<sup>st</sup> & Company visits on June 2<sup>nd</sup>

Dispelix, Nanocomp, Chipmetrics, and Photonics Center

✈️ Travel funding: 475€ for eligible organisations (SMEs / Research institutes / Clusters)

## FULL PROGRAM RELEASED



30 May - 1 June 2023, Joensuu, Finland

Full Academic and Industry program released - Register now!

- ★ Already over 200 registrations!
- ★ 33 Exhibitors registered - Only 1 place left!
- ★ Posters post deadline submission is open!
- ★ Co-sponsoring available!

### OPD2023 Gold sponsors



### OPD2023 Silver sponsors



# Round Table I: Modern digital solutions and high technology.

## Photonics Finland Partner in EU Projects



### Photonics4industry

- Delegation visits to discover the ecosystems of the 5 partner countries (Finland, Germany, France, Austria, Lithuania)
- New joint services for the clusters (Matchmaking platform, International Job board... )
- Connect businesses to trigger future partnerships

### PhotonHub Europe

- Help SMEs to innovate using Photonics
- Trainings and Innovation Fundings



# Round Table I: Modern digital solutions and high technology.

## Photonics Finland Partner in EU Projects



### PIMAP4Sustainability

- Call for Innovation fundings for cross-border collaborations between SMEs – 60k€ per project (Metalworking, Aerospace, Industrial Manufacturing)
- Call for Training
- Organisation of delegation visits to Canada, Japan and Singapore



### BestPhorm21

- Promote Photonics to decision makers



# Round Table I: Modern digital solutions and high technology.

## Photonics Finland team

Let's connect! Stay updated with our activities and opportunities, follow Photonics Finland in social media!

 Photonics Finland

 PhotonicsFin

 PhotonicsFinland

**Juha Purmonen**  
Executive Director



**Ana Gebejes, PhD**  
Head of Projects



**Caroline Amiot, PhD**  
Project Manager



**Tuukka Pakarinen**  
Communications and Exhibitions Manager



**“The whole is greater than the sum  
of its parts”**

**- Aristotle**



# Round Table I: Modern digital solutions and high technology

## PrintoCent Industry Cluster

Satu Väinämö

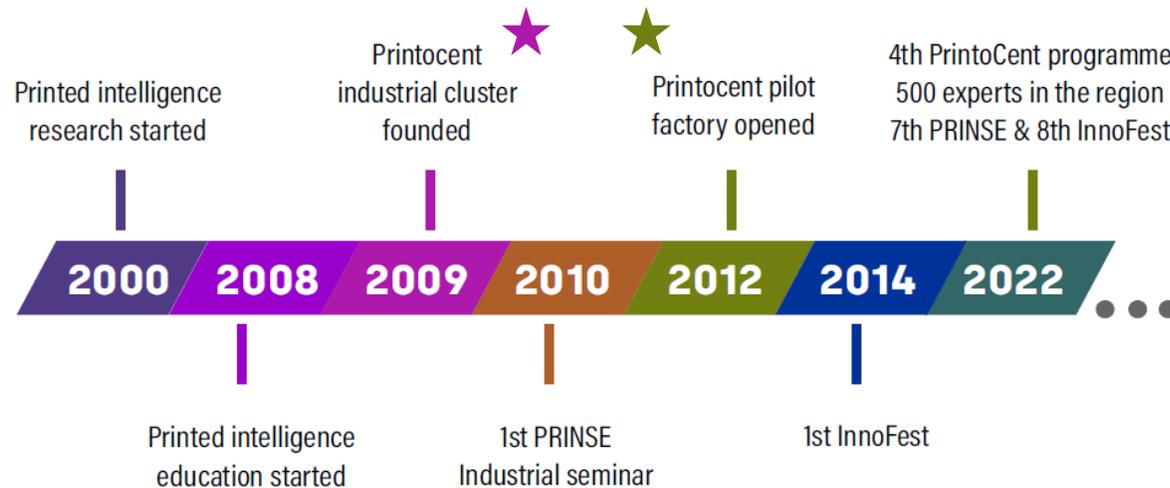
Director, PrintoCent



# PrintoCent

Boosts innovation and industrialisation of Printed Intelligence

- Click to edit Master text styles

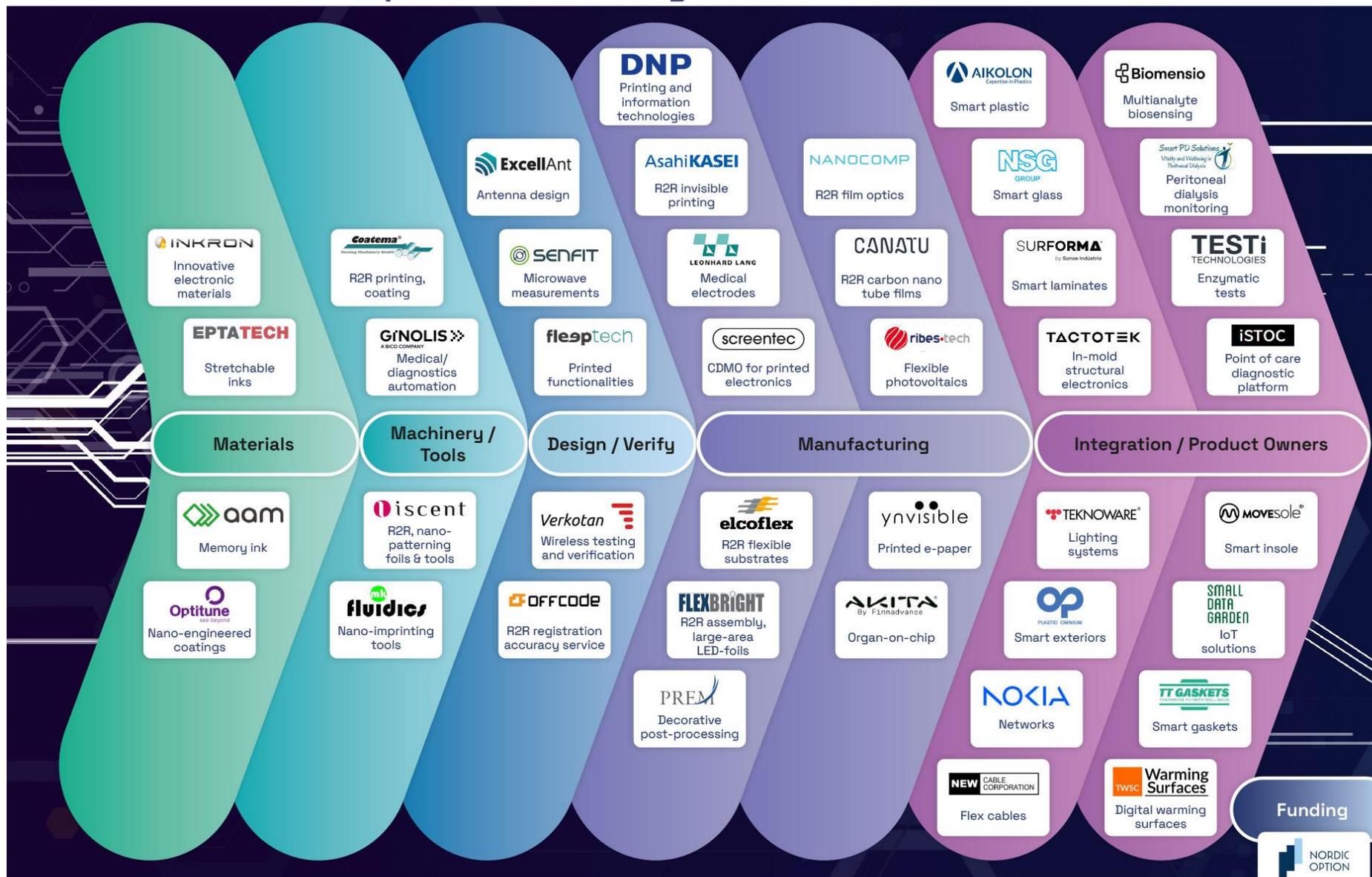


# Industry cluster

40+ industry members globally, which represent different parts of the value chains

> 500

experts in industry and research in the region



# PrintoCent Pilot Factory

A world class roll-to-roll capable pilot factory for **printing, component assembly and post processing**

Enables technology development and testing **from prototyping to proof-of manufacturing and pilot scale production for early market trials**



<https://www.printocent.net/proof-of-manufacturing>



**PrintoCent**  
1,189 followers  
3mo • 🌐

This is huge!!! VTT is investing in PrintoCent pilot factory 3.4 M€ in upcoming years.  
- press release in English is coming soon with more info -

...see more

**Expansion of Printocent Pilot Factory to accelerate the development of medical devices**

07 Mar, 2023

# Events



**June 8-9, 2023**

**PrintoCent InnoFest** is an annual innovation competition – it’s a place where ideas, problems and Printed Intelligence solutions meet!



**January 24-25, 2024**

**PRINSE'24** is the event where industry leaders show the current status of Printed Intelligence, and visionary keynote speakers lay the ground for the next steps!

**PrintoCent Industry Cluster Members 2022-2024**

Startup & Micro			SME		LSE	

**PrintoCent Industry Cluster (PIC) meetings for members 3 times/year**

<https://www.printocent.net/events>



## The Warming Surfaces Company

176 followers

1w • Edited • ↻

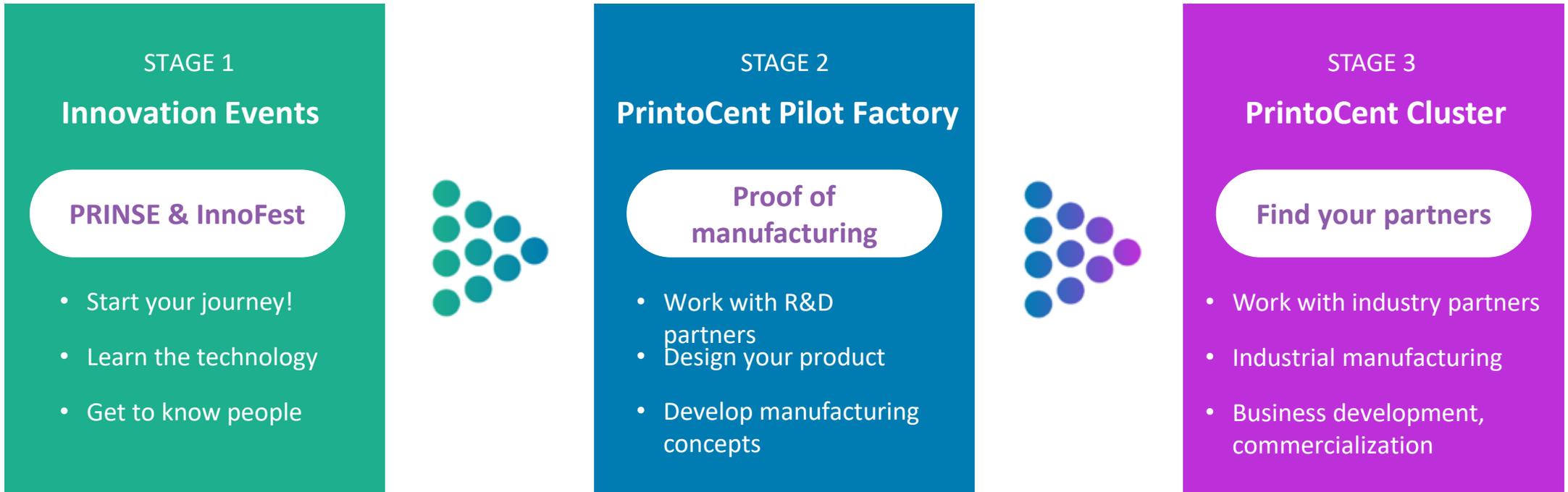
We've joined [PrintoCent](#) ...of course we did! Here's why:

- 1) Our base technology was invented at the PrintoCent pilot facilities at VTT in Oulu.
- 2) Our business idea was first publicly tested at #PrintoCentInnofest in 2021. Offered a friendly crowd to nurture our idea, but also tough competition from the other teams. We were happily surprised to win.
- 3) PrintoCent events are great for networking. We've met value chain members from many potential end markets. Those interactions helped us identify where to initially focus our business.
- 4) We now partner with several PrintoCent members, internationally, to develop first products to market.
- 5) PrintoCent allows our early pre-seed stage company to begin operations nimbly with low CAPEX, even though our solutions are based on novel hardware technology.

To sum it up, great collaborative spirit and valuable resources in PrintoCent. Always risks involved in starting new business, but feels kinda great doing it in this ecosystem!



# PrintoCent welcomes all industries to explore what Printed Intelligence can offer!



We have **partners, facilities and experience** to develop sustainable solutions, find new design opportunities and to build new value chains to realize these

Find your partners in

# Printed intelligence

Flexible- stretchable- wearable- hybrid- electronics & diagnostics

Satu Väinämö, Director, PrintoCent

[Satu.vainamo@vtt.fi](mailto:Satu.vainamo@vtt.fi) [www.printocent.net](http://www.printocent.net)

# Round Table I: Modern digital solutions and high technology.

## Paavo Niskala - TactoTek

### SVP IMSE Technology



# TactoTek

## *Injection Molded Structural Electronics* **IMSE® technology**

- IPR Licensing
- Design Services
- Selected Manufacturing

**HQ** in Oulu, Finland

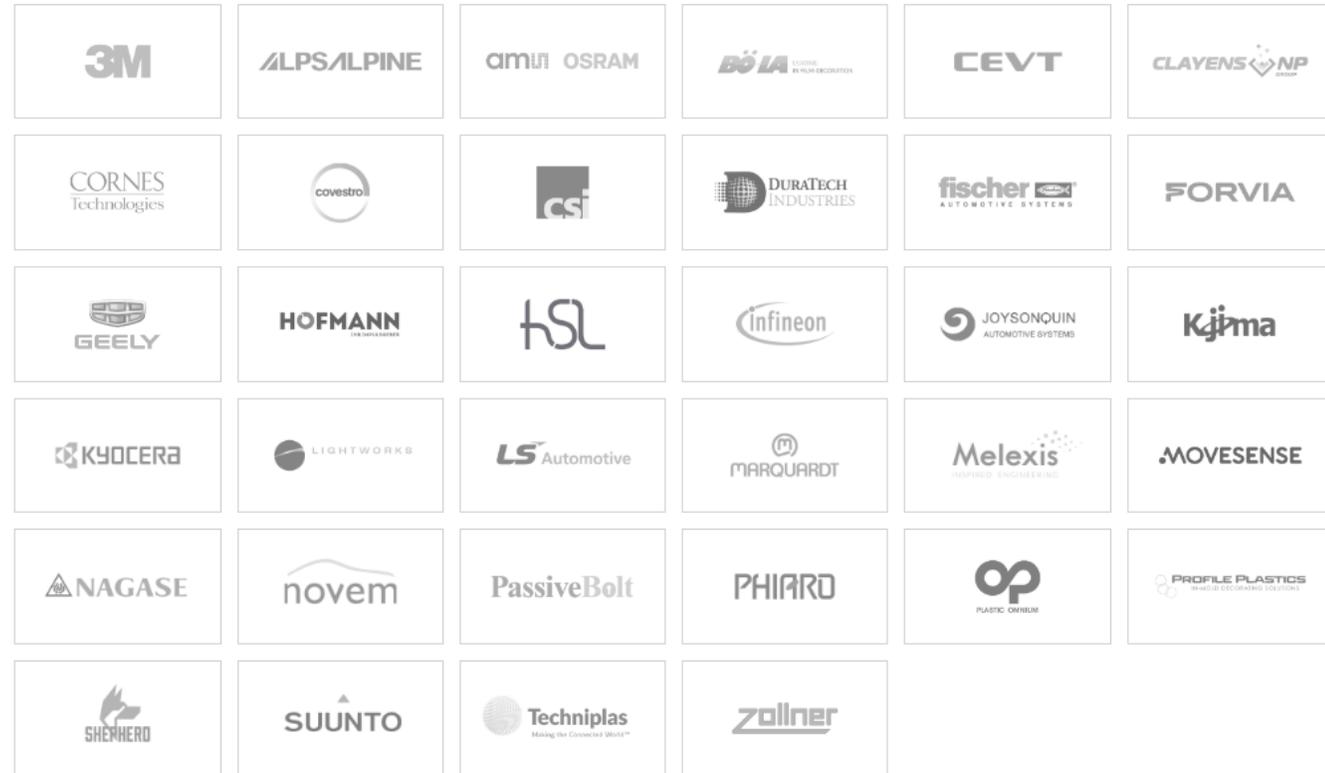
**Offices** in USA, Germany, Japan and South Korea

**Head Count** 100

**46** patent families & +170 patents

**Technology** based on decades long Finnish academia research

**Automotive** validated technology



# The Future of Electronics



## Conventional electronics

- 41 parts + Two large PCBs
- Multiple injection molding tools
- Costly and complex assembly
- 48mm assembly depth
- 281 grams



## IMSE = Injection Molded Structural Electronics

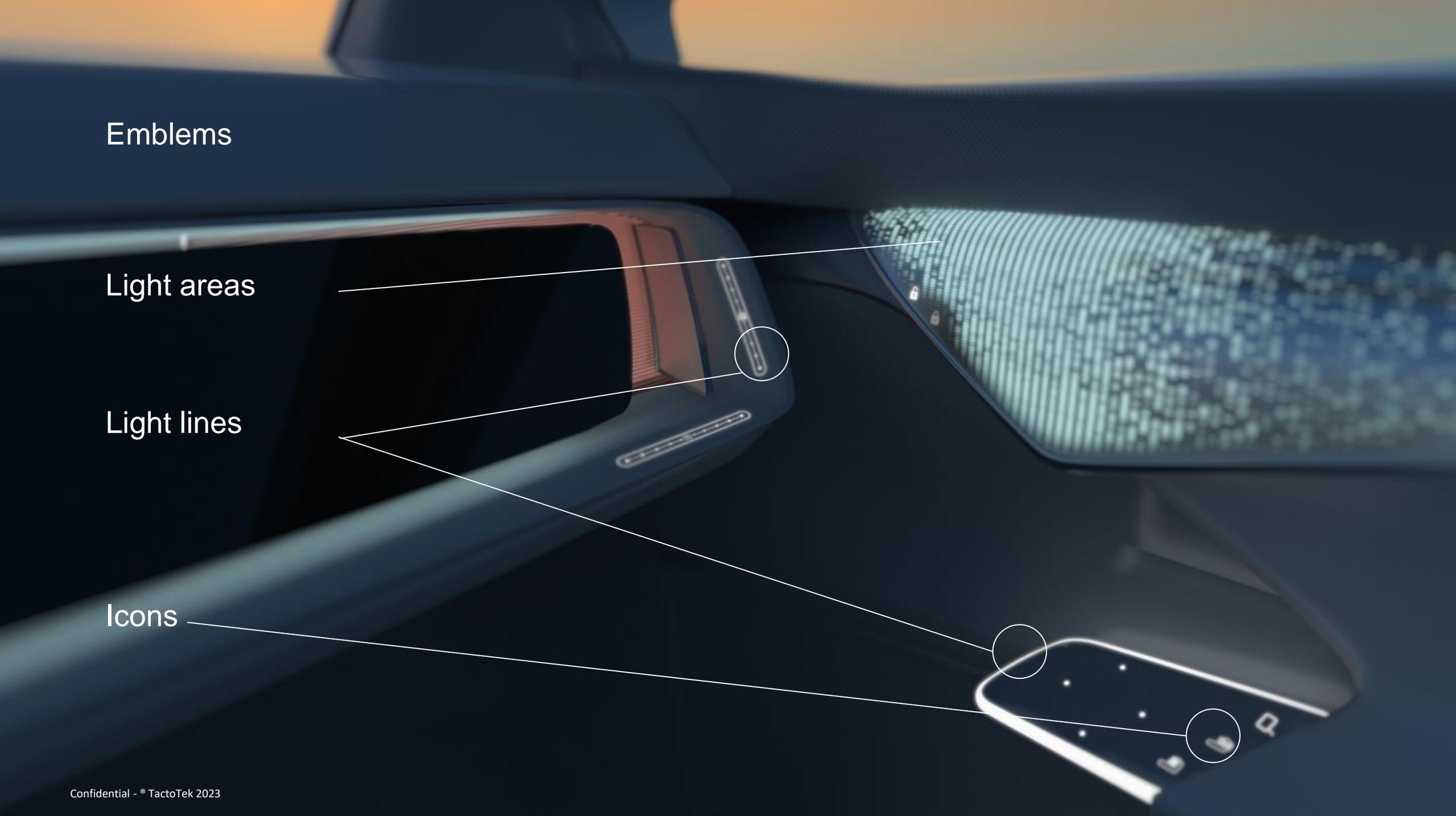
- One molded part with IMSE SiP
- One injection molding tool
- Minimal assembly
- 4,5mm molded material thickness, 90% less material
- 130 grams, 54% less weight
- Less energy needed in production & logistics

Emblems

Light areas

Light lines

Icons



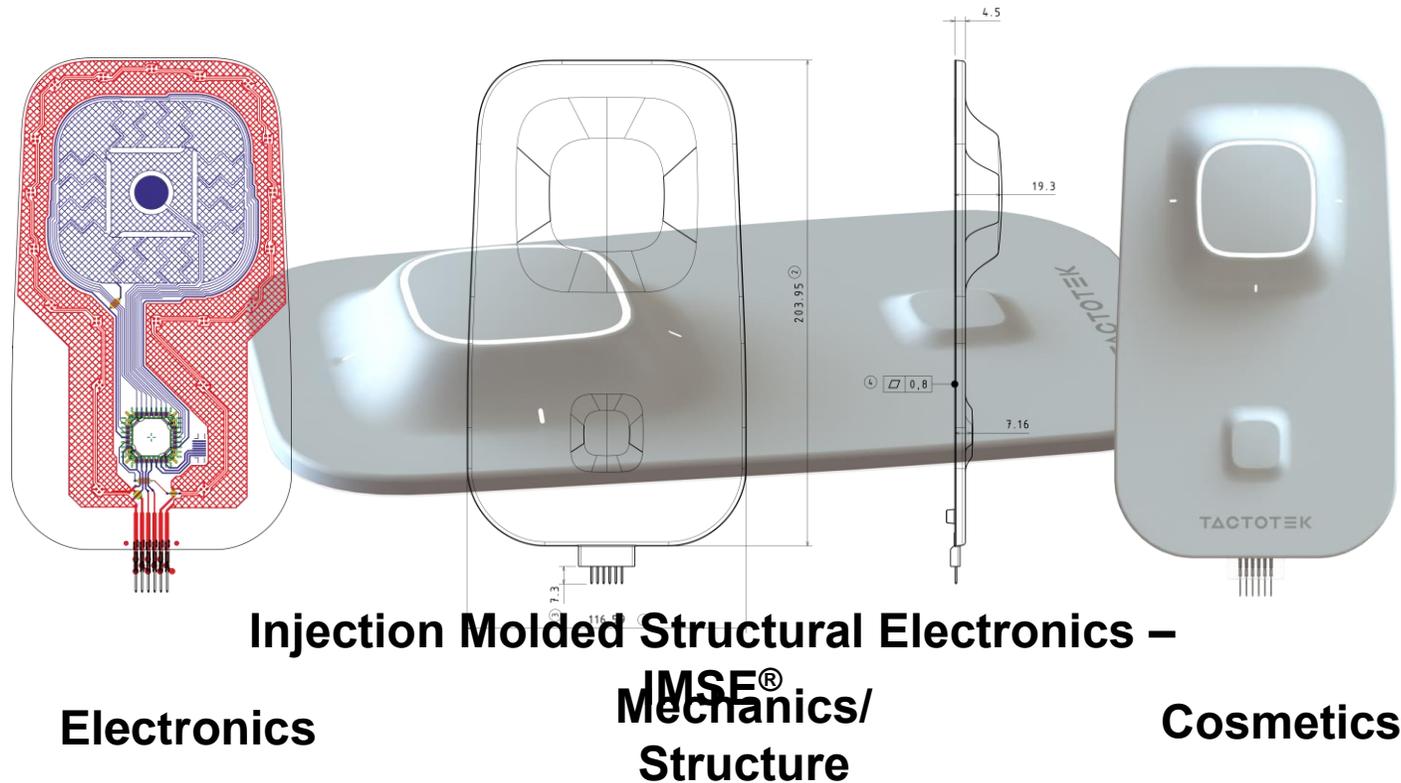


Aviation



Smart homes

# IMSE<sup>®</sup> Smart Surfaces for Integrated Sustainability

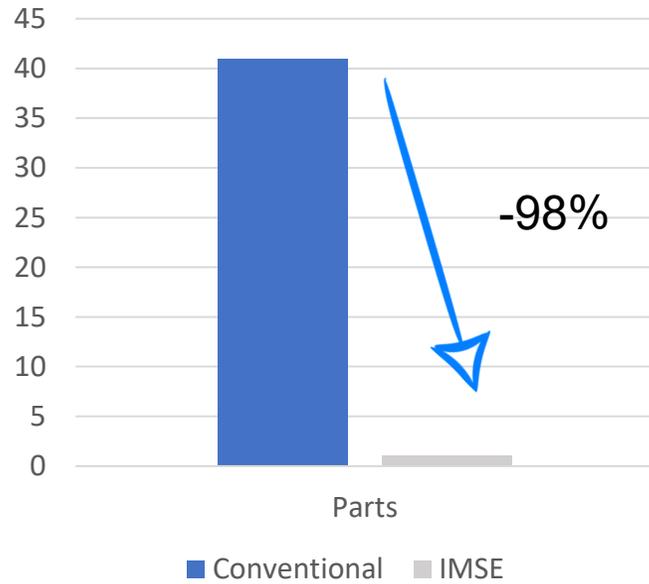


- Decorative and functional illumination - LEDs are molded within a single structure, no light guides
- Full HMI solutions
- Qualified by OEMs for automotive production use

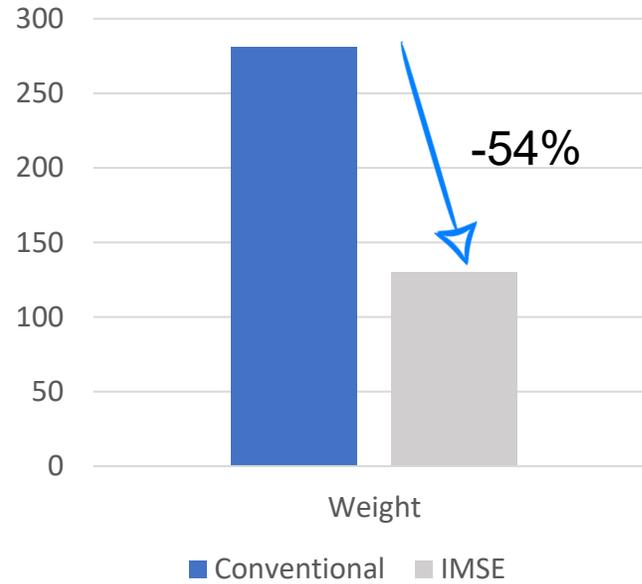




Amount of Parts



Weight

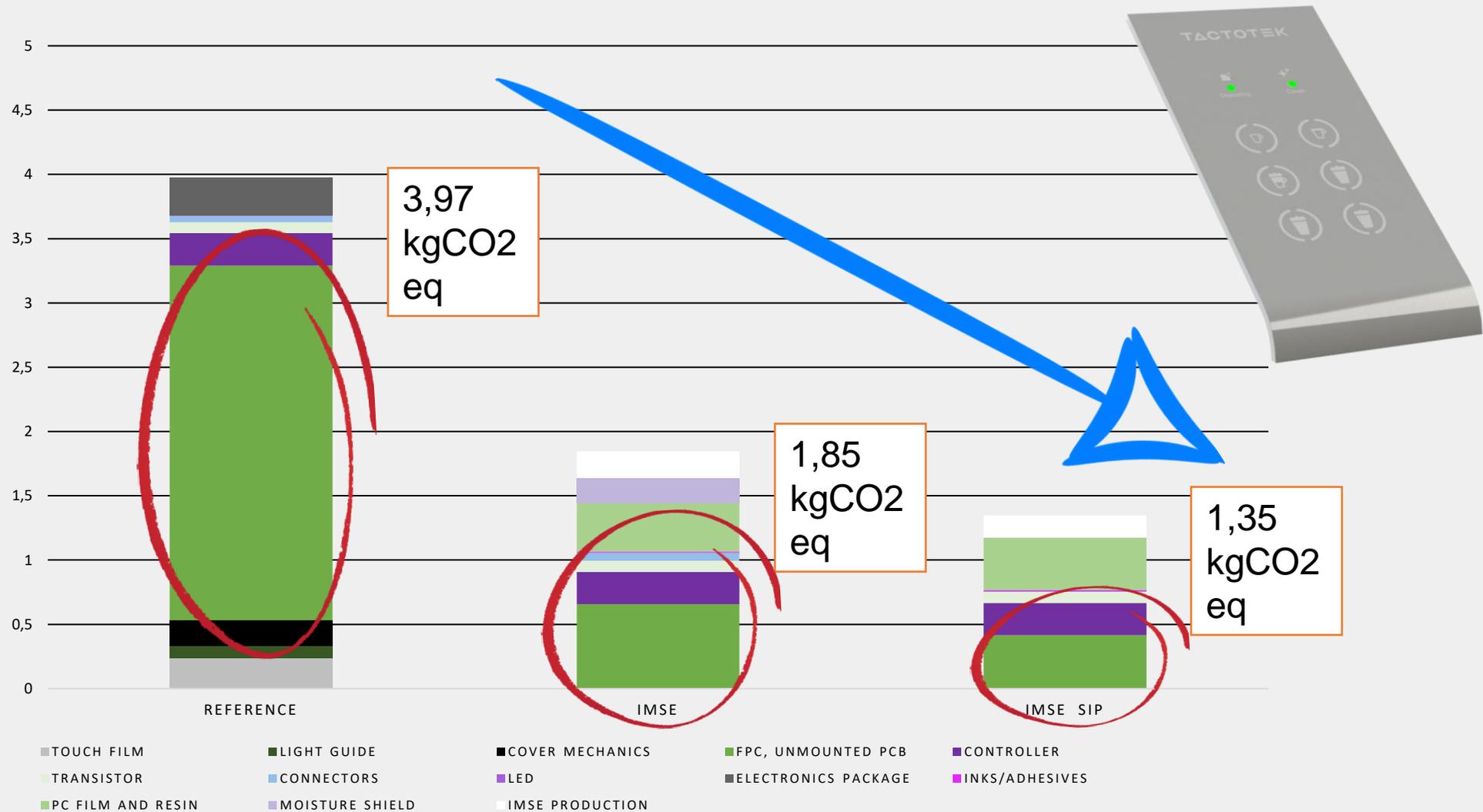


### More Benefits

- Additive Manufacturing
- GHG Emission reduction from cradle to gate\*
- Supply chain and manufacturing simplicity

\*verified LCA for a different IMSE Design

# GHG emissions for control panel production in kg CO<sub>2</sub>eq.



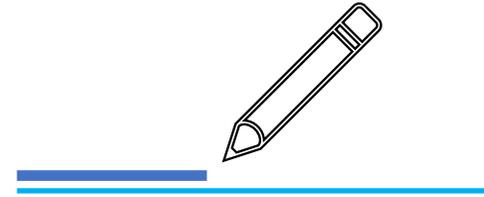
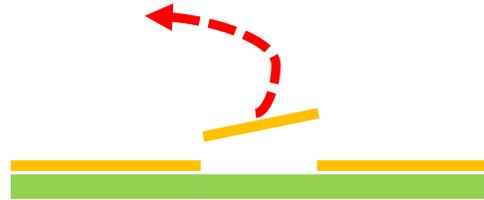
LCA report available for download from [tactotek.com](http://tactotek.com).

# IMSE disruption dissected

Conventional electronics

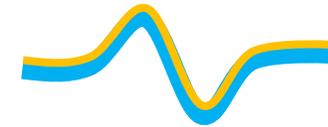
IMSE

**Subtractive**



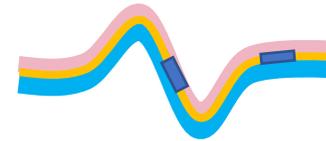
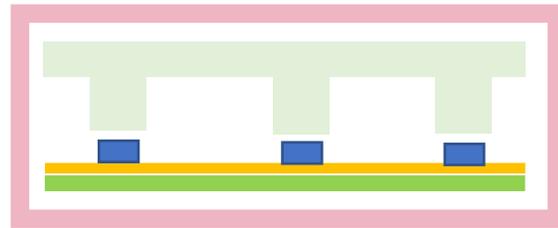
**Additive**

**Flat**



**Curved**

**Multi-structural**



**Mono-structural**

**Complex &  
China driven**



**EU**

**Simplified &  
European value  
chains**