

IRSE STRATEGY 2015-2020 : Implementation Plan

Originally approved by IRSE Council, October 2015, revised at April 2016 meeting.
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Theme 1: Enabling growth of the IRSE as a global Engineering Institution

Sub-themes	Actions	By whom	By when	Current progress and Notes
1.1 Encouraging the formation of Local Sections where there is a clear benefit for the membership and the IRSE in doing so.	a) Establish local section in China	IRSE members in China (supported by CEO and Council).	COMPLETED	Inaugural event held October 2016
1.2 Facilitating greater devolution of responsibilities and autonomy to Local Sections where this is considered appropriate;	b) Establish local section in France	IRSE members in France (supported by CEO and Council).	COMPLETED	Inaugural event held in January 2016
1.3 Ensuring that IRSE London office is resourced to address the continuing growth and global distribution of membership.	c) Establish local section in Thailand	IRSE members in Thailand (supported by CEO and Council).	COMPLETED	Inaugural event held in July 2016
1.4 Enabling IRSE London office to provide effective support to Local Sections, eg in membership management, operation and governance, provision of locally relevant information etc;	d) Consider establishing local section in UAE	IRSE members in UAE (supported by CEO and Council).	TBA	Previous endeavours to establish a Section did not come to fruition. No plans currently being pursued for creating a UAE Section.
1.5 Developing the IRSE "brand" so that there is a common framework within which Local Sections can provide a consistent message to their membership and local industry.	e) Consider establishing local section in Germany	IRSE members in Germany	TBA	Options being considered include collaboration with "Verband Deutscher Eisenbahningenieure" (VDEI, Association of German Railway Engineers), rather than establishing an IRSE German Section.
1.6 Actively support a gender balance within the IRSE that reflects the aspirations of the industry at both a local and global level.	f) Consider establishing local section in Japan	IRSE members in Japan	COMPLETED	Inaugural meeting held in Tokyo on 1 st November 2017.
1.7 Consider the benefits (and costs) of ISO9001 certification, or of applying the principles of ISO9001.	g) Produce a guide that sets out minimum requirements, responsibilities and options for the formation, development, operation and support of a Local Section. To include information about resources, materials and support that they can access, particularly for the early years of operation. Consideration to be given to what responsibilities etc could optionally be devolved from London office to Local Section.	CEO and Management Committee	GUIDE COMPLETED. Target for completing online "toolkit" – end of April 2018.	Document completed and distributed to Sections. Work started on providing an online "toolkit" for Local Sections.

	h) Appoint a Local Section coordinator who can provide advice, spread best practice, connect new sections with the committees of existing ones etc.	CEO / Council	COMPLETED, although implementation arrangements remain.	Charles Page appointed as Local Section Coordinator.
	i) When considering the constitution of local sections encourage the nomination of applicants to reflect as a minimum the diversity split of the profession in that local area.	Local Sections	COMPLETED	Included within the Guide for Local Sections - see 1(f) This and other diversity-related actions logically follow on from approval of the IRSE's Diversity, Equality and Inclusivity Policy (approved in early 2017).
	j) When considering the constitution of IRSE Committees encourage the nomination of applicants to reflect as a minimum the diversity split of the profession on a global basis.	CEO and Management Committee	No progress.	

Theme 2: Tackling the skills gap facing railway signal, control and communications engineering

The term “skills gap” possesses a three-fold meaning in this context:

1. the shortage of engineers in our industry
2. the gap between the current state-of-the-art knowledge/skills and the skills/knowledge required for next generation technology etc
3. the gap between the current state-of-the-art knowledge/skills which members should have and those that they actually do have

Sub-themes	Actions	By whom	By when	Current progress and Notes
<p>2.1 Working with other institutions and educational bodies to promote the benefits of engineering to society in general and in particular railway signalling, train control and communications engineering;</p> <p>2.2 Communicating the benefits of the IRSE contribution to CPD - to its members, employers and the railway industry in general;</p> <p>2.3 Communicating the benefits of the IRSE to non-member practitioners of railway signalling, control and communication engineering;</p> <p>2.4 Communicating to the railway industry the role of the IRSE in attracting, developing and retaining staff within the railway signalling, control and communications sector;</p> <p>2.5 Working with the railway industry in developing inspiring programmes to support Continuous Professional Development;</p>	a) Produce careers information for signalling, control and communications engineering.	E&PD Committee	COMPLETED	Careers map updated and on website. Case Studies of members profession diversity finalised and on website.
	b) Produce and disseminate informative material on train control and communications engineering for people considering a career in signalling/telecoms;	PD Manager	No progress.	May require different approach for different ages and diversity. Material to be generically useful but capable of adaptation by Local Sections for their particular circumstances. Consider also producing material tailored to schools and universities.
	c) Produce informational material for employers to promote the role of the IRSE in relation to CPD, and to encourage their active support.	<i>To be included within Action 5a.</i>		Material to be generically useful but capable of adaptation by Local Sections for their particular circumstances. Need to focus primarily on how the IRSE supports CPD; may in due course also want to review our CPD “offering” in terms of fitness for purpose.
	d) Provide guidance to Local Sections to encourage collaboration with other organisations (eg other Institutions, Technical Societies etc) and events organisers, to: <ul style="list-style-type: none"> - Promote careers in railways; - Offer events that are of interest and value to both IRSE members and members of those other organisations. 	<i>To be included within Action 5a.</i>		Included within the guide for Local Sections (see 1(f)). However, need to provide more detail in the Local Section “Toolkit”.

<p>2.6 Encouraging attendance and presentations at IRSE events from representatives from other Institutions and industry sectors;</p> <p>2.7 Investigating opportunities to provide Younger Members with further methods of obtaining greater benefits and value for money from IRSE Membership.</p> <p>2.8 Encouraging greater numbers of women to join the profession and the IRSE</p>	<p>e) Enable the establishment of an MSc course as an effective replacement for the CQU Australia course.</p>	<p>E&PD Committee and MSc Steering Group.</p>	<p>TBA</p>	<p>Proposed to be a pathway within the University of Birmingham's Railway Engineering MSc course. MSc Steering Committee established to represent the IRSE's interests and to support UoB.</p> <p>Australia also continuing to consider options for running a similar course and/or diploma-level courses. Possible we should split the actions for MSc and other courses if they are significantly different.</p> <p>Other Local Sections (China, India, Indonesia) also considering options for establishing courses with universities or technical colleges.</p>
	<p>f) Discuss with YM section how the IRSE can support them better. Specifically, invite YM representatives to make presentations to IRSE Council regarding changes they would like to see that would enhance the "value for money" that IRSE membership provides.</p>	<p>Council</p>	<p>COMPLETED.</p>	<p>Keith Upton (YM Chair, UK) working on linking up YMs around the world.</p>
	<p>g) Support diversity initiatives by external organisations such as 'Women in Rail' and 'National Women in Engineering Day' in the UK and similar initiatives elsewhere</p>	<p>PD Manager</p>	<p>In progress</p>	<p>Local Sections need to take the lead wherever possible, and the Local Section Toolkit needs to contain practical advice about diversity etc issues.</p> <p>The "Framework" produced by UK Royal Academy of Engineering is being used by the IRSE for measuring and planning progress in the field of equality, diversity and inclusion.</p>

Theme 3: Attracting more people to attend the President's Programme of Technical Meetings

Sub-themes	Actions	By whom	By when	Current progress and Notes
<p>3.1 Considering whether specific Presidential Programme Technical Meetings would be better attended at locations other than London (aligned with Local Sections) where opportunities exist associated with Presidential visits, local technical visits, seminars, etc.</p> <p>3.2 Making greater use of video conferencing and/or web based technology to engage worldwide audiences, with social media being used for interactive engagement;</p> <p>3.3 Spreading the Presidential Programme of Technical Meetings more evenly through the year, rather than having them all between October and March.</p>	a) Pilot the use of alternative places in the world for the Presidential Technical Meetings:	President, Vice-Presidents and CEO	COMPLETED, and being implemented for successive years.	
	b) Consider having, as part of the Presidential Programme, one annual high profile "Prestige" Lecture.	Management Committee	As part of 2018/19 programme	Possibility of "Wing Safety Lecture" being considered for 2018.
	c) Investigate good practice used elsewhere for video conferencing (as exemplified by Southern African section and the IRO in the UK).	IRSE London office	As part of 2018/19 programme	No progress to date, but planning to introduce in conjunction with Programme for 2018/2019
	d) Spread the Technical Meetings more evenly by (for instance): <ul style="list-style-type: none"> - Moving the December "London" meeting to June/July. - Adding a Technical Meeting in the period May - August. 	President, Vice-Presidents and CEO	COMPLETED, and being implemented for successive years.	

Theme 4: Facilitating the role of the President *

Sub-themes	Actions	By whom	By when	Current progress and Notes
4.1 Continuing the current practice of the Senior Vice-President being responsible for developing the programme of key Technical Meetings for his/her Presidential year. <i>NOTE: No specific actions required for this.</i>	a) Each year the new President to meet with the Vice Presidents to produce/update a cohesive rolling programme of Presidential visits.	President	COMPLETED in terms of initial meeting and a planning system in place. Now part of annual planning cycle.	Planning system takes the form of a shared online spreadsheet.
4.2 Involving Vice-Presidents in the development of a 2/3 year programme of Presidential visits to Local Sections, conventions, seminars and conferences. This will enable the workload to be spread over 2 to 3 years which may be easier for the individuals concerned and their employers;	b) Identify and review the UK specific engagements that the President traditionally is expected to participate in, and consider how these obligations can be met in the future (particularly where the President is not UK-based).	CEO	COMPLETED. Information about engagements is captured in planning system referred to in 4(a).	
4.3 Reviewing IRSE activities that take place in the UK and in which the President has traditionally been involved, to identify and agree how these responsibilities could be best fulfilled when the President is not UK-based.	c) Consider the arrangements for succession planning for the role of President, and how we might ensure that the role is attractive to senior industry figures.	Management Committee	TBA.	Arrangements in place for the nomination of Presidents as far ahead as 2021/2022.

* NOTE: The working title of this theme has been changed in this document from that shown in the original published Strategy (IRSE NEWS June 2015). The published version used the title "Attracting leading industry professionals to become IRSE President". The ambition remains to attract senior industry figures into the role, but given that increasingly the President may be located anywhere in the world, and the global spread of the IRSE continues to increase (and therefore impact on the role of the President), the more immediate actions listed above are considered to be essential enablers if we are in due course make the role attractive to senior industry figures.

Theme 5: Industry support for IRSE activities

Sub-themes	Actions	By whom	By when	Current progress and Notes
5.1 Developing a strategic communications plan involving IRSE London office and Local Sections highlighting the benefits of Continuous Professional Development to employers, their employees and other stakeholders; demonstrating the role of IRSE in supporting this in a cost effective framework;	a) Develop and implement a Marketing & Communications Strategy/Plan, primarily for London office to use in promoting the IRSE to employers and other organisations; to include how Local Sections can market and communicate their role and activities. <i>NOTE: This action also to include Actions 2c, 2d and 5d.</i>	CEO and Management Committee	Aiming for completion of most work, including new website, branding etc by end of 2018.	Project Manager appointed, and consultants engaged to assist with this initiative. Priority items for delivery in 2017 and 2018 are: <ul style="list-style-type: none"> ▪ Branding – new logo, supporting media etc (implementation in May 2018). ▪ Enhanced use of Social Media (started 2017). ▪ Website upgrade (aiming for completion by end of 2018).
5.2 Making IRSE activities relevant to the railway industry such that they can see the benefits to their businesses, by engaging with industry stakeholders and IRSE to make sure that both global and local needs are understood;	b) Review the existing Company Affiliation Scheme (UK), and consider how it could be changed to enhance employer engagement with the IRSE, and possibly be applied/ adapted in other countries where there are Local Sections.	Management Committee / Charles Page + Martin Fenner	New CAS to be launched, subject to industry consultation, in 2018.	Existing CAS shut down in 2016.
5.3 Promoting and sharing news and views of industry issues from a professional engineering perspective, through the activities of existing groups such as the International Technical Committee and adhoc requests from industry for the IRSE to contribute, such as the GB Signalling Projects review.	c) Engage and consult with employers regarding what the IRSE should be doing to offer benefits to companies. To include: <ul style="list-style-type: none"> - themes and topics that they would wish to see reflected in IRSE papers, seminars etc, and which they would be prepared to support. - Other initiatives in the field of professional development where they consider the IRSE should play a role such as diversity. - Also need to consider how to record knowledge and contact information emerging from such discussions, so as to provide useful input to the IRSE? 	President Vice Presidents CEO Local Sections	Ongoing activity, but not in a systematic manner.	Advice/support for Local Sections regarding this Action to be included within Action 1e. Some engagement started (in the UK – Network Rail, Siemens, Thales, Ricardo, Alstom, Hitachi, Kier) but no systematic programme of engagement yet in place for UK or elsewhere. To be linked to or be a part of the Company Affiliation Scheme (see (c) above).
	d) Consider producing a periodical bulletin of IRSE news, views, expert opinion and Institution activities that are relevant to companies, not just to members, to highlight the contribution that the IRSE makes to the wider rail industry.	<i>To be included within Action 5a.</i>		May also have relevance in the context of proposed new Company Affiliation Scheme (see Action 5b).

Theme 6: Strategy on Technology: Technological Drivers

Sub-themes	Actions	By whom	By when	Current progress and Notes
<p>6.1 Fast changes of technology can be observed and anticipated, which are expected to bring about fundamental changes to the industry as a whole.</p> <p>6.2 The IRSE should be a front-runner in making aware the newest fundamental drivers in technology relevant for the field to its members. This can be general (i. e. radio technology) or specific (i. e. ATO).</p> <p>6.3 There is a core central list of the relevant subjects kept, which is the guidance for all related activities, i. e. Presidential Programme, ITC publications, IRSE News, Activities of Sections,</p>	a) Setup the initial list	SVP 2017	COMPLETED	
	b) Consult ITC for input for discussion of Management Committee	JVP	March 2018	
	c) Review list regularly, at least in the Spring of each year, based on input of ITC and own observations	Management Committee	May 2018 etc.	
	d) Take new version of list into consideration for the development of the annual Presidential programme	SVP 2018	End of 2018 etc.	
	e) Deliberate list and plan article(s) taking it into account	ITC	June 2018 etc.	
	f) Publish an article about the list and coordinate publication plan with the list	IRSE News Editor	June 2018 etc.	
	g) Input for Sections for their event planning (list to be sent to them by CEO)	IRSE Section leaders	Every year	
	h) Input for ASPECT/Convention organisers for their Programme planning	ASPECT/Convention organisers	Every second year (each)	

APPENDIX TO THEME 6

Technological Drivers of Change								
General Drivers	Type of Change	Comments	Significance for us / what should we be doing?	Cause-Effects	Which areas of railway safety, operation and comms are influenced	Resulting Change for the railway	Examples	IRSE Actions (Presidential Programme, other events, IRSE News, IRSE Exams, Licensing, Company Affiliation, CPD)
IT Hardware	Faster, more memory	Speeds continuing to increase, and size decreasing. Significant impact, particularly for onboard systems. Is obsolescence inherently a problem, or is it that the railways haven't found ways of managing rapid change cost-effectively (even though the means exist to do so)?	We need to help educate the industry as to how to manage rapid IT/technological change cost-effectively. High SIL applications are more challenging in terms of avoiding obsolescence than low SIL.	Life cycles shortening and obsolescence is a growing problem for our industry. Architectures will change, and traditional "concepts" such as interlockings will change (possibly even disappear?).	TMS; onboard systems.	Better precision, better productivity. Challenge of obsolescence in managing out-of-date systems or continually having to invest in new.		
Software Development	More complex functionality	Is the fact that software experts (not signal engineers) are involved a threat to our profession, or an opportunity?	Do we have a role in helping the industry to take advantage of latest technology (opposite of being perceived as slow to adopt new technology). Can we be a bridge between the technology and its practical application?					
Automation, "Artificial Intelligence", Robots	More and more functions need no human work anymore		Are we being sufficiently aggressive in promoting automation? Should we be doing more to provide thought leadership in this area?	Does automation make a railway safer or less safe (for workers, for customers)? And where does responsibility lie when something goes wrong?				Various events on ATO in Presidential Programme 2018/2019
Internet of Things, System integration, networked systems	smaller devices for a variety of decentralised application, networked, controlled/mined centrally							
Cyber Security	Threats are becoming more aggressive	Rapidly becoming a hot topic for everyone, and a source of additional cost as well (?)		Is there a risk that cyber security drive us back to using "closed systems"? If so, that would create even greater obsolescence issues?				Presidential Paper on Internet of Railway Things, and Cyber Security, Germany, 07.02.19
Big Data	More data can be acquired, mined centrally	Closely linked to data analytics and machine learning	What sort of skills are needed for big data applications? Unclear at present as to what we can do in the field of "big data" in railways.					Seminar on Big Data in Railways, Paris, Sept 2018
Railway Specific Drivers								
General notion of safety	Re-definition of "Safe State", change of safety culture (ALARP), CySIS?	Focus on reliability and keeping trains moving, not stopping them as soon as something goes wrong.	Be more progressive in pushing thinking about safety (and be passionate about reliability as well).	Impact of cyber threats on our concepts and understanding of safety.				
How to manage innovation as such	Innovation is faster and faster		Make innovation an every-day task	Without innovation the railway will lag behind more and more	All areas	Potential threat		
Signalling	goal: simpler (functional, commercial, obsolescence, LC); reality: norms demand more and more		We need to be seen as systems engineers, not signal engineers. Is the name IRSE unhelpful?		CC 4.0 architecture (ERA) - reduce problem of safety control to one of localisation (positioning) of railway objects, rather than traditional interlocking approach).		Crossrail - signalling is 5% of the cost and 90% of the problem. But safety is taken for granted.	Presidential Paper by ERA, 18.06.2018 Presidential Papers Innovation & smartrail 4.0 SBR, 26.10.2018
Concept of Operations	increased capacity, automation, RAM	Recognise the range of railways (and their different concepts of operation) - heavy haul freight, metros, high speed, light rail / trams etc. Different railways (even ones that are operationally similar) have very different concepts of operation - largely because of historical precedent.	IRSE needs to be seen as providing thought leadership for the application of technology for improved railway operations, not just focussed on signalling equipment.	Signalling systems intimately connected to the underlying operational concepts.	Would greater commonality of operating rules lead to reduce costs? Can we realistically envisage railways wanting to converge towards common concepts of operation and operating rules?			
Localization	ubiquitous, preciser							
Communication	Faster, better coverage, more bandwidth	Do we need to say something about information for the railways' customers, acknowledging that social media etc is playing a major and growing role? What is our role in enabling all this?	What is needed for future communications systems that will support signalling, traffic management, operational support systems etc rather than having special and separate systems for separate applications?					
Sourcing	Products, Convergence Mainline/Metro	Contribution of EULYNK? Can we envisage "power by the hour" for train control?						
Engineering	Complexity, better Tooling			Drive for safety etc has tended to make systems more complex, more prone to human error in design, and less reliable.				