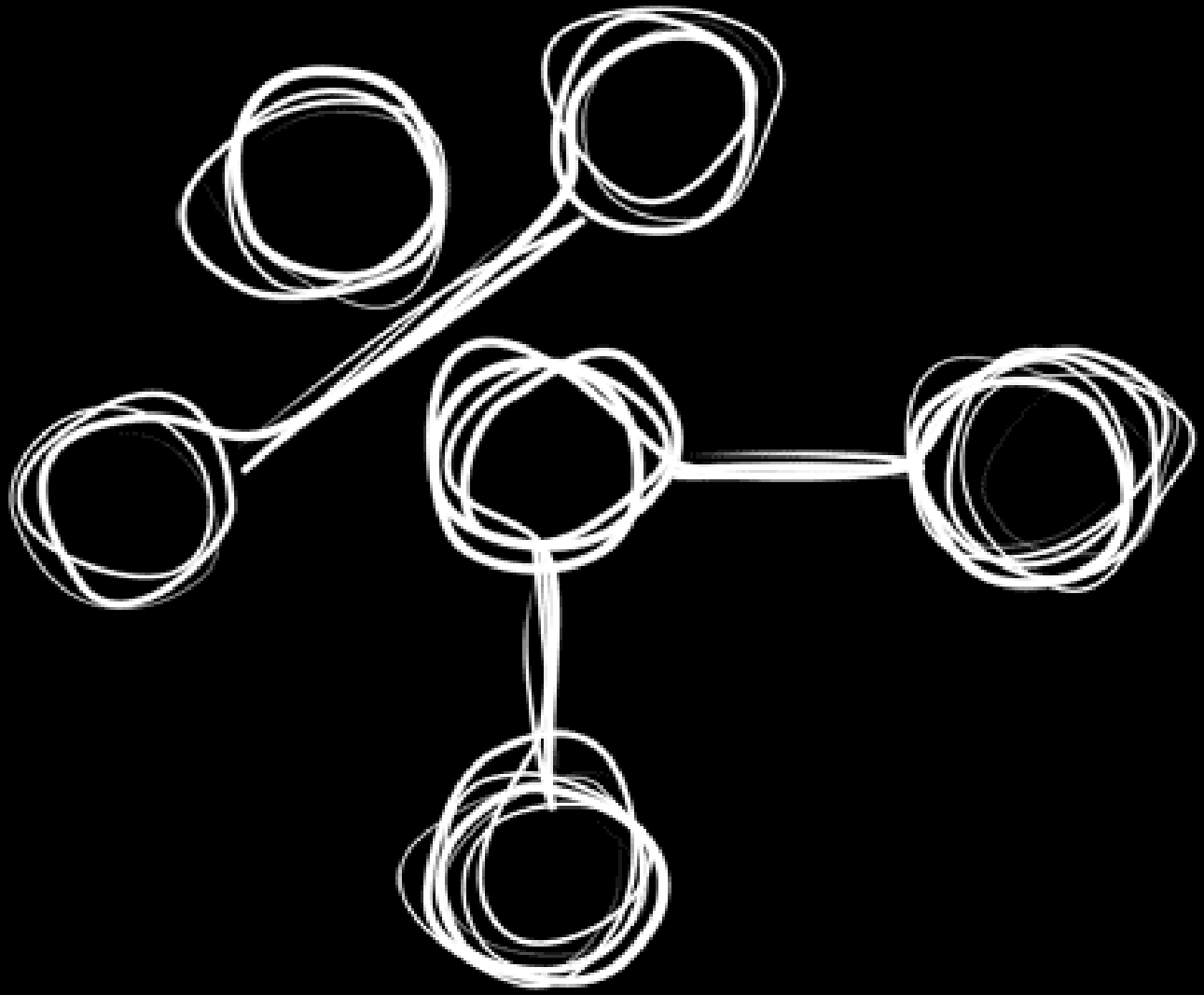


NEW TECH IMPACT

VIA NORDICA 2008

IT uden grænser – en rejse i Norden

TDC

preben@mejer.com

Preben Mejer

Senior Vice President

Direktør

Ny teknologi pa

NorthCap Partners

IT City of Katrinebjerg

- 90+ companies
- Denmark's largest concentration of it students: 1800+
- 10.000 employees within the IT area in a radius of 10 km

- World Class IT Research, 250+ scientists
  - Cryptology
  - Object-oriented programming
  - Human-computer interaction
  - Massive data masses
  - Virtual reality
  - Digital aesthetics
  - Pervasive computing

- The most dynamic and innovative IT environment in Denmark

Pervasive, 2015

Ambient - and Palpable

- Invisibility
- Construction
- Heterogeneity
- Change
- Scalability
- Sense-making and negotiation

- Visibility
- De-construction
- Coherence
- Stability
- Understandability
- User control and deference

Palpable systems

Systems that are capable of being noticed and mentally apprehended
Systems that support people in understanding what is going on
- at the level of their choice
Systems that support control and choice
Often the default mode is to suggest course of action
- rather than act automatically

–Prof. Morten Kyng, University of Aarhus, Center for Pervasive Computing

Pre-Hospital IT Support

High degree of mobility

Time critical requirements

Difficult to communicate

Difficult to obtain and maintain overview

(Often) unknown settings

ALEXANDRA Instituttet

Palpable Technology

Support for obtaining and maintaining different overviews

- of data belonging to one/a few injured person(s)
  - Biomedical
  - Other
- of data from several injured persons
- of which injured persons are where
- of who is going to be treated when (triage)
- of which resources are where
  - Human
  - Other resources

Depending on user's role and needs

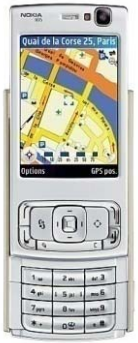
Communication support

Accumulation and use of Biomedical data

ALEXANDRA Instituttet

The new paradigm…… Deployment

- Spreading to all parts of the economy

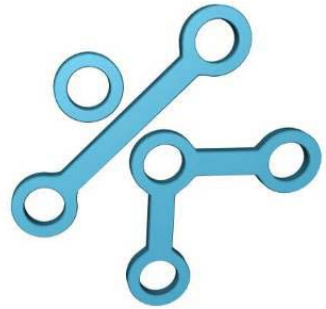


Continuous computing – i alt, over alt
- Transformational devices

Connecting the digital and physical world
- Sensing the world

Context as a driver, user centric, user generated
- Data is the next Intel inside

Dawn of the post-industrial age companies
- Enterprise 2.0…



TDC

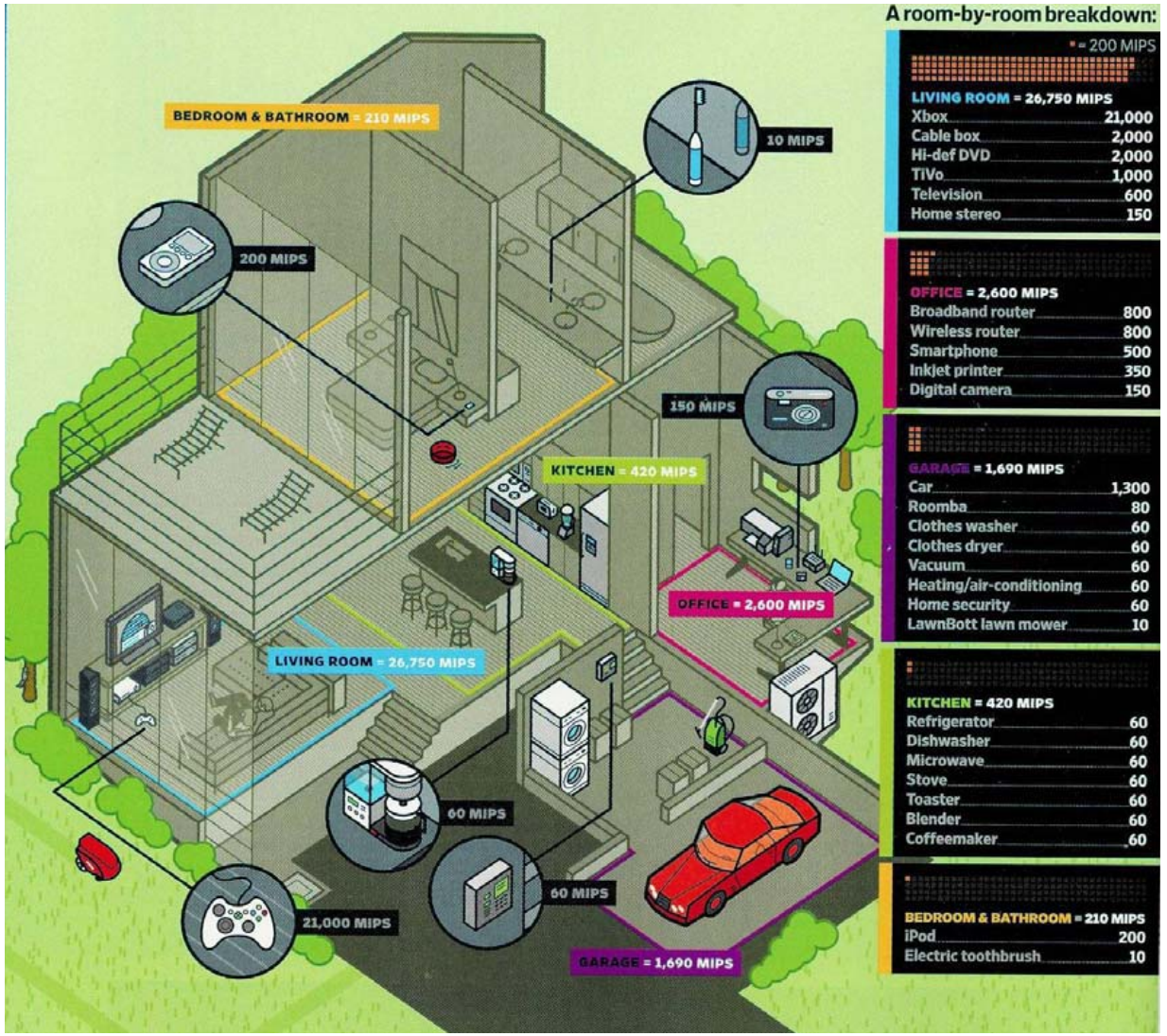
Teknologi byggeklodserne

TDC

Tech building blocks - Power House

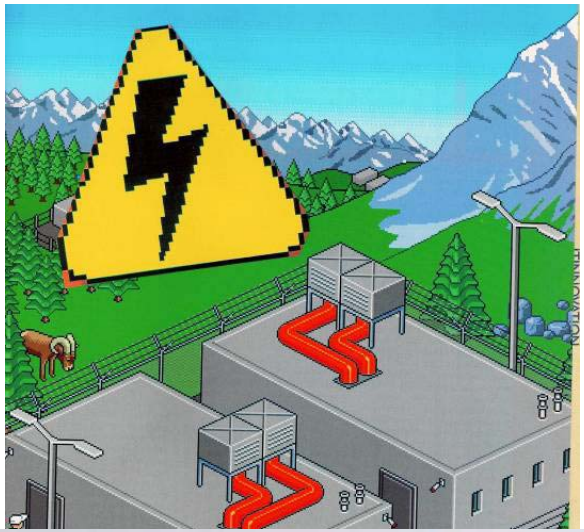
- IBM PC 1 MIPS
- Laptop today 6300 MIPS
- Modern house 31700 MIPS

- 1991-2006
- 60 times processor speed

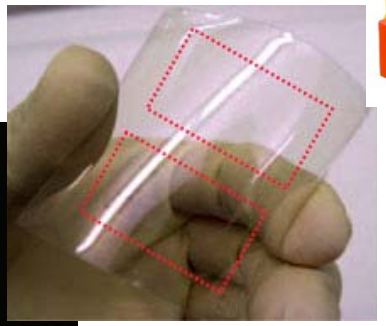


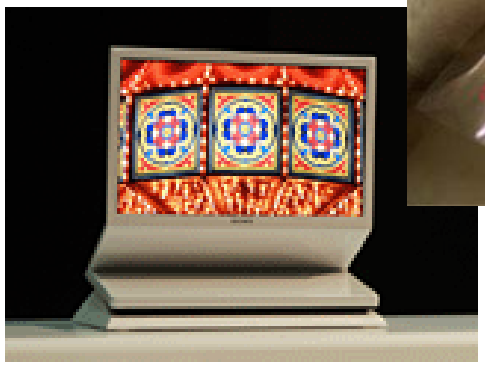
The Petabyte age

- Tera = 1000 Gigabytes
- Peta = 1000 Terabytes
- 2007, Hitachi & Seagate announce 1 terabyte hard disks for 400 usd
  - 250 hours HD programming
- Hard disk capacity explosion has made Moores law seem at a standstill
  - 1991 100mbyte drive cost 500 usd, 50 mhz Intel 486 cost same
  - 2006 500 usd buys 750 Gb drive or 3gHz processor
  - 7500 x drive capacity
  - Wired



Nye skærmtyper





- 40 pct af fladskærmene i 2010 vil være fleksible
- OLED
  - Papirs-tynd, lysstærk, bøjelig. Svaghed, levetid 5-10.000 timer
- SED
  - Tykkere skærm, primært til TV, risiko for burn-in
- E-Ink
  - Elektronisk papir, ikke med lys i
  - 350 til 100 mikron, OK til levende billeder og farver 2008

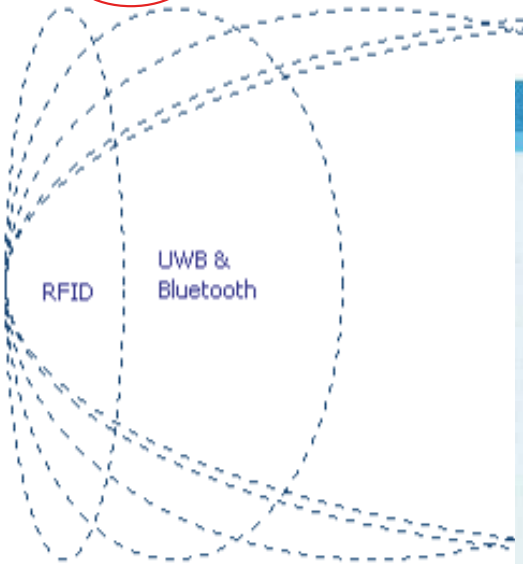
ıe Fourth Screen
- Third screen is on your cell phone, fourth is massive outdoor signs
- BWeek

Plastic Logic

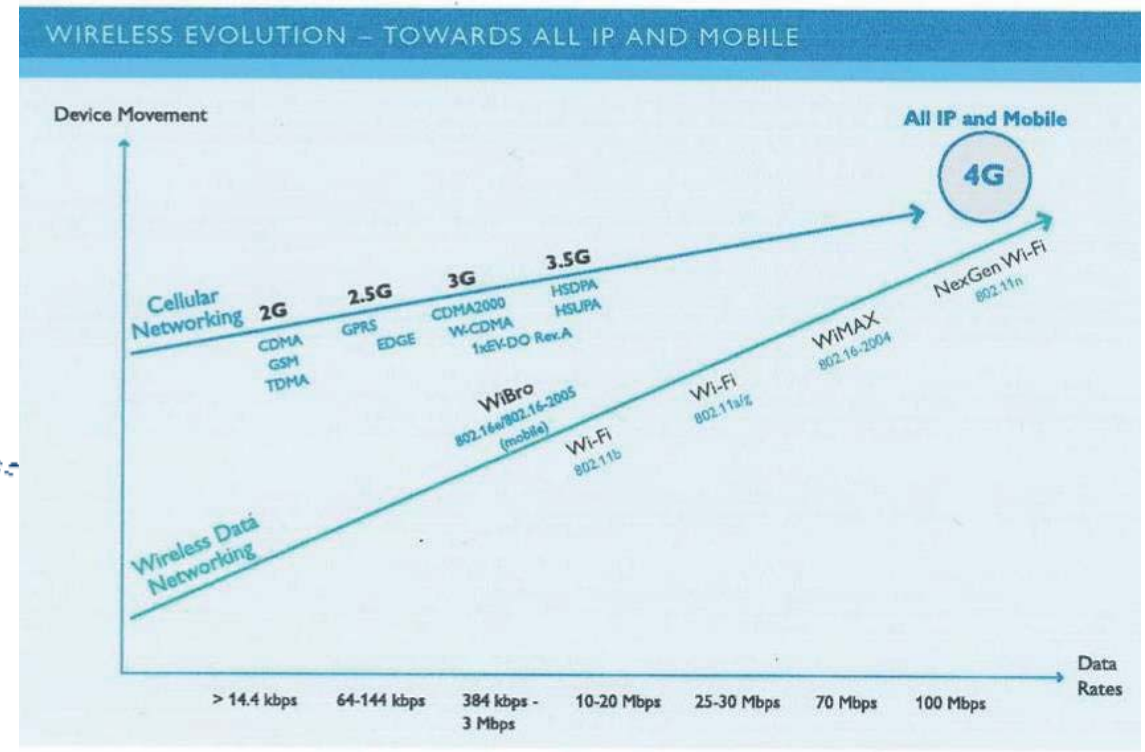
Der er ingen bånd der binder mig…..

PAN

MAN/WAN

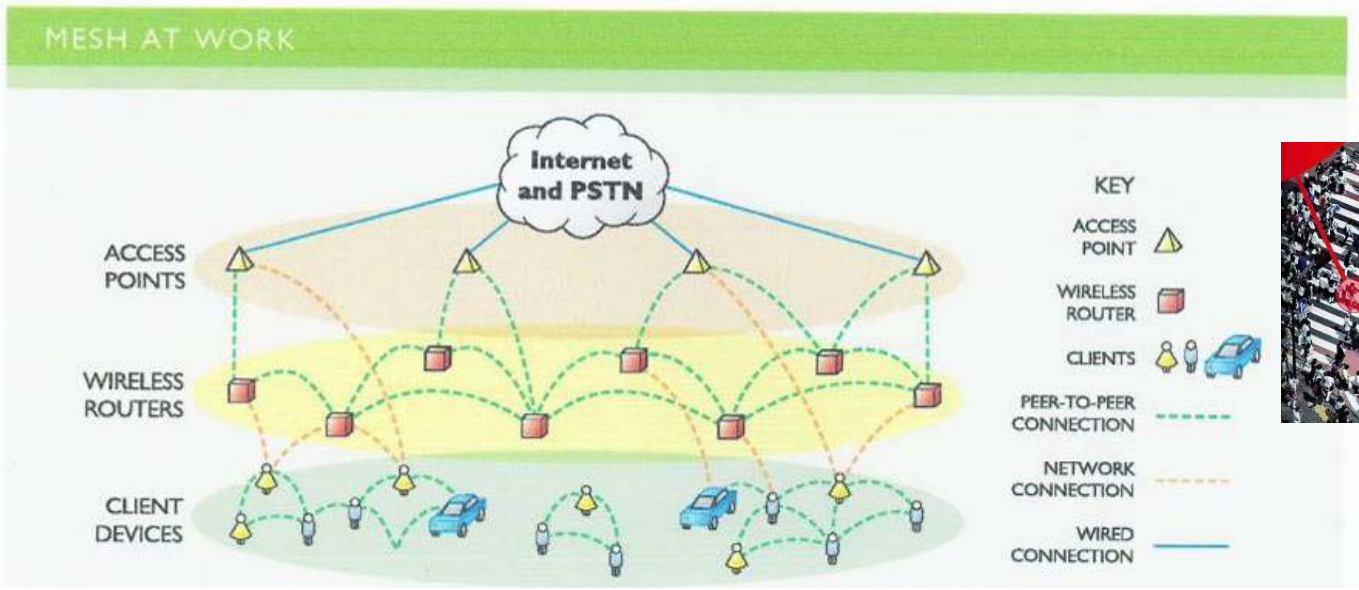


Frost & Sullivan



Combo’s will be the norm – Nokia med WiMax
Short term, HSPA on top of 3G dominant with LTE & IP, also voice
Qualcomm greed and OFDM driving industry towards WiMax

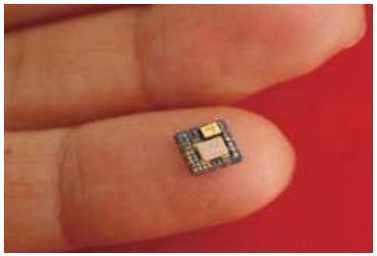
Meshing & Software Defined Radio



Motorola / CSC

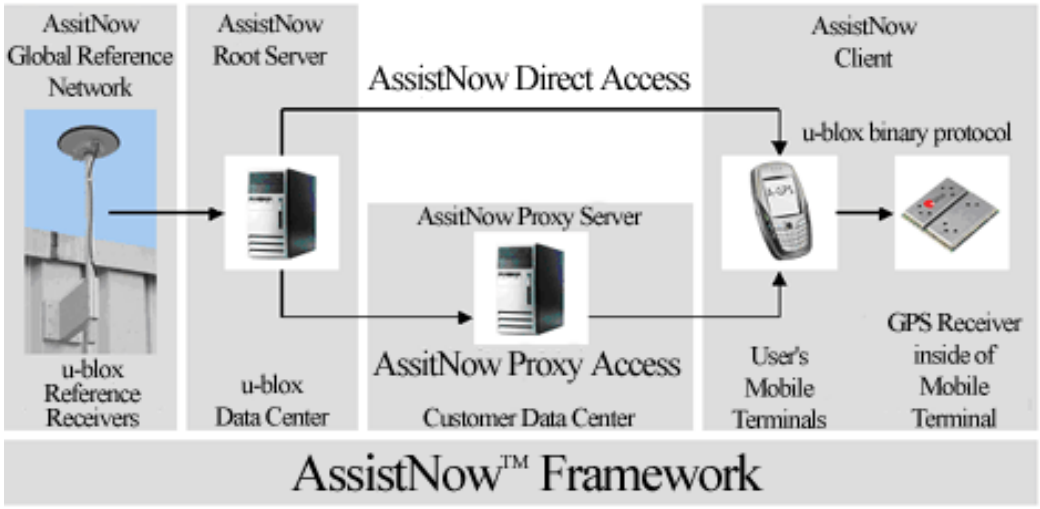
- SDR (software defined radio) Enables devices to work across wide spectrum range in any transmission format (Forrester)
- From software defined radio til cognitive radio
  - SDR's are hardware radios that are software programmable with the ability to add new waveforms
  - Cognitive radios are steps ahead in terms of awareness on users, device (self), networks, locations and waveforms
  - They have computational intelligence, and can be designed with spectrum sensing and resource utilitzation (Frost and Sullivan)
- Meshing
  - Meshing could be completely distributed
  - A multi-point to multi-point architecture
  - Ultradevices, Meshing on top of 802.11, 500 usd routing unit

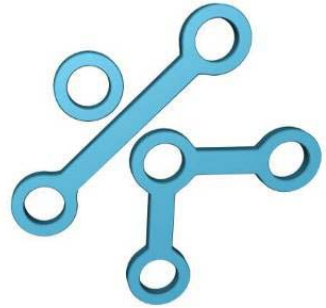
GPS – i alt



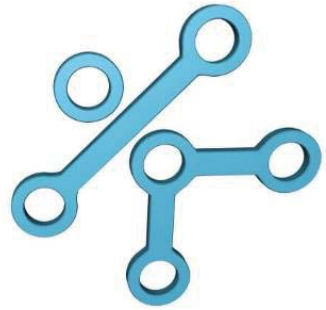
- Worlds smallest GPS receiver
  - ½ x ½ cm, Rakon
  - CSR 1usd add Btooth GPS
- 2025
  - 3.2mia GPS modtagere 1.2mia road, 1.8mia personal

- Fra GPS til A-GPS
- Assisted GPS fungerer ind i bygninger

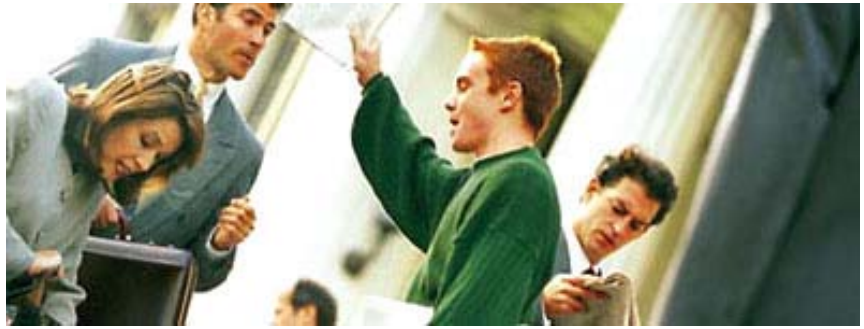




Enhederne



I stedet for dimser - behov
Situational types



- **… at work**
- **Deliberating (places for thinking)**
- **Presenting (places for speaking to groups)**
- **Collaborating (places for working within groups)**
- **Dealing (places for negotiating)**
- **Documenting (places for reference resources)**
- **Crafting (places for skilled practice)**
- **Associating (places for business form ecologies)**
- **Learning (places for experiments and explanations)**
- **Watching (places for monitoring)**

- **…at home**
- **Sheltering (places with comfortable climate)**
- **Recharging (places for maintaining the body)**
- **Idling (restful places for watching the world go by)**
- **Servicing (places with local support networks)**
- **Metering (places where services flow incrementally)**

- **… on the road**
- **Gazing/touring (places to visit)**
- **Hoteling (places to be at home away from home)**
- **Adventuring (places for embodied challenge)**
- **Driving (the car as a place)**
- **Walking (places at human scale)**

- **… on the town**
- **Eating, drinking, talking (places for socializing)**
- **Gathering (places to meet)**
- **Cruising (place sfor seeing and being seen)**
- **Belonging (places for insiders)**
- **Shopping (places for recreational retailing)**
- **Sporting (places for embodied play)**
- **Attending (places for cultural productions)**
- **Commemorating (places for ritual)**

TDC

Digital ground, Pervasive Computing, architecture and design
malcolm mccullough, MIT press

n

Mobile Internet Devices

- 38 pct of phone users will use mobile internet services in 2012
  - Forrester

Offline Web

- Offline, using web technologies, can run on computer, and use the net when connected
- Google Gears – Beta
  - Open source browser extension, lets developers create web apps that can run offline.
  - Local server, cache or serve app, HTML, Javascript, images
  - Database to store and access data within browser
- Adobe AIR – Integrated Runtime
  - Can run offline or –on, can swap content with web sites. Browser need not to be open
- Microsoft Silverlight plugin
  - Runs in browser, will later be able to run offline

Google Gears BETA

ADOBE® AIR™

Microsoft® Silverlight™

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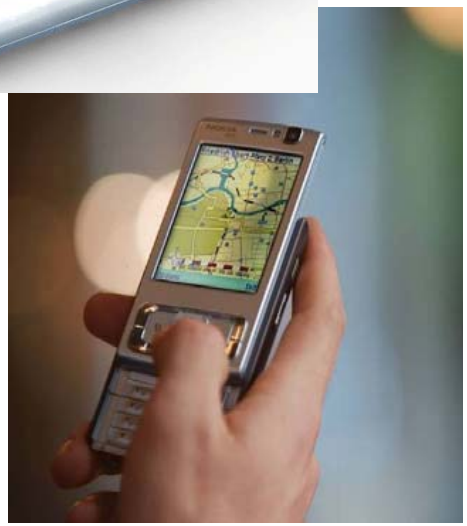
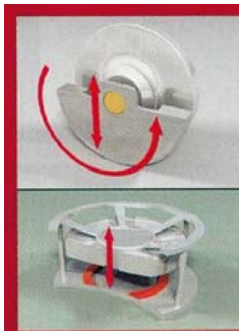
Transformational devices Nokia, Google & iPhone

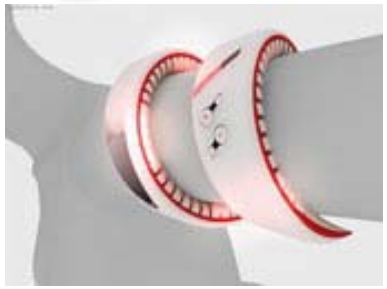
- From: voice and SMS
- To: Pervasive Information device



Faking the feel of buttons



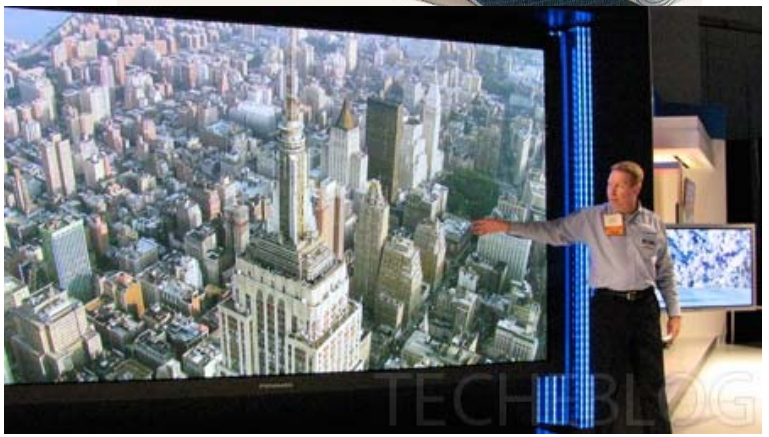
Transformational devices Future

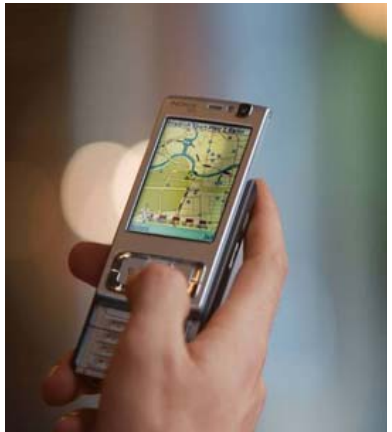


- Form factors:
  - 4-inch is the largest display you can put in your pocket
  - 7 inch is the smallest you can view an attachment on
- Micro lap-tops, pocket devices, watches, jewelry
- Phone as hub, remote control, personal trusted device, all IP
  - PAN/LAN/WAN, connecting to footfall monitors, heart rate mobitors, plood pressure, connection to a smart home, controlling entertainment, heating, ventilation. Also smart poster connection, payment, vending machines ABI Research

3 formater, 3 behov

- 40” - eller mere, familie, hjem, underholdning, kommunikation
- 4” mobil, underholdning, kommunikation, informationssøgning
- 12” Til fordybelse, arbejde





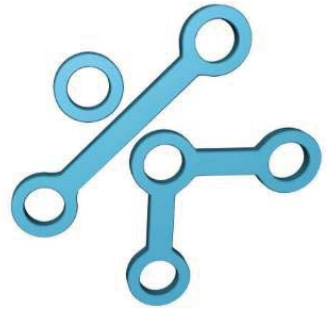
Digital Cars

- Killer application: Transparency
  - being able to access the same things as elsewhere in connected environment in an interface appropriate way
  - putting audio on what i already have access to
  - Tony Scott, CTO, GM, Forrester, Yankee, Wireless Car
- From almost never connected to almost always connected
  - Added features grow by 7 pct per year avg
  - From proprietary systems to open framework, XML in the car
- In Europe, mobile penetration makes phone center for most services
  - 50 pct of European car journeys are less than 5km
- Displays and computer power, but focus on updatable online systems

TDC

Kampen om navigations-markedet

- Traditionel navigation, TomTom, Garmin
  - Baseret på enhed med indlejret information
  - Eventuelt TMC
  - Priskrig
- Trussel nr 1, mobilen
  - Nokia N95 og andre typer med GPS
  - Bredbånd og services koblet på
- Trussel nr 2, web
  - Google Maps
  - Et hav af services, 3D overblik, foto-overlay




Branchensuche
Google
Am Standort
Am Zielort
PLZ oder Ort in Deutschland
Ort aus Adressbuch
SET
500m
GPRS Online
13:05
29.08.2007
NEW TECH IMPACT
MENING OG MULIGHEDER MED NY TEKNOLOGI
INNOVATION LAB KONFERENCE DEN 30. OKTOBER 2007 I ÅRHUS

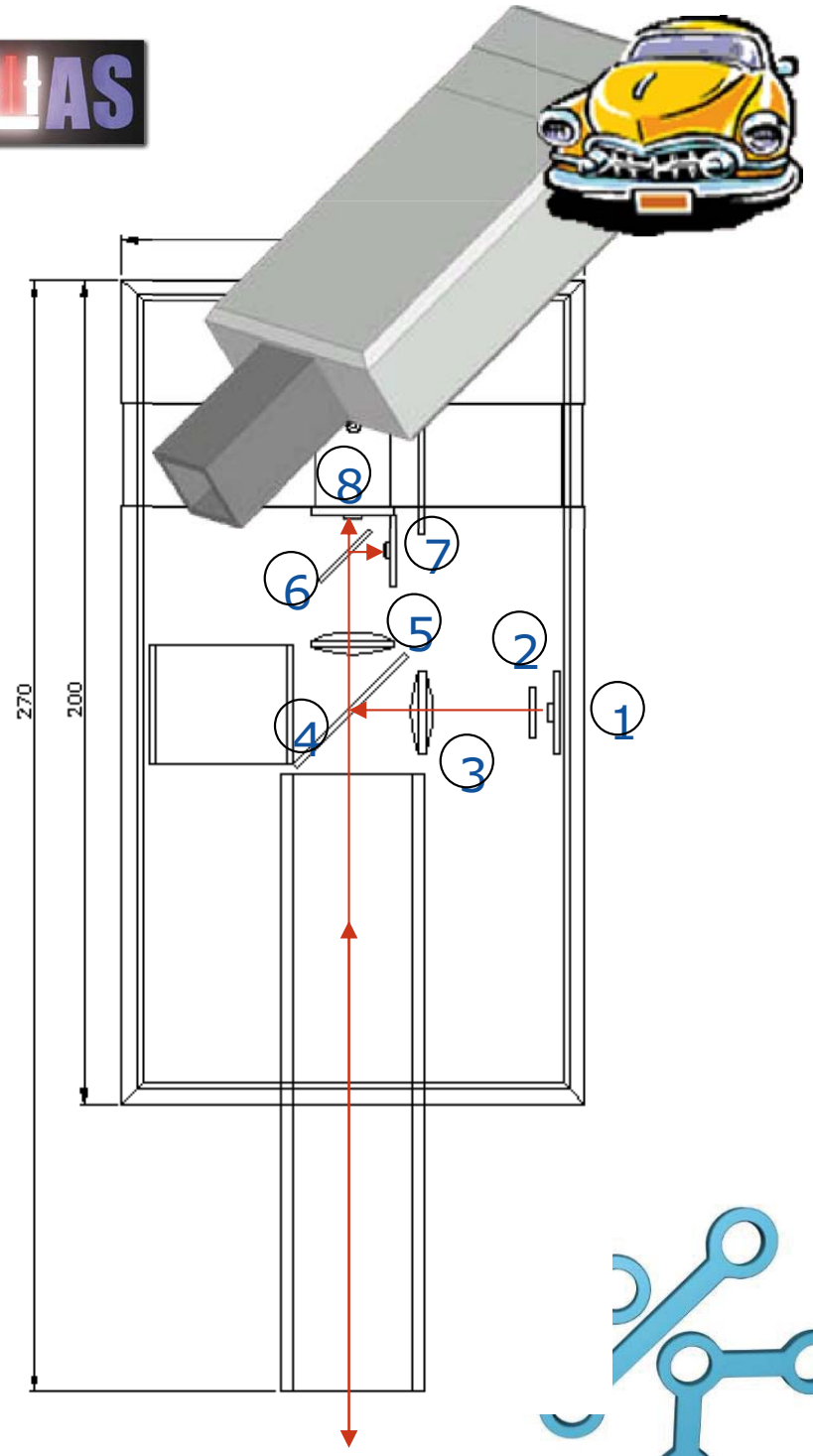

Today's High 110 F
Today's Low
Office 12 miles
Arrival 41 minutes
OPERATION ALERT
Hitachi 2400 Smart Windshield
Recommend Upgrading to OS 2.7
Look at Target and Blink Rapidly to Install
nifer // Age 23
tion, DUI Conviction 2012
COUPON ALERT
Special Offer
Expires in 15 minutes
$5 Off Espresso Poppers
THIS EXIT
STARBUCKS COFFEE
COMMUTER CHAT
100
120
140
3,413 MILES
2600 RPM
FUEL

Navigation
Real Time Traffic Information

- Inrix Dust Network
  - Dynamic routing by use of trafic flow sensors (moving vehicles) predict future flow based on past patterns – how long does it take to clear out a 50.000 person stadium, or slow down in traffic flow 5.pm, difference when rain or sun
  - 625.000 commercial vehicles/taxi's etc
  - BMW, partner with Clear Channel/RDS, data from Inrix
  - 5.6.000 vehicles needed to cover New York
- Dash Navigation
  - Connects via cellular or wifi depending on availability
  - Web searches, 95 oct cheapest, movie times, restaurants
  - 600 usd plus monthly fee
  - Also updating other Dash users by sending actual information from car
- Browse online maps for real time data
  - Local Gas Prices
  - Traffic flows
  - Restaurant waiting times
  - Parking spots

Liwas

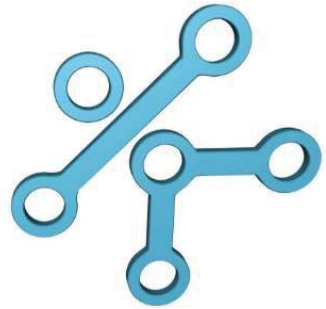
- Sensorer i bilerne, indrapporterer status
- ABS, ESP osv er alle defensive
- Med Liwas kan man reagere FØR problemet opstår (0.3 sec)



Light transmitter (1). Polarizer (2). Lens (3). Beam splitter (4). Beam splitter (4). Lens (5). Polarizer and beam splitter (6). Mirror Detector (7). Diffuse Detector (8).

Navigation version 2.0, winners and loosers

- Dash partner with Yahoo
- Magellan partner with Google
- Moving towards web based world
- Mobile - Nokia, or Google will provide service
- Focus on additional service and subscription
- TomTom Garmin may end up as camera brand name on mobile (lens by Carl Zeiss)



Indhold og adfærd

The softening of time and presence

Amount of communication before actual meeting or event

1900
1 letter
Or 1 call

Now
many calls
or SMS

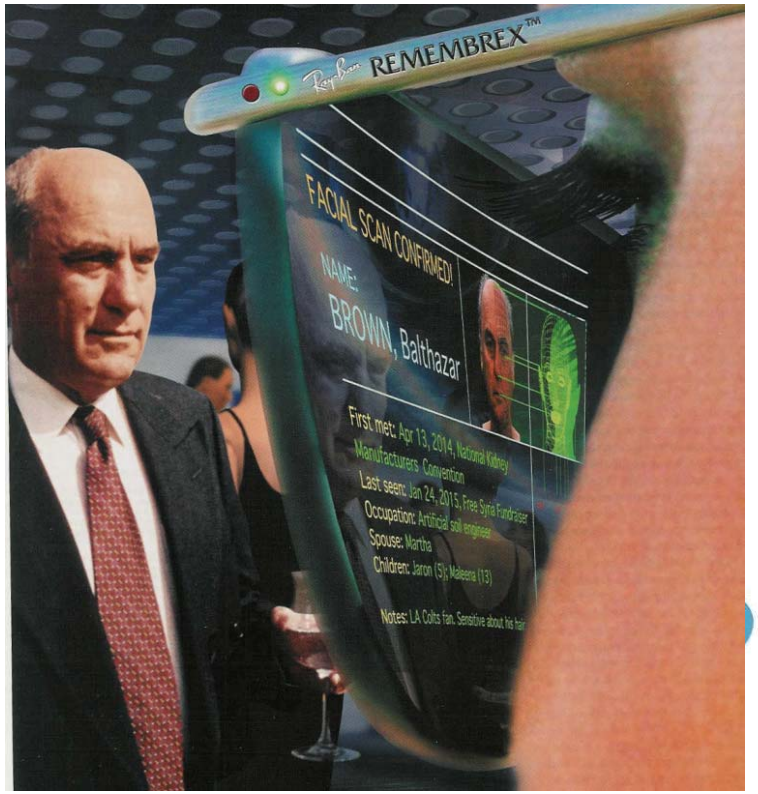
Soon
streaming
time and presence

- Digital aura, GPS ability to turn on and off for friends and family – Buddy Finder / 4 people Forrester
- From fixed coordination to progressive coordination
- Softening of time – if you have a phone you can be late - hyper coordination in real time (Rheingold, Smart Mobs)
- Definition of precense becomes uncoupled from physical places and reassigned to a social network
- As long as you participate in the shared communication you are considered to be present
  - Forrester, interaction design institute, Ivrea Italy

TDC

The Continuous Computing Era

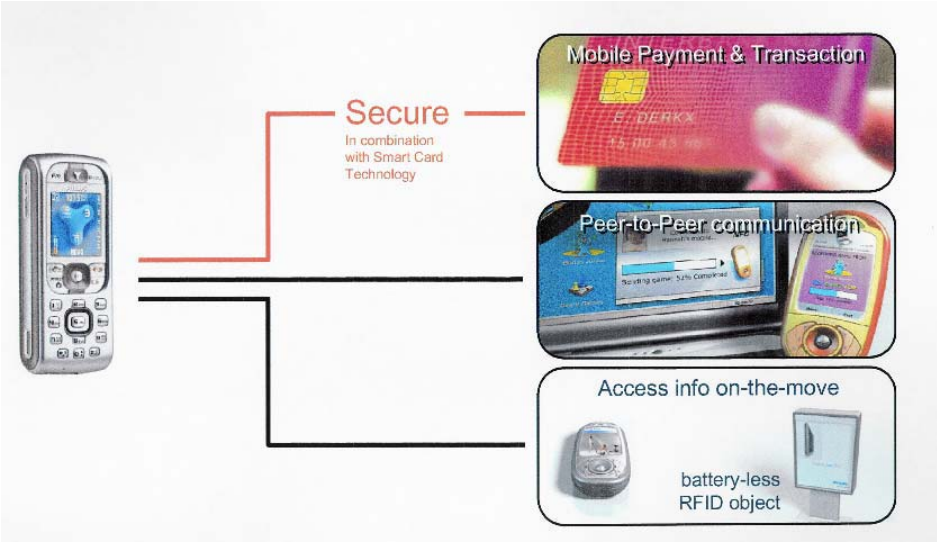
- Living in a world of Continuous Computing
  - Like wearing eyglasses – the rims are visible, but the wearer forgets he has them on – even though they make the world clearer
- Sensitive to identity
  - associaties location, preferences and chronology
- Soon devices will recognise patterns in your life
  - seeing you always return to the office from Starbucks, enables e-mail, voice mail
- IFTF, Forrester, MIT



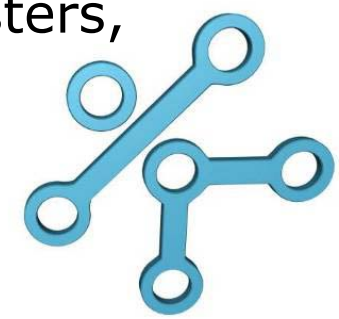
Fra Web 2.0 til Web 3.0

- Greater user participation
  - Usergenerated data and metadata, and user centric designs
  - Harnessing collective intelligence
- Openness
  - – API – open application programming interfaces, and open source software and content
- Ligthweight technology
  - – Ajax, RSS, etc
- Decentralized, distributed process
  - ad hoc mashups, content tagged by folksonomy
- The Web as a platform
  - Software above the level of a single device
  - Data is the next Intel inside
  - End of the software release cycle
  - Rich user experience

Wireless, and now contactless

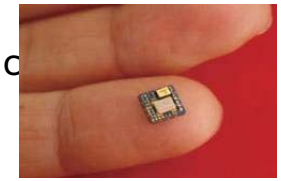


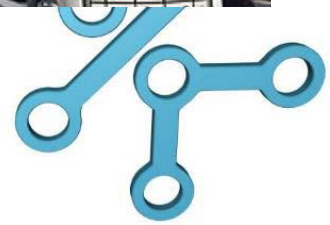
- - proximity services
- Combine payment, travel, loyalty, cinema and personal keys on mobile via NFC
- 2 main applications
- Emulate contactless card, use for payment, travel pass etc
  - Credit card or bank card with an interface, you can see transactions, amount on card, implement different solutions
- Reader mode
  - Phone transactions, data exchange, reading smart posters, transferring information, business cards



Mobile Phones of the (near) future
Geotagging and hyperlinking reality

- Small and ever cheaper
  - Worlds smallest GPS receiver 5x.5 c Rakon
  - CSR 1usd add Btooth GPS
- Geotagging mobile phone pictures,
  - Yahoo Research, Zonetag, autotagging, pictures and upload to Flickr
- Hyperlinking Reality via Phones
  - Nokia, MARA – Mobile Augmented Reality Application
  - Using GPS, accelerometer and compass, phone can identify restaurants, hotels and landmarks, providing web links and basic information on phone screen
  - Point camera at ground, displays map and orientation on display
- Microsoft Resarch, identify place via picture taken
- Samsung, Nokia Research, MIT Technology Review





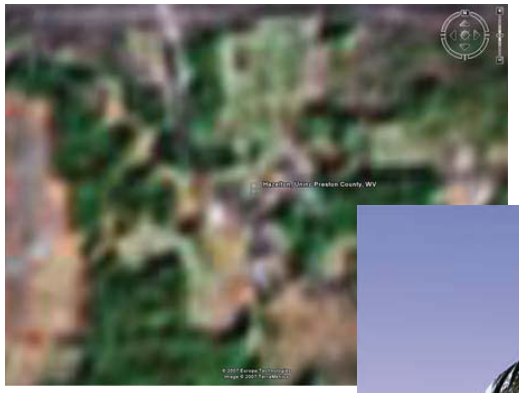
Fra OnLine til OnSite - Internet Ikke via-Google –internet”

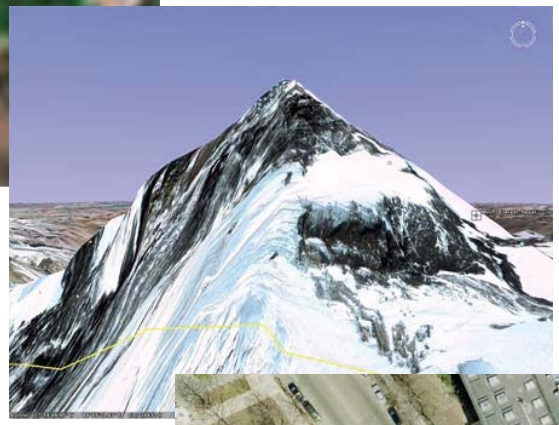
- En typisk Internet seance går enten til et bookmark, eller er via Google ud på nettet
- En mobil Internet seance understøtter derimod den ting du foretager dig lige nu
- Nokias Point and Find, hvor du peger på ting som telefonen genkender
  - Fex en taske i en butik, linker automatisk til information om produktet
  - Tag et billede af en spændende bygning og få at vide at du står foran Domkirken i Køln – som er bygget … osv
  - Din position og en restaurant søgning giver foretrukne restauranter i området efter din profil – senere kan den også vise om der er plads og booke
  - Virtual Graffiti – projekt fra Katrinebjerg man efterlader besked til hinanden
  - Shoot to translate, tag foto af tekst og få oversat

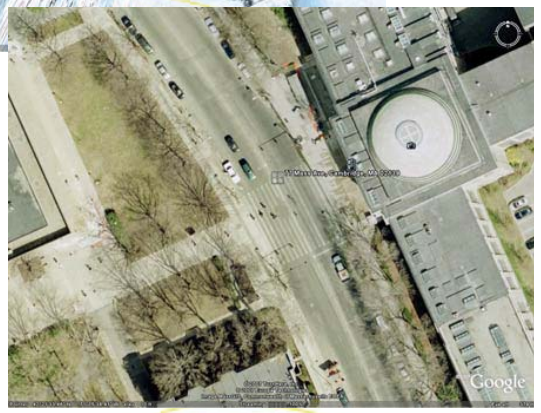
Mash-up Mapplets

- Google Inc. is introducing tools that will stitch together applications from a hodgepodge of Web sites.
- In the last two years, Google estimates more than 50,000 mashups have been built on its maps to highlight information about
  - gas prices, running routes, earthquakes, apartment vacancies, home prices and a wide range of other information.
- Until now, the mapping mashups were scattered across thousands of Web sites.
- Creations will be packaged into mini-applications called ''mapplets'' that will be posted under the ''My Maps'' section of Google's Web site.
- Multiple mapplets can be laid over Google's map simultaneously
  - a user could get a glimpse at where homes are being sold in a specific neighborhood while also analyzing the area's recent crime patterns.

Google Earth

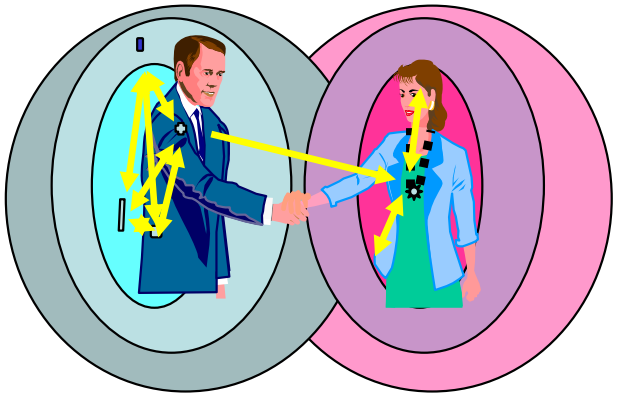




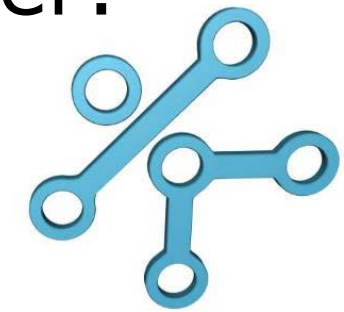


- How on earth does it work
- DigitalGlobe Quickbird High resolution pictures, sattelite 450km up, snapshots 16.5km2, resolution 60 cm2
- Landsat7 resolution 15meter
- Pictures matched with elevation data, makes it possible to tilt and view Grand Canyon
- High interest areas, like San Francisco is photographed by aircraft
- Data stored in a pyramid of varying resolution
- Google maps client loads from pyramid, decides which image to store as ”next” in cache

Digital Aura



- Ambient mobile computer systems
- Mobile enheder med GPS, ved hvor de er
- Unik identifikation med SIM
- Også betalingsmulighed ved nærhed, eller overførsel af data, NFC
- Social networking services og cirkler
- Hvem må vide hvor jeg er, flere cirkler:
  - Familie
  - Sikkerhed/tryghed
  - Information / kommercielle muligheder

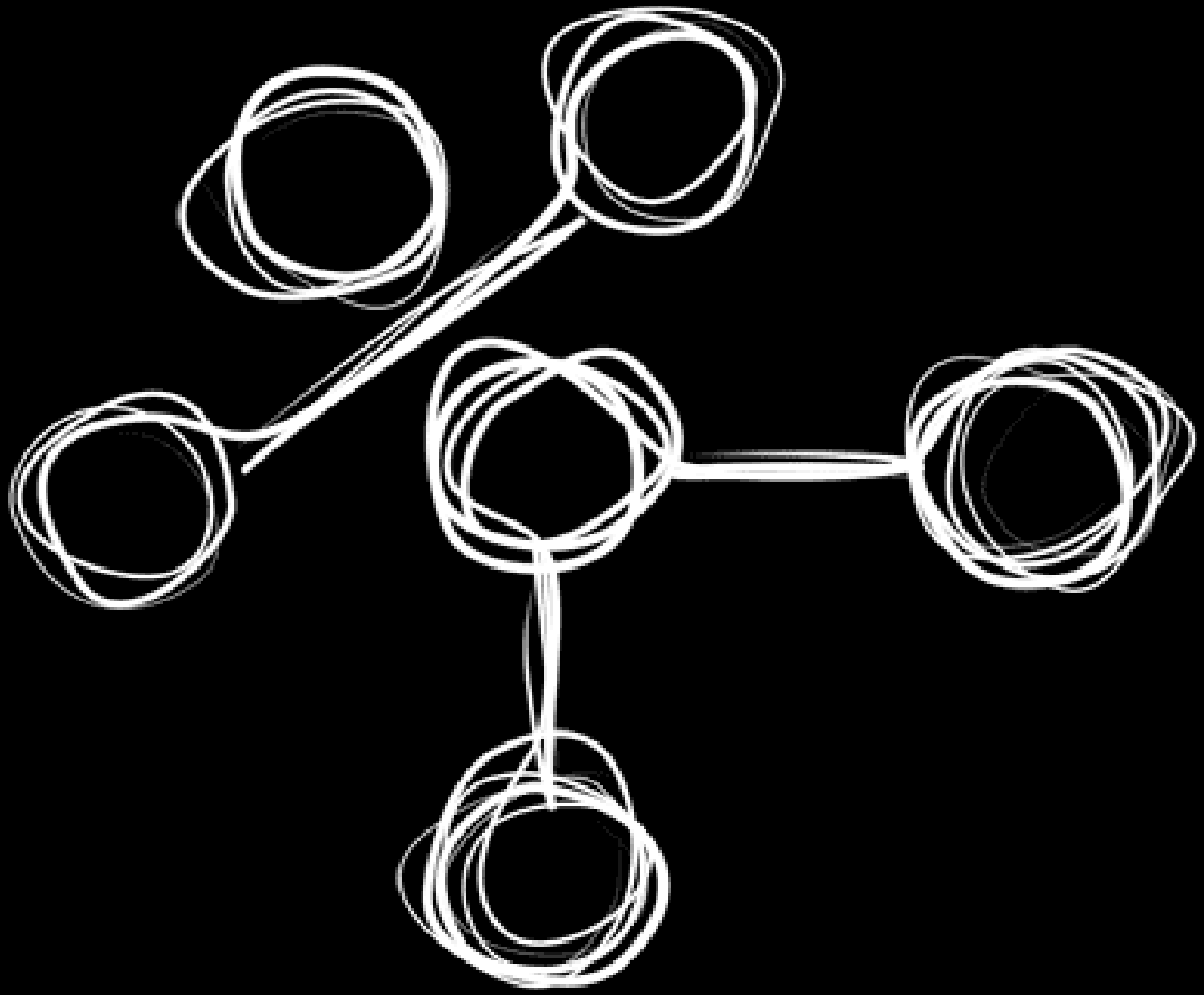


Twittermap

- Answers the question, What are you doing?
  - Like seeing a pixel of someones life
  - 140 character updates, uploaded from any device
  - 500.000 users
- Twittermap
  - Microblogging meets GoogleMaps

Dial F for Fitness, or Footprint, Co2 regnskab

- MobGas
  - Eco diary, tracking carbon footprint af activities, upload to web site compares to national, global average
- MobileFitness.dk
  - Brug af digitale medier til livsstilsændringer



NEW TECH IMPACT

IT uden grænser – en rejse i Norden

TDC

Matti og Tiina planlægger rejsen

- Parametre:
- På tværs af bil, fly, færge, tog
- Præferencer
- Tid
- Økonomi
- Co2

mobGAS

TDC

Alternativ planlægning ”on the fly”

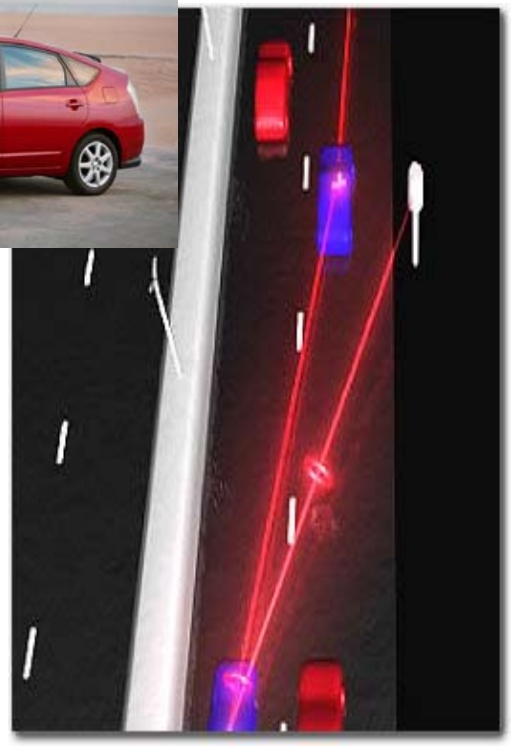
- Bus-strejke kræver dynamisk opdatering af rejseplan

Turister i Oslo og omegn

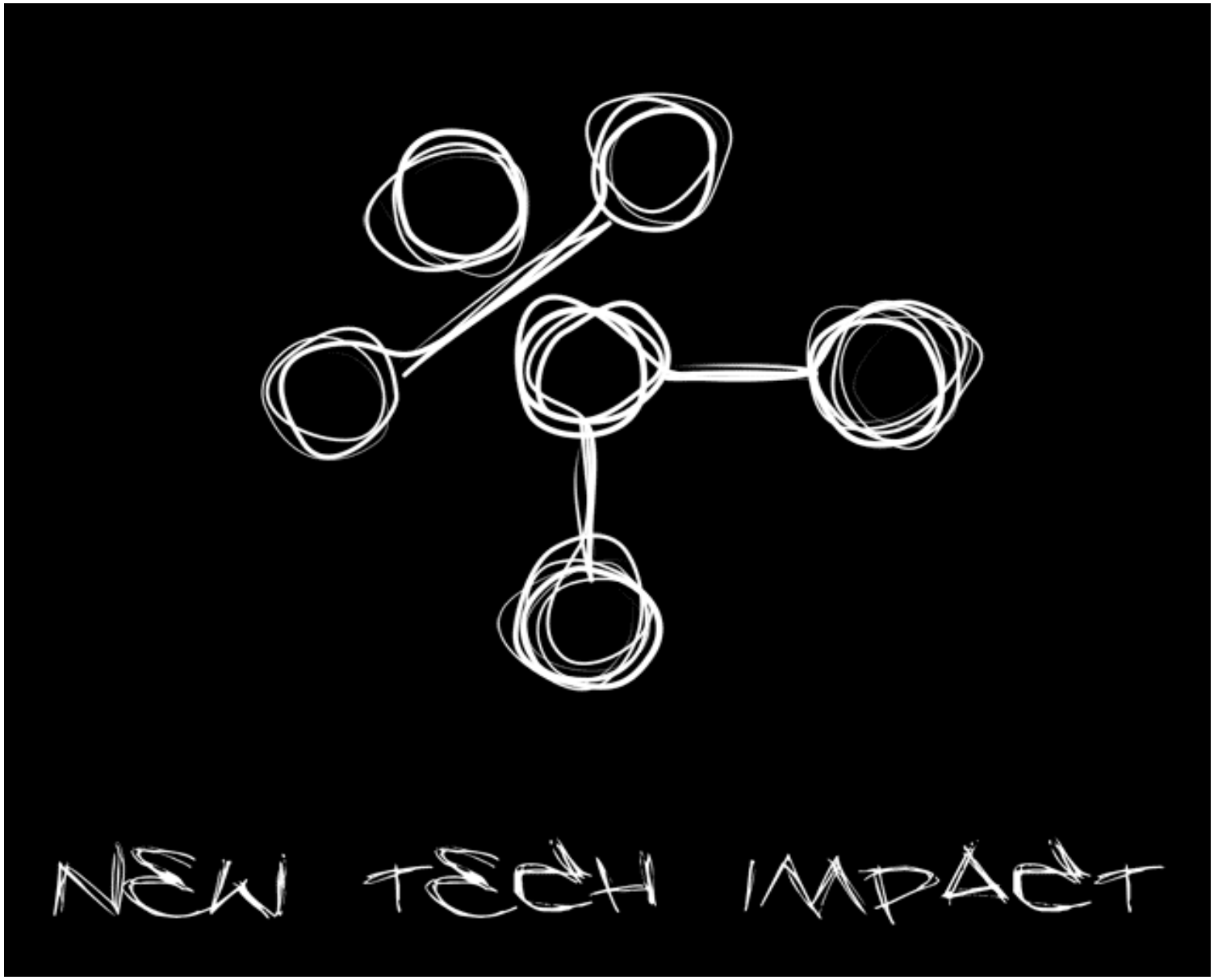
- Bilens navigations-system har flere ”lag” af information, turistlaget er aktiveret

Toyotaer taler med hinanden

- Toyotaerne taler med hinanden i et lukket proprietært system

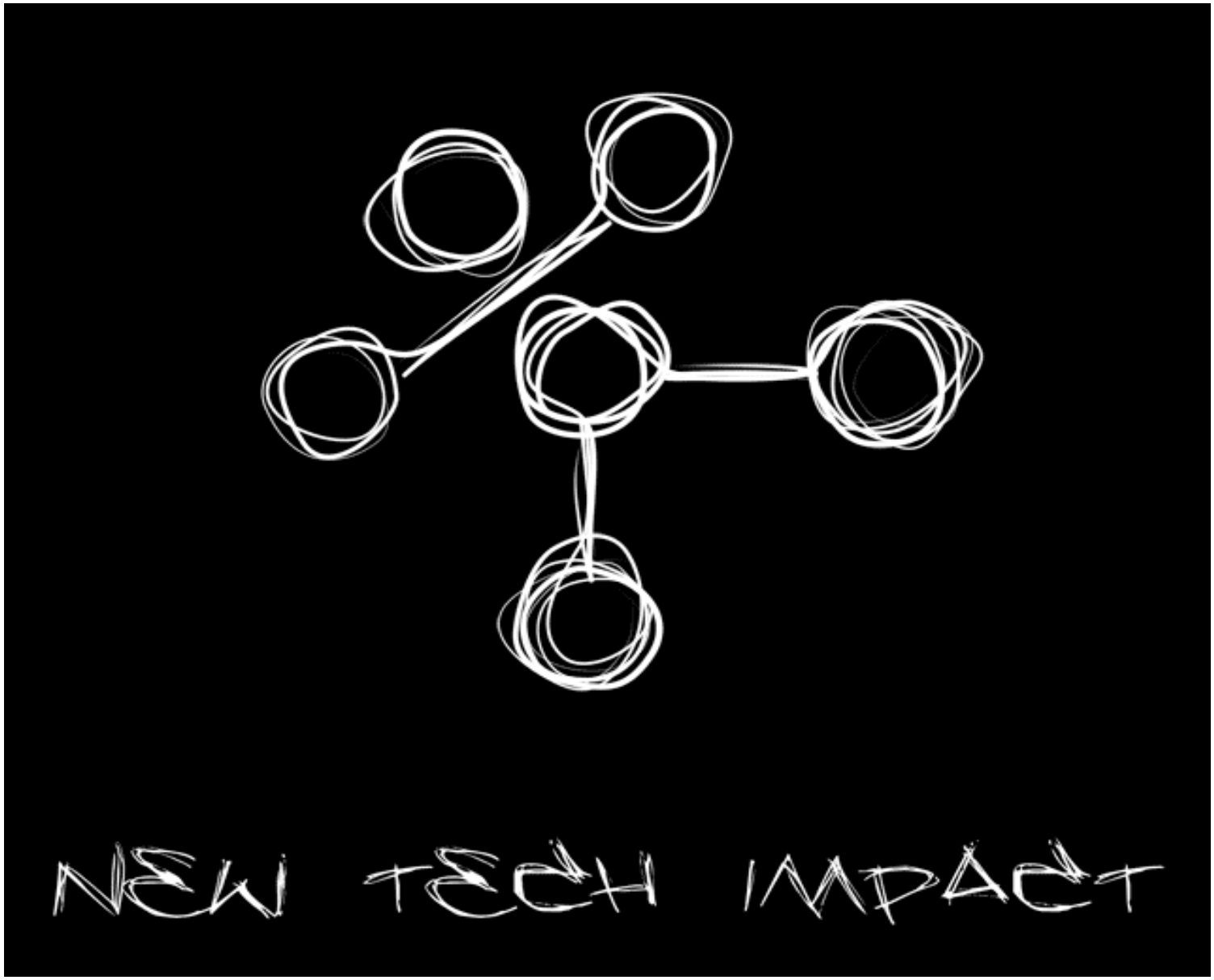


Cooperative **V**ehicle-**I**nfrastructure **S**ystems



En terrortrussel lukker en tunnel

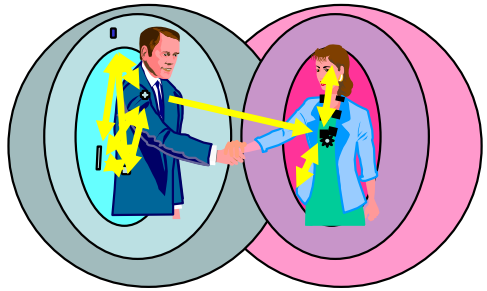
Tunnel innovation: Location Services and Robostics



Matti, Tiina og Ola når færgen

Med bus tager de til Ålborg, og herfra med toget til Roskilde

- 90.000 mennesker er på vej til Roskilde
- De finder andre der er på vej, og hjælper hinanden



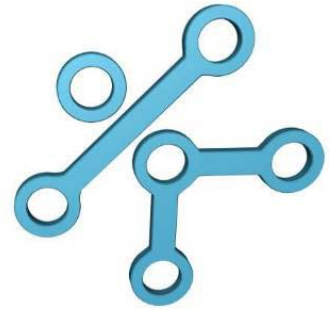
Trafik kaos i Roskilde

ROSKILDE FESTIVAL

- ITS systemer holder styr på trafikken, systemerne kan vende vejnet og trafiksignaler
- Busser sendes hen hvor kunderne er
- Ældre og børn prioriteres
- Systemerne kan forecaste

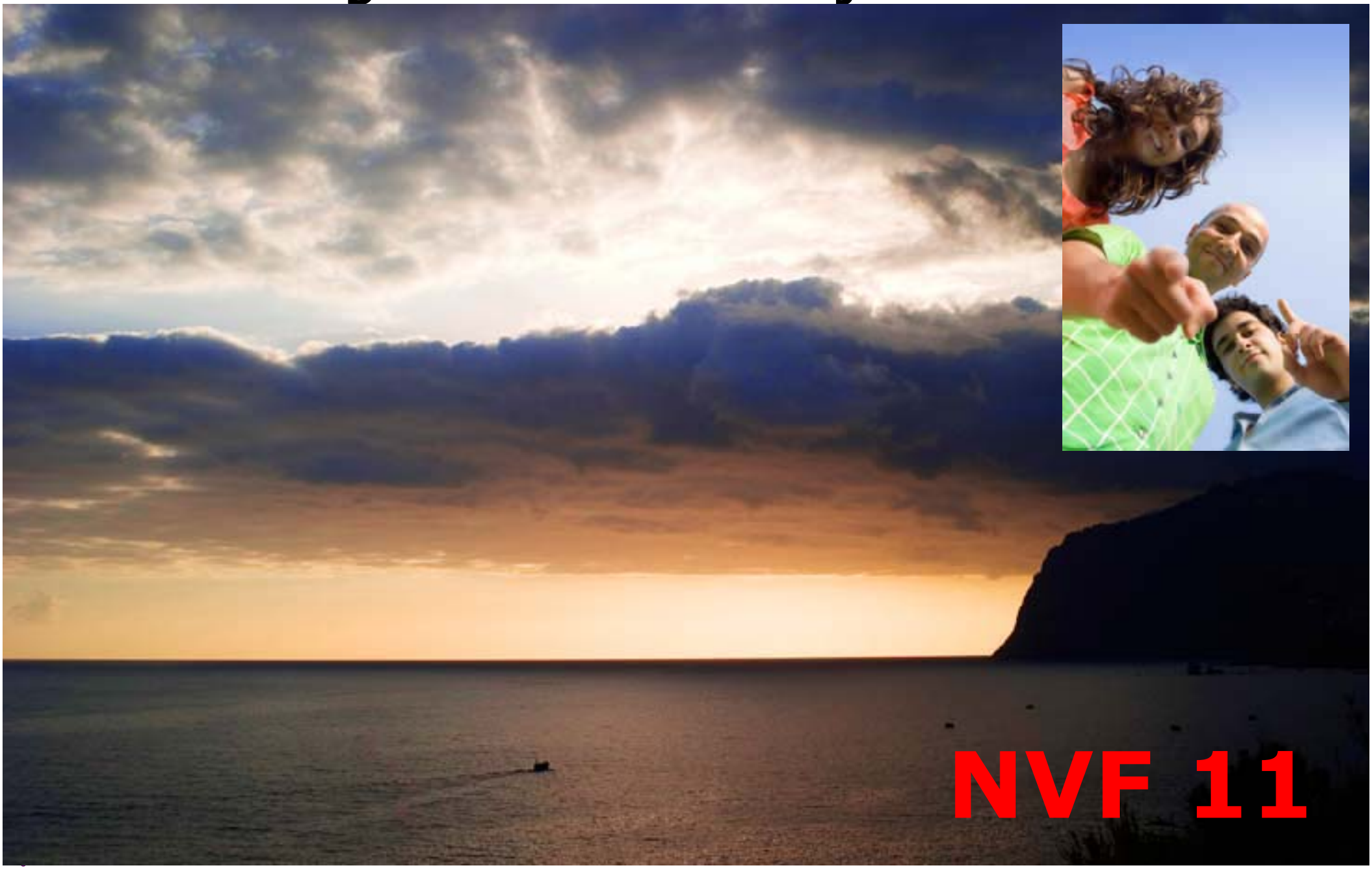
TDC

De nåede frem i tide !



Via Nordica 2008

IT uden grænser – en rejse i Norden



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