

# Best Practices for Industry- University Collaboration

Compiled by UR of Corporate Technology China

Source: - "Ways to cooperate", Corporate Technology, CT O UNI, Siemens AG  
- "Best Practices for Industry-University Collaboration", MITSloan Management Review, Vol.51 No.4, Summer 2010

## Contents

- Best Practices for Industry-University Collaboration from MITSloan Management Review
- Collaboration Models – Siemens Practices at Industry-University Collaboration

## How can companies best achieve competitive impact from industry-university research collaborations?

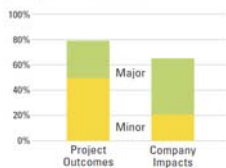
SIEMENS

### Findings from this Study

- An **outcome-impact gap** in university collaborations: Promising outcomes of university projects often fail to translate into tangible impacts for the companies involved
- **Seven best practices** can bridge this outcome-impact gap

#### THE OUTCOME-IMPACT GAP FOR INDUSTRY-UNIVERSITY COLLABORATIONS

About half of the 106 projects studied resulted in what were seen as major outcomes (i.e., they produced new ideas or solutions to problems, developed new methods of analysis or generated new intellectual property of potential benefit for the company). But only about 20% of the projects led to major impacts on the company that participated in the collaboration.



Page 3

### The Seven Keys to Collaboration Success <sup>1)</sup>

1. Define the project's **strategic context** as part of the selection process.
2. Select **boundary-spanning** project managers
3. **Share** with the university team **the vision** of how the collaboration can help the company.
4. Invest in **long-term** relationships.
5. Establish strong **communication linkage** with the university team.
6. Build **broad awareness** of the project within the company.
7. Support the work internally both **during the contract and after**, until the research can be exploited.

- The first four pertain to criteria for selecting the collaboration in the first place
- The last three address issues of project management and of fostering maximally productive relationships between I & U

1) Please see appendix for details with example

## Contents

SIEMENS

- Best Practices for Industry-University Collaboration from MITSloan Management Review
- Collaboration Models – Siemens Practices at Industry-University Collaboration

Page 4

February, 2011

© Siemens China 2011. All rights reserved

**Siemens' ways to cooperate with universities**

Collaboration models overview

well-established approaches	Research Project (Contract research)	Joint Research Project	Publicly Funded Joint Research Project	Joint Research Lab	PhD Research Scholarship
	Workshop / Seminar / Colloquium	Lecturing	Siemens Lab Visit	Siemens-University Conference	
innovative approaches	Technology-To-Business (TTB)	Idea Contest	Open Research Funding	E-Broker	University Competence Tour
	Endowed Chair	Expert Integration		"Rent a Scientist"	

**Siemens' ways to cooperate with universities (1)**

	Collaboration models	Description
Well-established approaches	<b>Research Project (Contract Research)</b>	Company assigns universities to conduct a research project with predefined goals.
	<b>Joint Research Project</b>	Company performs a research project in cooperation with university researchers.
	<b>Publicly Funded Joint Research Project</b>	Companies and universities jointly research in publicly funded R&D projects (funded e.g. by EU, BMBF, BMWi, etc).
	<b>Joint Research Lab</b>	Companies and universities establish research labs to jointly research in multiple projects. The labs are often located at the university campus and establish relationships with multiple academic departments.
	<b>PhD Research Scholarship</b>	Company pays universities to do research in a certain field via a PhD student.
	<b>Workshop / Seminar / Colloquium</b>	Dialogue between researchers is the basis for innovation and research. The format of the event - whether a seminar, workshop or colloquium - depends on the number of the participants, the topic and the degree of collaboration.
	<b>Lecturing</b>	Siemens staff (e.g. R&D, Management) works for a public research partner as a university lecturer for a limited amount of time (also full time possible as "sabbatical").
	<b>Siemens Lab Visit</b>	Company invites collaborating research institution's staff to visit its on-site labs or research facilities; may be aligned to workshops or conferences.
	<b>Siemens-University Conference</b>	Company organizes conferences related to an innovation topic with the participation of both research institution and company R&D staff.

Siemens' ways to cooperate with universities (2)

	Collaboration models	Description
Innovative approaches	<b>Technology-To-Business (TTB)</b>	Systematically explore and transform external raw technologies into profitable product innovation and growth opportunities for Siemens
	<b>Idea Contest</b>	Openly offer an award for researchers to provide solutions for a specific problem. Competition can be designed in different ways, depending on target group and goals. Online processing recommended.
	<b>Open Research Funding</b>	Department sets a (significant) budget and encourages selected research institutions to provide suggestions for innovative research projects. Feasibility studies may be elaborated before the final decision for one (or more) project(s).
	<b>E-Broker</b>	An innovation broker (=E-Broker) company (virtually) connects innovation seekers with solution providers.
	<b>University Competence Tour</b>	University presents laboratories, professors and research competencies – based on pre-defined interests and needs.
	<b>Endowed Chair</b>	Sponsor a professorship at a selected university in a specific field.
	<b>Expert Integration</b>	An industry expert from Siemens gets incorporated in the university research activities for a limited time, e.g. for a given research project. This may be (1) a part-time research activity or (2) a full time integration of an R&D staff as a researcher and lecturer (possible as "sabbatical").
	<b>"Rent a Scientist"</b>	A leading researcher is enrolled for a limited time, e.g. in a given project in order to drive the solution of specific and highly important core problems. This may be (1) a rather short "brainstorming" event, where e.g. top researchers of several partner universities are invited, (2) the short term integration of an external scientist in a project.

Appendix

- The Seven Keys to Collaboration Success in Details with Example
- Siemens' Collaboration Models Guideline
  - well-established approaches
  - innovative approaches

## Practice 1: Define the Project's Strategic Context as Part of the Selection Process

SIEMENS

Guidelines

Industry-university collaborations must be **aligned with** the company's research and development **strategy** and address a **tangible need** of the company.

- Use your company research portfolio to determine collaboration opportunities.
- Define specific collaboration outputs that can provide value to the company.
- Identify internal users of this output at the working level; executive champions are not a substitute for this requirement

Example (-) \*

For the research uptake to have impact, the issue is not whether there is support at a high level; it is whether the project addresses a real need as perceived by the company's working engineers.

An engine manufacturer:

- The partnership arose from a suggestion by a member of the board of directors, other senior management agreed and provided the funds
- The company supported the project for six years
- However, no one at the working level or first level of management saw a clear link to problems the company was having or to constraints on their design processes
- They took **no ownership** of the project and paid **little attention to its results**

Page 9

+: (+) pro, (-) con

February, 2011

© Siemens China 2011. All rights reserved

## Practice 2: Select Boundary-Spanning Project Managers with three key attributes

SIEMENS

Guidelines

- In-depth knowledge of the technology needs in the field
- The inclination to network across functional and organizational boundaries
- The ability to make connections between research and opportunities for product applications

Certain individuals who naturally engage in networking activities, maintaining relationships that cross organizational lines are called "**boundary spanners**".

Example (+) \*

Boundary spanners contribute to the success in **two primary ways**:

1. Effect a broad dissemination of the research results inside the company
2. Provide feedback through information they bring back from the company's technical community

A robotics company:

- The project manager in an R&D division managed one project which was seen as a basic research, years away from producing anything that would affect a company product
- However, the project manager made it a point to visit individuals in the company's manufacturing operations
- These interactions **led to ideas** about how the **next generation** of robotics might be evolved into tools and integrated into the manufacturing process
- Also provided the feedback on **the best direction** for the project to proceed

Page 10

+: (+) pro, (-) con

February, 2011

© Siemens China 2011. All rights reserved

## Practice 3: Share With the University Research Team the **SIEMENS** Vision of How the Collaboration Can Help the Company

### Guidelines

To have positive impact on a company if the university researchers have a strong **knowledge of the business setting**, company practices and how the **research fits company strategy**.

- Select researchers who will understand company practices and technology goals.
- Ensure that the university team appreciates the project's strategic context.

### Example (-) \*

Some project managers chose not to communicate the strategic context of the project and the high-level goals to the university researchers due to concern about losing a competitive edge.

One collaboration

- A two-year project aimed at improving the production process for a biotechnology product.
- Project manager disclosed the specific company needs, but did not explain how the project fit into the company's related strategy.
- The company is really reserved when it comes to revealing its technology strategy.
- The result: the solution delivered by the university researcher met the need in a way that was **not consistent** with other **strategic considerations**.
- Consequently **no subsequent value** to the company



## Practice 4: Invest in Long-Term Relationships

### Guidelines

- Plan multiyear collaboration time frames.
- Cultivate relationships with target university researchers, even if research is not directly supported.

Over longer time periods, members of research teams develop better joint understanding of the research problem and common vocabulary in which to communicate the research results.

### Findings

Two findings from the study:

1. Industry and academia do research on markedly **different time frames**
  - Industry driven by economic and product cycles
  - Academic research depends largely on the time required for a graduate degree program
  - Both parties need to be upfront, and realistic, about their time expectations.
  - **Multiyear collaboration** addresses this mismatch and improves the chance of a successful research outcome (average duration: two and a half years)
2. Nearly 80% of the examined collaboration projects declared **previous connection** between the company and the university group
  - Positively correlated with the outcome of the subsequent collaboration
  - A benefit to developing and maintaining such connection, at the personal level and not contractual

## Practice 5: Establish Strong Communication Linkage With the University Team

SIEMENS

### Guidelines

- Conduct face-to-face meetings on a regular basis.
- Develop an overall communication routine to supplement the meetings.
- Encourage extended personnel exchange, both company to university and university to company.

### Findings

- Creation of strong personal relationships
- **Personal interactions** are the crucial in the transmission of unwritten tacit knowledge
- To foster project discipline, helping to prevent the project from drifting away from its original purpose through **established known and “routine” opportunities**
- To **communicate changes in interests or strategy** that the research could be adapted to address via regular meeting
- To increasing interaction with universities by **sending company personnel on extended stays** as visiting researchers, by providing opportunities for faculty sabbaticals and leaves at the company and by providing student internships
- Those activities depend little on geography.

Page 13

February, 2011

© Siemens China 2011. All rights reserved

## Practice 6: Build Broad Awareness of the Project Within the Company

SIEMENS

### Guidelines

- Promote university team interactions with different functional areas within the company.
- Promote feedback to the university team on project alignment with company needs.

Outcome and the subsequent **value** of the research was **higher** for projects that had **larger numbers** of company employees involved while the research was under way; **broad participation** was important **during** the active research stage and **before final outcomes** had been produced.

### Example (-) \*

The consequences of not achieving such wider awareness are seen in a project as example:

A project to develop techniques for drilling shaped holes in a complex part

- The task is to develop an improved methodology with specific technical goals
- The team delivered an approach with the desired features, both sides who had worked together closely were pleased with the outcome
- While the members of the production staff were impressed by the technology, they saw it as too expensive to implement, given their recent investments to upgrade the equipment.
- The company did **not develop the approach** any further and may **not ever use it operationally**.
- The situation could be avoided if there had been communication with manufacturing personnel during, rather than after, project completion.

Page 14

\*, (+) pro, (-) con

February, 2011

© Siemens China 2011. All rights reserved

## Practice 7: Support the Work Internally Both *During* the **SIEMENS** Contract and *After*, Until the research Can Be Exploited

### Guidelines

- Provide appropriate internal support for technical and management oversight.
- Include accountability for company uptake of research results as part of the project manager role.

Successful management of Industry-university collaboration implies a **wider view than deliverables and contract fulfillment**, because creating and sustaining a peer-to-peer **relationship** is central to success

### Findings

Strong personal relationships serve as a catalyst for increasing knowledge flows

- Company project managers need to provide **appropriate internal support** for their work in the collaboration
- Characterized by a **sense of partnership** – project managers felt they and the university researchers were partners exploring an area together
- To foster **ownership of a project**, to include the dissemination of project results as a explicit part of the project manager's performance review
- The project manager must take responsibility not only for the **representation of the research results**, but also for ensuring the research is appropriately considered for possible action – proactive in taking the steps to **make the business impact happen**.

### Appendix

- The Seven Keys to Collaboration Success in Details with Example
- Siemens' Collaboration Models Guideline
  - well-established approaches
  - innovative approaches



## Research Project (Contract Research)

**Description:** Company assigns universities to conduct a research project with predefined goals.

- Goals:**
- Develop a solution for a specific research field or defined problem
  - Create a new program, tool, process etc.

- Prerequisites:**
- Specific topic / problem is defined
  - Goals are aligned with partner
  - Appropriate contacts at university / research institution

**Costs:** Depends on project, institution and region

**IPR:** General rule: if Siemens pays the project, Siemens receives all resulting IPR



- High control about results, budgets, time etc.
- Good for applied research or development
- Short-time success possible
- Well-known approach, low risk



- Short-term orientation limits motivation of faculty members
- Technology transfer hindered through minor involvement of company staff and tacit knowledge

## Joint Research Project

**Description:** Company performs a research project in cooperation with university researchers

- Goals:**
- Foster common research with regard to a specific topic, solution etc.
  - Create jointly a new program, tool, process etc.

- Prerequisites:**
- Willingness of both partners to share information, knowledge and results
  - Research goals, share of commitment and workload must be clearly defined and agreed between partners

**Costs:** General rule: lower costs than research projects (contract research), as both partners are contributing  
Costs depend on contribution of Siemens, which could also not be monetary but with availability to technical resources or personnel resources

**IPR:** Must be negotiated, in general shared IPR



- Clear focus and enhanced degree of innovativeness
- Cost-control / fixed budget
- Foster scientific network



- Shared IPRs may be difficult to handle

Publicly Funded Joint Research Project

**Description:** Companies and universities jointly research in publicly funded R&D projects (funded e.g. by EU, BMBF, BMWi, etc).

- Goals:**
- Develop a solution to a specific problem area or technology field (mid- to long-term oriented)
  - Build up new ideas, complement own competencies and resources
  - Access to regional, national and European public R&D funding
  - Access to (inter)national R&D networks and technology alliances

- Prerequisites:**
- Offered public funded programs need to fit to the R&D department's strategy
  - Appropriate partners in consortium

**Costs:** Company contribution required (typically 50 – 60%)

**IPR:** In general shared IPR due to specific requirements



- Technology transfer from various partners possible / opportunity for knowledge and experience exchange
- Insights in other company research and technologies activities
- Share technological risks and R&D costs



- Multiple barriers between partners may inhibit knowledge transfer and joint learning (organizational barriers, lack of trust, different locations, different „hidden“ agendas etc.)
- Often high bureaucratic application procedure
- Complex IPR situation

Joint Research Lab

**Description:** Companies and universities establish research labs to jointly research in multiple projects. The labs are often located at the university campus and establish relationships with multiple academic departments.

- Goals:**
- Establishing long-term relationships with key universities.
  - Getting early access to innovative technologies and knowledge/know-how of business relevant topics.
  - Introducing Siemens' equipment, solutions and services to students (including training) at an early education phase.
  - Recruit highly qualified top talents.

- Prerequisites:**
- Long-term commitment to preferred research partner
  - Lab infrastructure
  - Allocated resources

**Costs:** Depends on scope and timeline. A general rule of thumb would cover 100.000 €/year.

**IPR:** In general shared IPR due to specific requirements; conditions need to be defined in advance.



- Technology and knowledge/know-how transfer supported by co-located, long-term oriented joint research: synergies and learning effects
- Initiation and management of multiple research projects within a technology, business or process portfolio possible
- Combination with other collaboration models possible



- Annual costs for projects in the lab and maintenance
- Secrecy has to be managed on a trustfully bilateral basis.

## PhD Research Scholarship

**Description:** Company pays universities to do research in a certain field via a PhD student

- Goals:**
- Basic research
  - Creation / strengthening of long-term partnership with selected university / professor
  - Contact to young talents

**Prerequisites:** ▪ Willingness to relatively long-term commitment, less control

**Costs:** Depends on the university.  
As a general rule of thumb, in Germany: ca. 60.000 €/year, in China ca. 10.000 €/year, in USA up to 100.000 €/year

**IPR:** IPR usually belongs to scholar. No automatism for gaining IPR exclusively.



- Clear focus, enhanced degree of innovativeness
- Cost-control / fixed budget
- Motivated partners due to long-term commitment



- Technology transfer may be difficult
- IPR rules may be difficult

## Workshop, Seminar, Colloquium

**Description:** Dialogue between researchers is the basis for innovation and research. The format of the event - whether a seminar, workshop or colloquium - depends on the number of the participants, the topic and the degree of collaboration.

- Goals:**
- Develop topics for future joint research or other collaboration forms
  - Networking, exchange of latest scientific results, build up skills and knowledge

**Prerequisites:**

- Format of the event should be agreed up front between the research partners (goal, main subject, expectations)
- Identification of the right participants
- Agenda setting: what do you want to achieve?

**Costs:** Depends of scope, venue, duration (on average 1.000 – 10.000,- €)

**IPR:** In general, no NDA agreement for event necessary, unless required by experts due to confidential topics.



- Applicable for various kinds of purposes, agenda, timing, participation.
- Opportunity for networking and contacts



- Without proper moderation the purpose of the event might not be reached. Often more effort for preparation, particularly agenda setting and matching of expectations is needed. Indispensable precise definition of expectations, agenda and participants.
- The choice of right participants might be difficult. The amount of participants must fit to the agenda and purpose

Lecturing

**Description:** Siemens staff (e.g. R&D, Management) works for a public research partner as a university lecturer for a limited amount of time (also full time possible as "sabbatical").

- Goals:**
- Facilitate knowledge transfer between industry, university and students
  - Develop young academics with expertise in step with actual practice
  - Position Siemens as innovation / opinion leader

- Prerequisites:**
- Existing relations with university / research facilities
  - Siemens generally supports staff lecturing at universities (e.g. see guideline for Germany ZPP 32 - 19.12.1988: [https://intranet.cp.siemens.de/recherche/dir1980\\_1989/1989/ZPRB191288A.pdf](https://intranet.cp.siemens.de/recherche/dir1980_1989/1989/ZPRB191288A.pdf))
  - Pay, duration, etc. determined by individual agreements

**Costs:** No direct costs for Siemens

**IPR:** Not relevant



- Personal involvement of staff fosters networking in public research institutions
- Siemens lecturers increase knowledge, qualification and experience transfer to university
- Tutor role develops professional and personal development of Siemens staff



- Time and effort of Siemens staff to prepare and hold lectures or take a sabbatical.

Siemens Lab Visit

**Description:** Company invites collaborating research institution's staff to visit its on-site labs or research facilities; may be aligned to workshops or conferences.

- Goals:**
- Foster relationship
  - Create ideas for future joint research or other collaboration forms
  - Give university staff a vivid insight and understanding of industry-based R&D work

- Prerequisites:**
- Existing relationship to universities
  - Geographic proximity of company and research institution

**Costs:** Low internal organizational efforts.

**IPR:** In general not relevant. Sometimes NDA recommendable.



- Fast and relatively easy preparation (compared to other cooperation models)



- No immediate results

Siemens – University Conference

**Description:** Company organizes conferences related to an innovation topic with the participation of both research institution and company R&D staff.

- Goals:**
- Foster ideas, exchange of know-how and experience, networking
  - Further education for internal staff
  - Develop ideas for future joint research or other collaboration forms

**Prerequisites:** ▪ Existing relationship to universities

**Costs:** Depends on scope, venue, program, number of participants etc.  
As a general rule of thumb, costs may lie between 3.000€ and 10.000€

**IPR:** In general no specific agreements required.



- Opportunity to strengthen network with selected academics
- Platform to exchange ideas and knowledge



- No immediate results
- Often exchange of contacts and information stays rather superficial –wrap-up needed

Appendix

- The Seven Keys to Collaboration Success in Details with Example
- Siemens' Collaboration Models Guideline
  - well-established approaches
  - innovative approaches

## Technology-To-Business (TTB)

**Description:** Systematically explore and transform external raw technologies into profitable product innovation and growth opportunities for Siemens

- Goals:**
- Support Siemens to quickly penetrate market with partner that has existing technology, then inject critical technology to overcome uncovered challenges to provide Siemens with a competitive advantage.
  - Overtake incumbents by turning radical raw technologies into breakthrough products that are once unthinkable.

- Prerequisites:**
- Systematically scout for radical technologies, conduct technology and business due diligence together with business units to identify opportunities
  - Create product innovation, develop the business model and work with business units as well as external partners to incubate the product innovation in Siemens' context.

**Costs:** Variable, depending on the maturity of the technology and the business model

**IPR:** Flexible, depending on the business model and Siemens' needs



- Quickly develop new innovations that help Siemens surpass dominant players in crucial markets, strengthen its competitive position in key segments, and penetrate emerging markets with value added vendor



- Sometimes IPR discussion could be complicated for the spin-in case

## Idea Contest

**Description:** Openly offer an award for researchers to provide solutions for a specific problem. Competition can be designed in different ways, depending on target group and goals. Online processing recommended.

- Goals:**
- Create and implement new ideas, strategies, marketing or sales channels, tools, programs
  - Gain innovative solutions for a given problem
  - Improvement of awareness, image etc.

- Prerequisites:**
- Clear goals
  - Predefined budget
  - Communication strategy

**Costs:** Costs generally cover prizes for the winners, assessor and program management. Costs depends on scope and process. As a general rule of thumb, costs may lie between 10.000€ and 50.000€

**IPR:** Must be defined case-by-case. Call for ideas can include IP clause dedicating input to Siemens property.



- Easy, cost efficient way to receive inputs and new ideas
- May trigger awareness in relevant target groups



- IPR situation unclear
- Not applicable for sensible topics

## Open Research Funding

**Description:** Department sets a (significant) budget and encourages selected research institutions to provide suggestions for innovative research projects. Feasibility studies may be elaborated before the final decision for one (or more) project(s).

- Goals:**
- Creation of new ideas / development of new programs, tools, technologies.
  - Strengthen relationship with external partners

- Prerequisites:**
- Budget
  - Existing proved relationship with partners

**Costs:** Idea generation and feasibility study approx. 100.000 € + project costs later-on

**IPR:** Different approaches possible; .typically IPRs stay "open" to public.



- Innovative ideas
- Visibility, publicity
- The long-term approach might encourage high performance experts to participate



- High costs, high risk

## E-Broker

**Description:** An innovation broker (=E-Broker) company (virtually) connects innovation seekers with solution providers.

- Goals:**
- Search a solution to a given problem
  - Reduce development time
  - Find news ideas for specific areas of interest

- Prerequisites:**
- Willingness to engage external partner

**Costs:** Costs range from 15.000 € upwards

**IPR:** IPR can be acquired – procedure depends on the E-Broker's business model



- Easy access to huge research community
- Fast and cost-efficient results
- Little administration effort



- No direct contact to experts / research institutions

## University Competence Tour

**Description:** University presents laboratories, professors and research competencies – based on pre-defined interests and needs

- Goals:**
- Learn more about a specific university
  - Get in touch with professors and scientists
  - Identify topics for future joint research or other collaboration forms

- Prerequisites:**
- Clear interest of different Siemens departments to visit the university
  - Willingness of university to organize and accomplish the event

**Costs:** Generally either no or low costs. Depends on university's policy.

**IPR:** In general not relevant.



- Insight in university's research and competences
- Opportunity to contact scientists
- Easy preparation, in general low costs and good results



- This is just the 1st step: further efforts are required to buildup a relationship and initiate projects (additional meetings etc.)
- May raise high expectations of willingness to cooperate in the university's perspective

## Endowed Chair

**Description:** Sponsor a professorship at a selected university in a specific field.

- Goals:**
- Foster research in a specific topic (either strengthen existing faculties or initiate new programs)
  - Foster relationship with external partner
  - Improve recruitment
  - "Corporate social responsibility"

- Prerequisites:**
- Clearly defined commitment for long-term research (at least 5 years)
  - Topic and university must fit to the Siemens university strategy

**Costs:** Depends on selected type (regular professorship, "Junior"-professorship; with or without equipment etc.). The costs for a regular professorship in science or engineering faculties range to 1.000.000,- € / 5 years (including human and technical resources).

**IPR:** TBD – no „flatrate- IPR transfer“



- Access to university / academic community
- Strong impact on relationship with university



- Success depending on selected person
- Relatively low control during runtime



**Expert Integration**

**Description:** An industry expert from Siemens gets incorporated in the university research activities for a limited time, e.g. for a given research project. This may be (1) a part-time research activity or (2) a full time integration of an R&D staff as a researcher and lecturer (possible as "sabbatical").

- Goals:**
- Foster research in a specific topic
  - Facilitate knowledge transfer between industry, university and students
  - Develop young academics with expertise in step with actual practice
  - Position Siemens as innovation / opinion leader
  - Foster relationship with external partner

**Prerequisites:** ▪ Work contracts with university and Siemens may not collide.

**Costs:** No direct costs.

**IPR:** Generally IPR developed at the university without financial support by the company belong to the university.



- Cost efficient access to external know-how
- No binding of Siemens by a contract.
- Development of company's own resources



- Difficult to set up work contracts in line with employee's expectations.

**"Rent a Scientist"**

**Description:** A leading researcher is enrolled for a limited time, e.g. in a given project in order to drive the solution of specific and highly important core problems. This may be (1) a rather short "brainstorming" event, where e.g. top researchers of several partner universities are invited, (2) the short term integration of an external scientist in a project.

**Goals:** ▪ Gain external expertise in a specific scientific domain.

**Prerequisites:**

- Know who": need to identify the leading external scientist in a given domain.
- Identify the concrete technical challenge which is to be solved.
- Clarify the legal framework of the working contract with the professor. Restrictions by his working contract with the university?

**Costs:** From 1.000,-€ (for a one day brainstorming session) upwards.

**IPR:** A brainstorming workshop might be hindered if the participating professors are bound by too strict IP requirements.  
If the scientist is working for a period in a Siemens Lab, all rights to the results should be exclusively owned by Siemens



- Cost efficient access to external know how
- No long term binding of Siemens by a fixed full employment contract.



- Risk of losing know how when the professor leaves again.