

Hydrographic Services and Standards Committee

Report of the
Hydrographic Surveys Project Team (HSPT)

Christophe Vrignaud (Chair)
Nickolas Roscher (Vice Chair) – David Wyatt (Secretary)




Reminder (PT Objectives)

- Circular Letter 26/2017 March 2017:

The HSPT is tasked by the IHO HSSC “...review the existing edition (5th) of the IHO publication S-44 Standards for Hydrographic Surveys, identify deficiencies...” and “...when undertaking this task, to consider, as a minimum,...” the need to prepare a draft for the 6th Edition “...in support of safety of navigation data products and services...” (HSPT TORs refer)

44 members (16 States + Observers + Expert Contributors + IHO)

INTERNATIONAL HYDROGRAPHIC ORGANIZATION  ORGANISATION HYDROGRAPHIQUE INTERNATIONALE

IHO File No. S3/7198 CIRCULAR LETTER 26/2017
03 March 2017


COMPOSITION OF THE IHO PROJECT TEAM
ON STANDARDS FOR HYDROGRAPHIC SURVEYS (HS PT)

Reference: IHO CL 68/2016 dated 20 December - *Establishment of the IHO Project Team on Standards for Hydrographic Surveys (HS PT)*

Dear Hydrographer,

1. The Circular Letter in Reference invited nominations to participate in the IHO Project Team on Standards for Hydrographic Surveys (HS PT) and, if applicable, provide possible candidacy as an office bearer.
2. The IHO Secretariat thanks the 14 Member States that responded with nominations: Australia, Brazil, France, Germany, Italy, Japan, Netherlands, Norway, Peru, Portugal, Republic of Korea, Sweden, Turkey and United Kingdom. Chile provided a comment which is shown in Annex A. Two observer organizations nominated representatives: FIG and IFHS. Six stakeholder organizations proposed expert contributors: ARGANS, Fugro LADS, Gardline Geosurvey, IIC Technologies, Precision Hydrographic Services and the University of Southern Mississippi. The list of nominations is attached at Annex B.
3. Taking in to account the two nominations received for the roles of Chair and Vice-Chair, the IHO Secretariat proposes that Christophe Vrignaud (France) is appointed as Chair and Nickolás de Andrade Roscher (Brazil) as Vice-Chair. Subject to no objection being received from Member States within one month of the publication of this Circular Letter, the IHO Secretariat will invite the Chair to initiate the work of the Project Team.
4. The Terms of Reference for the HS PT are provided at Annex C for ease of reference. The point of contact within the IHO Secretariat will be Assistant Director David Wyatt (adso@iho.int).

On behalf of the Secretary-General
Yours sincerely,


Gilles BESSERO
Director

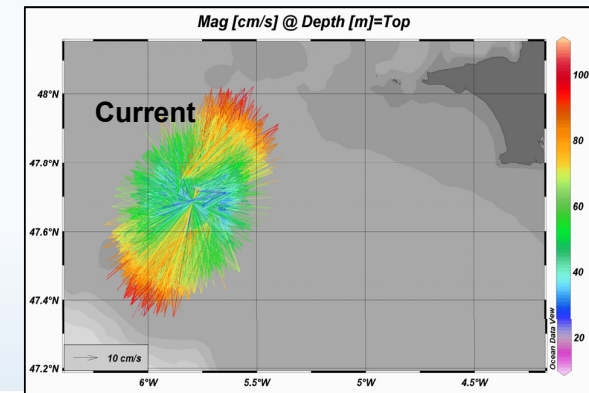
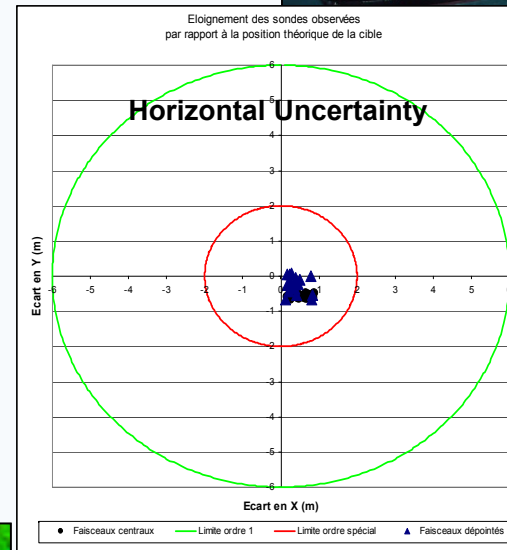
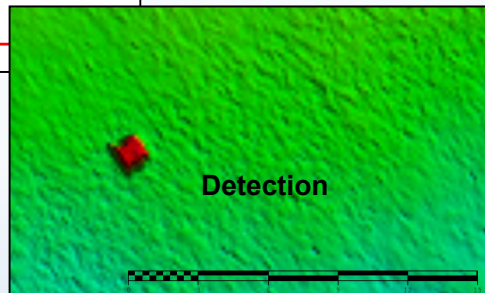
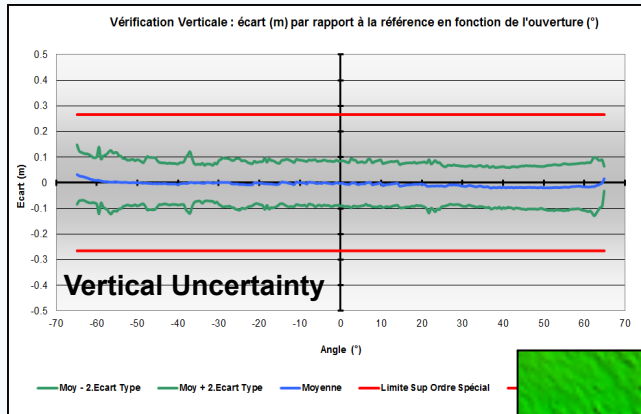
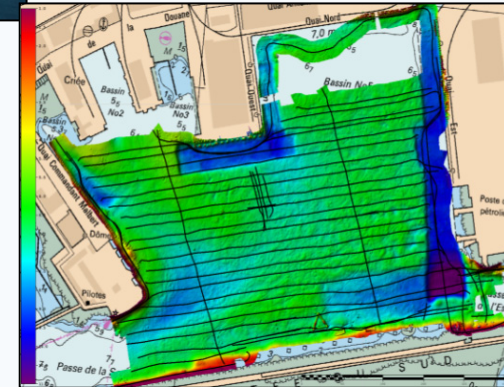


Reminder (S44 topic)

The IHO S-44 provides minimum standard for Hydrographic surveys, dedicated for safety of navigation



Coverage
Positioning of Aids to navigation, of Coastline



Principal activities and achievements

“Kick off” meeting in PARIS, 20-22 June 2017
(28 representatives : 13 MS + Observer + Expert Contributors + IHO).



3 outcomes:

1. Discussions about S-44 limitations
2. Questionnaire
3. “S44 Table” possible evolutions

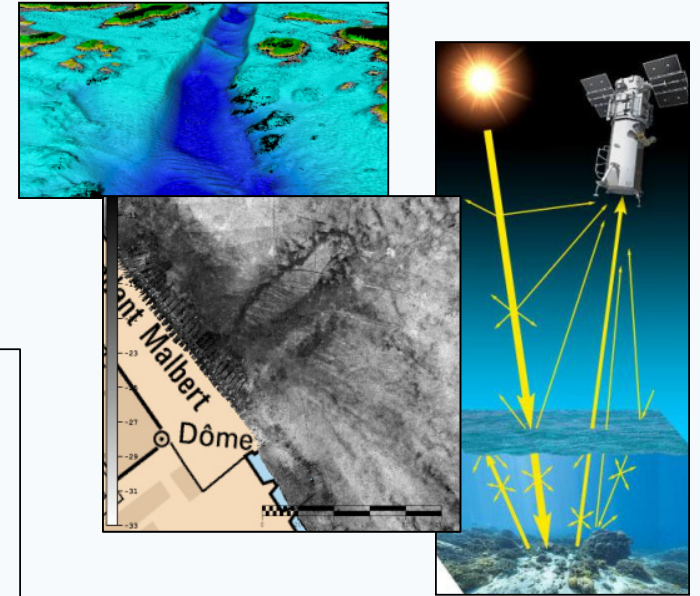


Principal activities and achievements

1. Discussions about S-44 limitations

Surveyors face Technologies more and more efficient (coverage, accuracy, new features).

Does the S-44 need to be more constrained or at the opposite, more flexible in order to accommodate data that might be less accurate but remain priceless when information is missing?



Principal activities and achievements

1. Discussions about S-44 limitations

For public maritime policies: bathymetric Surveys sometimes done by untrained people, or, using useless specifications for hydrography.



Knowledge of the hydrographic surveys standards is very important not only for the hydrographic community, but also for private/public contracting bodies.

(see the “European Coastal Mapping” project conclusions)



Principal activities and achievements

1. Discussions about S-44 limitations

“Hydrographic Needs” not only dedicated for safety of navigation (see “Blue Economy”)

Does the S-44 have to deal exclusively with safety of navigation or take into account other hydrographic needs?



Principal activities and achievements

1. Discussions about S-44 limitations

10 limitations underlined:

- 1 - S-44 only focused on a final objective which is the nautical chart, with a depth classification (possible solution: matrix or updated table)
- 2 - Difficulty to have an overview of all requirements (possible solution: matrix or updated table)
- 3 - Limited number of definitions (possible solution: support and liaison with the DQWG and VIM3)
- 4 - Misalignment between S-44 and CATZOC (possible solution: contacts with S-101WG and DQWG)
- 5 - Grid resolution and bathymetric surfaces not addressed (contact with S-102)
- 6 - Confusion between a-priori TPU and a-posteriori Qualification (review specific chapters of the S-44)
- 7 - S-44 should remain specific technologies neutral (review specific chapters of the S-44)
- 8 - Confusion of attribute in metadata
- 9 - Outdated chapters
- 10 - Annexes A & B to be placed in C-13 - Manual on Hydrography

AUS + GER : Coordinating Editors
(compiling all proposals/solutions
from members for the 6th Ed. draft)



Principal activities and achievements

2. Questionnaire

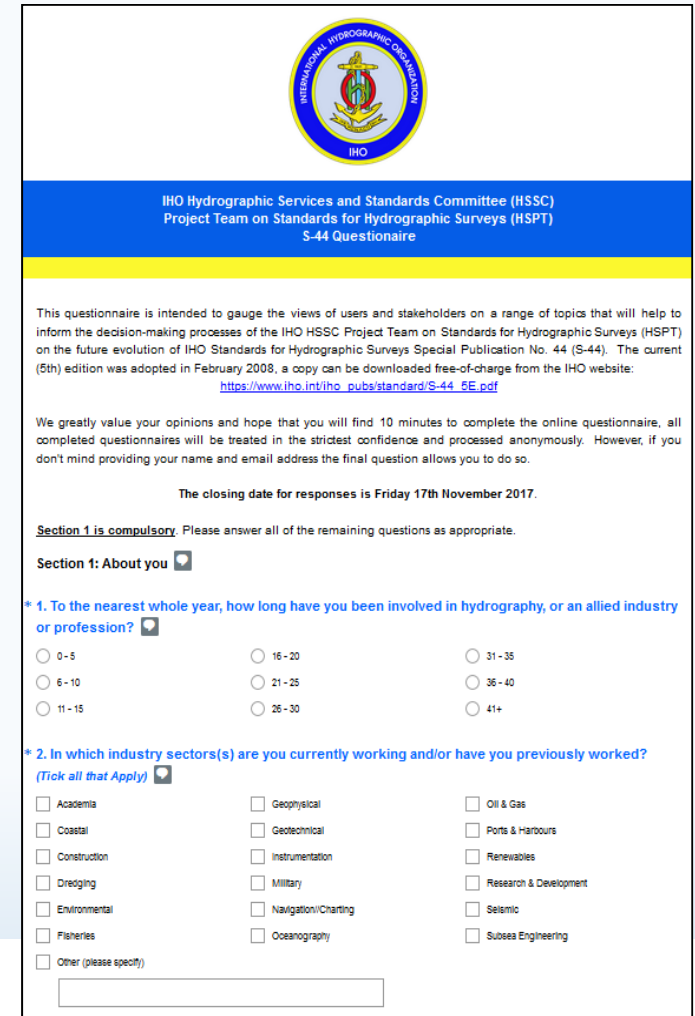
(https://www.surveymonkey.co.uk/r/HSPT_S-44_Q)

Designed to gauge the views of S-44 users, stakeholders and the wider hydrographic community on a range of topics

Administered by IFHS

Disseminated by IFHS, IHO and HSPT members
Closing date: Friday 17th November 2017
(postponed to the end of November)

By 8th November → 251 replies (62% involved in Navigation and Charting sector)



The screenshot shows the top portion of a survey page. At the top center is the IHO logo. Below it, a blue header bar contains the text: "IHO Hydrographic Services and Standards Committee (HSSC) Project Team on Standards for Hydrographic Surveys (HSPT) S-44 Questionnaire". A yellow bar follows. The main content area has a white background and contains the following text:

This questionnaire is intended to gauge the views of users and stakeholders on a range of topics that will help to inform the decision-making processes of the IHO HSSC Project Team on Standards for Hydrographic Surveys (HSPT) on the future evolution of IHO Standards for Hydrographic Surveys Special Publication No. 44 (S-44). The current (5th) edition was adopted in February 2008, a copy can be downloaded free-of-charge from the IHO website: https://www.iho.int/iho_pubs/standard/S-44_5E.pdf

We greatly value your opinions and hope that you will find 10 minutes to complete the online questionnaire, all completed questionnaires will be treated in the strictest confidence and processed anonymously. However, if you don't mind providing your name and email address the final question allows you to do so.

The closing date for responses is Friday 17th November 2017.

Section 1 is compulsory. Please answer all of the remaining questions as appropriate.

Section 1: About you [dropdown arrow]

* 1. To the nearest whole year, how long have you been involved in hydrography, or an allied industry or profession? [dropdown arrow]

0 - 5 16 - 20 31 - 35
 6 - 10 21 - 25 36 - 40
 11 - 15 26 - 30 41+

* 2. In which industry sectors(s) are you currently working and/or have you previously worked? (Tick all that Apply) [dropdown arrow]

<input type="checkbox"/> Academia	<input type="checkbox"/> Geophysical	<input type="checkbox"/> Oil & Gas
<input type="checkbox"/> Coastal	<input type="checkbox"/> Geotechnical	<input type="checkbox"/> Ports & Harbours
<input type="checkbox"/> Construction	<input type="checkbox"/> Instrumentation	<input type="checkbox"/> Renewables
<input type="checkbox"/> Dredging	<input type="checkbox"/> Military	<input type="checkbox"/> Research & Development
<input type="checkbox"/> Environmental	<input type="checkbox"/> Navigation/Charting	<input type="checkbox"/> Seismic
<input type="checkbox"/> Fisheries	<input type="checkbox"/> Oceanography	<input type="checkbox"/> Subsea Engineering
<input type="checkbox"/> Other (please specify)		

[Text input field for "Other (please specify)"]



Principal activities and achievements

3. “S44 Table” possible evolutions

3 options:

- Slight changes on the “Table1”
- Matrix approach
- Hybrid: Matrix and Table

Task lead by PTR/CAN/BRA

Criteria	Special	1a	1b	2
Description	UKC critical	Areas <100m UKC required	Areas <100m UKC not required	Areas >100m
Total Horizontal Uncertainty (m)	2.0	5+5% depth	5+5% depth	20+10% depth
Total Vertical Uncertainty (m)	a = 0.25 b=0.0075	a = 0.5 b=0.013	a = 0.5 b=0.013	a = 1.0 b=0.023
Feature Detection (m ³)	1.0	2 or 10% Depth after 40m depth	NA	NA
Seafloor Coverage / Line Spacing	100%	100%	3 x average depth or 25 meters	4 x average depth
Positioning of Fixed Aids (m)	2	2	2	5
Positioning of Coastline & Topography (m)	10	20	20	20
Floating Navigation Aids (m)	10	10	10	20



Principal activities and achievements

Matrix approach:

- Because there are other Hydrographic needs (more strict or flexible)
- Because list of criteria can be extended

→ S44 can propose **Recommendations**

	UKC (Exclusive Order)	Marine Renewable Energy	Oceanic	Engineering (Dredging?)	Engineering 2 (Cables, Pipes?)	Others.
Description	High-accuracy -dredge, build, UKC critical	Surveys dedicated for MRE farm	Oceanic soundings	High vertical accuracy	High Horizontal accuracy and detection capability	
Total Horizontal Uncertainty (m)	1	?	?	?	?	
Total Vertical Uncertainty (m)	a = 0.15 b=0.0075	?	?	?	?	
Feature Detection (m ³)	0.5	?	?	?	?	
Sea Floor Coverage / Line Spacing	200%	?	?	?	?	
Positioning of Fixed Aids (m)	1	?	NA	?	?	
Positioning of Coastline & Topography (m)	5	?	NA	?	?	
Floating Navigation Aids (m)	10	?	NA	?	?	
Final Survey Data Grid Resolution(m ²)	0.5	?	?	?	?	
Grid Source Sounding Density (pts/bin)	10	?	?	?	?	
Current Measurement	?	?	?	?	?	
Seafloor characterization	?	?	?	?	?	



Principal activities and achievements

Matrix Idea (prototype)

Grey cells used for S-44 Orders (5th edition)

(backward compatibility)

		A	B	C	D	E	F	G	H	I	J	K
1	Total Horizontal Uncertainty (m)	?	?	?	?	2.0	?	?	?	?	5+5% depth	20+10% depth
2	Total Vertical Uncertainty (m)	?	a = 0.15 b = 0.0075	a = 0.25 b = 0.0075	a = 0.5 b = 0.013	a = 1.0 b = 0.013	a = 1.0 b = 0.023	?	?	?	?	?
3	Feature Detection (m ³)	?	0.25	?	1.0	2.0	?	?	?	10% depth beyond 40m	?	Not Required
4	Seafloor Coverage / Line Spacing	?	?	100%	?	?	?	?	3 x average depth or 25 meters	4 x average depth	?	Not Required
5	Positioning of Fixed Aids (m)	?	?	?	?	?	2.0	?	5.0	?	?	Not Required
6	Positioning of Coastline & Topography (m)	?	?	?	?	10.0	?	20.0	?	?	?	Not Required
7	Floating Navigation Aids (m)	?	?	?	10.0	?	20.0	?	?	?	?	Not Required
8	Structure Heights (m)	?	?	?	?	?	?	?	?	?	?	Not Required
9	Point Cloud Grid Res. (m)	?	?	?	?	?	?	?	?	?	?	?
10	Point Cloud Density (pts/cell)	?	?	?	?	?	?	?	?	?	?	?
11	Current (speed/direction)		0.1knot/ 10°									Not Required
12	Seafloor characterization	Mandatory										Not Required



Principal activities and achievements

Matrix Idea (prototype)

Yellow cells
used for S-44
Order 1a

		A	B	C	D	E	F	G	H	I	J	K
1	Total Horizontal Uncertainty (m)	?	?	?	?	2.0	?	?	?	?	5+5% depth	20+10% depth
2	Total Vertical Uncertainty (m)	?	?	a = 0.25 b = 0.0075	a = 0.5 b = 0.013	a = 1.0 b = 0.013	a = 1.0 b = 0.023	?	?	?	?	?
3	Feature Detection (m ³)	?	?	?	1.0	2.0	?	?	?	10% depth beyond 40m	?	Not Required
4	Seafloor Coverage / Line Spacing	?	?	100%	?	?	?	?	3 x average depth or 25 meters	4 x average depth	?	Not Required
5	Positioning of Fixed Aids (m)	?	?	?	?	?	2.0	?	5.0	?	?	Not Required
6	Positioning of Coastline & Topography (m)	?	?	?	?	10.0	15.0	20.0	?	?	?	Not Required
7	Floating Navigation Aids (m)	?	?	?	10.0	?	20.0	?	?	?	?	Not Required
8	Structure Heights (m)	?	?	?	?	?	?	?	?	?	?	Not Required
9	Point Cloud Grid Res. (m)	?	?	?	?	?	?	?	?	?	?	
10	Point Cloud Density (pts/cell)	?	?	?	?	?	?	?	?	?	?	
11	Current (speed/direction)		0.1knot/ 10°									Not Required
12	Seafloor characterization	Mandatory										Not Required



Principal activities and achievements

Backward compatibility
(correspondence between
“Table1” and Matrix)

Criteria	Special	1a	1b	2
Description	UKC critical	Areas <100m UKC required	Areas <100m UKC not required	Areas >100m
Total Horizontal Uncertainty (m)	2.0 1E	5+5% depth 1J	5+5% depth 1J	20+10% depth 1K
Total Vertical Uncertainty (m)	a = 0.25 b=0.0075 2C	a = 0.5 b=0.013 2D	a = 0.5 b=0.013 2D	a = 1.0 b=0.023 2F
Feature Detection (m ³)	1.0 3D	2 (3E) or 10% Depth (3I) after 40m depth	NA	NA
Seafloor Coverage / Line Spacing	100% 4C	100% 4C	3 x average depth or 25 meters 4H	4 x average depth 4I
Positioning of Fixed Aids (m)	2 5F	2 5F	2 5F	5 5H
Positioning of Coastline & Topography (m)	10 6E	20 6G	20 6G	20 6G
Floating Navigation Aids (m)	10 7D	10 7D	10 7D	20 7F



Outstanding issues

- Matrix approach maintains the core philosophy of S-44 concept, but now allows expansion and future growth.
- According to the ToRs, HSPT has to focus in support of safety of navigation data products and services... whereas the HSSC objectives are “to promote and coordinate the development of standards, specifications and guidelines for official products and services to meet the requirements of mariners and other users of hydrographic information”.



Future work programme

- November: Table/Matrix prototypes for the 3 approaches are currently being discussed (BRA, PRT, CAN)
- End of November: closing date for the Questionnaire
- January 2018: consolidated feedback and comments from completed questionnaire (IFHS)
- Intercessional activities: work on S44 limitations and solutions, including Table/Matrix (Coordinating Editors + All Members)
- May 2018: report to the HSSC-10 on the ongoing activities
- July 2018 : HSPT Second meeting (Niteroi / Brazil – to be confirmed)
- 2019: draft of a sixth edition submitted to the HSSC, and proposal for a **HSWG**, if it need be.



Action requested of HSSC

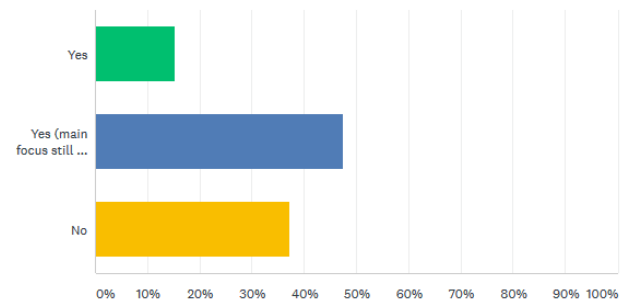
- Does the “Matrix approach” meet the expectations of the HSSC?

	A	B	C	D	E	F	G	H	I	J	K
1 Total Horizontal Uncertainty (m)	?	?	?	?	2.0	?	?	?	?	?	20x20% depth
2 Total Vertical Uncertainty (m)	?	a=0.15 b=0.0075	a=0.25 b=0.0075	a=0.3 b=0.013	a=1.0 b=0.013	a=1.0 b=0.022	?	?	?	?	?
3 Feature Detection (m ²)	?	0.25	?	1.0	2.0	?	?	?	10% depth beyond 40m	?	Not Required
4 Seafloor Coverage / Line Spacing	?	?	30%	?	?	?	?	3 x average depth up to 24 meters	4 x average depth	?	Not Required
5 Positioning of Fixed Aids (m)	?	?	?	?	?	2.0	?	5.0	?	?	Not Required
6 Positioning of Coastline & Topography (m)	?	?	?	?	10.0	15.0	20.0	?	?	?	Not Required
7 Floating Navigation Aids (m)	?	?	?	10.0	?	20.0	?	?	?	?	Not Required
8 Structure Heights (m)	?	?	?	?	?	?	?	?	?	?	Not Required
9 Point Cloud Grid Res. (m)	?	?	?	?	?	?	?	?	?	?	?
10 Point Cloud Density (pts/cell)	?	?	?	?	?	?	?	?	?	?	?
11 Current (speed/direction)		0.1m/s / 10°									Not Required
12 Seafloor characterization	Mandatory										Not Required

Q25

Do you consider that S-44 should be extended for other purposes other than for the Safety of Navigation?

Réponses obtenues : 158 Question(s) ignorée(s) : 94



CHOIX DE RÉPONSES

RÉPONSES

Yes

15.19%

Yes (main focus still on safety of Navigation)

47.47%

No

37.34%

63% = Yes



Merci



1st meeting of HSSC Project Team on Standards for Hydrographic Surveys (HSPT1) at Palais de la Porte Dorée, Paris, France, 20th to 22th June 2017

