People. Discovery. Innovation.
Les gens. La découverte. L'innovation.

NSERC CRSNG

Natural Sciences and Engineering Research Council of Canada

Conseil de recherches en sciences naturelles et en génie du Canada
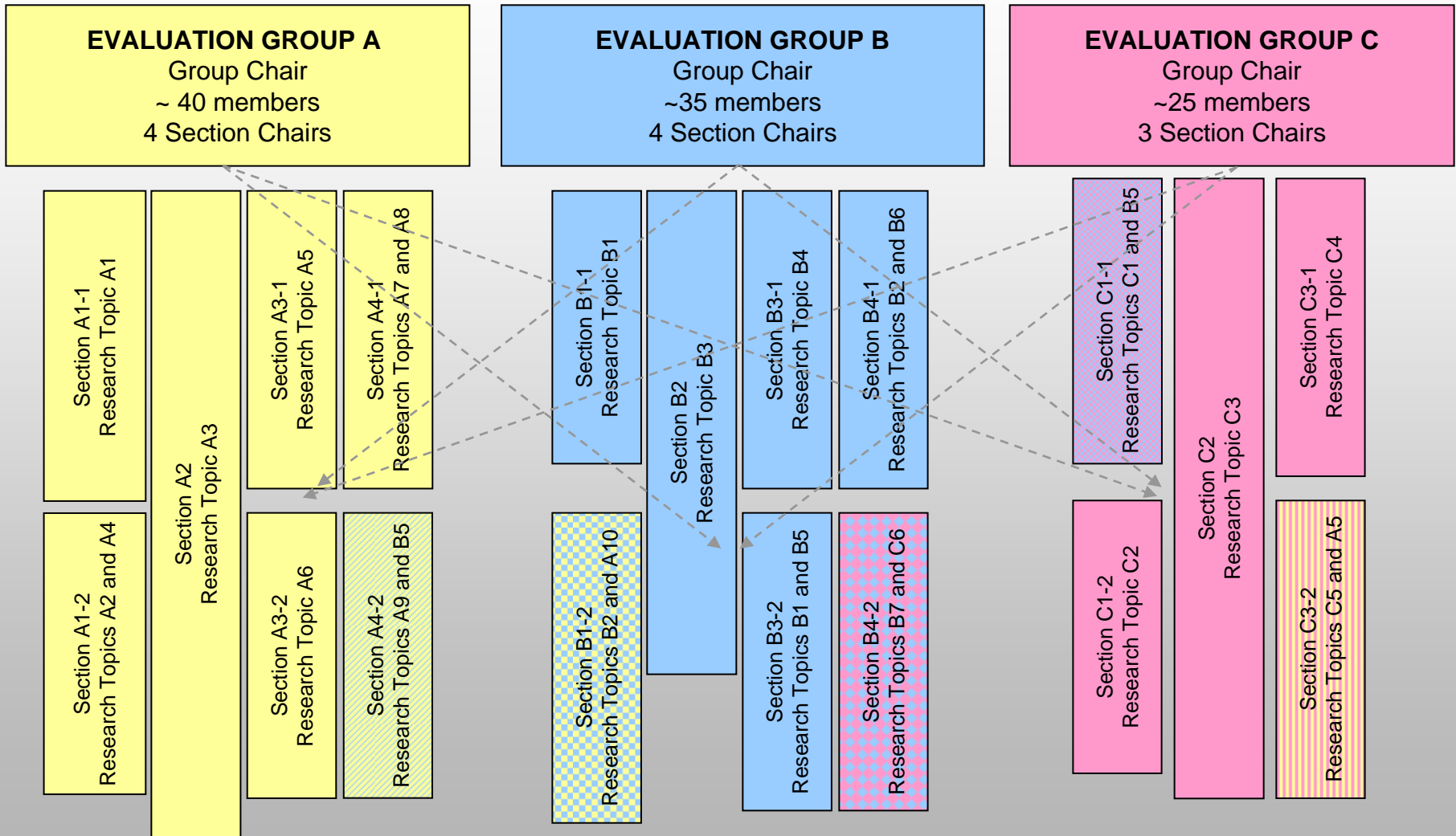
Canada

Session's Outline

- General Context of 2011 Competition

- Computer Science Evaluation Group

- Overview of the Discovery Grants Competition Process

- Discovery Grants Competition Results

- Discovery Accelerator Supplements Competition

- Research Tools and Instruments Competition

2011 Discovery Grants Competition
General Context

- Second year of implementation of Conference model, as recommended by the Grant Selection Committee Structure Review

  - 12 Evaluation Groups

  - Flexible composition of Sections to ensure comprehensive review of applications

  - Members from different Evaluation Groups joined various Sections to review applications covering topics that cross the traditional boundaries between disciplines

Conference Model

EVALUATION GROUP A
Group Chair
~ 40 members
4 Section Chairs

EVALUATION GROUP B
Group Chair
~35 members
4 Section Chairs

EVALUATION GROUP C
Group Chair
~25 members
3 Section Chairs

Section A1-1
Research Topic A1

Section A1-2
Research Topics A2 and A4

Section A2
Research Topic A3

Section A3-1
Research Topic A5

Section A3-2
Research Topic A6

Section A4-1
Research Topics A7 and A8

Section A4-2
Research Topics A9 and B5

Section B1-1
Research Topic B1

Section B1-2
Research Topics B2 and A10

Section B2
Research Topic B3

Section B3-1
Research Topic B4

Section B3-2
Research Topics B1 and B5

Section B4-1
Research Topics B2 and B6

Section B4-2
Research Topics B7 and C6

Section C1-1
Research Topics C1 and B5

Section C1-2
Research Topic C2

Section C2
Research Topic C3

Section C3-1
Research Topic C4

Section C3-2
Research Topics C5 and A5

List of Evaluation Groups

- Genes, Cells and Molecules (1501)
- Biological Systems and Functions (1502)
- Evolution and Ecology (1503)
- Chemistry (1504)
- Physics (1505)
- Geosciences (1506)
- Computer Science (1507)
- Mathematics and Statistics (1508)
- Civil, Industrial and Systems Engineering (1509)
- Electrical and Computer Engineering (1510)
- Materials and Chemical Engineering (1511)
- Mechanical Engineering (1512)

2011 Discovery Grants Competition
General Context

- Two-stage review process as recommended by the International Review of the Discovery Grants Program

  - In the first step, the Evaluation Group assesses and rates the merit of each application based on three selection criteria, consistently using the evaluation indicators

  - The ratings lead to the grouping of applications into categories ("bins") of comparable overall merit

  - In the second step, the Executive Committee balances the amounts to be awarded to the merit bins in relation to the number of applicants funded. This is done at the global bin level and no specific application is singled out or discussed

2011 Discovery Grants Competition
General Context

- Evaluation Groups do not make direct funding recommendations for any individual application

- Process separates the merit assessment from the funding recommendation

- Merit assessment of applications decoupled from the previous grant held by applicants

- Applicants, new and established, with superior contributions are recognized and awarded funding at appropriate level

- A more dynamic system

Computer Science Evaluation Group (1507)
2011 Membership

- Evangelos Milios (Group Chair)
  Dalhousie University

- Mourad Debbabi (Section Chair)
  Concordia University

- Stavros Konstantinidis (Section Chair)
  St. Mary's University

- Nur Zincir-Heywood (Section Chair)
  Dalhousie University of Saskatchewan

- Srinivas Bangalore
  AT&T Labs Research

- Robert Bridson
  University of British Columbia

- Xiao-Chuan Cai
  University of Colorado

- Brahim Chaib-draa
  Université Laval

- Rama Chellappa
  University of Maryland

- Laurence Cuthbert
  University of London

- Juergen Dingel
  Queen's University

- Martin Ester
  Simon Fraser University

- Amy Felty
  University of Ottawa

- Russell Greiner
- University of Alberta

Computer Science Evaluation Group (1507)
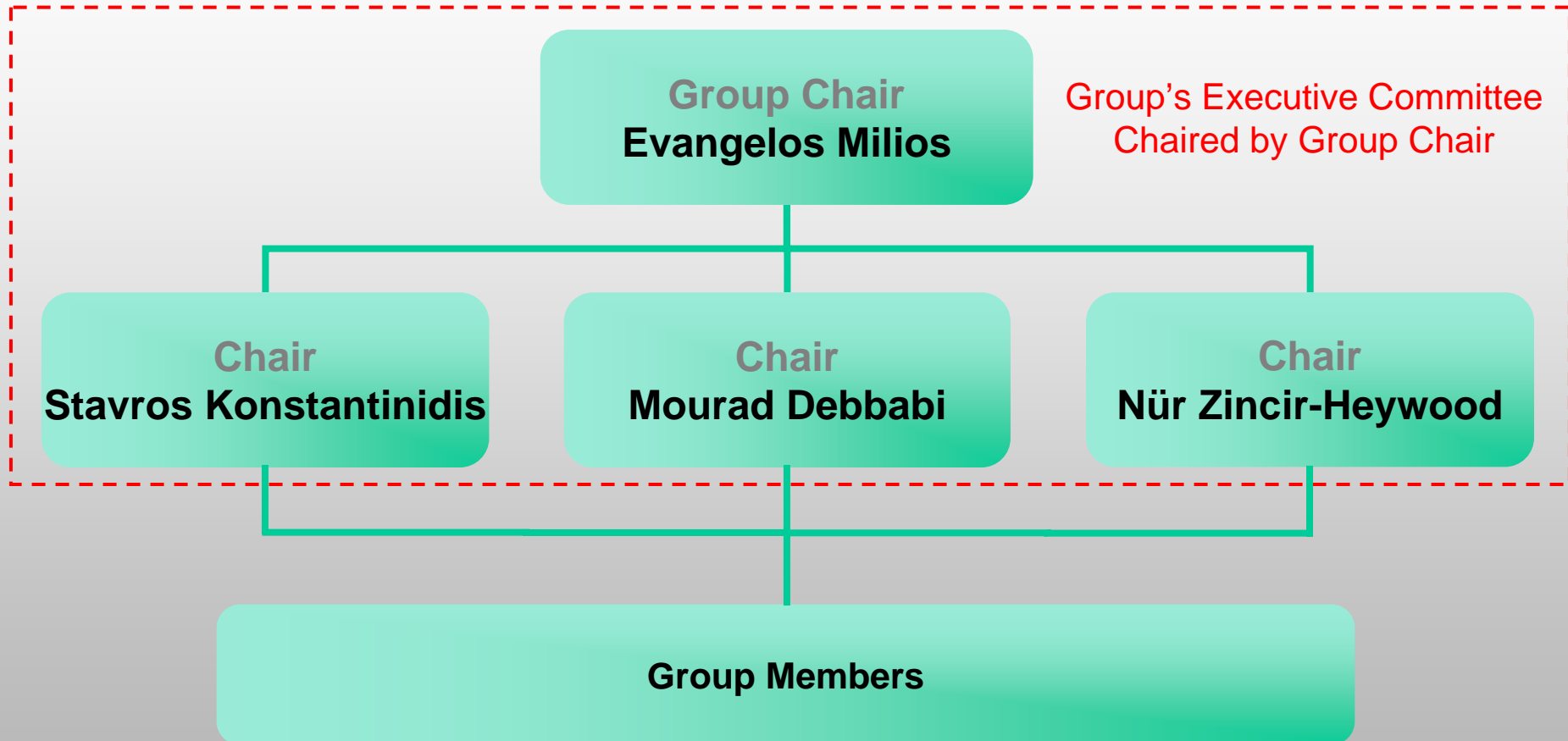## 2011 Membership

- Mike Hinchey
  University of Limerick

- Xiangji (Jimmy) Huang
  York University

- Ahmed Kamal
  Iowa State University

- Arthur Kordon
  Dow Chemical Company

- James Lester
  North Carolina State University

- Luigi Logrippo
  Université de Québec en Outaouais

- George Mihaila
  Google, Inc.

- Torsten Möller
  Simon Fraser University

- Parvin Mousavi
  Queen's University

- Mario Nascimento
  University of Alberta

- Dorina Petriu
  Carleton University

- Toniann Pitassi
  University of Toronto

- Makan Pourzandi
  Ericsson Canada Inc.

- Doina Precup
  McGill University

Computer Science Evaluation Group (1507)
2011 Membership

- Przemyslaw Prusinkiewicz
  Calgary University

- mc schraefel
  University of Southhampton

- Jack Snoeyink
  University of North Carolina

- Alain Tapp
  Université de Montréal

- Hans Vangheluwe
  McGill University

- Shengrui Wang
  Université de Sherbrooke

- Kaizhong Zhang
  University of Western Ontario

Organization of Evaluation Group

Group Chair
Evangelos Milios

Group's Executive Committee
Chaired by Group Chair

Chair
Stavros Konstantinidis

Chair
Mourad Debbabi

Chair
Nür Zincir-Heywood

Group Members

Research Topics and Sections in EG 1507

SECTION - COMPUTER APPLICATIONS

- CS 01 - Web-enabled Applications & Services
- CS 08 - Information Systems
- CS 10 - Data Management
- CS 16 - Web-based Systems

SECTION - COMPUTER METHODOLOGIES

- CS 02 - User Adaptive Systems
- CS 17 - Human Computer Interaction
- CS 18 - Artificial Intelligence
- CS 19 - Computer Graphics & Visualization
- CS 21 - Computer Vision & Robotics

SECTION - COMPUTER SYSTEMS

- CS 06 - Computer Networks
- CS 09 - Security & Privacy
- CS 11 - Programming Languages
- CS 12 - Software Engineering
- CS 13 - Formal Methods
- CS 14 - Computing Systems
- CS 15 - Parallel and Distributed Computing

SECTION - THEORETICAL COMPUTER SCIENCE

- CS 03 - Mathematical Computing
- CS 04 - Theory of Computing
- CS 05 - Algorithms and Data Structures
- CS 07 - Quantum Computing
- CS 20 - Bioinformatics & Bioinspired - Computing

Major Pre-Competition Activities
2011 Discovery Grants Competition

- **August**
  - Applicants submitted Form 180, *Notification of Intent to Apply*
  - Orientation material provided to members

- **September - October**
  - Members provided comfort ratings to review each application
  - Preliminary assignment of applications to Sections was made
  - Chairs held teleconferences:
    - To confirm assignment of applications to Sections
    - To assess need to seek/offer additional expertise from/to other EGs for each application and discuss possible transfers to/from other EGs
  - Chairs identified 1st internal reviewer for each application
  - First internal reviewers selected 5 external referees for each application
  - NSERC contacted external referees (all 5 for each application) to probe their willingness to participate and followed-up with first internal reviewers if additional names were needed

Major Pre-Competition Activities
2011 Discovery Grants Competition

- **November / December**

  - Chairs' meeting in Ottawa (November 20, 2010) – Based on the full proposals:

    - ➢ Determined the most appropriate Evaluation Group to take the lead for the review of a certain number of applications
    - ➢ Finalized the Section assignment of a few applications within the Computer Science Evaluation Group

  - New members' orientation meeting in Ottawa (November 21, 2010)

  - Assignment of 2nd internal reviewer and additional 3 readers (to add to 1st internal reviewer) for each application – 5 internal reviewers in total

  - Establishment of competition schedule

  - Applications and assignments provided to members
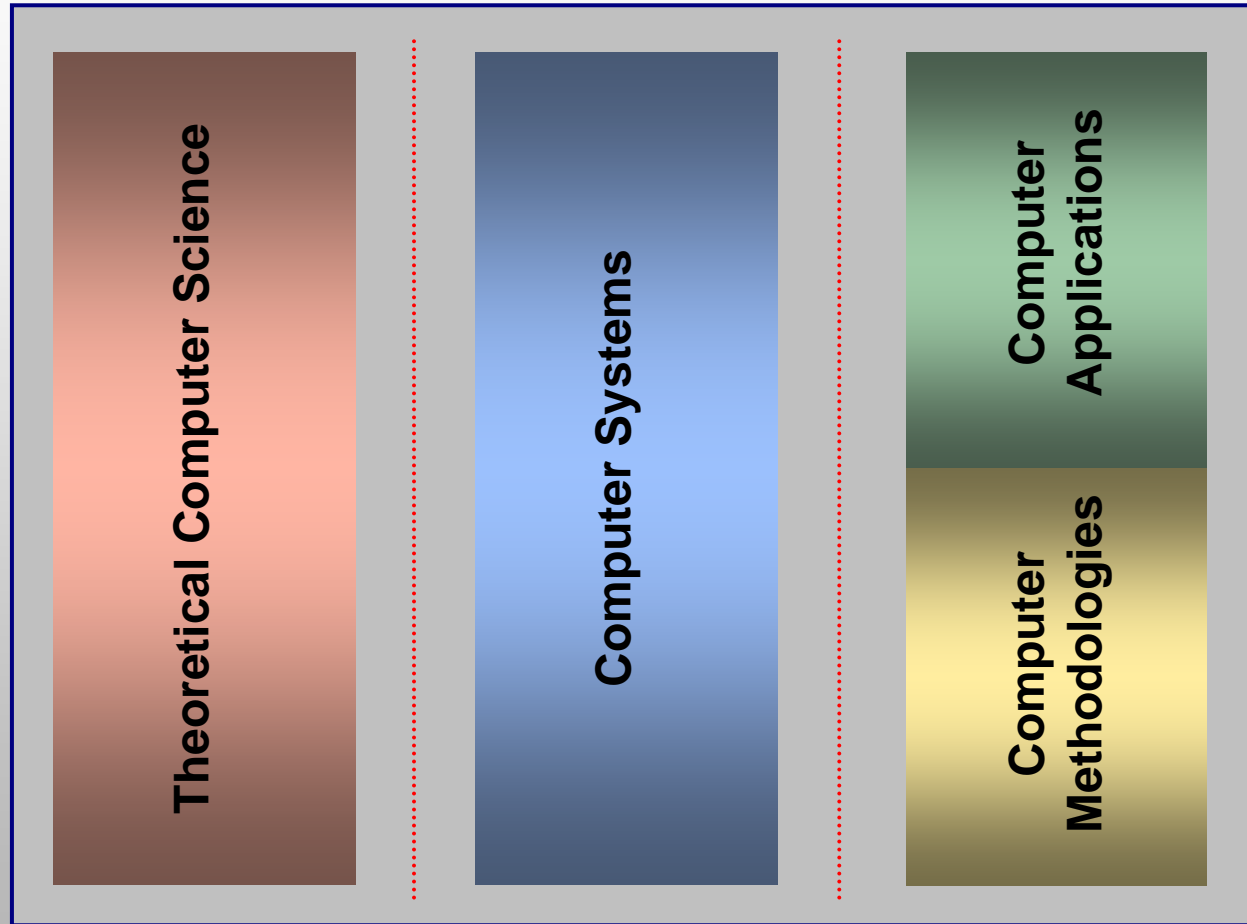
Organization of Competition Week
2011 Discovery Grants Competition

- Sunday, Jan. 30th to Thursday, Feb. 3rd

  - Orientation

  - Review of Discovery Grants applications

  - Policy meeting

- Friday, Feb. 4th

  - Executive Committee meeting

Organization of Competition Week
2011 Discovery Grants Competition

Conference model with parallel streams

Theoretical Computer Science

Computer Systems

Computer Applications

Computer Methodologies

Schematic representation of the Streams organization

Overall Statistics (All EGs)
2011 Discovery Grants Competition

	Success rate (%)	Average Grant
Early-Career researchers (ECR)	54	$22,481
Established researcher (ER) applicants who held a grant	74	$35,045
Applicant not previously holding a grant[1]	33	$28,082

1. Includes returning unfunded applicants and experienced researchers submitting a first application

- 3,482 applications in total (higher than in 2009 and 2010)

- Going into the competition, there were 1,863 renewal applicants who held grants of, on average, $30,999; after the competition, there are 2,002 funded researchers at an average grant level of $32,186

Change in Grant Level for all Est. Researchers
2011 Discovery Grants Competition

All Eval. Groups
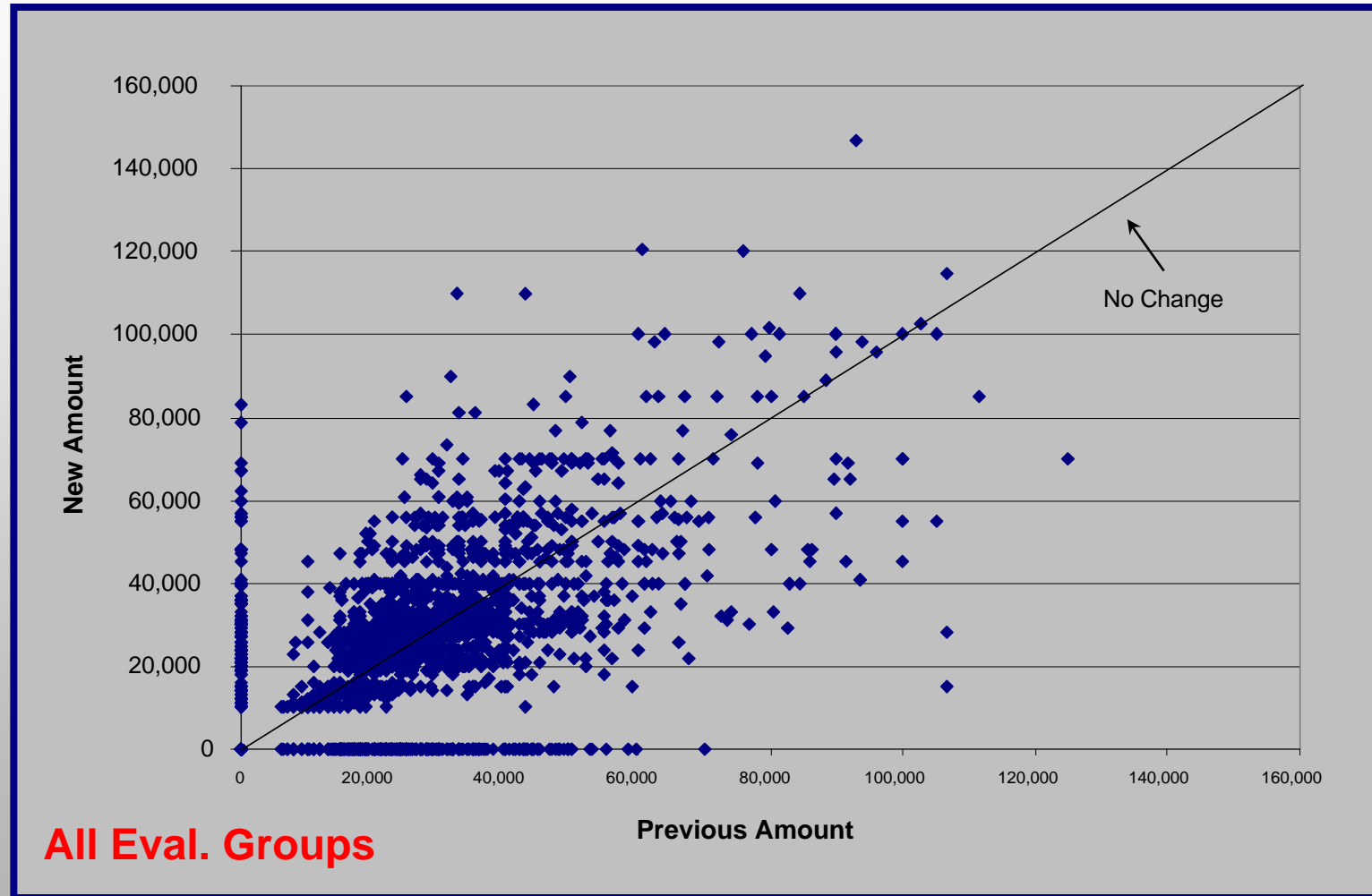
Change in Grant Level for all 1st Renewals
2011 Discovery Grants Competition
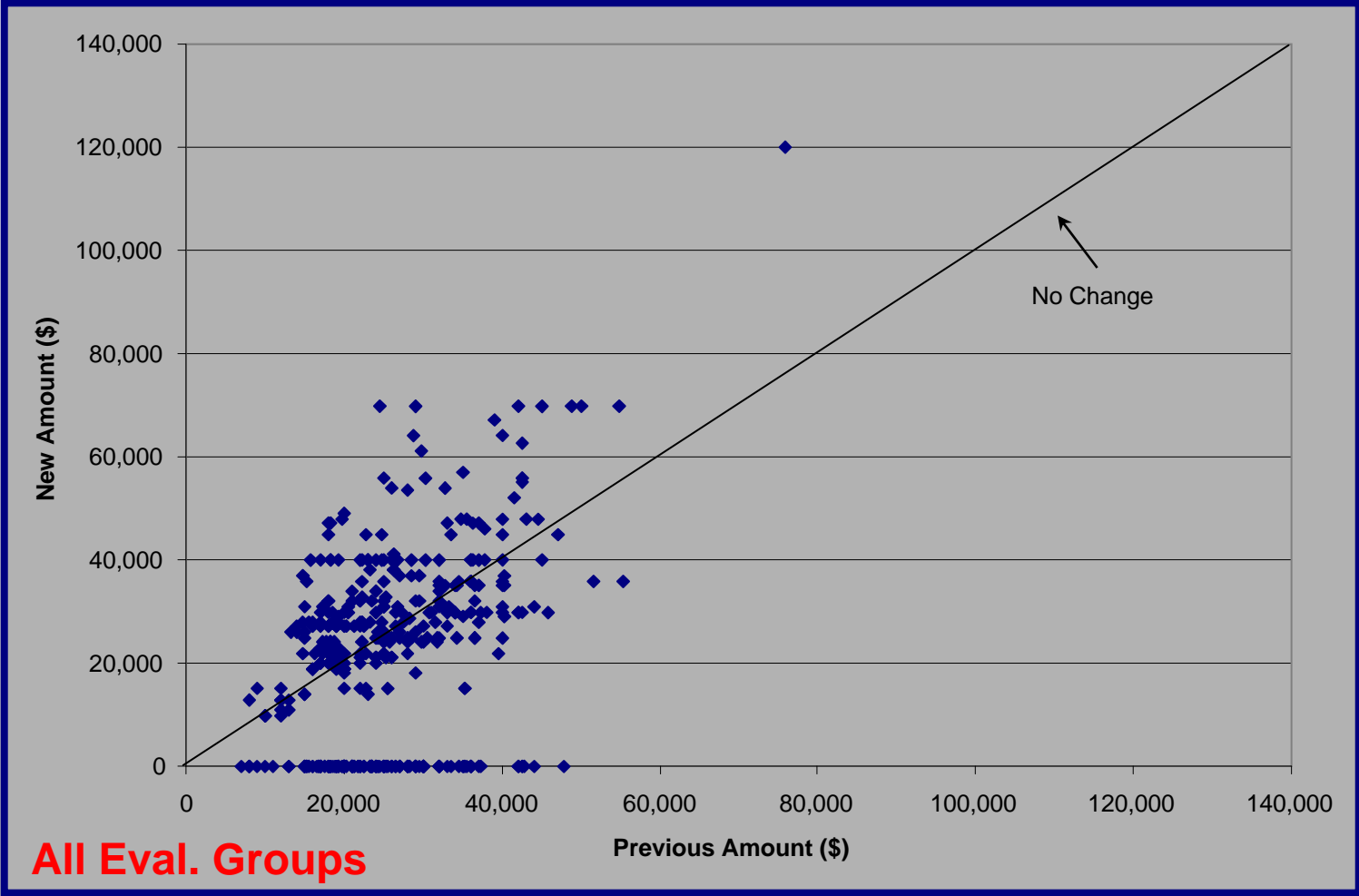
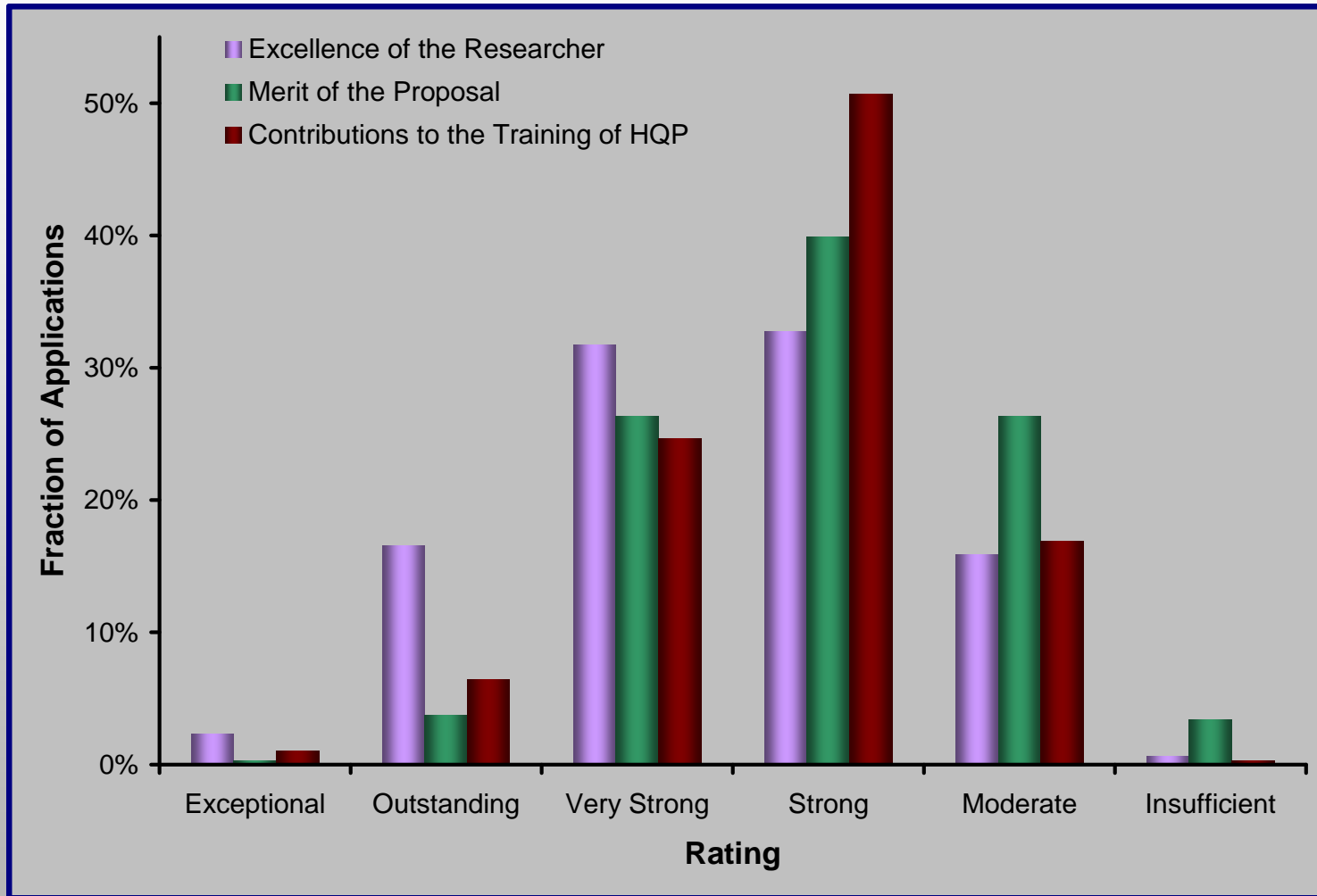# Results and Statistics – Computer Science
2011 Discovery Grants Competition

| Discovery Grants	Established Researchers Renewals	Other Established Researchers	Early-Career Researchers
Number of Applications	168	95	33
Number of Awards	141	34	27
Success Rate	84%	36%	82%
Average Grant	$28,316	$17,235	$20,296
Total Budget	$3,992,543	$586,000	$548,000

Overall S/R: 68%

Results and Statistics – Computer Science
2011 Discovery Grants Competition

Results and Statistics – Computer Science
2011 Discovery Grants Competition
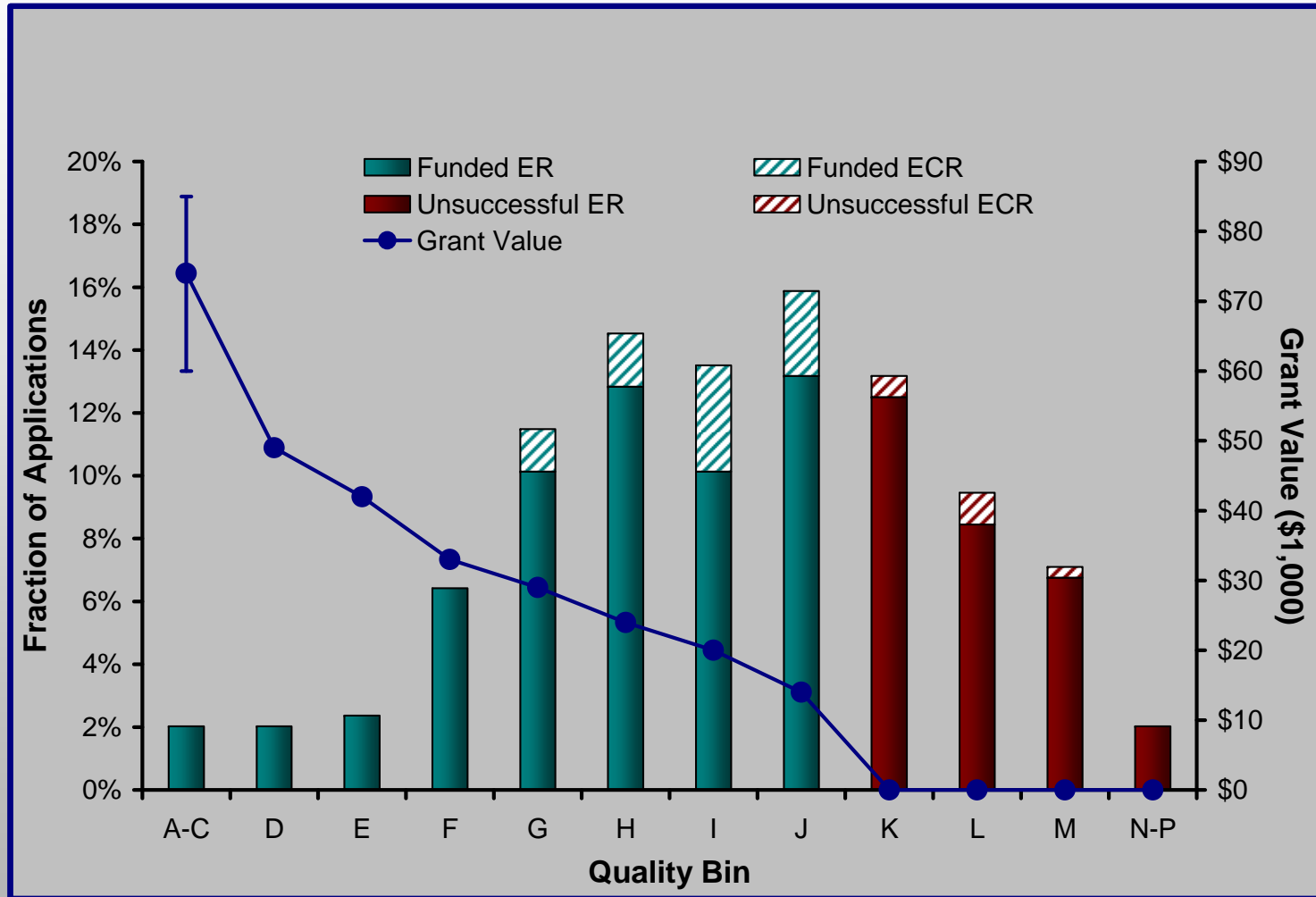
Results and Statistics – Computer Science
2011 Discovery Grants Competition

- Always a difficult task of balancing the amounts to be awarded (i.e., assigned to merit bins) in relation to the number of applicants funded

- For Computer Science, applicants supported down to merit category J (equivalent to Strong / Strong / Strong combination)

- All applicants in category J were supported

Discovery Accelerator Supplements
2011 Competition

- Intended to provide substantial and timely resources to outstanding researchers who have a well-established research program, and who show strong potential to become international leaders.

- Each EG directly recommends its candidates, in agreement with a set quota.

- Quota of thirteen (13) supplements for Computer Science EG

Discovery Accelerator Supplements
2011 Competition

- During Discovery Grants deliberations, applicants were put forward and briefly discussed by members

- After the competition, the Executive Committee reviewed the Discovery Grants review material (applications, contributions, external referee reports) of all DAS nominees

- The Executive Committee reviewed and discuss all nominees against the DAS program objective and criteria

- A merit-based ranked list was generated at the end of this review

Research Tools & Instruments
2011 Competition

- Review carried out by an *ad hoc* review Committee

  - Joel Martin (Chair)
    National Research Council of Canada

  - Selim Akl
    Queen's University

  - Saul Greenberg
    University of Calgary

  - Holger Hoos
    University of British Columbia

  - Ahmed Karmouch
    University of Ottawa

  - Guy Lapalme
    Université de Montréal

  - Ze-Nian Li
    Simon Fraser University

  - Srinivas Sampalli
    Dalhousie University

  - Eleni Stroulia
    University of Alberta

  - Sofiene Tahar
    Concordia University

  - Melanie Tory
    University of Victoria

  - Marcelo Wanderley
    McGill University

  - Ramin Zabih
    Cornell University

  - Calisto Zuzarte
    IBM, Markham, Ontario

Evangelos Milios, *ex officio* (observer)

Research Tools & Instruments
2011 Competition

- One Lead reviewer and four Readers assigned to each application

- Members submitted ratings in a forced flat distribution in advance of the deliberations

- Scores were compiled; all applications that fell in the middle tier of the rankings, in addition to any flags, were discussed during the deliberations

- Deliberations held via teleconference on January 24th

- Following deliberations, members could revise any of their individual scores, while a forced flat distribution had to be maintained by each member

Research Tools & Instruments
2011 Competition Results

Research Tools & Instruments (Category 1)	EG 1507
Number of Applications	49
Number of Awards	11
Success Rate	22.4%
Total Budget (Awarded)	$744,853
Funding Rate	22.1%

Reminder: _The budget of the RTI program comes mostly from year-end funds_

Other Information from NSERC

NSERC Frontiers

- Initiative includes two elements:
  - [Discovery Frontiers](), focused on discovery research
  - [Innovation Frontiers](), focused on research partnerships with industry

- All funded projects will include an international partnership component that taps into global expertise

- Discovery Frontiers' first call for proposals (2010): Northern Earth System Research - $4 million over a four-year period

- Theme for next call for proposals will be determined in summer 2011

Communication Tools for the Discovery Grants Program

- New ways to communicate program information and details about the peer review process to prospective applicants

- Two videos are currently finalized and will be available in the Professors section of NSERC's Web site by the end of May 2011
  - Tips on applying for an NSERC Discovery Grant
  - Demystifying the review process for NSERC Discovery Grants

Description of HQP Training in Discovery Grant Applications

- **New!** Additional page* added to the section "Proposal" of Form 101 – to be used to address the criterion "Contributions to the training of Highly Qualified Personnel"

- Applicants are asked to describe their plans for the training of HQP in that page

- Instructions on how to complete Form 101 are being updated (available on NSERC's Web site as of August 5, 2011) – important that applicants consult instructions before preparing their proposals

* The number of additional pages is a function of the type of application – Individual (1), Team (2).

Budget Description in Discovery Grant Applications

- **New!** A maximum of two (2) pages can be used for the section "Budget Justification" in which applicants provide the explanation and justification for the budget items identified in the "Proposed Expenditures" page

- Instructions on how to complete Form 101 will be updated in this respect as well - important that applicants consult instructions before preparing their proposals