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RCISD
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US R&D cooperation and funding opportunities;

How to create relevant partnerships in the US

06-07 June 2019, Bulgaria

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Chief Scientific Officer
Regional Centre for Information and Scientific Development
www.rcisd.eu

Horizon 2020
European Union funding
for Research & Innovation

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The classical European perception of university-industry synergies

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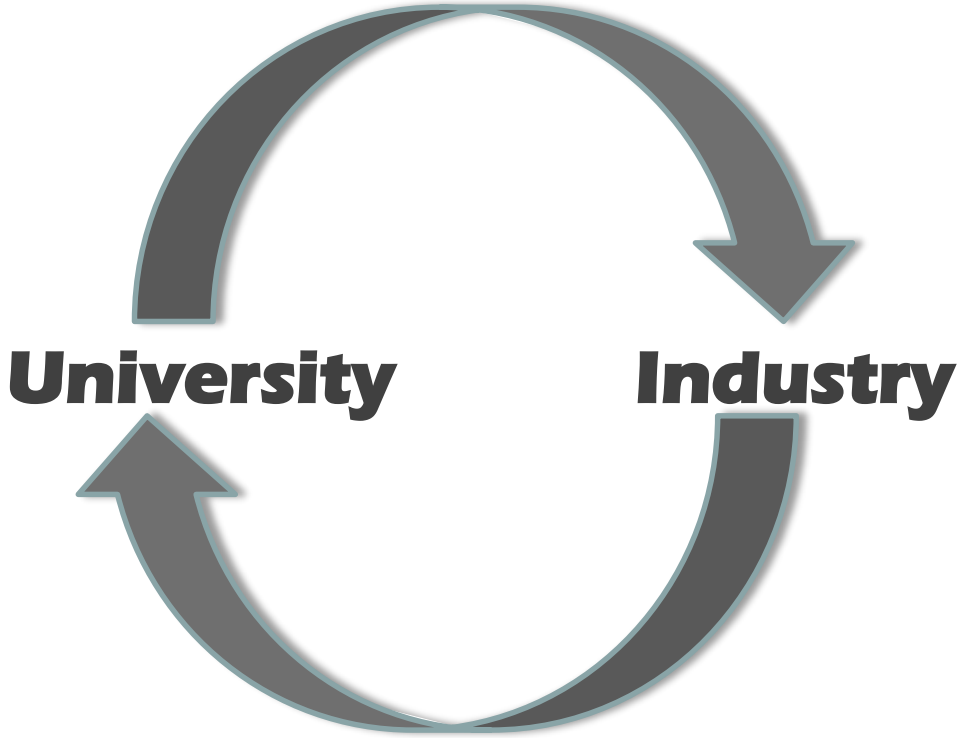
Technology Transfer



- Research contracts
- Gifts
- Patent royalties

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Technology Transfer

Market Pull
Innovation based on market needs

Science

Contracts between higher education institutions and the entrepreneurial sphere

Market

Spin-enterprises, issuing patents

Technology push
Innovation based on research results

Research | Development | Innovation

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Misunderstandings about the nature of the of HEI–industry cooperation (through the example of the Stanford University and Silicon Valley)

First misperception :

Industry supports research at Stanford

Source	Stanford
US Department of Energy	28.9%
US Department of Health and Human Services	25.5%
NASA	12.6%
US Department of Defense	9.4%
National Science Foundation (NSF)	6.0%
Industry	**15.0%**
Others	2.6%

Industry support represents only 15% of total at Stanford and generally less than 20%

Stanford Facts 2013; J.L. Clément, Kiev, 21 May 2013

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Misunderstandings about the nature of the of HEI–industry cooperation (through the example of the Stanford University and Silicon Valley)

Second misperception :

Patents bring significant resources to Stanford!

- In 2012–13 Stanford concluded 103 new licenses
- Stanford received gross royalty revenue from 622 technologies
- 42 of the inventions generated $100,000 or more in royalties
- 3 inventions generated $1 million or more.

Stanford received more than $87 million in gross royalty revenue less than 1.8% of the total budget of $4.8 billion

Stanford Facts 2013; J.L. Clément, Kiev, 21 May 2013

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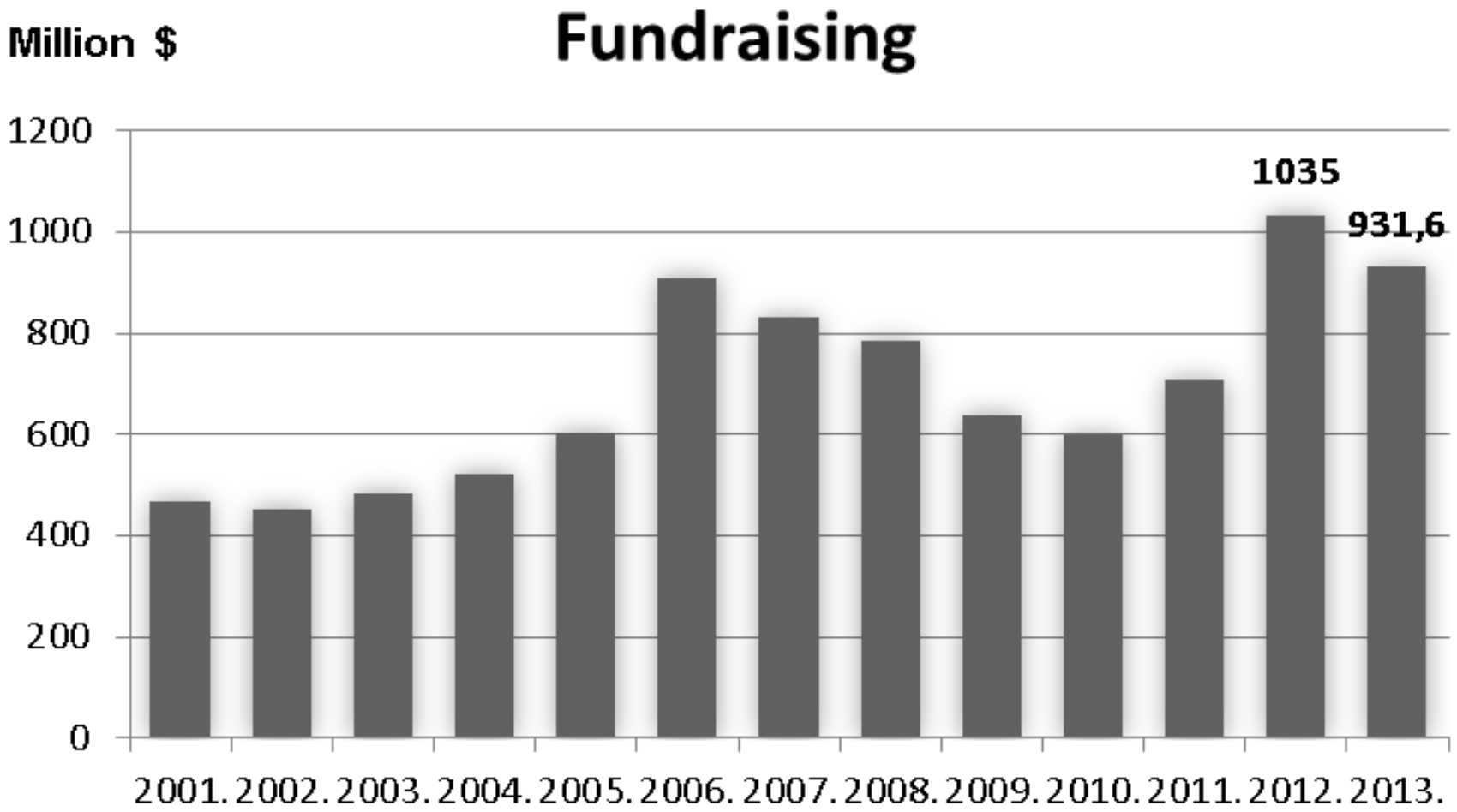
Third misperception: Industry versus individuals



Stanford Facts 2013; J.L. Clément, Kiev, 21 May 2013

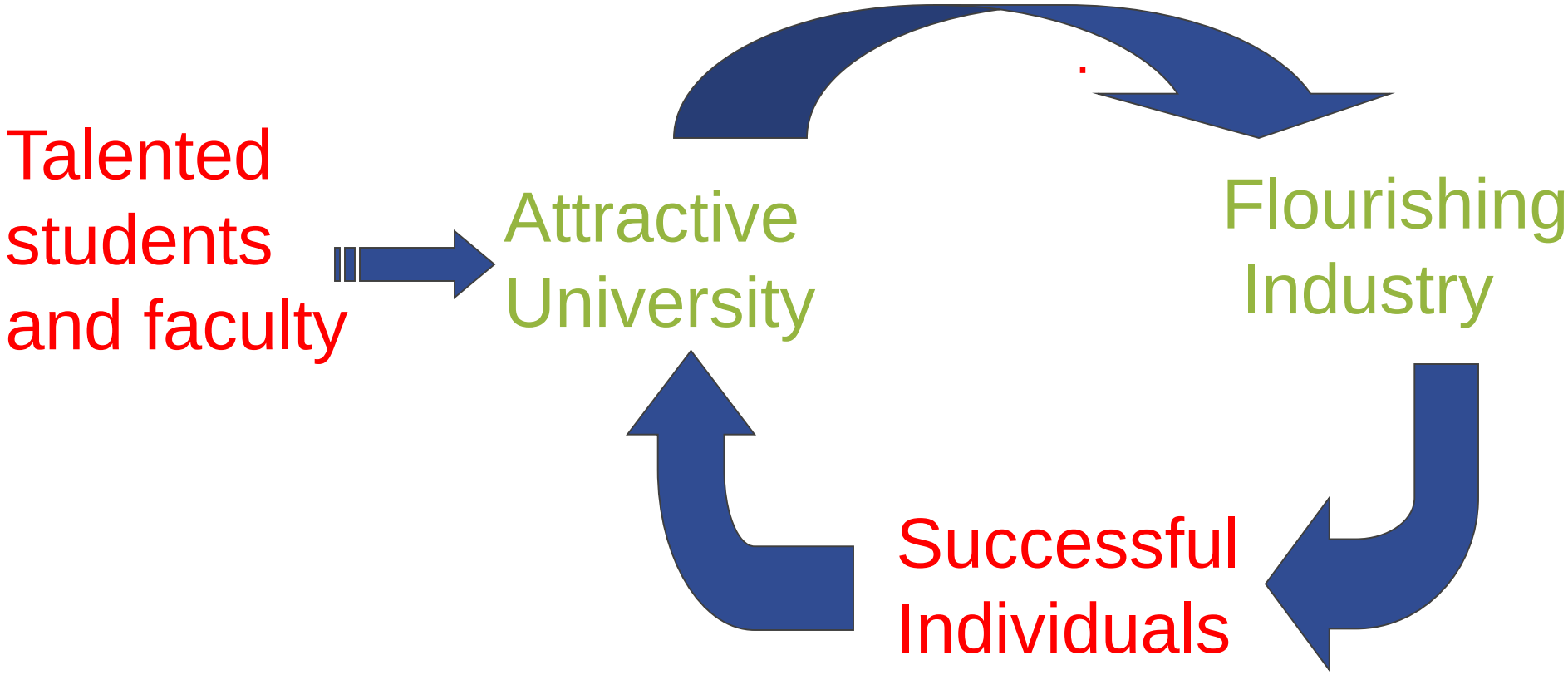
Summary

In summary	• Donations come mainly from **successful individuals** • Research funding comes mainly from the **government** • Patents create 1.8% of the revenue
So why the impression of such strong connections between Stanford and Silicon Valley?	~33% of the Silicon Valley revenue is from Stanford spin-offs
What proportion of enterprises have used Stanford technology either directly or indirectly?	Of the 1200 enterprises issued from Stanford, only 5% have used technologies developed at Stanford!
Stanford's contribution to Silicon Valley?	**Technology** <<**The Myth**>> **Educated People** <<**The Reality**>>

Probably the most important contribution that Stanford has made to the development of Silicon Valley was to attract and to educate talented students, many of whom preferred to stay in the area.

Stanford Facts 2013; J.L. Clément, Kiev, 21 May 2013; courtesy of Prof. Bob Byer, Stanford

Conclusion: the Stanford-Silicon Valley exchange model



Government – Federal Level Funding

Department of Defense (DoD)
R&D: 53,396 Millions of dollars

National Institutes of Health (NIH)
R&D: 26,144 Millions of dollars

National Aeronautics and Space Administration (NASA)
R&D:10,327 Millions of dollars

Department of Energy (DoE)
R&D: 13,408 Millions of dollars

National Science Foundation (NSF)
R&D: 5,371 Millions of dollars

Source: Federal Research and Development Funding: FY2018

US Research Support

Federal Initiatives and Programmes

State Initiatives and Programmes

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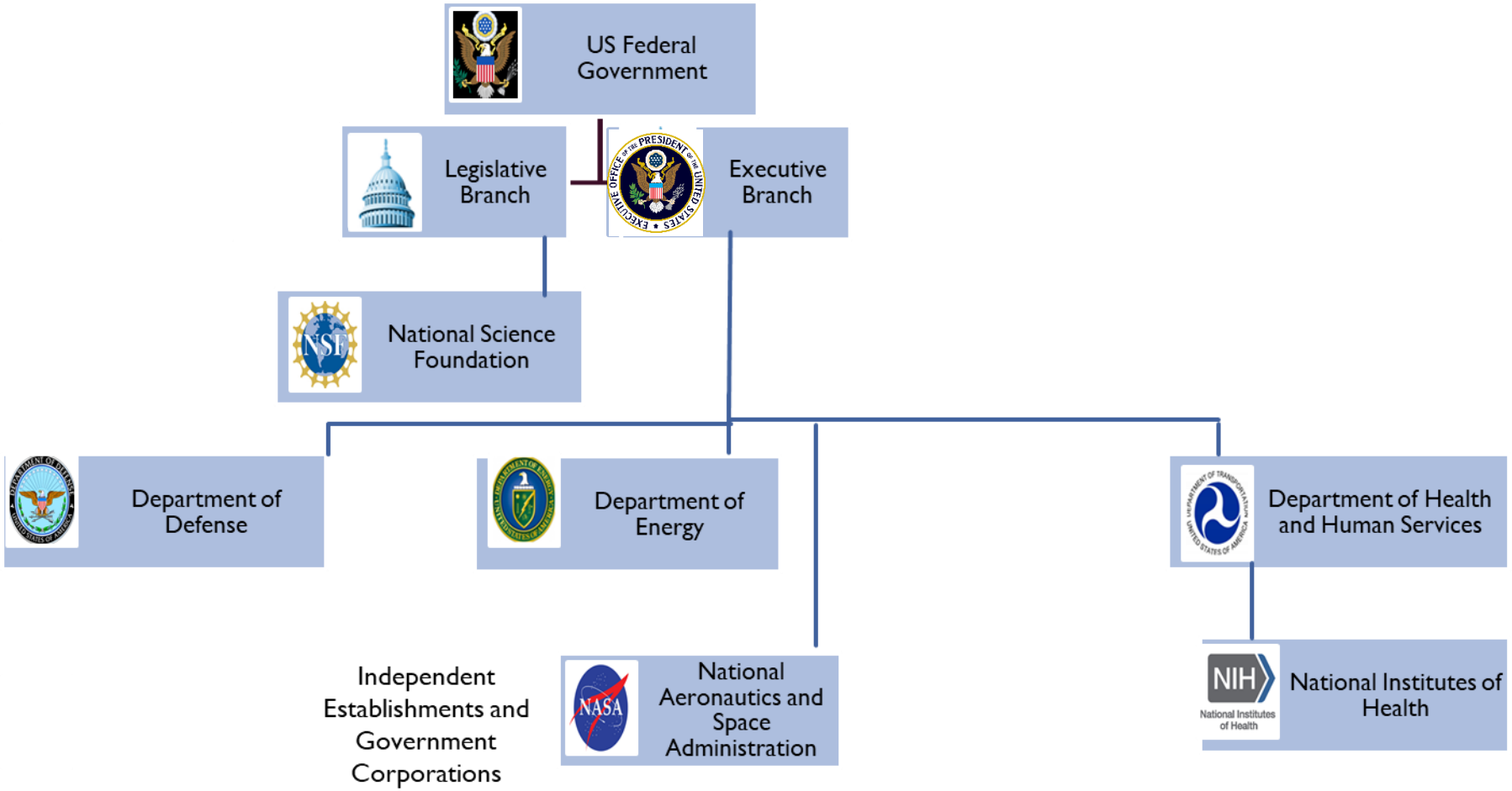
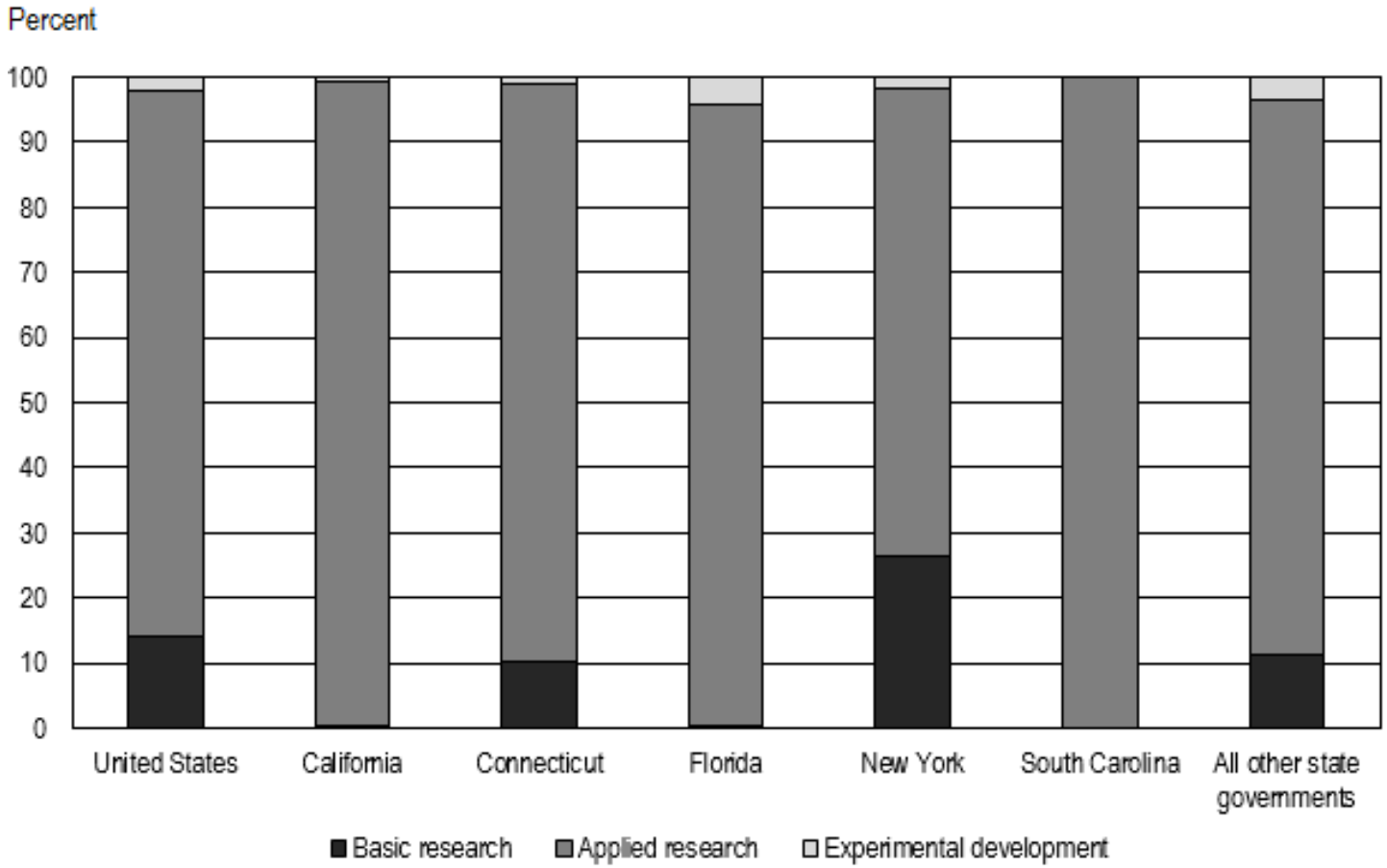
US R&D Collaboration Support Schemes at the Federal Level



US R&D Collaboration Support Schemes at the State Level

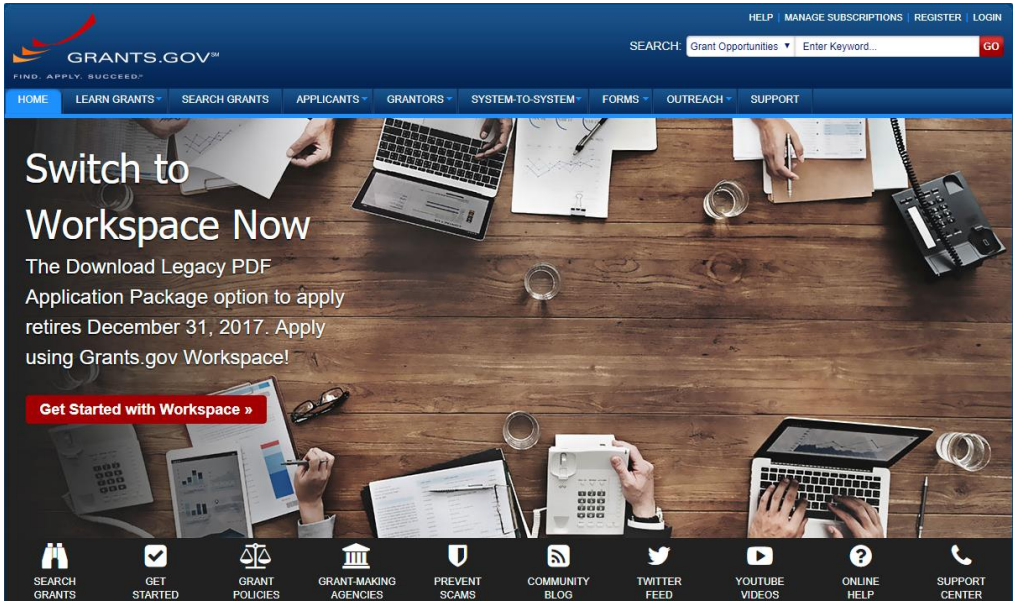


Source: National Science Foundation, National Center for Science and Engineering Statistics, Survey of State Government Research and Development, FYs 2016

How to apply to US funding opportunities

- Each funding opportunity among different departments and agencies includes **different needs and requirements**.
- Normally, a **set of pre-requisites or registrations** are needed for submission.

https://www.grants.gov/



Example of a potential opportunity

- In general, **no agency is opposed to unfunded international collaborators**, but no agency, except in a very few cases, makes a special effort to target international partners.

Name	Advanced Vehicle Technologies Research Funding Opportunity Announcement (FOA)
Agency	DoE, National Energy Technology Laboratory
Objective	Seeks research project to address priorities in the following areas: batteries and electrification; materials; technology integration and energy efficient mobility systems; energy efficient commercial off road vehicle technologies; and co optimized advanced engine and fuel technologies to improve fuel economy.
Budget	5.000.000 USD (award ceiling)
Deadline	13/07/2018

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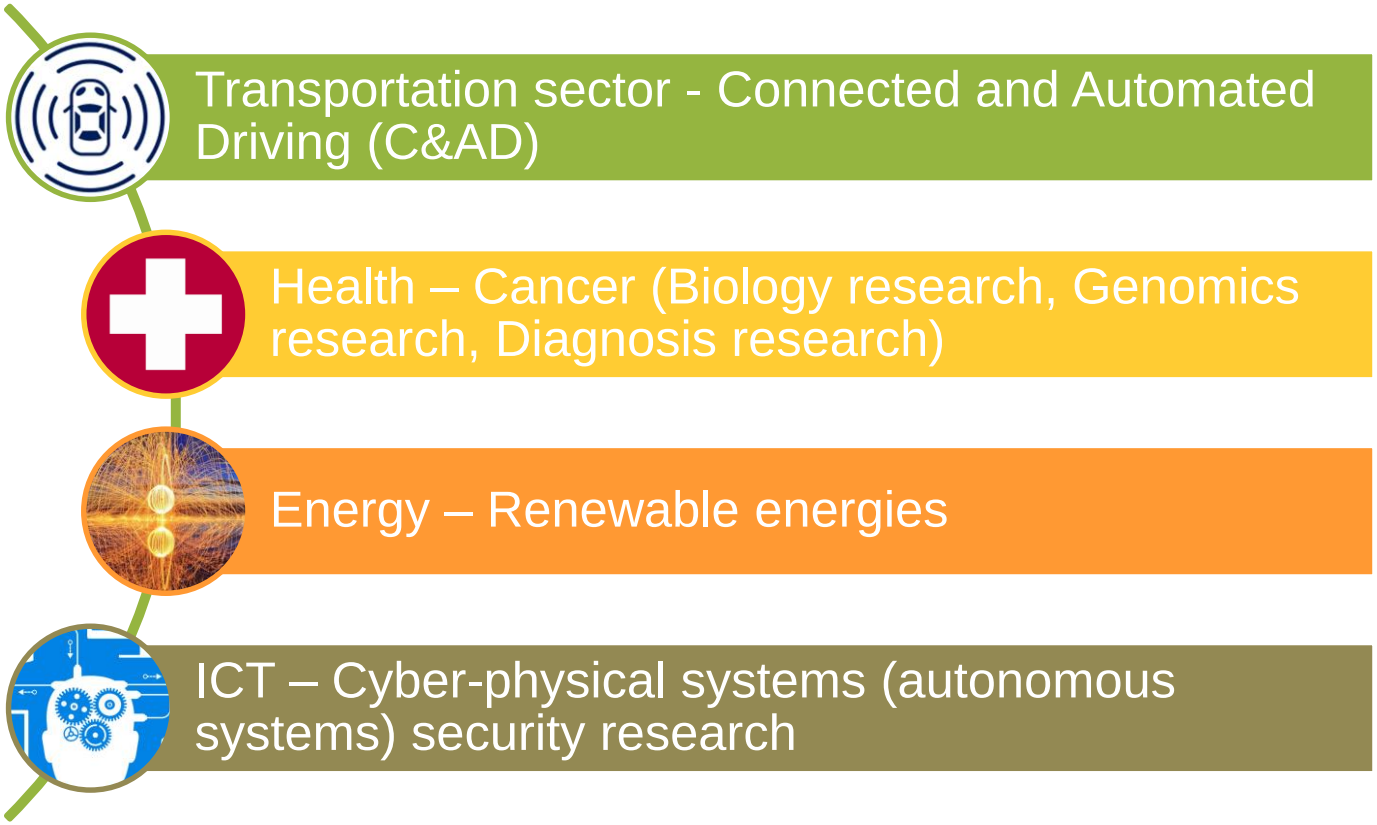
Relevant EU-US research cooperation topics



Transportation sector - Connected and Automated Driving (C&AD)

Initial Approach

- University research groups
- Industry–university research centers
- Industry Clusters
- Research networks and professional associations
- Conferences and other networking events
- US R&D initiatives and programs

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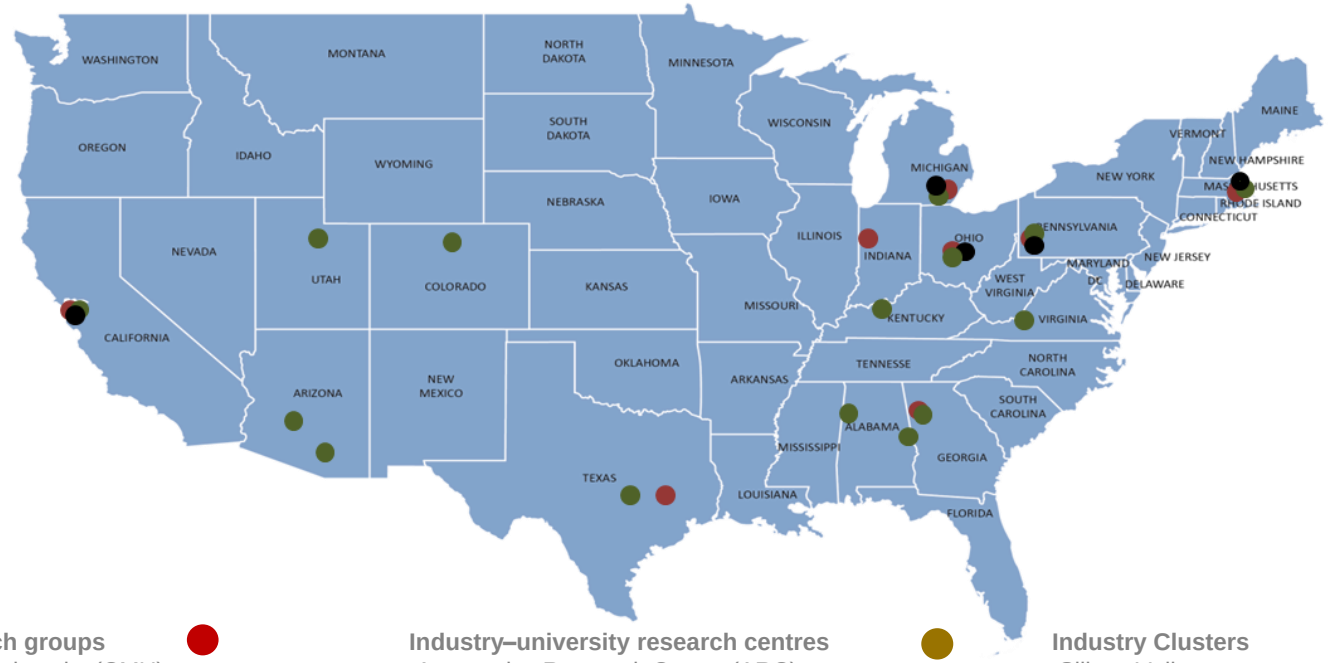
Transportation sector - Connected and Automated Driving (C&AD)



University research groups
Carnegie Mellon University (CMU)
Georgia Institute of Technology
Massachusetts Institute of Technology (MIT)
Purdue University
Stanford University
Texas A&M, University
University of California, Berkeley
University of Michigan
Ohio State University

Industry–university research centres
Automotive Research Center (ARC)
Center for Advanced Automotive Research (CAAR)
Center for Advanced Vehicle and Extreme Environment Electronics (CAVE)
Center for Unmanned Aircraft Systems (C-UAS)
Center for Automotive Research at Stanford (CARS)
Efficient Vehicles and Sustainable Transportation Systems (EV-STS)
Ford Research and Innovation Center Palo Alto
Smart Vehicle Concepts Center (SVC)
Toyota-CSAIL Joint Research Center
Uber Advanced Technologies Group (ATG)
UM & Ford Center for Autonomous Vehicles (FCAV)

Industry Clusters
Silicon Valley
Michigan Automotive Cluster
NW 33 Automotive Cluster
Massachusetts Robotics Cluster
Cluster for Unmanned Vehicles and Robotics

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US R&D collaboration support schemes in C&AD

Federal Initiatives and Programmes

- National Science Foundation (NSF)
- Department of Defense (DOD)
- Department of Energy (DOE)
- Department of Transportation (DOT)

Grants.gov

State Initiatives and Programmes

- ROADX
- Florida Automated Vehicles (FAV) programme
- Michigan Mobility Initiative
- Ohio's 33 Smart Corridor

Department of Transportation (DOT)

Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD)	○ ATCMTD issues competitive grants for the development of advanced transportation technologies to improve safety, efficiency, system performance and infrastructure.
Connected Vehicle Pilot Deployment Programme	○ The Connected Vehicle Pilot Deployment Programme aims to support testing and operationalization of advanced mobile and roadside technologies and enabling of several C&AD applications.
FHWA Exploratory Advanced Research (EAR) Programme	○ The FHWA EAR Programme is focused on identifying gaps faced by applied highway research programs in order to anticipate emerging issues with national implications.
ITS Joint Program Office (ITS JPO)	○ The ITS JPO programme supports C&AD research through investments in research initiatives, exploratory studies, technology transfer and training.

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US R&D collaboration support schemes at the State Level

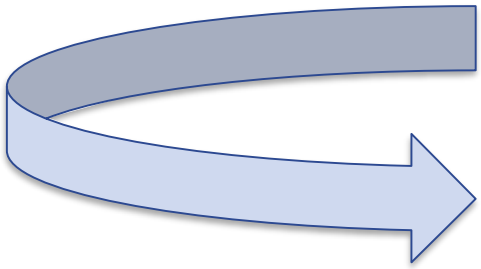
Colorado: ROADX	○ RoadX is a Colorado Department of Transportation initiative that focuses on promoting the use of innovative technologies to improve safety, mobility and the efficiency of the state's transportation system.
Florida Automated Vehicles (FAV) programme	○ The FAV initiative is focused on helping to educate the public for the deployment of C&AV technologies on public roadways. The FAV programme is led by the Florida Department of Transportation
Michigan Mobility Initiative	○ Michigan Mobility Initiative aims to strengthen, protect and promote the state's global leadership in the next-generation mobility development.
Ohio's 33 Smart Corridor	○ The Corridor is a key element of Ohio's new Smart Mobility Initiative. This initiative is a Ohio Department of Transportation with Ohio's leading automotive research centres and local governments and aims to provide ground to safely test innovative technologies that will change the mobility system in Ohio.

Observations

- The US funding system is **highly complex** and comprises different actors;
- Federal R&D funding is provided through different federal agencies;
- There are significant federal and state R&D investments;
- **Information** on funding programmes and initiatives is **not easy to access**.

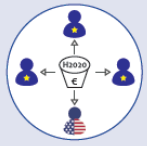
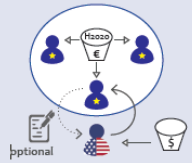
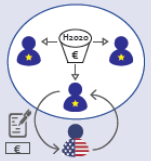
III. Observations

- Specific **information** on international cooperation is **rarely available online**;
- While European funding opportunities, such as Horizon 2020, strongly encourage cooperation with non-EU researchers; US funding opportunities are highly focused on US researchers.



BILAT USA 4.0

4 ways for US researchers to participate in Horizon 2020

	I. Standard Horizon 2020 Terms	II. Article 14a "International Partners"	III. Regular 3rd party (e.g. subcontractor or legal link,EU definition)	IV. EU-U.S. Implementing Arrangement
	 Horizon 2020 project	 Horizon 2020 project	 Horizon 2020 project	 Horizon 2020 project optional MoU
Considered as:	Beneficiary	U.S. as International Partner - Specific third party linked to one (or more) beneficiaries	Third Party (linked to beneficiary either via sub-contract (Art. 13) or legal link (Art. 14)	EU as Beneficiary U.S. as "Research Partner" to the project
Form of funding:	EU funding from Horizon 2020 in exceptional cases possible and SC1	EU partner funded via H2020 U.S. partner brings own funding	Payment for service (subcontract) or funding for task possible (legal link) from linked beneficiary	EU Partner: Horizon 2020 U.S. partner: brings U.S. funding
Agreement with funding organisations:	H2020 Grant Agreement	No legal obligation to sign an agreement, but U.S. International partner must be named in Grant Agreement	EU Partner: Grant Agreement U.S. Partner: Subcontract or legal link with beneficiary	EU Partner: H2020 Grant Agreement U.S. Partner: sings own agreement with their funding organisation
Agreement in consortium:	Consortium Agreement in accordance with H2020 regulations All parties share complete workload	Can sign MoU or alternative agreement U.S. partner has responsibility for specific task	Specific service/task (subcontract) or task (legal link 3rd party) defined in contract between H2020 partner and U.S.entity; no further information on project data than that regarding assigned service or task is provided	Can sign MoU or alternative agreement
Form of Reporting:	In accordance with H2020 regulations (and via Participant Portal)	EU partner in accordance with H2020 regulations and can report about U.S. International Partner U.S.: in accordance with US funding organization but reports to EU partner	Subcontractor is paid via invoice to linked beneficiary. EU beneficiary receives money from H2020	EU partner: in accordance with H2020 regulations, U.S.: in accordance with U.S. funding organisation

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Strategy for going international

US representation

Self-assessment

Internationalisation strategy

Form strategic partnerships

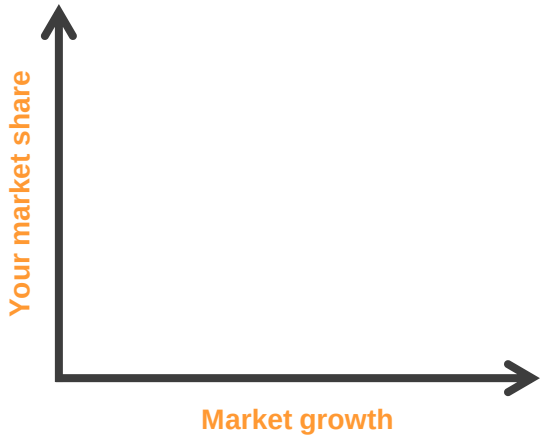
Your team for internationalisation

Build your network of channel partners

Self-assessment

Actions:

- Identify your core competences.
- Formulate your mission and vision for the future, and be able to present it.
- **Be able to present your business activities and your added-value to the US market.**

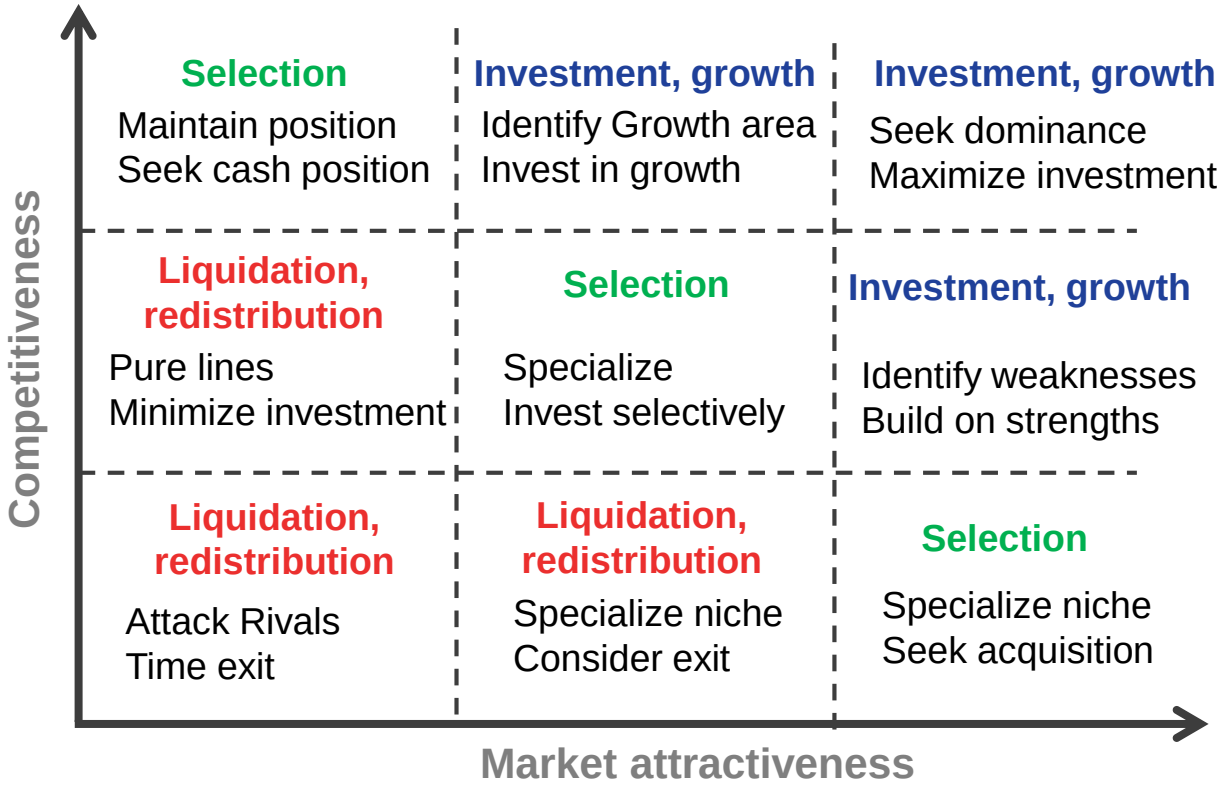


→ *Being able to present your possible market share and the possible market development is an advantage*

→ *What is a differentiating attribute in the European market may be a common attribute/not relevant in the US market*

Self-assessment

Analyse your market competitiveness in the light of your market attractiveness



Source: McKinsey (1971)

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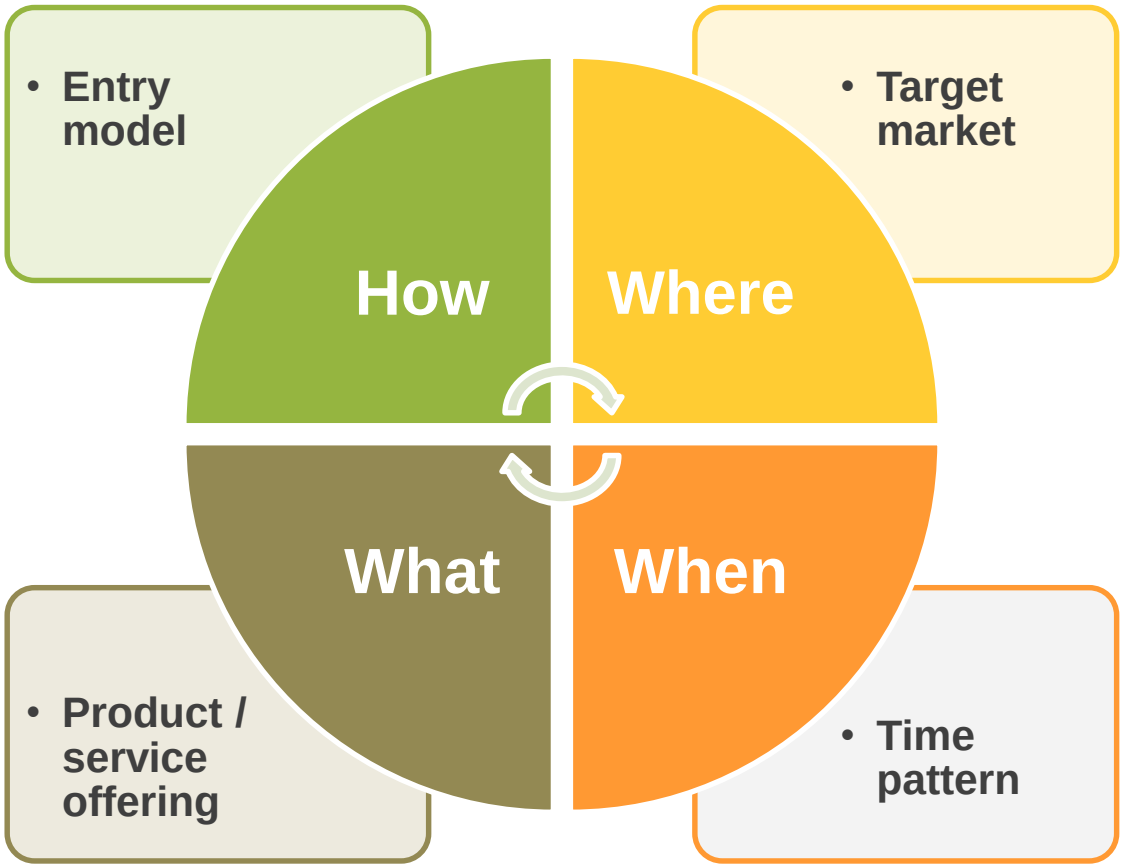
Internationalisation strategy



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Forming strategic partnerships

- **Locate the actors on the market – your potential partners AND your potential competitors, through:**
  - ENRICH in the USA services.
  - Attending relevant events with stakeholders (matchmaking events, conferences etc.) – select carefully!
- **Identify the partner you wish to collaborate with in light of your internationalisation strategy.**
- **Choose carefully the form of partnership:** joint venture, OEM, ODM.
- **If there are joint activities – share responsibilities in financial planning.**
  - Clearly defining who is responsible for what exactly (accounting, overhead, etc.).

Your team for internationalisation

- **Hire a specific team for expanding in the US market – responsible for sales and marketing.**

- **Hire qualified sales personnel with the proper technical background if needed for the product:**
  - Workers with high-level technical expertise AND sales expertise.
  - **Preferably from the US, and located close to your first strategic partner.**

Build your network of channel partners

- **Channel partner:** Person or organisation that partners with a manufacturer or producer to market and sell the manufacturer's products, services, or technologies. Usually through a co-branding relationship.

1. Determine your channel partnership strategy:

- You sell through your partner.
- Your partner sells with you.
- Your partner sells for you.

2. Exploit your strategic partner's channel partnerships:

- Approach more accessible potential partners.
- Position the proposed partnership as a value added that benefits the channel partner as well.

Build your network of channel partners

3. **Form your first channel partnerships:**
   - With distributors, vendors, retailers, consultants, system integrators (SI), technology deployment consultancies, value-added resellers (VAR), manufacturers' representatives etc.
   - Depends on your type of product.
4. **Organise pre-sale efforts with the collaboration of channel partners.**
5. **Participate on tradeshows exhibits and roadshows with channel partners.**
6. **Organise your own annual events to grow your network of partnership.**

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