It is proposed to simultaneously:

Rename the Department of Electrical Engineering and Computer Science to the Department of Electrical, Computer, and Systems Engineering

and

Create the Department of Computer and Data Sciences.

CSE Special Faculty Meeting March 22, 2019, 11:30-12:30PM Glennan 424

Summary of Discussions

An overview on the rationale for the motion was presented by the interim co-chairs of the Department of Electrical Engineering and Computer Science, Jing Li and Pedram Mohseni. It was then opened up for questions and comments. The full scheduled hour was used between the presentation and the discussion. The tenor of the discussion was positive towards the motion. The following is a summary of

Questions and Discussions

1. Computer appears in both names of the Departments, "Department of Computer and Data Science", and "Department of Electrical, Computer, and System Engineering".
   Response: This is common with many other universities and has not been an issue there. A number of examples were cited.

2. The name of ECSE appears to be long
   Response: The total words in the ECSE is the same as the current EECS name.

3. How the transition will benefit students.
   Responses: the transition will help departmental development efforts and fund raising, the expected growth in faculty size, revenue sharing from expected increasing MS student enrollment, new joint programs leveraging Computer Science, Data Science with other programs in CSE and CAS etc. Such as CS/DS+ or X+CS/DS

4. Faculty Size

   Response: CS program currently has a student/faculty ratio of 36, which is large and unfavorable for recruitment and ranking. There is a clear need to increase the CS faculty size while ensuring other needs in CSE are met. Some discussion of how to accomplish this include development and fund raising (one endowed chair has been committed). Increasing revenue from the new revenue sharing model. Investment from Provost and President. Co-growth in conjunction with emerging programs, i.e., Quantum Engineering and ISSACS. Faculty support via grant agencies, i.e., AI/BMI and computing grant submitted to NSF.

5. Negative Vote at Department Level

   Responses: Most EECS faculty are in support of the transition plan via the hard split. The negative votes are primarily due to concern about the process (resources, spacing, administration of academic programs, etc.). Concerns raised are being address or have been addressed by task force, committees.

Other comments made by attendees:

- The transition is expected to improve the ranking for the Department and CSE. By give good visibility of CSE to the emerging areas of AI, big data, etc.
- The department faculty are supportive of the transition plan.
- Development of a long term strategic plan that emphasize partnership and collaboration will help secure resources, internally and externally. Increasing the CS graduate program (PhDs) is important.
- Should move fast to catch the new waves in CS, DS, AI etc. It is beneficial to CSE to act based on 'acceptable level of acceptance'

EECS Department Transition

EECS Interim Co-Chairs
Jing Li and Pedram Mohseni

CSE Special Faculty Meeting on March 22, 2019

Backgrounds for the proposed motion

It is proposed to simultaneously:

Rename the Department of Electrical Engineering and Computer Science to the Department of Electrical, Computer, and Systems Engineering

and

Create the Department of Computer and Data Sciences.

Department of Electrical Engineering and Computer Science offers:

- Computer Engineering
- Computer Science
- Data Science
- Electrical Engineering
- Systems and Control Engineering

CSE student enrollment data (2012-2017)

	Student Enrollment (registrar data, Fall Sem)		2012	2017	Δ
1	CMP-BA+BSE	Computer Science BA+BS	129	331	202
2	CIS-MS-A	Computing & Info Sci (MS-A)	26	62	36
3	CIS-MS-B	Computing & Info Sci (MS-B)	2	4	2
4	CIS-PHD	Computing & Info Sci (PhD)	44	23	-21
5	ECM-BSE	Computer Engineering	41	44	3
6	ECM-MS-A	Computer Engineering (MS-A)	12	11	-1
7	ECM-MS-B	Computer Engineering (MS-B)	0	1	1
8	ECM-PHD	Computer Engineering (PhD)	21	18	-3
9	EAP-BSE	Electrical Engineering	91	153	62
10	EAP-MS-A	Electrical Engineering (MS-A)	38	43	5
11	EAP-MS-B	Electrical Engineering (MS-B)	2	6	4
12	EAP-PHD	Electrical Engineering (PhD)	37	43	6
13	ESY-BSE	Systems & Control Engineering	13	20	7
14	ESY-MS-A	Systems & Control Engr (MS-A)	12	10	-2
15	ESY-MS-B	Systems & Control Engr (MS-B)	0	5	5
16	ESY-PHD	Systems & Control (PhD)	23	25	2
17	EMC-BSE	Mechanical Engineering	189	303	114
18	EMC-MS-A	Mechanical Engineering (MS-A)	39	35	-4
19	EMC-MS-B	Mechanical Engineering (MS-B)	1	29	28
20	EMC-PHD	Mechanical Engineering (PhD)	40	40	0
21	EAR-BSE	Aerospace Engineering	102	114	12
22	EAR-MS-A	Aerospace Engineering (MS-A)	10	9	-1
23	EAR-MS-B	Aerospace Engineering (MS-B)	0	6	6
24	EAR-PHD	Aerospace (PhD)	5	3	-2

			2012	2017	Δ
25	EBI-BSE	Biomedical Engineering	323	331	8
26	EBI-MS-A	Biomedical Engineering (MS-A)	35	21	-14
27	EBI-MS-B	Biomedical Engineering (MS-B)	4	37	33
28	EBI-PHD	Biomedical Engineering (PhD)	98	83	-15
29	ECI-BSE	Civil Engineering	48	60	12
30	ECI-MS-A	Civil Engineering (MS-A)	10	3	-7
31	ECI-MS-B	Civil Engineering (MS-B)	3	12	9
32	ECI-PHD	Civil Engineering (PhD)	12	17	5
33	ECE-BSE	Chemical Engineering	92	170	78
34	ECE-MS-A	Chemical Engineering (MS-A)	6	6	0
35	ECE-MS-B	Chemical Engineering (MS-B)	0	25	25
36	ECE-PHD	Chemical Engineering (PhD)	29	25	-4
37	POL-BSE	Polymer Science & Engineering	32	55	23
38	EMA-MS-A	Macromolecular Science (MS-A)	5	17	12
39	EMA-MS-B	Macromolecular Science (MS-B)	1	15	14
40	EMA-PHD	Macromolecular Science (PhD)	65	56	-9
41	EMS-BSE	Materials Science & Engineering	23	49	26
42	EMS-MS-A	Materials Sci & Engr (MS-A)	13	11	-2
43	EMS-MS-B	Materials Sci & Engr (MS-B)	1	6	5
44	EMS-PHD	Materials Sci & Engr (PhD)	26	18	-8
45	EPH-BSE	Engineering Physics	13	26	13
46	POM-ME	Practice Oriented Masters	9	47	38

2012	2017	Δ	%	
1096	1656	560	51%	Undegrad
206	228	22	11%	Total Plan A MS
23	193	170	739%	Total Plan B MS
400	351	-49	-12%	Total PhD
629	772	143	23%	

2017	EECS	%CSE
BS	548	33%
MS-A	126	55%
MS-B	16	8%
PhD	109	31%

331	CS (BS/BS)
217	Rest of Dept
60%	CS frac
66	CS (MS)
76	Rest of Dept
46%	CS frac
23	CS (PhD)
86	Rest of Dept
21%	CS frac

Updated numbers in Fall18

Fall18	EECS	% CSE
BS	560	34%
MS	141	38%
PHD	114	31%

374	CS (BS/BA)
186	Rest of EECS
67%	CS fraction

78	CS (MS)
63	Rest of EECS
55%	CS fraction

27	CS (Ph.D.)
87	Rest of EECS
24%	CS fraction

12	CS Faculty
24	Rest of EECS
33%	CS fraction

Degree	Undergrad	%	Masters	%	Doctoral	%
Aerospace Engineering	112	6.8%	9	2.5%	4	1.1%
Biomedical Engineering	336	20.5%	47	12.8%	93	25.0%
Chemical Engineering	169	10.3%	17	4.6%	28	7.5%
Civil Engineering	61	3.7%	7	1.9%	13	3.5%
Computer Engineering	26	1.6%	12	3.3%	17	4.6%
Computer Science	374	22.8%	78	21.3%	27	7.3%
Data Science and Analytics	2	0.1%	MEM 32	8.7%		
Electrical Engineering	141	8.6%	33	9.0%	48	12.9%
Engineering Physics	20	1.2%	POM 41	11.2%		
Materials Science and Engr	38	2.3%	14	3.8%	20	5.4%
Mechanical Engineering	303	18.5%	36	9.8%	48	12.9%
Polymer/ Macromolecular	41	2.5%	23	6.3%	52	14.0%
Systems and Control Engr	17	1.0%	18	4.9%	22	5.9%
TOTAL	**1,640**	100.0%	**367**	100.0%	**372**	100.0%

Student Faculty ratio in CS as of March 2019

Advisor	Grads	Undergrads	Minors	Total
Faculty A	4	50	0	54
B	4	14		18
C		19		19
D	10	20		30
E	3	77	67	147
F	17	50	2	69
G	19	55		74
H	8	43		51
I	5	0		5
J	24	51	15	90
K	5	0	7	12
L	14	57		71
Total	113	436	91	640
Ratio	9.4	36.3	7.6	53.3

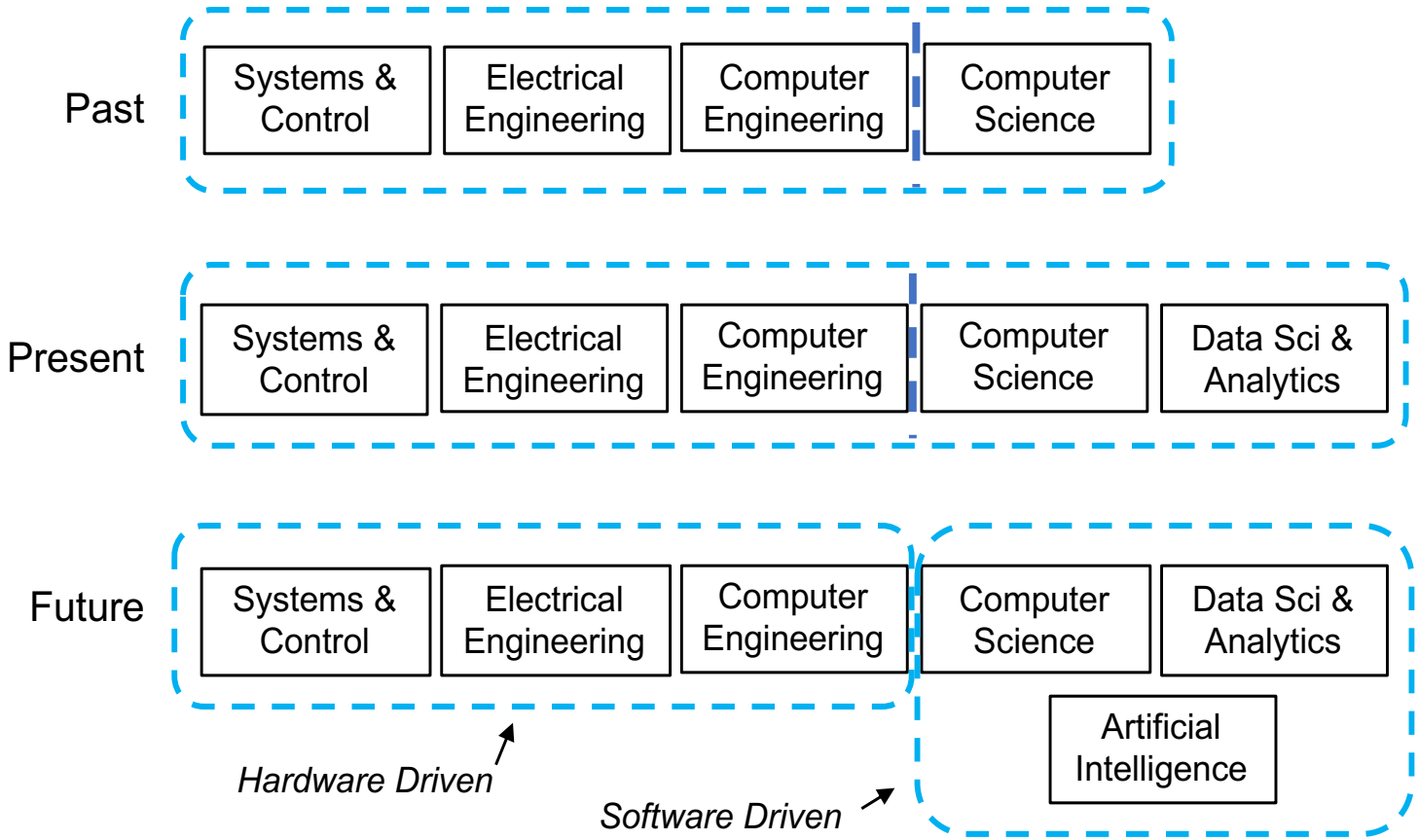
Does the current structure of the department serve existing students and faculty well?

What is the best structure for the future?

Both as a response to the current demand by students and, especially, as a response to clear opportunities in the future, the discussion of reorganization started in Fall17-Winter18.

The interim dean led a half-hour discussion at the Feb. 16, 2018 EECS full faculty meeting.

The idea vetted by the CSE Silicon Valley Think Tank in Mar. 2018 and the SVTT strongly endorsed restructuring.



March 2018

- During the same trip, a key alum, Kevin Kranzusch (vice-president of NVIDIA) committed a $5M gift to establish an endowed Chair for the chair of the new department.

- Clearly demonstrated the feasibility of combining development efforts, with internal strategic planning to build a structure oriented to seizing the new opportunities and serving a broad array of students and faculty.

Spring 2018

- Later in March 2018, the slides were presented to a full EECS faculty meeting
- Faculty were positive that the initiative was taken.
- Discussion points include: refinement of the two structures, new modalities of instruction, key advantage of CSE/CWRU being cross department collaboration, and the natural identity of the two groups as two departments.
- Apr.-May 2018: Internal departmental and divisional meetings were regularly held for additional discussions.

Aug.-Sept. 2018

- There was a single-topic open discussion meeting with the new dean.
- The dean offered his view on the transition: to formalize the two existing divisions within the department into two truly autonomous divisions. The arrangement would offer a positive external image (a large department) with internal flexibility in planning, curriculum development, and hiring. It was pointed out a change in the faculty handbook and/or bylaws is needed.

Oct.-Dec. 2018

- Discussions continue…
- At a department meeting (faculty and staff) in Dec., written feedbacks were collected regarding the restructuring (e.g., anxious, opportunities, preferred structure). The results were compiled and distributed to all EECS faculty and staff
- Also, the dean attended a portion of this meeting and again made his view as to the benefit of either the soft- or hard-split, but leaving the choice of which to the department.
- Both divisions had their own meetings and the two-department solution were endorsed by both divisions.

Jan.-Feb. 2019

- Meetings continue…
- At EECS meeting, on Jan. 11, 2019, a draft motion was discussed and was edited. No vote was taken. The dean joined the later portion of this meeting and was presented with an acclamation in favor of two departments and he was charged with vetting this proposal with the provost and president – which he did on the following Monday, Jan. 14.

Feb 15th Meeting

The dean announced the appointment of interim co-chairs of the EECS department – Pedram Mohseni and Jing Li. McGuffin-Cawley was relieved of his role as interim chair.

Following discussion there was a formal vote on the motion. The final tally was

25 Yes, 8 No, 2 abstentions, and 1 no response.

To ensure a smooth transition, task forces are formed

- Curriculum realignment (UG* & Grad* committees, Full faculty, Buchner, Ballou)
- Appointments of existing faculty (Mohseni*, Li*, Balakrishnan, Boughner)
- Staff (Hilliard*, Mohseni, Li, McGuffin-Cawley, Zorman)
- Space (Conger, Hilliard, Mohseni*, Li*, McGuffin-Cawley)
- Budget (Hilliard, Mohseni*, Li*, McGuffin-Cawley, Balakrishnan)
- Existing and growing multidisciplinary research (Zorman, Mohseni, Li, Barendt, McGuffin-Cawley, Loparo*)

Task forces

- Aligning the future (Mohseni*, Li*, Balakrishnan)
- Growth plans for each department (Mohseni*, Li*, Balakrishnan)
- Development of partnerships and collaborations (Mohseni, Li, Balakrishnan, McGuffin-Cawley)
- Tenure and Promotion during transition (Balakrishnan)
- Messaging (Balakrishnan, Mohseni, Li, Coolick*)

Mar. 2019 – present:

- Meetings continue…
- The draft of delineating the courses by a joint undergrad and grad committee was created and made available to all Faculty online.
- Faculty affiliations have been drafted based on the existing divisional structure and faculty requests.
- The positive vote was reported to the CSE Executive committee and reviewed with UTech, per the CWRU Faculty Senate Approval Matrix. UTech endorsed the change.

Context

- Time of great interest and excitement in Computer and Data Sciences
  - Data plentiful and cheap to gather
  - Many recent advances in algorithms
  - Applications across engineering and well beyond
  - Exploding student interest at all levels

CASE SCHOOL
OF ENGINEERING
CASE WESTERN RESERVE
UNIVERSITY

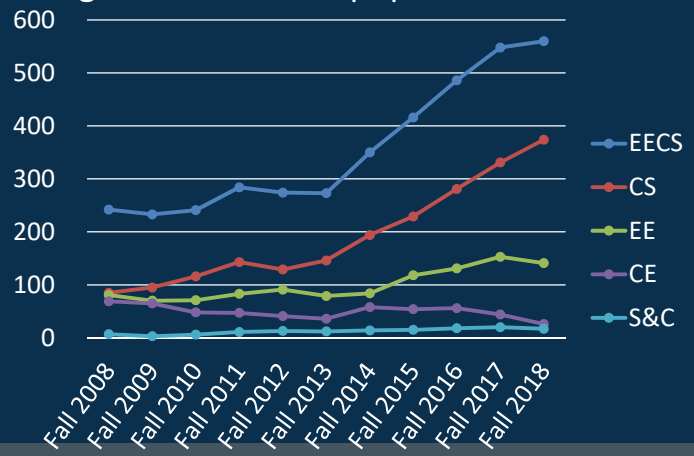
At CWRU engineering

- Computing and data part of EECS
- Not the only organizational model
- Other models are EE + CS; ECE + CS; EE + CSE; …

CASE SCHOOL OF ENGINEERING
CASE WESTERN RESERVE UNIVERSITY

Challenges with current model

- Lopsided undergraduate student population and interest



CASE SCHOOL OF ENGINEERING
CASE WESTERN RESERVE UNIVERSITY

Challenges with current model

- Research allocation and recruiting difficult
- Reduced visibility for CDS, reduced possibilities for collaboration

CASE SCHOOL OF ENGINEERING
CASE WESTERN RESERVE UNIVERSITY

New organizational model

Department of Electrical Engineering and Computer Science

Department of Electrical, Computer, and Systems Engineering

Department of Computer and Data Sciences

CASE SCHOOL OF ENGINEERING
CASE WESTERN RESERVE UNIVERSITY

New model mirrors UG degree offerings

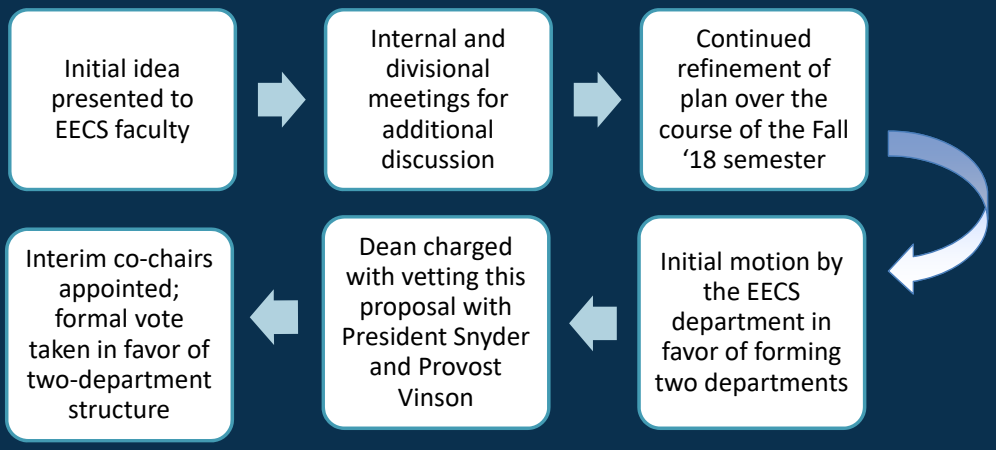
ELECTRICAL ENGINEERING AND COMPUTER SCIENCE				
Systems & Control	Electrical Eng	Computer Eng	Computer Science	Data Science and Analytics

ELECTRICAL, COMPUTER, AND SYSTEMS ENGINEERING (ECSE)		
Systems & Control	Electrical Eng	Computer Eng

COMPUTER AND DATA SCIENCES (CDS)	
Computer Science	Data Science and Analytics

CASE SCHOOL OF ENGINEERING
CASE WESTERN RESERVE UNIVERSITY

Process



Vote counts

- EECS
  - Yes: 25 No: 8 Abstain: 2
  - Issues raised: Process questions, Data sciences (“We do data sciences too!”)
  - Steps taken to address process questions (“many subcommittees, open membership”)
- CSE
  - Yes: 57 No: 11 Abstain: 3
  - No issues raised

Issues being addressed

- Curriculum realignment
- Appointments of existing faculty
- Tenure and promotion during transition
- Staff
- Space
- Budget
- Messaging

Longer-term planning

- Growth plans for each department
- Development of transdisciplinary partnerships and collaborations
- Existing and emerging multidisciplinary research