

Membership Services

AESS Board of Governors Meeting

May, 12-13, 2017

Seattle, WA

Wolfgang Koch

Leo Lighart

VP Membership Services, AESS



Mission and Vision

■ Mission (from Strategic Plan)

- attract, engage, aid, and retain a diverse set of members
- worldwide: theoretical, managerial and applications
- technical, chapter and society activities

■ **Vision** (from Strategic Plan)

- *be recognized for outstanding contributions in the fields of AECS*
- *demonstrate this through the Society's products, service and offerings*

Within three years and in a joint effort of relevant VPs such as Membership Services, Education, Industrial Relations, Conferences substantially strengthen the Chapter activities to make AECS more attractive to old and new members.

Report on EU-AESS Chapters meeting 11-12-2016

Venue: Mercure airport hotel, Amsterdam

Present:

**Dr. Leo P. Ligthart (AESS international
Director Europe)**

Dr. Heinz Wipf (AESS chapter chair Switzerland)

Dr. Mark Bentum (AESS chapter chair Benelux)

Dr. Wolfgang Koch (AESS chapter chair Germany)

E.M.H.M. Ligthart-Versaevel (report)

**Extra reports received from Chapter Chairs who could not
attend: Denmark, Poland, Slovakia, Ukraine, France**

Prime problem in EU-AESS Chapters/Sections

Insufficient funding for Chapter lectures which are important for knowledge transfer, recruiting new members, and promoting IEEE-AESS

**Main criticism: AESS members in EU pay IEEE fee but AESS-EU chapters hardly benefit.
Zero funding by AESS is criticized, other societies have different attitude.**

Prime request: Partial (20% to 30%) BoG funding as support for organizing chapter events in Mid- and Eastern-European countries especially.

Actions derived from the Amsterdam meeting (1)

1. Recruiting new members (Wolfgang)

- **In order to illustrate the benefits of being member of AESS there should come a marketing plan. Benefit of being an IEEE-AESS member is access to IEEE-Xplore. Question: "Access to IEEE-Xplore extended to more societies"?**
- **No recognition for IEEE in EU companies and research organizations; no impact for members in their job or salary.**
- **IEEE membership can play a role in academia (but more important are the H and Citation index).**
- **For EU industry recognition as Chartered Engineer becomes important.**
- **AESS chapters in EU may fulfil a platform role to stimulate future applications in traditional and new AESS areas. The applications require challenging technology and system developments. System-oriented approach for these applications is characteristic for AESS.**
- **Multi-disciplinary / system-related research is a key future topic for AESS in EU.**
- **New ideas:**
 - **for "critical mass" make a special AESS EU chapter's LinkedIn group.**
 - **Also creating an IEEE + young engineer + industry platform which organizes workshops. Students should get an one year AESS membership for free when they attend the workshop.**
 - **Ideas to have student competitions should be worked out.**
- **Mind mapping about all the ideas mentioned during the meeting will be set up.**

Actions derived from the Amsterdam meeting (2)

- 2. Funding issue (Leo):** If BoG is willing to give financial support, EU AESS chapter chairs should prepare a budget overview and present plans how to strengthen EU AESS chapters and how to organize needed regional AESS activities
- 3. Membership (Wolfgang):** With the help from national engineering organizations and support from the BoG, AESS more active members will show up at events organized by EU AESS chapters. Note: importance of building up alliances between national engineering organizations and IEEE.
- 4. Conferences (Leo):** Limited IEEE support for national conferences because (too) many conferences result into lower quality of the papers. Academia may think differently.
- 5. Creating an IEEE-EU network between the chapters (Wolfgang, Leo):**
IEEE-EU representatives in areas as ICT and Energy, but none in Aerospace Electronic Systems (http://www.ieee.org/about/ieee_europe/index.html)
IEEE representatives are not well-known in EU organizations.
Koch will analyze the options for an IEEE-EU establishment

Actions derived from the Amsterdam meeting (3)

- 6. IEEE-USA is unknown in EU, exists for many years and supports USA members in many useful ways including political lobbying for the profession, employment issues like: salary, insurance, career planning, self-employment, consulting networks, industry job offers, and professional networks (see <https://ieeeusa.org>).**

Explore establishing IEEE-EU based on IEEE-USA organization (Wolfgang, Leo):

Inquire information related to the IEEE-USA organization and find out how to establish the IEEE-EU organization.

Apparently, a legal entity IEEE-EU exists in Geneva, Switzerland.

IEEE GmbH c/o Fiducia-Intergest SA, rue Joseph-Girard 24 CH-1227 Carouge.

However, we have no experience with it

- 7. Issues mentioned in chapters reports (Leo)**

Strategic plan shows what has been done, not what could (not) be reached

Set up of a federation of small chapters. Leo will discuss first with the EU chapters and then make a proposal for the BoG.

Attending lectures of 1-2 hours not attractive when to travel more than 1 hrs

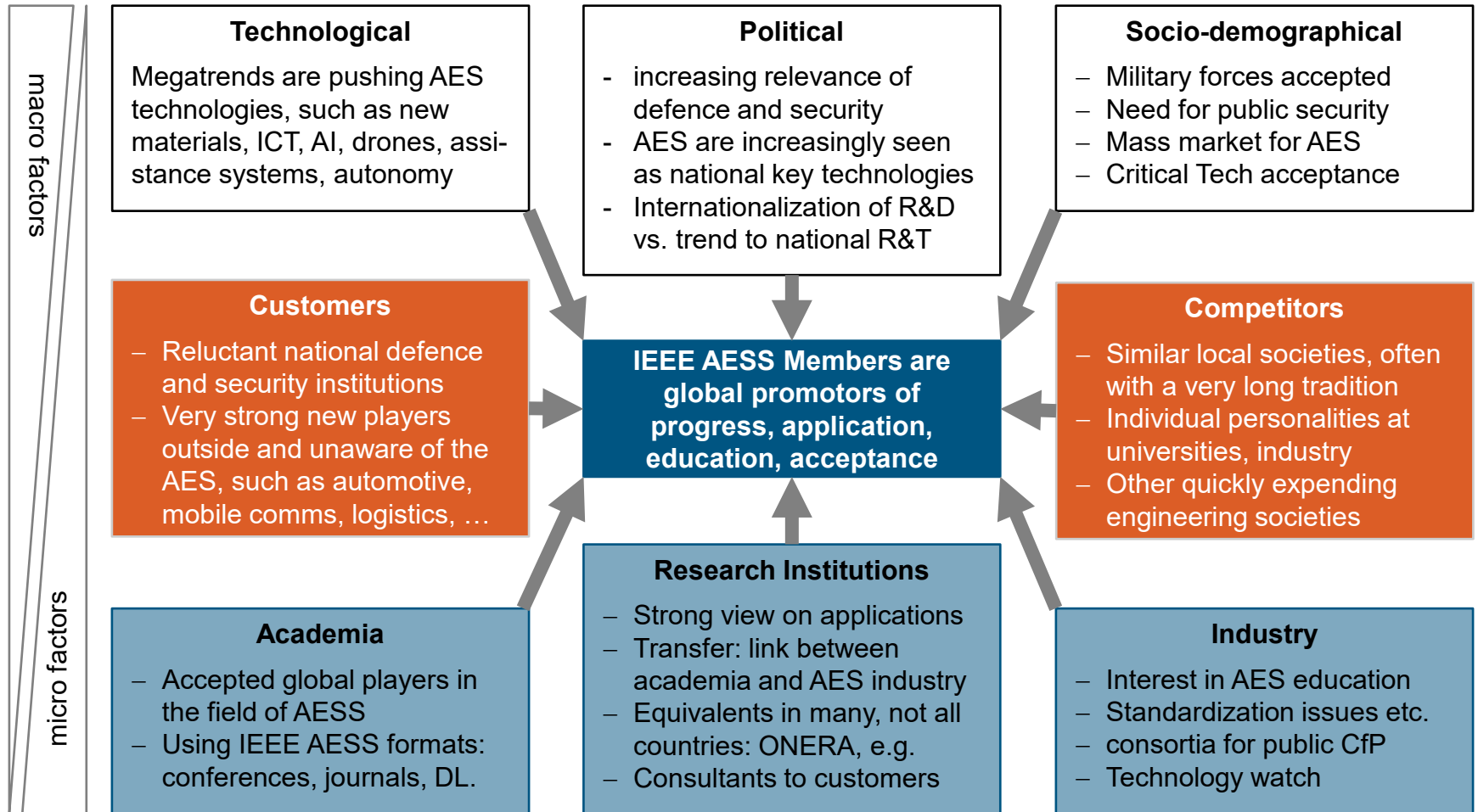
Promoting member benefits (see Ignite presentation of IEEE summit 2014)

Some chapters disappointed; more visibility by publishing chapter reports on the AESS website as well as the yearly reports by the international directors

Membership: Strategic Analysis

- *Key Observation:* The local chapters provide THE sustainable link to the members.
- An analysis of external factors provides more general insight in the situation.
- The internal factors are much more specific with less potential insight.
- A huge reservoir of new members is Region 8, including East- & non-Europeans.

Analysis of the External Factors



Model Activities for Simulating Chapters?



Switzerland

Institute of Electrical and Electronics Engineers

Invitation to an AES-CH Joint Lecture on



Institut für Geodäsie und
Photogrammetrie



Navigation Sensors and Systems in GNSS Degraded and Denied Environments

Dr. George T. Schmidt

IEEE Life Fellow

Distinguished Lecturer

Vice President Member Services AESS

AIAA Fellow



Date: June 08th 2017

Time: 18:30 – 19:30

Location: ETH Zürich, Room HG E 1.1

I have the pleasure to inform you, that the IEEE - CH Aerospace & Electronic Systems succeeded in arranging a joint lecture in Zurich of Dr. G. T. Schmidt, a member of the AESS Board of Governors. He has served on NATO's Research and Technology Organization (former AGARD) since 1968 and acted as director of several NATO-RTO lecture series related to navigation in GPS denied environments. NATO awarded him the distinguished von Kármán Medal in 2005. As a former Editor-in-Chief of the AIAA Journal of Guidance, Control and Dynamics he oversaw an unprecedented growth of that journal. A director of the MIT's Draper Guidance Technology Center and leader of the Guidance and Navigation Division, he was also teaching estimation at MIT's Department of Aeronautics and Astronautics while advising thesis students in control and navigation. He authored more than 100 technical publications. Dr. Schmidt earned his BS, MS degrees and the ScD both from MIT.

Position, velocity, and timing signals from Global Navigation Satellite Systems are in use throughout the world. The availability, reliability and integrity of these signals have become a subject of concern for both military and civilian applications alike. International news reported a successful GPS spoofing attack on a civilian UAV at White Sands Missile Range in New Mexico. This has increased concerns over the planned use of UAV in the U.S. national airspace and safety of flight in general. The problem requires filling the position, velocity, and timing gap. One solution uses inertial and/or other sensors to bridge that gap. The lecture summarizes the past and recent advances in navigation sensor technology. State-of-the-art sensor integration technology, synergistic benefits and projections for the future are elaborated. Expected technology improvements for system robustness will be highlighted.

We look forward to your participation. Guests are welcome.

Refreshments will be served after the lecture.

Heinz Wipf, Chair AES
IEEE Switzerland

Prof. Alain Geiger
Inst. Geodäsie & Photogrammetrie

Prof. Bertrand Merminod
Präsident ION-CH



IEEE AESS



Fraunhofer
FKIE

The IEEE AESS Germany Chapter welcomes you to a Focus Day on

Navigation in GNSS-degraded Environments

under the auspices of BMVg, A II.6.

When: Tuesday, June 6, 2017. Begin: 11:00 h. End: 16:30 h.

Where: Fraunhofer FKIE, Fraunhoferstraße 20, 53343 Wachtberg.

Registration by June 1, 2017. Contact Wolfgang.Koch@fkie.fraunhofer.de.

Welcome and Introduction

TRDir Matthias Steil, BMVg, Bonn; Priv.-Doz. Dr. Wolfgang Koch, Fraunhofer FKIE

IEEE Distinguished Lecture on

Navigation Sensors and Systems in GNSS Degraded and Denied Environments

Dr. George T. Schmidt, IEEE Life Fellow, AIAA Fellow, BoG IEEE AESS

Robust Navigation – A Military End-users' Perspective

NN., BMVg, CIT I, Berlin

Autonomous Intrusion and Indoor Reconnaissance in Buildings by Quadcopters

Prof. Dr.-Ing. Gert F. Trommer, Karlsruhe Institute of Technology (KIT)

Industry View on Robust Navigation for Missile Applications

Thomas Löffler, Dirk Krogmann, Diehl Defence, Überlingen

Anti-Jam Preprocessors for Satellite Navigation Receivers

Dr. Ulrich Engel, Fraunhofer FKIE

Map-building for Camera Based Navigation in GNSS Denied Environments

Daniel Bender, Fraunhofer FKIE

Wide-area Multilateration using ADS-B/Mode S Receivers

Christian Steffes, Fraunhofer FKIE

Discussion: Quo vadis, Navigation?

Moderation: TRDir Matthias Steil, BMVg

Model Activities for Simulating Chapters?



Bonn, October 10th – 12th, 2017



11th Symposium Sensor Data Fusion: Trends, Solutions, and Applications

Call for Papers

Motivation

To a degree never known before, human decision makers or decision making systems have access to a vast amount of data. Therefore, real-time data streams must not overwhelm the actors involved. On the contrary, the data are to be fused to high-quality information to provide a reliable decision support. Being a challenging exploitation technology at the common interface between sensors, command & control systems, data and information fusion has a large potential for future security and ISR systems in defence and civilian applications.

Scope

Sensor Data Fusion techniques provide higher-level information by spatio-temporal data integration, the exploitation of redundant and complementary information, and the available context. Important applications exist in logistics, advanced driver assistance systems, medical care, public security, defence, aerospace, robotics, industrial production, precision agriculture, traffic monitoring, sensor positioning, and resource management.

Plenary Talk



Plenary Talk: TBA By Lennart Svensson.

Key Aspects

- Distributed sensor fusion in complex scenarios
- Fusion of heterogeneous sensor information
- Exploitation of non-sensor context knowledge
- Artificial Intelligence of autonomous systems
- Risk analysis / data driven sensor management

Fees

€149.-	Students and public agencies
€299.-	Regular

- For the student registration a proof of the student status is required.
- One registration covers one paper only.

Contributions

Prospective authors are encouraged to submit high-quality full draft papers (4-6 pages, IEEE format). All submissions are subject to a peer-review process by the technical program committee. Accepted papers will be published at the IEEE Xplore data base. At least one of the authors of each accepted contribution is expected to register for the Workshop, which will be held in Bonn, Germany, and to present the paper. For details contact www.fkie.fraunhofer.de/sdf2017.

Important Dates

14.07.2017	Submission of full draft papers
01.09.2017	Notification of acceptance
22.09.2017	Submission of the final version
10.10.2017	Start of SDF Workshop

Organisation

Executive Chairs: Wolfgang Koch, Fraunhofer FKIE and University of Bonn, w.koch@ieee.org; Peter Willett, University of Connecticut, USA, p.willett@ieee.org.

Technical Program Chair: Felix Govaers, Fraunhofer FKIE, Germany.

Publicity Chair: Stefano Coraluppi, Systems and Technology Research (STR), USA, stefano.coraluppi@ieee.org.

Technical Program Committee

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SCIENCE AND TECHNOLOGY ORGANIZATION

COLLABORATION SUPPORT OFFICE

SET PANEL/GROUP



TECHNOLOGY WATCH¹

1. **Title:** Modular Multisensor Fusion Engines

2. Description of the Technology:

Although multisensor fusion technologies for particular military surveillance and reconnaissance applications are already in a mature state and fielded, this branch of technology rapidly evolves and is the key an ever increasing variety of military use cases.

According to the progress of sensor, platform, and ITC technologies, data from diverse sources are to be considered to meet NATO's future challenges in situational awareness and decision making. This includes, but is not limited to, distributed networks of heterogeneous and even possibly multifunctional sensors, to specialized sensor suites on multiple autonomously operating mobile platforms, e. g. for forward air controllers, or to the integration of context and background information in the sensor data exploitation process, e. g. on the propagation channel, on the sensing environment, or on the scenario to be expected.

In Modular Multisensor Fusion Engines, to be considered as sub system in the wider context of NATO's C&JISR systems, proven methodologies are applied to exploit heterogeneous sensor data streams on received different levels of pre-processing. These methods have their roots in advanced statistics, combinatorial optimization, statistical decision theory, and mathematical game theory for resources management. To ensure robust, systematically evolving, and adaptive fusion engines for military multiple purpose applications they need to be modular, controllable, and embeddable via interoperable interfaces.

Since research and development activities in the area of Modular Multisensor Fusion Engines have the potential of a 'game-changing' or disruptive effect for both friendly and adversary forces, a systematic technology watch of the building blocks of fusion engines on very diverse TRL levels is expected to highly desirable that also including technology watch of developments in the civil domain such as the internet of sensors, autonomous driving, smart manufacturing, and others.

The proposed technology watch quite naturally complements already existing technology watch activities that are focused on individual sensor technologies. It will also be the basis for predicting potential future developments in the area of fusion engines in a midterm timeframe.

¹ Technology Watch is a systematic effort to identify new militarily important technologies that hold the potential to contribute to or enable the development of military capabilities that can have a "game-changing" or disruptive effect for both friendly and adversary forces, and to communicate the potential impact of these technologies to NATO and National leadership.

² Midterm Timeframe is 15-20 years for technologies but may be less (~5 years) for new analytical methods, models or commercial technologies and the cyber domain.

- **Swarm Centric Systems**
- **Deep Learning**

Model Activities for Simulating Chapters?

**DL and
AESS promotion
via Skype**

**Data Fusion and Resources Management
Artificial Intelligence Methods
for Space-borne Surveillance**

Space Technologies & Satellite Applications

International Conference on Micro & NanoSatellites

Rabat, Morocco

May 2-3, 2017

Wolfgang Koch

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Head of Sensor Data Fusion

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Model Activities for Simulating Chapters?

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17. März 2017

Anregung gemäß § 24 GO NRW: Gedenktafel für Christian Daniel Hülsmeyer

Sehr geehrter Herr Bürgermeister Hupke,

für die Gelegenheit, Ihnen am 13. März 2017 persönlich unsere Anregung zur Anbringung einer Gedenktafel für Christian Daniel Hülsmeyer (1881-1957) näher erläutern zu können, danken wir Ihnen herzlich. Gern nehmen wir Ihren Vorschlag einer formalen Bürgereingabe auf, die wir hiermit einreichen.

Hintergrund

Das Rheinufer an der Hohenzollernbrücke ist der Schauplatz einer bedeutenden Kölner Erfindung, deren weltweite Wirkung bis in die unmittelbare Gegenwart strahlt – das RADAR. Am 17. Mai 1904 wies dort der Unternehmer und Erfinder Christian Hülsmeyer (1881-1957) zum ersten Mal in der Technikgeschichte das RADAR-Prinzip nach. Seine Erfindung, von ihm „Telemobiloskop“ genannt, sendete „Hertz'sche Wellen“ aus. Sobald sich Rheinschiffe näherten, reflektierten diese die Wellen. Hülsmeyers „Telemobiloskop“ konnte die Reflexionen empfangen, eine Klingel auslösen und die Richtung anzeigen, aus der das Schiff kam.

Anerkennung

Es ist in der internationalen Fachliteratur zur Geschichte der Elektrotechnik unbestritten, dass der 17. Mai 1904 in Köln der Geburtstag des RADAR war. Erinnert man sich, dass Heinrich Hertz (1857-1894), der Entdecker der elektromagnetischen Wellen, als Professor für Physik im nahen Bonn wirkte, so wird deutlich, dass das RADAR eine durch und durch rheinische Erfindung ist. Kurz vor seinem Tod im Jahre 1957 wurde Hülsmeyer von seinem Erfinderkollegen Konrad Adenauer geehrt, damals Bundeskanzler, zuvor aber der große Oberbürgermeister Kölns.

Initiator und Kosten

Die *Institution of Electrical and Electronics Engineers* IEEE, www.ieee.org, ist die bedeutendste internationale ingenieurwissenschaftliche Gesellschaft. Sie möchte an diesen wichtigen Meilenstein der internationalen Technikgeschichte erinnern, nachdem der Vorschlag ausgiebig von einer renommiert besetzten internationalen Wissenschaftlerkommission geprüft und empfohlen wurde. Konkret soll an geeigneter Stelle eine Messing-Tafel mit folgender Inschrift angebracht werden:

On 17 May 1904, the German engineer and entrepreneur Christian Hülsmeyer first demonstrated a device in Cologne which he named a Telemobiloskop, using electromagnetic waves to detect a distant target. He patented this device in Germany, in the UK and in the USA. This device was the world's first radar.

Derartige Tafeln erinnern weltweit an Meilensteine der Technikgeschichte. Abb. 1 zeigt eine derartige Tafel, die rechts neben dem Denkmal für Heinrich Hertz an der Technischen Universität Karlsruhe aufgestellt ist. Eine derartige Tafel für Hülsmeyer kann an einer Wand oder wie in Karlsruhe auf einer Säule angebracht werden. Die entstehenden Kosten für Tafel und Aufstellung wird der deutsche Zweig der *IEEE Aerospace and Electronic Systems Society* übernehmen. Eventuelle Kosten für die unterjährige Pflege können durch die Fraunhofer-Institute FKIE und FHR in Wachtberg bei Bonn aufgebracht werden.



Abb. 1: Gedenktafel für Heinrich Hertz an der Universität Karlsruhe.



Abb. 2: Vielleicht möglicher Anbringungsort am Kölner Rheinufer.

Möglicher Aufstellungsort

Mit dem Begriff RADAR wissen nahezu alle Menschen etwas anzufangen. Flughafen, Schifffahrt, Einparkhilfen am Auto, autonomes Fahren, aber auch polizeiliche Geschwindigkeitskontrollen wären ohne RADAR undenkbar. Es wäre also davon auszugehen, dass eine solche Tafel das Interesse vieler Menschen, die am Rheinufer flanieren, wecken und ihnen einen weiteren Hinweis auf die Bedeutung und Vielseitigkeit Kölns geben würde, der großen Metropole am Rhein. Abb. 2 zeigt ein eckförmiges Mauerstück nahe der Hohenzollernbrücke, das aus der Sicht der Unterzeichner passend wäre. Dies soll aber nur eine unter sicherlich vielen

Strategic Objectives

- **Strengthen and vitalize the chapter activities!**
 - **Identify AESS membership benefits for the members**
 - **AESS membership fee includes access to AESS Digital Library (200 AESS conferences). If one wants the library, join the AESS. About half the IEEE societies offer a digital library of their conferences.**
 - **Distribute AESS relevant tech watch information towards the local Chapters**
 - **Get informed of the current status of local chapters**
 - **Done for the Dutch, Swiss, and German Chapters**
 - **Ongoing discussions with the Polish Chapter**
 - **Support of creating a Morocco Chapter, ongoing**
 - **Considerable interest in several Arabic Countries**
 - **More communication, perhaps via LinkedIn?**
 - **SWOT analysis? Rather generic if of more general interest**

Initiatives and Actions

- **Survey of Chapter activities by introducing Leo and Wolfgang who provide an overview of Dutch, Swiss, and German activities.**
- **Strengthen the link to the strong Polish Chapter via personal contacts and establish a strategic core team with them (key to the east?). At least partial funding for cross-chapter activities?**
- **Establish a LinkedIn group of AESS chapters, at first with a focus on Region 8 (i.e. including the non-Europeans).**
 - **Contact information**
 - **Current activities**
 - **Tech Watch Documents**
- **Provide simple guidelines for Chapter Chairs**
 - **How to establish a new chapter?**
 - **How to invite a DL? What about cost?**
 - **What are examples of chapter activities?**
- **Draft a generic annual email for local Chapter Chairs to encourage renewal or signing in AESS in their countries.**
- **Provide a list of concrete benefits of AESS membership**
- **Alliances with local tech institution: “very friendly, but ...”**