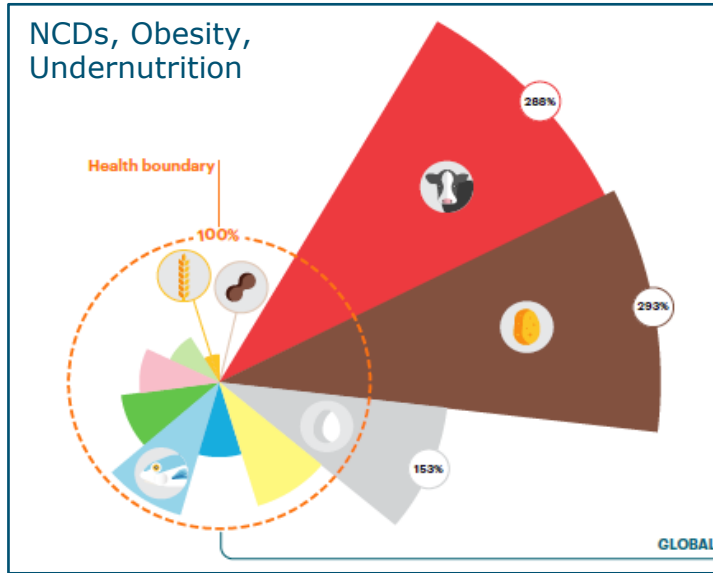# Overcoming fragmentation in the food, Nutrition & Health Research landscape

Quisper Personalised Nutrition Symposium with EuroFIR AISBL
June 19th 2019, Brussels.

Pieter van 't Veer, Wageningen University, on behalf of the FNH-RI consortium

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Based on EU H2020 projects EuroDISH and Richfields. Presentation does not signal any formal position of the European Union.

Challenge 21st century: healthy eating within planetary boundaries

NCDs, Obesity, Undernutrition

GHGE, Protein

Optimal energy intake (BMI, physical activity)
Diversity of plant-based foods, low animal foods
Saturated fat → unsaturated fats
Limit refined grains & highly processed foods
Double fruits, vegetables, legumes and nuts
Halving added sugars and red meat
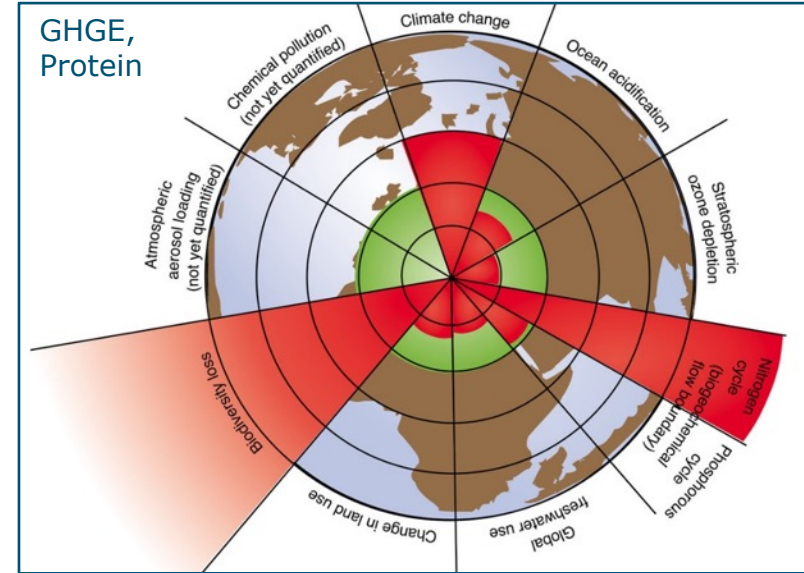
Biodiversity loss (animals, plants, land use, monocultures)
Nitrogen cycle (energy use, eutophication, dead zones)
Climate change (¼ GHGe agricult, acidification, sea level)

Willett et al, Lancet 2019
Rockström et al, Nature 2014

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(FAO, HLPE 2017)
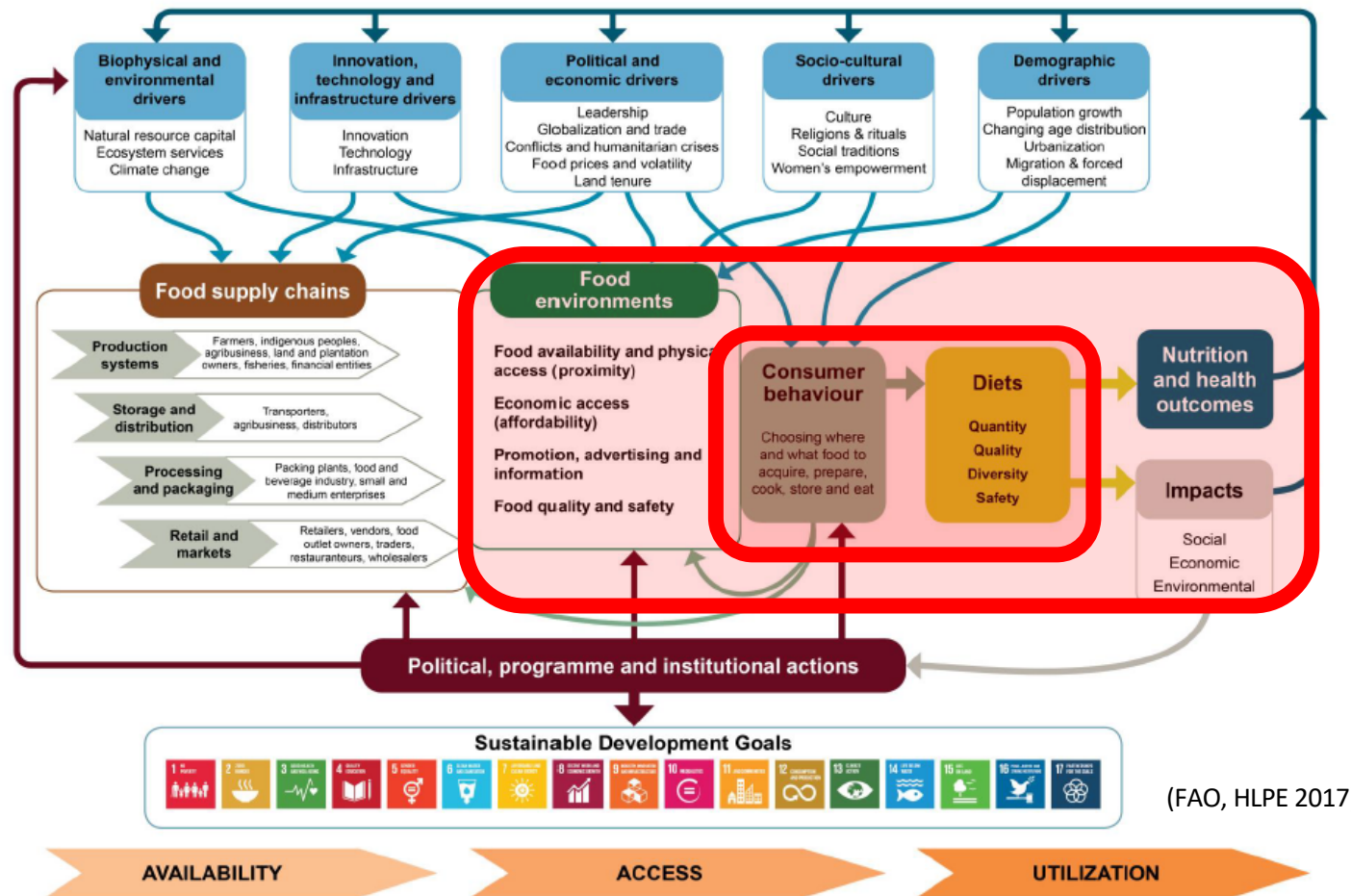
Fragmented research in FNH-domain

Science

- Disciplines: life sciences, social sciences
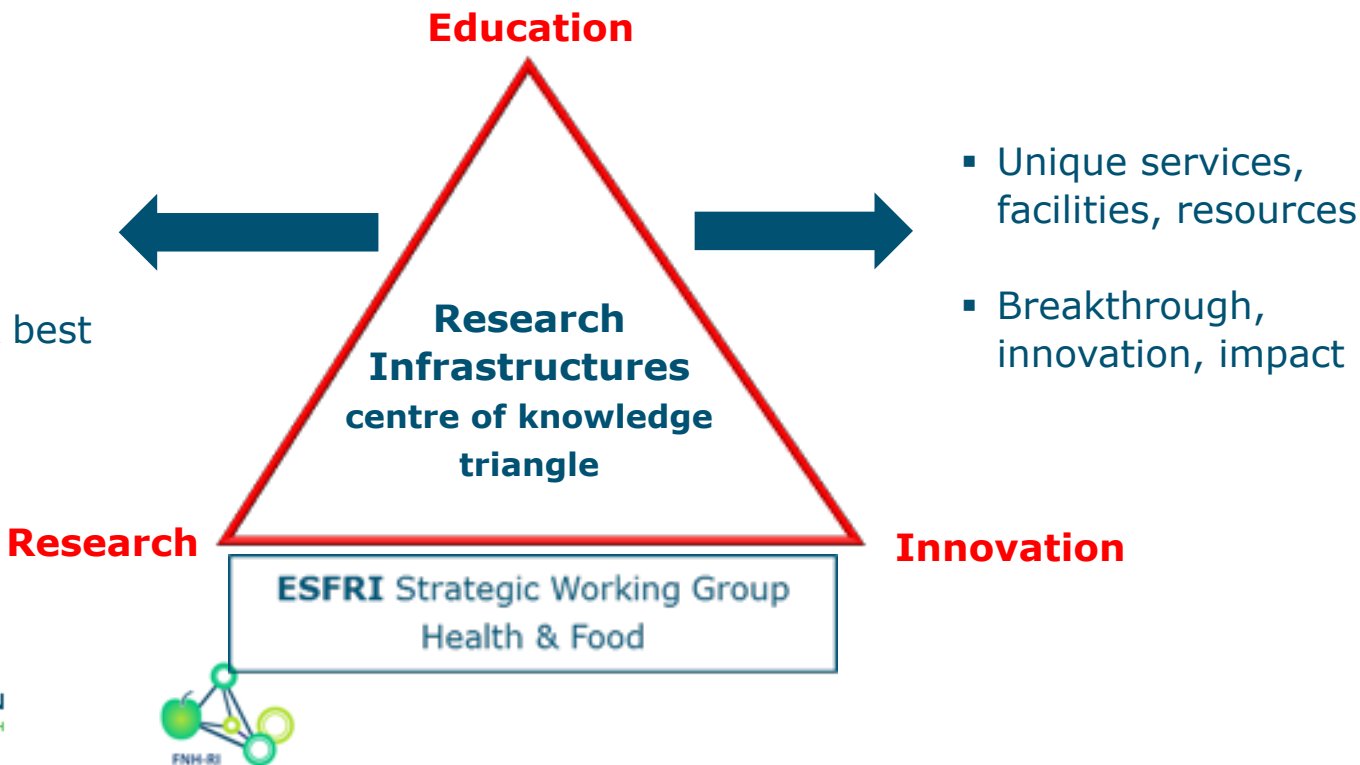- Bibl analysis: 10,232 unique researchers from 998 institutions (Europe)

Society

- Sectoral fragmentation: Min of health, agriculture, economic affairs, …
- Governance levels: Global, European, national, municipal, …
- Research funding: Public, public-private partnerships, contract-research
- Economic relevance ca 10% GNP in agrifood, 10% in health (NL)

The challenge: BIG data & data integration
## across life sciences and social sciences
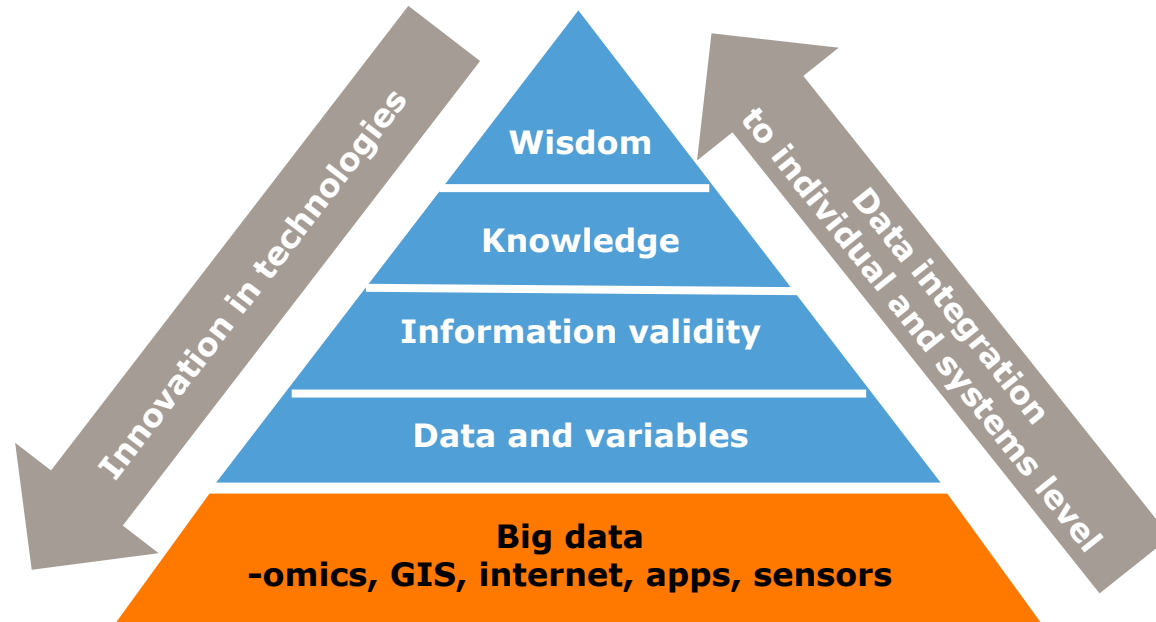
FNH-RI: enable scientific breakthroughs & innovation in health and food, via research, innovation and education

Education

- Build bridges

- Shape scientific communities

- Attract young & best researchers

Research Infrastructures
centre of knowledge triangle

- Unique services, facilities, resources

- Breakthrough, innovation, impact

Research

Innovation

ESFRI Strategic Working Group
Health & Food

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Time line to the pan-European Food, Nutrition and Health RI

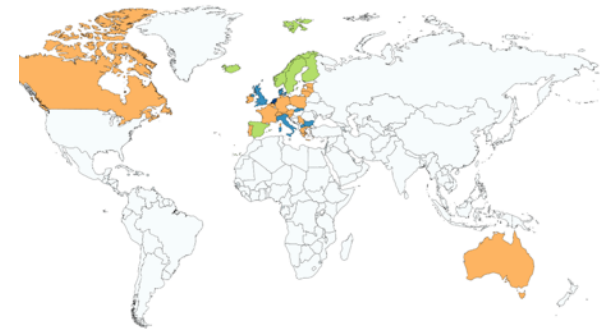Time line of the Food, Nutrition and Health RI
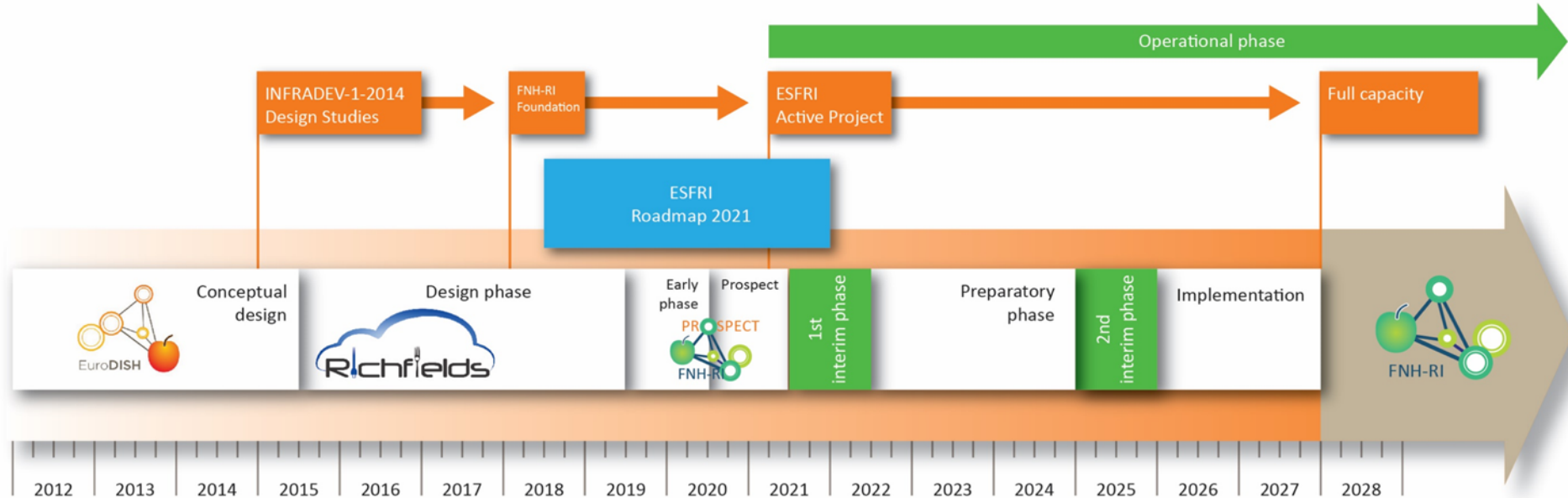
FNH-RI Community- Europe and Global

Legend:

■ Lead Country

■ Prospective country (National Node level)

■ Prospective country emerging at national node level

■ Prospective country emerging at institutional level

Task Force FNH Community, State of the art, June 2019

8

Food-Nutrition-Health: Four domains, two axes, one objective

Consumer behaviour
- Food
- Eating behaviour
- Sensory preferences

Sustainable food supply
- Food access
- Fair trade
- Environmental sustainability

Food system

21st century diet

Personal and public health
- Nutrition & disease
- guidelines & public health
- Effectiveness of interventions

Dietary intake
- Actual intake & habitual patterns
- Innovative assessment, biomarkers
- Nutrients & bioactive compounds

Individuals

citizens

Social, environmental and economic sustainable food system

Based on EuroDISH mapping

FNH-RI services support breakthrough research

CITIZEN DRIVEN FOOD SYSTEM REFORM

FNH-RI SERVICES

Health outcomes
for people and planet

LIFE SCIENCES

Production
Composition
Retail, outlets

Monitoring
Surveillance
Evaluation

NUTRITION & PHYSICAL FOOD ENVIRONMENT

FOOD

HEALTH

PERSONAL & SOCIAL FOOD ENVIRONMENT

Price
Convenience
Labelling

Jobs
Income
Disparities

SOCIAL SCIENCES

Policies & strategies
affect citizens and the food system

DATA

FACT

TED

Service	Domains of the Food, Nutrition and Health RI				Objective
	Sustainable food supply	**Consumer behaviour**	**Dietary intake**	**Personal & public health**	
TED Training, Education & Dissemination	*Create transdisciplinary research community, incl early career researchers, professionals and stakeholders*				Co-creation of research and innovation
FACT Facilities & Tools	*Assessment: citizen data platform (CDP), innovation & standardization of tools, sharing of lab facilities*				Breakthrough on dietary choices of EU citizens
DATA sharing & connectivity	*Study data: surveys, cohorts RCTs, community trials, food composition databases, sensory databases, etc*				Healthy & sustainable food system
	Food security, planetary boundaries	Psychology, sensory, food environment	Nutrition, dietetics, biomarkers, requirements	Physiology, risk markers, burden of disease	

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FNH-RI Architecture

FNH-RI services to
- Scientists (research)
- Public & private stakeholders
- Consumers / citizens

- DATA (upload & use of metadata, data-sharing, interfaces)
- FACT (access to research facilities, tools & models).
- TED: Training & Education, Dissemination & Co-creation

Food, Nutrition & Health Linked Data Platform

| Ontology | Semantic modelling | Meta data | FAIR | Protocols and metrics | Software and tools (ML, AI) |
| Standards | Harmonisation | Thesaurus | Protocols | Data collection | |

Labs and facilities

Experimental labs
- Virtual buffets
- Restaurants of the future
- Virtual supermarkets
- Scape lab
- Mood rooms

Facilities
- Sensory labs
- MRI scan
- Protein accelerator (Lund)

Databases

Food data
- Purchase
- Preparation
- Dietary intake
- Composition
- LCA

Adjacent RI's
- ELIXIR
- ECRIN
- BBMRI
- METROFOOD

Platforms
- EUROFIR
- Quisper

FNH Consumer Data Platform

RICHFIELDS Research app for data on food- related behaviour of consumers and intake

Richfields

- New sensors, apps wearables, …
- FFQ, FCMQ, 24 hour recall

Services and impact

TED reform
- transdisciplinary FNH community
- young researchers & professionals

FACT innovate
- food choice and diet patterns of citizens
- healthy and sustainability food system

DATA connect
- citizen generated data
- public & private research data

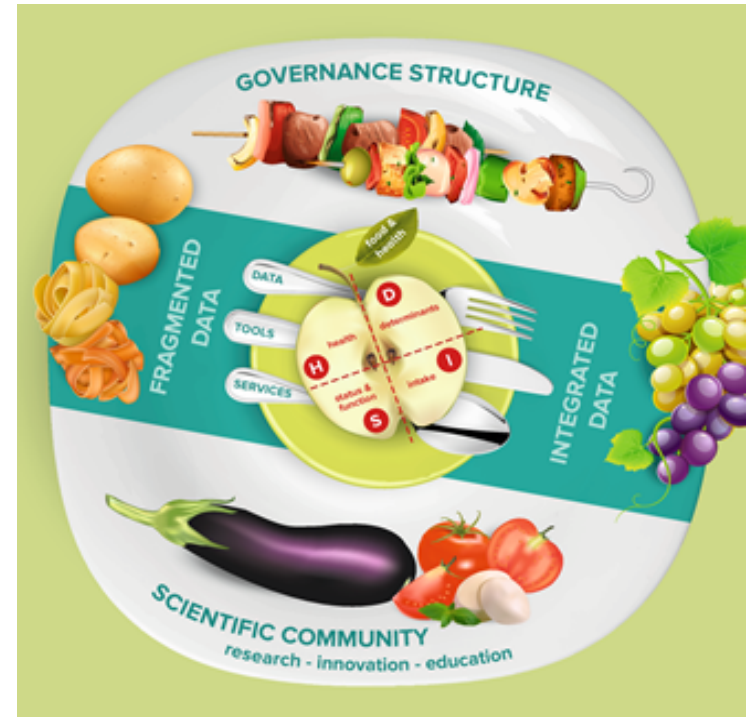**Breakthrough potential**

Impact on innovation and society

On behalf of all partners of the FNH-RI consortium and the partners of EuroDISH and RICHFIELDS

THANK YOU FOR YOUR ATTENTION

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FNH-RI will facilitate research and innovate the diet of 21st century citizens