



Specialists

in evidence-based lighting systems



CHROMAVISO
LIGHT IS LIFE

Chromaviso has a unique combination of skills, knowledge and products

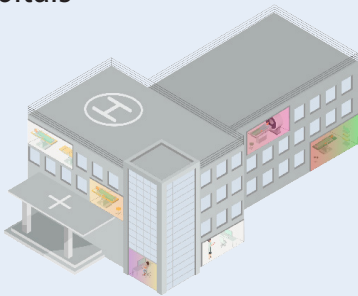
- We **specialize in health-promoting lighting systems** for hospitals and nursing homes
- Our solutions have **clinically proven effect**
- **Turnkey solutions** –with both planning, fittings, luminaries, control and technical components for a complete lighting system
- **Adapted to the specific environment** with commissioning and quality assurance
- **92% user satisfaction:** We are experts in implementation in collaboration with the technical staff and users
- **Security in delivery:** best quality, extended warranty and high operational reliability. We are with you all the way!

+130
sjukhus

+16 års
specialisering

+3000
projekt

Hospitals

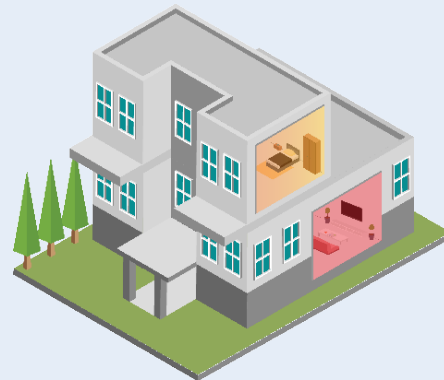


Chroma Zona: Surgery, diagnostic imaging, endoscopy and scanning

Chroma Zenit: Rehabilitation, recovery, intensive care, geriatrics, neonatal, maternity ward and psychiatry

Chroma Sound: Music as medicine and sound masking

Care Home

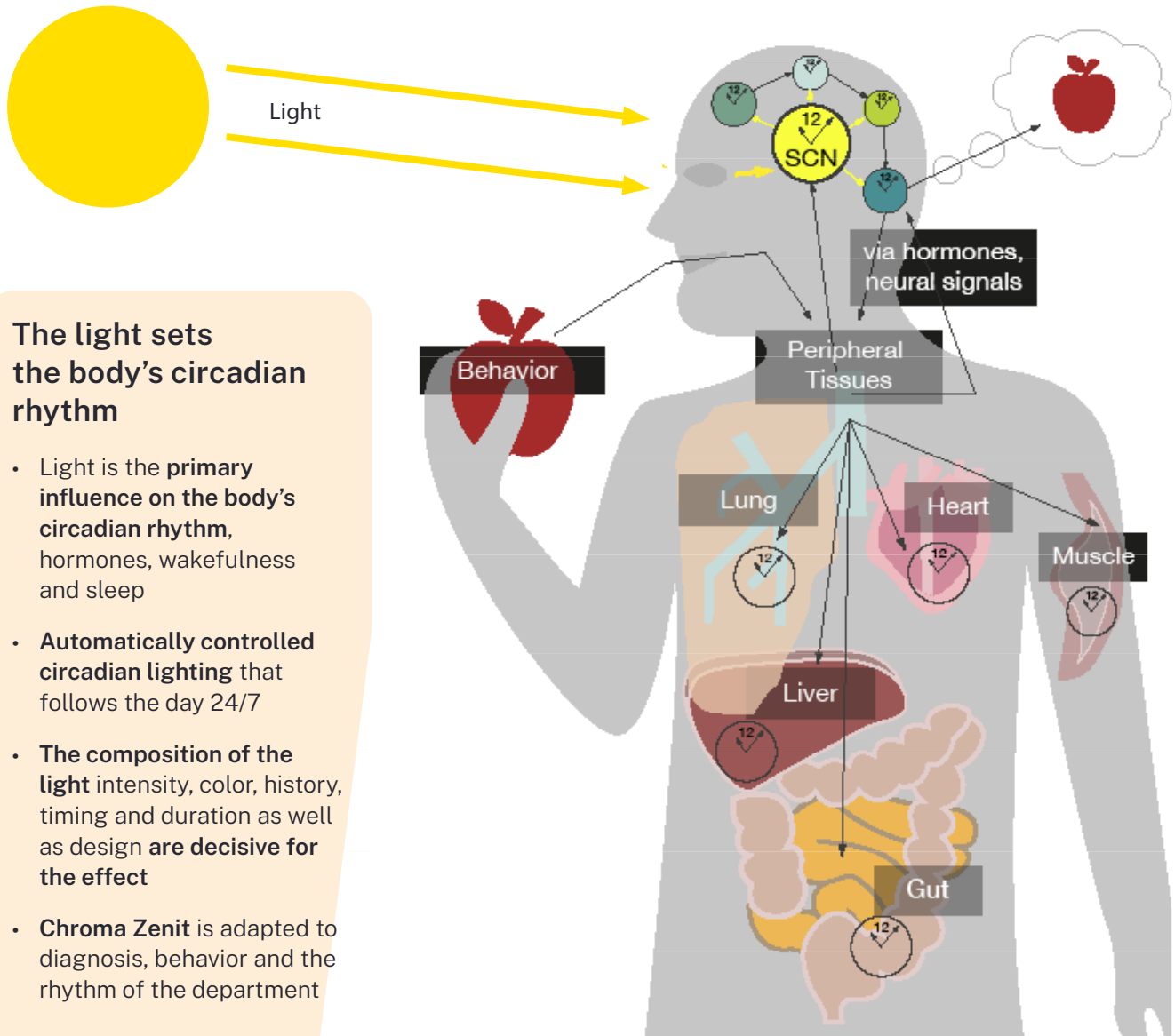


Chroma Zenit: Nursing/dementia homes, apartments, hallways, stimulus rooms and common areas

Evidence projects with Chromaviso lighting

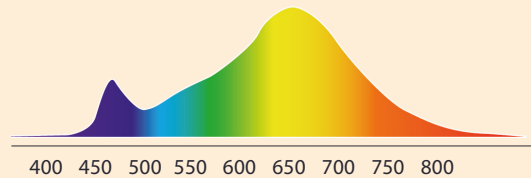
EVIDENCE LEVEL	PROJECT	RESULTS
Clinical studies Clinical trials with control group, intervention, randomization	• Apopleksienheden, Rigshospitalet Glostrup, Anders West • Neurokirurgisk intensiv, Aarhus Universitetshospital, Leanne Langhorn • ROOM-LIGHT, Psykiatrisk Center København, DTU, CTU, Klaus Martiny • Klinisk Forskningscenter, Hvidovre Hospital, Albertslund Kommune • Lund Universitet, Hillevi Hemphälä	• 90 Patients: Reduced depression, fatigue and improved circadian rhythm. • 20 Patients: Improved sleep and memory, reduced agitation, and hospital stay • 150 Patients: High tolerability and use. Reduced hospitalization time, depression, medication use and faster recovery. • 20 residents with dementia: Improved sleep, circadian rhythm and well-being. • Lighting during surgery: better screen and vision, fewer reflections and less fatigue.
Qualitative studies Systematic review of case – control studies	• Aarhus Universitetshospital og Rigshospitalet • Business Ph.D. Aalborg University • Stimulus room, DemensCentrum Aarhus, Aarhus Kommune, VIA University College • Aarhus Kommune - Center for Frihedsteknologi • Herluf Trolle Care Home, Odense Kommune	• Pilot study on 26 nurses: Better sleep, more rested, quicker return to circadian rhythm, better working environment. • 100 staff: Implementation and the effect on the staff. • 46 residents: Increased attention / memory, mood, reduced extroverted behavior, physical and psychological restlessness. • 2 Care homes: Improved activity level among staff, 21% lower sickness absence. Less nocturnal wandering among residents, better sleep and well-being and 68% less extroverted behaviour.
User surveys Structured, anonymous surveys	• Scandinavian study, Ergonomic Lightng • Aabenraa Psykiatri, CoLab Recovery & Rehab, Region Syddanmark • Lokalcenter Sønderskovhus, Aarhus Komm., Demensplejehjem Skovgården, Quistgaarden, Klinkby Bo-og Dagcenter, Lemvig Kommune, Lundtofte Plejecenter, Vejen Kommune • Skejby, Kolding, and Ringerike maternity wards. • Hudiksvall Sjukhus, Malmö Neuro-OBS • Akademiska Sjukhuset Uppsala neonatal IVA • Rigshospitalet, The Neurocentre	• 138 staff / 30 hospitals: Improved display, quality, concentration, well-being. 97% satisfaction with the light and the operation. • 100 staff: Reduced medication consumption, coercion. Improved calmness, energy level, sleep, well-being and working environment. High usage and user satisfaction as well as satisfaction with implementation. • User surveys among +500 staff: Patient effect: Improved well-being, sleep, quality of life, more calm, less negative behaviour, better treatment. Effect on staff: Less stress, better sleep, more energy during the day.
Evidence of practice Expert opinions and case stories, best practice	+130 hospitals, care homes, psychiatry in +15 years • Intensive care units, neuror rehabilitation, geriatrics • Recovery, inter-media departments • Birth and neonatal • Care homes, Dementia, Psychiatry • Surgery, Radiology, Imaging and X-ray	• User experiences: Opinions and exchange of experience with +130 hospitals and nursing homes about use, effect, ease of use, research and implementation. • Experiences: Adaptations and dialogue.

Chroma Zenit Circadian Lighting



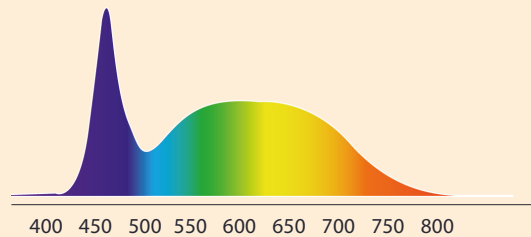
How the documented effect is achieved

Morning light: 2700 kelvin



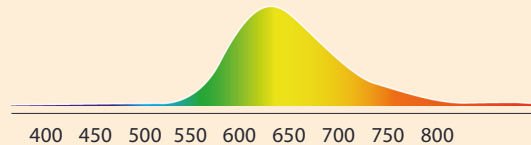
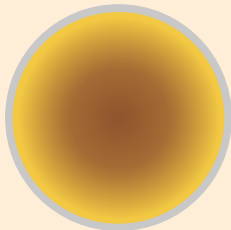
- Wake and sleep preparation make the body ready to get up/sleep
- Natural, slow transitions with sliding fades on and off requires stepless dimming completely down to 0.1%
- Flicker-free dimming throughout the dimming profile in compliance with IEEE1789-2015
- The timing of color temperature and intensity relative to diagnosis defines the physiological effect

Daylight: 6000 kelvin



- Strong daylight ensures circadian rhythm anchoring, energy during the day and sleep at night
- The light quality must ensure 6000 Kelvin, with min. 40% energy below 520 nm, which is nice to stay in
- The light must be fine-tuned and calibrated to the room conditions, needs and work flow
- Lighting design, placement of luminaries and implementation ensure optimal effect and use

Night light: 1800 kelvin



- Light at night: Balances considerations for residents and staff
- Biological darkness at night requires 1800 Kelvin with max 1% energy below 520 nm
- Broad-spectrum diodes provide high visibility
- Minimally disturbing settings for wake-up lights, toilet visits, control

Chroma Zona Ergonomic Lighting

Chroma Zona Ergonomic Lighting ensures optimal working environment

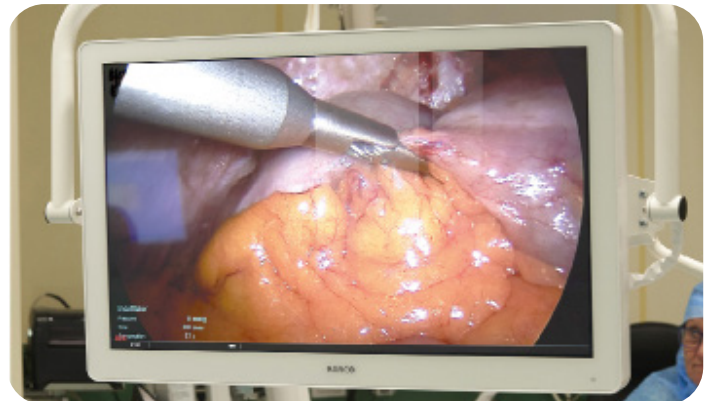
- Chroma Zona Ergonomic Lighting is **adapted to work processes** before, during and after the procedure in the specific specialty
- A **good working environment** for everyone with zoning
- Calibration of colors and brightness ensures **optimal screenwork** with clear contrasts, reduced blur and reflection
- Good opportunities for integration with other systems and customized solutions
- Chroma Zona Triple White creates a **well-balanced light environment** during open surgery



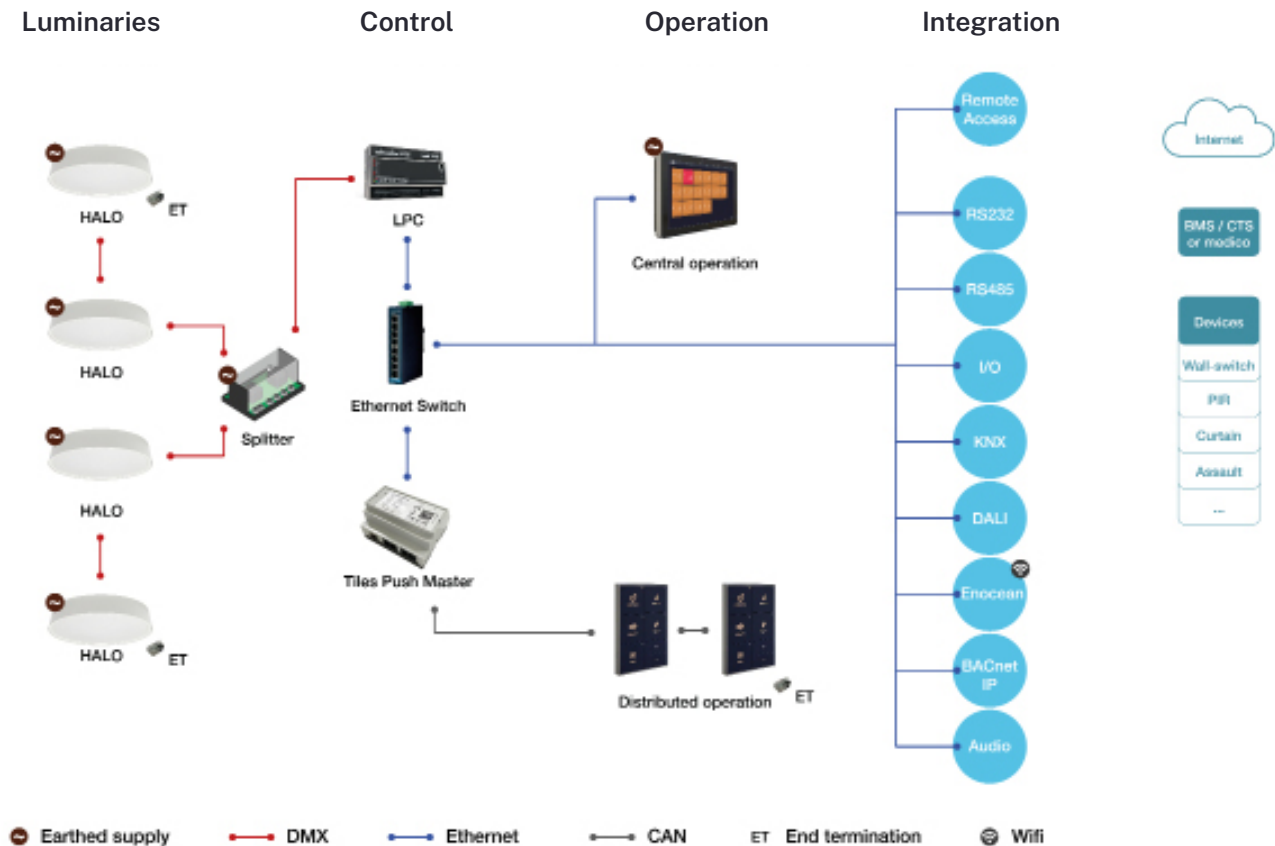


How to achieve the documented effect:

- Luminance balancing increases focus on the screen
- Contrasts are enhanced through complementary colours in the screen
- Colored light reduces the contrast of the background and reduces eye strain
- A red light reduces chromatic aberration
- Green background color increases relaxation and decoding
- Improved visual decoding ensures more frequent blinks and better tear film –essential for fatigue, dry eyes, headache etc.
- Improves room lighting during open surgery -less glare



System Overview with Integration



2021-02

EXPERTS IN TECHNICAL INTEGRATIONS

Ethernet

BACnet

EnOcean

KNX

DALI

RS232

Digital and
KNX analog I/O



If it's not on the list, we're up for a challenge! Chromaviso has its own development API and test environment for integration projects. Find out more about the specific task.

Project-specific solutions

Luminaries: Available as built-in, add-on and pendant that meets IP44. Examples:



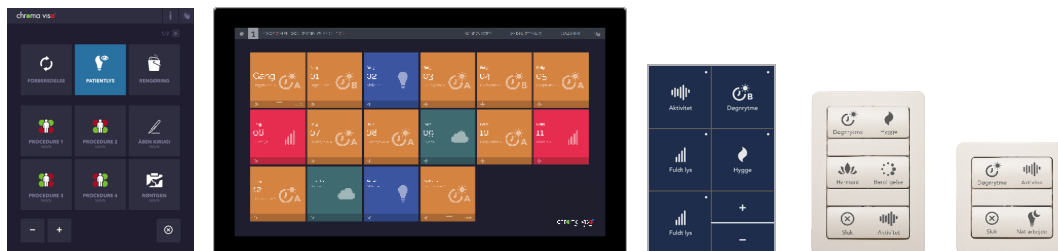
**5 YEAR AFTER DELIVERY 0%
AND COMMISSIONING**

Warranty

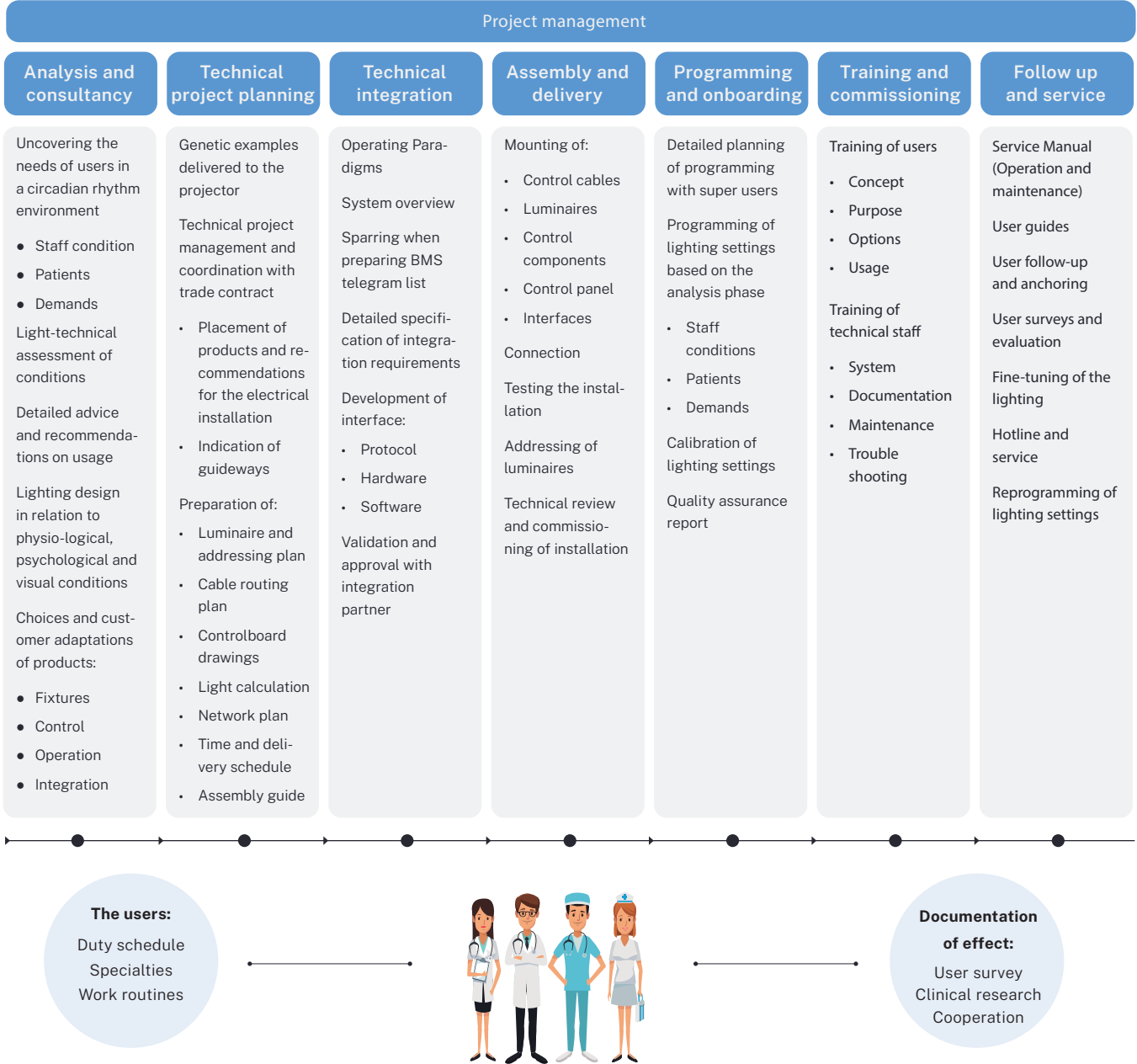
0% NOMINAL ERROR RATE

The warranty covers all luminaires that fail within the warranty period. In the event of an error, an option is offered for replacement products while the defect is rectified.

OPERATION Intuitive control panels with text and icons. Examples:



Turnkey solution based on competencies



Best practise from +130 hospitals and nursing homes

“

Chromaviso have continuously consulted and handled the training very well.



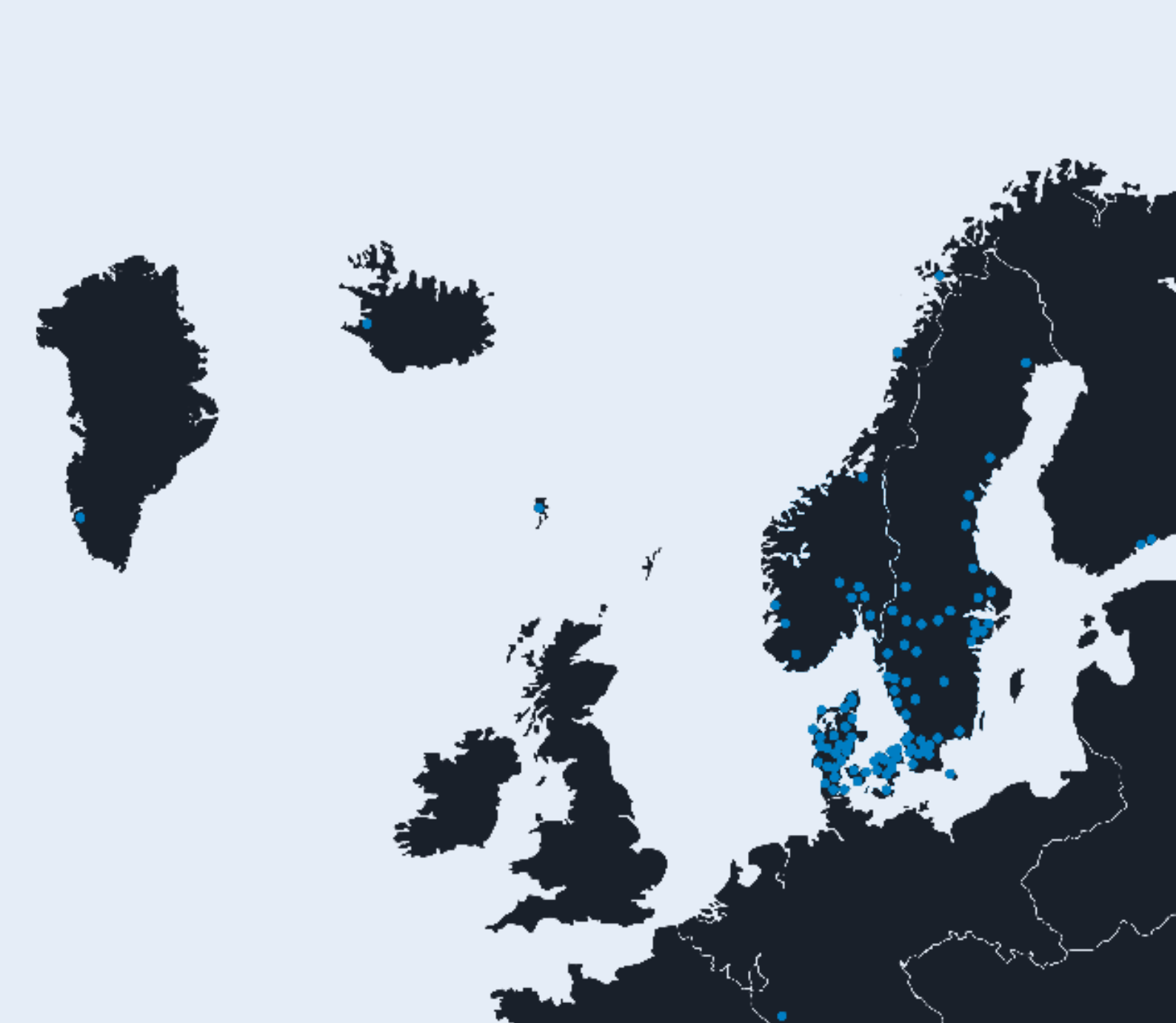
“

We have had no problems with the solution. It just works!

“

Chromaviso found a good solution for reasonable money. They have a professional approach, they take on the challenges immediately and get them resolved.





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