**FET Consultation - template FET Flagships**

**About you**

* What is your background? Are you submitting this proposal as an individual, or do you represent a community or institution?

John Sutcliffe-Braithwaite, MA (Cantab), MBCS, C.Eng., MBA (Tech.Mgt) OU, Fellow, Inst.of Directors, retired in 2006 from his first career in Business Computing, where early work in computer modelling led to an interest in the human aspects of computer usage (HACU), the name of the BCS Specialist Group of which he was first Chairman in 1971. His interest now is research in the domain of the complexity science of the Human Condition, especially computational sociology in the real world, leading to this proposal to FET for a research programme called ‘Computational Socio-Geonomics/Metaloger’, The Peoples’ Toolkit’. Its present state is that of a fledgling consortium including institutions in several EU countries and a nascent open public community called The Metaloger Consortium. The research will likely require a sequence of H2020 Calls: from an initial SME Instrument, through a Proactive Proposal, to its final scope and scale as a Flagship effort that is global, led by the EU.

**What is the challenge and the vision?**

* What is the grand S&T challenge and its underlying vision and what are the main objectives your initiative would address? Why is this a grand S&T challenge and what makes it a "game-changer"?

This proposal is for a new applied science of human behaviour and its experimental validation, implemented universally via The Peoples’ Toolkit, in a shared endeavour that will enfold the entirety of human efforts across the spectrum of human interests since the emergence of the Homo Sapiens species to current fascination with our possible cosmic conclusion. In between is the ‘*here and now’*, and what we want to do with it, that gives us sufficient purpose and necessary opportunity - if we think about it carefully enough – to bring about a new Order of Things. Its secret recipe is the means to find *value –* and then make use of it. This brings to the general significance of husbanding the fragile ecology of our existence, the requirement for people, not just as the consumers of the ecology, but as its only saviour (if we put our minds to it). The task is not just loving our gadgets, but recognising we are seven billion *individual* widgets continuously *processing* the ecology of our world & our minds. We intend for us all to get on with it together; & learn how to distinguish between what we value & its opposite & how to discriminate between them (mindfulness). This skill is as fundamental as love, nurturing & working in a common cause to safeguard our future. Antonio Loredan, 25/1/16 described FET Open as having a ‘nurturing role’. Following his description of its mission as to kick start the big shifts in society, leading to paradigmatic change in functioning, we know we are on the right track. A new App, The Peoples’ Toolkit, a symbiosis of ICT, science & society will nurture a better World driven by People, empowered, enabled & engaged. We will be seven billion participants in the common experiment of life, an evolving ecosystem of purposeful innovating minds caring for the future, & empowered, enabled & engaged to make it happen, with Society its supporting ways-&-means, working ***“towards a sustainable World: holistic, symbiotic, creative, & survivable”***.

Our target is to be the ‘social media of choice’ for concerned people. It brings to the domain of Sociology, the excitement of democratic involvement that is already making its mark in EU thinking, coupled with the socio-technology of the Information Age – extended into a new paradigm of Computable Society, eighty years after ‘On Computable Numbers’ & likely to prove as defining. Its other determining features include complexity science & ‘interconnectedness’, also key EU foci. The complexity of society and how this permeates every aspect of its functioning is a huge part of sociology & societal research; such research involves setting up laboratory experiments & applying any useful findings into ‘real-life’ actions. This is the ‘Complexity in the Real World’ (CRW) movement. This ‘grand challenge’ sets out to incorporate this model directly into how ordinary life proceeds, which presumes some fundamental alignment between ‘complexity science’ and that of ‘people/society’ functioning. This research starts from the hypothesis that the entire phenomenon of the human condition is driven by the complex adaptive system of the human mind, specifically as the basic tool of human purpose/decision-making. This research is an empirical scientific study of how human behaviour operates to bring about observed, experienced phenomena of human life and how this can be improved and optimised; within the context of the past decade of EU research into identified problems of society and our world’s well identified risks, the S&T grand challenge proposed holds out the possibility to tackle the fundamental underlying cause – ‘ourselves’. Paradoxically both cause-&-solution are the same: we are into the applied science domain of ‘systems of systems’. In terms that are resonant with H2020 terminology, we are beginning to recognise the total interconnectedness of everything about our world such that there is no room for the old model of *power:* we are all in it together. This grand challenge works with the entirety of ubiquitous systems in place, and, usefully and significantly establishes their significance(s) within the overall ecology of human purpose. The vision is of a universal individual & collective societal involvement summarised in the two slogans:

* The 4‘E’s: everyone/everywhere/everyday/everything; this is digital societal-personal involvement
* People: Empowered, Enabled and Engaged, to say, “Yes, we compute our World”.

‘Computable Society’ will be a game-changer because it uses ICT, the defining technology of our Age to involve the whole world in an effort to innovate a new, better future by redesigning the present model(s) where these are past their sell-by date. This is about Human Will and Wilfulness. The specific challenge is to establish a viable, living, ecosystem of human purpose, defined by & based on the new science & socio-technology, together with the entire phenomenon of functioning people & their society(ies), enterprises, institutions, & above all families. It becomes a living/usable model of our purposeful existence.

* What are the main technologies, including digital technologies[[1]](#footnote-1), which your initiative will advance?

The core(new) technology is ‘socio-technology’, the basis of which are designs we, the human species, conceive and implement applying the ideas of thinking (Wo)Mankind over the aeons of our existence – as example from Plato to Prigogine. To the pantheon of philosophers and scientists we add the ‘common (wo)man’ whose ideas, innovations and entrepreneurial skills expand the base-line away from power and privilege to peoples’ own performances (sic). It is about chosen quality of life.

‘The Peoples’ Toolkit’ brings the disciplines of the systems sciences, especially relational-systems, to bear on advancing the above; its implementation involves, new science, technology, computing models (mathematics, especially Memory Evolutive Systems) & real-world deployment models requiring an operational infrastructure at Internet (& governance-systems) scale:

* Meta**-**modelling constitutes the practical systems methodology, extending practical systems design into that of ‘systems-of-systems’. This ‘super-model’ enables the worlds of current sociology, enterprise systems, & today’s ‘geeks’ (whether aged eight or eighty years…) to work-together (especially, to share designs & reinforce practical interconnectedness); modelling is the standard method used by engineers to get from idea to workable answer (whether ‘things, services, or innovations of any kind’)
* Computational Socio-Geonomics (CSG) is the new science of the practical structural model of functioning society operating at the fundamental level of human purpose will & wilfulness, called ‘system(s) of values’. Its computable basis mimics that of the world of bio-informatics, with Its key property being continuous evolution *by design;* (this indicates the nature of the ontological practical scope)
* Metaloger is the operational ICT platform for the CSG systems-of-systems, (it is a neologism from ‘meta’ – [Greek: *above/over signifying multi-level hierarchies of cause/effect systemic significance*] & ’catalogue’ - [ *n:* a collection/repository of ordered information, here Meta Frames of Reference (MetaFor’s that are models-in-use of life’s continuous activity(ies)]; but also suggestive of ‘logger’, a device for recording signals for further analysis & action), it includes:
  + Metaloger ‘Systems of systems’ are constructions of people & ‘things etc, etc…’ whose operational interconnections exhibit complexity the aetiology of which can be traced back to the human mind(s) involved with their functional design, whether physical, theoretical, practical or any of the range of psycho‐social behaviours exhibited by *people, empowered, enabled, & engaged*
  + Metaloger Living-Labs of Life are their experimental validation & verification: *in-vivo, in-silico, in petri* simulations of human purpose & its ‘Future(s)’. Their domain is society, people, and their culture, at working level(s). Their main source is the Human Mind
  + The operational output of the above create Metaloger Tapestries consisting of complex patterns formed by the interactions of the complex perturbations of the Complex Adaptive System of the purposeful awareness of seven billion *future concerned* minds, yielding the evidence base for the real-world applied science of human behaviour.

In addition to the core new socio-technologies outlined above there will be a huge domain of ‘legacy’ life needing systems technologies aimed at integration between ‘old & new world’ visions of (Wo)Mankinds purposeful existence, among which are:

* Society(ies) will be able to share ‘sci-fi’ type experiences, trialling alternative Computable Society configurations as part of a general continuous evaluation of ‘the state of societal well-being’
* Current sociological assets/solutions will become a repository of, and expert resource for comparative selection of optimum solutions for peoples’ total immersive simulation-conducted living-lab experimentation
* The forensic domain will be a main ‘client’ of the living lab simulated testing and analysis method of investigation
* There is no limit to the scope & extent of Metaloger World other than the choices we all face regarding the value systems that *matter*
* Metaloger World, progressively created using The Peoples’ Toolkit will mature through wrapping the entirety of experience of the past, present, & hypothetical future(s) into an interconnected theoretical simulation of life; choices regarding how much credence any aspect of this possesses is a continuous analysis of meta-level Metaloger Tapestries (new analytics beyond statistical physics!)
* The most significant new technology is ‘User’ engagement systems that will replicate all of life’s acquired competences for ‘making sense’ of existence and applying it to evaluating ‘life’ & accordingly making meaningful decisions and actions, using the latest specific User simulators designed to mimic states of User maturity with Metaloger World; this is playing in the game of life
* *An entire operational Metaloger Technologies world will grow-up as experience of Meta-modelling increases the universal need to make sense of the total interconnectedness of everything; this will be an advanced version of current media worlds of ‘trial existences’, - but resulting in genuine increased understanding of the multiple meta-worlds we all inhabit (despite societal pressures for conformity)*

In summary, this socio-technology will equip (Wo)Mankind to understand the workings of its complex individual & collective *mind;* how this enables the entirety of purposeful behaviour, and the resulting patterns across society – that form the best (and worst) of society’s phenomena, innovation, creativity, summed up as human will & wilfulness. Metaloger World offers the opportunity to think our way out of trouble If we are so mindful; it is the new meaningful social App for the whole world.

* Your initiative’s relevance for European industry & what is its innovation potential that would benefit Europe's economy &/or society?

The ‘European Project’ is itself a classic case of seeking to repair its former damaged existence whilst at the same time extolling its proud history of worthwhile achievement that continues unabated. Even as this commands respect across the global stage it experiences the risks & challenges of ecological & geo-political societal pressures that strain its resources & threaten its cohesion & well-being. There is no single or simple answer because the problem domain is wider than any view of Europe’s borders; in fact the answers depend on a recognition of & engagement with EU’s global world that is its true partner & basis of opportunity. Put simply & starkly, we are all in it together; the aim of CSG/M, The Peoples’ Toolkit is to join everything up into a global success story as well as an enhanced European one. For this everybody & everything must open its doors & share its ongoing ecological & entrepreneurial success stories to advance the whole world ***“towards a sustainable World: holistic, symbiotic, creative, & survivable”***. It is an opportunity for a global improved societal model of purposeful people, empowered, engaged & enabled to say, “Yes, we compute our World”. The Peoples’ Toolkit *works well.*

Looking towards a possible solution space: the EU puts strong emphasis on tackling the problems of society, of which current issues across geo-political divides fill current news; global concerns are dominated by ecological & societal challenges. H2020 pillars include key areas of science & technology & a strong focus on participation by ‘*the people’*, A useful starting brief for CSG/M, The Peoples’ Toolkit is that of the FET PROACT-01-2016 Call, Area 1: Future Technologies for Societal Change, topic (b) New Science for a Globalised World:

“New science for a globalised world: tools and methods (mathematical, technological, social/organisational,…) for the collaborative

study, projection and engineering of large scale open socio-technological and ecological systems characterised by complexity and

inherent uncertainty due to, among others, partial knowledge, ignorance and conflicting world-views by different actors. These tools

and methods should include the study of informal opinion groups emerging on the Internet at a global level, and focusing on global

topics such as Global Systems Science as a new integrative science approach, the emergence of global solutions as patchworks of

local ones, non-rationality, the impact of open-data, the dynamics of social and cultural divides, of peace and conflict, and various

incentives, drivers and enablers of change and innovation, including the arts”.

This proposal defines the answer as the Global Systems Science of human behaviour & purpose, and specifically that this requires the new System of Systems of Computable Society because this addresses the ‘qualities’ highlighted in the brief, albeit these are somewhat preliminary at this stage:

* World patterns mix exciting possibilities with glaring missed opportunities. We ask ourselves if we ever learn the lessons of the past. We may even sound as if change is a futile possibility bordering on hopelessness; “the World is out of joint…”; we address a challenge on a similar scale to Hamlet’s. The SoS response is to make Governance, Policy, Standards the definitive practical domain of CSG/M, The Peoples’ Toolkit. In this respect GPS is personal commitment to life, individually & collectively, including our sense of direction – where are we going in this journey of life? All of Europe’s industry and societal activity is part of the composite ecology of purpose that can be optimised through the scientific experimentation of Metaloger World; the practice of this is The Peoples’ Toolkit – universally.
* The ecological focus is the glaringly diverse variations in the standard of real world existence; but also the corresponding multiplicity of ideas, actions & innovations - sometimes contended, sometimes consensual – attempts to make progress & change the ‘Order of Things’, total diversity across resources, consumption, fairness, qualities (comprehensively), & correspondingly for CRW answers
* Its solutions require an integrative methodology; this is the raison d’etre of CSG/M, The Peoples’ Toolkit – comprehensive but more than ‘patchwork’ and all of the current world of on-line communications become enhanced by its scientific rationale, summed up as the totality of human will & wilfulness, elsewhere expressed as the psych ologistics of human activity
* The essential integrative result is the working system-of-systems called Metaloger World, whose job is to optimise and not be a new variety of old power & preferment. The Peoples’ Toolkit, in addressing the above holds out the hope & possibility of doing everything we do now & more, with the new ability to avail ourselves of the wisdom of shared comparative experience that enlarges the understanding of ideas, decisions, actions therefrom together with the entirety of their living consequences. This is only possible by utilising the engineer’s ’model’ methodology – that in Metaloger World is a continuous, universal simulation of life’s potentiality continuously over past, present & future – together with a continuous personal/enterprise updating of life’s working-level Meta Frames of Reference (MetaFoRs). The Peoples’ Toolkit is a working toolset for the CRW experience of ‘life’.

The relevance for Europe’s Industry/economy/society of this proposal lies in the concept of interconnectedness. There is no domain of human purpose, thought, decision/action that functions oblivious to this principle – whatever is our seeming power to pursue a course just of our choosing. All of Europe’s activity is part of the composite ecology of purpose that can be optimised through the scientific experimentation of Metaloger World; the practice of this is The Peoples’ Toolkit – universally. Its practical realisation is ubiquitous Metaloger Labs specific to every individual exercise in enterprise ‘systems’ across society. And, finally, there is no opt-out clause in being part of human purpose: exit is that final step from which there is no easy going back!

* Are there existing international research initiatives linked to this proposal? How would this initiative position Europe with respect to other regions in the world?

None so far. Our earliest foray into EU societal research included abortive attempts to join forces with the FuturICT flagship initiative (of which we are still a critical supporter); we do not rule out discussions with their consortium still. Meanwhile we have engaged with EU research initiatives including Internet Science; Future Internet Enterprise Systems, Complexity Science (since the early Paris Workshops where the first Metaloger submission was presented); complexity in society & the Real World; ‘futures-studies’ & Complexity in International affairs. Also several meetings, workshops & conferences in the fields of Internet Science, Governance, CAPS, & H2020 generally. In all of these there continues to be significant interest in international participation that could lead to substantive global collaborations.

**What would it take to do it?**

* What is the scale of the effort required to reach the objectives and how long will it take to do so?

The scale of effort to get this overarching model to ‘usable’ state & deploy it as the integrating model of diverse society(ies), is likely to be an effort at the same scale, cost, and innovation demands as the nearest existing universal ‘peoples’ system, i.e. The Future Internet. An early strategic decision, that has yet to be determined suggests FI together with its associated services is a natural contender for the work of setting up the infrastructures of The Peoples’ Toolkit programme at least for the initial implementation phases. The further decisions are the standard ones that accompany all innovation of which a paradigm changing one is the ultimate test. The current effort addresses the following proposed tactical phasing:

1. work with EU REA; National Contact Points; emerging interested individuals & institutions to resource a programme team

2. development of a strategic/business plan for an initial prototype phase of development - likely an SME Instr. Funded effort

3. followed by FET Proactive & Flagship proposals.

4. the *maturity* phase is when the Computational Society paradigm has run its course & ‘The Old Order changes yielding place to new’

The following is a conceptual CSG/M, The Peoples’ Toolkit ‘Programme Road-Map’:

*EARLY-DAYS/PROTOTYPING the learning Stage (30-48 months, €10M-25M)*

**1. Break‐through‐team**: win hearts & minds; challenge luddites; Believe; FuturICT(?)

**2. Excellent leadership**: orchestrate; facilitate; choreograph; team of all the talents

**3. Architecture**: Think big – Act small; every initiative delivering results; devolved R&D

**4. Action plan**: applied R&D; specialisms; continuous V & V; beta‐ release model

**5. Systems Engineering**: bridging‐technologies; holistic outcomes; fluid‐rigidity

**6. Problem solvers**: BRAID focus; total openness/exposure to criticism/experimentation

**7. Prototyping:** controlled *meta‐model;* open experimentation; open governance

*FAST FOLLOWERS/KEY DOMAINS fully operational ‐ (YRS 5 – YR15 €1B – 10B indicative)*

**1. Open Source**: System‐of‐Systems (SoS); science expansion; wider field of application

**2. Global Delivery**: breakthroughs; multiple domains;

**3. Legacy**: capture the past; modern learning; new paradigms

**4. Forensics:** two‐way challenges; specialist domains; dispersing power games

**5. Advanced collaboration**: new science; new socio‐technic models; changed worlds

**6. Flagship**: System‐of‐Systems (SoS); science expansion; wider field of application

*MATURITY ubiquitous complex society ‐ (YRS 15 ‐ YR40 onwards €1 T self‐funded)*

**1. Self‐healing World**: multiple domains; integrated life/physical/biological sciences

**2. What next?** Futures expansion; new world society; socio‐technology the new power

Programme realisation, the art of The Prince, is about coalitions of purpose, scientifically driven. The above Road-map is conceptual; we start from a simple situation pointer: in a world that can realise multi‐billion dollars from an opportunistic on‐line game (that is what current social media is) & where EU research only funds a small percentage of novel ideas, we need to look ahead realistically at the effort of bringing about a paradigm change of ‘On Computable Society’. Realistically we are only concerned with the initial 4yr effort; it is a truism of Management Science that the Horizon for strategic thinking has to extend beyond any present RoadMap to that of the eventual ‘War‐of‐the‐Worlds’, which is that of the Oxford (& now Cambridge also) view of the time left to correct the world ecological disaster unfolding. The CSG/M challenge is Big. FuturICT similarly. It took a World War to succeed with the US Manhattan Project. Kennedy’s Man‐on‐the‐Moon is surely moving towards being Mars next. China, Middle East, BRICS etc etc now do in twenty years what took the West a century to bring about. ‘Time’ is not, however of the essence, *Will* to deliver is. Generic models of societal functioning & how it has led to national & global dispensations of how world-systems run, called socio-economic studies, are case histories of comparative answers to a world that is intolerant of all that is not specific to a ‘local’, aka proprietary solution. What is on offer in the new science is a system-of-systems that from its inception as a new idea takes a strict scientific path that has to be proven scientifically. The risk of introducing the new applied science of CSG/M, The Peoples’ Toolkit, is its own type of hubris: it does not (yet) have any competition. Our aim is to refine and expand the basic concepts, starting from sectors that offer to trial the new idea(s) and share what comes out of such experiments. Ours will be a totally open answer universally debated and refined. Computational Socio-Geonomics is involved *People and Society’* as an updated IBM Fagin Inspectionof the psycho-logistics of human behaviour; gaining mastery of the science of CSG/M; properly supported in use of the *service, but first the R&D of the new socio-technology*

* We will work with EU National & Global Research bodies, & their infrastructure(s) of engagement, especially EU REA, to build a new, expert and *people-participation-based* consortium of all the talents supported by the full panoply of The Peoples’ Toolkit empowerment, engagement & enablement capabilities. The EU Research initiatives linked to this proposal will lead a successful global working effort towards a better society, free from and also able to cope with ills that exist or might arise. Mutual learning & support in governance & handling forensic behaviours at all levels of society is a necessity in our complex world ecology of purpose, working towards a better future. This all is standard systems development with innovation at normevery stage
* initially setting up the Users infrastructure for the new applied science of computational Socio- Geonomics/Metaloger

1. a massive operational infrastructure to provide & service the universal engagement facilities;
2. the devolved interlinked set of operational Metaloger Labs; these are proprietary *according to societal norms*
3. the continuous analytics of the dynamic occurrences of Metaloger Labs i.e. Metaloger Tapestries
4. engagement & its experimental basis to be trialled under controlled conditions and its empirical basis be validated and verified
5. deployment progressively as the Peoples’ Toolkit for use globally: it will test working performance & User satisfaction.
6. Early trial experiments following the model of any high-tech new product/service
7. early adopters in depth real-world trials, learning, & prototyping,
8. fast followers testing to the limits of performance (the equivalent to testing to destruction, is simulation model manipulation)

* Why is Europe well positioned in terms of skills/expertise & capabilities including industrial to be involved & are there existing national or European research initiatives linked to this proposal?  What is the added value for such an effort at the European level?

I think these questions cannot be answered at this stage since this proposal is one of clean-sheet innovation coupled with an as yet unproven scientific basis; its utmost creativity regarding ‘the human condition’ requires a level of research to match. The questions above are incapable of resolution outside of applying the new science by ‘manual means’ ahead of availability of the answers! Our conclusion to this early straw-man/position-paper is to mark as WIP, the necessary preliminary stage before R&D of the solution commences, which is to formulate & agree with stakeholders the (near-final) specification of what is to be delivered. We have a working paper available to stimulate discussion on our proposal and look forward to sharing this with commentators & the EU. The two diagrams are early conceptual working designs for the socio-technologies from the working White Paper, but ignore footnote.

*End of submission.*





1. See in particular the EU's Digital Single Market Strategy (<http://ec.europa.eu/atwork/pdf/cwp_2016_en.pdf>)?  [↑](#footnote-ref-1)