Energy Harvesting Committee (EHC) Minutes
17th Aug 2017

Attendees	Apologies/Non attendees	
Joe Horzepa, PSMA Brian Zahnstecher, Powerrox Aarohi Vijh, Alta Devices Ben LeNail, Alta Devices Maeve Duffy, NUIG Gary Johnson, Ilika Baoxing Chen, Analog Devices Dan Stieler, Powerfilm **Mike Hayes, Tyndall**	Katherine Kim, UNIST Anthony Laviano, NRAIT Henrik Zessin, Fraunhofer IIS Justin Knott, FCI Wensi Wang, BJUT Peter Zou, Huawei Ajinder Singh, TI Mike Wingard, Amphenol David Newell, NUIG Dushan Vuckovic, Delta Force Lorandt Foelkel, Wurth Aaron Stein, Dartmouth Kevin Parmenter, Excelsys Jae-Do Park, Univ of Colorado Denver	Laili Wang, Xi'an Jiatong University Guoqing Liu, Huawei (HiSilicon) Warren Wambsganss, Astronics Jeffrey Jouper, Astronics Seshank Malap, Tektronix Johan Pederson, Sigma Design Scott Thielman, Product Creation Studio **Doug Osterhout, OnSemi/Fairchild**

(Co-chairs in bold font) (new members in red – welcome Ben!)

Next meeting:- Thurs Sept 21st at 1100 Central.

Giving more committee members an opportunity to 'lead & speak':-

Agenda for next meeting

1. Welcome any new members – Mike/Doug (e.g. Brian talking with Imperial College London)
2. APEC 2018 industry session – Mike
3. Energy harvesting workshop – Brian
4. Energy harvesting demos – student competition – Looking for lead & volunteers
5. Assessment of ambient energies - Mike
6. Status update on technical forum - Doug
7. AOB, actions, updated goals, next meeting, etc. - Mike

We shall mainly focus on items 2&3 so please start to give suggestion on speakers & topics for both.

2. APEC industry session – March 2018 San Antonio.

- EHC has reviewed the abstract. Mike will release and submit by 23/08. Topics:- EH, storage, power mgt, systems/applications, demos. Make provision for applications and relevant emerging technologies that impact the IoT load e.g. lower power transceivers, microcontrollers, etc.
- Looking for volunteers to form a technical committee – so far Mike, Brian (demos), Baoxing (EH/pwr mgt), Gary (storage), Maeve (systems/apps + demo support?).
- Looking for suggested topics and speakers. So far Baoxing is willing to give a presentation on some latest ADI work – would be excellent but depends on what other suggestions come in sign as Baoxing already presented this year.
- Do not worry if we get several suggestions, we shall also be looking for suggested speakers for our workshop in May.

3. Dedicated workshop/demo session

- Proposing May 2018 at Tyndall in Cork (donating the facility)
- Keep it relatively small and focused (70-120 people) – similar to the way PwrSoC started out.
- Proposing similar agenda to our EH industry session, just broaden it out to 1.5-2 days with multiple presentations per topic (EH, storage, power mgt, systems/applications, demos)
- Lots of demos please. Would we facilitate sponsored demos?
- Whilst application targeted we also need a good healthy industry/academic balance – more academic volunteers please
- We should consider having a training session – possibly too much work given ambitious timeframe?
- Looking for volunteers to form a steering and technical committee – so far Mike, Brian, Baoxing, Lorandt, Maeve.

- Brian to create outline proposal for submission to PSMA board. - DONE
- PSMA will assist with seed money as well as covering costs of assigning an admin person to help run this.
- UPDATE:- Brian & Mike presented proposal to PSMA board on 18/08 – we have approval to pre-finance up to 20K.
- We should consider getting technical sponsors to help promote, e.g. IEEE, ECPE – Mike & Brian investigating.
- We should increase fee to ensure we have decent surplus (>20%) with 70 person attendance.

4. Sponsorship of a program where students build demonstrators.

- Still looking for a volunteer to lead this.
- Core idea is to make kits of parts available to academics, have an open call.
- Mike suggested 2 prize categories, 1 for 'science excellence',1 for 'impact/application excellence'. Applicants can bid for both categories if their demo fits.
- 1st round – best applicants get awarded hardware (some from companies in the EH committee?)
- Finalists could be invited to show their demos at an industry session & prizes awarded there.
- Keep it as simple as possible to minimise time and effort needed by organisers, judges, etc.
- Best timing for the students to do work on this is winter/spring, esp. if they can align to a final year project.
- Consider a model similar to the IEEE energy challenge & possibly doing in collaboration with IEEE.
- Looking for volunteers & a leader to help drive this, esp. members with academic experience.

5. Assessment of ambient energies in real life use cases (paper study, model?)

- We now need to figure out exactly what we want to do. Can people please submit proposal on what exactly you would like us to characterise as examples. Suggestion so far from Aarohi – IoT enabled door locks (good one!). Jonas suggests categorising into (i)Typical manufacturing setting (ii) Home (iii) Office
- Note there are 2 useful databases already out there.
  http://realvibrations.nipslab.org/.
  http://eh-network.org/data/index.php

6. Technical forum - Doug

- Update technical forum, work with Lisa to get 3 key documents updated every 1-2 months, all partners to send to the following leads who will filter:-
  - Events – led by Doug – revamp old table (ref. p3) and simplify
  - Useful weblinks – led by Johan
  - Companies – led by Doug with help from Brian

7. Actions from previous meetings still open (red = updates)

- Share IoT examples of case studies similar to 'microwave oven' story, e.g. water faucet sensors, – Ajinder & Seshank – any updates?
- Any ideas for our 2018-2019 strategy – needs refreshing. Some related items:-
  - Look at options to get more storage partners in our committee – e.g. Cymbet, Imprint Energy? Ilika now on board
  - Anyone interested in RF, any partners worth bringing on board?
  - Consider expanding beyond IoT – ongoing – in time once we find our initial sweet spots
- Any volunteers to help with PSMA technology roadmap energy harvesting section for 2019 – not urgent for now but please start thinking about it, activities will start later in 2017, our initial contribution for 2017 roadmap was very well received

Mike Hayes,
Tyndall, 21 Aug 2017

THE OLD TABLE OF EVENTS THAT DOUG WILL UPDATE

Event	*Timeline (next date if annual)*	*EHC 'go to person'*
PCIM 2016 https://www.mesago.de/en/PCIM/The_conference/Welcome/index.htm	May 2016	Brian
http://www.sensorsexpo.com/ San Jose	June 2016	Brian, Kevin
SME SV conference http://connect.sme.org/smesiliconvalley/conference	9 June 2016	Brian
Energy harvesting workshop, Dresden Germany http://www.iws.fraunhofer.de/en/events/flexteg_2016.html	26-27 Sept 2016	TBD
PwrSoc 2016, Madrid http://pwrsocevents.com/	Oct 2016	Mike, Maeve
Elektronica	8-11 Nov	Lorandt
Embedded Systems Conf Silicon Valley (ESC SV '16)	6-8 Dec 2016	Kevin, Brian
EH&S US 2016 (IDTechEx) Santa Clara http://www.idtechex.com/energy-harvesting-usa/show/en/	Nov 2016	Brian
Tyndall Industry Seminar - Energy	11 Oct 2016	Mike
PowerMEMS Paris http://www.powermems2016.org/	Dec. 2016	
	2017	TBD
SSI 2017 (Smart system integration) https://www.mesago.de/en/SSI/home.htm	Mar 2017	TBD
Next Generation energy storage http://www.knowledgefoundation.com/next-generation-energy-storage/	~~April 2016~~	Brian, Kevin
http://www.batterypoweronline.com/conferences/ Denver	Aug 2016	
http://www.low-power2016.com/main/ Las Vegas	Nov 2016	
http://electronica.de/trade-fair/for-visitors/	Nov 2016	Lorandt? Henrick?
International/Asian Conference on Thermoelectrics in China http://ict2016.whut.edu.cn/	May-June 2016	Baoxing
Energy Harvesting Workshop at Virginia Tech. http://www.cpe.vt.edu/ehw/index.html	6-7 Sept 2016	Aaron