Working title	International Smart Metering Research Forum (iSMRF)	
Brief description	What is the issue that the research would address? Why is it important?	Smart meters are a necessary condition for distribution system optimization, integration of intermittent renewables, and real-time network management through DSR. They also play a pivotal role in enabling a new generation of consumer-centered energy service models, and in raising the salience of energy demand for users through feedback devices.
	Who would be collaborating (policy makers, academics, industry, other organisations, e.g. TCPs)?	This would be multi-stakeholder collaboration, seeking to identify program design and delivery trade-offs between energy sector actors, consumer advocates, civil society representatives, and governments. It would strongly benefit from being a joint initiative of the Users and ISGAN TCPs.
	Which sectors, technologies, users would the work focus on?	The focus would be on building a socio-technical stack that delivered defined smart metering program benefits. This would include: - Metering hardware (Including emerging technology for energy sensing as well as communications technologies) - Software (including software architectures regarding the location and processing of data on or off the meter, as well as security, firmware/software balancing, upgradability, etc) - Protocols and standards (looking at interoperability of devices, secure connections, device identification, etc) - Data architecture (where is data stored, for how long, what types of data, encryption standards, etc) - Consumer interface design (In Home Displays and Consumer Access Devices – feedback to users of energy use) - Smart device control functionality (capacity and mechanisms for controlling smart devices by end users or energy system actors)

		- Consumer engagement and value propositions (end user energy savings benefits and energy service benefits including automated home energy audits, etc) - Social acceptance (Social marketing, application of behavioral insights, avoidance of conspiracy/hoax health movements; etc. - Policy, regulatory and legal aspects (implications for existing energy regulations and codes, implications for, or constraints from, non-energy law (including data privacy law, consumer protection, etc)
Strategic alignment (Please use the draft Strategic Framework document as a guide)	Would the research have the potential to scale and create substantial impact?	Many OECD countries most of the policy and regulatory decisions around smart metering have already been taken. The question would be what value we could add, and for whom. I suspect the primary beneficiaries would be developing nations. Other research ideas around smart metering might still be worth pursuing, e.g. around the implications of hierarchically structuring balance and settlement metering throughout the grid.
	Why is international collaboration needed?	Smart metering programs take very different forms in different countries. These vary by where the data is stored (centralized vs on the meter), how much data is stored (duration, frequency and type), who controls access to the data (consumer or energy sector actor or government), who owns the meter (energy suppliers or network operators), how smart meter data is view in data protection law (personal data or not); what policy objectives the program is seeking to meet (power systems optimization, service innovation, public interest applications (energy poverty identification, power theft), etc. These decisions impact on both industry actors' and consumers' experiences, and the resistance/support of smart metering rollout programs. Smart meters raise public concerns regarding unsubstantiated health concerns, as well as substantiated privacy concerns. In the Netherlands, the smart metering program was halted over concerns the data could be

		used to identify religious minorities (Muslims observing Ramadan). International comparative analysis can identify best practice from different stakeholders' perspectives, helping governments evaluate tradeoffs between policy outcomes and program risks.
	How is the research policy relevant?	Smart metering is a corner-stone of digitalization and smart grids. All European, and most developed nations have programs in train or in development. These are multi-billion pound investments that require strong policy and regulatory frameworks to deliver value.
	How would the research combine technology and social research?	Social acceptance and consumer benefits sit at the heart of successful smart meter rollouts in market economies. Issues such as secure by design data structures, well designed end-user interfaces with strong end-user value propositions, well designed instillation programs are key to successful rollouts.
	Which high-level factor(s) in the energy system would the research aim to help improve: energy intensity, consumption intensity, emissions intensity?	Can deliver benefits to both energy efficiency (through promoting efficient use of networks, but also uptake of energy efficient appliances and building retrofit recommendations and evaluation) – as well as consumption intensity through increasing energy salience, both directly through feedback, but also as an enabling technology for making embedded generation and storage visible and valuable to the consumer.
	Which characteristic(s) of sociotechnical energy systems would the research focus on? e.g. technology choice, design efficiency, end-use behaviour, motivations, capabilities	Interface design (for In Home Displays of consumption); Technology choice (informing selection, control and benefits of energy efficiency appliances); end user behaviour (through feedback, but also through smart appliance control and energy service provision support); consumer motivations to save energy/carbon, etc.