

# Global Computing for Our Complex World



FuturICT

[www.futurict.eu](http://www.futurict.eu)

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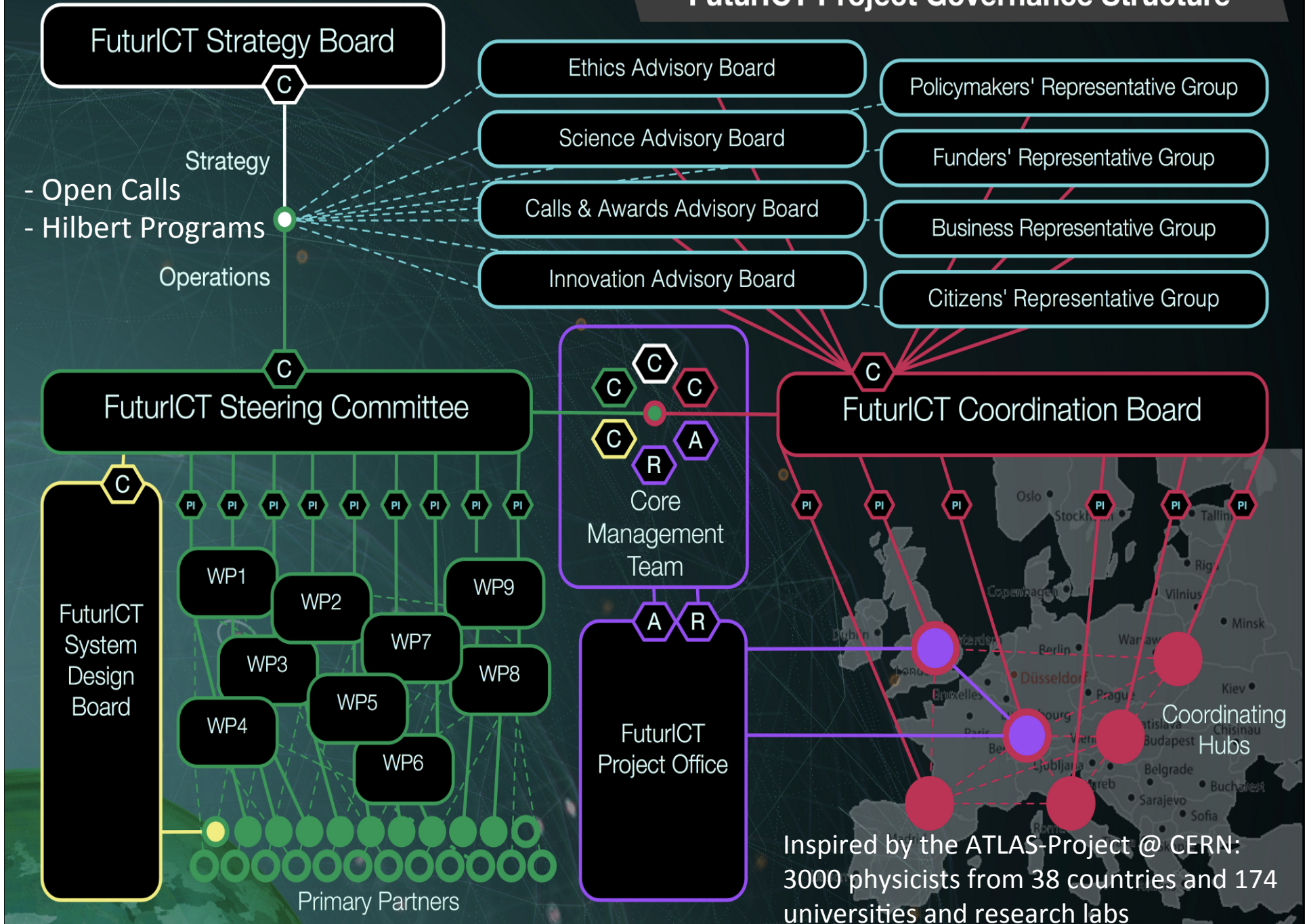


ICT

Complexity Science

Social Science

# FuturICT Project Governance Structure

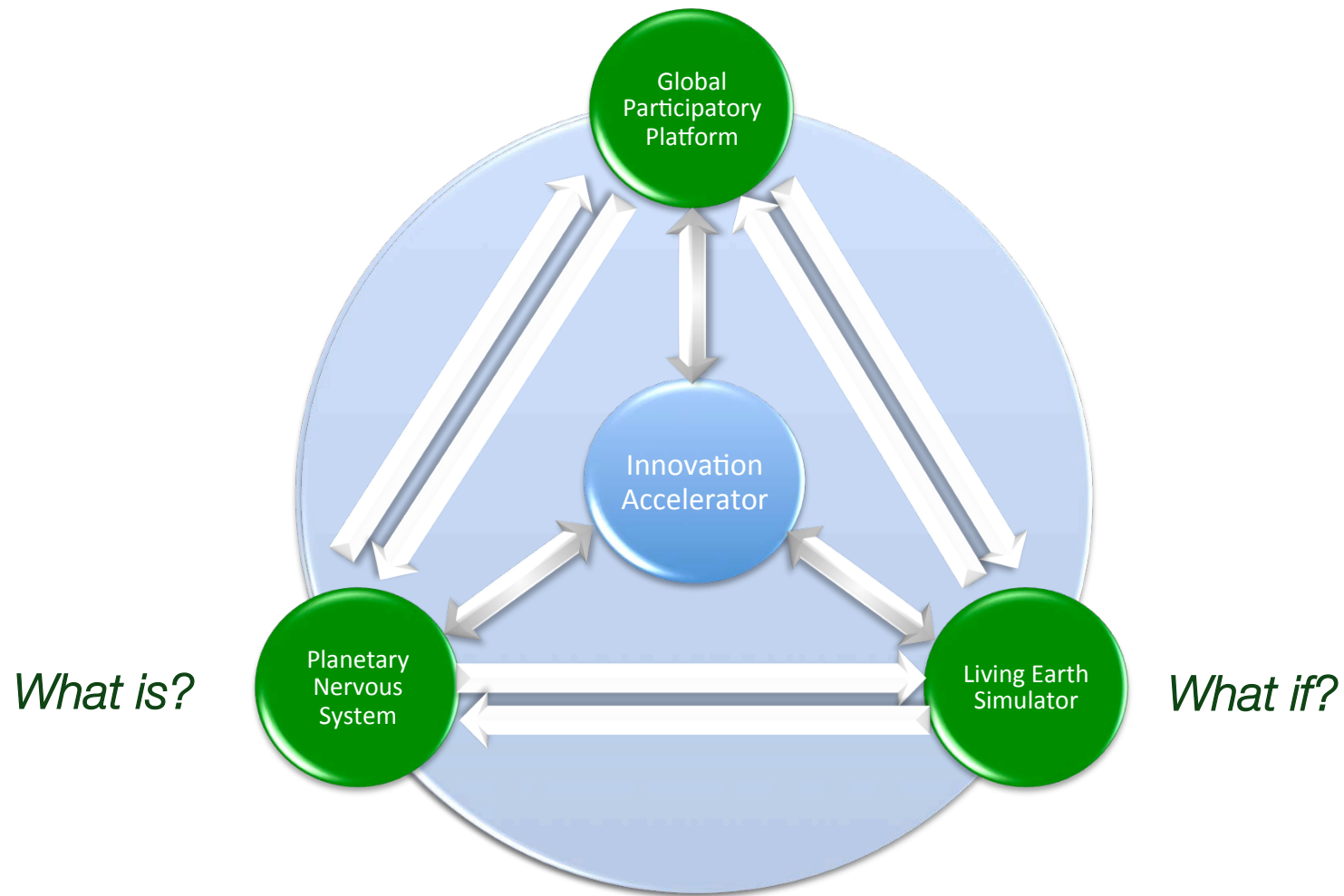




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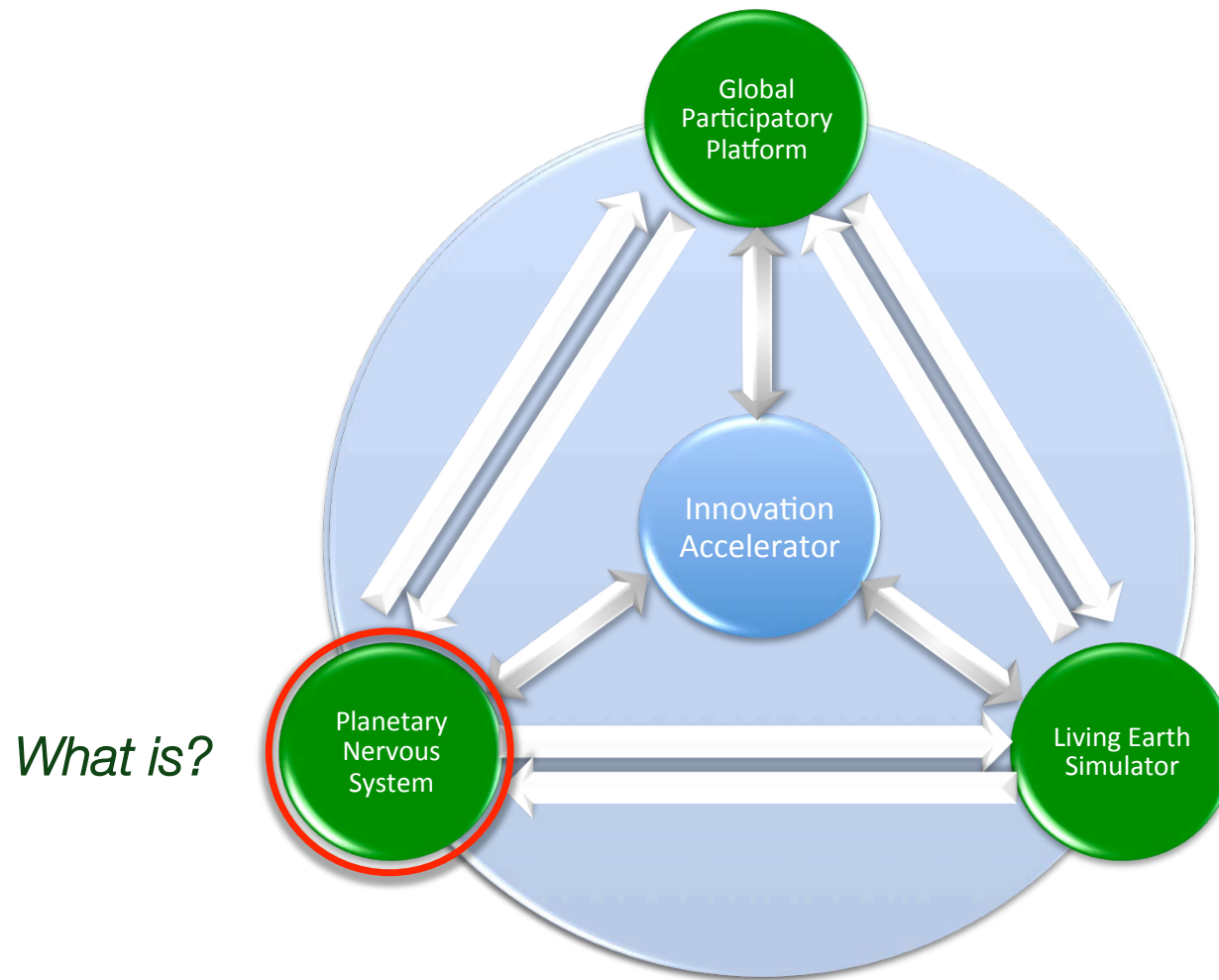
# FuturICT Platform

*What for?*



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# FuturICT Platform



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## The story so far...

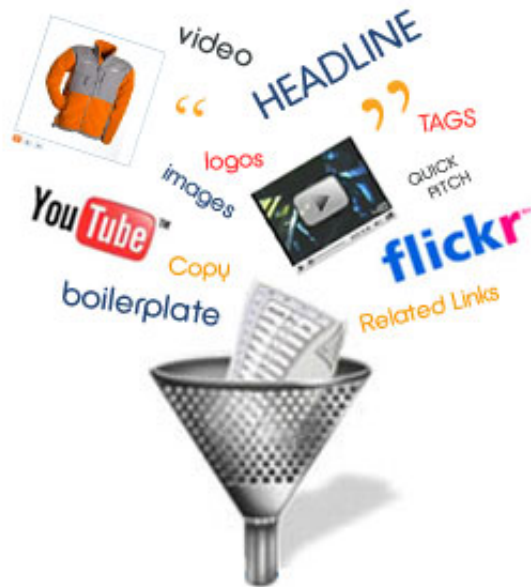
- The Internet made any piece of digital, **archival knowledge** instantly globally available, searchable, connected, easy to correlate

- most complex artifact ever created



# The future...

- The Internet made any piece of digital, **archival knowledge** instantly, globally available
- We are now at the verge of any **real life event** becoming, **instantly globally connected** to the digital domain



UNIVERSITÄT  
PASSAU



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## The future...

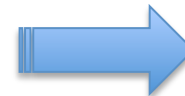
- The Internet made any piece of digital, **archival knowledge** instantly, globally available
- We are now at the verge of any **real life event** becoming, **instantly globally connected** to the digital domain
  - 20 Million videos per month on Facebook
  - 152 Million blogs active in 2010
  - 2 Billion mobile phone world wide
  - 5 Billion Flickr photos
  - 25 Billion Tweets in 2010



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## „Digital Shadow“

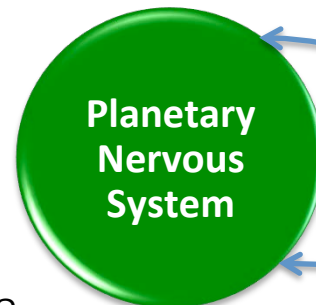
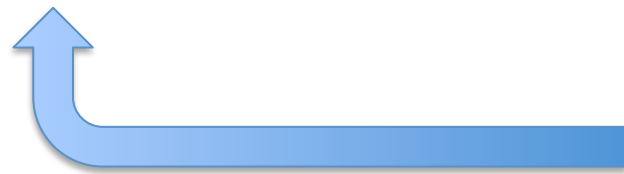
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# Planetary Nervous System

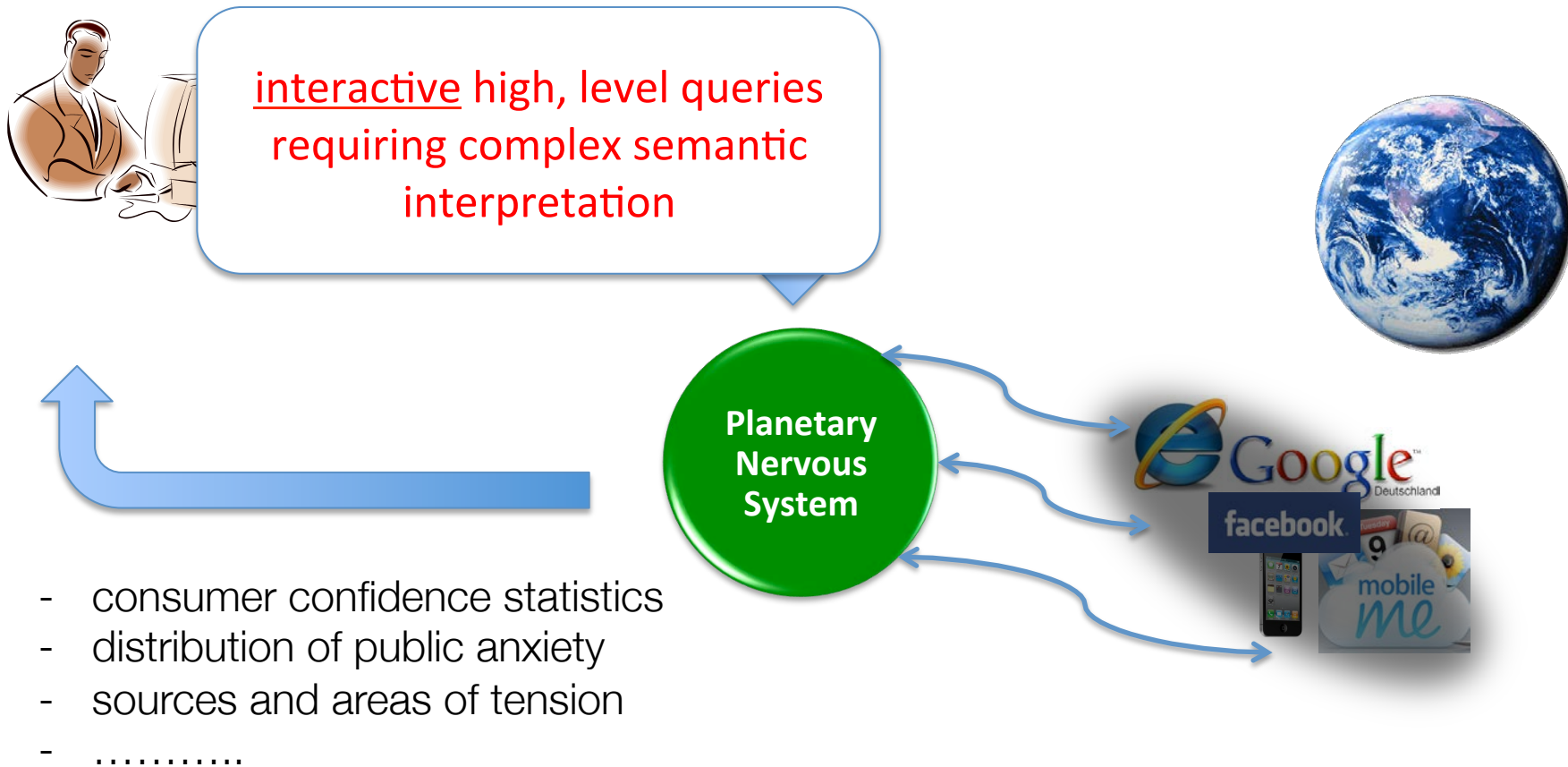


- consumer confidence ?
- panic after earthquake ?
- ethnic tensions ?
- .....



- consumer confidence statistics
- distribution of public anxiety
- sources and areas of tension
- .....

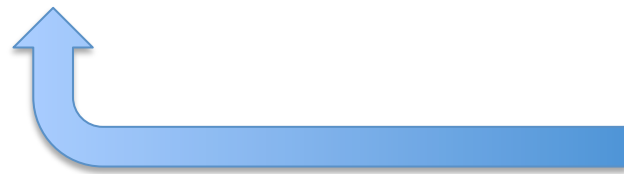
# Semantic Query Interpretation



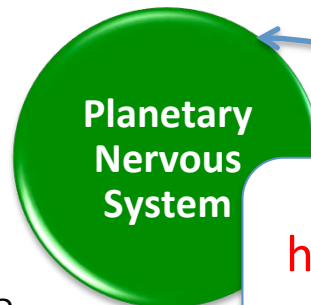
# Goal Driven Self Configuration



- consumer confidence ?
- panic after earthquake ?
- ethnic tensions ?
- .....



- consumer confidence statistics
- distribution of public anxiety
- sources and areas of tension
- .....



high level goals driven dynamic  
self- configuration





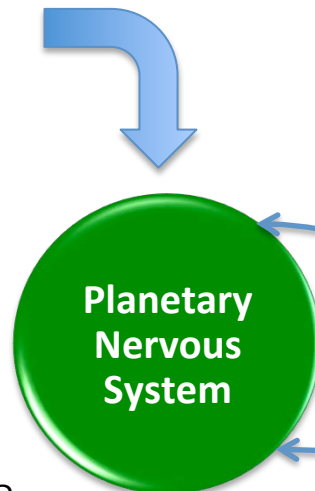
# Global Heterogeneous System



- consumer confidence ?
- panic after earthquake ?
- ethnic tensions ?
- .....



- consumer confidence statistics
- distribution of public anxiety
- sources and areas of tension
- .....



- global scope
- heterogenous sources
- multiple temporal and spatial scales



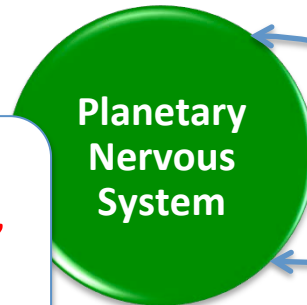
# Privacy Respecting Reasoning



- consumer confidence ?
- panic after earthquake ?
- ethnic tensions ?
- .....



privacy respecting, distributed,  
bottom up reasoning



- consumer confidence statistics
- distribution of public anxiety
- sources and areas of tension
- .....

# Global Social Awareness



- consumer confidence ?
- panic after earthquake
- ethnic tensions ?
- .....



- consumer confidence statistics
- distribution of public anxiety
- sources and areas of tension
- .....



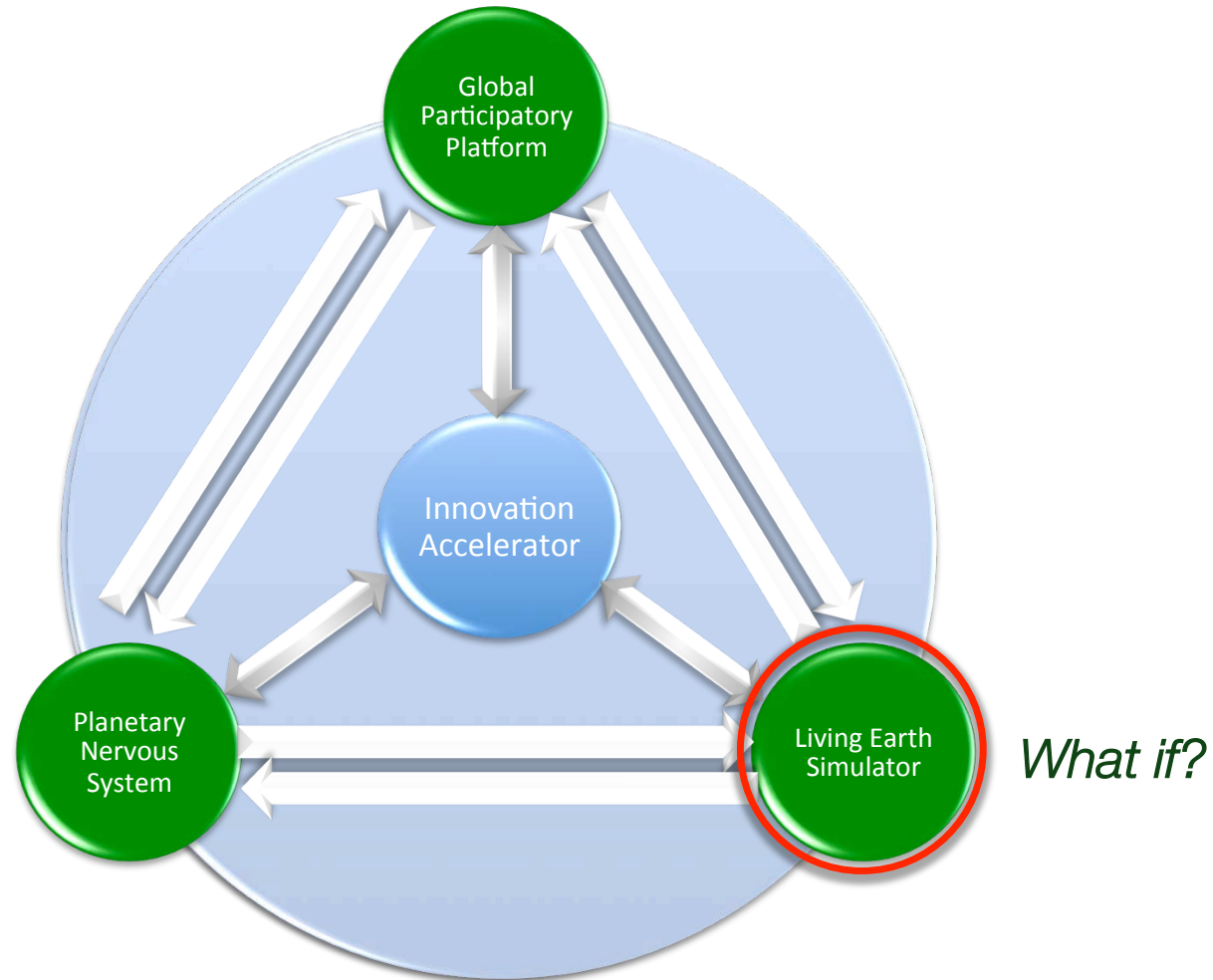
Painting by Maurits  
Cornelis Escher



incremental construction, of “global social-awareness” like internal representation of the world

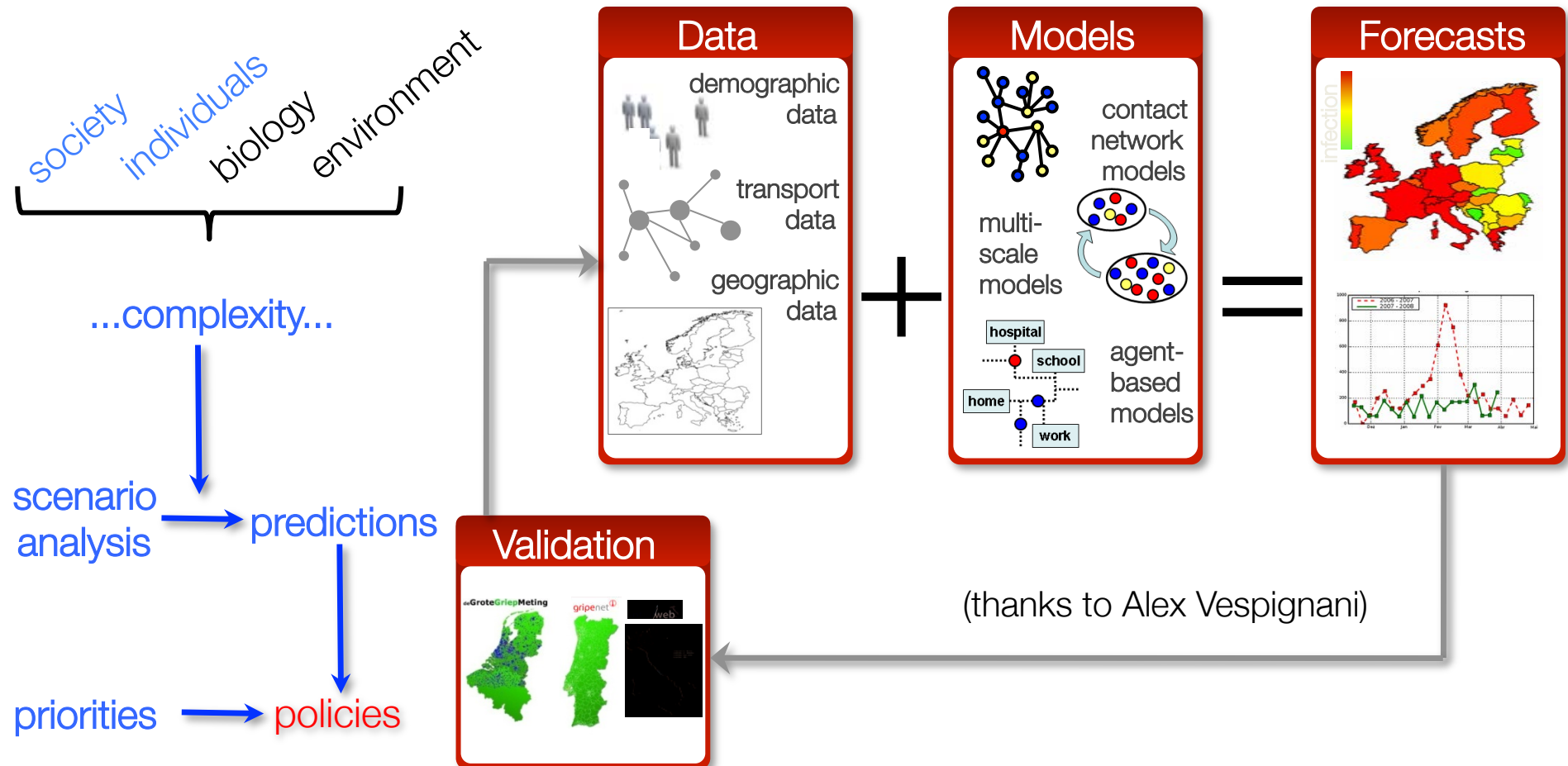
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# FuturICT Platform



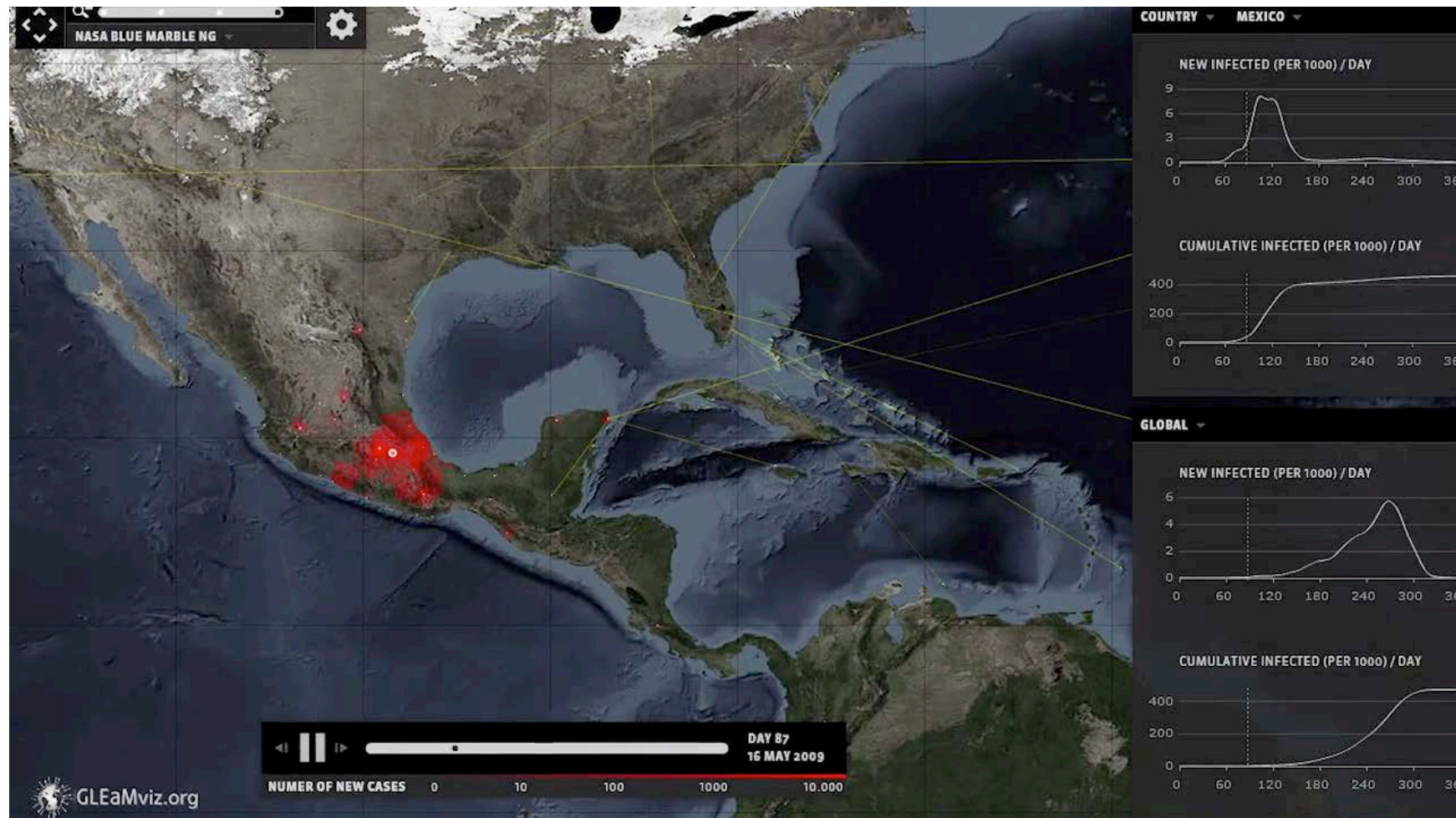


# Scenario Analysis with FuturICT's Observatories: Example of Epidemic Spreading



Possibilities are limited, but even short-term prediction can be useful,  
as weather forecasts or new traffic light controls show.

# Modelling the global spread of H1N1, combining models of epidemiology and global travel



# Building FuturICT's Living Earth Simulator

- **Integrate** existing models (traffic, production, economic system, crowd behavior, social cooperation, social norms, social conflict, crime, war...)
- **Scale them up** to global scale
- **Increase degree of detail, accuracy** (statistical and sensitivity analysis, calibration, validation, identification of crucial and questionable modeling assumptions,...)

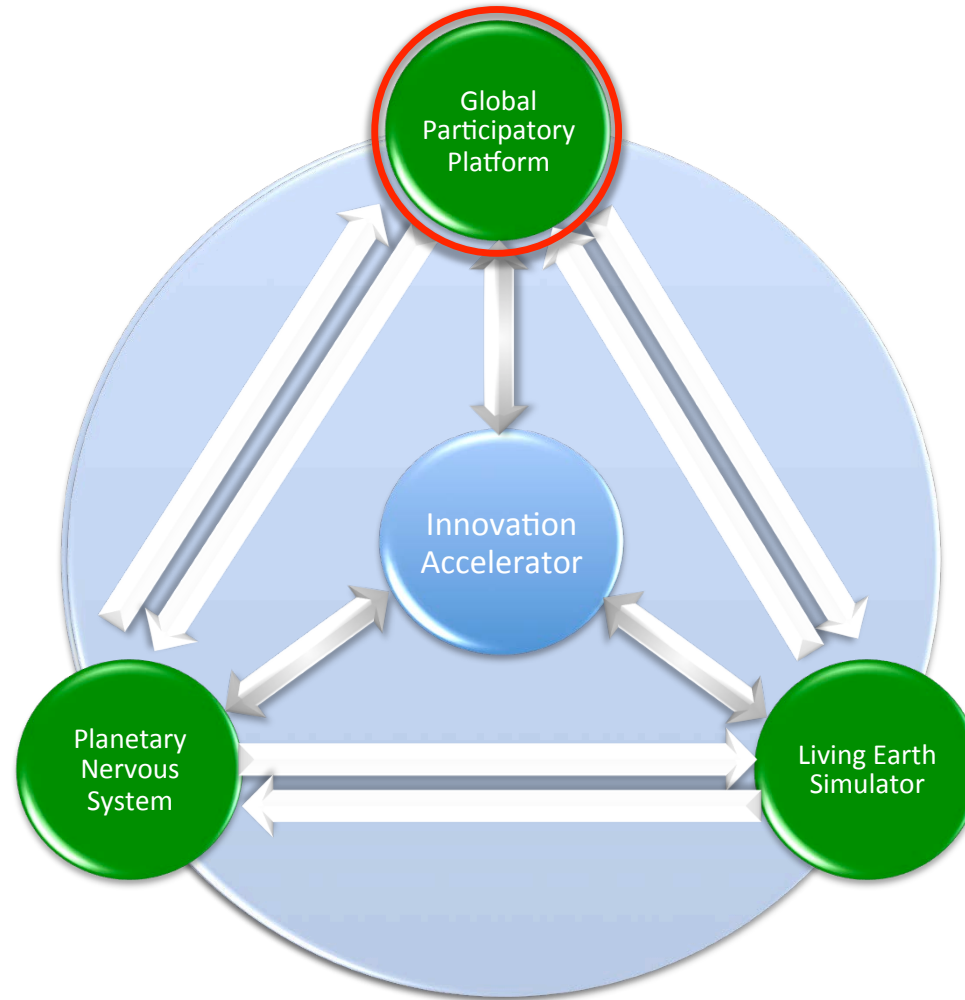




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# FuturICT Platform

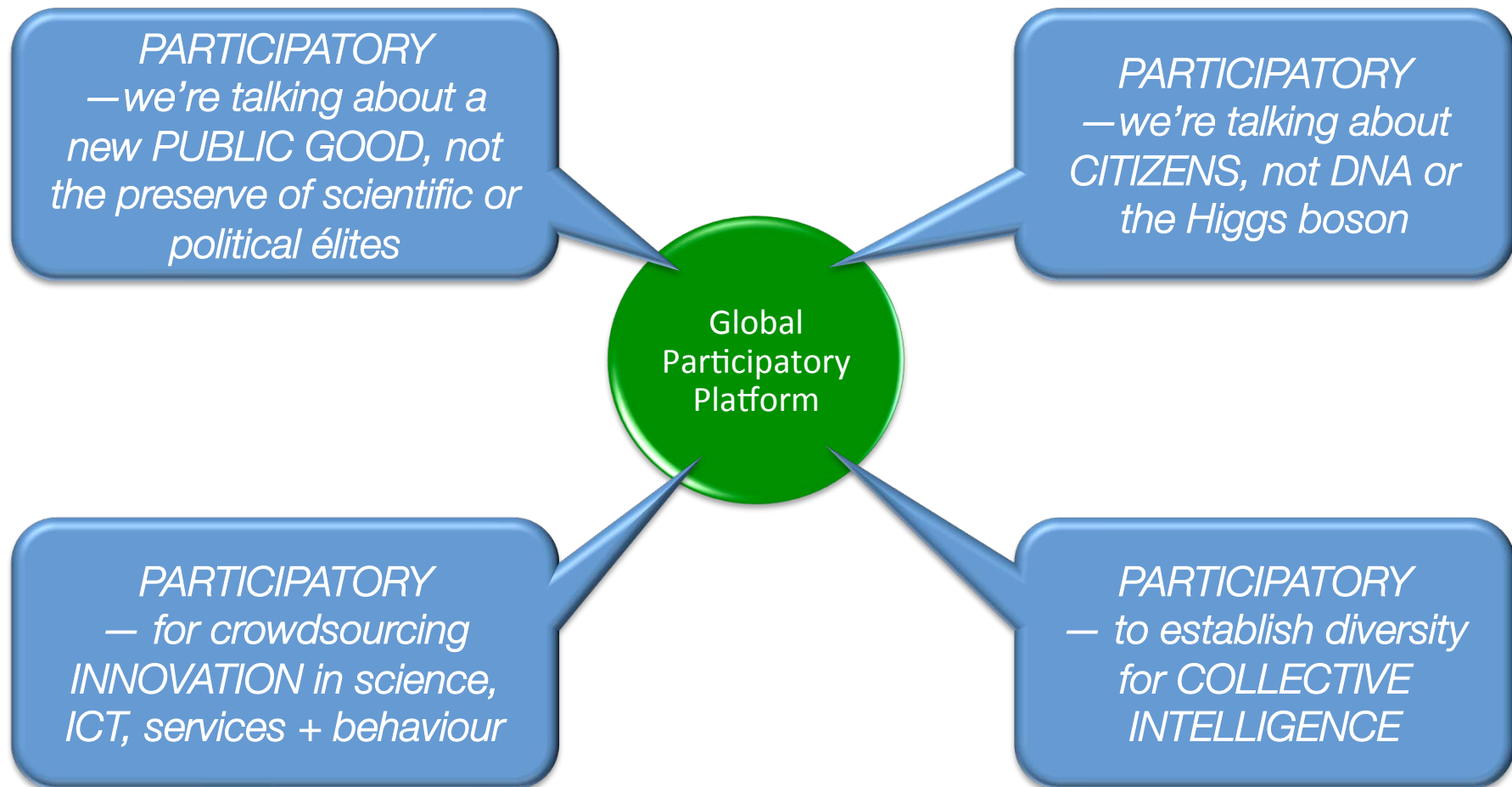
*What for?*





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# Participatory Engagement is Vital



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# The Global Participatory Platform in action...



App Developer Toolkit &  
App Store, inc. Commercial Software/Services

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# The Global Participatory Platform in action...



Serious Games  
across diverse platforms

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# The Global Participatory Platform in action...



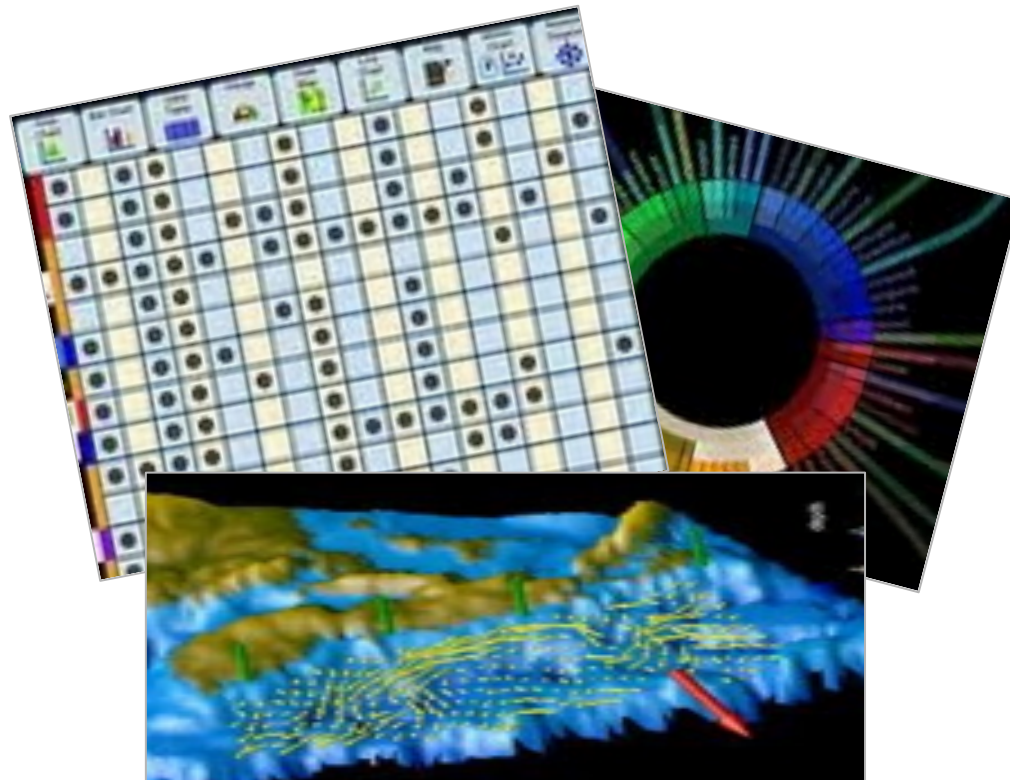
Citizen Science





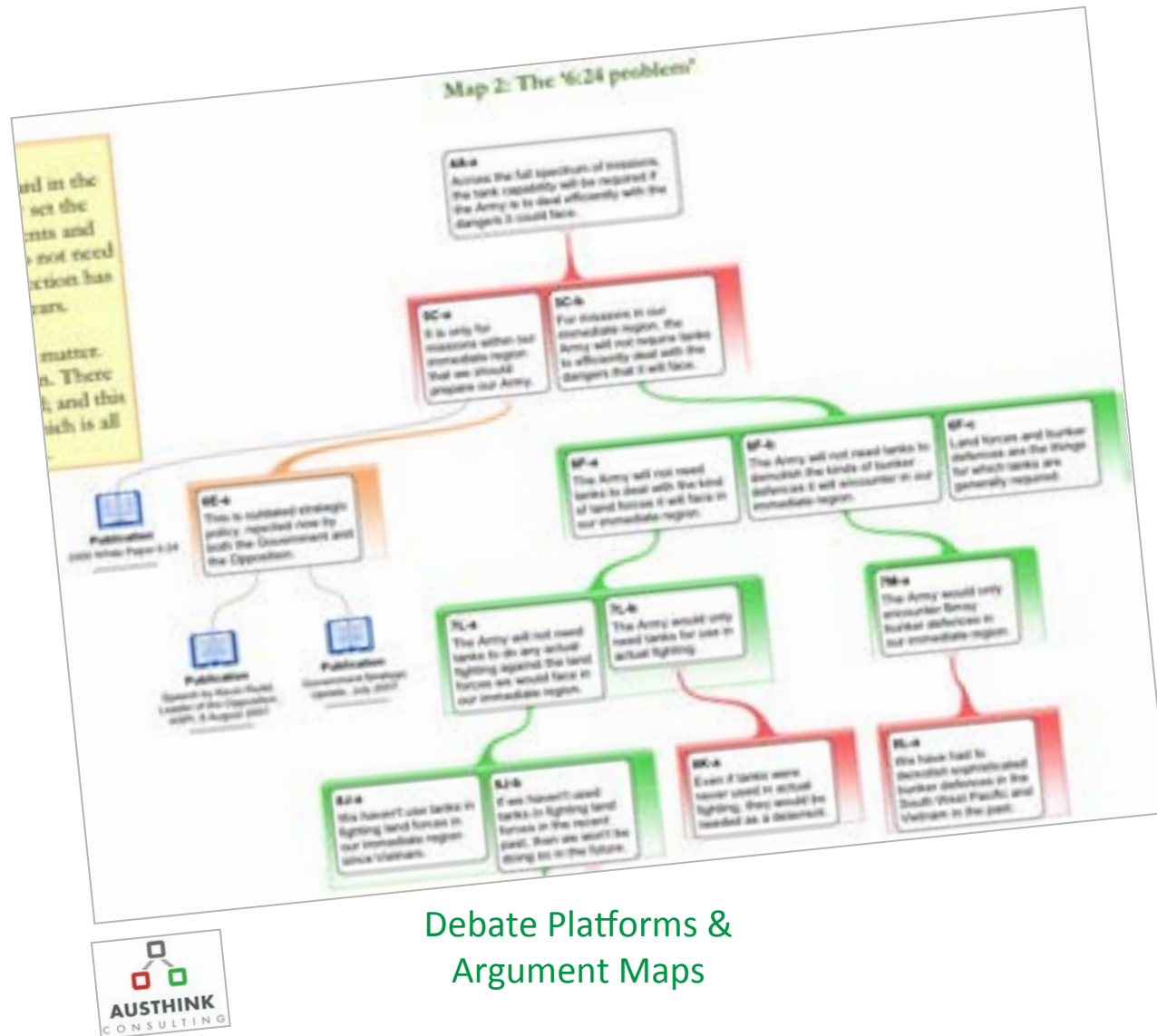
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# The Global Participatory Platform in action...



Visualization Tools  
for all abilities

# The Global Participatory Platform in action...

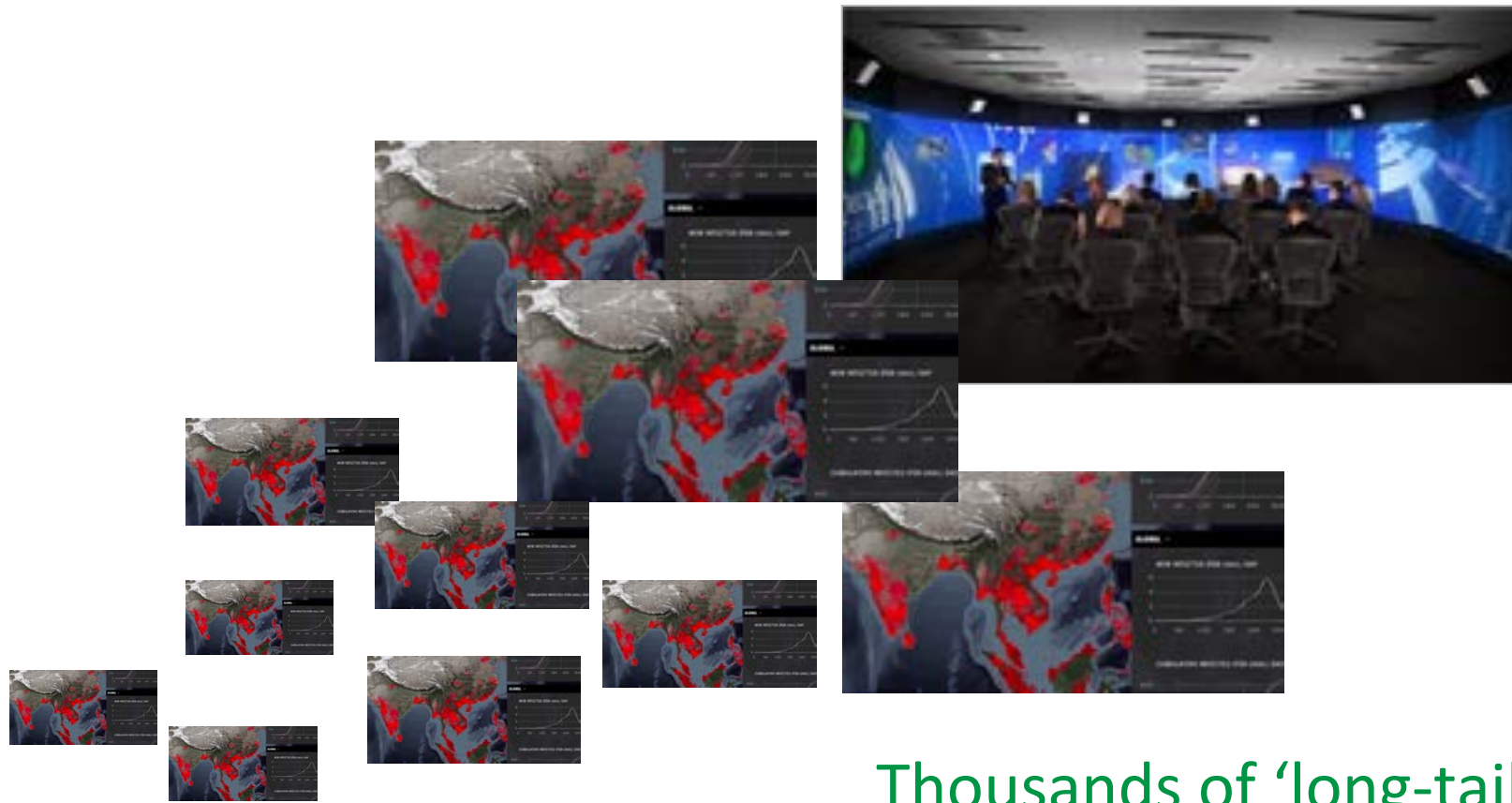


Debate Platforms &  
Argument Maps

FuturICT

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# The Global Participatory Platform in action...



Thousands of 'long-tail' niche  
Observatories complementing  
the 'Big Observatories'

# The GPP will itself be studied as a complex, social system



App Developer Toolkit &  
App Store, inc. Commercial  
Software/Services



Serious Games  
across diverse platforms

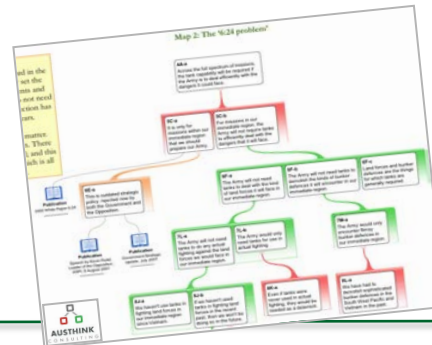


Citizen Science

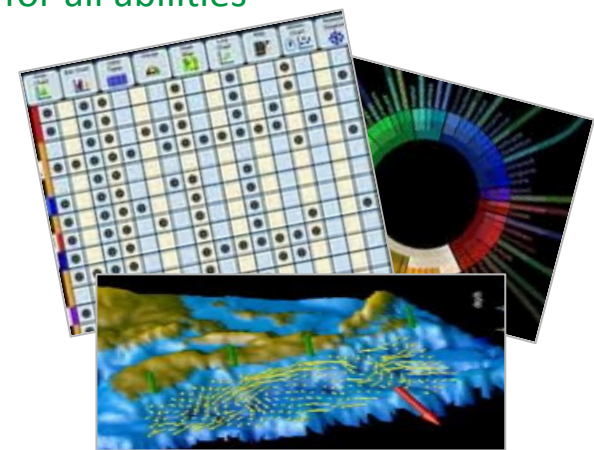
Thousands of 'long-tail'  
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Debate Platforms &  
Argument Maps



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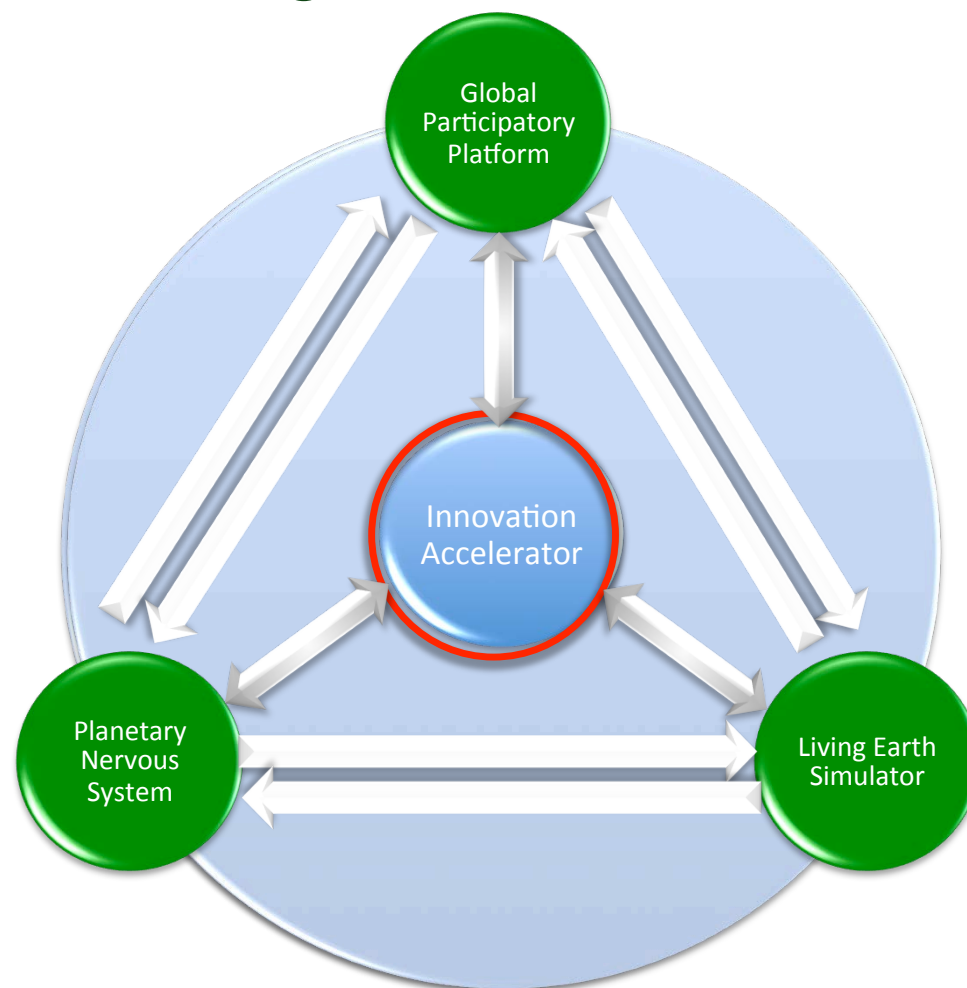


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Ultimately, all of this is about  
accelerating European innovation



FuturICT's Innovation Accelerator

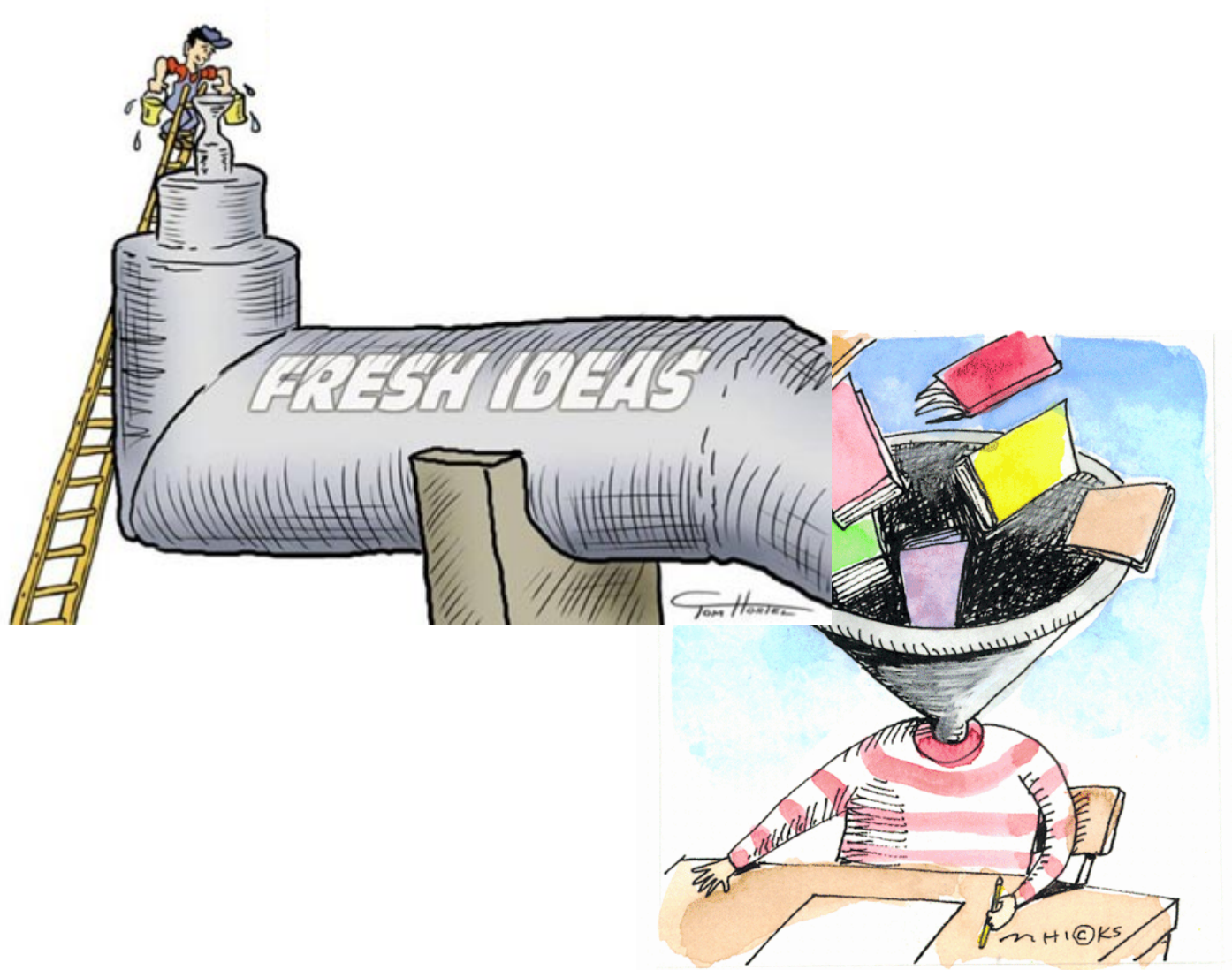
FuturICT

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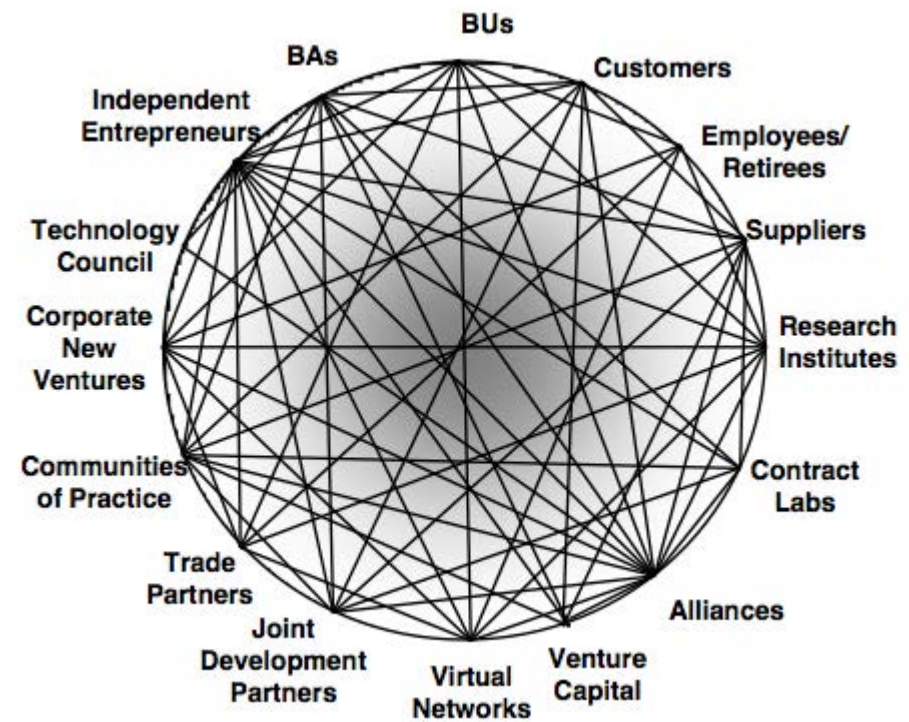
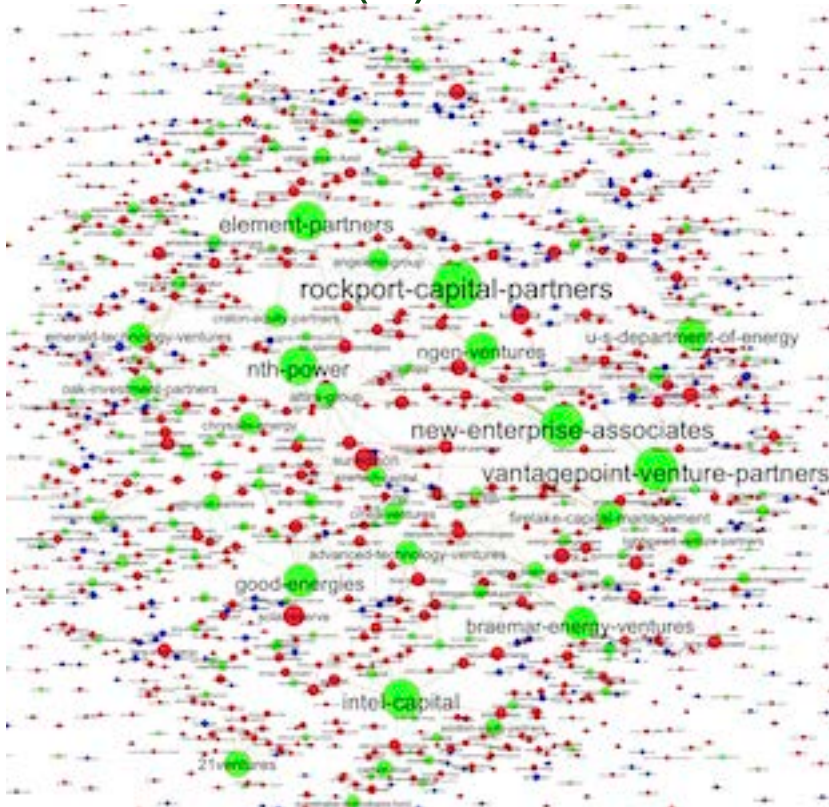


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# Innovation is not a pipeline...

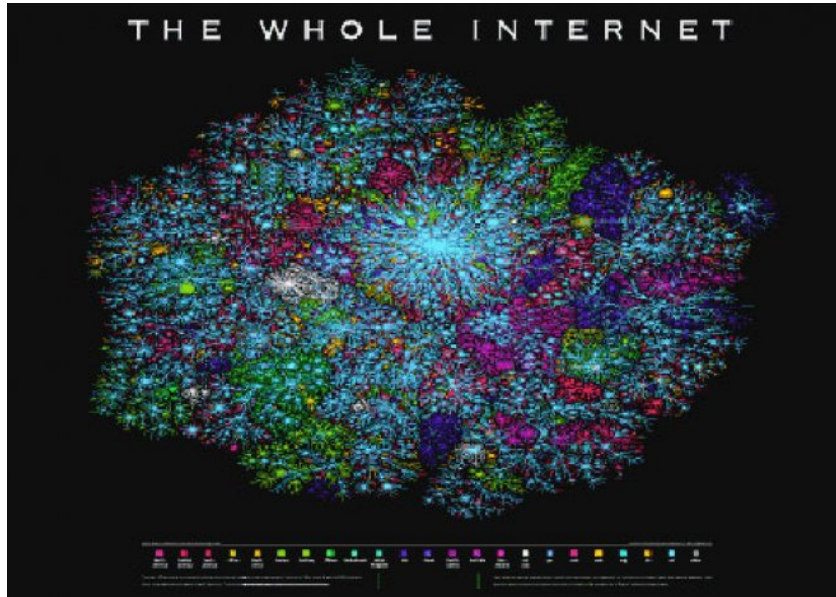


# (1) Innovation is an ecosystem



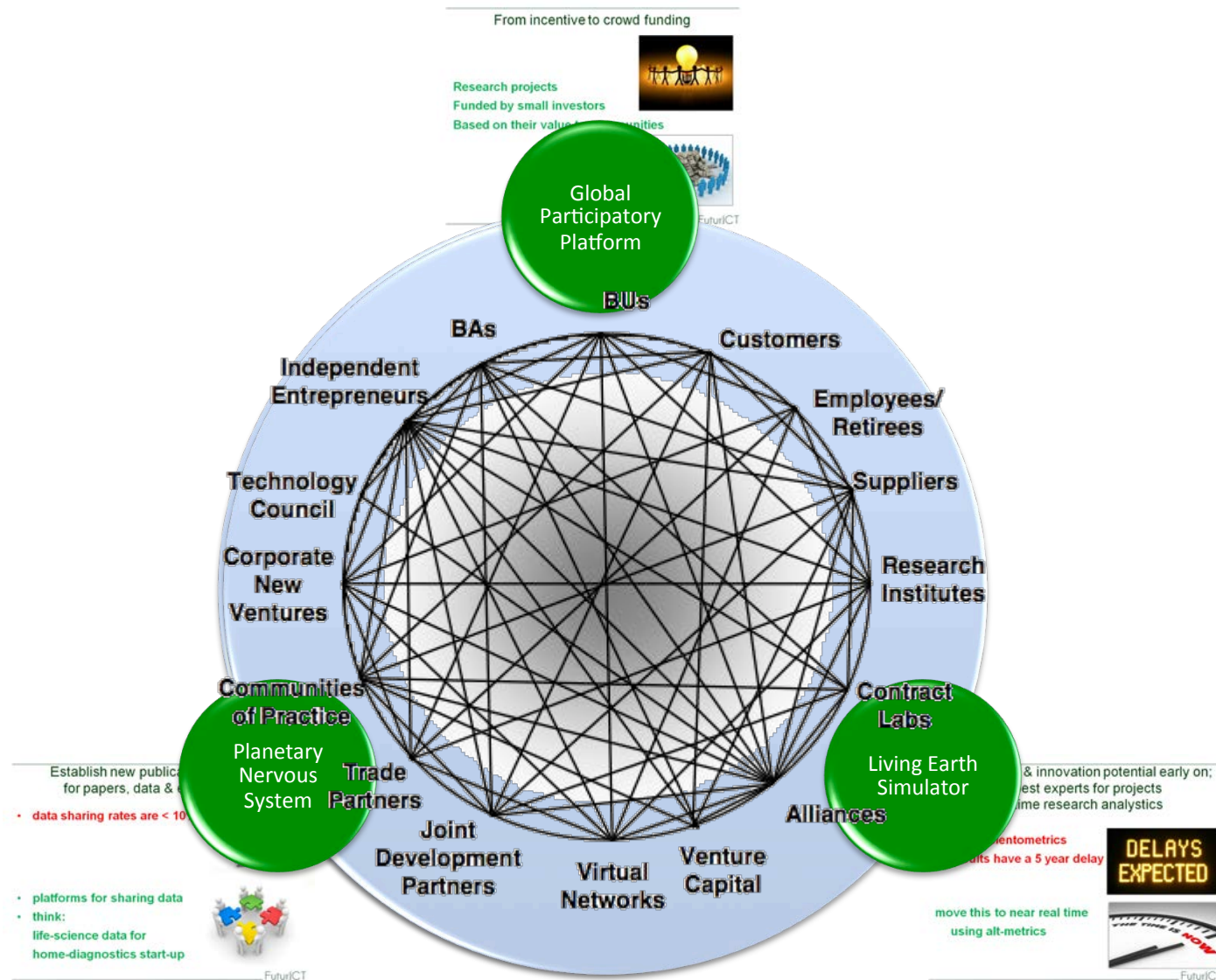
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## (2) Innovation is driven by platforms





# FuturICT as an innovation *platform*



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Detect trends & innovation potential early on;  
find best experts for projects

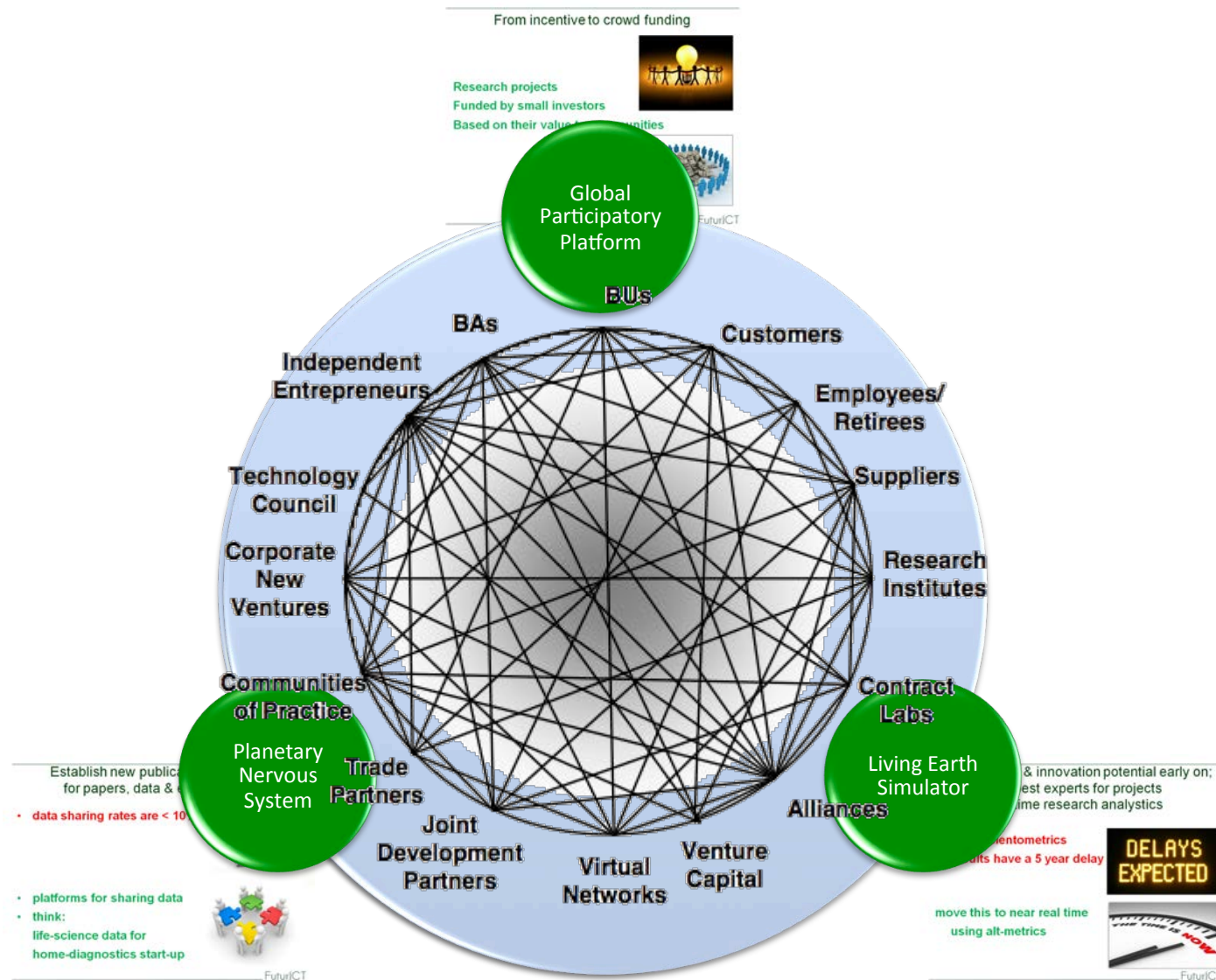
Current scientometrics results  
have a 5 year delay

move this to near real time  
using alt-metrics





# FuturICT as an innovation *platform*



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# Establish new data publication platforms

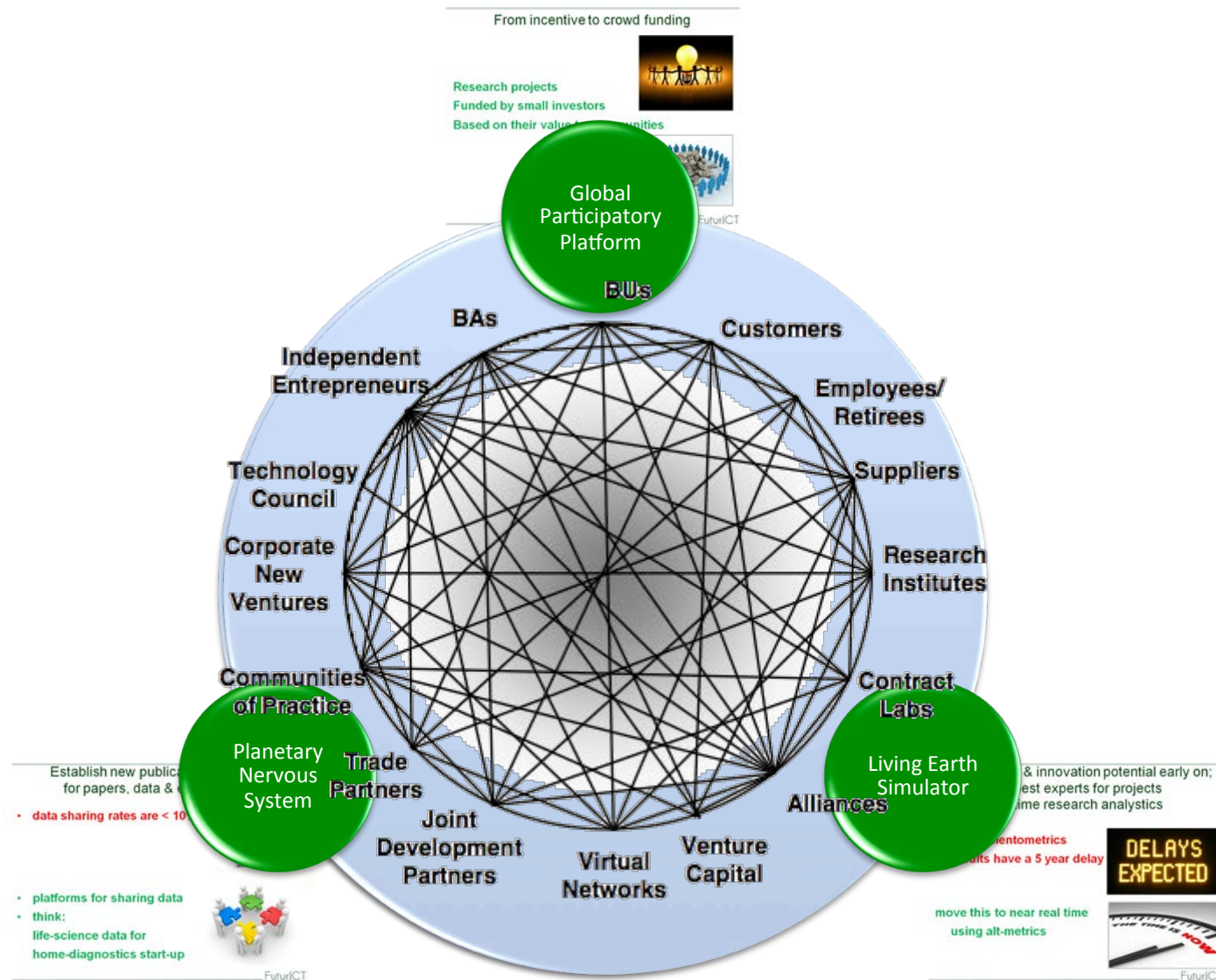
- data sharing rates are  $< 10\%$



- platforms for sharing data
- think:  
life-science data for  
home-diagnostics start-up



# FuturICT as an innovation *platform*



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# From incentive to crowd funding

Research projects

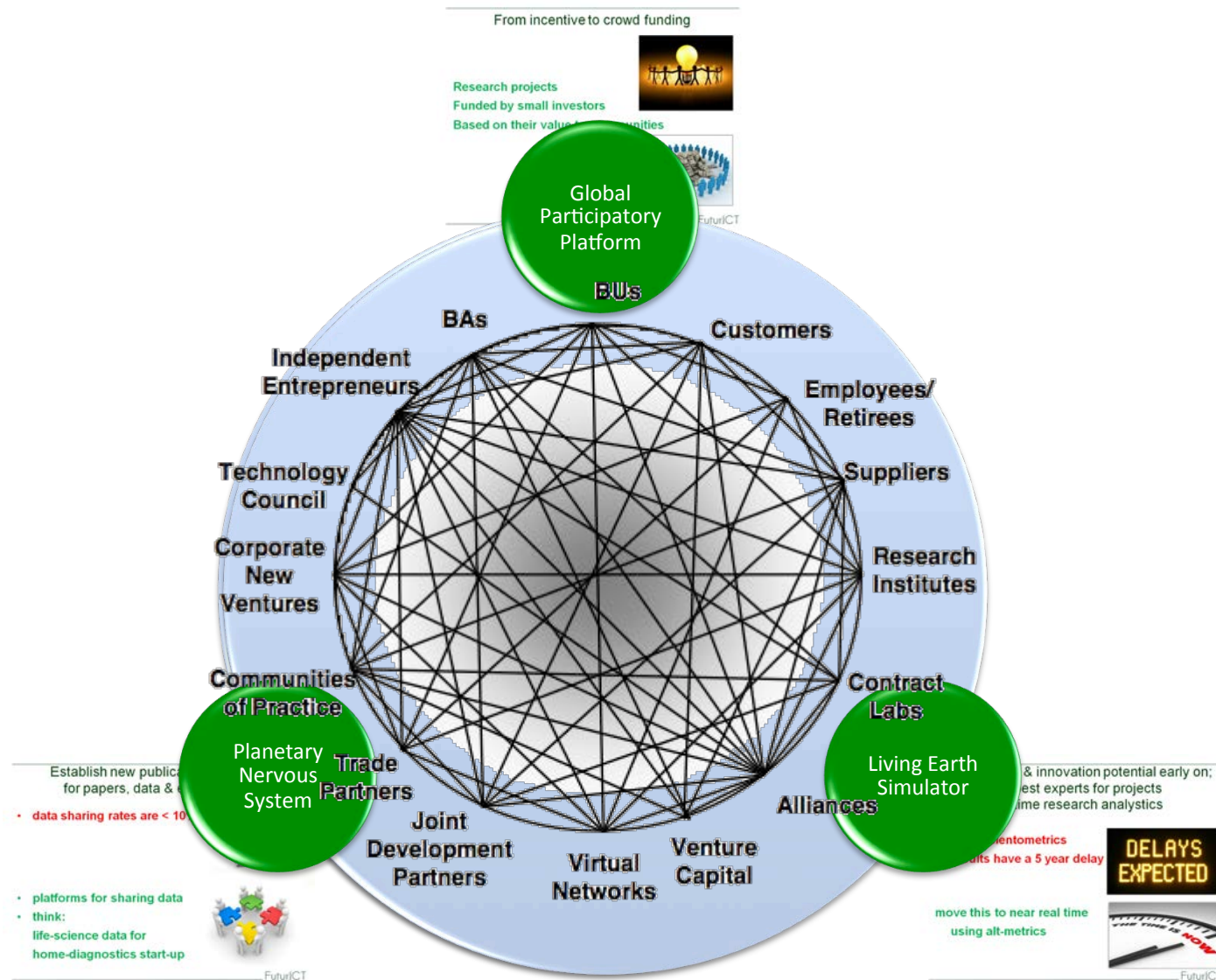
Funded by small investors

Based on their value to communities





# FuturICT as an innovation *platform*





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# A New Era of Socio-Inspired Technology

New socially interactive ICT  
enabled by complexity theory  
and novel social science

Better understanding, monitoring,  
and management of global society  
enabled by new ICT

