

Oulu Capital
of Northern
Scandinavia



OULU

www.oulu.com



Grand Challenge USA



Dressed for Egress
An X-ray of the suit that Alvin B. Shepard wore on the Moon during the Apollo 14 mission in 1971.

ANTI-ABRASION PATCH
Kevlar space-age fabric offered protection from the life-support backpack, which weighed 100 pounds on Earth.

ARM BEARING
Allowed the arm to rotate freely.

SHOULDER RING
Prevented the shoulders from collapsing under the weight of the backpack.

MAIN ZIPPER
A special air-tight zipper started at the neck and wrapped under the crotch. For later missions, the zipper design was modified to allow the astronauts to sit in a lunar rover.

PRESSURE GAUGE

COUPLINGS
The upper left port was for communications, and the upper right port fed water to the suit's water-cooled undergarment. The four lower couplings were for good air and exhaled air.

SNAP CLOSURES
and velcro were used to secure external flaps and pockets.

URINE TRANSFER CONNECTOR
A small port for draining collected urine.

MEDICAL INJECTION PATCH
A small area on the right thigh was designed for emergency injections.

MULTIPLE LAYERS
The suit, which weighed about 70 pounds on Earth, was made of 21 layers of fabric, hand-sewn on Singer machines by experienced seamstresses. The innermost pressure bladder was a combination of natural and synthetic rubber, and the outer layers were made of materials like Dacron, Mylar, Kapton and Teflon.

SHOULDER RING

PRESSURE RELIEF VALVE

TETHER BAR
An attachment point for wires that kept the astronauts in place while flying the lunar module to and from the Moon's surface.

CONVOLUTES
Accordionlike folds allowed the suit's flexible joints to move when pressurized. Hand-dipped from latex, the folds contained nylon brood and flexible restraining rings to retain their shape when inflated.

CABLE RESTRAINTS
Braided stainless-steel wire kept flexible joints from overstretching when pressurized.

INTEGRATED BOOTS
Like the rest of the suit, boots were custom-made for each astronaut. Some a suit required measuring the individual along more than 100 dimensions.

Source: "Spacewalk: The Smithsonian National Air and Space Museum Collection" by Amelia Young, MITL, "Spacewalk: Battling Apollo" by Nicholas de Munnich

THE NEW YORK TIMES MAGAZINE

Grand Challenge Norway





Grand
Challenge
Finland



Oulu Track Record in Wireless

- 2011** WIFIOUS – High Capacity NextGen Cognitive Radio Solution
- 2010** World's First Fully 'Open' Mobile Device Powered by Moblin
- 2010** Linux Phone launch
- 2009** World 1st Cloud based mobile security services
- 2008** World 1st pedestrian navigation phone
- 2007** Launch of mobile Wimax test network
- 2005** The world's 1st public NFC user
- 2004** The world's 1st commercial Edge high-speed network
- 2003** Europe's 1st free urban area WLAN network
- 2002** The world's 1st WCDMA (3GPP) telephone call
- 2002** The world's 1st security OTA-services for Mobile phones
- 2001** The world's 1st security products for Mobile phones
- 1996** The world's 1st WCDMA telephone call
- 1993** Modern menu-driven user interface style for mobile phone
- 1992** The 1st contactless fare collection system for public transportation
- 1991** The world's 1st GSM telephone call
- 1991** The world's 1st GSM base station
- 1982** Europe's largest science park
- 1981** The world's 1st NMT network



More Than 100 Wireless Devices

- Oulu ICT ecosystem has designed and developed more than one hundred mobile phone models.
 - more than 1 billion sold devices
 - Nokia's ecosystem has enabled the growth
- More than 7 companies can develop and design wireless handsets from scratch to market ready product.



Nokia Solutions and Networks - NSN



Every 95 seconds one NSN designed cellular network base station is installed





R&D and mass production skills

Complete Product Creation – Quality

Product Definition

- Market and consumer research
- Business analysis
- Innovation, concepting and validation
- Technology selection and prototyping
- Industrial design
- Cost structure and value chain analysis
- User experience

System Design

- HW & SW architecture
- Interfaces and connectivity
- Performance analysis
- Mechanics design
- UI/UX design
- Interoperability

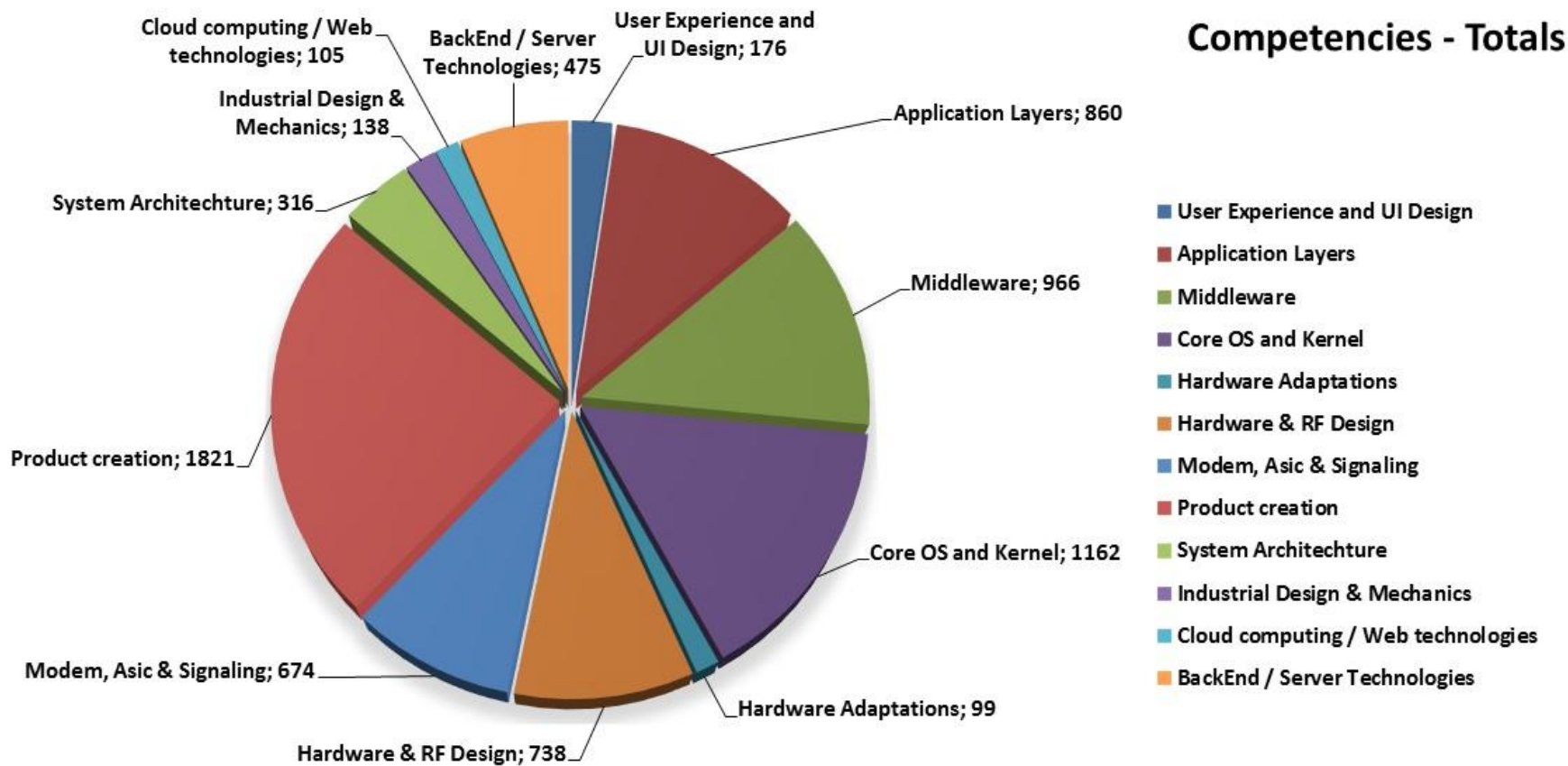
Development

- Product program and projects management
- HW development
- SW development
- UI/UX
- Mechanics
- Manufacturability verification
- Product validation and testing
- Sourcing and logistics chain
- Production ramp-up
- Ecosystem ramp-up

Go-To-Market and Sales

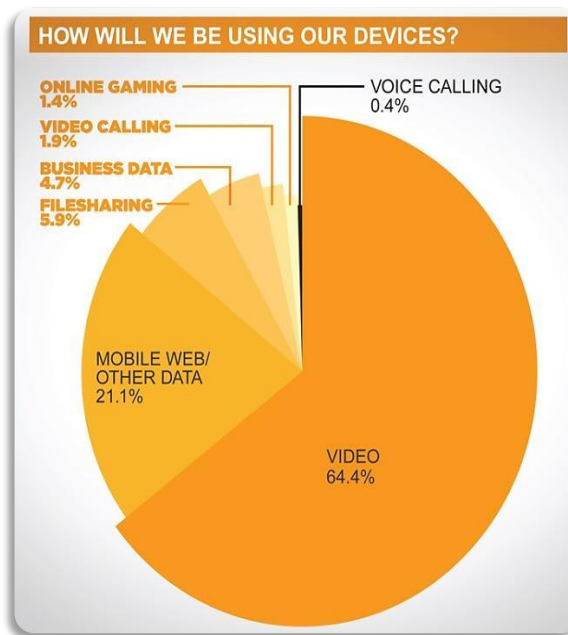
- Global market entry strategy
- Global Business Development
- Global support and warranty operations
- Product quality improvements
- Developer Support
- Customer Support
- Product updates
- Market expanding – Product variants

7530 Oulu ICT R&D experts categorized





5G Network development already on-going



Leading Global ICT Brands in Oulu



Future Success Stories by SMEs

Grant4Com

Lewel
group

PEHUTECH
Inspection by camera

LudoCraft
The Art of Designing Games and Play

FINGERSOFT

koodiviidakko

ZEF®

HealthEx

film360.tv
My Personal Cameraman

PLAYSIGN
ANYTHING PLAYFUL

boogie
software

9Solutions

esju
Sharpening
High
Technology

an

KUVALEX
Yksilölliset kuvatarinatkoost

CREOIR
BRANDS GO MOBILE

Haltian

CyberLightning

codemate

FixUi

CREOWAVE
SOLUTIONS FOR EXTREMES

Ibis Luxury Watch- developed by Creoir



Adidas SmartRun, developed and designed by Elektrobit



Mendor Blood Glucose meter, developed and designed by Lewel Group



Digital Locking with zero power - iLOQ



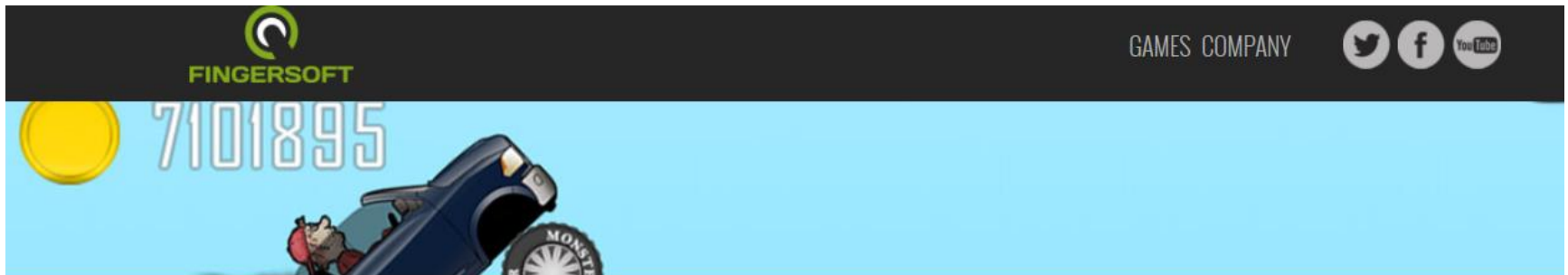
Rugged Windows Tablet Inari by AavaMobile



Heart Rate Monitors - Polar



Hill Climb Racing by **Fingersoft** - more than 160M downloads



HILL CLIMB RACING

A very addictive and fun hill climb driving game. Complete levels and gain bonuses from tricks to upgrade your car.



Seven Habits of Highly Successful Business Innovation Ecosystems (William Aulet MIT)



A regional business innovation ecosystem needs seven well-functioning components to be successful:

1. Infrastructure including roads, telephones, Internet access, and legal, accounting and other professional services
2. Funding sources, such as lines of credit or equity.
3. Invention, emerging from individuals, universities.
4. Corporate R&D centers, and other sources; demand for its products.
5. Culture that celebrates entrepreneurship and accepts the risks involved.
6. Skilled, well-educated labor pool of entrepreneurs.
7. Supportive government that provides innovation-friendly regulations, tax incentives, bankruptcy laws, and other policies.

Generation of 300 StartUp -companies

During year 2013 Oulu based startup-companies reached about 40 million euros investments.

One of funders, **Northern Startup Fund**, is a venture capital fund managed by Butterfly Ventures that invests into early stage startups as the first asymmetric fund in Finland.

Asymmetry means that the public investor, which benefits also in a form of tax income, lowers the risk of a private investor by offering a possibility for returning the invested capital and profit share before the public investor.

From the private investors' point of view this improves the risk – return expectation ratio significantly.

The public investors in the Northern Startup Funds are the City of Oulu and the European Regional Development Fund (the Northern Ostrobothnia Centre for Economic Development, the European Union).

THE TIMES Technology

News | Opinion | Business | Money | Sport | Life | Arts | Puzzles | Papers

Saturday, February 22 | London | Max 10C

Welcome to your preview of The Times

Subscribe now

Frozen assets: Finland's start-ups pitch for cash from a hole in the ice



Nic Fildes Technology & Communications Editor in Oulu
Last updated at 12:01AM, February 8 2014

1 of 6



Global co-ordination is the ultimate prisoner's dilemma
Philip Aldrick's Economic Insight

Käyttäjän Business Kitchen uudelleenwiitaama

T TimesBusiness (@TimesBusiness) · 10. helmikuuta
If you missed it: Finland's start-ups pitch for cash from a hole in the ice (pics @henriiuoma) t.me/1uJBMP twitter.com/VEERYFKTD

Uudelleenwiitausta: 19 | Suosittu: 4

7.03 - 10. helmikuuta 2014 · Tiedot | Ilmainen mediaaika: 0/50

Pinenena

Behind the story:

'It feels like pins and needles under the skin'

The Finns were amazed when I said I'd have a go at ice swimming. But it made sense to them when I said I was...
Published at February 8 2014



From Research to Business



Core Innovation Environments and LivingLabs



Developing innovative solutions and products in collaboration with Oulu university hospital and companies for life science sector.



Developing and manufacturing environment for researchers to design prototype for printed intelligence products.



SmartCity development environment offers premises for research, development, testing and launching for new innovations for smart living.

PrintoCent Pilot Factory



Laboratory infrastructure

- Table-top printers
- Research and development
- Proof of concept demonstrators



R2R up-scaling

- Room-sized R2R lines
- Transfer from lab to R2R
- Process development



R2R pilot manufacturing

- Hall-sized R2R pilot lines
- Towards pilot manufacturing
- Towards market trials

OuluHealth

Forerunner in Smart Health



OuluHealth Ecosystem services

World class lab services

- Product testing
- Certification management
- Simulation facilities, 3D cave
- Technology healthcare center

Innovation and research services

- Oulu Innovation Alliance (Oullabs)
- CHT innovation centre
- Centre for Wireless Communications

Marketing, networks & matchmaking

Investment services

Market participation services



Unique Business Scene is the Key For Success

The ecosystem in Oulu covers the whole chain of creating wireless products and systems from the design to the production



WIRELESS
TECHNOLOGY



DATA SECURITY



GAME INDUSTRY



3D INTERNET



WIRELESS
DEVICES



CLOUD COMPUTING



M2M



PRINTED
INTELLIGENCE

Elements of Smart City in Oulu

- Strong education and research by University
- Innovation Centers for R&D between science and business
- Spearheading companies
- Wide StartUp –generation
- Pre-active city (politicians and office holders) with long term strategical activities
- Bridges to global markets if you don't have internal demand
- Invest in –capability
- Everyday collaboration with key actors in ecosystem

SuperWeek in Oulu 9-13.5.2014



Nightless Night
OuluHealth Ecosystem Meeting

June 11th, 2014 | Oulu, Finland

Registration open >>

www.ouluhealth.fi **OULUHEALTH** 



12.-13.6.2014 NALLIKARI OULU FINLAND

MIDNIGHT PITCH FEST

THE WORLD'S NORTHERNMOST
ROCK 'N' ROLL FLAVORED
START-UP EVENT OPEN FOR
GENERAL PUBLIC





Oulu, City of 240 000 people

- 400+ ICT companies
- 15 000 high-tech jobs
- 7500+ R&D experts
- 200 eHealth companies
- 300 start-up companies
- 16 000 students in University of Oulu
- 8000 students in Oulu University of Applied Sciences



**The most intelligent
city in Europe
2012 & 2013**

Intelligent Community
Forum (ICF)



Thank You!

Janne Mustonen

Key Account Director / ICT

BusinessOulu

janne.mustonen@businessoulu.com

BUSINESS OULU

www.businessoulu.com