



NATIONAL RESEARCH  
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# Public-private partnership research cooperation

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***Public-Private-Partnerships for R&D and innovation co operations are independent infrastructural entities based on partnerships between the public and the private sector with the aim of mid- to long-term generation distribution and exploitation of knowledge, technology and know-how to all parties' mutual advantage for scientific, commercial and societal benefit.***

## PPP are only one instrument among many others in innovation policy

		Recipient / aim of public support		
		Science base	Industry	Industry-science co operation
Reference to national innovation system	Reference to framework conditions	<ul style="list-style-type: none"> <li>Scholarships and talent support</li> <li>R&amp;D subsidies</li> <li>Public direct support programs</li> </ul>	<ul style="list-style-type: none"> <li>IP regulations</li> <li>Loans; subsidies</li> <li>Less bureaucracy (e.g. e-government)</li> <li>Venture capital</li> <li>Tax incentives</li> <li>Education / further education (lifelong learning),</li> <li>Human resources</li> </ul>	<ul style="list-style-type: none"> <li>Support to networks of competences and clusters</li> <li>Virtual innovation cluster / networks</li> <li>International cooperation</li> </ul>
	Project based	<ul style="list-style-type: none"> <li>Research contracts</li> <li>Priority programs</li> </ul>	<ul style="list-style-type: none"> <li>Project support</li> <li>Technology support programs</li> </ul>	<ul style="list-style-type: none"> <li>Singular project funding</li> <li>Joint research funding</li> <li>Framework contracts</li> </ul>
	Reference to institutions	<ul style="list-style-type: none"> <li>Research institution basic funding</li> <li>Research infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Joint ventures</li> <li>Funding agencies for new companies / SME</li> <li>Innovation consulting schemes</li> </ul>	<ul style="list-style-type: none"> <li>TT offices</li> <li>Spin-offs</li> <li>Technology parks (poles) / incubators</li> <li>Research consortia</li> <li>associations</li> <li><b>Infrastructure based competence centers / programs (PPP)</b></li> </ul>

## Characterization of research cooperations

		Characteristic		
		formalization	interaction	Time horizon
Dimension	Information oriented	low	Mostly not binding	Short term
	Action oriented	Medium	Medium	Mid term
	Resource oriented	Very high	Intensiv	Long term

## Information related type of research cooperation

Form alization	Time horizon	Cooperation type	characteristic	Pro	Contra
Informal	Ad-hoc	<ul style="list-style-type: none"> <li>informal / virtual networks</li> </ul>	<ul style="list-style-type: none"> <li>no legal contract</li> <li>short term</li> </ul>	<ul style="list-style-type: none"> <li>high transaction cost</li> <li>difficulties in adjusting expectations</li> </ul>	<ul style="list-style-type: none"> <li>low cooperation intensity</li> <li>limited information flow</li> </ul>
	Mid term	<ul style="list-style-type: none"> <li>informal / virtual networks</li> </ul>	<ul style="list-style-type: none"> <li>no legal contract</li> <li>mid term</li> </ul>	<ul style="list-style-type: none"> <li>high transaction cost</li> </ul>	<ul style="list-style-type: none"> <li>Commitment and information exchange strongly depended on behavior and interests of parties involved</li> </ul>
	Long term	<ul style="list-style-type: none"> <li>informal / virtual networks</li> </ul>	<ul style="list-style-type: none"> <li>No legal contract</li> <li>Long term</li> </ul>	<ul style="list-style-type: none"> <li>Long term horizon lowers uncertainty and supports trust building</li> </ul>	<ul style="list-style-type: none"> <li>No explicit cooperation</li> </ul>
Contract based	Mid term	<ul style="list-style-type: none"> <li>Framework contract (narrow focus)</li> </ul>	<ul style="list-style-type: none"> <li>Rules of conditions negotiated in framework contracts</li> <li>Mid term</li> </ul>	<ul style="list-style-type: none"> <li>Flexibility / involvement depends on stakeholders and projects</li> </ul>	<ul style="list-style-type: none"> <li>Repeated negotiations for each projects</li> </ul>
	Long term	<ul style="list-style-type: none"> <li>Framework contract (broad scope)</li> </ul>	<ul style="list-style-type: none"> <li>Legally binding within time frame</li> </ul>	<ul style="list-style-type: none"> <li>Flexibility limited in a stable environment</li> </ul>	<ul style="list-style-type: none"> <li>High transaction cost</li> </ul>
Legal entity	Long term	<ul style="list-style-type: none"> <li>Research funding organization</li> <li>endowments</li> <li>association</li> </ul>	<ul style="list-style-type: none"> <li>legally binding</li> <li>weak responsibilities assigned</li> <li>long term cope</li> </ul>	<ul style="list-style-type: none"> <li>Flexibility for parties involved</li> <li>subject of negotiations</li> </ul>	<ul style="list-style-type: none"> <li>strongly depended on stakeholders</li> <li>potential dominance of one partner</li> <li>strong need for discussion and negotiations</li> </ul>

## action related types of research cooperation

Formalization	Time horizon	Cooperation type	characteristic	Pro	Contra
Informal	Mid term	<ul style="list-style-type: none"> <li>Cluster</li> </ul>	<ul style="list-style-type: none"> <li>Informal and geographical networked institutions with joint mid term goals</li> </ul>	<ul style="list-style-type: none"> <li>Geographical closeness</li> <li>Strong commitment</li> <li>Missing legal rules support flexibility and ongoing adjustment</li> </ul>	<ul style="list-style-type: none"> <li>Involvement of actors depends on their interest, no external incentives possible</li> <li>Free rider problem: reliability and sustainability of cooperation unsure</li> </ul>
	Long term	<ul style="list-style-type: none"> <li>Cluster</li> <li>Technology parks</li> </ul>	<ul style="list-style-type: none"> <li>Informal and geographical networked institutions with joint mid term goals</li> </ul>	<ul style="list-style-type: none"> <li>Long term networking strengthens cooperation and mutual trust</li> </ul>	<ul style="list-style-type: none"> <li>No controlling mechanisms</li> <li>No formal agreements</li> </ul>
Contract based	Mid term	<ul style="list-style-type: none"> <li>Contract research</li> <li>Company initiatives for supporting scientific / research fellows</li> <li>Patent and license agreements</li> <li>Project related cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Timely limited</li> <li>Specified terms of conditions</li> <li>Contract based</li> </ul>	<ul style="list-style-type: none"> <li>Goal orientation</li> <li>Clear structured cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Projects often determined by needs of industrial partner</li> <li>Limited scientific freedom</li> <li>Companies do not build own know-how and absorptive capacities</li> <li>Difficulties in coordination</li> <li>High negotiation cost</li> </ul>

## Resource oriented cooperation

Formalization	Time horizon	Cooperation type	characteristic	Pro	Contra
Contract based	Short term	<ul style="list-style-type: none"> <li>Project related cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Cooperation contract for specific project</li> <li>Objectives, resources and exploitation of results predefined</li> </ul>	<ul style="list-style-type: none"> <li>Deep cooperation</li> <li>Adjusted interests</li> <li>Contract to steer and monitor cooperation activities</li> </ul>	<ul style="list-style-type: none"> <li>Limited freedom to act for stakeholders</li> <li>High negotiation cost prior cooperation</li> </ul>
	Mid term	<ul style="list-style-type: none"> <li>Project related cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Cooperation contract for multiple succeeding projects</li> <li>Objectives, resources and exploitation paths are negotiated in general – freedom to act</li> </ul>	<ul style="list-style-type: none"> <li>Considers interest and resources available by stakeholders</li> <li>Increased freedom to act due to long term horizon</li> </ul>	<ul style="list-style-type: none"> <li>High negotiation cost prior cooperation activities</li> <li>Difficulties formulating interest and objectives</li> </ul>
Legal entity	Long term	<ul style="list-style-type: none"> <li>Subsidiary institution</li> </ul>	<ul style="list-style-type: none"> <li>Unlimited cooperation contract</li> <li>General rules for cooperation</li> <li>Stakeholders not bound into legal entity</li> </ul>	<ul style="list-style-type: none"> <li>Long term horizon</li> <li>Broad objectives</li> </ul>	<ul style="list-style-type: none"> <li>Legal activities limited</li> <li>Additional administrative expenditures</li> </ul>
		<ul style="list-style-type: none"> <li>Joint entity</li> </ul>	<ul style="list-style-type: none"> <li>Stakeholders bring resources into legal entity</li> </ul>	<ul style="list-style-type: none"> <li>High and long term commitment of stakeholders</li> <li>Resolving entity causes high transaction costs</li> </ul>	<ul style="list-style-type: none"> <li>High negotiation cost in the beginning</li> <li>Potential legal barriers</li> </ul>

# ad-hoc PPP common practice; test PPP fashionable topic; sustainable PPP likely to prosper

characteristic	Ad-hoc PPP	Test PPP	sustainable PPP
<b>degree of formalization</b>			
Status	<ul style="list-style-type: none"> <li>• Cooperation contract</li> <li>• letter of interest / intend</li> </ul>	<ul style="list-style-type: none"> <li>• Cooperation contract</li> </ul>	<ul style="list-style-type: none"> <li>• Legal entity</li> </ul>
Commitment	<ul style="list-style-type: none"> <li>• Somewhat strong</li> </ul>	<ul style="list-style-type: none"> <li>• strong</li> </ul>	<ul style="list-style-type: none"> <li>• Very strong</li> </ul>
<b>Interaction form</b>			
Involved parties	<ul style="list-style-type: none"> <li>• Min 1 public and 1 private actor</li> <li>• Open to others</li> </ul>	<ul style="list-style-type: none"> <li>• Min 1 public and 1 private actor</li> <li>• Multiple actors possible</li> </ul>	<ul style="list-style-type: none"> <li>• Min 1 public and 1 private sector actor</li> <li>• Equal rights for partners</li> <li>• Number limited</li> </ul>
Goals	<ul style="list-style-type: none"> <li>• Clear specified objectives</li> <li>• Innovation</li> <li>• Technology renewal</li> </ul>	<ul style="list-style-type: none"> <li>• Partly open goals</li> <li>• Limited project definition</li> <li>• Technological renewal</li> <li>• Shorten innovation process</li> </ul>	<ul style="list-style-type: none"> <li>• General goal definition rather unspecific</li> <li>• Substantial flexibility to adapt goals</li> <li>• Innovation</li> <li>• Increase effectiveness and efficiency of R&amp;D</li> <li>• Technological breakthroughs</li> </ul>
Co operation location	<ul style="list-style-type: none"> <li>• Diverse locations</li> <li>• virtual networks</li> <li>• Ad-hoc-resource sharing according to current project</li> <li>• No project portfolio</li> </ul>	<ul style="list-style-type: none"> <li>• Based in existing infrastructures of one partner</li> <li>• Resources allocated to partner most suitable for project</li> </ul>	<ul style="list-style-type: none"> <li>• Within institution</li> <li>• Resources shared (staff, financial resources, knowledge, infrastructure)</li> <li>• Joint decision power and liability</li> </ul>
Chances / risk share	<ul style="list-style-type: none"> <li>• Result directly applicable</li> <li>• Application part of contract agreement</li> <li>• application risk specified and shared</li> </ul>	<ul style="list-style-type: none"> <li>• Often no strict detailed regulation</li> <li>• Exploitation rights negotiated after conclusion of project work</li> </ul>	<ul style="list-style-type: none"> <li>• Clear rules of result ownership and risk sharing prior any work</li> </ul>
<b>Time horizon</b>			
	<ul style="list-style-type: none"> <li>• Short to mid term</li> <li>• Project related</li> </ul>	<ul style="list-style-type: none"> <li>• Mid term</li> <li>• project related</li> </ul>	<ul style="list-style-type: none"> <li>• Long term</li> </ul>



# PPP have impact on the research base the broader innovation system and foreign actors

		Impact on			overall impact
		Research system	Innovation system	Impact on foreign actors	
PPP-Type	Ad-hoc PPP	<ul style="list-style-type: none"> <li>Selected technological developments</li> <li>Potential inspiration for new research fields</li> <li>Limited TT</li> </ul>	<ul style="list-style-type: none"> <li>Timely and focused influence on NIS</li> </ul>	<ul style="list-style-type: none"> <li>Timely limited impact</li> <li>Marketing tool to develop external relations and contacts for future cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Focused support of applied R&amp;D</li> <li>Contribution to awareness creation for cooperation and exchange</li> <li>Strengthening project related research subsidies</li> </ul>
	Test-PPP	<ul style="list-style-type: none"> <li>New knowledge / new technologies in high uncertainty research fields</li> <li>Potential inspiration for new research fields</li> </ul>	<ul style="list-style-type: none"> <li>Mid to long term synergies through geographic closeness and resource sharing</li> <li>Shortened innovation processes</li> </ul>	<ul style="list-style-type: none"> <li>International impact project limited</li> <li>Contribution to long term international cooperation more difficult</li> </ul>	<ul style="list-style-type: none"> <li>Influence and decision making because of non legal status limited</li> <li>Incentive for industrial R&amp;D investment and cross border (entity) collaboration</li> </ul>
	Sustainable PPP	<ul style="list-style-type: none"> <li>Sustainable building of competences</li> <li>Further strengthening of knowledge base</li> <li>Support to cross entity / border collaboration</li> <li>Suitable for complex research fields</li> <li>Reduces uncertainty / R&amp;D risk</li> </ul>	<ul style="list-style-type: none"> <li>Focused and sustainable influence</li> <li>Clear strategy and long term cooperation</li> <li>Synergies</li> <li>Shortened innovation processes (increased efficiency and effectiveness)</li> </ul>	<ul style="list-style-type: none"> <li>Well suited tool to attract foreign partners / foreign direct R&amp;D investment</li> <li>Suitable for exploitation of national knowledge base</li> </ul>	<ul style="list-style-type: none"> <li>Strong commitment and long term influence on inter disciplinary research</li> <li>Substantial contribution to long term national and international innovation networks</li> <li>Strengthening of TT demand side</li> <li>improved integration of science in economy and society</li> </ul>

### Key success factors

- ▶ Creation of awareness with researchers in public research about approaches used by industrial researchers especially with respect to project management and result / application awareness
- ▶ Commitment to open communication with society and partners
- ▶ Development of organizations and management processes which are unique in many aspects to existing traditional HEI management.
- ▶ Internationalization of research is essential and requires explicit and offensive strategies
- ▶ Enhanced communication skills of researchers
- ▶ High engagement both from companies and the HEI management
- ▶ Legal framework conditions, esp. IP (ownership, liability) and labor regulation (sabbaticals; part time)
- ▶ Cooperation culture in scientific community
- ▶ Regular evaluation
- ▶ Contract management
- ▶ Controlling system
- ▶ Information, communication and decision making processes

### challenges

- ▶ Keep balance between basic research; applied research and commercial interest
- ▶ Transparency problems especially when competing partners are involved (competing values)
- ▶ Rent seeking interests of individual partners

## PPP seem promising instrument but need careful preparation

### ► Pro

- ☛ PPP strengthen interdisciplinary cross institution research sustainably
- ☛ Contribute significantly to exploitation of research results (industry - science relationships)
- ☛ Enable close exchange between basic research and applied research
- ☛ Contribute to networks between universities and between industries and universities
- ☛ Suitable for maintaining and strengthening the excellent image of Switzerland as research nation

### ► Contra

- ☛ Substantial transaction cost in early stages
- ☛ Danger that research agendas might be dominated by one partner / stakeholder
- ☛ Some unclearness for IP management remains

- ▶ **PPP are a measure of innovation policy complementary to other measures**
- ▶ **PPP offer advantages and incentives to all parties engaged**
  - ☛ **for industry: access to human resources and knowledge base;**
  - ☛ **for science base: enrichment of research agenda, discovery of new horizons;**
  - ☛ **for policy: strengthened TT;**
  - ☛ **for society: bigger closeness of science to society and innovation**
- ▶ **Rather than a unique fashionable innovation policy measure PPP combine advantages from different long established measures**
- ▶ **PPP are suitable for building the bridge between basic and applied research while preserving interests missions and visions of partners**
- ▶ **Effective and efficient PPP are a well suited instrument to attract international attention e.g., to profile NIS and attract foreign direct investment in R&D related fields**



Thank you  
for your attention!

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