The Effect of Intellectual Property Issues on Industry – University Partnership

“ The German Situation “

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Research Funding in Germany

- **Frameworks of the European Community**
- **BMBF** = Bundesministerium für Bildung und Forschung
  Ministry of Education and Research
- **FNR** = Fachagentur für nachwachsende Rohstoffe
  = Agency for Renewable Resources
  sponsored by the Ministry for Agriculture
- **DFG** = Deutsche Forschungsgemeinschaft
  = German Science Foundation
- **AvH** = Alexander von Humboldt Stiftung / Foundation
- **DAAD** = Deutscher Akademischer Austauschdienst
  = German Exchange Service
- **Industrial Partnerships**

7th Framework of the European Community

- Such frameworks include all areas of science. Certain topics are supported e.g.renewable sources, nanotechnology,climate research, energy sources
- Foundation of consortia including members from industry, academia as well as governmental and private research institutions such as Max Planck Soc. Number of members varies . Members come from EU countries. But special programs for collaborations between EU and Non EU - countries
- Support for man power, equipment, consumables, traveling and overhead, 100 % coverage for the university and research institution partners, mostly 50% of the expenses for the industrial partners , rest comes from industry. Leadership by an industrial partner
- Special programs such as COST only for travel expenses and livelihood
- **IP and contract regulations** between the partners are provided and advised by the EU. In case of patent application one industrial partner takes over the leader-ship , cost will be shared by the partners who are interested in. Free licence for the other partners who are not interested in .

DFG Funding

- **DFG supports the academic fundamental research** without or only minor connection to the application and commercialisation.
- Only for academic and governmental research institutions. Individuals are sponsored for their salaries, equipment, consumables and travel expenses
- **SFB** = Sonderforschungsbereiche support consortia of academic groups working in the same field but using other complimentary tools up to12 years
- **Concerning the IP,** in case patentable results will be achieved then the individual research group can offer the rights to a third party e.g. company. The company applies for a patent and takes over all the costs for that. Now:
  - DfG might be generous and give it for free particularly for German Com.
  - DfG might be not so generous , payment of a certain amount but not more than the amount of the research fund

AvH and DAAD Funding

- **AvH** and **DAAD , both organizations provide individual scholarships**
- Only basic research is sponsored
- Support for man power, travel expenses and recently a bit for consumables
- **AvH** sponsors very talented students from outside and inside of Germany

  but also foreign highly distinguished Professors and industrial scientist .
- **DAAD** sponsors very talented students from outside of Germany, often exchange programs with comparable institutions of other countries in such cases only funding for travel expenses and livelihood
- **Concerning the IP,** in case that patentable results will be found then the individual research group can offer the rights to a third party e.g. company. The company applies for a patent and takes over all the costs for that. The situation and reimbursement are similar to that of DFG .

BMBF Funding

- BMBF picks up new and innovative approaches as a result of the basic research e.g. in fields such as new type of catalysts, new characterization techniques, new reactor and engineering concepts etc.
- **In pre competitive studies of a consortium** of academic and industrial partners (small groups with 4 to 7 members) such new and innovative research approaches are evaluated.
- **However, competitive research and development** of new or already existing processes and products should be carried out in bi/ trilateral collaborations of academic and industrial partners under the guidance and financial support of the industrial partner. That is **not sponsored by BMBF**
- Support for man power, equipment, consumables, traveling and overhead, 100 % for the university and research institution partners, mostly 50% for the industrial partners , rest comes from industry,
- **IP belongs to the industrial partner paying the patent application etc.**

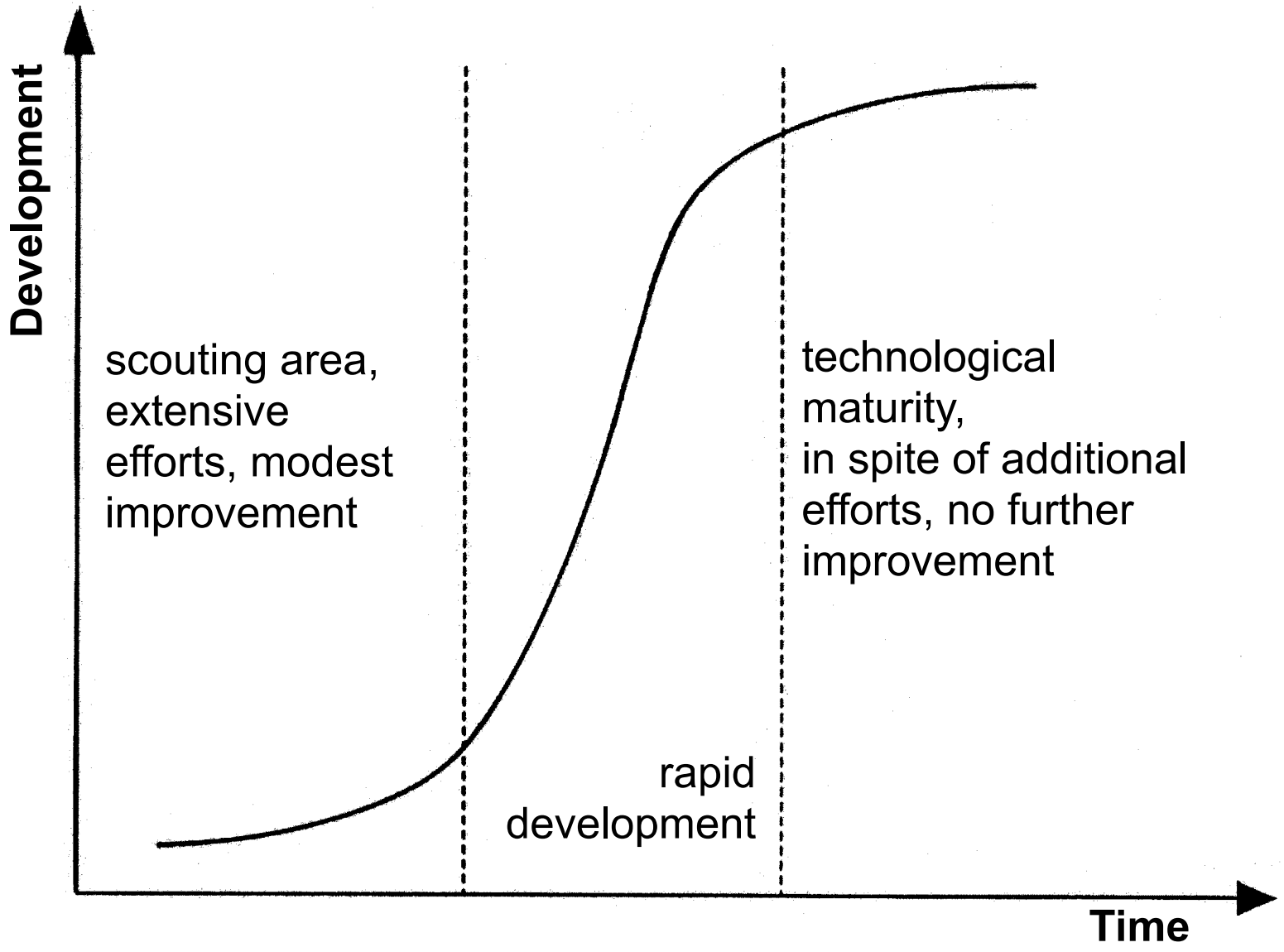
FNR Funding

- FNR funds research projects between academic and industrial partners within the frame of bi– and trilateral collaborations.
- **This research must be in connection with the use of renewable feedstock and close to the application**
- Support for man power, equipment, consumables, traveling and overhead, 100 % coverage for the university and research institution partner, mostly 50% of the expenses for the industrial partner , rest comes from industry,
- **IP belongs to the industrial partner paying the patent application etc.**

Industrial Funding of Research

- Competitive research and development of new or already existing processes and products should be carried out in bilateral or maybe trilateral collaborations between academic groups and industry under the guidance and financial support of the industrial partner .
- Depending on the field of chemistry the research group is involved more or less industrial projects. Physical, Inorganic and Organic Chemistry have less industrial collaborations, than technical or polymer departments .
- Depending on the importance of the field for industry
- Depending on the right organization of the academic group
- Depending on the right equipment in the academic group
- Depending on the expertise and industrial experience of the head of the academic group etc.
- **Number of industrial collaborations is increasing**

Cycle of Development



TCHK, RWTH Aachen – Research Group of Prof. Hoelderich

Catalyst Preparation

- powder preparation
- characterization
- shaping of powders
- standard test reactions

Catalyst Testing

- heterogeneously catalyzed organic synthesis of fine and intermediate chemicals in the presence of new, known and modified catalysts
- development of new syntheses routes

Chemical Engineering

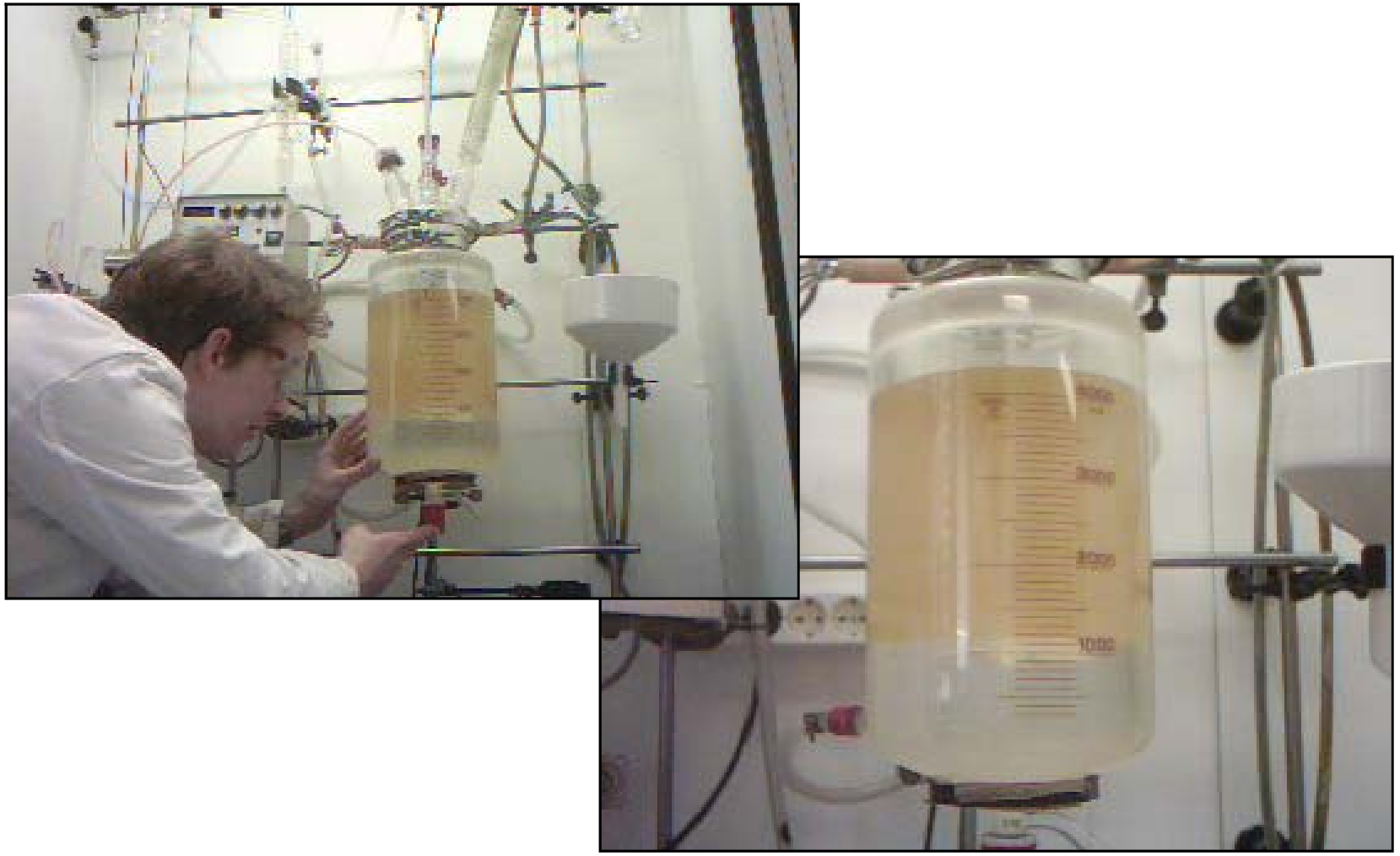
- optimization of
  - reaction phase
  - reactor type
  - engineering parameters
- reaction kinetics

Analysis

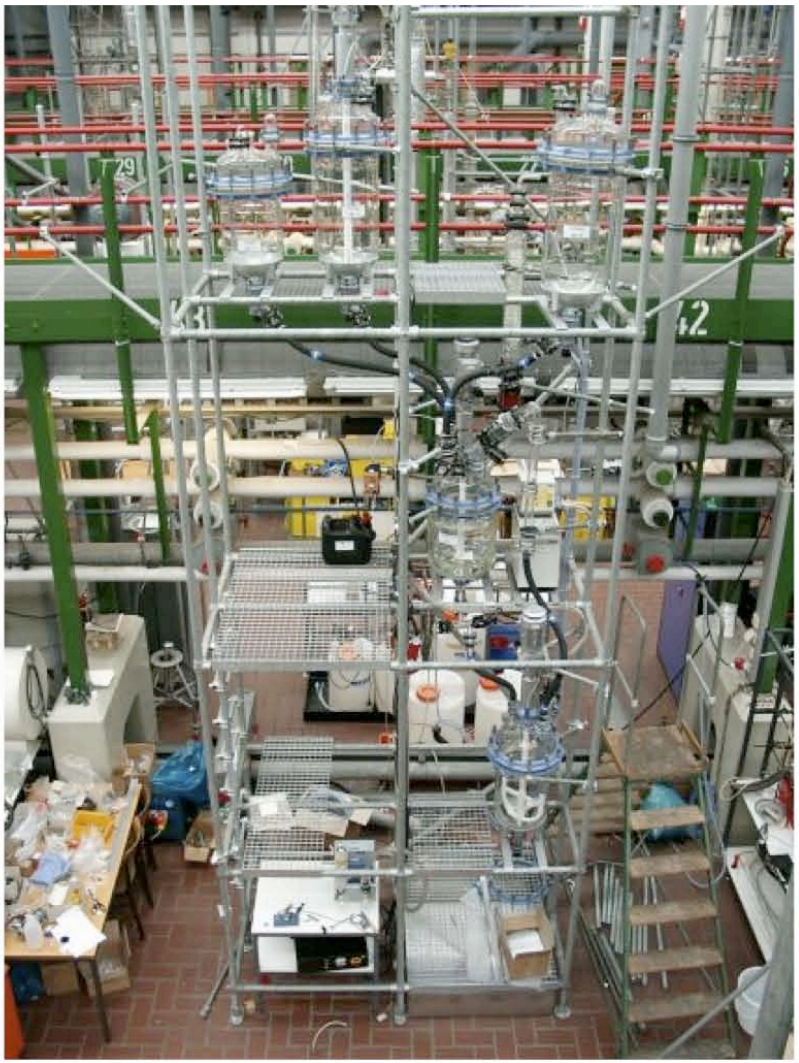
- X-ray diffraction
- thermoanalysis
- sorption measurements
- FTIR, DRIFT, UV/Vis
- MAS NMR (DSX 500)
- GC, GC-MS, HPLC
- ICP AES, TPD with TPR

Mini Plant: Double-Bed FB with Continuous Regeneration II

Bench-scale Apparatus



Pictures of Pilot Plant



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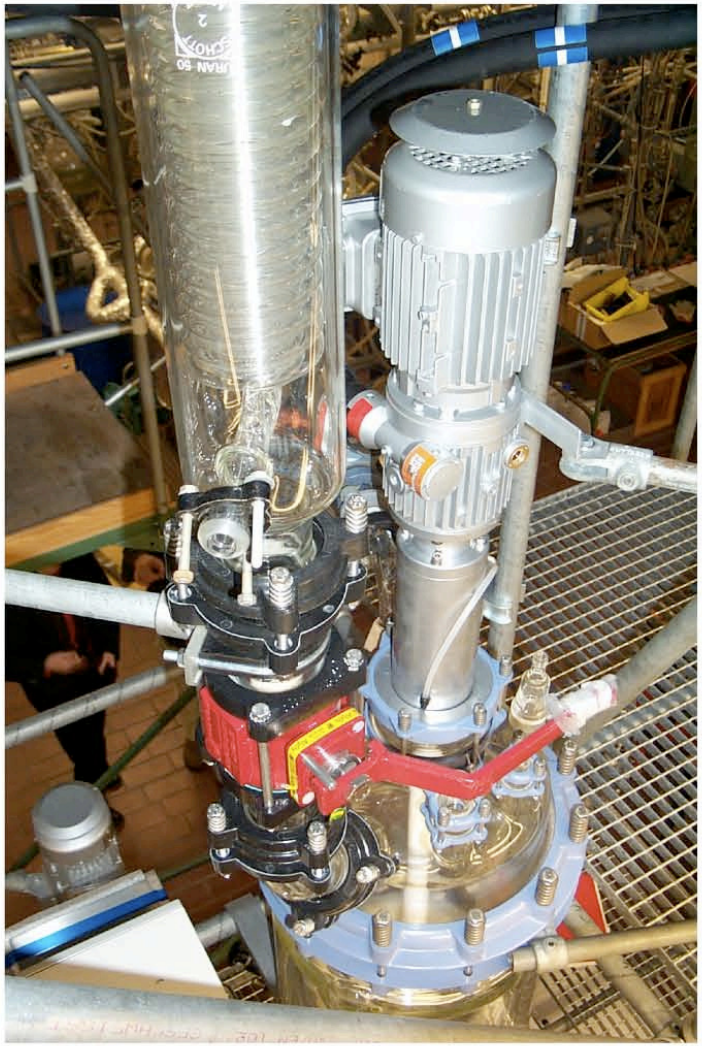

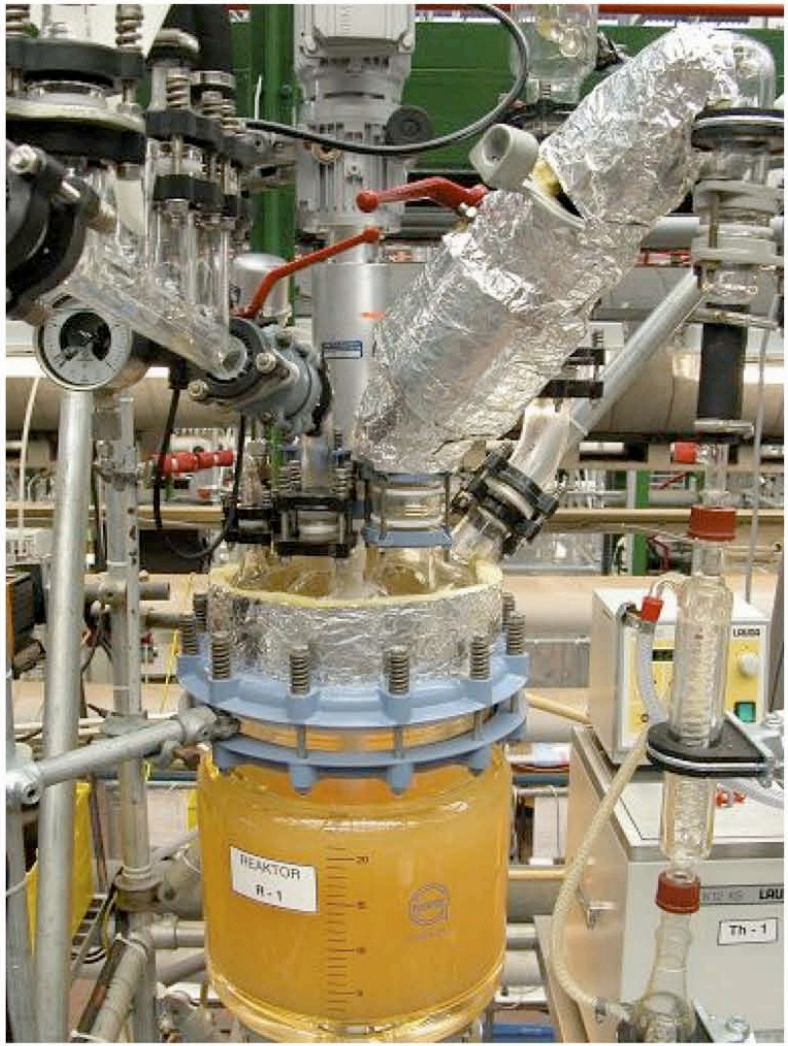

Importance of University Industry Research = Win - Win Situation

- **For the University**
  Without the industrial research and money the Universities in Germany can not survive. Therefore the Federal Government , the States and the Universities have interest in such kind of research. In contrast to the U.S.A. funding of Universities via private foundations is not existing . Disadvantage : not so much fundamental and free research !

- **For the Students**
  Learning how to interact with industrial researchers and to work in a team , getting aware of industrial questions and needs , learning the terminology , i.e. they are better prepared for the future job . Easier to find a job !

- **For the Industry**
  Outsourcing of research became necessary about 10 to 15 years ago and was cheaper. Feasibility studies of risky projects i.e. working in the scouting area could be done with less investment at universities . Help in recruitment of young researcher; observing the candidate over a longer time. Utilization of expertise, experience and equipment i.e. use of brain resources.

Set up of New Industry Funded Projects

- Various ways to find partners and to identify projects . Approached by companies , being constantly in touch with companies , presenting lectures , personal contacts , consulting contracts , meetings etc.
- There are legal standard contracts and secrecy agreements of the University which the professor can signe alone in case nothing is changed in the text .
- The negotiation of these standard contracts and standard secrecy agreements can be done alone by the head of the research department However, if companies insist on their own contracts then the lawyers of the University have to get involved and then it becomes more complicated
- Rule !? The larger the companies the longer it takes to set up a contract . The reasons : several management levels , often management change , the patent and licence department is the slowest part . It takes 4 to 6 months to set up a project but sometimes also years when a big company is involved. Privately owned companies need only 2-3 weeks
- European and Japanese companies faster than American companies .

Intellectual Properties in Former Days until 2002

- The **professors in Germany had all the rights of the IP until 2002**
- At that time he could market and negotiate the IP with companies and could make private contracts independently from the University administration !
- At that time a quite common rule could be : **Who pays who owns !**
- In 2002 the situation changed drastically when these rights have been taken away and the professors have been not anymore the owners of the IP.
- **Now the universities are the owner of the IP !**
- The German Federal Government , the States and the Universities looked to the USA and wanted to take over similar IP management in order to pay with that money part of the expenses for the universities . They wanted to sit at the table , to discuss the value of the invention and to negotiate the royalties when the invention becomes commercialised etc.
- They failed with that idea ; there was a lot of reluctance from companies to accept such contracts and its conditions .

Intellectual Properties: Present, quite Simple Status

- By way of compensation of the Contractor in accordance with § 42 Sub-paragraph 4 of the Law governing Inventions through Employees [ArbNErfG], **the Client(s) shall undertake to pay the Contractor a once-off amount of € 1,000.00 for every invention** availed of, no more, however, than a total of 5% of the value of order as agreed under § 3.
- € 1000,-are paid to the university; 30% of that will be paid to the inventors to fulfil the Law governing Inventions through Employees [ArbNErfG],
- The inventors of the university must be named on the patent
- The Contractor / inventors shall retain, for its own purposes in connection with research and educational activity, a simple, free-of-charge, indefinite and irrevocable right of use in respect of all such protective rights as may accrue.
- The IP is owned and controlled by the client / industrial partner, taking over all the costs to patent, to write, to prosecute, to maintain, to pay fees etc .