

The IEEE Fellow Program A "Chair's" Perspective

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*Empowering Members
to Create the Future*

IEEE Sections Congress 2011

IEEE Fellow Process – Issues from the Chair’s Perspective

- Address two perceptions
 - The IEEE Fellow process disadvantages the “Practitioner” over other nomination categories
 - The IEEE Fellow process does not adequately recognize industrial contributions
- Increase high quality IEEE Fellow nominations that better reflect the general population of the IEEE membership
- Emphasize understanding of the four categories of IEEE Fellow nomination
 - Practitioner
 - Educator
 - Technical Leader
 - Research Engineer / Scientist
- Communicate the IEEE Fellow process to **Chapters**, **Sections**, Societies, and IEEE Boards

Outline

- The Process
 - The Nomination Form
 - The Society Evaluation
 - The Fellow Committee Evaluation

- IEEE Fellow Categories
 - Practitioner
 - Educator
 - Technical Leader
 - Engineer / Scientist

- Needs
 - Practitioner Representation
 - More High Quality Nominations
 - Increased Industrial Representation

- A Goal: Communicate the IEEE Fellow Process to IEEE Entities

The Fellow Committee – Volunteers and Staff

- The IEEE Fellow Committee
 - Chair – Robert Fontana, Research Scientist, IBM Systems Technology Group
 - Vice Chair – Bruce Hajek, Professor, University of Illinois
 - 50 Members or Judges (all IEEE Fellows)

- IEEE Fellow Staff
 - Cecilia Jankowski, Managing Director, Membership and Geographic Activities
 - Rosann Marosy, Manager IEEE Fellow Activities
 - Donna Dukes, Administrator IEEE Fellow Activities

- Numbers for IEEE Fellow Class of 2012
 - IEEE voting membership: ~ 330,000
 - IEEE Fellow population: ~ 6000 (1 in 55 or 1.8%)
 - IEEE Fellow nominees/candidates: ~ 800 (0.24% of IEEE voting membership)
 - IEEE Fellow Class of 2012: ~ 330 (0.10% of IEEE voting membership)

- Notes
 - IEEE By-Laws specify the maximum size of an IEEE Fellow Class as 0.10% of the IEEE voting membership
 - IEEE Fellow candidates forming the IEEE Fellow Class of 2012 will represent 41% of the IEEE Fellow candidate pool

The Fellow Process -- Nomination

- Candidate
 - An eligible candidate is an IEEE member in good standing (i.e. dues is current), an IEEE Senior member, and not on the IEEE Board of Directors
- Nominator
 - An eligible nominator need not be a member of the IEEE
- Nomination Form
 - Description of Individual Contributions
 - Evidence of Technical Accomplishments
 - References from 5 to 8 IEEE Fellows ←
 - Endorsements (optional) from up to 3 supporting entities / individuals
 - Description of IEEE Activities, e.g. Awards, Offices Held, ...
 - Description of Non-IEEE Activities, e.g. Awards, Professional Society Memberships, Committee Memberships (Major Professional, Government, or International), Professional Engineers License

A Comment on References

- Reference statistics for Class of 2012 Candidate Pool
 - ~ 800 candidates
 - ~ 5500 submitted references
 - ~ 7 references per candidate (a minimum of 5 are required)

- Only IEEE Fellows may submit references for IEEE Fellow candidates
 - ~ 6000 IEEE Fellows
 - ~ 2950 IEEE Fellows (48%) participated in the reference submission process for the Class of 2012 Candidate Pool
 - ~ 1600 IEEE Fellows submitted 1 reference
 - ~ 670 IEEE Fellows submitted 2 references
 - ~ 300 IEEE Fellows submitted 3 references

- Observation
 - A critical “barrier” for submitting a nominee for IEEE Fellow is identifying at least 5 IEEE Fellows to serve as references

- A Need
 - Search Committees at the Regional, Section, Chapter and Society level to assist nominators in identifying IEEE Fellows to serve as references for IEEE Fellow nominees

The Fellow Process – Society Evaluation


- Candidates are first evaluated by the Society / Technical Council that best reflects the nominee's field of technical accomplishments (nominator designates the appropriate society / technical council)

- The Society / Technical Council provides the following candidate evaluation to the IEEE Fellow Committee
 - **A rank order**
 - **A narrative answer:** What is/are one or two of the accomplishments or contributions identified? (200 word limit)
 - **A narrative answer:** Characterize the evidence provided in support of the specific accomplishments
 - **A narrative answer:** Describe the impact of the nominee's work
 - **An "absolute" candidate score**
 - Extraordinarily Qualified (90.0 – 100)
 - Highly Qualified (80.0 – 89.9)
 - Qualified (60.0 – 79.9)
 - Marginally Qualified (50.0 – 59.9)
 - Not Qualified (00.0 – 49.9)

The Fellow Process – IEEE Fellow Committee Evaluation

- Fellow Committee Judges are divided into 10 groups (5 members) and each group is randomly assigned, subject to conflict of interest checks, the same 10% of the candidate population, ~ 80 candidates

- Judges rate the candidates from 100 to 0 in four categories
 - Technical Accomplishments 40 points
 - Society Evaluation 25 points
 - References 15 points
 - IEEE and non IEEE Activities 10 points

- Some Observations
 - The “Society Evaluation” information from the Society Evaluating Committees carries the most impact for the Judge 
 - The Nominator descriptions of the candidate’s accomplishments and evidence of accomplishments are obviously important

- Final candidate selection is determined during a 2 day general meeting of the IEEE Fellow Committee.

The Fellow Process – IEEE Fellow Committee Process (continued)

■ Normalization

- Each Judge develops his/her own scoring strategy but the final scores are subsequently normalized to reflect a rank order weighting


Candidate	Judge 1 Score	Rank	Normalized Judge 1 Score	Judge 2 Score	Rank	Normalized Judge 2 Score
A	80	5	55	40	9	15
B	79	6	45	45	8	25
C	65	9	15	70	3	75
D	92	1	95	50	6	45
E	68	8	25	65	4	65
F	74	7	35	53	5	55
G	83	4	65	35	10	05
H	84	3	75	71	2	85
I	90	2	85	72	1	95
J	66	10	05	51	7	35
Average	78.1		50	55.2		50

IEEE Fellow Nomination Categories

- **Research Engineer / Scientist** (70% of the nomination pool)
 - Contributions take the form of inventions, discoveries or advances in the state of the art. Equally likely to be a professor in **academia** or an engineer in **industry**.
 - Typical profile: Sustained technical contributions, over a 15 year period, which are documented by significant (quality and quantity) publications or patents

- **Educator** (10% of the nomination pool)
 - Contributions take the form of unique and innovative curricula / courses, support to engineering education as an administrator, or authorship of a pioneering text
 - Typical profile: Technical contributions in early career followed by transition to engineering education and positions in **university** administration

- **Technical Leader** (10% of the nomination pool)
 - Contributions take the form of engineering application or scientific accomplishments from leading a managerial, team, or company-wide effort
 - Typical profile: Technical contributions in early career then transition to engineering management positions in **industry**. Minimal publications or patents

- **Practitioner** (10% of the nomination pool) 
 - Contributions take the form of product or standards development, advancement in systems, infrastructure activity or manufacturing from the nominee's personal effort.
 - Typical profile: An engineer in **industry** and not in management, with ~ 15 years of experience. Accomplishments are in a product or service or standard that are used pervasively within the engineering community. Minimal publications or patents.

Practitioner Category for IEEE Fellow

- Success for the “Practitioner” nominee at the IEEE Fellow Committee
 - The Fellow Committee members must have awareness of the “Practitioner” category
 - Nominator must convincingly address the accomplishments and evidence of the accomplishments of the nominee
 - References must provide convincing explanations of these accomplishments

- Success for the “Practitioner” nominee at the IEEE Society Fellow Evaluating Committee
 - The Society Evaluating Committee members must have awareness of the “Practitioner” category
 - Nominator must convincingly address the accomplishments and evidence of the accomplishments of the nominee

- Fellow Committee Initiatives in 2011
 - Presentation module on “Nominee Categories” given to all Chairs of the IEEE Society/Technical Council Fellow Evaluating Committees
 - Presentation module on “Nominee Categories” given to all Members of the IEEE Fellow Committee
 - Presentation module on “IEEE Fellow Process” to TAB, MGA by the Fellow Committee Chair

Successful Practitioner Profile – 3 Examples

- Quantified impact statement related to infrastructure and/or product
- Endorsements
- Very small number of IEEE publications

	Candidate A	Candidate B	Candidate C
Education	BS in 1965, Industry	MS in 1981, Industry	PhD in 1977, Industry
Society Score	91	88	95
Society Rank	5 of 14	6 of 18	3 of 14
Impact Statement	"Green" / "Infrastructure"	"Safety/Health"	"Company Savings"
Technical Evidence	-\$ impact quantified -3 IEEE papers -3 non IEEE papers	-\$ impact quantified -1 IEEE paper -6 non IEEE papers	-\$ impact quantified -3 internal papers -5 IEEE papers
IEEE Activities	-IEEE best paper -IEEE Society involvement	-IEEE best paper -Standards group	-30 referred IEEE papers
Non IEEE Activities	-Standards groups -Professional Eng	-Professional Eng -Internal company awards	-Service on national evaluation committees -Membership in major national society
Endorsements	3 strong inputs	3 strong inputs	2 strong inputs
References	-2 consultants -2 academic -1 industry	-2 consultants -1 industry executive -2 academic	-3 industry -1 consultant -2 academic

Industry vs. Academic Nominations

- The typical nomination pool consists of 60% academic nominees vs. 30% industrial nominees. (Government and Consultant disciplines account for the remaining 10% of the nomination pool)
- Independent of the 2:1 ratio of academic to industry nominations, the acceptance rate for both categories is identical ~ 38%.
- Why are there more academic nominations than industry nominations?
 - Academia has infrastructures that create nominations which ultimately enhance faculty careers and university prestige . Aside from a few large companies (IBM, HP, Intel, Lucent, ...) such an infrastructure does not exist within industry.
 - Fellow designation enhances an academics career (tenure, government funding)
 - Fellow designation does not comparably enhance an engineering career.

High Quality Nominations – A Best Practice Strategy

- The IEEE Magnetics Society established a Fellow Search Sub-Committee reporting to the IEEE Magnetics Society Awards Committee in 2007
 - Fellows elevated in 2007 1
 - Fellows elevated in 2010 7

- Activities
 - Identify and sponsor members of the IEEE Magnetics Society that are candidates for Senior Member Level (a key requirement for IEEE Fellow nomination eligibility)
 - Annually, identify 4 to 6 candidates appropriate for IEEE Fellow nomination
 - Assist in the nomination process – nominators and references
 - Publicity -- Plenary Session of the annual IEEE Magnetics Society International Magnetics Conference (800+ attendees) where the IEEE Fellow Program is described and where newly elected Fellows are acknowledged

- Suggestion – Develop comparable “Best Practice Fellow Nomination Strategies” at the Society, Region, Section, and Chapter levels of the IEEE

Summary

- “Practitioner” issues addressed by communications
 - To members of this Board
 - To Chairs of the Society Fellow Evaluating Committees
 - To Members of the IEEE Fellow Committee
 - Suggestion – Societies must understand the “practitioner” concept

- Industry Representation issues can only be solved by more high quality nominations from Industry.
 - Suggestion – Societies establish “search” committees to identify industrial candidates
 - Suggestion – Regions, Sections, and Chapters establish “search” committees to identify industrial candidates

- Successful candidates are characterized as having **well written nomination packets** (nominator and references).

- **Reality** -- The “Society Evaluation” information from the Society Evaluating Committees carries the most impact for the Judge



APPENDIX

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The Fellow Process -- Nomination

- Candidate
 - An eligible candidate is an IEEE members in good standing (i.e. dues is current), an IEEE senior member, and not on the IEEE Board of Directors

- Nominator
 - An eligible nominator need not be a member of the IEEE

- Nomination Form
 - **Individual Contributions:** Explain how the nominee's one or two most distinctive contributions have contributed to the advancement or application of engineering, science, and technology. Explain how these contributions of unusual distinction have had a lasting impact on society. Identify specific attributes of the nominee's contributions that qualify him/her for elevation to Fellow, and why the nominee ranks near the top of those in his/her discipline.

 - **Evidence of Technical Accomplishments:** List the three most important items of tangible and verifiable evidence of technical accomplishments identified as Technical Contributions, e.g. technical publications; technical reports and presentations; patents; development of products, applications and systems; and, application of facilities and services. In sentence form, state the engineering significance and lasting societal impact of each. List not more than 10 additional items, subdivided into distinct areas of contributions.

The Fellow Process – Nomination (continued)

- Nomination Form (continued)
 - **References -- 5 to 8 IEEE Fellows:** On the basis of your personal knowledge of the work of the candidate, indicate whether or not, in your judgment, the candidate meets the requirements for Fellow grade. What distinguishes his/her contributions from the norm. Explain from your perspective the impact on professional knowledge, widely used technologies, or industry processes, products, and services at least one outstanding contribution made by the candidate. How do candidates accomplishments compare with those other Fellows with whom you are familiar. Have the candidate's contributions made a significant difference to society, and how
 - **Endorsements -- optional, maximum of 3, no eligibility requirements:** Describe why the candidate's achievements are extraordinary and how they have had a significant impact on the profession or society
 - **IEEE Activities:** Awards, Offices Held, Committee Memberships
 - **Non-IEEE Activities:** Awards, Professional Society Memberships, Committee Memberships (Major Professional, Government, or International), Professional Engineers License

IEEE Fellow Nomination Categories

- Research Engineer / Scientist
 - Most represented nomination category (70%)
 - Contributions of a nominee take the form of inventions, discoveries or advances in the state of the art
 - Typical profile demonstrates sustained technical contributions over at least a 15 year period which are documented by significant (quality and quantity) publications or patents

- Educator
 - Small number (10%)
 - Contributions of a nominee take the form of unique and innovative curricula or courses, contributions to engineering education as an administrator, or authorship of a pioneering text in his/her field
 - Typical profile demonstrates technical contributions in early career followed by transition to engineering education and positions in university administration

- Technical Leader
 - Small number (10%)
 - Contributions of a nominee take the form of engineering application or scientific accomplishments resulted from a managerial, team, or company-wide effort that were lead by this nominee
 - Typical profile demonstrates technical contributions in early career followed by transition to engineering management positions in industry. Minimal documentation with publications or patents

IEEE Fellow Nomination Categories (continued)

- Practitioner
 - Small nomination population (10%) yet the majority of the IEEE membership could best be described as “practitioners”.
 - Category not well understood
 - Contributions could take the form of product development, advancement in systems, application or operation, project management or construction activity, process development, manufacturing innovation, codes or standards development, or other application of technology that was the direct result of the nominee's personal effort.
 - Typical profile is an industry engineer, not in management, with ~ 15 years of experience with accomplishments in a product or service or standard that is used pervasively within the engineering community. Documentation in the form of patents and or publications may be lacking.
 - Success in this nomination at the IEEE Fellow Committee level requires the nominator adequately addressing the accomplishments and evidence of the accomplishments of the nominee and the references for the nominee providing documentation of these accomplishments
 - Success in the nomination at the IEEE Society Fellow Evaluating Committee requires that the evaluating committee understand the “Practitioner” category and that the nominator adequately addressing the accomplishments and evidence of the accomplishments of the nominee

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