



*Pan-Pacific MIRAI*

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Pan-Pacific Manufacturing Research Institute

(Manufacturing Sustainability Initiative)



# Agenda

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- Introduction of attendees and guests
  
- Review of activities to date
  - Participation status
  - Website (<http://www.miraiinstitute.org>)
  - Current projects
  - Preparation of 1st MIRAI federal joint workshop on micro-fabrication
  
- Discussion on draft organization plan
  - Organization name
  - Structure of organization
  - Election of leadership
  - Registration of organization



# Agenda

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- Membership and funding issues
  - Membership model
  - Financial planning
  - Funding model
- Initial MIRAI project proposals
  - Inclusion of existing sample projects
  - Announcement of project proposals and guidelines
- Future needs
  - Development of educational tools (Education office)
  - Marketing and website



# Agenda

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- Specifics for next meeting
  - Participation commitment
  - Decision of meeting location and dates



# Overview of MIRAI

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Manufacturing Institute for Research on  
Advanced Initiatives



# Objectives

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MIRAI will serve to raise the importance of manufacturing, provide efficient research environment for manufacturing technology, and attract good engineers through various educational tools with following objectives;

- To create a framework for collaborative research and education on the substantial issue facing sustainable manufacturing.
- To explore future manufacturing agenda, setup initiatives leading manufacturing society, and establish manufacturing research projects on advanced topics.
- Future agenda for manufacturing
  - Sustainability
  - Energy
  - Environment protection
  - High mix/high volume
  - Multi-scale manufacturing (fusion)



# Topics

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- Topics of research could include:
  - environmentally conscious design and manufacturing,
  - sustainable systems of production,
  - clean energy and alternative energy sources for manufacturing,
  - product and process design for sustainability and environment.



# Expectations

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- Great impact on manufacturing community setting and leading global manufacturing agenda
- Offer reliable resources to manufacturing research focusing principles
- Provide tools to make process of manufacture sustainable
- Technology to impact society and improve standard of living



# Review of activities to date

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# Initial participants

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- The Institute created by this initiative will be comprised, initially, of a set of cooperating organizations from US, Japan, and Korea:
  - University of California at Berkeley (Laboratory for Manufacturing and Sustainability (LMAS), Prof. D. Dornfeld)
  - Keio University (Inasaki Lab and Aoyama Lab, Prof. I. Inasaki and Prof. T. Aoyama)
  - RIKEN (Dr. H. Ohmori)
  - KITECH (Dr. M. Han and Dr. K. Na)
  - KIMM (Dr. K. Whang)
  - NCRC at Pusan National University (Prof. H. Jeong)
  - LBNL (Dr. K. Robinson)
  - Mori Seiki (Dr. M. Mori and Dr. M. Fujishima)



# Proposed

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- US
  - UC-Davis (Prof. K. Yamazaki)
  - Machine Tool Technology Research Foundation (MTTRF)
- Brazil: University of Sao Paulo (Prof. J. Oliveira)
- Japan: Kobe University (Prof. T. Moriwaki)



# Potential

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- Canada: UBC, Prof. Altintas
- Mexico: Monterrey Institute of Technology, Prof. Rodriguez
- Japan:
  - AIST
  - Mitsubishi Materials Kobe Tools Corporation
- Korea: SNU
- Taiwan, China, Singapore, Australia, etc.



# MIRAI website

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- <http://www.miraiinstitute.org>



# 1<sup>st</sup> MIRAI federal joint workshop

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- 1<sup>st</sup> MIRAI Federal Joint Workshop on Micro-Fabrication (7<sup>th</sup> Joint Symposium on Micro-Fabrication)
- When: June 28-29, 2007
- Where: LBNL, Berkeley, CA, USA



# Draft organization plan

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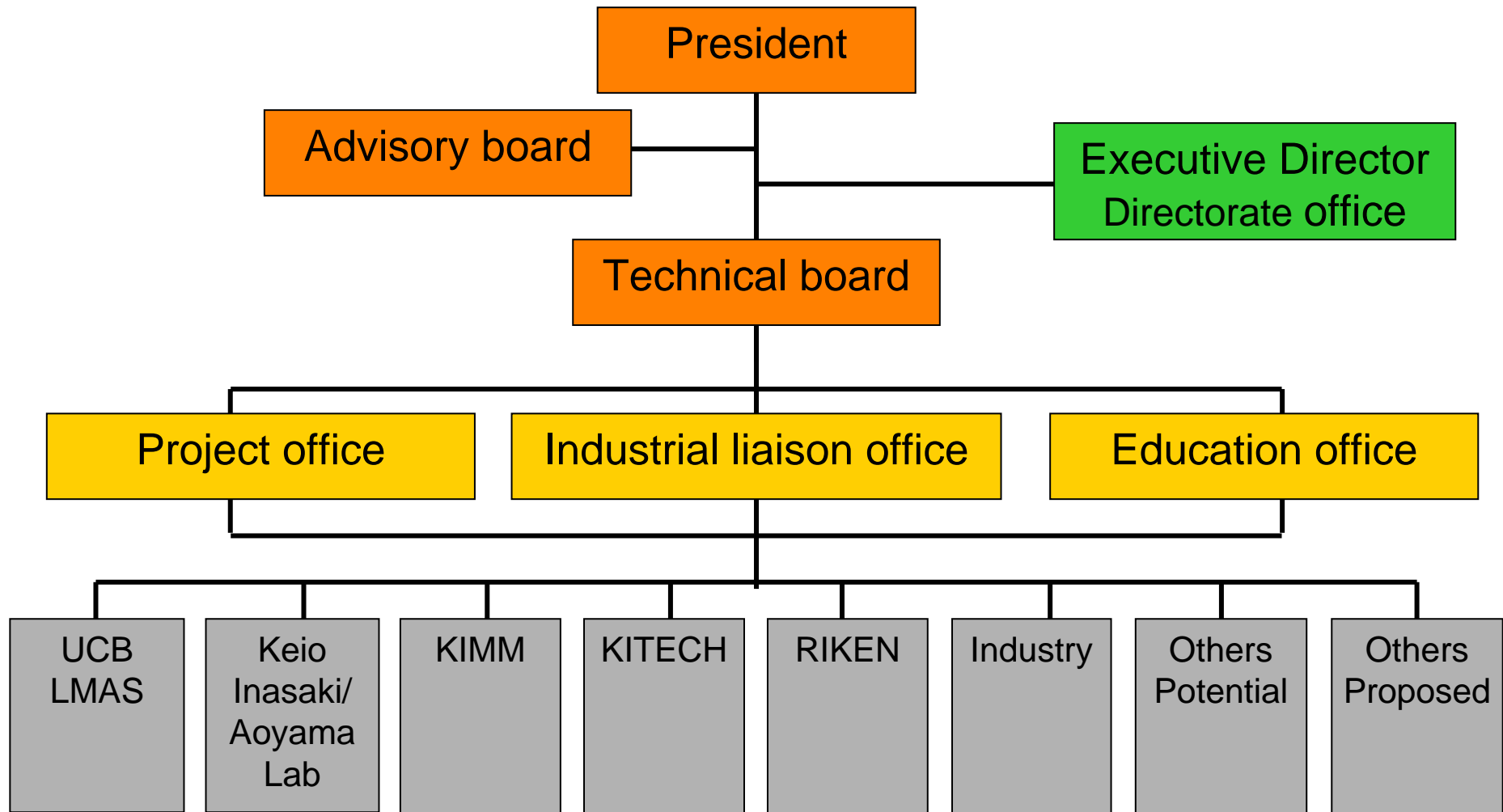


# Organization name

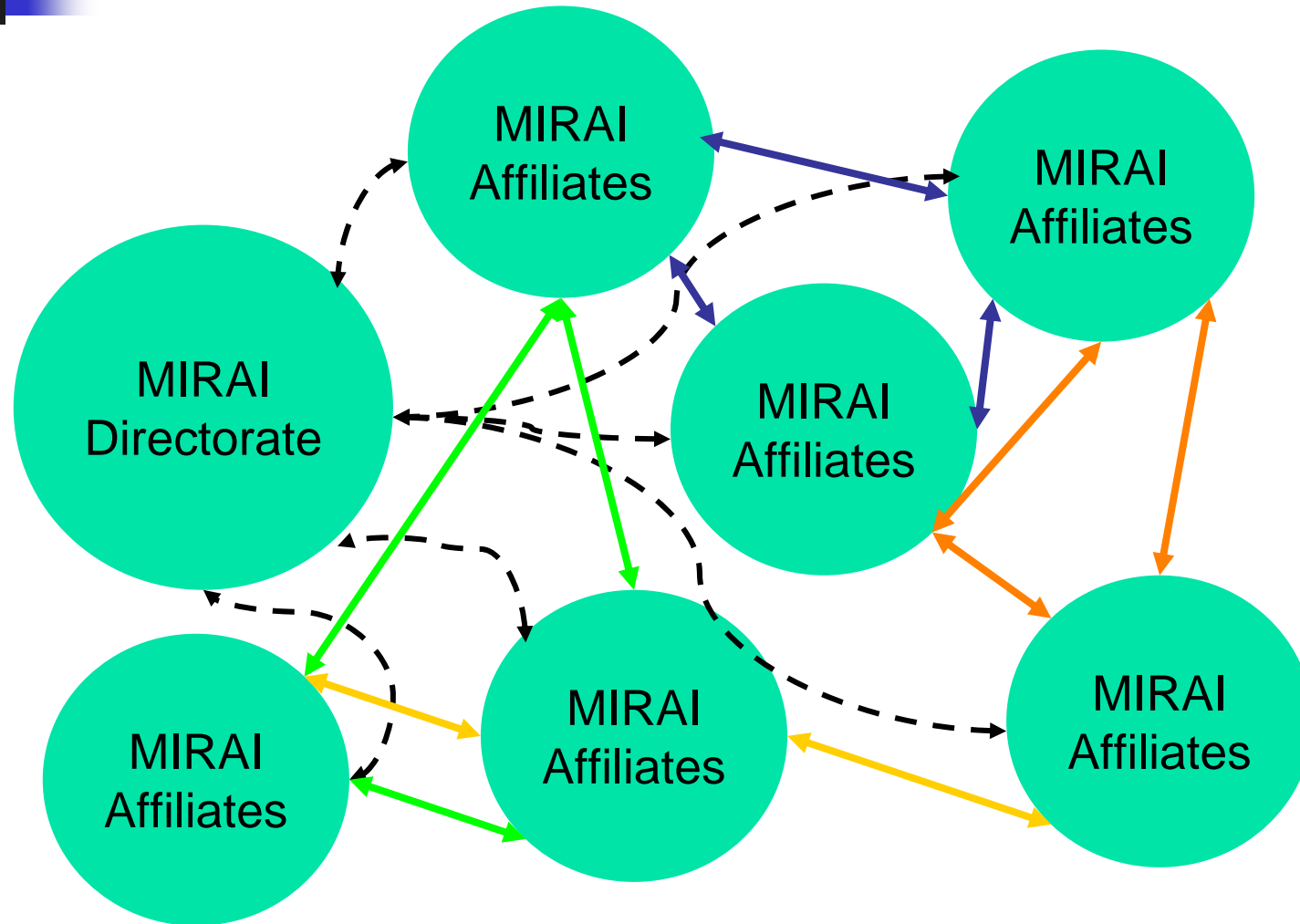
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- Pan-Pacific Manufacturing Institute for Research on Advanced Initiatives
- Pan-Pacific Manufacturing Research Institute
- MIRAI Federal Institution (Mission to Future)

# Organization chart (draft)



# MIRAI "Federation"





# Organization structure (draft)

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- President
  - 3 year term
  - Elected by two boards
  - Becomes a member of advisory board after the term
  - Makes final decisions on all items approved by two boards
  
- Directorate office (Executive director)
  - Permanent office
  - One or two administrative staffs
  - Support president and operating board
  - coordinate three offices (project, industrial liaison, education)



# Organization structure (draft)

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- Advisory board (Chair)
  - Support and advise president in research agenda, policy, government and industrial relations, etc.
  - Acting member
    - 3 year term and one third will be replaced every year
    - Total of 6 members from participating institutions, industries, and governments
    - Presidential voting right
  - Honorary member:
    - No limit on the number of member
    - Retired presidents, distinctive figures from outside
    - No voting right



# Organization structure (draft)

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- Operating board (Technical) (Chair)
  - Executive decision on project, finance, events, etc.
  - Supervise three offices
  - Board member
    - 3 year term and one third will be replaced every year
    - Total of 10 members from participating institutions, industries, and governments
    - One senior manager and two managers per office
    - Presidential voting right



# Organization structure (draft)

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- Project office
  - Project management, administrative support for collaboration
  - A technical director would serve to insure that the collaborations were effective and, importantly, resources were available.
- Industrial liaison office
  - Industrial relations and public relations
- Education office
  - Development of educational tools
  - Planning lectures, online seminars, other educational events



# Regular meetings (draft)

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- January: Board meeting
  - Participants: President and board members
  - Functions: Executive decisions, financial review, project review
  
- August: Annual meeting
  - Conference: project report/paper
  - Expanded discussion meeting
    - Participants: Delegates from all participating organizations
    - Report on January board meeting outcome
    - Industrial feedback
    - Free discussion
  - Industrial visit
  - Board meeting: executive summary on annual meeting



# Election of leadership

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- President
- Board members and chair
- Directorate office and executive director
- Three offices



# Registration of organization

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- Form of organization
- Where to register
- How about each country?



# Membership and funding issues

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# Financial plan (fee based)

Items	Description	Rate	Periods	percent	Quantity	2007		2008		2009	
						Reduced	Full	Reduced	Full	Reduced	Full
Inflation (4% per year)											
<b>Administrative support</b>											
Operating Director	Associate Research Engineer II	\$7,625.00	12	50%	1	\$45,750.00	\$91,500.00	\$47,580.00	\$95,160.00	\$49,483.20	\$98,966.40
Secretary		\$4,000.00	12	50%	1	\$24,000.00	\$48,000.00	\$24,960.00	\$49,920.00	\$25,958.40	\$51,916.80
Operation expenses	fax, phone, paper, office supplies, etc.	\$800.00	12	100%	1	\$9,600.00	\$9,600.00	\$9,984.00	\$9,984.00	\$10,383.36	\$10,383.36
Benefits (22%)						\$15,345.00	\$30,690.00	\$15,958.80	\$31,917.60	\$16,597.15	\$33,194.30
<b>Subtotal</b>						<b>\$94,695.00</b>	<b>\$179,790.00</b>	<b>\$98,482.80</b>	<b>\$186,981.60</b>	<b>\$102,422.11</b>	<b>\$194,460.86</b>
<b>Conference and meetings</b>											
Meeting Space		\$10,000.00				\$10,000.00	\$10,000.00	\$10,400.00	\$10,400.00	\$10,816.00	\$10,816.00
Food		\$5,000.00				\$5,000.00	\$5,000.00	\$5,200.00	\$5,200.00	\$5,408.00	\$5,408.00
Travel expense											
	Board meeting										
	Air fare	\$1,500.00									
	Meal for 5 days	\$250.00									
	Taxi	\$150.00									
	Registration	\$600.00									
	Subtotal	\$2,500.00	2	50%	15	\$37,500.00	\$75,000.00	\$39,000.00	\$78,000.00	\$40,560.00	\$81,120.00
	Special meetings for fund raising, etc.										
	Air fare	\$1,500.00									
	Meal for 5 days	\$250.00									
	Taxi	\$150.00									
	Registration	\$600.00									
	Subtotal	\$2,500.00	4	50%	6	\$60,000.00	\$60,000.00	\$62,400.00	\$62,400.00	\$64,896.00	\$64,896.00
<b>Subtotal</b>						<b>\$112,500.00</b>	<b>\$150,000.00</b>	<b>\$117,000.00</b>	<b>\$156,000.00</b>	<b>\$121,680.00</b>	<b>\$162,240.00</b>
Total before overhead						\$207,195.00	\$329,790.00	\$215,482.80	\$342,981.60	\$224,102.11	\$356,700.86
Overhead	Max. 20%					\$41,439.00	\$65,958.00	\$43,096.56	\$68,596.32	\$44,820.42	\$71,340.17
<b>Total</b>						<b>\$248,634.00</b>	<b>\$395,748.00</b>	<b>\$258,579.36</b>	<b>\$411,577.92</b>	<b>\$268,922.53</b>	<b>\$428,041.04</b>



# Financial plan (no membership)

Items	Description	Rate	Periods	percent	Quantity	2007		2008		2009	
						Reduced	Full	Reduced	Full	Reduced	Full
Inflation (4% per year)											
<b>Administrative support</b>											
Operating Director	Associate Research Engineer II	\$7,625.00	12	50%	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Secretary		\$4,000.00	12	50%	1	\$24,000.00	\$48,000.00	\$24,960.00	\$49,920.00	\$25,958.40	\$51,916.80
Operation expenses	fax, phone, paper, office supplies, etc.	\$800.00	12	100%	1	\$9,600.00	\$9,600.00	\$9,984.00	\$9,984.00	\$10,383.36	\$10,383.36
Benefits (22%)						\$5,280.00	\$10,560.00	\$5,491.20	\$10,982.40	\$5,710.85	\$11,421.70
<b>Subtotal</b>						<b>\$38,880.00</b>	<b>\$68,160.00</b>	<b>\$40,435.20</b>	<b>\$70,886.40</b>	<b>\$42,052.61</b>	<b>\$73,721.86</b>
<b>Conference and meetings</b>											
Meeting Space		\$10,000.00			0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Food		\$5,000.00			0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Travel expense											
	Board meeting										
	Air fare	\$1,500.00									
	Meal for 5 days	\$250.00									
	Taxi	\$150.00									
	Registration	\$600.00									
	Subtotal	\$2,500.00	2	50%	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Special meetings for fund raising, etc.										
	Air fare	\$1,500.00									
	Meal for 5 days	\$250.00									
	Taxi	\$150.00									
	Registration	\$600.00									
	Subtotal	\$2,500.00	4	50%	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Subtotal</b>						<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>
Total before overhead						\$38,880.00	\$68,160.00	\$40,435.20	\$70,886.40	\$42,052.61	\$73,721.86
Overhead	Max. 20%					\$7,776.00	\$13,632.00	\$8,087.04	\$14,177.28	\$8,410.52	\$14,744.37
<b>Total</b>						<b>\$46,656.00</b>	<b>\$81,792.00</b>	<b>\$48,522.24</b>	<b>\$85,063.68</b>	<b>\$50,463.13</b>	<b>\$88,466.23</b>



# Membership model (Phase I)

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- Phase I: Three objectives for funding for MIRAI at Phase I are;
  - maintain smallest feasible administrative costs,
  - cost sharing among participants,
  - meeting and conference expenses by hosting institutions.
  
- According to survey results, most institutions expect administrative difficulties to allocate membership fee. Alternative suggestions for expenses are as followings:
  - Annual board meeting: A hosting institution covers expenses. Travel expenses should be covered by participants.
  - Annual conference: A hosting institution covers expenses. It may charge the registration fee to cover the cost.
  - Administrative costs:
    - Suggestion 1: One administrative secretary can be supported by participating institutions (approximate cost: \$80,000/year). The person can be hired as “outside contractor or employee (or whatever it is called)” by each institution.
    - Suggestion 2: At least one participating company or sponsor contribute fund to cover this cost. Any surplus can be used to cover other expenses.



# Membership model (Phase I)

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- Research funds in Phase I:
  - individual affiliate members from their own resources.
  - no research funds would be paid to the MIRAI Directorate or distributed by the Directorate.
  - All collaborative agreements would be between the individual affiliates engaged in the collaborative work.
  - The research projects would, however, have to be developed according to the general guidelines of MIRAI program (topics, scope, length of study, desired outcomes, etc. (these guidelines to be determined)) and would be reviewed annually by the MIRAI Board.



# Membership model (Phase II)

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- Phase I + the addition of the possibility of project funding through the Directorate.
- Funding organizations/industries wishing to support generic research involving a large number of affiliates could provide funding directly to the MIRAI Directorate and, according to their interests and the MIRAI Board's governance, projects among the affiliates would be established and funded from MIRAI Directorate.
- This would necessarily require a minimum level of funding to make this effective – anticipated as \$100K/year minimum. This could accommodate the requirements of governmental agencies wishing to utilize the entire MIRAI federation or companies wishing to benefit from a broad input of the affiliates.



# Membership model (Phase III)

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- Phase II + the addition of the possibility of the MIRAI Directorate submitting proposals to funding agencies and organizations for the purpose of acquiring research support for MIRAI projects.
- Expected transition
  - Phase I: present - 2010
  - Phase II: 2010 - 2012
  - Phase III: 2012 -



# Initial MIRAI project proposals

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# Inclusion of existing projects

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- Micro-manufacturing
  - KITECH-UCB: Microfactory project, Glass forming project
  - KITECH-RIKEN: Microfactory project
  - UCB-Keio-RIKEN: Micromachining
  - UCB-UBC: Micromachining (future)
- Manufacturing technology for alternative energy
  - UCB-LBNL: Fuel cell, Helios (DOE)
  - UCB-KIMM: Fuel cell
  - UCB-RIKEN: Fuel cell (future)
- Biomedical device manufacturing
  - UCB-Keio: Micro-TAS
  - UCB-USP: Sensor development (future)



# Project design (Project office)

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- Development of project guidelines and topics
- Announcement of project proposals



# Future needs

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# Education office

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- I-Seminar
- On line lecture series (topic selection)
- Development of educational tools
- Other issues



# Marketing and website

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- MIRAI marketing
  - Affiliation with other organization such as CIRP
  - Add a link to member's website
  - Articles for magazines, journals, etc.
- Website
  - Contents update
  - Feedback on current design and contents



# Specifics for the next meeting

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# Participation commitment

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- MOU for official participation
- Other forms



# Next meetings

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- Meeting plan in near future
  - Summer, 2007: 1<sup>st</sup> MIRAI board meeting and or “Forum on Manufacturing Strategy for Future of Pan-Pacific Countries” and candidate locations and dates are;
    - MTTRF: July, Nagoya, Japan
    - Micro-factory symposium: July, Jeju, Korea
    - CIRP: August, Dresden, Germany
    - October, Seoul, Korea
  - 2nd board meeting: January, 2008, Paris, France
  - 1st MIRAI conference: October, 2008, TBD
  - 2nd MIRAI conference: October, 2009, TBD



# Action items by next meeting

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Needs to be developed during 3<sup>rd</sup> meeting