BUSINESS
FINLAND

Digitalisation Based Business Opportunities of Forest, Food and Water

Dr Ilmari Absetz,
Director
Ecosystems
Bio & Circular Economy
Business Finland

June 2018

BUSINESS
FINLAND

Digitalisation of Forest Industry

- Ecosystem from forest to sea
- Biobased textiles for 7 % growing markets
- Printed electronics
- Substitution of fossile to bio 1 % = 20 Billion
  - Bio-based plastics, packaging, EU-Regulation
  - Industrial BIM-based sustainable wood construction and logistics ecosystem
  - Next generation forest-based bio-refineries
- Time from science to business faster and cheaper by digitalised R&D&I&Piloting process productivity

BUSINESS FINLAND

WOODBASED FIBRES ARE CHALLENGING PLASTIC

Lignin ecosystem

New cellulose and fibre products

Telaketju – textile ecosystem

Packaging valley

CASE FORESTRY

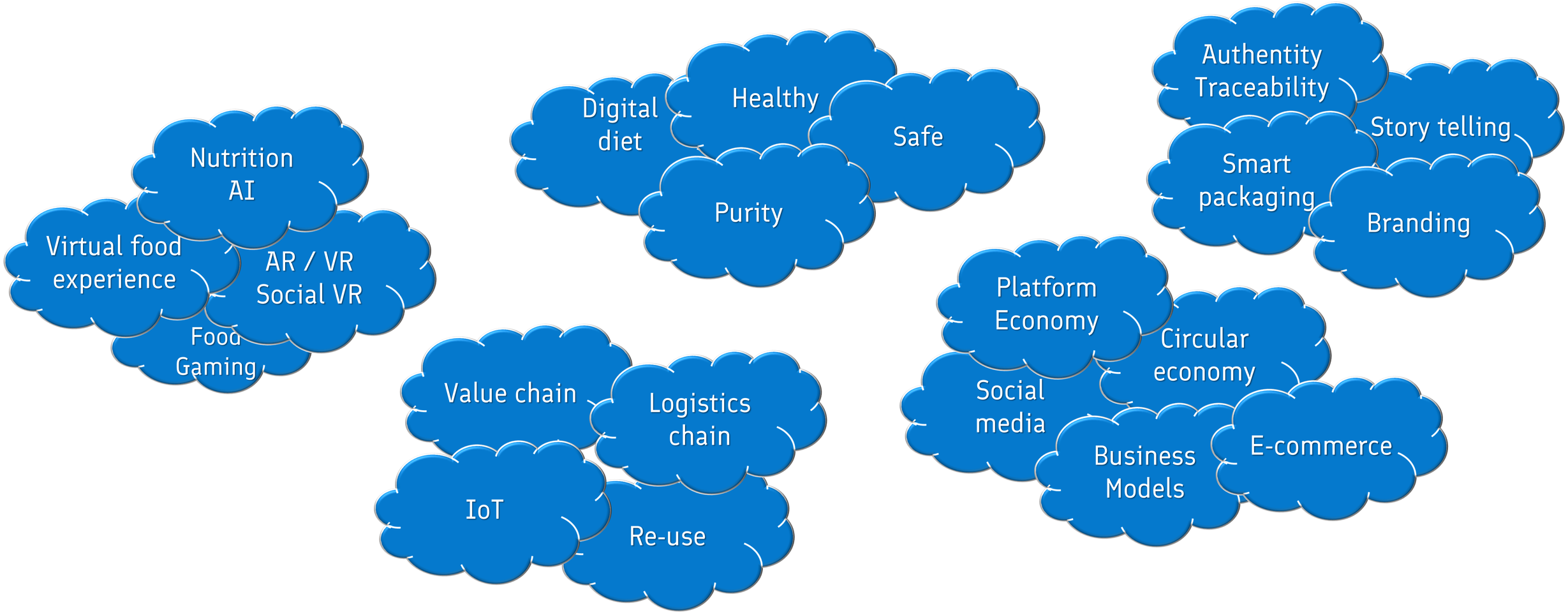
SATELLIO STUDIES HEAVY SNOW FOREST DAMAGES BASED ON A SATELLITE DATA

Satellio has signed two agreements to analyze the heavy snow (“tykkylumi”) damages in Finland.

Tykkylumi has caused extensive forest damage, especially for young pine trees in East-Finland. Most of the damages happened between December 2017 and January 2018. In the projects, Satellio works to analyse the extent and location of the damages.

Satellio uses satellite imagery interpretation and automated satellite data processing chains, as well as forest damage notifications and field measurements to verify the project results.

POTENTIAL FOOD ECOSYSTEM CHARACTERISTICS AND SUCCESS FACTORS



CASE FOOD WASTE

Lund University
Research Magazine

LUND UNIVERSITY

DIGITAL SOLUTIONS TO MINIMIZE FOOD WASTE

We can reduce food waste by getting more information about how the food is handled in the chain.

Digital sensors in the products' transport packages – what are referred to as "intelligent return boxes" – send information about the status of the product to all the actors in the chain.

With intelligent return boxes, we achieve a visible and open supply chain that can lead to reduced food waste.

Nesteen moottorilaboratorion Jukka Nuottimäki havainnollistaa Neste Pro- ja MY-dieselien eroja. TEEMU GRANSTRÖM

BUSINESS FINLAND

Hajuton ja näyttää vedeltä - tiedätkö, mistä kuvan diesel on valmistettu?

Porvoon jalostamolla valmistettava Neste MY -uusiutuva diesel valmistetaan sataprosenttisesti jätteistä ja tähteistä.

Nesteen viime vuoden 1,1 miljardin tuloksesta 51 prosenttia tuli uusiutuvista tuotteista, joten tuotekehitys on tuottanut myös euroissa laskettuna hyvän tuloksen.

Nesteen laskelmien mukaan uusiutuva diesel tuottaa keskimäärin 90 prosenttia tavallista dieseliä vähemmän kasvihuonekaasupäästöjä. Laskelma perustuu siihen, että uusiutuvien raaka-aineiden hiilidioksidi on peräisin jo ilmakehässä olevasta hiilidioksidista, jolloin polttoaineen käyttäminen ei lisää hiilidioksidia ilmakehään.

Hiilidioksidipäästöjen lisäksi biodieselin pienhiukkaspäästöjen kerrotaan olevan 33 prosenttia pienemmät, mikä on erityisen merkitsevää kaupunkiympäristössä.

Biodieselin menestystarina on ollut merkittävässä osassa, kun Neste valittiin maailman toiseksi vastuullisimmaksi yritykseksi.

Lähde: Iltalehti 6.6.2018

CONNECTED AGRICULTURE

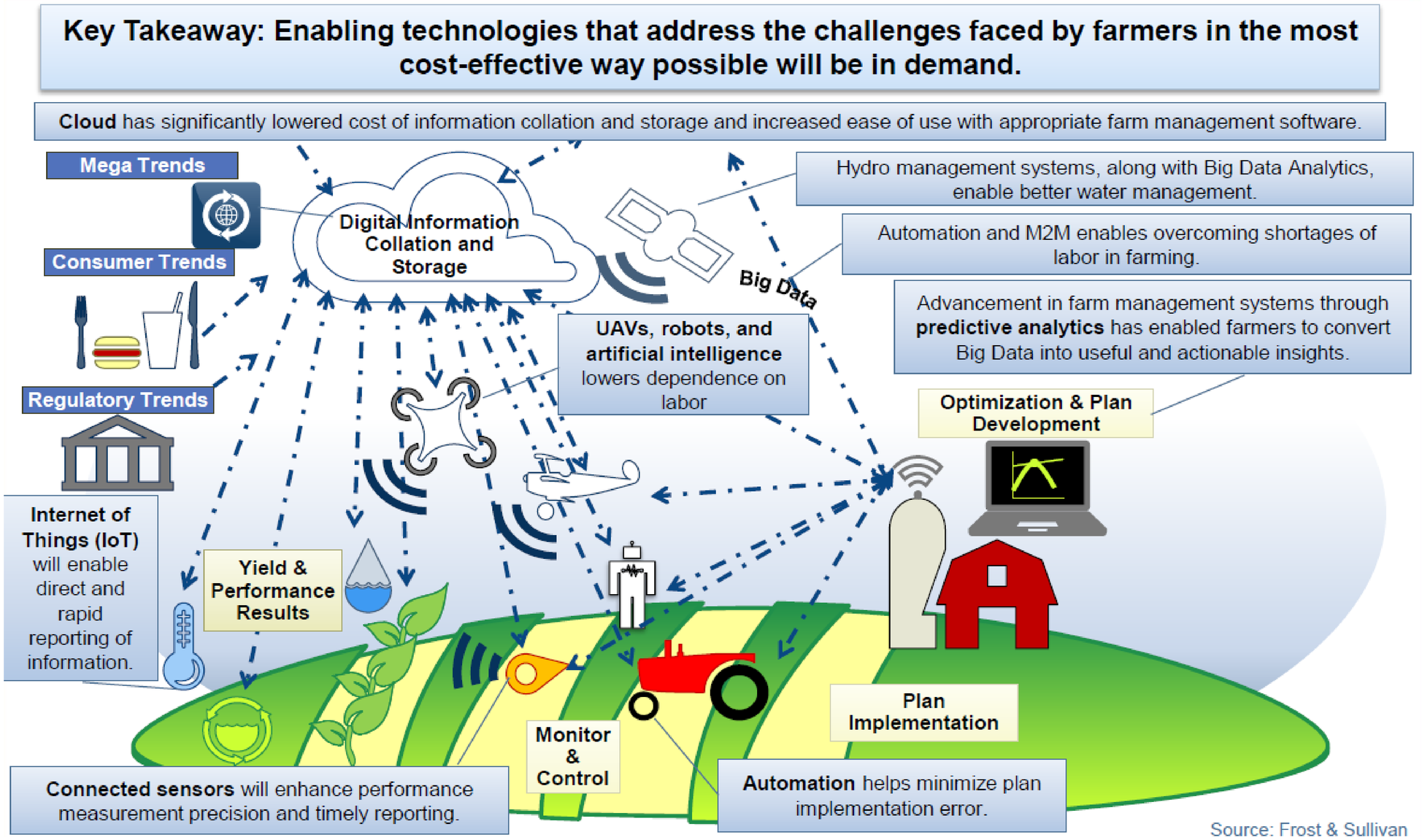


Figure 6. The impact of AI on profits by industry

Share-of-profit increase per industry between baseline in 2035 and AI steady state in 2035 (%)

HOW AI BOOSTS INDUSTRY PROFITS AND INNOVATION

By Mark Purdy and Paul Daugherty

THE VALUE OF AI TO INDUSTRY

BUSINESS FINLAND

Circular Water Ecosystems

- Water ecosystems aiming at integrated solutions on selected areas:
  - Waste water purification combined with circular economy
    - Water => Sludge => Fertilizer
    - Sludge => Gasification => Bio Gas => Traffic Fuel or Electricity
    - Cleaned water to industry or municipality water systems
  - On-line monitoring and AI-based control for watersystems could be scalable globally

- From bottle – to pipes: Developed world needs high class water systems

- Developing world needs light infrastructure solutions
  - On-going Fusion Grid project combines connectivity and DC smart grids to remote areas, villiges and favelas etc. which are missing infra-structure. The integrated concepts need sanitation and water solutions (such as internet sanitation centres).

Breakthrough in nutrient recycling -ecosystem

Goal:
To accomplish the breakthrough in nutrient recycling and to create new Finnish business for international markets

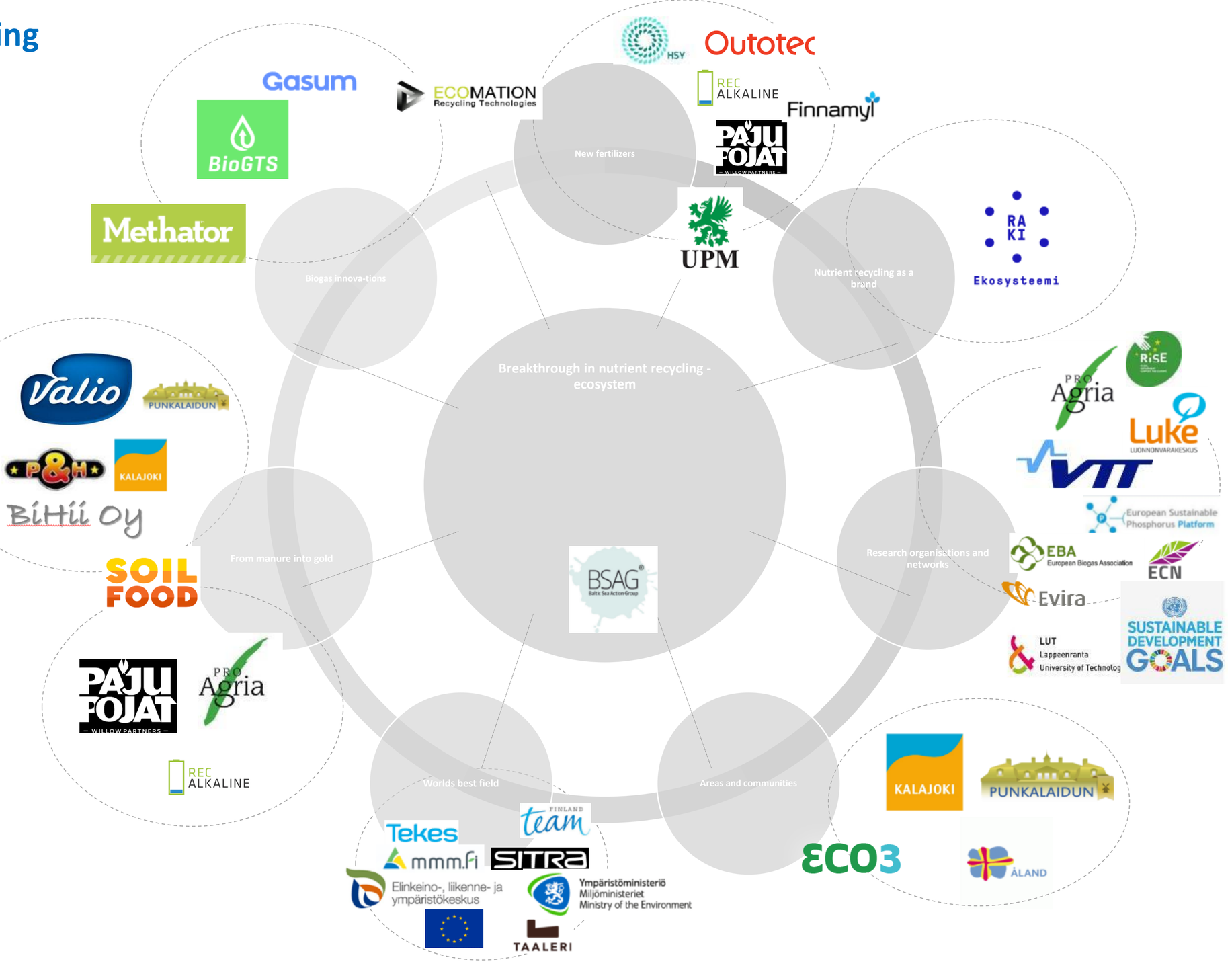
Business spearheads:

1. Worlds best field**: improving productiveness of the soil, carbon storage, market potential globally 1 mrd. €**
2. From manure into gold**: Market potential of the optimal use of manures nutrients in farms, 150 milj. €**
3. Biogas innovations: **Decomposition of manure and other nutritive substances and recovering nutrients, market potential 17 TWh**
4. Future fertilizers**: New recycled fertilizer industry, market potential 15-50 milj. €**
5. To make recycling of nutrients a brand.

Ecosystem accompanies:

- Biogas technology providers, recycled fertilizer producers, soil improvement actors, end users of nutrition products
- SME's, large scale companies, communities, research organisations
- Raw material producers, technology suppliers, end users

More information:
http://www.bsag.fi/NUTRIENT_CYCLING_BUSINESS_ECOSYSTEM_FI.html



Vesijohtoverkostojen osaaminen nousuun

Idea: Kehittää eurooppalaisena yhteistyönä vesijohtoverkostoja. Water-M -projektiin osallistuvat Suomesta Measurepoliksen lisäksi EHP-Tekniikka, Econet, Keypro ja remoteMX sekä tutkimuspartnereina Oulun yliopisto, Savonia AMK ja THL Kuopiosta.

Vaikutus: Tieteellistä osaamista ja pk-yrityksiä yhdistävä projekti luo uusia vientituotteita ja -palveluita veden laadun ja määrän mittaamiseen, vesijohtoverkostojen valvontaan ja niiden säätöautomatiikkaan.

> Water-M on ensiaskel yhtiömme kansainvälistymiselle, jonka Tekes-rahoitus on mahdollistanut. Suomalaiskonsortion koordinaattorin rooli sopii yrityskehitysyhtiöllemme erinomaisesti.

Jussi Mäkinen
Toimitusjohtaja, Measurepolis Development Oy

environments

MDPI

Editorial

Blockchain with Artificial Intelligence to Efficiently Manage Water Use under Climate Change

Yu-Pin Lin [1,*], Joy R. Petway [1], Wan-Yu Lien [1] and Josef Settele [2]

1 Department of Bioenvironmental Systems Engineering, National Taiwan University, No. 1, Sec. 4, Roosevelt Rd., Taipei 10617, Taiwan; d05622007@ntu.edu.tw (J.R.P.); wanyulien@gmail.com (W.-Y.L.)
2 Department of Community Ecology, Helmholtz-Centre for Environmental Research—UFZ, Theodor-Lieser-Str. 4, 06120 Halle, Germany; josef.settele@ufz.de
* Correspondence: yplin@ntu.edu.tw; Tel.: +886-2-3366-3467

Received: 24 February 2018; Accepted: 26 February 2018; Published: 28 February 2018

BIO-ECONOMY

HEALTH

CLEANTECH

DIGITALIZATION

TRAVEL

CONSUMER

NEW VALUE CREATION

DEVELOPING MARKETS

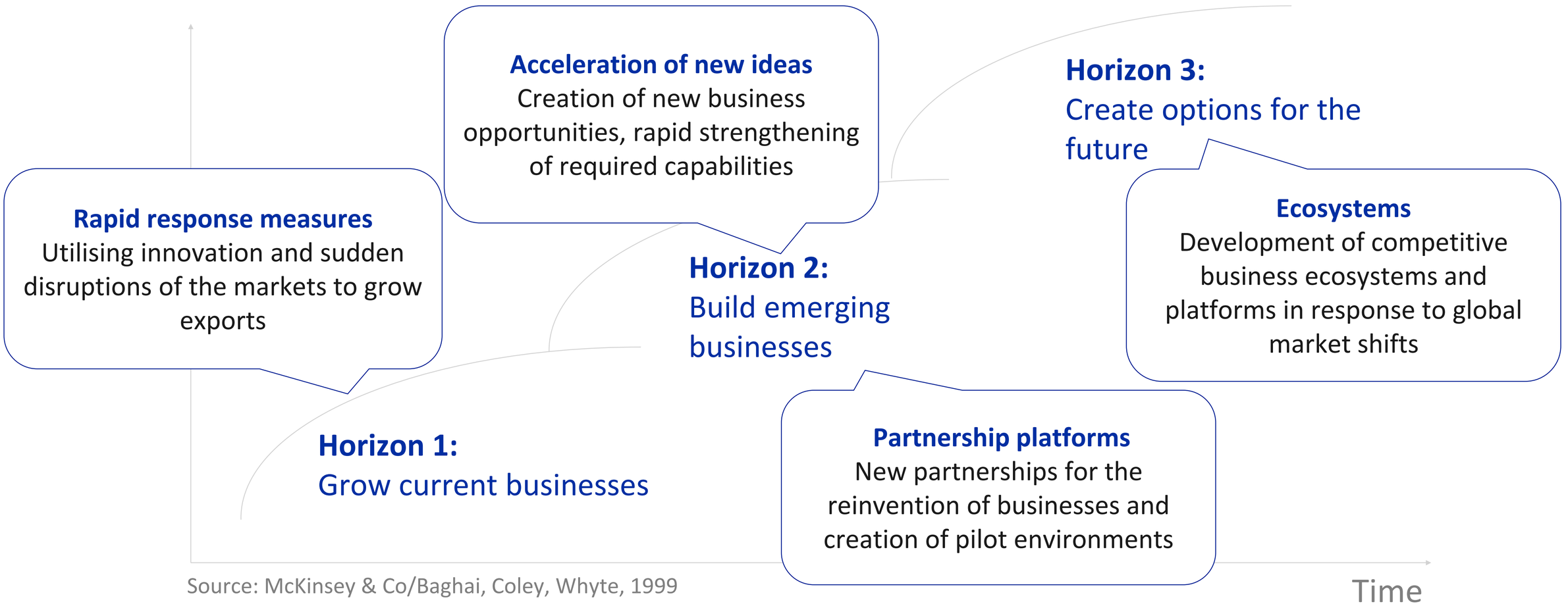
ARCTIC

BUILDING WORLD-CLASS ECOSYSTEMS

BUSINESS FINLAND

STRATEGIC INTENT	WORLD-CLASS ECOSYSTEMS AND COMPETITIVE BUSINESS ENVIRONMENT		
ELEMENTS	A. Change makers in global business ecosystems	B. Best knowledge to drive renewal	C. World class trial environment
DESCRIPTION: WHAT	Finnish companies form strong and attractive ecosystem nodes to gain critical positions in global business ecosystems, driven by global challenges	Renewing ecosystems have access to knowledge, competences and talent, which drive the change	Finland establishes significant large scale real life experimental platforms and environments, attracting leading global companies
HOW	BF supports the creation and renewal of business ecosystems by producing insights on global challenges, tackling regulatory barriers, networking key players, and by funding renewal and coordination	BF strives for having best competences and talent available for ecosystems in focus, through funding research, attracting international investments and forming networks (domestic and international)	BF drives co-operation between public and private players and facilitates joint industry actions for selected potential world class ecosystems

TIME SPAN AND FORMS OF PROGRAMME ACTIVITIES



Source: McKinsey & Co/Baghai, Coley, Whyte, 1999

BUSINESS
FINLAND

Digitalisation Boosts Productivity of R&D&I&Piloting

- Digitalisation can speed-up the innovation process and increase productivity and quality of co-operation in ecosystems
- The time from science to business can be reduced significantly
- Risk reduction faster scale-up in industrial investments
- AI, AR, VR, Social VR, Platform management, Communication, Cyber security, Simulation, Monitoring, Modelling, Financial simulation, Optimisation, Digital analytics, Data mining…

BUSINESS FINLAND AND AGENDA 2030 (DRAFT)

Core target

BF customer-targets
(theme, programme, other strong input)

Have an impact mainly through other partners

KIITOS
THANK YOU

Dr Ilmari Absetz
Director, Ecosystems, Bio & Circular Economy
´Tel: +358 50 5577 837
Email: ilmari.absetz@businessfinland.fi