



Minutes of the SEMS Industrial Advisory Board Meeting of 5/11/2024

Meeting details and attendance

Date: 5/11/2024

Time: 12:00 – 14.30

Location: Graduate Centre and Teams

Link to recording:

Chair: Martin Muir (Airbus)

In-person attendees:

Tony Kinsella	Lucideon Group
Guy Newcombe	Archipelago Technology
Phil Kennedy	SEMS/Nanoforce
Giovanni Santagiuliana	Polymateria
Carolyn Small	Arconic
Bhupen Lodhia	Viya Ventures
Keizo Akutagawa	Aston Martin F1
Martin Thomas	AWE
George Amarantidis	MathWorks
Ranjan Vepa	SEMS
Abdirahman Mohamed	SEMS Student Voice Committee (SVC)
Abul Hassan Mohammad Ibrahim	SEMS SVC
Henri Huijberts	SEMS
Karin Hing	SEMSe
Kaspar Althoefer	SEMS
Karen Shoop	SEMS
Jens-Domink Mueller	SEMS
Kiane Johnson	SEMS SVC
Fatima Dahir	SEMS SVC
Hazel Screen	SEMS
Eldad Avital	SEMS
Roberto Volpe	SEMS
Edo Boek	SEMS
James Busfield	SEMS
Chinnapat Panwisawas	SEMS
Maria Romero-Gonzalez	SEMS
Oliver Fenwick	SEMS
Martin Muir	Airbus

Online Attendees:

Yasmin Farhatnia	Platinum Medica
Nigel Smith	Biomedical Consultancy LTD
Matthew Tickle	Tickletech
Roly Whear	Jaguar Landrover

Yvonne Crew	AWE
Su Varma	Pilkington NSG
Martin Muir	Airbus
Joe Hallett	Birla Carbon

Minutes of meeting

1. Review of last meeting (Olly Fenwick)

OF reported minutes were incomplete due to a lost recording.

OF presented aggregated results of discussions in previous IAB around the following questions about the engineering job market:

- What technological developments will change the role of an engineer in the next 5 – 10 years?
 - o OF reported that answers clustered around sustainability, software/modelling/data, bioengineering and robotics/automation/VR.
- Which engineering roles will become more important in the future?
 - o OF reported that answers clustered around AI/digital twins, safety/security and sustainability.
- Which engineering roles will become less important in the future?
 - o OF reported that answers clustered around technologies being replaced (analogue, combustion engine and traditional manufacture) and the roles being replaced by AI (project management, data analytics)
- What skills gaps do you see emerging? (5 – 10 years)
 - o OF reported that answers clustered around AI/software, energy and basic skills needed for all engineers.

OF presented aggregated results of discussions in previous IAB around the following questions about the future of sustainability:

- What are the sustainability priorities in your industry in the short term (<5 yrs)
 - o OF reported that answers clustered around waste reduction, use of renewable materials, and using cleaner/less energy.
- What are the sustainability priorities in your industry in the longer term (>5 yrs)
 - o OF reported that answers included energy access, replacing materials, using waste, using greener energy and decommissioning.
- Skills needed for sustainability
 - o OF reported that answers included LCA, understanding environmental data, CCS, new fuels and electric mobility.
 - o SV additionally suggested Cost Engineering with respect to costing the transition to more sustainable technology.

2. Input on the Design, Innovation & Creative Engineering (DICE) programme (Karen Shoop)

After presenting the motivations of the DICE programme, the course structure and some case studies of successful students, KS asked if any IAB members present were design advocates (Action agreed was for IAB members to take this question away to find colleagues who are)

GN said he would like a DICE student on a year-in-industry.

GN commented that he appreciates people who can come up with ideas rapidly.

AWE commented that 3D printing should not replace traditional manufacturing at university. Commented that students leaving university are lacking traditional workshop skills that are still relevant.

MT likes that DICE students can be flexible and multidisciplinary.

SV commented that it exciting when materials and design students overlap.

3. Advanced Chemical Engineering MSc programme presentation (Henri Huijberts)

HH presented the plans for the new MSc in Advanced Chemical Engineering including course structure which has a focus on the future of chemical engineering.

GN highlighted that it could be useful to connect with SMEs which are growing/recruiting, whereas the site visits were focussed on big companies.

MM Asked if SEMS was talking to regional development partnerships, such as the SWRDP, which Airbus is involved with. He commented that many are involved in these regional development hubs.

SV noted the use of captured carbon was not covered as companies are looking at how to monetise this.

HH replied that it isn't in the MSc, but it is in an undergraduate project.

BL asked if storage/transport of H₂ was included.

MM asked how modelling is included and if students will be prepared for future modelling and AI or quantum computing.

EB commented that there is a module on "Machine Learning and Artificial Intelligence for Engineering". HH replied that standard modelling is included.

MM asked is Systems Engineering is incorporated and if it goes beyond the V-model, which he believes turns everyone off.

HH replied that it doesn't go much beyond that model.

4. Student voice (Student Staff Liaison Committee Members)

The students introduced themselves and what they're doing in their modules at the moment.

MM asked how they're finding the balance between group work and individual work.

SVC1 commented that group work can be challenging when dealing with deadlines.

SVC2 (Fatima, Chem Eng) wants to find more about skills she should be developing for industry.

MM answered that he looks for people who do more than just their course. Also commented that experience in monetising is good.

SVC2 asked how to answer questions about creativity when applying for jobs.

MM said he's looking for "functional fixedness" (how you use things differently or do things differently).

MT said he's looking for people with a wide range of interests and able to answer questions in interview and think in an interdisciplinary way. In interviews, applicants should answer with examples.

BL commented that creativity is about drastic improvement on what you're working on (a big idea). He feels that creativity will be more important as AI takes on technical tasks.

MM thinks it's good that SEMS students from broad disciplines working together to drive interdisciplinary and creative thinking.

SVC3 What techniques do students use to answer interview questions well.

MT answers that use the SMART technique are good.

SVC4 Is there a need to infuse more design skills into traditional disciplines.

GN Not sure, but top skills are speaking on the phone and speaking to senior employees (i.e. getting in front of people and smiling).

Others agreed that smiling at interview is really positive.

MT commented that researching the company before interview is also important.

5. Artificial Intelligence in education

This was a breakout session and the results of this are being recorded separately.

6. Any other business

SVC Is the engineering sector becoming saturated with engineers?

TK No. Engineers are in short supply.

MM No. Airbus is recruiting more engineers year-on-year, but you can't ignore the future effect of AI. Also, graduates should consider using LinkedIn to ask companies what they're looking for.

MT pointed out that graduates should be prepared to be agile in the workplace and there will be disciplines you work in that don't yet exist.

SVC asked how companies square the use of AI with sustainability goals considering the huge power consumption.

MM replied that we might have to live with this, but that using AI selectively where it can make the biggest impact is important.

MM requested volunteers to act as deputy chair in case he's unable to attend future meetings. Volunteers to contact OF.

7. MM closed the meeting

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