WARWICK BUSINESS SCHOOL

Scenario 2015

Improving Scenario Methodology:

Theory and Practice

14th – 15th December 2015

WBS

THE OR SOCIETY

BAM British Academy of Management

Contents

Welcome

Welcome to Scenario 2015, Improving Scenario Methodology: Theory & Practice. The conference is organised by the Operational Research and Management Sciences Group in Warwick Business School in collaboration with the British Academy of Management and the Operational Research Society UK.

Scenario 2015 aims to bring together distinguished researchers and practitioners from academia and industry to exchange knowledge, ideas and results in a broad range of topics relevant to scenario planning.

The programme consists of 40 presentations in 16 sessions. At the time of going to print, we have over 50 registered participants from ten countries.
We wish you a productive, stimulating conference and a pleasant stay at WBS.

Conference Organising Team:

Frances O'Brien, Warwick Business School

Sue Shaw, Warwick Business School

Maureen Meadows, Open University Business School

Neil Pyper, Coventry Business School

Stathis Tapinos, Aston Business School

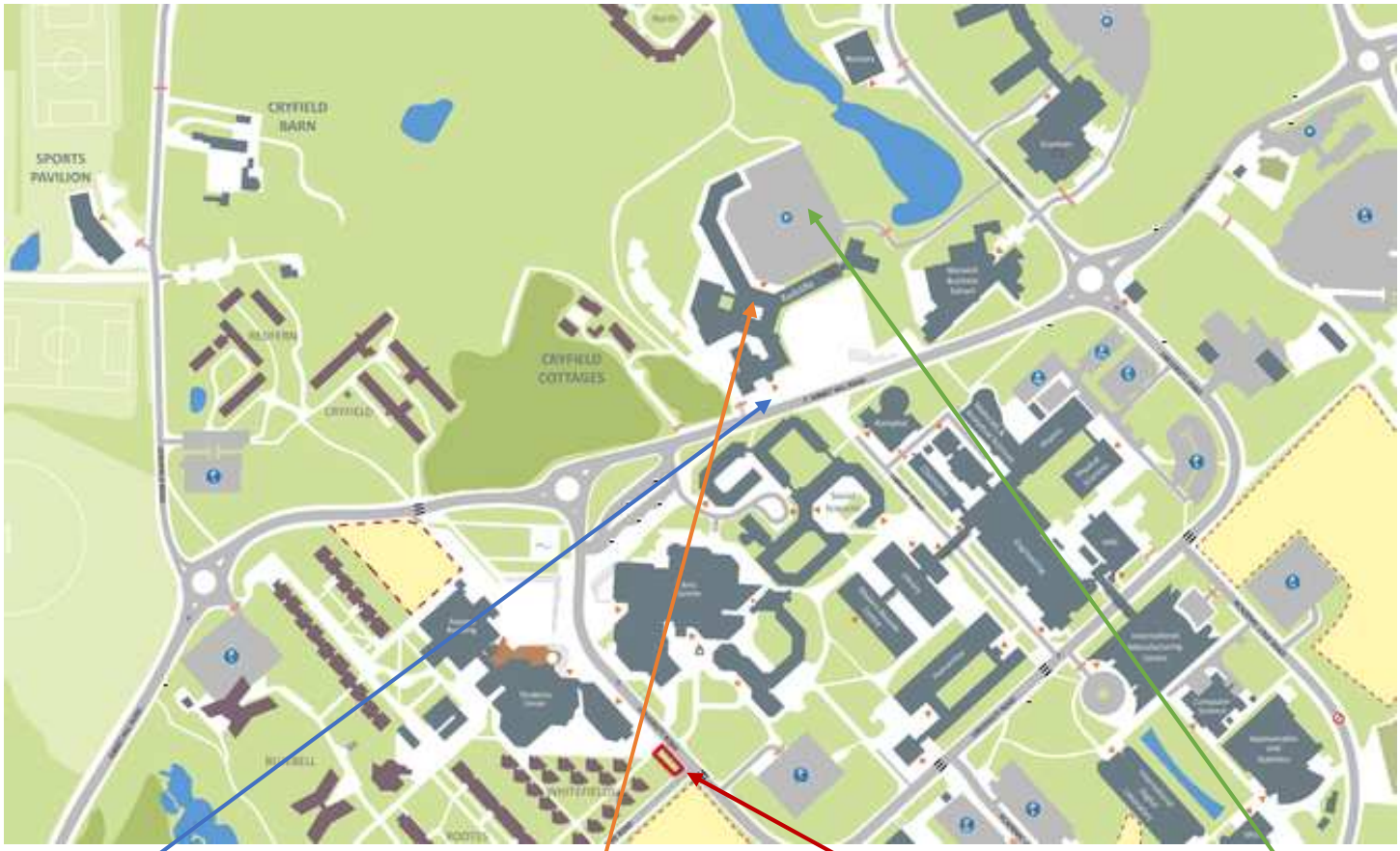
George Wright, Strathclyde Business School

The Schedule

Time	Day 1	Stream A – Theatre M1	Stream B – Theatre M2
09:30	Arrival & coffee		
09:45	Welcome		
10:00		Plenary talk	
11:30	Session 1	Issues related to teaching & facilitation of groups	Quantitative and qualitative scenarios
12:30	Lunch		
13:30	Session 2	Using scenarios for policy development	Scenarios & time-related issues
15:00	Tea		
15:30	Session 3	Scenarios and regional development	Scenarios & the web
17:00	Session 4	Scenarios with gaming & competitive elements	Temporality and related issues
18:30	Free time		
19:30	Dinner		

Time	Day 2	Stream A – Theatre M1	Stream B – Theatre M2
09:00	Session 5	Scenarios & systems thinking	Theoretical developments in scenario planning I
10:30	Coffee		
11:00	Session 6	Scenarios & participant related issues	Theoretical developments in scenario planning II
12:30	Lunch		
13:30	Session 7	Developments relating to the Intuitive logics scenario approach	Developments in scenario methods I
14:30	Session 8	Developments in scenario methods II	Developments in scenario methods III
15:30	Tea		
16:00	Guidance re SI		
16:30	Close		

Please see pages 57-59 for a detailed scheduled in author order.



WBS Teaching Centre

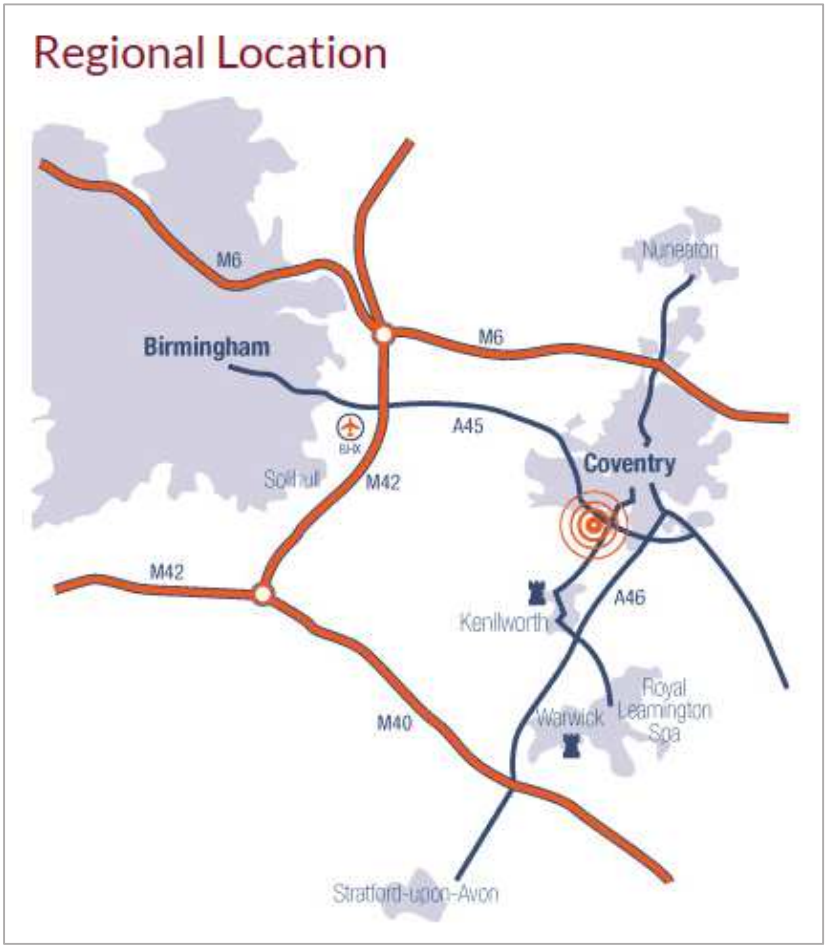
Conference venue

Radcliffe Conference Centre

Venue for Conference Dinner

Taxi rank

Parking for delegates with accommodation booked in the Radcliffe Conference Centre



Practical Information

Travel to the conference

Travel by Car: Our campus is on the outskirts of Coventry, a couple of miles from the junction of the A45 and A46. Don't drive to Warwick town! Satnavs and GPS should accept our postcode: CV4 7AL.

Parking

Details of where to park on campus can be found using this link: https://www2.warwick.ac.uk/about/visiting/directions/car/parking/ Car parks - Note that all campus parking is chargeable. We recommend that delegates park in one of the pay and display car parks, either car park 15, 10, or 7; the charge is £3.50 per day.

Delegates with accommodation booked in the Radcliffe Conference Centre may park in the Radcliffe car park where no charge is applied.

Travel by public transport: The nearest train station is Coventry, a 10-15 minute taxi journey from campus. The number 12 bus also goes from the station to campus.

Coventry railway station is around:

- One hour from London Euston railway station;
- 12 minutes from Birmingham International railway station, serving Birmingham airport (BHX);
- 20 minutes from Birmingham New Street railway station, serving Birmingham city centre.

Travel by Plane: The nearest airport is Birmingham (BHX) which serves most major airlines and many smaller ones too. It's about a 20 minute taxi journey from the airport to WBS. Alternatively, it is a short monorail ride from the airport terminal to Birmingham International rail station, where you can catch a train to Coventry railway station.

Many international flights travel to and from the following London airports:

London Heathrow (LHR) - about 2.5 hours away

London Gatwick (LGW) - about 3.5 hours away

London Stansted (STN) - about 3.5 hours away

Taxis at the University

There is a taxi rank on campus near the bus station – see the map on page 6. Alternatively you may wish to order a taxi from a local company:

Trinity Taxis - 024 7663 1631

Registration

Registration will open at 08.30 on Monday 14th December in the WBS Teaching Centre foyer. The registration desk will be staffed both days from 08.30. The desk will close at 17.00 hrs on Monday and at 16.00 hrs on Tuesday.

Security:

All participants are asked to wear their Scenario 2015 name badges for the duration of the conference. The conference venue, WBS Teaching centre, will be on 'open access' for the duration of the event. You are therefore advised not to leave valuable items unattended.

Meals:

The registration fee includes morning and afternoon refreshments and a buffet lunch each day – all served in the foyer outside the main lecture theatre (M1) in the WBS Teaching Centre.

The Conference Dinner, also included in the registration fee, will be held on Monday evening in the Private Dining Room in the Radcliffe Conference Centre. The meal will be served at 19.45. Please arrive by 19.30 hrs.

You will have the opportunity to view the menu prior to the dinner – copies will be available on the registration desk. Wine will be included with the dinner and juice for those who prefer non-alcoholic drinks.

Access to Wi-Fi

Details about how to access Wi-Fi via your laptop, tablet or phone will be available from the registration desk.

Messages

All messages / announcements as well as messages for delegates will be displayed next to the registration desk.

The telephone number for colleagues or family to leave an urgent message for you between 09.00 and 17.00 is 024 7652 8220 (Sue Shaw). For emergency messages outside of these times, please call the main University Switchboard on 024 7652 3523.

Notes for speakers

Each paper is scheduled for 30 minutes. You should plan your talk to last for 20 minutes, allowing 5 minutes for questions and a 5 minute break between speakers. Please bring your presentation on a USB stick or email a copy to scenario2015@wbs.ac.uk

Plenary Talk

Scenario Planning and its Future: what's missing and does it matter?

Scenario Planning and Scenario Informed Strategic Planning have been in commercial use for several decades. However, over the last decade, the domain has attracted an increasing interest from academics who, inter alia, have examined the process from aspects of psychology, organisational sense-making, strategic management and organisational change. Acknowledging these extant research channels and drawing upon nearly 3 decades of experience of scenario planning on four continents, this presentation explores initiatives that might fortify the process and help academics and practicing managers better understand the actions of its actors. Drawing upon research in sociology, neuro-marketing and the creative arts, the presentation informs future research pathways, not previously travelled. As is usual in the proposing of new or different dimensions, there will be a much that is controversial and much that is useful.

Peter McKiernan is Professor of Management at the University of Strathclyde, Scotland and Dean of the School of Management and Governance at Murdoch University in Australia. He has been engaged with foresight activities since the 1970s, specialising in econometric forecasting and then, from 1988, in scenario planning, when the University of St Andrews partnered Shell executives in setting up the St Andrews Management Institute (SAMI). Peter was Chief Executive of SAMI during the 1990s, as it continued to spread scenario planning techniques across UK public and private sectors. Since then, Peter has led numerous scenario projects across the globe, including the Scenarios for Scotland (in preparation for devolution in 1998) and more recently for the the States of Jersey, the Shetland Islands, the City of Edinburgh, the Counties of Fife, Stirling and Grampian, the Scottish Futures Forum, the North East of England, TWR (Germany), the St John of God HealthCare Group (Australia) and Southern Cross Care (Australia). He teaches scenario planning at the prestigious Strathclyde Business School and at its many international locations.

Peter is a Fellow of the British Academy of Management, a past President and a recipient of its Life Time Achievement Award; a Fellow of the European Academy of Management and a Past President; he holds Fellowships from the Academy of Social Sciences, the Governance Institute of Australia and the Chartered Institute of Secretaries and Administrators and a Companionship of the Association of Business Schools.

Session 1A: Issues related to teaching & facilitation of groups

Title	**The Critical Role of Facilitation in the Scenario Development Process**
Primary Author: Affiliation:	Dr Ronald Bradfield University of Strathclyde, Scotland
Additional Authors:	George Wright; George Cairns
Abstract	Improving scenario practice: The critical role of facilitation in the scenario development process. While numerous scenario development models and their enhancements are proposed in the literature, they are largely based on anecdotal evidence and more significantly, they tend to understate the complexity of the scenario development process. Under the 'Intuitive Logics' (IL) methodology, scenario development is usually a facilitated group process, yet the scenario literature makes only a passing mention of facilitation of the process with indications that scenarios workshops require an able and skilled facilitator to engage participants in conversation about the future, but no guidance based on empirical findings is offered in terms of the specific skills required of the facilitator. However there is a substantial body of literature around facilitation and its impact on groups in the area of group decision support and model building, and given that working with groups to develop scenarios has much in common with the challenges of model building, problem structuring and group decision support in general, the literature on facilitation in this area should be applicable in the context of scenario planning. At the same time the IL scenario development process relies heavily on subjective judgments which are impacted by cognitive effects, heuristics and their associated biases which operate at the subconscious level and impact human judgment, and while there is a large body of research in this area in the domain of psychology, again these findings have not yet migrated to the scenario literature to any depth. The paper presents a staged process model similar to that described by Tuckman and Jensen (1977), which groups in a typical IL scenario exercise progress through. Based on observations of groups engaged in developing scenarios, the model shows how in combination, a range of cognitive processes, heuristics and biases represent mutually reinforcing mechanisms which impact the scenario development process and significantly influence the ability of groups to develop effective scenarios. Understanding these factors and how to mitigate their effects is an essential skill required of scenario process facilitators. The paper concludes by suggesting that the process of developing scenarios is a more demanding and complex task than is generally recognized in the literature, and the data gathered in this research indicates that to improve the process a trained full-time facilitator is essential.
Key words:	scenario process facilitation, staged development model, cognitive processes
Email:	bradfield@strath.ac.uk

Title	**Using Live Cases to Learn Scenario Planning**
Primary Author: Affiliation:	Yasser Bhatti Imperial College London and University of Oxford, United Kingdom
Additional Authors:	Rafael Ramirez
Abstract	The Oxford Scenarios Programme (OSP) is an executive education programme at the Saïd Business School of the University of Oxford that uses 'reflective practice' (Schön 1983) to help individuals alone and in groups learn by doing and reflecting. Since 2007 this experiential learning (Markulis 1985) has been helped by deploying "live client case studies" to ground the learning in a real, still-unfolding, setting. Our designing executive education as an inquiring system (Churchman, 1971) includes wider stakeholder engagement as a foundation for learning. It is this experience we analyse in this paper. The main purpose of the OSP is to help participants to improve the effectiveness of their scenario planning by understanding the epistemology, theories and methodology that underpin choices of methods (techniques, practices, tools) used in any scenario planning engagement. Grounding this in a real engagement helps learners. The OSP has been a week-long programme since 2007. This stable format allows comparing how live case client executives benefit from a limited exposure (three hours Monday evening, one on Wednesday, and 90 minutes on Friday) to scenario planning done on an issue that matters to their organisation. We used abduction (Suddaby 2006) and interpretative research (Gephardt 2004) to study 22 live case clients of the OSP. We designed, tested, and used a survey to explore dependent variables on (i) actual values derived from claims in scenario planning literature and (ii) purpose expectations versus outcome. As engaged scholarship (Trist, Murray, and Trist 1990) that links theory and practice, our findings suggest the 'impact' of executive development can extend to the executives of a large number of organisations beyond the executives attending the programme. Findings will inform the literatures on (a) management education and (b) the benefits and impact of scenario planning. Further, acknowledging the clashes between theory and practice that this programme design surfaces has helped faculty to produce research that clarifies methodological and epistemological misunderstandings (e.g., Ramirez and Wilkinson 2014, 2016). --- Churchman, C. W. The Design of Inquiring Systems. NY: Basic Books, 1971 Gephart, Robert P. "Qualitative research and the Academy of Management Journal." Academy of Management Journal 47.4 (2004): 454-462. Markulis, Peter M. "The live case study: Filling the gap between the case study and the experiential exercise." Developments in Business Simulation and Experiential Learning 12 (1985). Ramirez, Rafael, and Angela Wilkinson. "Rethinking the 2× 2 scenario method: Grid or frames?." Technological forecasting and social change 86 (2014): 254-264. Ramirez, Rafael, and Angela Wilkinson. Forthcoming. The Oxford Scenarios Approach. Oxford University Press. 2016.

Schön, Donald A. The reflective practitioner: How professionals think in action. Vol. 5126. Basic books, 1983.
Suddaby, Roy. "From the editors: What grounded theory is not." Academy of management journal 49.4 (2006): 633-642.
Trist, Eric, Hugh Murray, and Beulah Trist (eds). The social engagement of social science: A Tavistock anthology, Vol. I: The socio-psychological perspective. University of Pennsylvania Press, 1990.
Key words: Scenarios, Engaged Scholarship, Executive Education, Live Case, Learning, Impact

Email: yabhatti@gmail.com

Session 1B: Quantitative and qualitative scenarios

Title	**Exploring the Range of Data Inclusion by Energy Scenarios for Denmark, Ireland and UK since the EU 2009 Renewable Energy Directive – Focus on the Wind Energy Sector**
Primary Author:	Miss Celine Bout
Affiliation:	DTU Management Engineering, Denmark
Additional Authors:	
Abstract	The EU has committed to increasing the share of its energy needs met by renewables. It created in 2009 the Renewable Energy Directive, which sets a target of 20% of all energy needs to be covered by renewables by 2020. This common goal is to be achieved through nationally legally-binding targets, specified by the Directive for each country. Each country's target was informed by scenarios included in National Renewable Energy Action Plans (NREAP). In parallel, a substantial research has been dedicated to studying the potential energy and policy scenarios to ensure achievement of the 2020 targets and beyond to 2050. Most scenarios used for this purpose are model-based, an approach that affords the possibility of assessing technical and economic feasibility in detail, and has become an integral part of energy scenario planning. This paper examines the quantitative scenario modelling undertaken since 2009 for the three European countries with the highest amounts of wind energy full-load hours: Denmark, Ireland and the UK. All three countries have witnessed significant, if fluctuating, development of their wind sectors over the past three decades. The countries' energy sectors and industries have been vastly modified, their policies have been continuously adapted, and their populations have become unevenly accustomed to wind farms in the landscape (but not without contests). The three national innovation systems of wind power have evolved quickly, and so has the range of data necessary to fully comprehend current dynamics. In reaction to this rapidly evolving context, this paper aims to get a deeper understanding of the range and types of data actually considered by the models used in the three wind-prolific countries since the 2009 legally-binding targets. This research is achieved through the systematic review of 410 relevant papers dealing with energy scenarios. This screening led to 15 articles and three NREAPs for in-depth analysis, to identify and categorise the input data used for each publication. Covering Denmark, Ireland and the UK creates a comparative output of the range of data inclusion and assumptions made. Considering that energy data are inevitably tied to population behaviours, political orders, economic directives, this work investigates the type of data that is included and excluded from these energy models. This research contributes to a critical reflection on quantitative scenario work, and models' ability to fully represent future energy paths, and thus guide a better informed and more proactive planning method, more adequate to the vital task ahead.
Key words:	scenario, wind, renewable, energy, model, planning, quantitative
Email:	cebou@dtu.dk

Title	**Using Hybrid Simulation Approach to Develop a Regional Behavioral Analysis (RBA) Framework to Improve the Scenario Design Methodology**
Primary Author:	Dr Raul Trujillo-Cabezas
Affiliation:	Center for Strategic Thinking and Prospective, Colombia
Additional Authors:	
Abstract	Simulation modeling has successfully permeated real world applications for future studies; it is a new opportunity to bring to the forefront some of the efforts and advances made by using modeling and simulation techniques to regional strategic foresight. The proposal suggests a simulation approach in order to understand the complexity behavior on many regional operations and anticipate the best way to build a shared vision for the future. The assumption is that the use computational social science approach and future studies methodologies helps to multi-domains actions to build a vision for the future, and achieve a sustainable relationship within the communities in a territory. One major question of interest is included: Which hybrid simulation techniques are more appropriate for different types of futures research questions during scenario design? This proposal seeks to contribute to the debate about the roles of modeling and simulation (M&S) in the practice of future studies field. The combination between Systems thinking approaches and the field of M&S-based computing platforms and a robust methodology develop appropriate skills in advance, an adaptive decision-making processes, and a collective responsibility to contribute to building a sustainable future for communities in their territories may help to integrate decision-making processes about complex realities from regional behavior. It is expected that with the concept of Systems of Systems (SoS), the identification of interrelated and interdependent domains around the territory could be achieved. The proposal introduces a complex social system characterized by multiple ontological levels, with multiple domains connections; it is a multi-scale between the micro and macroscopic level. The main motivation of this proposal is to create a Decision Support System (DSS) for conducting simulation runs devoted to improve decision-making process with special attention, on the development of innovative and regional interactive process. The discussion includes a regional behavioral analysis framework for futures studies.
Key words:	System of System Approach, Future Studies, Computational Social Science Approach
Email:	raul.trujillo@uexternado.edu.co

Session 2A: Using scenarios for policy development

Title	**Using Scenarios for Policy Making at EU Level**
Primary Author: Affiliation:	Dr Laurent Bontoux European Commission Joint Research Centre, Belgium
Additional Authors:	Peter De Smedt, Fabiana Scapolo
Abstract	The scenario method has long been used in foresight studies, and has been applied to a large variety of topics. However, fewer reflections have taken place on the effectiveness of the scenario method in helping policy makers think outside-the-box and reflect beyond the duration of the policy cycle. Also, little has been published on how scenarios can provide policy relevant insights. Here, we are exploring some of these issues by presenting recent applications of scenarios from foresight studies carried out at the European Commission on the EU transition towards a sustainable future and on food safety and nutrition. The immediate purpose of the application of the scenario method in these two cases was to extract policy or research recommendations. However, a comprehensive scenario building process is resource intensive and takes time. To strengthen knowledge creation and depth of analysis, the process relies on the integration of multiple perspectives and fields of expertise by involving many contributors. The collective intelligence thus constructed is a key added value which is most enriching for the participants but difficult to communicate beyond the study group. As a result, there was a desire to go beyond the immediate recommendations produced by the studies and to use the scenarios for policy simulation and testing. The challenge was two-fold: make policy makers who did not participate in the studies benefit from the perspectives created by the scenarios and use the scenarios to "future-proof" existing policies. In order to make it easier for people who did not participate in the studies to get an in-depth understanding of the scenarios, the study team developed a serious game. The game provides a simulation platform for the players to act as a business, a policy maker or a civil society organisation in the context of the scenarios. This policy simulation approach has proven to be a powerful way to make policy makers and other stakeholders think beyond their usual mental models whilst addressing a variety of connected issues that could built upon them to serve the purpose of the policy testing exercises. This contribution will illustrate two cases: a) the assessment of how EU food safety policy could deal with future innovation and how resilient it is in the face of coming changes (horizon 2050), and b) how to bring a future perspective into the review of European legislation on water.
Key words:	EU policy making, scenario method, European Commission, EU food safety policy, EU water legislation
Email:	laurent.bontoux@ec.europa.eu

Title	**From Foresight to Impact? The 2030 Future of Work Scenarios**
Primary Author: Affiliation:	Prof Martin Rhisiart University of South Wales, Wales
Additional Authors:	Eckhard Störmer, Cornelia Daheim
Abstract	Scenario exercises may have a range of tangible and intangible benefits, for example in supporting strategic decision-making, setting priorities, challenging assumptions and promoting learning. Assessing the impact of scenarios on decision-making and policy-making is not a simple task considering the multiplicity of factors, layers and processes involved. These include – but are not limited to – individual and collective learning processes, intra-organisational and inter-organisational aspects, and the influence of ideas, politics and perceived problems in agenda-setting in the policy environment (Kingdon, 2002). The topic of foresight impact has attracted more attention in recent years and studies have identified success factors for government foresight (Calof and Smith, 2010), offered insights on longitudinal case studies (Rhisiart and Jones-Evans, 2015) and evaluated national foresight programmes (Georghiou and Keenan, 2006; Daim et al., 2009). However, there is still a comparative lack of evaluation of foresight exercises (Poteralska and Sacio-Szymańska, 2013) even though it can support learning and improved policy-making (van der Steen and Van der Duin, 2012). The aim of this paper is to explore the use and impact of a foresight scenarios project undertaken on the future of work and skills. The paper is guided by the following questions. What makes a scenarios exercise impactful? How are the results of a scenarios project used? How do organisations track the use and impact of foresight work? The case study for the paper is a comprehensive foresight exercise undertaken by the UK Commission for Employment and Skills (UKCES) on the future of work, jobs and skills. The study was delivered for UKCES by a team that included the authors of this paper. UKCES has four key stakeholder groups: employers, education and training providers, policy-makers, and individuals; the foresight exercise was intended to explore the potential implications of future work and jobs changes for each of these to 2030. The paper will briefly set the context and outline the main steps and processes of the Future of Work 2030 project. Most of the paper is dedicated to exploring how the foresight results have been used following the launch of the main outputs. Post-project interviews have been conducted with UKCES to track the use and impact of the scenarios produced. Two rounds of post-project interviews have been conducted over 18 months since the end of the project. The assessment indicates that it has been a highly impactful project. Robustness and credibility of the outputs are essential to achieve policy-related impact. Moreover, we suggest that impactful foresight has been facilitated by key design choices and processes, notably the quality and variety of outputs for different stakeholders (including visualisations), the engagement with stakeholders during and after the project, and innovative social media campaigns. The paper reflects on how these can inform the design and implementation of future scenarios work.
Key words:	foresight; sceanrios; impact;
Email:	martin.rhisiart@southwales.ac.uk

Title	**Exploring UK Energy System Scenarios: a Comparative Analysis**
Primary Author: Affiliation:	Dr Mark Winskel University of Edinburgh / UKERC, UK
Additional Authors:	Ioanna Ketspoulou, Jim Watson
Abstract	Energy futures have become increasingly contested over the past decade, as tensions between apparently contrasting energy policy goals (affordability, security and environmental sustainability) have intensified. At the same time a burgeoning domestic and international industry in energy scenario production has developed, from government departments, research organisations, consultancy firms and others. In order to inform the design of future scenario studies, and their role in energy policy and strategy, this paper will analyse a set of key, influential UK energy system scenarios from a number of different organisations, including government, academic and industry and public-private partnership organisations. The comparison will consider the scope, methodology, content and implications of each scenario. Drawing on recent work from the UK Energy Research Centre (McDowall et al., 2014; Winskel, 2016), the paper will show that many scenarios reflect the prevailing concerns and interests of their commissioning bodies. The decarbonisation driver is prominent in most of the scenarios, and also energy security; recent concerns about equity and the wider economic effects of current climate policies are less prominent. While most scenarios address certain aspects of energy system transitions, such as techno-economic factors, few scenario exercises aim to explore other important dimensions of transitions such as market and institutional structures, and explicit or implicit responsibilities for delivering the transition to a decarbonised system. While in some cases the need for structural change in energy system operation and governance is acknowledged, it is not uncommon for a shift in direction towards a specific outcome to be assumed, despite system 'lock-ins' and resistance from incumbent actors. The significant differences between different scenarios suggests that underlying forces that shape their content and recommendations should be taken into account more explicitly. A comparative review of different studies can help to identify strengths and weaknesses of different methods, some common features that are relatively robust to varying assumptions, methods and drivers, and some key uncertainties facing energy system transitions. We conclude with some recommendations for scenario analysis, and their role in policy-making and strategy. References McDowall , W. , Trutnevyte , E. , Tomei , J. and Keppo , I. 2014 , Reflecting on Scenarios, UKERC Working Paper, London: UK Energy Research Centre Winskel, M (2016) 'From Optimisation to Diversity: Changing scenarios of heating for buildings in the UK' in D. Hawkey et al. Sustainable Urban Energy Policy: Heat and the City, Routledge, Abingdon, pp68-90
Key words:	energy systems, scenarios, policy
Email:	mark.winskel@ed.ac.uk

Session 2B: Scenarios & time-related issues

Title	**Connecting Ephemeral and Sustainable Futures in Scenario Design. Theoretical Issues and Lessons from the Defence Field**
Primary Author: Affiliation:	Dr Fabrice Roubelat University of Poitiers - IAE, France
Additional Authors:	Anne Marchais-Roubelat
Abstract	In this paper we propose to explore the connection between ephemeral and sustainable futures from the perspective of action-based scenarios. While scenario literature suggests enhancing scenario analysis to develop stakeholders' perspectives, as well as to question time issues, such perspectives invite to consider scenarios as moving and ongoing organising processes designed to cope with rapid changes in stakeholders' actions and behaviours. Based on defence strategic action scenarios designed within the French ministry of defence, the paper will explore how scenario rules move through time. Strategic action scenarios will be proposed as a set of four rules (action rule, institutional rule, operations rule, steering rule) to be transformed. As a result, innovations and changes will be assessed within a set of rules and according to the transformations of the underlying organising processes. Four modes of prospective transformations are proposed: transfer (shift from a set of rules to a new one), oscillation (going to and fro between several sets of scenarios), stalemate (rules frozen in a scenario set), phase lag (stakeholders performing the same organising process with different sets of rules). Results address scenario design time issues. Transformations of rules in a set challenge the concept of end-state. Action-based scenarios considered as ongoing organising processes suggest designing fragmented interacting scenarios, which provide assessment frameworks for geostrategic and technological issues. Within the context of rapid changes, sustainable futures have to be supplemented by ephemeral futures, as pop-up scenarios that would emerge and disappear along the organising process through stakeholders' moves and dominance relationships. Such an approach leads to introduce the connection between ephemeral and sustainable scenarios in scenario design.
Key words:	Action, ephemerality, rule, scenario
Email:	fabrice.roubelat@univ-poitiers.fr

Title	**Theory-driven Scenario Development: Using Theories of Change and Stability to Anchor and Differentiate Alternative Futures**
Primary Author:	Dr. Richard Lum
Affiliation:	Vision Foresight Strategy LLC, USA
Additional Authors:	
Abstract	One of the central tenets of futures research taught to students of the University of Hawaii at Manoa futures studies program for the past several decades has been the need to base one's work on explicit theories of social change and stability (TOCS). Building upon this tenet, the author has over the course of the last several years developed a TOCS-based method for developing scenarios of alternative futures. In contrast to some of the more common methods for generating scenarios, such as the 2x2 "axes of uncertainty" approach and morphological analysis, the author's TOCS-driven method ensures a fundamental level of diversity among scenarios by proceeding first from a set of divergent theories of change, each of which frames a different scenario. In doing so, the method also grounds forecasts in formal - and often competing - theories of change. The method is further elaborated with explicit inputs from trend research and emerging issues analysis, the incorporation of inspiration from additional historical precedents, and the inclusion of traditional intuition and creativity. Experience has shown that the scenarios developed from this approach are divergent, grounded, and provocative. The author will outline the approach and present examples of the results of its application.
Key words:	scenarios, theories of change, futures studies, futures research, alternative futures
Email:	richard@visionforesightstrategy.com

Title	**Process Tracing as a Basis for Issue-based Scenarios: The Case of the General Data Protection Regulation**
Primary Author:	Mr Matti Minkkinen
Affiliation:	Finland Futures Research Centre, University of Turku, Finland
Additional Authors:	
Abstract	Scenarios are one of the most widely used tools in futures research, and there is a wide variety of scenario methods. Scenarios are commonly used in planning as structural descriptions of the future which help to anticipate possible future circumstances. In contrast, this paper focuses on issue and event-based scenarios and examines process tracing as a basis for building scenarios. From this perspective, both historical analyses and scenarios can be understood as narratives of an event sequence: they tell the story of a chain of temporally ordered and causally connected events. Process tracing is a qualitative within-case method which is used particularly in political science to investigate how historical outcomes are produced through a sequence of events connected by causal mechanisms. The paper focuses on the issue of privacy protection. As a case study, the paper traces the legislative process of the General Data Protection Regulation in the European Union. The evolution of the regulation is examined as a process of institutional change which involves actors such as companies (data controllers), data protection authorities, institutions of the European Union and non-governmental organisations. The hypothesis is that this regulation has the potential to be a key juncture in the future development of privacy protection. The empirical material consists of documentary material such as planning documents, submissions to open consultations, position papers and political speeches. The documents will be analysed to discover the positions of actors at different times in the process and the supporting arguments that are presented or implied. The CompendiumNG software (http://www.compendiumng.org) is used in the analysis. As a result of the process tracing exercise, preliminary privacy protection scenarios are built depending on which positions are legitimised and adopted by decision-makers. The paper contributes both to the methodological development of scenario building and to anticipating possible developments in privacy protection. The paper argues for a way of building issue-based scenarios based on evidence of historical event sequences. Understanding scenarios as event sequences that continue historical processes has three key benefits for futures research: 1) it allows breaking macro-level trends and change processes into sequences of events and actions, 2) it clarifies the claims that are made about the links between events or stages in a process and 3) it highlights the importance of sequencing, that is, the timing and order of events and actions.
Key words:	scenario, process tracing, institutional change, data protection, privacy protection
Email:	matti.minkkinen@utu.fi

Session 3A: Scenarios and regional development

Title	**Success Scenarios of Personal Health Systems**
Primary Author: Affiliation:	Dr Totti Könnölä (S Giesecke presenting) Insight Foresight Institute, Spain
Additional Authors:	Laura Pombo-Juárez; Ian Miles; Ozcan Saritas; Doris Schartinger; Effie Amanatidou; Susanne Giesecke
Abstract	This paper elaborates and applies a success scenario method in the context of the Personal Health Systems (PHS) Foresight EU-FP7 project that examined future prospects for the development and application of PHS in European societies over the next two decades. Through a series of steps and methods the project developed elements of a vision for PHS for 2030, in which we considered major dimensions of change, indicators, that might be used to assess progress towards desirable outcomes, and actions and strategies to facilitate PHS development in desirable directions. The success scenario (SS) method can be regarded as a "hybrid" of conventional scenarios and roadmapping, one which can typically be conducted relatively rapidly. Roadmapping is often a process that extends upon several workshops, as the participants determine the key events with which they are concerned, and fit them together across the different layers of the map. It often produces highly detailed information relevant to one specific goal (e.g. getting a particular product to mass markets), though there are many exercises that do set out roadmaps for, for instance, a whole field of science or technology development (e.g. biofuels, space exploration). The SS approach usually speeds things up by creating a less structured pathway. It identifies a plausible and desirable course of development, the steps required to get onto it and the indicators of progress in the right direction. It may be the prelude to a roadmapping exercise, which will elaborate the steps and actions n more depth; or it may actually draw upon the results of roadmaps related to specific aspects of its topic (e.g. specific products within a broad technology field) generated in prior deskwork or workshops. This paper presents the methods and major results achieved, providing a point of departure for the policy-oriented phase of the Personal Health Systems (PHS) Foresight project. There was general consensus among participants that PHS can contribute to improved health outcomes as well as increasing the efficiency of health services. Indeed, PHS will be part of a complex restructuring of health systems - and even of the notion of health itself - that in any case is liable to be prompted by demographic, technological and social changes. The findings are discussed both in the context of PHS and the further methodological research and development of the success scenario method.
Key words:	Success Scenario, Scenarios, Roadmapping, Personal Health System, Foresight, European Coordination
Email:	totti.konnola@if-institute.org

Title	**Anticipation and Visualisation of Regional Developments – How Scenarios can be Supportive in Strategic Decision Making**
Primary Author: Affiliation:	Professor Dana Mietzner Technical University of Applied Sciences Wildau, Wildau
Additional Authors:	Frank Hartmann
Abstract	The competiveness of regions, their dynamics, innovative power, entrepreneurial activities and focus of the future in terms of a strong technological concentration are of high interest for the future development of regions. The concept of an innovation hub (Ruiz, 2010, 14; da Cunha, I.V & Selada, C, 2007; da Cunha, I.V., 2009) as a powerful place for the creation of innovations through the interaction of science, education and the economy in combination with matching living and cultural life conditions forms the starting point for a comprehensive scenario study. In this study, a scenario analysis is implemented in order to explore a selected region for its potential to become an innovation hub. In the course of the study it is investigated if the region shows appendages for the development of an innovation hub. The site-factors necessary for the development of hubs are assessed and interlinked with the scenario analysis. Furthermore, it is explored and visualized by the use of scenarios which functions an innovation hub has to have to perform as a regional growth engine for innovation. In the course of the case, a classification and definition of innovation hubs has been developed as a starting point for the anticipation and visualization of possible and plausible scenarios. Based on the common understanding about innovation hubs and the assessment of regional development conditions, two scenarios for the year 2027 has been anticipated. Comprehensive desk research and interviews with regional stakeholders as well as expert workshops form the knowledge base for the scenario analysis. Furthermore, it is investigated which effects the scenario analysis may have on strategic decision making and how it can be used to reduce uncertainty in terms of strategic decision making. The case study indicates how and with which methods and data sources the scenario analysis is implemented and combined with other methods. It is shown how a scenario study can be supportive in order to assess the potential of a region to become a strong innovation hub. It is discussed how scenarios may contribute to a common understanding between different actor groups and assessed in which way scenarios support decisions, strategy processes and corresponding measures. It is explored in which sense the scenario approach is useful to learn more about regional development factors and how it can be interlinked with strategic decisions in a selected region. But the case is also addressing significant barriers, prejudices of involved stakeholders, evident disadvantages and limitations of the selected scenario approach.
Key words:	Strategic decision making, regional development, innovation hub, scenario visualisation
Email:	Dana.Mietzner@th-wildau.de

Title	**Applying scenario methods to health and social care workforce planning**
Primary Author: Affiliation:	Dr Graham Willis Centre for Workforce Intelligence
Additional Authors:	Dr Siôn Cave, Matt Edwards, Tom Lyscom, John Fellows, and Shyam Lamba
Abstract	The consequences of getting planning wrong within the English healthcare system are extremely high. Patient lives may be at risk, morbidity may increase, and the health of the nation decline. The National Health Service in the UK is large (over 1.7 million people) and has a budget of more than £109 billion, so understanding the future workforce requirements is critical. The Centre for Workforce Intelligence (CfWI) has the task of contributing to the planning of future workforce requirements for health, public health and social care in England. The CfWI has developed a framework called the Robust Workforce Planning Framework to support national workforce planning. The framework is composed of four interrelated stages, with scenario thinking at the heart of the process. The stages are: 1) **Horizon scanning** to understand the system and what drives future behaviour 2) **Scenario generate** to explore the future and generate challenging scenarios 3) **Workforce modelling** to simulate different futures and see what they look like 4) **Policy analysis** to make robust decisions and decide which option works best. Our process for creating scenarios is consensus-based with a high degree of stakeholder involvement and has been used for a range of workforces. Our process is under constant review. In this presentation we will discuss the Horizon 2035 project, which is taking a whole system approach to modelling the skills needed for the entire health, social care and public health system in England over the next twenty years. The project is supporting the development of a long-term strategic vision for this system. A set of six quantified scenarios has been produced as part of the project. Improvements to the CfWI scenario generation process that have been applied in Horizon 2035 include: ▪ Online collection of ideas about the future, and analysis using systems thinking methods to inform scenario generation. ▪ Use of a nested scenario generation approach with four critical factors, where workshop participants select consistent combinations to develop into full scenarios. ▪ Improvements to the elicitation of critical yet uncertain parameters for quantifying the scenarios, using Bayesian analysis. ▪ Latest thinking on the scenario generation process. We will discuss the overall scenario generation approach applied during Horizon 2035, and in particular these improvements to our process.
Key words:	
Email:	Graham.Willis@cfwi.org.uk

Session 3B: Scenarios & the web

Title	**What Weblogs Reveal about Qualitative Key Factors in Scenario Studies**
Primary Author:	Prof. Dr. Martin Moehrle
Affiliation:	University of Bremen, Institute of Project Management and Innovation, Germany
Additional Authors:	Dipl.-Geogr. Christian Hanke
Abstract	In recent years discussions about social trends or desirable and possible futures have increasingly been taking place in the so-called social media. Many users do not merely consume content, they also debate, rate and create content for the general public. With access to this content new perspectives are opened up for scenario methodology. In this context two aspects are of particular interest: (i) How and in what form can the spectrum of scenario methodology be extended through the use of web-based data, and (ii) what insights concerning desirable and possible futures can be gained from social media. To investigate these two aspects, we apply a five step process. First of all, a case study from the field of mobility is referred to for an investigation of existing scenario studies and for the identification of key factors and their projections. For further analysis, we concentrate on qualitative key factors, namely on propulsion concepts and climate change. Second, on this basis keywords are generated for data retrieval by means of a special weblog search engine. We apply measures from information retrieval to systematize this step. Third, the search is executed, and the listed search results are selected and secured. Fourth, a qualitative analysis of the textual information extracted from the weblog is undertaken. Fifth, similarities and differences between the forward-looking statements contained in scenario studies and weblogs are examined. We find that weblogs can significantly help update the projections of key factors. Finally, we conclude that weblogs may not only be used as a monitoring instrument for scenario studies but can also serve as a source of inspiration during the creation of such studies. Researchers who intend to use weblogs for one of the abovementioned purposes are challenged to identify high quality blogs and distinguish between content replicated from other sources and original content.
Key words:	scenario studies, weblogs, key factors, projections, qualitative analysis
Email:	moehrle@uni-bremen.de

Title	**Web-based Scenario Development: Process Improvements**
Primary Author: Affiliation:	Ms. Victoria Kayser Fraunhofer ISI / TU Berlin, Germany
Additional Authors:	Erduana Shala
Abstract	Foresight is a structured discourse about possible future developments in order to plan strategic actions in the present. For this, scenario development is a popular and established method (van der Heijden 2005). However, we argue that the process of scenario development is too elaborate and process improvements might increase its applicability. Currently, the time effort results from desk research and reading at the beginning of the scenario process and, second, the process to create alternative scenarios (as e.g. by cross-impact analysis). Therefore, the aim of this article is to optimize the scenario process to have more time for the second task of foresight: develop a future strategy, formulate recommendations and initialize an action plan. So a new process is developed using the future of quantified self as an example. First, the focus of this article lays on information aggregation for an overview on current developments in the scenario field (based on web- and text mining). Therefore, the potential of Twitter is explored and it is examined if the scenario field can be captured by web- and text mining. Second, morphology analysis (Godet 1997) is applied for generating scenario stories. Still, a crucial challenge of scenario development is to capture the topic and identify its key influences. However, technical and methodological improvements of scenario development, in most cases, concentrate on later stages of the process. However, the epistemic value of big data for foresight should be evaluated (Shala und Kayser 2015). For example, social media is widely spread but foresight rarely examines the evolving opportunities. Therefore, this article uses Twitter in scenario development and applies web- and text mining. Twitter as widely used social media platform covers a broad spectrum of content that might be used as information base for the scenario process. Besides the hashtags, especially the web links contained in the tweets will be explored. After that, text mining is used for information aggregation. Text mining delivers a fast overview on aspects describing the scenario field to capture the topic and derive influence areas and factors (Kayser und Shala 2014). Then, morphology analysis is proposed for the fast development of scenario stories. As the results show, Twitter captures the topic very well. Still, future projections need to be searched manually but the factors resulting from the automatic analysis guide this step comprehensively. Additionally, the time effort of scenario development can be reduced remarkably by morphology analysis.
Key words:	Web Mining, Foresight, Text Mining, Twitter, Scenario Development, Topic Modeling, Social Media, Morphology Analysis
Email:	victoria.kayser@isi.fraunhofer.de

Title	**Stitching Scenarios from Distributed Fragments: a Crowdsourced Approach to Scenario-building**
Primary Author: Affiliation:	Dr Wendy L Schultz Infinite Futures, United Kingdom
Additional Authors:	Richard Lum
Abstract	"Crowdsourcing" innovation and insights from large numbers of distributed individuals via internet-based platforms has generated considerable interest within the futures and foresight community. Foresight crowdsourcing often focusses on identifying trends and weak signals of change. Crowdsourcing scenarios presents a greater challenge, requiring synthesis of plausible and coherent narratives describing alternative futures. This paper presents the results of a recent project to crowdsource alternative future scenarios for the emerging technology of "blockchains." The project used the Sensemaker (Cognitive Edge) software for distributed narrative capture and human sense-making as its data platform. This tool enabled the research team to solicit, collect, and connect 'micro-narrative' scenario fragments describing the various uses of blockchains, and the resulting impacts. Respondents were asked to contribute a short narrative scenario describing a possible future for blockchains (exploratory, not normative). Using Sensemaker. researchers provided conceptual frames and keywords so that respondents could 'self-signify' their contributions - in a sense crowdsourcing the analysis as well as the scenario narratives. This in turn enabled a more nuanced and methodologically rigorous approach to gathering the perspectives of foresight professionals and subject matter experts on how a challenging new technology (blockchains) might evolve. It builds on previous experimental work using Sensemaker to crowdsource scenarios for the future of public services (Raford, 2012) and for short-term futures for Greece post-referendum (Cognitive Edge, 2015). Our paper will present the process and core technology involved, the major scenarios that resulted from the process, and the outlier forecasts and weak signals identified through the process. It will conclude by offering a comparative evaluation of this approach to scenario building in contrast to a selection of other scenario building approaches, expanding on previous work (Curry and Schultz, 2009).
Key words:	scenarios, narrative, crowdsourcing, alternative futures
Email:	wendy@infinitefutures.com

Session 4A: Scenarios with gaming & competitive elements

Title	**Adding the Competitive Dimension to Scenario Planning: Combining Scenarios with Business War Gaming**
Primary Author: Affiliation:	Prof. Dr. Jan Oliver Schwarz AMD Academy for Fashion and Design, Germany
Additional Authors:	Camelia Ram
Abstract	Deliberate exploration of how the future competitive landscape may evolve is critical to uncovering threats and opportunities for firms focused on incrementally improving their core business. While techniques such as business war gaming can effectively support this process, they can benefit from placing competitive considerations within a broader future landscape shaped by geopolitical, social, technological and economic forces. Scenario planning considers the interactions across multiple external forces to create a rich set of narratives on how the future may unfold. However, scenarios often neglect the question of how the future competitive landscape of a firm will evolve. This paper will discuss the potential for combining scenario planning and business war gaming to enable focus on the competitive dimension when developing and executing against long term strategy. We will use a real-life case study to illustrate how a scenario planning exercise can guide the crucial stage of selecting relevant future competitors of a firm prior to engaging into a business war gaming exercise. While there is an absence of structured approaches to guide analysis of the future competitive dimension, the combination of scenario planning and business war gaming allows for the meaningful exploration of the future competitive landscape of a firm.
Key words:	scenario planning, business war gaming, foresight, competitive landscape
Email:	jan.schwarz@amdnet.de

Title	**Testing Transformative Energy Scenarios through CLA gaming**
Primary Author: Affiliation:	Sirkka Heinonen Finland Futures Research Centre, University of Turku, Finland
Additional Authors:	Matti Minkkinen; Sohail Inayatullah
Abstract	This paper presents the results of an innovative experiment on elaborating transformative energy scenarios by conducting a causal layered analysis (CLA) game. CLA is a communicative method, using storytelling and narratives to explore and construct possible futures. CLA is based on the "assumption that the way in which one frames a problem changes the policy solution and the actors responsible for creating transformation". CLA consists of four layers or levels: litany (quantitative problems, trends, often exaggerated, often used for political purposes); social cause (interpretation given to quantitative data, e.g. futures tables); discourse/worldview (supporting and legitimating or challenging social structure) and metaphor/myth (deep stories, collective archetypes, images). Typically, CLA workshops are conducted in four tables/groups corresponding to the four layers and communication with each other, back and forth in iterative turns. Instead, the CLA game session as depicted in this paper consists of a dialogue of four scenarios with each scenario group going through the four CLA layers and finally advocating their scenario to the other groups . The game was conducted in June 2015 during the "Futures Studies Tackling Wicked Problems" conference in Finland, and the material for the game was derived from the four transformative scenarios of the Neo-Carbon Energy project. The scenarios used in the game are called "Radical Startups", "Value-based Techemoths", "Green DIY Engineers" and "New Consciousness". These scenarios were "deconstructed" and "reconstructed" through the interactive CLA game process with its four layers. The result was new insights emerging from questioning and digging deeper into the building blocks of the scenarios using the four CLA layers. Key actors in each scenario were played as roles in the game, and their relations are analysed using social network theory and systems thinking to identify leverage points in the systemic layer. The outcomes will be used for elaborating the scenario work. They also form the basis for making recommendations for further developing this specifically modified combination of scenario construction and CLA game.
Key words:	CLA, action learning, serious gaming, transformative energy scenarios, Neo-Carbon Energy
Email:	sirkka.heinonen@utu.fi

Title	**Exploring Constructive Conflict in Scenario Development**
Primary Author: Affiliation:	Mr Will McDowall UCL Institute for Sustainable Resources, UK
Additional Authors:	Nick Hughes
Abstract	Scenario generation is typically an interdisciplinary, multidisciplinary, or even transdisciplinary activity, drawing on diverse bodies of knowledge. Interdisciplinary research is often conditioned by assumptions about the desirability of integrating and synthesising knowledge from diverse disciplinary perspectives (Barry et al. 2008). This is certainly true of scenarios, which involve integrating diverse forms of information relating to complex systems comprising multiple actors. Scenario literature commonly highlights the need to integrate the qualitative and quantitative, for example, or to bring together insights from engineering, economics, sociology and other fields (Wack, 1985). At the same time a common call in scenario work is for scenarios that are 'internally consistent' (Porter, 1985; Nakicenovic et al, 2000; van Notten, 2005; Ray and Brown, 2015) – implying that a lack of consistency, or the presence of contradiction or conflict, would be indications of an unsuccessful scenarios process. In this paper we argue that, as scenarios are frequently multi-disciplinary endeavours dealing with complex multi-actor systems, conflict and contradiction should not be unexpected outcomes of an honest and thorough process. Furthermore, we argue that rather than necessarily being inconvenient or undesirable features to be removed, or even simply ignored, conflicts emerging from scenario development can themselves provide useful material and important sources of learning and greater insight. We highlight the value which can be derived from resisting the temptation to bring contrasting perspectives and forms of knowledge into a false harmony, but bringing them into 'constructive conflict', drawing on Barry et al.'s work on antagonistic modes of interdisciplinarity (Barry et al. 2008), and Cuppen's work on constructive conflict in stakeholder dialogue (Cuppen 2010). We argue that, by bringing different methodological approaches and bodies of knowledge into dialogue, rather than synthesis, we can generate further insights into both the beliefs and expectations of the present, and the possibilities of the future. We use three examples to illustrate our approach: 1. Dialogue between system modelling and narrative, intuitive scenarios (building on McDowall 2014) 2. Dialogue between futures circulating as beliefs and expectations of stakeholders, and historic analogies (as explored in McDowall, forthcoming) 3. Dialogue between scenario elements that appear to be internally inconsistent (building on Hughes, 2015) In each case, we show how a tendency within the literature is to seek integration and synthesis, but that approaches that explore contestation and dialogue can yield additional insights.
Key words:	constructive conflict; dialogue; scenario methodology; internal consistency
Email:	w.mcdowall@ucl.ac.uk

Session 4B: Temporality and related issues

Title	**Using Scenarios to Explore Temporalities in Fashion**
Primary Author: Affiliation:	Dr Jonas Hoffmann SKEMA Business School - Said Business School-Oxford University, France
Additional Authors:	Dr. Rafael Ramirez
Abstract	Roubelat et al. (2015) explored the connection between scenario thinking and fashion design. Fashion design typically involves a shorter-term sense-giving and sense-making process, whereas scenarios explore the present from the perspective of a longer term view (Ramirez et al. 2015), yet both are artefacts that (help people to) explore narrative and identity, both are constructed with explicit and embedded notions of time and culture, and both contemplate something different from the status quo (Roubelat et al. 2015). We are initiating research to explore the issue of temporality (Adam, 1994) in the fashion industry in the UK, using scenarios as a scholarly methodology to seek to produce "interesting research" (Ramirez et al. 2015). The UK fashion industry is estimated to contribute £20.9 billion to the national economy, or 1.7% of total UK GDP (British Fashion Council 2010). It is at a particular turning point where "fashion is crashing" and the "pace of creativity, commerce and social media is dangerously out of control" (Menkes, 2015) – perhaps thus a suitable moment to explore how fashion practitioners engage with the future. We will present the research design of this project and seek to gain feedback to improve it. Adam, B. E. (1994), Time and social theory, Cambridge: Polity Press. British Fashion Council (2010), The value of the UK fashion industry, available at http://www.britishfashioncouncil.com/uploads/media/62/16356.pdf retrieved 20 Octobre 2015. Menkes, S. (2015), "Why fashion is crashing", Vogue.co.uk, available at http://www.vogue.co.uk/suzy-menkes/2015/10/raf-simons-why-fashion-is-crashing retrieved 28 Octobre 2015. Ramírez, R., Mukherjee, M., Vezzoli, S. and Kramer, A. (2015), "Scenarios as a scholarly methodology to produce 'interesting research'", Futures, 71, 70-87. Roubelat, F., Brassett, J., McAllum, M., Hoffmann, J. and Kera, D. (forthcoming), "Probing ephemeral futures: scenarios as fashion design", Futures, available at http://www.sciencedirect.com/science/article/pii/S0016328715000774 retrieved 20 Octobre 2015. Tapinos, E. (2013), "Scenario Planning at business unit level", Futures, 47, 17-27.
Key words:	Scenario - Temporality - Fashion
Email:	jonas.hoffmann@sbs.ox.ac.uk

Title	**Reflecting on the use of social media within a scenario planning project**
Primary Author: Affiliation:	Maureen Meadows Open University Business School
Additional Authors:	Frances O'Brien
Abstract	Scenario planning is a tool which captures multiple futures that an organisation may face. The scenario planning process is often participative and conducted in a facilitated workshop setting, requiring people to be physically present in order to participate. A variety of social media exist which allow people to interact with each other virtually, and in real time. This paper explores the potential for social media, and in particular Twitter, to be used to facilitate and encourage engagement with workshops, beyond those physically attending the workshop. We reflect on the use of social media within a project to develop scenarios for the future of the food system within Birmingham for 2050. The paper considers the broader implications of these reflections for the scenario process. Our case study setting is a year-long project run by the New Optimists, a Birmingham based not-for-profit organisation. The project consisted of six events, involving a range of local scientists. Each event was supported with live social media reporting in the form of Twitter postings which were intended to encourage and facilitate engagement and further discussion by non-attendees. This paper presents an analysis of the tweets related to the project, to explore how this form of social media has been used. Our dataset consists of tweets made by the New Optimists, and others involved in the project who were either project participants, facilitators or members of the social media team. Our analysis reveals how Twitter was being used to support the scenario process. It supported communication between participants between the events, and promoted material generated during the events. Twitter was also used to post commentary of the event; to post prompts to encourage participation from those not present; and to market future events and promote wider interest in related topics. Our analysis also leads us to reflect on what constitutes 'good' or 'bad' practice of use of social media in such instances. We found evidence of the posting of quotes and video/audio material which had the potential to encourage wider interest in the project. However, it was also observed that the project team did not appear to have a strategy for their social media activity, e.g. a planned schedule for tweeting before, during and after the events. We suggest that there is scope for future use of social media in such projects to support participation. This is likely to be most appropriate in the more 'divergent' stages of the scenario process where wide participation and idea generation/input are encouraged. However, in this instance, we failed to find evidence of wide scale engagement beyond the core of 'activists'. The experience on this project suggests a following on social media is unlikely to simply emerge, but has to be built via careful planning. We note that in future projects of this type, social media can be used for several purposes; as well as supporting wider engagement in the project itself, it can facilitate communication between interested activists.
Key words:	Social media, twitter, case study
Email:	Maureen.meadows@open.ac.uk

Session 5A: Scenarios & systems thinking

Title	**Exploring the Role of Systems Thinking in Scenario Building**
Primary Author: Affiliation:	Mr Sotirios Levakos University of Cambridge, UK
Additional Authors:	
Abstract	The aim of this study is to explore the role of systems thinking in informing the scenario building practice. While the academic literature of scenario planning often mentions systems thinking, it is not clear how these two are related and how thinking in systems updates the scenario building process and the content of scenarios. Practitioner's literature does not shed much clarity either. In order to explore this gap in the literature, 25 facilitators of scenarios planning projects and project directors were consulted. Data collection took the form of 40 semi-structured interviews with these experts. The data underwent qualitative inductive analysis to extract prominent futures of the relationship between scenarios and thinking systems. The preliminary results of this study suggest that scenario planning projects are informed to varying degrees by thinking in systems; there is good evidence that a number of projects are guided by principles of systems thinking, with facilitators being consciously aware of the project design and choices made. In other cases, facilitators where not aware of the term systems thinking terminology, however, there was good evidence of principles of systems thinking. Finally, in a last category, no evidence was found of influences of systems thinking. Based on these distinctions, archetypes of scenario planning are proposed, with the associated links to scenario content and process. Implications for practice are also discussed.
Key words:	scenario plannig, systems thinking
Email:	sl656@cam.ac.uk

Title	**A Strategic Mapping Approach to Regional Scenario Planning: Offshore Renewable Energy in the Channel**
Primary Author: Affiliation:	Mr Michel Leseure Unievrsity of Chichester, UK
Additional Authors:	Dawn Robins; Graham Wall; Dylan Jones
Abstract	Offshore renewable energy technologies (offshore wind, tidal energy, wave energy) provide many new opportunities for coastal regions around the world. The energy policy literature has documented the success stories of many 'first mover' regions such as Denmark and Germany (Bergek and Jacobsson, 2003). This paper investigates the strategic challenges faced by coastal Channel regions (in the UK and France) that are followers rather than first movers. The strategic questions faced by regional planners in the Channel can be described as 'deep uncertainty' (French, 2005) as they consider investing both (i) in existing but not mature technologies in uncertain market where competition is well established and (ii) in unproven technologies for markets that do not exist yet. In order to help regional planners to formulate scenarios, we use a five step methodology, which is illustrated through the results of a large INTERREG project (Channel-MOR): • Step 1. Expert Survey. We conduct a survey to better understand which strategic factors are essential for a region to compete on a global scale in the offshore renewable energy industry. In order to make sure that this step is performed rigorously, we use Analytical Hierarchy Process (AHP; Saaty, 1980) metrics to identify reliable expert respondents in our sample. • Step 2. Strategic Analysis. Each Channel region then completed a facilitated strategic analysis exercise where regional officers rated their ability to act upon these strategic factors. • Step 3 . Strategic Mapping. The data collected in the previous steps is combined in a strategic map that visually depicts each region's position on a grand strategy matrix (Christensen et al., 1976, Chang and Huang, 2006) • Step 4. Technology Innovation Systems Dynamics. We use the Technology Innovation System (TIS) scheme of analysis (Bergek et al., 2008) to make sense of each region's position and to extrapolate lessons learnt to formulate different strategic options. • Step 5. Robustness Analysis. In the final step we use robustness analysis (Rosenhead, 2001) to compare each strategic option.
Key words:	AHP, strategic mapping, technology innovation systems, robustness
Email:	m.leseure@chi.ac.uk

Title	**Integrating Scenarios with the Resource-based View of the Firm: An Exploratory Study.**
Primary Author:	Dr Martin Kunc
Affiliation:	Warwick Business School, UK
Additional Authors:	Frances O'Brien
Abstract	Scenarios are tools that help managers to identify critical uncertainties and describe possible futures. Different scholars suggest that they are better than forecasts to deal with long term strategic planning. Scenario planning focuses on situations where managers need to gain a better understanding of the external environment and how different uncertainties interact together. Within the scenario literature there has been much research on how to evaluate strategies in the context of scenarios (Goodwin and Wright 2001)(Montibeller et al. 2006). This paper tackles a different but related issue, that of how to combine scenario planning with another tool to develop and evaluate strategies to help an organizations to face the uncertain environment. A highly recognized literature stream in strategic management is the Resource-Based View of the Firm (RBV) (Barney, 1991). RBV proposes that the competitive advantage of the firm resides in a unique set of strategic resources which are non-imitable. RBV literature suggests an internal perspective on the development of strategies since the resources are considered isolated from external events, e.g. competitors or changes in the external environment. It is clear from this brief review, Scenarios and RBV literatures are disconnected. However, managers don't perceive this disconnection since they need to manage their strategic resources, which are the sources of strengths and weaknesses, through uncertain environments, which generate threats and opportunities. We propose a serial integration of scenario planning and RBV through a refinement of the scenario methodology. We suggest the use of resource mapping (Kunc and Morecroft, 2009), a tool from the field of RBV and management science for identifying the dynamic performance of the strategic resources, to evaluate the organization in terms of strengths and weaknesses of its strategic resources. After the development of the scenarios, the outcome of the resource analysis will be integrated to the TOWS matrix to derive a set of strategies. Strategies can be tested in terms of robustness in three areas. Firstly, their suitability across the set of scenarios, ie a robustness check. Secondly, their coherence in terms of impact on the resource dynamics by rehearsing the strategies separated from the scenarios. Thirdly, the dynamic robustness of the strategies under the diverse scenarios. Barney, J. B. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1): 99-120. Goodwin, P. and G. Wright (2001). "Enhancing strategy evaluation in scenario planning: A role for decision analysis." The Jrnl of Management Studies 38(1): 1-16. Kunc, M., and Morecroft, J. (2009). Resource-based strategies and problem structuring: using resource maps to manage resource systems. Journal of the Operational Research Society, 60(2): 191-199. Montibeller, G., H. Gummer and D. Tumidei (2006). "Combining scenario planning and multi-criteria decision analysis in practice." Journal of Multicriteria Decision Analysis 14: 5 - 20.
Key words:	Scenario Methodology; Warwick Method; Resource-Based View
Email:	martin.kunc@wbs.ac.uk

Session 5B: Theoretical developments in scenario planning I

Title	**'Potential Surprise' as a Theoretical Framework for Scenario Planning**
Primary Author: Affiliation:	Dr James Derbyshire Middlesex University, United Kingdom
Additional Authors:	
Abstract	Despite its widespread use by business and government, scenario planning is not yet fully-recognised as an academic discipline. One reason is the perception that it is a practical tool for thinking about the future which has limited theoretical foundations. However, several authors have noted that the non-orthodox economist G. L. S. Shackle's writings on 'potential surprise' contain much that can lend theoretical support to scenario planning. As such, the present paper explores the potential for Shackle's ideas to provide an underpinning theoretical framework that can render scenario planning more credible and distinctive as an academic discipline. At the same time, the paper adopts a positive stance towards scenario planning as a practical tool, viewing this as its strength rather than its weakness, and therefore also explores the implications of Shackle's ideas for the way scenario planning is implemented from a practical point of view.
Key words:	scenario planning; probability; surprise; uncertainty; Shackle
Email:	J.Derbyshire@mdx.ac.uk

Title	**The Function of Paradigms in Scenario Methodology**
Primary Author: Affiliation:	Dr. Rebecca Wayland Competitive Paradigms, USA
Additional Authors:	
Abstract	Summary: A practice-based theory of paradigms can improve scenario methodology by clarifying the structure of epistemological and ontological change. The concept of paradigms was popularized by Thomas S. Kuhn in The Structure of Scientific Revolutions (1962), an extended essay whose aim was "a sketch of the quite different concept of science that can emerge from the historical record of the research activity itself" (1). Drawn from case studies of scientific achievements, Structure examines the processes whereby scientific theory and practice is refined, challenged, and, in some cases, replaced by new and substantively different commitments. Although Structure was praised by historians of science, as presenting "a new epistemological paradigm" (Hesse, 187), leading philosophers of science rejected Structure's image of science as irrational (Feyerabend 1970, 215); "governed by mob psychology" (Lakatos 1970, 178); and "a danger to science and indeed, to our civilization" (Popper 1970, 53). Sociologists of science praised Kuhn as "a man who did as much as anyone to destroy the authority of science" (Brown 1997, 486), to which the author replied, "One thing you have to understand. I am not a Kuhnian!" (Dyson 1999, 16). The central point of debate was Kuhn's theory of paradigms. Admittedly "the most novel and least understood aspect" of Structure (Kuhn 1977, 186), the concept raised important questions of how – and on what authority – theories and practices are constructed, linked, and changed over time. Much of the initial controversy has subsided and the concepts of paradigm and paradigm shifts are now "embarrassingly everywhere" (Hacking 2012, xix). Yet ambiguity and confusion continue to limit their effective use. This paper proposes a practice-based theory of paradigms can improve scenario methodology by clarifying the structure of epistemological and ontological change. Part I examines the concept of paradigms within scenario literature, drawing on various interpretations in the debates surrounding Structure. Part II proposes a practice-based theory of paradigms as dual-function generalizations: research achievements that simultaneously define the world and guide its investigation. The practice-based nature of this self-defining integration of theory and practice gives the theory of paradigms its unique power. Part III examines the implications for scenario methodology. Specifically, we can distinguish the processes and activities underlying epistemological change within a paradigm's boundaries and those that prompt ontological change and the shift to a new paradigm. These benefits accrue not only to the theory but also to the practice of scenario methodology.
Key words:	paradigms, paradigm shift, Kuhn, scenarios, epistemological change, ontological change
Email:	rwayland@competitiveparadigms.com

Title	**Origin Ontology of Future Scenario's Idea**
Primary Author: Affiliation:	Mr Ahmad Mahdeyan Supreme National Defense University, IRAN
Additional Authors:	Ebrahim Soltani Nasab
Abstract	The complexity of decision making and rapid changes associated with globalization leads to stillborn and failure of many Future Scenarios assumptions in organizations as well as in the area of social changes that put the world on a great historical twist. These trends pose a fundamental question. What is the problem? It seems before understanding the origin of the idea of Future Scenarios and laws governing the Future Time, we've gone into the application of Scenarios to build better stories for future. This research aims to study the impact of Idea philosophical foundation on Future Scenarios, in other words, we seek to bridge an ontology base with an applied knowledge. This paper is a fundamental research type that makes theory for an applied science. Its methodology is a combination of many methods with the domination of philosophical approach based on rational manner. According to qualitative approach this study because of its data references to valid resources is valid and due to expert's continuous supervisions is reliable. Human's epistemological basis shows natural scenario building ability to tell stories about ourselves in the future and a cognitive link to time oriented structure of brain for understanding, this indicate that more awareness on time makes more power to create future Scenarios and emphasizes the power of vision in top people whom have top minds with big ideas. Our decisions about the future depend on how we think the world works. Hence, we can identify the origin of human authority to change the world from inside the absolute structure of time. Scenarios are based on intuition, but crafted as analytical structures. We use Scenario planning artful via learning process to overcome barriers of creative thinking by changing mental model for decision making. Future Scenarios are just different ideas about future. So how we can improve the ability of Scenario planning in order to make enough potential in facing alternative future? For this regard, we deeply investigated following issues in order to demonstrate the fundamental effects of the origin of idea's ontology on Future Scenarios; Idea Ontology, The origin of creative thinking, Idea nurturing in organizations, Shaping the future time, Scenario planning and Ideas social network (global brain).
Key words:	Future Scenarios, Idea's Origin, Mind's Cognitive map, Future Time structure
Email:	mahdeyan@iraneservice.com

Session 6A: Scenarios & participant related issues

Title	**Participant Disposition, Equivocality and Readiness to Benefit from Scenario Planning**
Primary Author: Affiliation:	Professor George Burt University of Stirling Management School, United Kingdom
Additional Authors:	David J. Mackay, Kees van der Heijden, Charlotte Verheijdt
Abstract	In this paper we examine the impact of participant readiness to cope with equivocality on the benefits that might be yielded by scenario planning processes. Central to our examination is the concept of disposition – the tendency to seek either to hold open ambiguity, complexity and uncertainty, or look for closure, simplification and surety, when engaging in strategic management conversations. Disposition indicates the capacity of individuals and collectives to work with competing narratives, dilemmas, tensions and differences of opinion. A focus on disposition enables critical evaluation of the potential utility of scenario planning to different individuals and groups based on their readiness to engage with equivocality during structured, exploratory conversations. This paper offers new insights in relation to one of the dominant themes within the extant literature – the benefits of search for predetermined elements of the environment. Based on findings emerging from a longitudinal field study with ProRail N.V. Holland, we empirically identify three characteristics of disposition, which are theorised to extend understanding of how individuals and groups might participate in, and benefit from, scenario planning processes.
Key words:	Disposition, scenario planning, ambiguity
Email:	george.burt@stir.ac.uk

Title	**Rethinking Plausibility: Empirically Analysing External Judgments on Different Qualitative Scenario Formats**
Primary Author:	Ms. Ricarda Scheele
Affiliation:	Stuttgart Research Center for Interdisciplinary Risk and Innovation Studies, University of Stuttgart, Germany
Additional Authors:	
Abstract	Aspirations of scenario intervention as a means to improve decision-making are addressed with increased caution in recent scientific literature. As a consequence, cognitive benefits are regularly put forward as its raison d'être. Scenarios are assumed to (a) foster understanding of the logics and causal processes that may shape future developments and (b) challenge pre-existing mental maps and encourage previously disregarded futures. Following both academic and practitioners literature, the concept of plausibility plays a key role as construction and assessment criterion: As a qualitative demarcation from probability, plausibility requires accessible causal chains so as to enable simultaneous consideration of multiple, yet different futures. At the same time, in order to challenge conventional thinking, scenario analysis has to move beyond the obviously plausible. Given scenarios' role as a communication tool and the fact that they are often criticised for simply reflecting previous mental models of their developers, it seems essential to study how plausibility, established by different scenario formats, is assessed by third parties. Despite its inflationary use, plausibility is theoretically under-explored and it remains unclear, what dimensions unfold in practice. The cognitive psychology-based scenario literature has been particularly silent on such external judgments; only a small body of experimental research addressed cognitive effects on those involved in the scenario process. This contribution follows recent research agendas and presents a conceptual framework and preliminary findings from socio-psychological experiments that explore the effects of two epistemologically different scenario techniques – Cross-Impact Balance Analysis and Intuitive Logics – on plausibility perceptions in terms of energy futures. It examines how the techniques perform in establishing plausibility ranges among participants and, from an explorative perspective, analyses what dimensions/ interpretations of plausibility are actually involved. Scenario assessment of respondents is analysed through the lens of information processing mechanisms and is embedded in (risk) perception research. With references to cognitive sciences and organisational theories not only theoretically-based dimensions of plausibility can be operationalized for empirical research, but also more differentiated statements on individuals' plausibility perceptions can be made. Thereby, the research supports the argument that elaborating on individual cognitive styles of scenario recipients is essential for understanding scenario product perception and for scenario effectiveness more generally. This contribution, hence, opens up two 'black boxes' in scenario research: 1) Shedding new light on conditions and nuances of scenario plausibility and 2) targeting the often mysterious 'scenario user' as an individual with different information processing characteristics.
Key words:	technique comparison, human information processing, cognition styles, socio-psychological experiment, plausibility,
Email:	ricarda.scheele@zirius.uni-stuttgart.de

Title	**Exploring the Social, Political and Cognitive Dynamics of Scenario Planning Interventions: A Critical Incident Study**
Primary Author: Affiliation:	Prof Gerard P Hodgkinson Warwick Business School
Additional Authors:	Mark P Healey
Abstract	Interventions employing scenario planning directed at challenging or modifying existing strategic thinking in organizational contexts are now commonplace (for relevant applications, see van der Heijden et al., 2002). A basic unquestioned assumption implicit in this interventionist work is that the practice of helping actors to question their strategic assumptions and beliefs is an inherently 'good thing', i.e. externalization serves as a useful aid to decision making. However, this can only be true to the extent that such interventions are designed in accordance with scientifically robust principles, so as to maximize the likelihood of non-trivial outcomes (cf. Klayman & Schoemaker, 1993). The issue of intervention design is particularly critical given the evidence suggesting that a number of cognitively-based intervention procedures can interfere with the decision process at hand in ways that yield deleterious outcomes (see, e.g., Biehal & Chakravarti, 1989; Russo, Johnson & Stephens, 1989). Hence, from a practical point of view, the field needs an overarching theoretical framework to help optimize the design of such interventions. Despite the immense popularity of scenario-based practices there have been very few attempts to systematically evaluate the extent to which they actually enhance the adaptive capabilities of the organization and/or contribute to organizational effectiveness and well-being in other ways (for a notable exception see Schoemaker, 1993). Rather, the vast bulk of the evidence takes the form of anecdotal 'success stories,' in which apparently positive outcomes for the organizations concerned are attributed to the scenario planning process (for representative examples see, Fahay & Randall, 1998; van der Heijden, 1996; van der Heijden et al., 2002; Ringland, 2006; Wack, 1985a, 1985b). From a scientific standpoint, this form of 'evidence' is highly unsatisfactory. Skilful intervention using scenario planning and related techniques not only requires knowledge of the boundary conditions under which these techniques are more or less applicable, but also a clear understanding of the underlying mechanisms through which the effects of these procedures are manifest (Hodgkinson & Sparrow, 2002; Hodgkinson & Wright, 2002). To this end, the goal of the present study was to strengthen the evidence base for scenario-based approaches, based on a deeper appreciation of appropriate psychological theory and research, drawn from the fields of organizational and cognitive psychology. In line with a number of calls for management research that meets the twin imperatives of scholarly rigour and social usefulness (Anderson et al., 2001; Pettigrew, 1997, 2001; Starbuck, 2006; Tranfield & Starkey, 1998; Van de Ven, 2007; Van de Ven & Johnson, 2006), we will report the findings of an empirical study that adopted a 'design science' approach, the broad aim of which was to inform robust design principals and propositions to enhance the practice of scenario planning through the creation of knowledge and artifacts (see, e.g., Dunbar & Starbuck, 2006; Romme & Endenburg, 2006; Simon, 1969; van Arken, 2004, 2005).

In our previous work we have evaluated critically the evidence base pertaining to scenario intervention procedures and related approaches (Healey & Hodgkinson, 2008) and developed new theory to further understanding of the circumstances in which such interventions are more likely to succeed (Hodgkinson & Healey, 2008). Adopting a design science perspective, the present study deepens understanding of the critical success factors that drive the processes and outcomes of scenario-based interventions, through in-depth interviews with highly experienced facilitators.

Anderson N et al. 2001. The practitioner-researcher divide in Industrial, Work and Organizational (IWO) psychology: Where are we now, and where do we go from here? *Journal of Occupational and Organizational Psychology* 74: 391-411.

Biehal G, Chakravarti D. 1989. The effects of concurrent verbalization on choice processing. *Journal of Marketing Research* 26: 84-96.

Dunbar RLM, and Starbuck WH. 2006. Learning to design organizations and learning from designing them. *Organization Science* 17: 171-8

Fahay, L. & Randall, R.M. 1998. *Learning from the future: Competitive foresight scenarios*. : Wiley.

Hodgkinson, G. P., & Sparrow, P. R. 2002. *The competent organization: A psychological analysis of the strategic management process*. Buckingham: Open University Press.

Hodgkinson, G. P., and Wright G. 2002. Confronting strategic inertia in a top management team: Learning from failure. *Organization Studies*, 23: 949-977.

Klayman J, Schoemaker PJH. 1993. Thinking about the future: A cognitive perspective. *Journal of Forecasting* 12: 161-8

Pettigrew, A.M. 1997. The double hurdles for management research. In T. Clarke (ed.), *Advancement in Organizational Behaviour: Essays in Honour of Derek S. Pugh*. London: Dartmouth Press, 277-96.

Pettigrew, A.M. 2001. Management after modernism. *British Journal of Management, 12*, S61-S70.

Ringland G. 2006. *Scenario planning: Managing for the Future*, 2nd Edition, Chichester: Wiley

Romme AGL and Endenburg G. 2006. Construction principles and design rules in the case of circular design. *Organization Science* 17: 287-97

Russo JE, et al. 1989. The validity of verbal protocols. *Memory & Cognition* 17: 759-69.

Schoemaker P. J. H. 1993. Multiple Scenario Development - Its Conceptual and Behavioral Foundation. *Strategic Management Journal* 14: 193-213

Simon HA. 1969. *The sciences of the artificial*. Cambridge, MA: MIT Press

Starbuck, W. H. 2006. *The production of knowledge: The challenge of social science research*. OUP

Tranfield, D. and Starkey, K. 1998. The nature, social organization and promotion of management research: towards policy. *British Journal of Management*, **9**, 341-353.

van Aken JE. 2004. Management research based on the paradigm of the design sciences: The quest for field-tested and grounded technological rules. *Journal of Management Studies* 41: 219-46

van Aken JE. 2005. Management research as a design science: Articulating the research products of mode 2 knowledge production in management. *British Journal of Management* 16: 19-36

van der Heijden K. 1996. *Scenarios - The art of strategic conversation*. Chichester: John Wiley

van der Heijden K, Bradfield R, Burt G, Cairns G, and Wright G. 2002. The sixth sense: Accelerating organizational learning with scenarios. New York: John Wiley

Van de Ven, A. H. 2007. *Engaged Scholarship: A Guide for Organizational and Social Research.* Oxford: Oxford University Press.

Van de Ven, A.H. and *Johnson, P*. 2006. 'Knowledge for science and practice'. *Academy of Management Review*, 31: 802-21.

Wack P. 1985a. Scenarios - Uncharted waters ahead. *Harvard Business Review* 63: 72-89

Wack P. 1985b. Scenarios - Shooting the rapids. *Harvard Business Review* 63: 139-50

Key words:

Email: Gerard.Hodgkinson@wbs.ac.uk

Session 6B: Theoretical developments in scenario planning II

Title	**Relationships with our Futures: Anticipation, Post Normality and Scenarios**
Primary Author: Affiliation:	Professor Ted Fuller University of Lincoln, UK
Additional Authors:	
Abstract	This paper explores organisational anticipation in uncertain times. "Anticipation" is interpreted as a mediating process between knowledge and action. The context for examining organisational anticipation is one of ontological insecurity, and raising issues of epistemological and therefore methodological uncertainty. The paper draws on emerging areas of study in the futures literature especially with respect to anticipatory systems (ontology) and post-normal science (epistemology). The paper therefore situates premises of scenario planning in notions of anticipation and anticipatory systems. In doing so it addresses the too well-known phenomenon of 'foresight' having little or no measurable effect. Evidence is drawn from entrepreneurial (agential) settings where anticipation is an everyday practice but where scenarios are seldom explicitly constructed
Key words:	anticipation, futures, post-normal
Email:	tfuller@lincoln.ac.uk

Title	**Scenario Planning: Proposal for a Measurement Scale Based on the Paradigm of Churchill (1979).**
Primary Author: Affiliation:	Mr Arafet Bouhalleb Université Paris 13, Cité Sorbonne, France
Additional Authors:	Ali Smida
Abstract	Scenario planning: Proposal for a measurement scale based on the Paradigm of Churchill (1979). This study describes the development and validation of a scale to measure scenario planning. Based on Churchill paradigm (1979), this research starts out from an in-depth analysis of the main scenario planning models in the specialized literature. Data analysis follows from a sample of 118 managers operating in two different fields: healthcare and knowledge management sectors. To validate our scale, we used three approaches: first, an exploratory factor analysis; second, an examination of psychometric proprieties of all dimensions and third, a confirmatory factor analysis. The results of this study indicate that scenario planning is a multidimensional construct composed of four dimensions: organizational learning, dialogue and communication, scenario development and strategic choices.
Key words:	Keywords: Scenario planning, Churchill paradigm, reliability, validity
Email:	arafet.bouhalleb@gmail.com

Title	**Sensemaking in Scenario Planning**
Primary Author: Affiliation:	Dr Efstathios Tapinos ABS & SBS, UK
Additional Authors:	
Abstract	Scenario planning is acknowledged as one of the most popular tools used by managers in the last two decades, for its impact to the organisation. Several outcomes and benefits have been identified from the use of scenario planning. One of the most commonly mentioned is 'sensemaking' by 'building shared mental models', for which the existing literature has paid very limited attention to explain. This paper investigates conceptually how sensemaking takes place within scenario planning and how shared mental models are built to allow for individual and collective sensemaking. The use of scenario planning for varying purposes has evolved from being a strategy tool to an 'umbrella' concept which includes a philosophy of examining the future with scenario thinking, to more planning oriented applications. Also, it is well established that there are different scenario planning schools ranging from quantitative modelling based approaches to qualitative intuition based approaches. Focusing on qualitative intuitive logic models, we observe significant variation between the exploratory type models and backcasting. This research shows how sensemaking differs in these two approaches. Sensemaking has been traditionally considered a retrospective cognitive process. Even when developments in the field have considered prospective sensemaking, this was conceptualised as a backward looking– future perfect approach. Very few recent works in the field of sensemaking have challenged the dominant view of 'future perfect' and with a post-Weickian future-oriented sensemaking approach. Most of the existing literature considers sensemaking to be retrospective within scenario planning. This view is challenged in this paper, as sensemaking in scenario planning is explored in terms of how the process of scenario planning creates different opportunities for developing individual and collective mental models and how this leads to different types of sensemaking.
Key words:	Sensemaking, Scenario Planning, Intuitive Logic,
Email:	e.tapinos@aston.ac.uk

Session 7A: Developments relating to the Intuitive logics scenario approach

Title	**Refining the Intuitive-logics Approach to Scenario Planning: The Case of the Future of the UK and Scotland**
Primary Author: Affiliation:	Professor Brad MacKay University of Edinburgh, UK
Additional Authors:	Dr. Veselina Stoyanova, University of Strathclyde Business School
Abstract	The intuitive-logics approach to scenario building deals with two worlds, the world of objective structures and the world of subjective perceptions. Where objective structures refers to the socio-economic positioning and propensities of the outer 'environment', subjective perceptions refers to how such realities are interpreted by 'actors' and the assumptions that underpin such interpretations. While the future that comes to pass is inevitably driven by an interaction between the objective structures of the outer world and subjective inner worlds, the implicit distinction between the two – often captured as either certain or uncertain 'drivers' – is rarely made explicit in scenario methodologies. Such an omission is curious given that scenario methods purport to be predicated on social-psychological foundations. It may also account for recent criticisms that scenario methods either lead to confusion or to reinforcing existing perceptions. This paper seeks to refine scenario methods and address recent criticisms of the intuitive-logics approach by demonstrating that by making the objective and subjective dynamics of possible futures explicit in scenario methodologies, it can lead to more credible scenarios. By way of illustration, the paper draws on a recent scenario exercise into the future of the UK and Scotland leading up to the 2014 Scottish referendum on independence from the rest of the UK.
Key words:	Intuitive-logics, scenario methods, Scottish referendum, objective-subjective structures
Email:	Brad.Mackay@ed.ac.uk

Title	**Producing "effective" scenarios: an evaluation of both the basic Intuitive Logics method and recent developments of that method**.
Primary Author: Affiliation:	Professor George Wright Strathclyde Business School, UK
Additional Authors:	Ron Bradfield, George Cairns
Abstract	In this paper, we establish the common objectives of scenario interventions within organizations and contextualize the well-established, but basic, “intuitive logics” scenario development methodology. We next consider if the basic intuitive logics method achieves these objectives. Then, we consider recent augmentations of the intuitive logics method and evaluate whether these augmentations enhance the basic method's capabilities. We find that there is a strong case for arguing that these scenario methods are designed to address two of the three objectives that we identified from the literature, namely: (i) enhancing understanding: of the causal processes, connections and logical sequences underlying events — thus uncovering how a future state of the world may unfold, and (ii) challenging conventional thinking in order to reframe perceptions and change the mind-sets of those within organizations. However, other than in the augmentation in which multi-attribute value analysis is applied, none of the recent developments that we detail address directly the third objective that we distil from the literature: (iii) improving decision making: to inform strategy development. We conclude by considering the new methodological development of "Scenario Improvisation" (Cairns, Wright and Fairbrother, 2015) and its use with time-poor decision makers.
Key words:	Scenarios, intuitive logics, methological development
Email:	george.wright@strath.ac.uk

Session 7B: Developments in scenario methods I

Title	**Scenario Systems for Addressing Planning Situations: the Case of Scenario-contextualised Analysis**
Primary Author: Affiliation:	Dr E. Anders Eriksson FOI Defence Analysis, Sweden
Additional Authors:	Henrik Carlsen; Karl Henrik Dreborg
Abstract	In addressing complex planning situations it is often useful combining different types of images-of-the-future. One example from the Shell tradition is global vs. focused scenarios. In the climate field the story-and-simulation approach for combining narrative and computational futures provides another example of what we will call 'scenario systems'. While several examples are mentioned in the literature, we have found few case-based in-depth treatments. Filling this knowledge gap is crucial for more effective futures studies (FS) interventions, in particular if aiming at actually improving decision-making; there the need for interventions to match the specifics of situations is more pronounced than in other project types. To help in this endeavour the paper synthesises twenty years of case experience. After a general discussion on how analysis of planning situations should inform scenario systems design we focus on work based on a particular type: 'scenario-contextualised analysis' (SCA). SCA is akin to the idea of global vs. focused scenarios but judging from available descriptions more straight-forward (simplistic?) than the Shell version. A global*detailed scenario matrix is the key construct. The main perspective is bringing global scenarios to bear on more detail level planning situations, hence extending the relevance of the global scenarios. But analysis at detail level may also discover inconsistencies and implausibilities in the global scenarios, hence providing validity check of the latter. In our SCA experience the detail level has varied considerably in type. In the first application it was transport technologies and markets, where conventional econometric models were adapted to the various global scenarios by judgmentally adjusting model parameters estimated from historical data. Several subsequent applications have similarly had sectors and/or geographic regions in focus. In another branch of SCA the detail level is made up of situational challenges. Such studies have been made for defence and civil security, the idea being that the global scenario forming the stage for, e.g., a terrorist attack importantly determines the possible consequences, the acceptability of countermeasures, the likelihood of attack, etc. Finally we use SCA to discuss a line of the FS debate that criticises global scenarios for being too – global. Also the small number of such scenarios typically developed is sometimes cited as a disadvantage, e.g. by 'deep uncertainty' and robustness oriented scholars. We see this as a false contradiction: SCA allows broadening the myriad assumptions consistent with known facts under a business-as-usual future by also considering them under more unconventional global futures.
Key words:	Scenario systems, planning situations, intervention design, context scenarios, global scenarios, focused scenarios, detailed scenarios, situational scenarios
Email:	e.anders.eriksson@foi.se

Title	**Theory-based and (more) Systematic Scenario Factor Definition and Selection**
Primary Author: Affiliation:	Dipl.-Geogr. Sigrid Prehofer ZIRIUS, Germany
Additional Authors:	
Abstract	The decision of scenario practitioners on which factors to choose to outline a complex problem for modeling purposes, is generally made rather intuitively and cannot be solved satisfactory by common scenario methods. Tools like PEST analysis, STEEP, PESTLED or similar taxonomies, are widely applied in different research fields and are meant to provide such guidance, however, often are considered to be of limited use. To give practitioners alternative tools at hand, this presentation suggests two conceptual tools to improve scenario factor definition and selection in scenario construction processes. These conceptual tools have been applied within the project "Integrated scenario building" of the Helmholtz Alliance ENERGY-TRANS and have been combined with the more formalized scenario method Cross-Impact-Balances (CIB). (1) In cases where 'society' is assumed to be the adequate scope of problem consideration, like for energy system transitions, I propose to put social system theory at the outset of the scenario study, for example, the 'AGIL' scheme by Talcott Parsons. Therewith, scenario practitioners should be enabled to i) think out of the (current practice) box and ii) to think more systematically and detailed about societal structures and relevant (societal) drivers. Furthermore, applying social system theory to scenario construction iii) guides and structures the selection and definition of scenario factors for further analysis. (2) In cases where the contextual environment of a specific object under study needs to be taken into account, like the context of the energy system, I propose to explicitly distinguish between context and focus factors and integrate both in the scenario study. Applying the 'context-focus scheme' i) guides and structures the selection and definition of scenario factors for further analysis and ii) enhances learning and understanding for the object under study in its specific context. If the constructed scenarios are part of a combined scenario methodology, therewith, I furthermore assume to iii) facilitate linking a qualitative scenario with e.g. a quantitative energy model.
Key words:	scenario factors, social system theory, qualitative scenario construction, combined scenario construction, cross-impact balance analysis (CIB)
Email:	sigrid.prehofer@zirius.uni-stuttgart.de

Session 8A: Developments in scenario methods II

Title	**Testing the Effectiveness of Scenario Generating Techniques: Forecasting Outcomes of the Refugee Crisis**
Primary Author: Affiliation:	Professor Dilek Önkal Bilkent University, Turkey
Additional Authors:	Prof. Mandeep K. Dhami
Abstract	Forecasting with scenarios offers valuable insights for policy planning and decision-making by depicting alternative storylines about plausible futures. In an increasingly volatile world, these scenarios may be highly effective in stimulating foresight and enhancing visions of the future, thus constituting requisite tools for those informing policy-makers. A variety of techniques currently exist to help individuals and groups generate scenarios. However, to-date, they have not been subjected to rigorous empirical analysis. Therefore, in the present research we used an experimental design to examine the effectiveness of three scenario-generation techniques commonly used in strategic intelligence analysis (i.e., cone of plausibility, simple scenarios, and individual brainstorming). We use these techniques to investigate scenarios and forecasts pertaining to a very important and real issue: the Syrian refugee crisis. We discuss the findings in the context of understanding the skill of scenario generation and improving the training of strategic analysts.
Key words:	scenario, forecast, scenario-generation
Email:	dilekon@gmail.com

Title	**The Real-Time Spatial Delphi: Fast Convergence of Expert Opinions on the Territory**
Primary Author: Affiliation:	PhD Simone Di Zio University "G. d'Annunzio", Chieti-Pescara, Italy
Additional Authors:	Juan Daniel CATILLO Rosas; Luana Lamelza
Abstract	The Delphi method is a technique that uses opinions by a group of experts to solve a problem, generally in a decision-making context and/or a forecasting framework. In 2006 a Real-Time version was developed by Gordon and Pease, that is a computerized questionnaire without subsequent rounds and a greater efficiency in terms of execution time. More recently (2011) a new version of the classical Delphi, called Spatial Delphi, considers the geographical aspect and has the aim to reach a consensus among the experts in finding an optimal location on a limited portion of the territory. Here we present an innovative system, called Real-Time Spatial Delphi, which combines the advantages of the Real-Time Delphi with those of the Spatial Delphi. The Real-Time Spatial Delphi has been integrated as core of a Spatial Decision Support System (SDSS), which is used in order that a panel of experts, working under anonymity, expresses opinions on the territorial component. The system aims to reach a convergence of opinions regarding the location of goods, services or events (scenarios) in space-time. It is designed to support decision-making in complex situations with high uncertainty or where the objective data are not sufficient for the application of quantitative methodologies and allows to point out strengths and/or vulnerabilities of specific points in a territory. It can be used to support decision-making on strategic planning, forecasting or geoprospective. This paper proposes an application of the Real-Time Spatial Delphi for the “zoning”. The zoning is a methodological approach which aims to relocate the practice of prostitution in areas characterized by low population density, the presence of law enforcement and social workers. For the identification of these areas, it is important a sensitization and mediation phase between the social partners involved (local government, citizenship, etc.). This new type of intervention is part of the methodology of harm reduction which increases both the effectiveness of actions aimed at the welfare of citizens and that of prostitutes. Although zoning is a complex process involving administrations, women engaged in prostitution, customers, law enforcement agencies and local services, the phase of finding a suitable place on the territory is crucial. A panel of nine experts provided a series of evaluations in five municipalities of central Italy, through a Real-Time Spatial Delphi on a web platform specially designed for the study. For each municipality the result is a small portion of the territory suitable for the zoning.
Key words:	GIS, Spatial Delphi, Real-Time Delphi, Zoning
Email:	s.dizio@unich.it

Session 8B: Developments in scenario methods III

Title	**Multiple Tools and Scenario Use**
Primary Author: Affiliation:	Mr. Matthew Spaniol Roskilde University, Denmark
Additional Authors:	Prof. Nicholas J. Rowland
Abstract	Scholars have demonstrated that while "scenario development" has received significant attention in foresight and futures studies, the use and consequence of those scenarios post-development -- what scholars refer to as "scenario use" -- goes relatively understudied. This implies that the cultural boundary which distinguishes scenario development from scenario use is also underdeveloped in the literature. While it might seem like an innocuous question -- "where do our scenarios go after development?" -- there is a palpable need for scholars and practitioners to answer this question for stakeholders. We contend that that boundary can be better understood, managed, and bridged if a broad perspective on tools -- and, in particular, the coordination of multiple tools -- can be brought to bear on the boundary between scenario development and use. We test this proposition in a mixed-methods case study involving a Danish NGO that undertook a scenario planning process over 6 weeks with 6 1-day sessions in 2015 with a 12 year time horizon toward 2027. Although a mix of tools were deployed throughout the process to conceptualize, design, develop, explore, and use the scenarios, this paper delimits its focus to the tools applied in the later stages of scenario usage, namely: optimal business ideas for each scenario; timeline-impact-reaction spreadsheets; wind-tunneling strategic options; and wind-tunneling organizational forms; all based on 2x2 scenario planning matrices. Using insights from science and technology studies, we find that the cultural boundary separating scenario development and scenario use is negotiated and non-chronological rather than ordered into neat phases. Our attentiveness to the consequence of multiple tool-use during scenario planning, based on Knott's Typology, leads to insight about how some tools afford "closure" (i.e., that conclude development and initiate use) while others afford the facilitator the opportunity to "open-up" (i.e., shift from use back toward development). In our closing remarks, we discuss how future research in futures studies should also be attentive to post-development scenario use further "downstream" than the window of time considered in this exploratory paper.
Key words:	Scenario Planning; Scenario Use
Email:	matt@ruc.dk

Title	**Embedding Real Options in Scenario Planning: A New Methodological Approach**
Primary Author: Affiliation:	Dr Riccardo Vecchiato Kingston Business School - Department of Strategy, Marketing and Innovation, UK
Additional Authors:	Professor Giampiero Favato
Abstract	Various future-oriented practices and techniques have been developed to support strategic planning in fast-paced environments and thus help decision makers cope with uncertainty. Scenario planning, in particular, has been started using more than 40 years ago and rapidly emerged as one of the most popular and effective foresight technique. Scenario planning represented a strong discontinuity with previous forecasting approaches: the primary contribution decision makers tried to achieve through scenarios is not so much to predict the future but to establish and nurture a process of strategic thinking and organizational learning. Together with scenario planning, a technique that has become considerably popular and is attracting the growing interest of both practitioners and scholars is real option analysis. A real option is the right, but not the obligation, to make an investment in real assets by or at the end of a given period. This method has been developed by researchers in both finance and strategic management as a way to value investment under uncertainty. On the one hand, scholars emphasize that there are significant complementary strengths between scenarios and real options: scenarios might help identify real options while real options might help decision makers understand the effect and implications of each scenario on the organization. On the other hand, literature offers little indication as to how use together these methods, by bridging the gap between the qualitative approaches of (most) scenarios and the quantitative approaches of real options. This is exactly the main gap we try to bridge in this paper: we design and illustrate a new and simplified approach to real option evaluation and we combine it with scenario planning. The combined methodological approach we propose in this paper was developed in the specific context of R&D and, more generally, high-technology investment decisions. However, this methodology might be simply extended and adapted to similar areas of corporate and business choices like market entry investments or investment decisions related to the expansion into a foreign country. Our paper thus contributes to the strategic management literature in three basic ways. First, it develops a new methodological approach to the real option analysis. Second, it blends this methodological approach in the 2 x 2 scenario matrix. Third, it deepens our understanding of both scenarios and real options and the opportunities related to the combined and systematic use of these two techniques.
Key words:	scenarios, real options, planning, organizational learning
Email:	r.vecchiato@kingston.ac.uk

Call for papers:

Improving Scenario Methodology: Theory and Practice

A special issue of the journal *Technological Forecasting and Social Change* edited by:

George Wright, Strathclyde Business School, Glasgow, UK (george.wright@strath.ac.uk)

Maureen Meadows, Open University, Milton Keynes, UK (maureen.meadows@open.ac.uk)

Stathis Tapinos, Aston Business School, Birmingham, UK (e.tapinos@aston.ac.uk)

Frances O'Brien, Warwick Business School, Coventry, UK (frances.o-brien@wbs.ac.uk)

Neil Pyper, Coventry University, Coventry, UK (ab7982@coventry.ac.uk)

We invite papers that focus on the scenario method in its widest sense, that document the current status of its application and use, and that analyse its future potential and prospects. Specifically we invite papers that consider the scenario method with a focus such as:

* Critical theoretical considerations of the method and its rationale
* Review of the use of the technique in specific applied areas, including evidence of impact on decision making and policy making
* Analysis and critical evaluation of variations in applications of the scenario method in different contexts, e.g., moving beyond the typical application of exploring the external environment for large corporations to applications that encompass scenario planning for, say, governments, industries, or smaller-scale organizations
* Empirical studies comparing scenario method variants, or comparing some variant of scenario method with alternative approaches (e.g., forecasting)
* Novel elaborations of the method and critical appraisal of these - for example combinations with the Delphi technique and combinations with inputs from social media
* Consideration of future prospects for the technique

Submission deadline: 29 February 2016. Manuscripts should be submitted via the standard TFSC electronic submission process. A covering letter should be included that indicates that the paper is to be considered for inclusion in the special issue. The editors are happy to give pre-submission guidance by e-mail as to whether a paper's content is, in principle, appropriate for the special issue.

This call for papers for the special issue is underpinned by the conference on '*Improving scenario methodology: theory and practice*' held at Warwick Business School, Coventry, UK on the 14 and 15 December, 2015.

The O.R. & Strategy SIG of the UK OR Society

O.R. typically plays a supporting role throughout organisations. The nature of such support can be analytical (e.g. through the application of modelling and analytics) or procedural in nature (e.g. through workshop facilitation or the application of problem structuring approaches).

The aims of the Special Interest Group are to provide a forum which:

- Promotes a discussion of the contribution that O.R. makes to strategic issues in organisations.
- Increases awareness of the potential for O.R. methods to support strategic development and strategic level analysis

We have welcomed a wide variety of contributions from both academia and practice, reflecting on the development and use of frameworks, methods and models to support strategy within organisations. More recently we have organised conference streams exploring the newly emerging themes of Big Data and Analytics and their impact on strategy support.

The Strategy SIG of the British Academy of Management

The SIG aims to:

- Provide a forum for discussion on the topic of strategy within the wider BAM community;
- Enable members to keep in touch with the contemporary debates on the topic of strategy;
- Publicise opportunities, events and knowledge about strategy.

Themes

The SIG aims to cover a broad spectrum of issues concerned with the development and implementation of strategy in organisations. The list below represents some of the main themes in strategic management research today; we do not limit ourselves to the themes listed, but remain open to new ideas as they emerge.

- Competitive Strategy
- Cooperative Strategies
- Corporate Strategy
- Global Strategy
- Strategy Process
- Knowledge and Innovation
- Entrepreneurship and Strategy
- Operations Strategy
- Strategic Human Capital
- Stakeholder Strategy
- Non-market Strategy
- Emergent Strategy
- Strategic Leadership and Governance
- Teaching Strategy
- Strategic Foresight
- Strategy, Neuroscience and Cognition

List of delegates

Abdulrahman ALHarbi, University of Hull
Yasser Bhatti, Imperial College London & University of Oxford
Laurent Bontoux, European Commission Joint Research Centre
Arafet Bouhalleb, Université Paris
Celine Bout, Technical University of Denmark
Ronald Bradfield, University of Strathclyde
George Burt, University of Stirling Business School
Siôn Cave, Decision Analysis Services Ltd
James Derbyshire, Middlesex University
Simone Di Zio, University "G. d'Annunzio", Chieti-Pescara
E.Anders Eriksson, FOI Defense Analysis
Giampiero Favato, Kingston Business School
Ted Fuller, Lincoln Business School
Susanne Giesecke, Austrian Institute of Technology GmbH
Kerstin Goluchowicz, INPRO
Megan Grime, University of Strathclyde
Frank Hartmann, University of Applied Sciences Wildau
Sirkka Heinonen, Finland Futures Research Centre, University of Turku
Jonas Hoffman, SKEMA Business School - Said Business School-Oxford University
Victoria Kayser, Fraunhofer ISI
Totti Könnölä, Insight Foresight Institute
Martin Kunc, Warwick Business School
Michel Leseure, University of Chichester
Sotirios Levakos, University of Cambridge
Richard Lum, Vision Foresight Strategy LLC
Brad MacKay, University of Edinburgh
Ahmad Mahdeyan, Supreme National Defence University
Will McDowall, UCL Institute for Sustainable Resources
Maureen Meadows, The Open University
Dana Mietzner, Technical University of Applied Sciences Wildau
Matti Minkkinen, Finland Futures Research Centre
Martin Moehrle, University of Bremen
Ebrahim Soltani Nasab, Supreme National Defence University
Frances O'Brien, Warwick Business School
Dilek Önkal, Bilkent University
Esra Öz,Bilkent University
Sigrid Prehofer, ZIRIUS, University of Stuttgart
Neil Pyper, Coventry University
Martin Rhisiart, University of South Wales
Fabrice Roubelat, University of Poitiers - IAE
Ricarda Scheele, University of Stuttgart
Wendy L. Schultz ,Infinite Futures
Jan Oliver Schwarz, AMD Academy for Fashion & Design
Erduana Shala, Fraunhofer ISI

Matthew Spaniol, Roskilde University
Koen Tackx, Vlerick Business School
Efstathios Tapinos, Aston Business School
Philip Tovey, Avon & Somerset Police
Raul Trujillo-Cabezas, Center for Strategic Thinking and Prospective
Meraj Unnisa, Tomorrow-Wise
Riccardo Vecchiato, Kingston Business School
Rebecca Wayland, Competitive Paradigms
Felix Werle, Institute for Innovation & Change Methodologies (IICM)
Graham Wllis, Centre for Worksforce Intelligence
Mark Winskel, University of Edinburgh
George Wright, Strathclyde Business School

Title	First name	Surname	Title of submission	Day	Sess	Str	Page
	Yasser	Bhatti	Using Live Cases to Learn Scenario Planning	MON	1	A	11
Dr	Laurent	Bontoux	Using Scenarios for Policy Making at EU Level	MON	2	A	15
Mr	Arafet	Bouhalleb	Scenario Planning: Proposal for a Measurement Scale Based on the Paradigm of Churchill (1979).	TUES	6	B	43
Miss	Celine	Bout	Exploring the Range of Data Inclusion by Energy Scenarios for Denmark, Ireland and UK since the EU 2009 Renewable Energy Directive – Focus on the Wind Energy Sector	MON	1	B	13
Dr	Ronald	Bradfield	The Critical Role of Facilitation in the Scenario Development Process	MON	1	A	10
Prof	George	Burt	Participant Disposition, Equivocality and Readiness to Benefit from Scenario Planning	TUES	6	A	38
Dr	James	Derbyshire	'Potential Surprise' as a Theoretical Framework for Scenario Planning	TUES	5	B	35
PhD	Simone	Di Zio	The Real-Time Spatial Delphi: Fast Convergence of Expert Opinions on the Territory	TUES	8	A	50
Dr	E. Anders	Eriksson	Scenario Systems for Addressing Planning Situations: the Case of Scenario-contextualised Analysis	TUES	7	B	47
Prof	Ted	Fuller	Relationships with our Futures: Anticipation, Post Normality and Scenarios	TUES	6	B	42
	Sirkka	Heinonen	Testing Transformative Energy Scenarios through CLA gaming	MON	4	A	28
Prof	Gerard	Hodgkinson	Exploring the Social, Political and Cognitive Dynamics of Scenario Planning Interventions: A Critical Incident Study	TUES	6	A	40
Dr	Jonas	Hoffmann	Using Scenarios to Explore Temporalities in Fashion	MON	4	B	30
Ms.	Victoria	Kayser	Web-based Scenario Development: Process Improvements	MON	3	B	25
Dr	Totti	Könnölä	Success Scenarios of Personal Health Systems	MON	3	A	21
Dr	Martin	Kunc	Integrating Scenarios with the Resource-based View of the Firm: An Exploratory Study.	TUES	5	A	34
Mr	Michel	Leseure	A Strategic Mapping Approach to Regional Scenario Planning: Offshore Renewable Energy in the Channel	TUES	5	A	33
Mr	Sotirios	Levakos	Exploring the Role of Systems Thinking in Scenario Building	TUES	5	A	32
Dr.	Richard	Lum	Theory-driven Scenario Development: Using Theories of Change and Stability to Anchor and Differentiate Alternative Futures	MON	2	B	19
Prof	Brad	MacKay	Refining the Intuitive-logics Approach to Scenario Planning: The Case of the Future of the UK and Scotland	TUES	7	A	45
Mr	Ahmad	Mahdeyan	Origin Ontology of Future Scenario's Idea	TUES	5	B	37

Title	First name	Surname	Title of submission	Day	Sess	Str	Page
Mr	Will	McDowall	Exploring Constructive Conflict in Scenario Development	MON	4	A	29
	Maureen	Meadows	Reflecting on the use of social media within a scenario planning project	MON	4	B	31
Prof	Dana	Mietzner	Anticipation and Visualisation of Regional Developments – How Scenarios can be Supportive in Strategic Decision Making	MON	3	A	22
Mr	Matti	Minkkinen	Process Tracing as a Basis for Issue-based Scenarios: The Case of the General Data Protection Regulation	MON	2	B	20
Prof. Dr.	Martin	Moehrle	What Weblogs Reveal about Qualitative Key Factors in Scenario Studies	MON	3	B	24
Prof	Dilek	Önkal	Testing the Effectiveness of Scenario Generating Techniques: Forecasting Outcomes of the Refugee Crisis	TUES	8	A	49
Dipl.-Geogr.	Sigrid	Prehofer	Theory-based and (more) Systematic Scenario Factor Definition and Selection	TUES	7	B	48
Prof	Martin	Rhisiart	From Foresight to Impact? The 2030 Future of Work Scenarios	MON	2	A	16
Dr	Fabrice	Roubelat	Connecting Ephemeral and Sustainable Futures in Scenario Design. Theoretical Issues and Lessons from the Defence Field	MON	2	B	18
Ms.	Ricarda	Scheele	Rethinking Plausibility: Empirically Analysing External Judgments on Different Qualitative Scenario Formats	TUES	6	A	39
Dr	Wendy L	Schultz	Stitching Scenarios from Distributed Fragments: a Crowdsourced Approach to Scenario-building	MON	3	B	26
Prof. Dr.	Jan Oliver	Schwarz	Adding the Competitive Dimension to Scenario Planning: Combining Scenarios with Business War Gaming	MON	4	A	27
Mr.	Matthew	Spaniol	Multiple Tools and Scenario Use	TUES	8	B	51
Dr	Efstathios	Tapinos	Sensemaking in Scenario Planning	TUES	6	B	44
Dr	Raul	Trujillo-Cabezas	Using Hybrid Simulation Approach to Develop a Regional Behavioral Analysis (RBA) Framework to Improve the Scenario Design Methodology	MON	1	B	14
Dr	Riccardo	Vecchiato	Embedding Real Options in Scenario Planning: A New Methodological Approach	TUES	8	B	52
Dr.	Rebecca	Wayland	The Function of Paradigms in Scenario Methodology	TUES	5	B	36
Dr	Graham	Willis	Applying scenario methods to health and social care workforce planning	MON	3	A	23
Dr	Mark	Winskel	Exploring UK Energy System Scenarios: a Comparative Analysis	MON	2	A	17
Prof	George	Wright	Producing "effective" scenarios: an evaluation of both the basic Intuitive Logics method and recent developments of that method	TUES	7	A	46