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Module 5

Financing the Digital Transformation of the Agricultural Business



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Modules

1. Introduction to the Digitization in the Agriculture

2. Digital skills for Improving the Agricultural Business

3. Managing the Agricultural Business in the Digital Economy

4. Building Economical Value Chain in Agricultural Using Digital Technologies

5. Financing the Digital Transformation of the Agricultural Business



Learning Objectives of Module 5

After completing this module, you will:

- ✓ Be able to understand the diversity of funding instruments,
- ✓ Understand that along the innovation chain different financing options exist
- ✓ Learn about selecting the preferred options for financing your digital agriculture activity/project,
- ✓ Understand impact and requirements of different funding mechanisms.





Unit 1

The Financing Needs along the Innovation Chain - from Research to Innovative Products/Services

Objectives

- ✓ Understand the meaning of innovation and the elements of the innovation chain
- ✓ Understand the elements of a business environment, in which innovation happens
- ✓ Understand the challenges of identifying the right funding sources in the different stages of the innovation chain

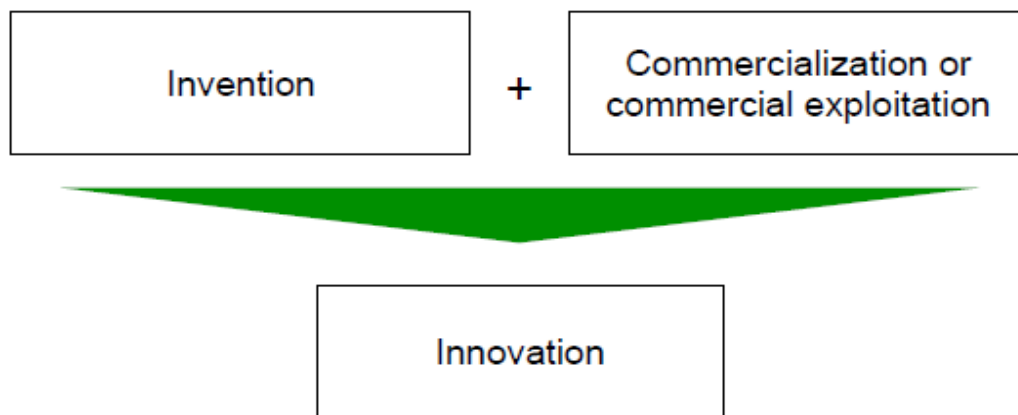


What is Innovation?

“Innovation - the ability to create and capture economic value from inventions”

Business Week, Funding Invention Vs. Managing Innovation

"Invention" and "innovation" are related concepts but have distinct meanings in the context of creativity, development, and progress:



From Invention to Innovation

Invention:

- An invention refers to the creation of a new product, process, technology, or idea that did not previously exist.
- An invention can be a standalone creation and does not necessarily have to lead to immediate practical use or commercialization.
- It involves coming up with something original and novel.
- Inventions can range from physical objects to abstract concepts.
- The focus is on the act of creating something new, regardless of whether it has practical applications or market value.

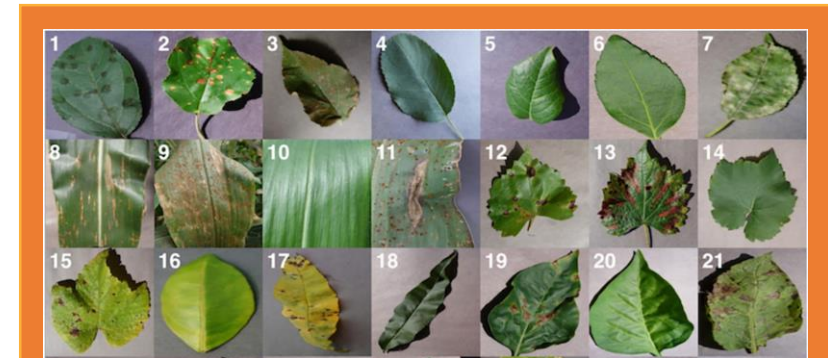
Innovation:

- Innovation is closely tied to bringing inventions or ideas to the market and making them usable, valuable, and relevant to society.
- Innovation involves the process of taking an existing idea, product, or process and improving, modifying, or adapting it in a way that adds value or addresses a specific need.
- It often involves applying creativity to enhance or transform an existing concept.
- Innovations can be incremental (small improvements) or radical (fundamental shifts or breakthroughs).
- The focus is on implementing ideas to create practical solutions or improvements that have real-world impact.

Example of an Invention in Agriculture

One example of an **invention** in digital agriculture the market could be a **highly efficient and accurate automated plant disease detection system using advanced computer vision and machine learning algorithms.**

This system is in the prototype or experimental stage, demonstrating promising results in controlled environments or small-scale trials. However, it has not yet undergone the necessary steps for commercialization, such as mass production, regulatory approvals, and market launch.



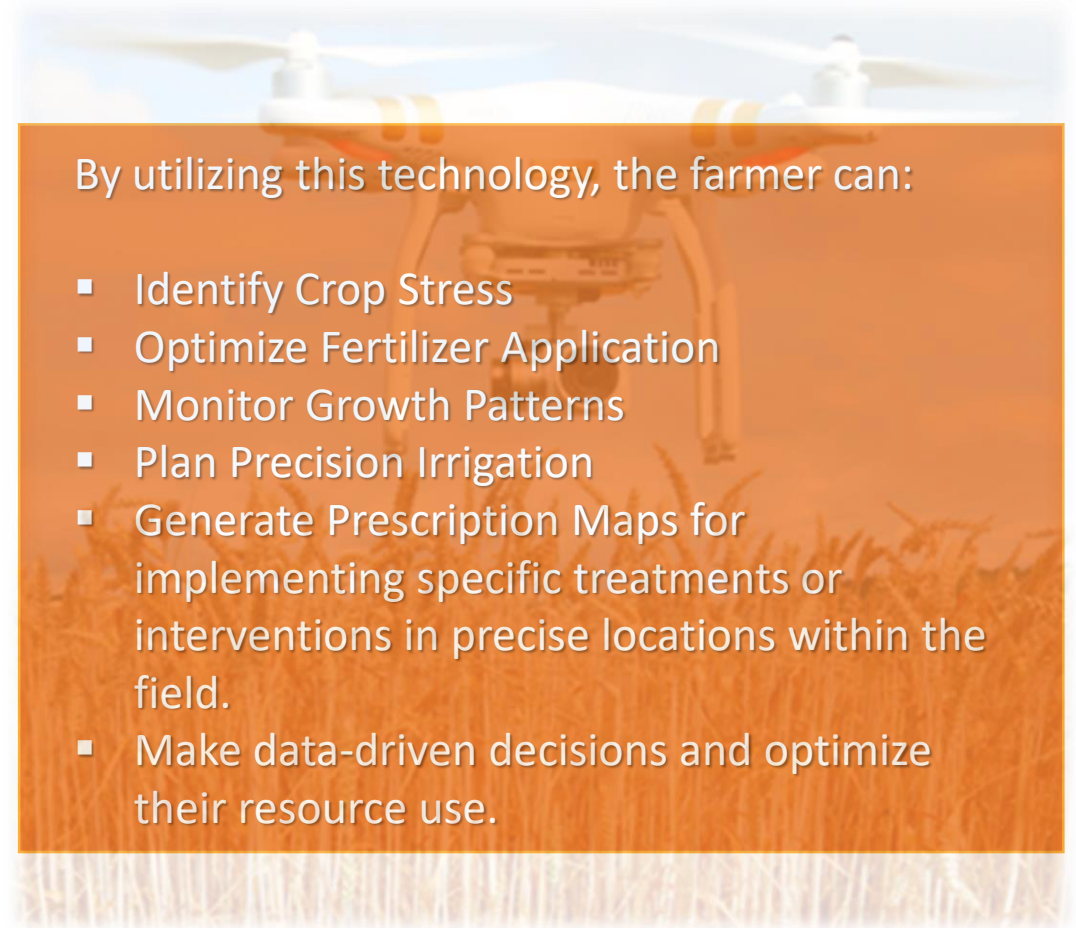
Research results in this area between 2015 and 2022 are presented in English here:

<https://www.frontiersin.org/articles/10.3389/fpls.2023.1158933/full>

Example of an Innovation in Agriculture

One example of an **innovation** in digital agriculture is the use of **autonomous drones equipped with multispectral cameras for precision crop monitoring.**

In this scenario, the farmer employs drones that fly over the fields capturing high-resolution images in various wavelengths. The multispectral cameras can detect specific indicators of plant health, such as chlorophyll levels or water stress, which are not visible to the naked eye. This data is then processed using specialized software that generates detailed maps showing areas of potential concern or optimization.



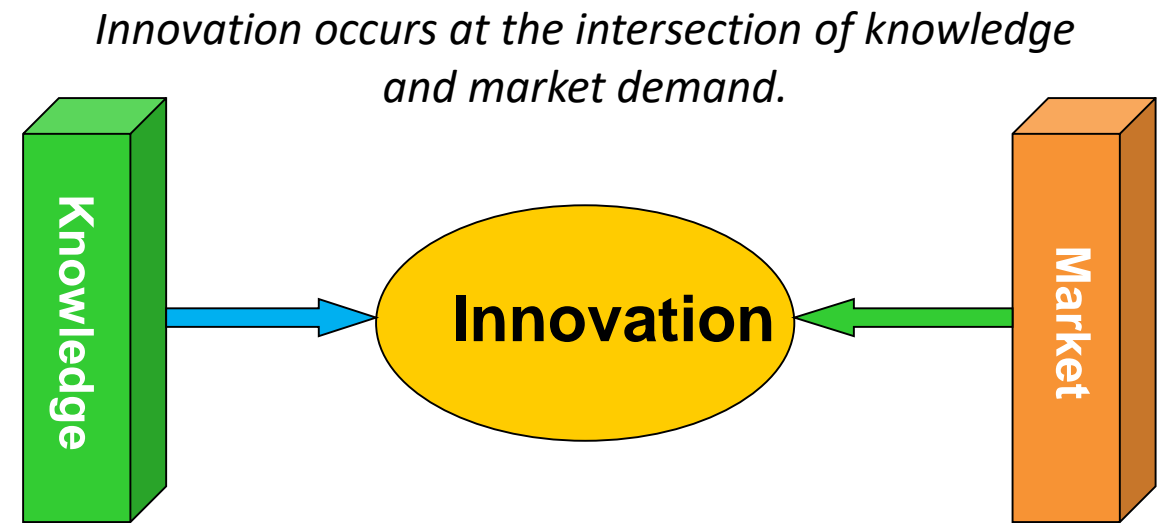
By utilizing this technology, the farmer can:

- Identify Crop Stress
- Optimize Fertilizer Application
- Monitor Growth Patterns
- Plan Precision Irrigation
- Generate Prescription Maps for implementing specific treatments or interventions in precise locations within the field.
- Make data-driven decisions and optimize their resource use.

The Innovation Link ...

In summary:

- Invention is the creation of something new. An invention can serve as the basis for innovation.
- Innovation is the process of making improvements or adaptations to existing creations, resulting in practical applications on the market and meaningful changes in how tasks and processes are carried out.

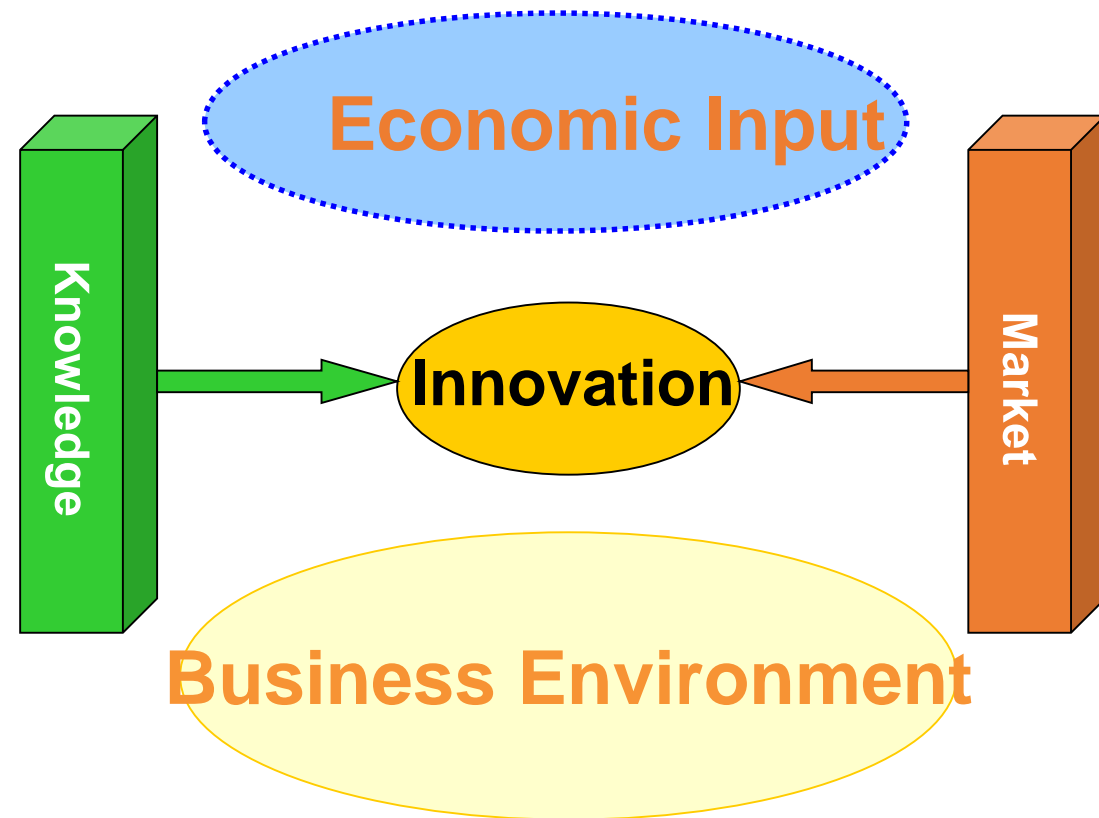


Innovations often build upon inventions to create tangible benefits in various fields and applications in the different market segments.

... the Support Needs ...

In order to convert inventions into innovations and to apply them in the markets, you will need:

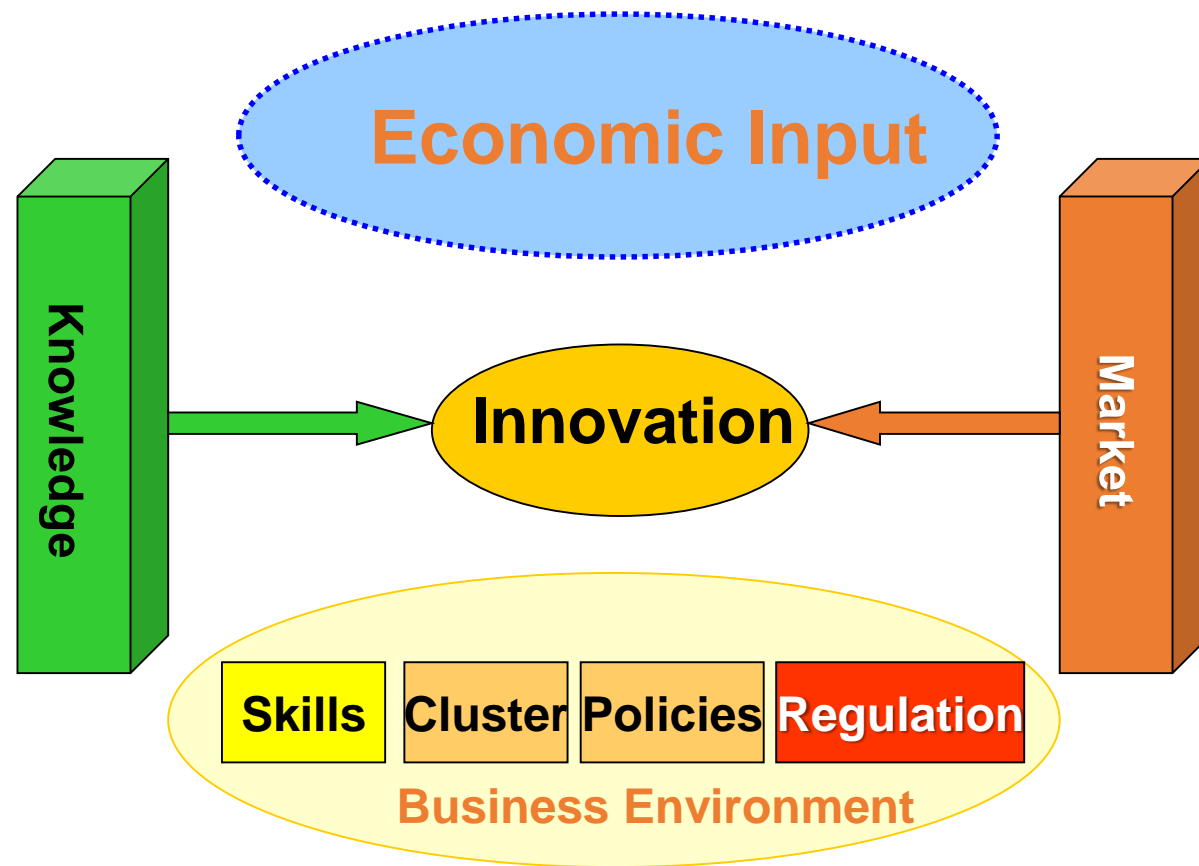
- An enabling **business environment** as well as
- Adequate economic resources and support as **economic input**.



... and Support Elements

Examples of elements within an **enabling business environment** include:

- Development of **skills** required to apply innovations in work.
- Engagement with various stakeholders in different **clusters** as technology clusters, innovation clusters or market clusters;
- Supportive frameworks provided by **policies** and
- **Regulations** that stimulate innovation.



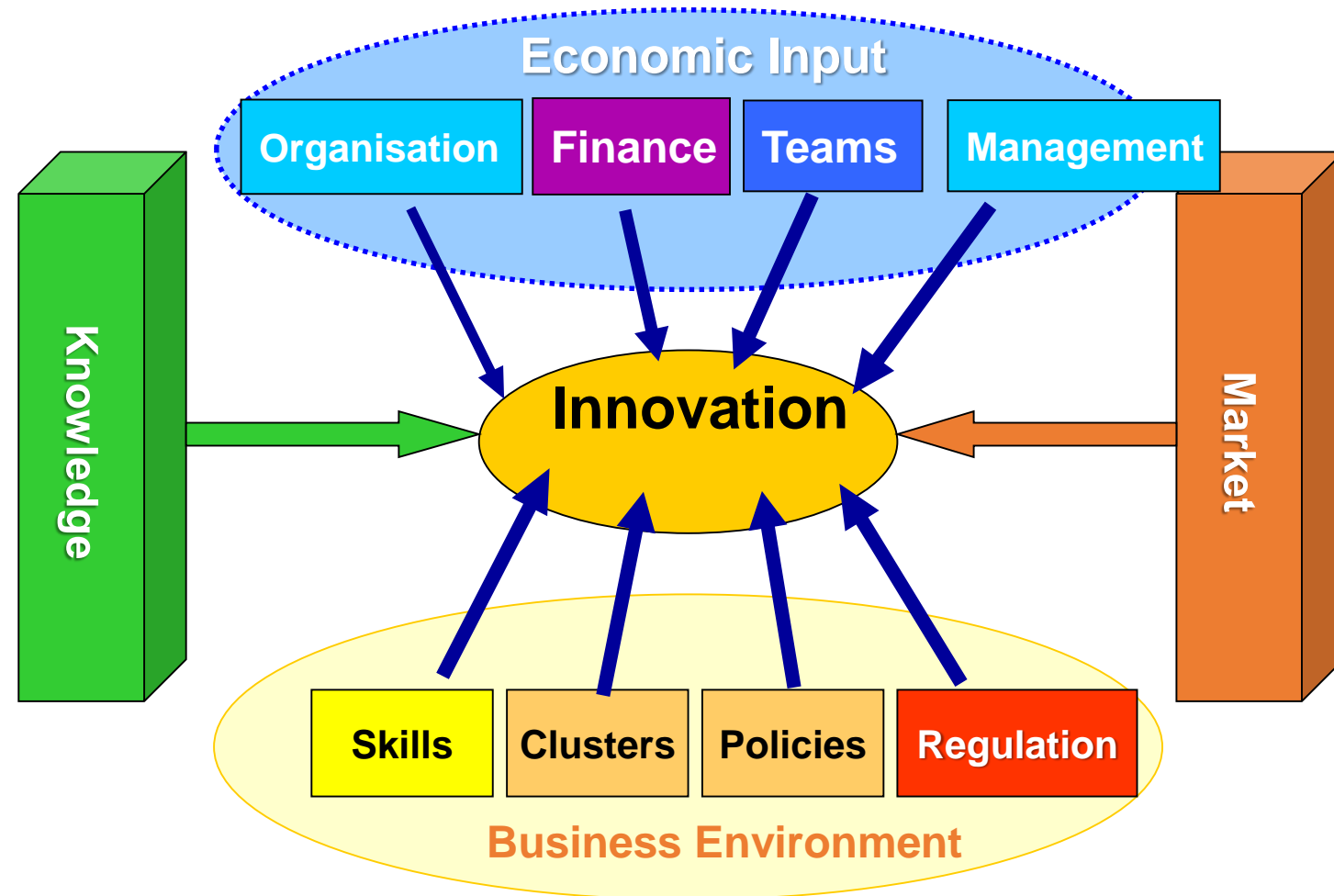
Examples of Elements Contributing to an Enabling Business Environment in Agriculture

- **Skill Development for Innovation Application:** Offering training programs and workshops to farmers and agricultural professionals on how to effectively adopt and implement innovative technologies and practices. This can include workshops on precision agriculture techniques, sustainable farming methods, and advanced machinery operation.
- **Engagement with Technology, Innovation, and Market Clusters:** In the field of sustainable agriculture, a farming cooperative could engage with partnering with a local research institution to test and develop new organic farming techniques or working with local restaurants and grocery stores to establish a direct-to-consumer sales channel for fresh produce.
- **Adherence to Regulatory Frameworks:** Creating and enforcing policies and regulations that provide a clear and supportive framework for agricultural innovation. This can include regulations related to intellectual property rights, quality standards, tax incentives for R&D, regulations that foster a competitive and innovative market.

The Innovation Link in Practice

Economic input is needed in forms of:

- Organisation of innovation management and innovation application,
- Management,
- Teams on different management and working levels,
- Finances.



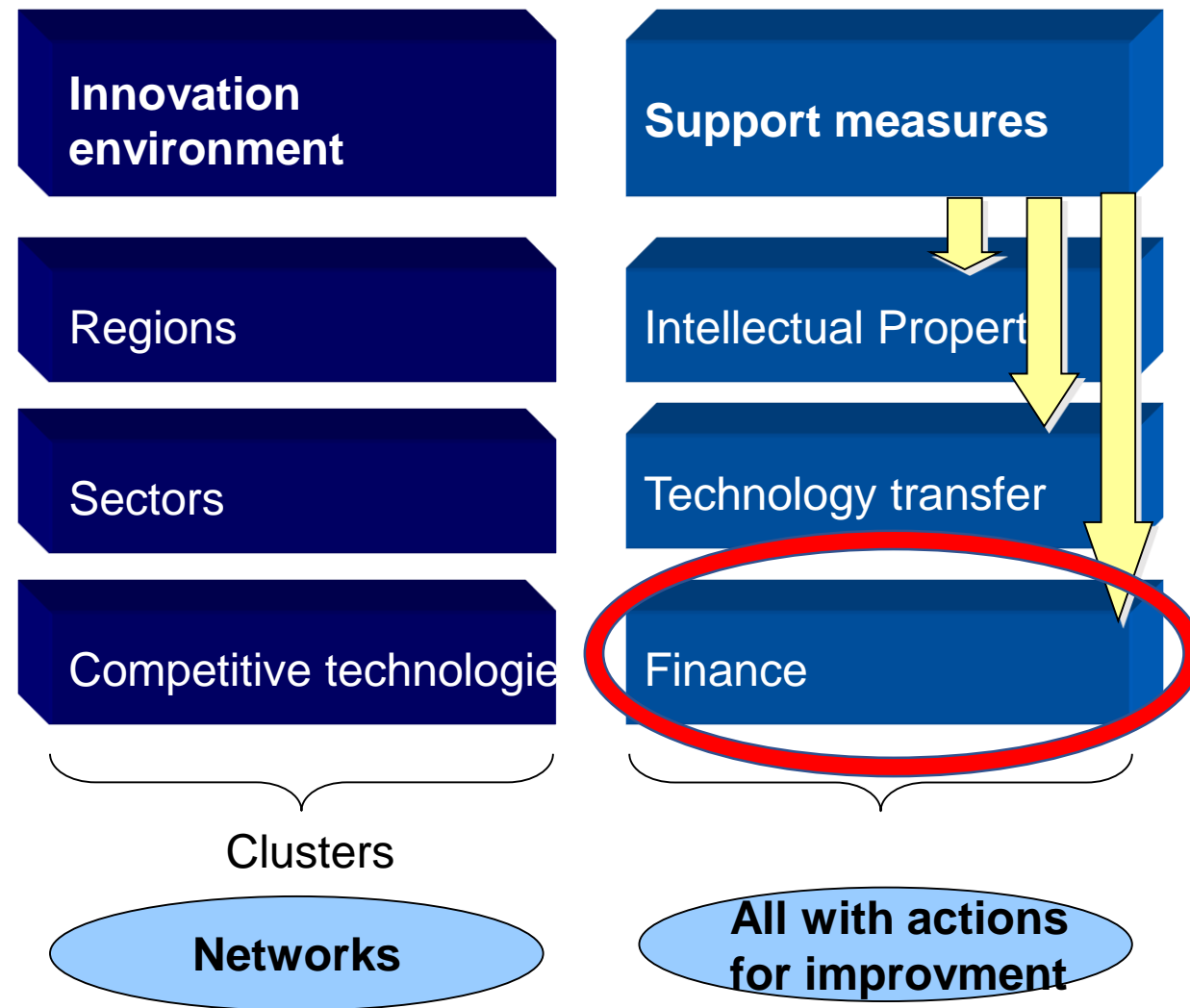
Example of an Economic Input in Agriculture: Implementation of a Precision Farming System in a Farm

- **Organisation of Innovation Management and Application:** This includes establishing a dedicated team or department responsible for identifying suitable technologies, managing their implementation, and ensuring their effective use on the farm.
- **Management:** Skilled managers would be required to lead the innovation efforts. They would be responsible for setting strategic goals, allocating resources, and monitoring progress towards adopting precision farming practices.
- **Teams on Different Management and Working Levels:** This requires training both farm workers and managers to effectively use precision farming technologies and make the most of generated data and insights.
- **Finances:** Investment in precision farming technologies, such as GPS-guided equipment, drones, and specialized software, would be necessary. Additionally, there would be ongoing costs for maintenance, training, and potential upgrades or expansions of the system.

Economic Input in Innovation

Basically, when we talk about **economic input in technology transfer and innovation**, we mean the **money and expenses** involved at different steps, like creating, putting into action, and keeping up with the technology.

Taking a close look at these economic factors is **crucial for organizations to make well-informed decisions about the advantages and potential drawbacks of incorporating technology** in various sectors, including agriculture.



DIGITAL AGRICULTURE INNOVATION



What is Digital Agriculture Innovation?

Climate change, biodiversity loss, indigenous health problems, food access and hunger are among the major challenges of our time. Agricultural businesses and farmers need to fundamentally redefine how they deliver value to clients, customers, and citizens. They need innovative solutions.

Digitalizing agriculture doesn't just make it more efficient and productive; it also opens up new opportunities for creating value through the development of fresh products, new services, and new business models.

The way successful innovation works has changed. It is happening faster, involving a wider range of disciplines, and being fueled by market demand.

click!



Digital agriculture innovation refers to the application of cutting-edge digital technologies and data-driven approaches in the agricultural sector to improve productivity, sustainability, and overall efficiency.



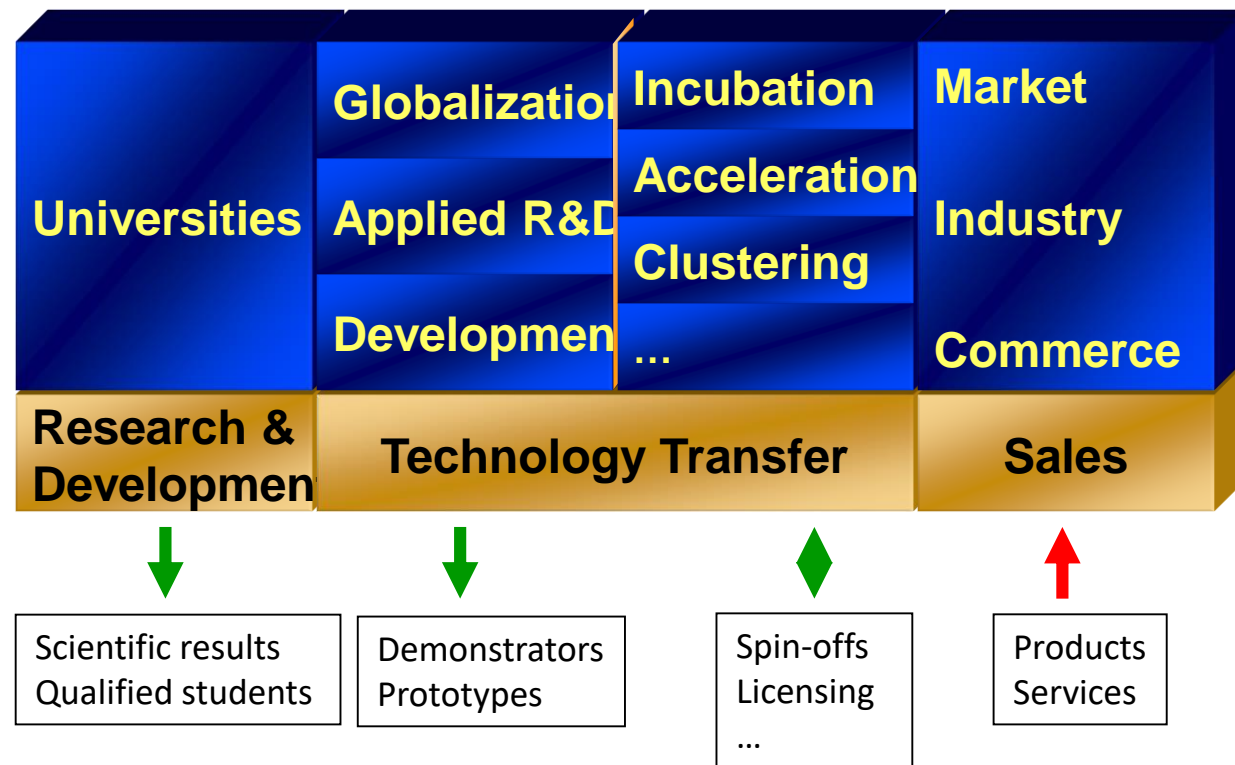
The Value Generation Chain



Innovations, which are digitalizing the agricultural sector, can be found all along the innovation chain (see image to the right).

The earlier the innovative technologies appear along this value generation chain, the lower is the *maturity* (= technology readiness level).

The lower the maturity is, the more innovation management support and financing is needed to take it as product innovation, process innovation or service innovation into the market.

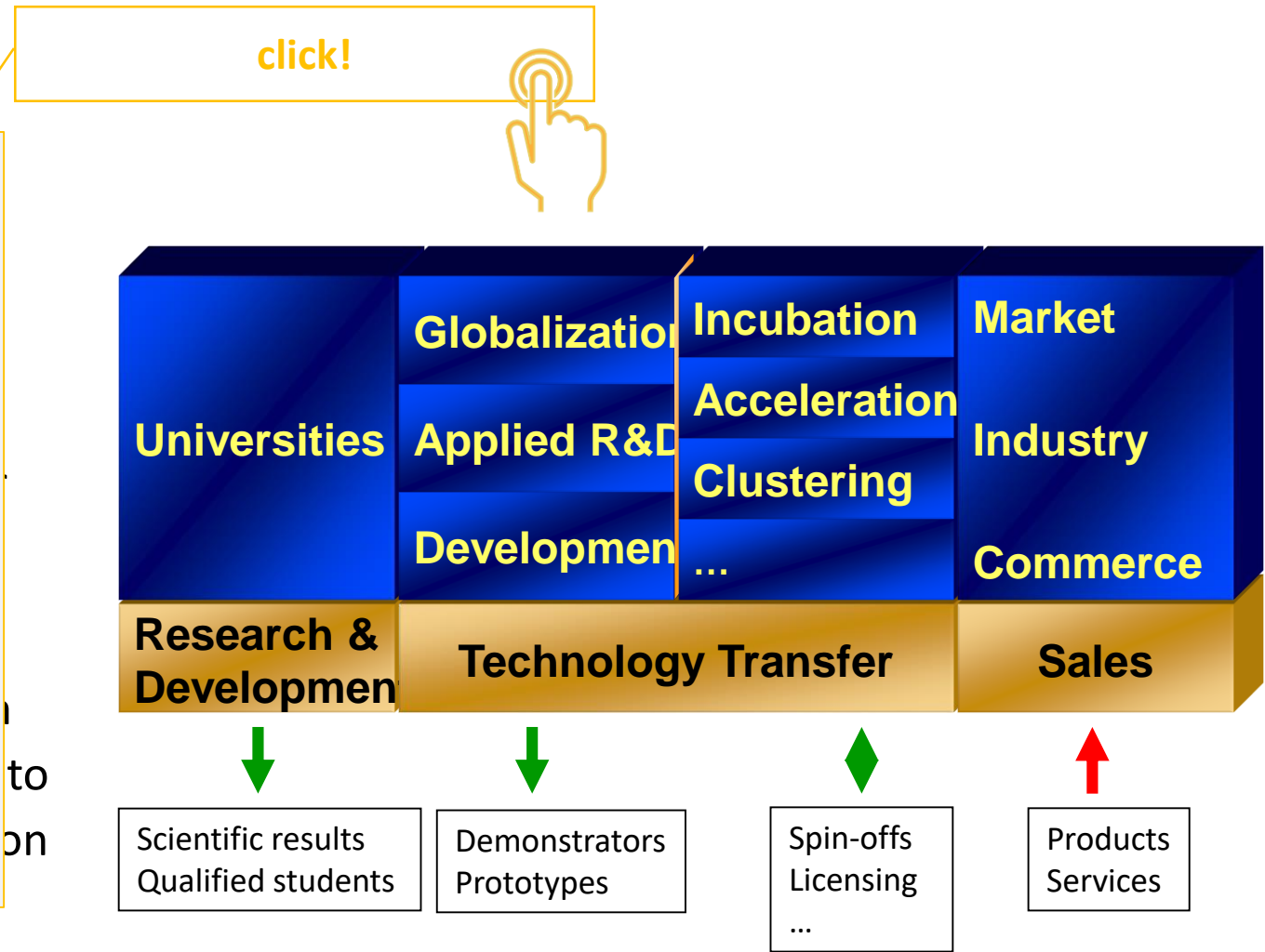


The innovation chain “from research to market” © INI-Novation

The Value Generation Chain

Innovation agricultural innovation
 The earlier along this the *maturity*
 The lower management take it as p or service innovation into the market.

The **Value Generation Chain** involves all the steps and activities that contribute value before the product or service is ready to be received by the end user. This encompasses stages like research, development, production, promotion, distribution, and customer support.
 You may also hear similar terms like "value chain", "innovation chain" or "supply chain" which focus on slightly different aspects of this process.

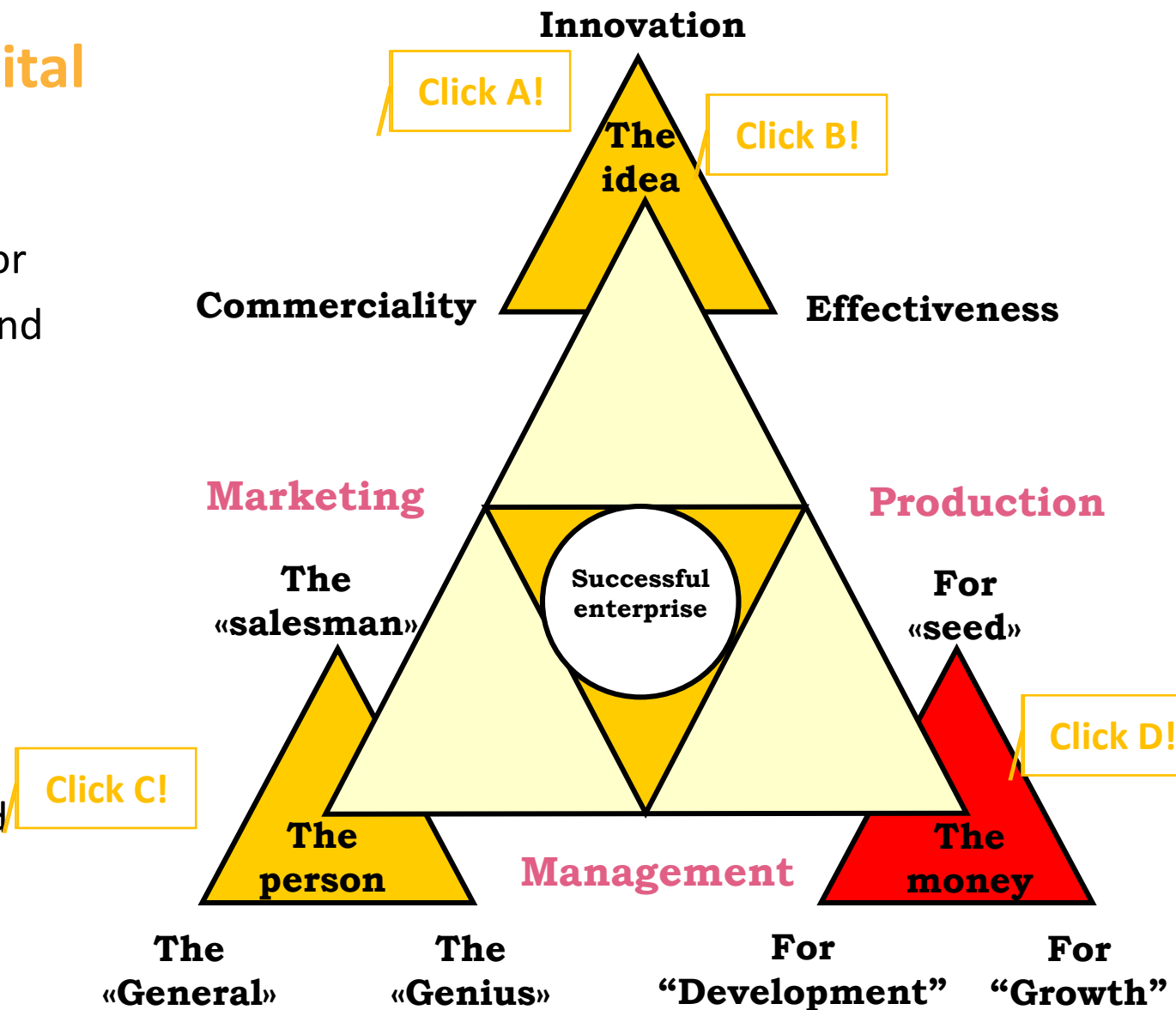


The innovation chain "from research to market" © INI-Novation

Magical Triangle of Managing Digital Agriculture Innovation

Therefore, actors in the management process for agriculture innovation must provide solutions and strike sensitive balances for the following key stakeholders:

- **The Inventor** - who does not understand management, finance and marketing;
- **The Marketer** - who does not understand technology, finance or management; and
- **The Financier** - who also needs to understand technology and marketing.



Magical Triangle of Managing Digital Agriculture Innovation

Therefore, actors in the management process for agriculture innovation must provide solutions and strike sensitive balances for the following key stakeholders:

- **The Inventor** - who does not understand management, finance and marketing;
- **The Marketer** - who does not understand technology, finance or management;
- **The Financier** - who also needs technology and marketing.

Problems to be solved:

- ✓ IP Protection
- ✓ IP Evaluation
- ✓ IP Management

Problems to be solved:

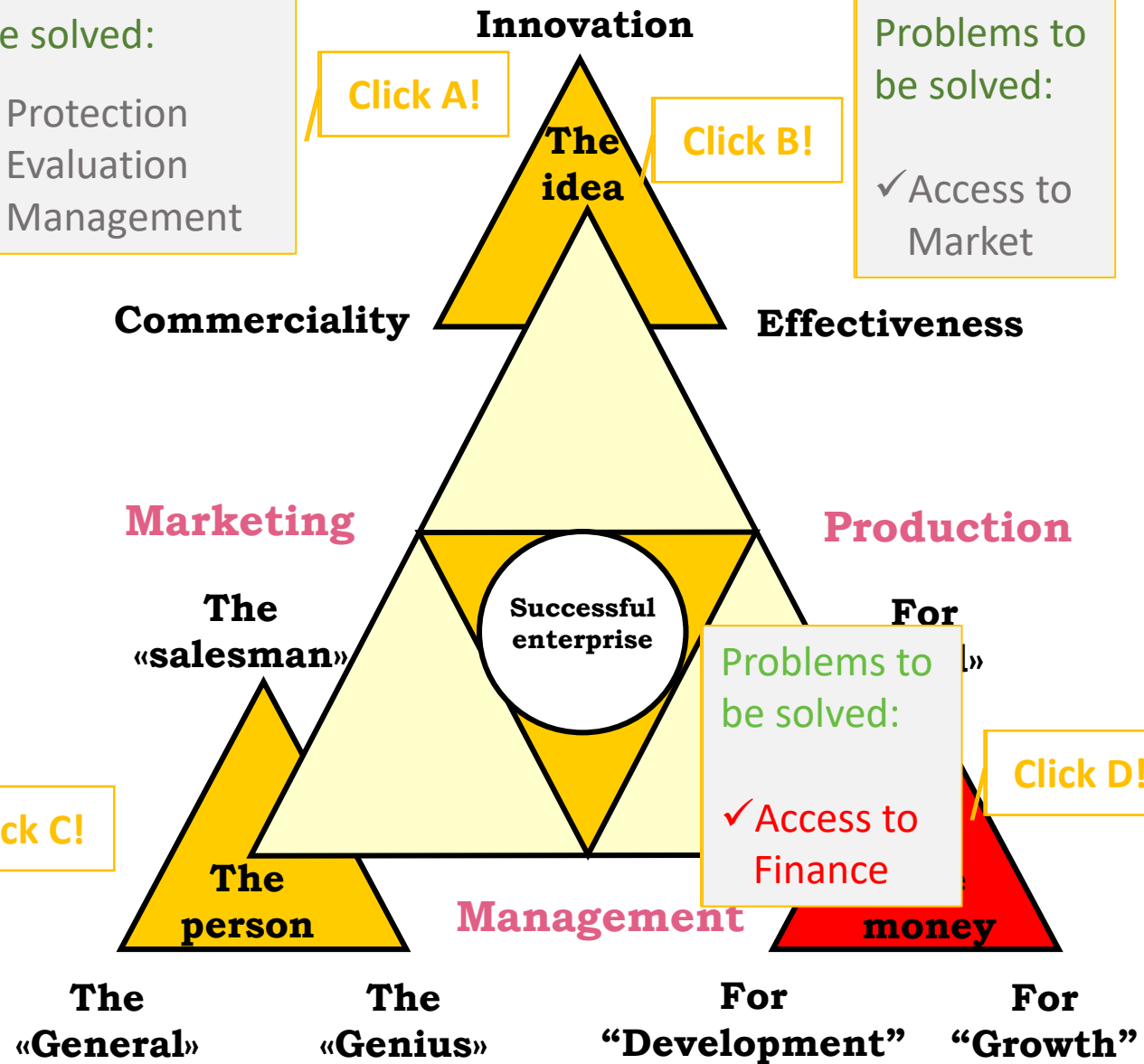
- ✓ Access to Market

Problems to be solved:

- ✓ Access to Resources

Problems to be solved:

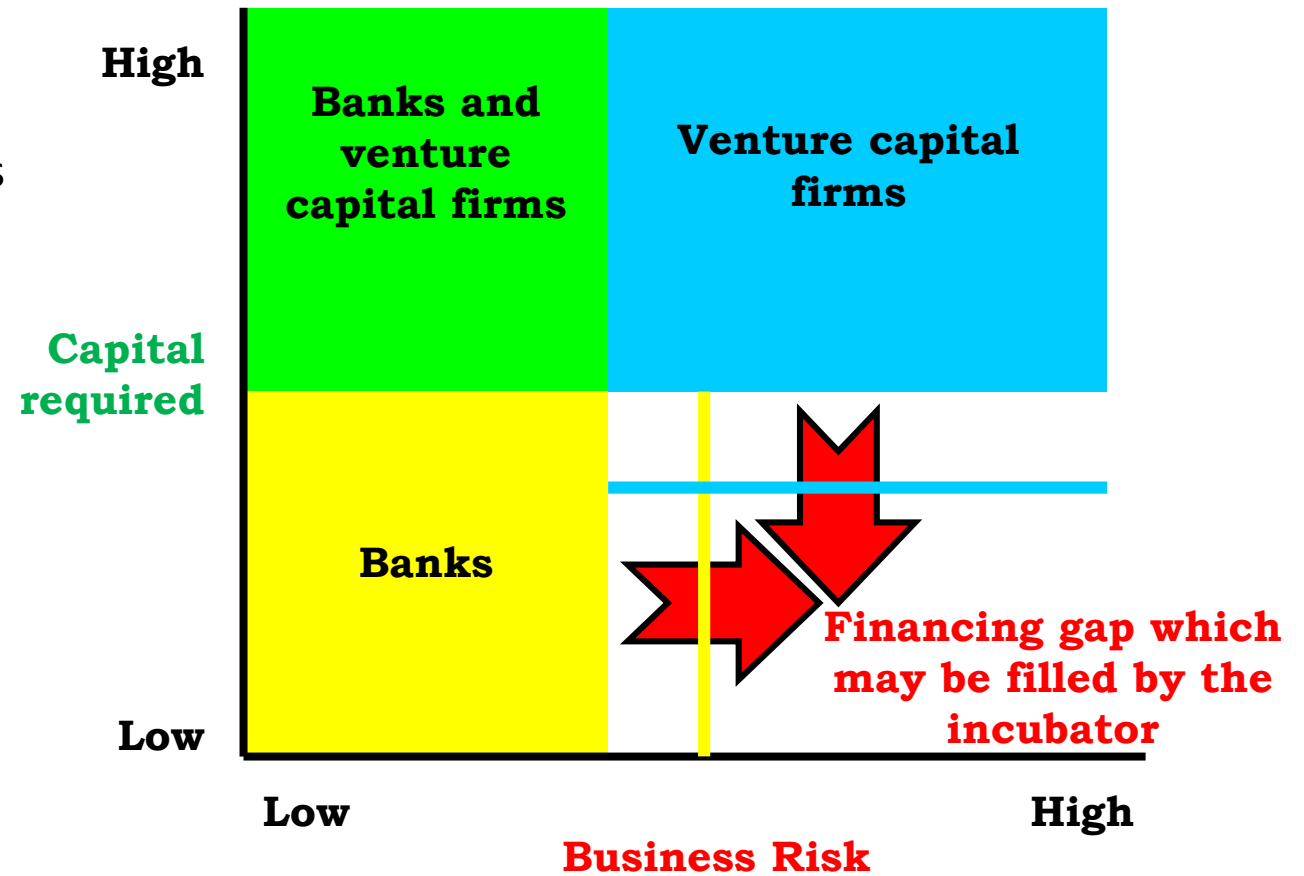
- ✓ Access to Finance



Sources of Finance in Relation to the Business Risk

The different instruments that allow financing the development and application of agriculture innovations vary, depending on the amount of money required and the business risk involved in the innovative action.

It's important for businesses to carefully analyse the sources of finance you choose in relation to your risk tolerance, business objectives, and financial stability. A well-balanced mix of various sources of finance can help mitigate risks and ensure a sustainable financial structure.



Click A!

Click B!

Business risks in digital agriculture (1)

- **Technical and Operational Risks:**
 - **Technology Reliability:** New agricultural technologies may not work as expected, leading to reduced yields, increased costs, or operational disruptions.
 - **Skill Gaps:** Adoption of advanced technologies might require new skills or training for farmers and workers, potentially causing inefficiencies during the learning phase.
 - **Operational Complexity:** Implementing new systems, machinery, or techniques can complicate operations if not managed properly.
- **Market and Economic Risks:**
 - **Market Acceptance:** Innovative agricultural products or practices may not gain immediate market acceptance, affecting demand and pricing.
 - **Market Volatility:** Agricultural markets are sensitive to supply-demand imbalances, weather fluctuations, and global trade dynamics, leading to price volatility.
 - **Economic Conditions:** Economic downturns can impact consumers' willingness to pay for premium products, affecting profitability.
- **Environmental Risks:**
 - **Sustainability Concerns:** New practices or technologies might inadvertently harm soil health, water quality, or biodiversity if not properly managed.
 - **Climate Change:** Changing weather patterns can affect crop yields, pest dynamics, and water availability, posing risks to production.
- **Regulatory and Compliance Risks:**
 - **Regulatory Changes:** Innovations may be subject to evolving regulations, requiring businesses to adapt to new compliance standards.
 - **Environmental Regulations:** Non-compliance with environmental regulations can lead to penalties and damage to reputation.
- **Supply Chain Risks:**
 - **Supply Disruptions:** Dependency on a single supplier for innovative inputs or technologies can create vulnerabilities if that supplier faces issues.
 - **Logistical Challenges:** Transport and distribution challenges can hinder the timely delivery of inputs or products to market.

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BUSINESS RISK

Click A!

Click B!

Business risks in digital agriculture (2)

- **Financial Risks:**
 - **High Initial Investment:** Innovations often require significant upfront investment, which may strain financial resources if returns are not realized as expected.
 - **Return on Investment:** The time it takes to achieve a positive return on investment (ROI) for innovations may be longer than anticipated.
- **Pest and Disease Risks:**
 - **Emerging Pests and Diseases:** New agricultural practices might inadvertently introduce or exacerbate pest and disease issues, leading to crop losses.
- **Data and Cybersecurity Risks:**
 - **Data Privacy:** Collecting and using data for precision agriculture introduces data privacy concerns if not managed securely.
 - **Cyberattacks:** Farm machinery and IoT devices are susceptible to cyber threats, potentially disrupting operations and data integrity.
- **Social and Consumer Risks:**
 - **Consumer Perception:** Innovations like genetically modified organisms (GMOs) or synthetic fertilizers can face consumer resistance due to health or ethical concerns.
- **Adoption and Resistance Risks:**
 - **Farmer Adoption:** Convincing traditional farmers to adopt new practices can be challenging due to resistance to change or lack of awareness.
 - **Technology Interoperability:** Compatibility issues between different technologies can hinder their successful integration.

well-balanced mix of various sources of finance can help mitigate risks and ensure a sustainable financial structure.



Click A!

Click B!



Unit 2

Financing Instruments

Objectives

- ✓ Understand different methods of raising funding
- ✓ Understand mechanisms of so-called “Internal Financing”
- ✓ Learn how to distinguish debt financing from equity financing as so-called “External Financing” sources
- ✓ Understand the so-called “j-curve” of financing innovative activities
- ✓ Learn about grants and donations as alternative funding



What are Financing Instruments?

The methods of raising funds are called **Financing Instruments**. These instruments allow individuals, businesses, governments, and organizations to raise money for various projects, investments, or initiatives.

Financing instruments can be classified into different categories based on their characteristics, terms, and sources.



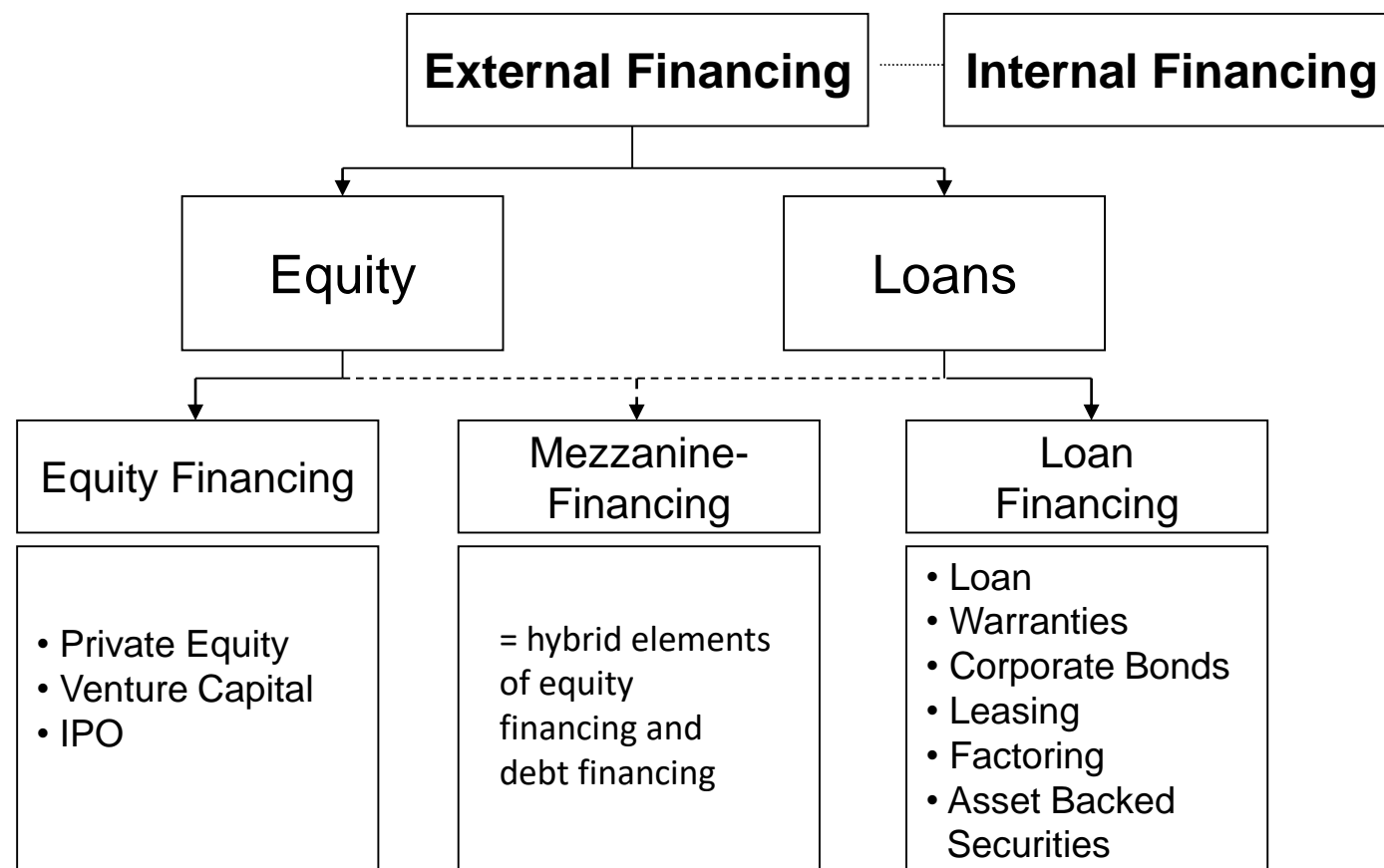
External and Internal Financing Instruments

Click !

Ramping up your agriculture business with digital applications needs funding, which can be from its own resources, or it can be sourced from somewhere else.

When you aim the funding from your own sources i.e. from your own assets or from your own profits, we would call it an **internal source** of financing.

When you need to raise money from **external sources**, you might want to go out and take loans from banks or other financial institutions according to the chart on the right:



Financing from internal vs. from external sources

If we do a quick comparison, we will realise that there are key differences between internal financing and external financing:

- ✓ Internal sources of finance are sources inside the business.
- ✓ External sources of finance, on the other hand, are sources outside the business.
- ✓ Entrepreneurs typically look for funding internally when the fund requirement is quite low. In the case of external sources of financing the funding requirement are usually quite huge.
- ✓ Should you manage to source the funding internally, the cost of capital is pretty low. In the case of external sources of financing, the cost of capital is medium to high. Internal sources of funding don't require any warranties. But external sources of funding require warranties or transfer of ownership.

And you should know, when to use what; or to be more specific: you should be aware of the fact that not at every time of the life-cycle of your technology development or your agriculture digitalisation concept all financing sources and funding schemes are properly available.

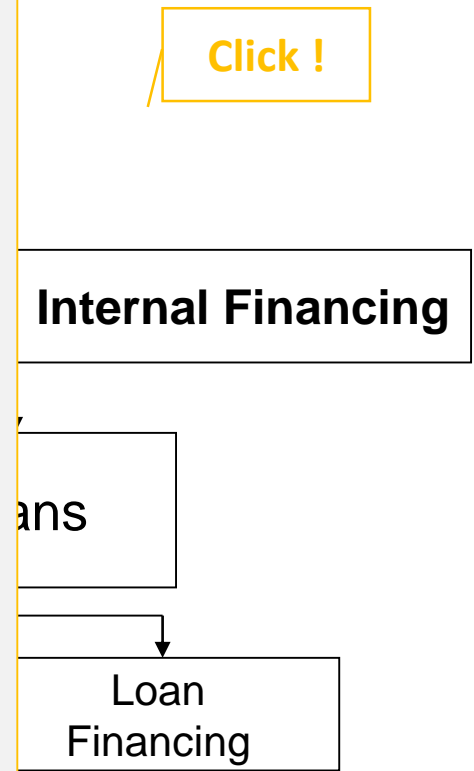
When you need to raise money from **external sources**, you might want to go out and take loans from banks or other financial institutions according to the chart on the right:

- Private Equity
- Venture Capital
- IPO

– hybrid elements of equity financing and debt financing

Loan Warranties

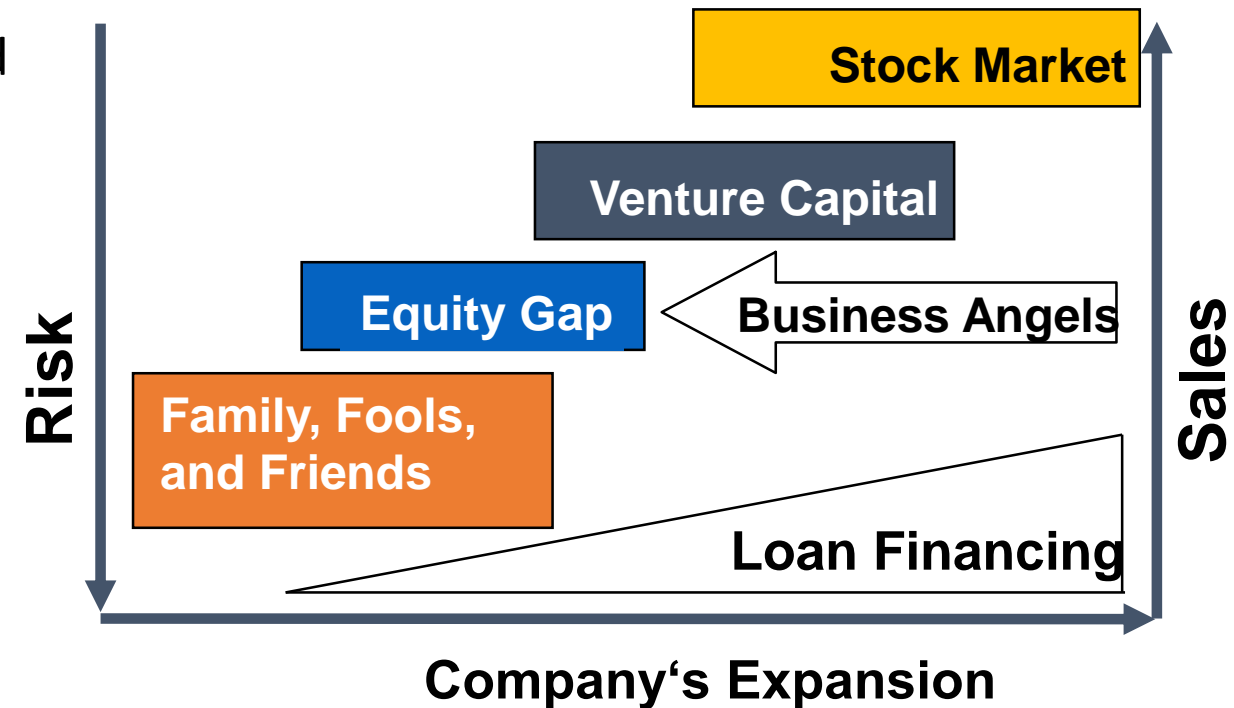
- Corporate Bonds
- Leasing
- Factoring
- Asset Backed Securities



Phases of Funding

Innovation funding typically goes through several phases, each with its own set of sales maturity and risk factors. The allocation of funding at different phases depends on the level of maturity of the innovation, the associated business risks, and the potential for returns.

In the graphic are presented the **common phases of innovation funding** and how they relate to business risks:



The Hockey Stick Curve

The „**j-curve of entrepreneurial financing**“ (which is in literature often also referred to as „hockey-stick curve“) describes the different phases of financing a business from starting it up towards growing and sustainable operation.

Each of these phases require a primary focus on the different financing sources and poses specific challenges accordingly.



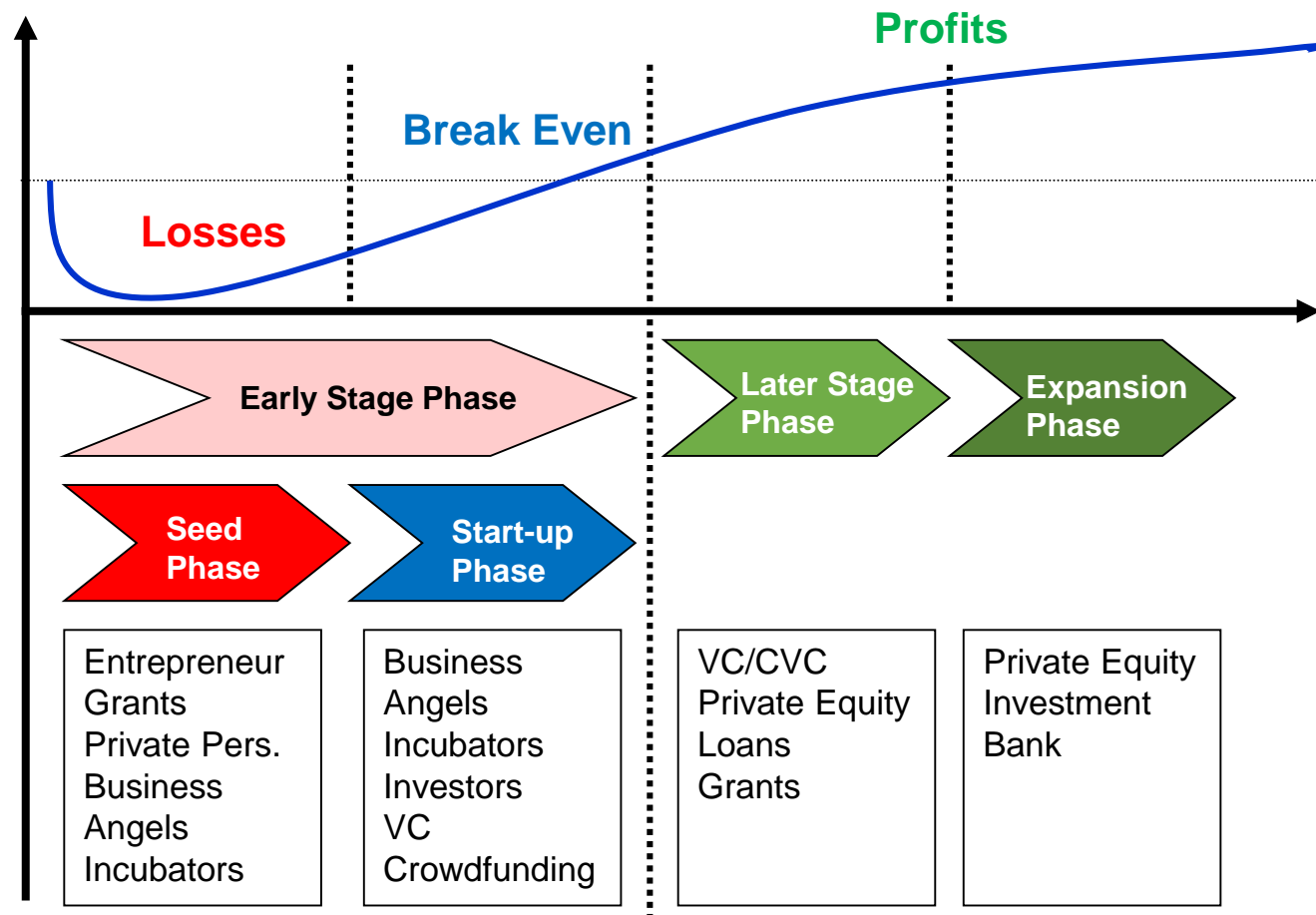
The Hockey Stick Curve (2)

Click !

As the chart on the right shows, the **j-curve** is used to illustrate the tendency of entrepreneurial financing to cover **losses in early years** and to achieve **investment gains in the coming years**.

In the early years, several factors contribute to negative returns (=losses) including bootstrapping costs, marketing costs, salaries, management effort, basic equipment costs, etc.

Over time, your operations will begin to experience gains that you may not have initially recognized. Eventually, there will be events where these gains are realized, allowing for an expansion of your business accomplished by so-called „organic growth“, which means mainly out of own revenues.

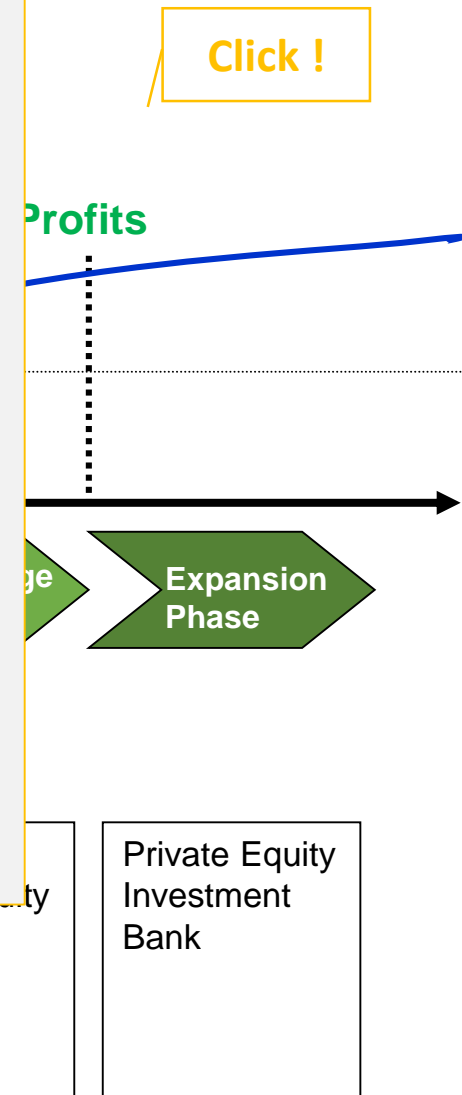


The Hockey Stick Curve

The chart also shows that in each and every of this growth path there are only specific funding instruments available as the business grows as laid out in the next chapters. You will learn a lot about financing instruments which are not easy to get and which are not necessarily sustainable. These instruments are at best a supplement to your entrepreneurial commitment for boosting your agriculture innovation activities. They will never be at the centre of your business if you want to organise your activities and projects sustainably. At first glance some of the instruments presented might seem very far from your working reality. Believe us: It is not! If you want to position yourself professionally in your target market, sooner or later you will have to deal with it, because this will become or is already part of your entrepreneurial strategy.

But don't be fooled by the wealth of possible financing instruments! These are tools for the development of your activities, not an end in itself. Your first objective as a farmer who wants to innovate or as digital agriculture entrepreneur will therefore always be to generate direct income from your business activities, meaning from your internal funding mechanisms.

will be events where these gains are realized, allowing for an expansion of your business accomplished by so-called „organic growth“, which means mainly out of own revenues.



Private Pers. Business Angels Incubators	Incubators Investors VC Crowdfunding	Loans Grants	Private Equity Investment Bank
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FUNDING SOURCES



[Click !](#)

Public Funding

To finance the development and implementation of digital agriculture technologies it is recommended to look at various sources of funding that are available via donations, grants and other similar public funding instruments, most commonly supported by governments or not-for-profit aid organisations.

Please see the chart below comparing different sources of private and public funding:

Financing instruments available for enhancing your digital agriculture business:

Private support

Standard bank loans

Private equity and venture capital

Mezzanine funding

Crowdfunding

Donations

Public support

Loan guarantees

Public venture capital

Public mezzanine funding

Grants

Donations

Specifics of Public Funding

A grant is an amount of money to fund certain projects. One may receive a grant for academic, scientific or development work, or to further one's education or to engage in charity work.

A charitable donation is a gift made by an individual or an organization, mostly to a non-profit organization, charity or private foundation. Charitable donations are commonly in the form of cash, but they can also take the form of real estate, assets, appreciated securities, clothing and other assets or services.

Grants are non-repayable funds or products disbursed or given by one party (grant makers), often a government department, corporation, foundation or trust, to a recipient, often (but not always) a non-profit entity, educational institution, business or an individual. In order to receive a grant, some form of "Grant Writing" often referred to as either a proposal or an application is required.

Most grants are made to fund a specific project and require some level of compliance and reporting. The grant writing process involves an applicant submitting a proposal (or submission) to a potential funder, either on the applicant's own initiative or in response to a Request for Proposal from the funder. Other grants can be given to individuals, such as victims of natural disasters or individuals who seek to open a small business.

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Sources of Public Funding

- **Governmental agencies or regional institutions**
- **International Aid organisations**

These include the United Nations Agencies such as WHO, UNICEF, UNDP, FAO, the European Commission (EC), the World Bank (WB), and Asian Development Bank (ADB). However, they do not often support small-scale projects. Funds from these sources are more likely to be available via national umbrella organisations. It is worth finding out what their contributions to the government and to bigger NGOs in your country are.
- **Foreign Embassies**

They often have funds available for small-scale projects. For example, Dutch Embassies have special funding sources for so called KAP projects. From these sources they can give direct support to projects with sums up to \$20,000. Special procedures/criteria need to be followed.
- **Searching the web**

Fund raisers should go to the websites of the big international organisations that cover the groups they are trying to find (i.e., Bill ad Melinda Gates Foundation). You will find more tips on fundraising through donations under this link: <https://youtu.be/IPac2YPpvAc>.
- **Local organisations**

Think of Rotary or Lions clubs, churches, temples, mosques, hospitals, local business associations, the 'rich' in your community etc.
- **Voluntary funding organisations**

These include missions, aid agencies and other groups, both religious and secular. Most of them are based in in Europe, North America and Australia. Such groups are often interested in supporting smaller-scale development and cultural projects. A list of names can be obtained from national and voluntary organisations and from embassies.

Support from Banks

Banks are the sources that most people immediately think of for debt financing. There are many different types of banks, although in general they exist to accept deposits and make loans.

Most banks tend to be fairly risks averse and proceed cautiously when making loans. As a result, it may be difficult for an IP development and sales initiation business to obtain this sort of financing.

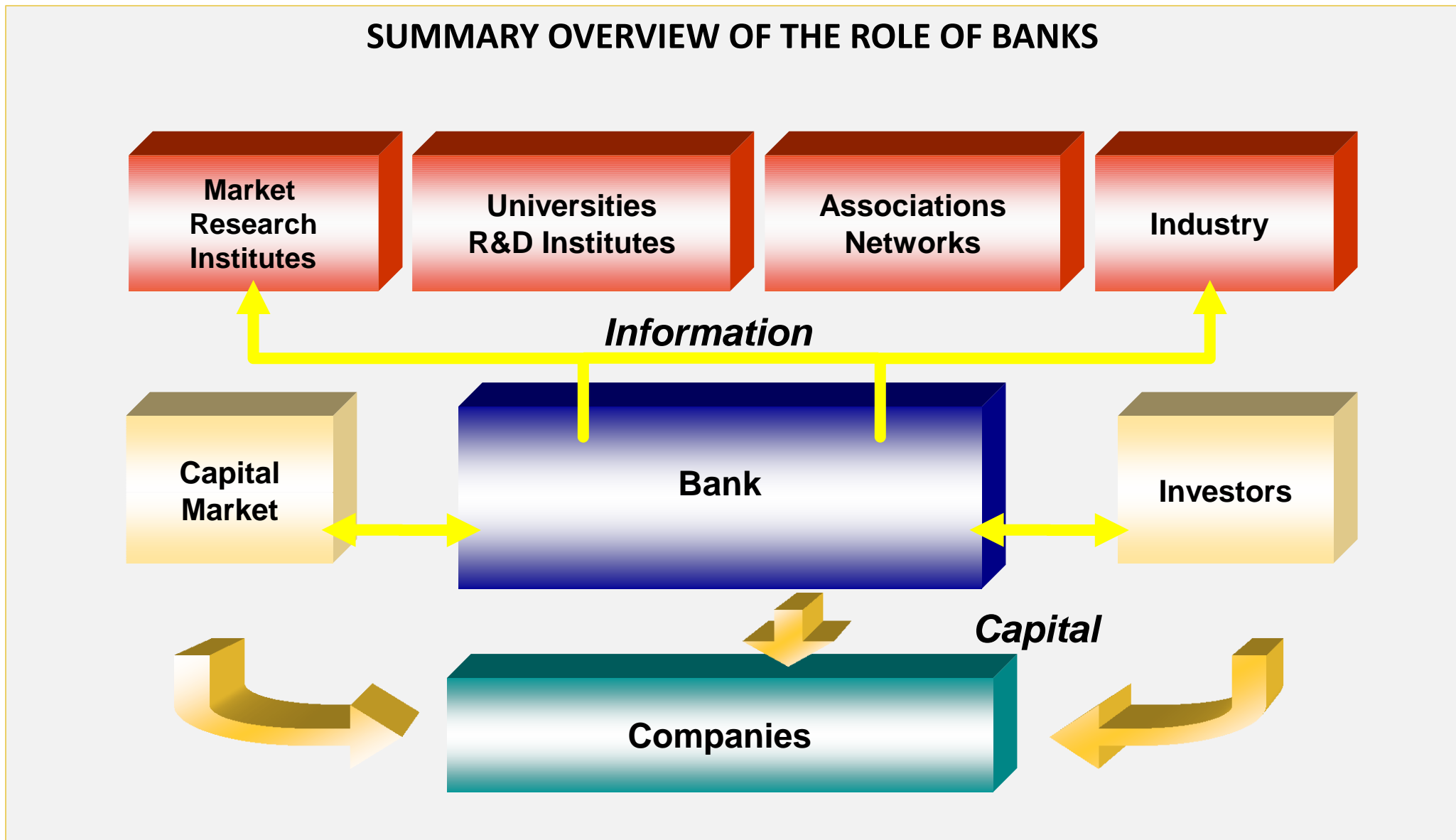
Commercial banks usually have more experience in making business loans than do regular savings banks. It may be helpful to review the differences among banks before choosing one as the target of a loan request.

In any case, banks may be valuable “free consultants” to your IP funding initiative, because they are well evaluating the business opportunity as part of their customer acquisition and customer binding strategies.

Advantages of support from banks:

- Management Support and Consulting
- Information flow to Assess HighTech Start-up
- Local, Regional Networks
- Co-operation within an Innovation Team
- Organisation of and Participation in Fairs
- Loans

But: Rating Requirements



Financing through European Funds (1)

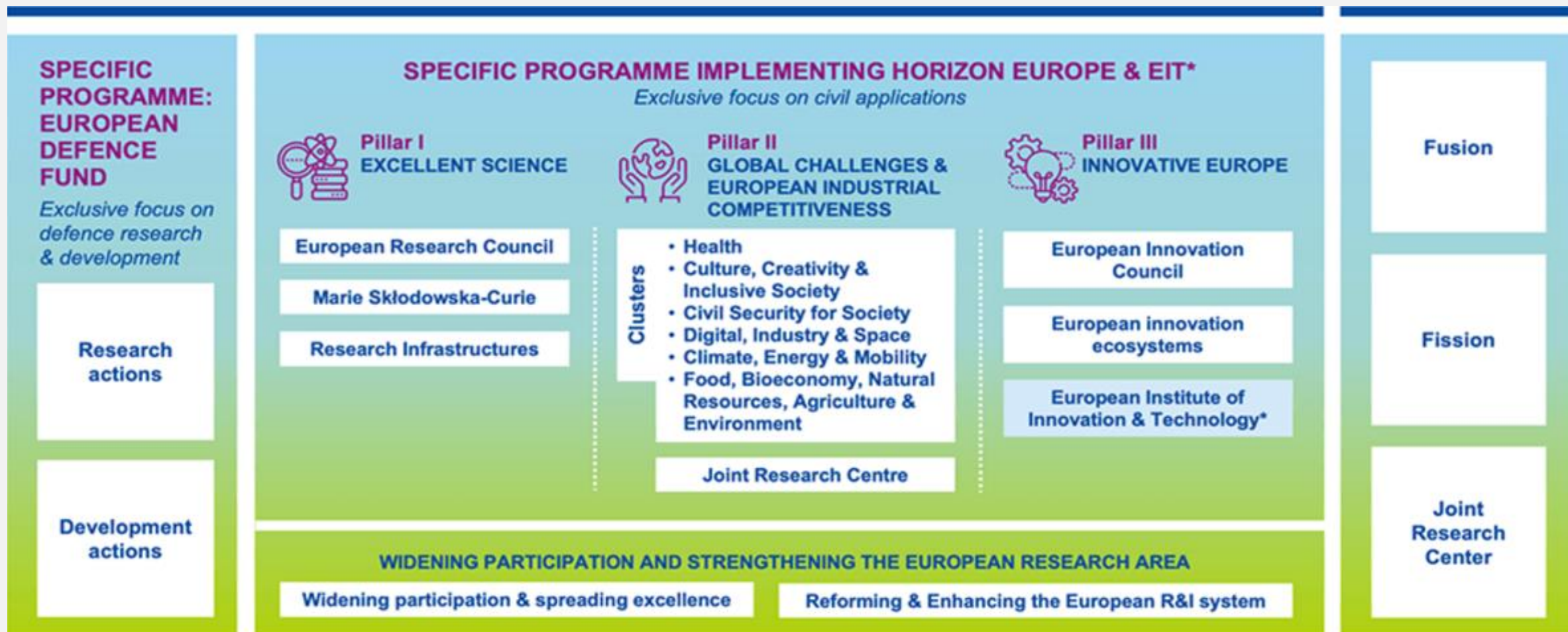
There are various sources of funding available in the European Union. The various funds and programs reflect the diversity of the needs of market and technology sectors - and the range of EU thematic programs can consequently digitalization of agriculture.

After exploring the “funding jungle”, we assume that still a challenge remains to identify the most proper opportunities. We hope that the following slides will make the overview easier. It focuses on the most important EU programs addressing types programs eligible for funding the development as well as the application of digital agriculture innovations and your related business.

The EU provides funding for a broad range of projects and programmes covering areas such as:

- Regional & urban development,
- Employment & social inclusion,
- Agriculture & rural development,
- Maritime & fisheries policies,
- Research & innovation, or
- Humanitarian aid.

Structure of the HORIZON Europe Framework Programme



Source: European Union 2021; ISBN 978-92-76-29646-1; it can be read under https://ec.europa.eu/info/horizon-europe_en

Source: European Union 2021; ISBN 978-92-76-29646-1; it can be read under https://ec.europa.eu/info/horizon-europe_en

[Click !](#)

HORIZON EUROPE (1)

The period of funds and programmes covers the years 2021 to 2027, called „Horizon Europe“, an ambitious €100 billion research and innovation programme. „Horizon Europe“ incorporates policy missions to ensure the effectiveness of research and innovation funding by pursuing clearly defined targets. The Commission has engaged policy experts to develop studies, case studies and reports on how a mission-oriented policy approach will work.

The various funds and programmes reflect the diversity of the different sector's needs; and the range of EU thematic programmes that can consequently support it. Creativity and rural area development, for instance, get support from various programmes, but gathering and digesting information about many programmes remains a challenge for hard-pressed private and public entities.

[Click !](#)

HORIZON EUROPE (1)

The period of funds and programmes covers the years 2021 to 2027, called Horizon

EU **Work programmes** announce the specific research and innovation areas that will be funded. You can access the forthcoming calls for proposals through the one-stop-shop [Funding and Tenders Portal](#).

“ir
fu When ready each call gives more precise information on the research and innovation issues that applicants for funding should address in their proposals.

to
wi Proposals should also specify the intended outcome of the project and describe the impact-relevant key performance indicators/success criteria.

The various funds and programmes reflect the diversity of the different sector's needs; and the range of EU thematic programmes that can consequently support it. Creativity and rural area development, for instance, get support from various programmes, but gathering and digesting information about many programmes remains a challenge for hard-pressed private and public entities.

HORIZON EUROPE (2)

The European Innovation Council (EIC) and the European Institute of Innovation and Technology (EIT) are part of a wider ecosystem to give Europe's many entrepreneurs every opportunity to receive initial funds and to grow. The EIC provides direct financial support, investment opportunities and coaching to breakthrough and disruptive innovation projects from deep tech founders to startups, from entrepreneurial researchers to investors, and from corporate partners to global markets.

The European Institute of Innovation and Technology (EIT) is Europe's largest innovation network supporting the development of dynamic pan-European partnerships - EIT Knowledge and Innovation Communities (KICS) - among top companies, research labs and universities. The EIT Community offers a wide range of innovation and entrepreneurship activities across Europe: entrepreneurial education courses, innovation driven research projects, and business creation and acceleration services.

Most relevant for financing digital agriculture project are the support programs offered by EIT Digital, EIT Food and EIT Manufacturing.

Other European Funds

Other funds are managed directly by the EU. These are provided in the form of:

- [Grants](#) for specific projects in relation to EU policies, usually following a public announcement known as a 'call for proposals'. Part of the funding comes from the EU, part from other sources; or
- [Contracts](#) issued by EU institutions to buy in services, goods or works they need for their operations – like studies, training, conference organisation, IT equipment. Contracts are awarded through calls for tender.

Paving the Way from Idea to Market

Great efforts have been made to support a more innovation-friendly business environment in Europe (i.e. Innovation Union -- unitary patent, revised public procurement directives, venture capital passport etc.).

Should you decide to apply for funding from EU sources please make sure that you target advancing the **Technology Readiness**.

Click !

Stages in the Technology Readiness Levels (TRLs)

TRL 1 – basic principles observed

TRL 2 – technology concept formulated

TRL 3 – experimental proof of concept

TRL 4 – technology validated in lab

TRL 5 – technology validated in relevant environment

TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 7 – system prototype demonstration in operational environment

TRL 8 – system complete and qualified

TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

Market

to support a more
environment in
unitary patent,
ctives, venture

unding from EU
ou target
ness.

organisation, IT equipment. Contracts are awarded through calls for tender.

Click !

Way Towards a Funding Proposal

When you orient yourself towards preparation of a funding application or funding proposal, you should use a kind of mind-mapping template to structure your thoughts and activities. Here is an example of a template, considering most of the relevant aspects of your activity:

Title of your activity / project			
Holder(s) of the project			
Key stakeholders	(What are your target groups?) (On whom do you focus?)		
Deadline for submission		Submission source(s)	
What are your challenges (What are the needs? Why are you doing your project?)			
C₁			
C₂			
C_n			
What are your objectives (What do you want to do or to change?)			
O₁			
O₂			
O_n			
Task descriptions (Who? When? How?)			
T₁			
T₂			
T_n			
Outcome description	Expected results (What do you want to achieve?)	Outcome indicators	
R₁		Ind₁	
R₂		Ind₂	
R_n		Ind_n	
Impact description	What is the societal, ecological, economical, financial impact		
I₁			
I₂			
I_n			
Target duration	(from date to date) or (number of months or years)		

**PRIVATE EQUITY
FUNDING**



Private Equity Investments (1)

Private equity financing is available from a wide variety of sources without financing from the stock market. Some possible sources of equity financing include:

- The business owner's friends and family,
- Groups of local business owners to wealthy Entrepreneurs known as "angels",
- Employees, customers and suppliers,
- Former employers,
- Venture capital firms,
- Crowdfunding and crowd investing organisations,
- Investment banking firms,
- Insurance companies, and
- Large corporations.

Venture Capital firms often invest in new and young organisations or ventures. Since their investments have higher risk, however, they expect a large return, which they usually realize by selling their shares later, either back to the company or on a stock market. They're especially interested in fast-growing tech startups. These firms have strict rules for what kinds of companies they'll invest in, based on industries, technology, development stage, and money needed.

As a result, formal venture capital is not available to a large percentage of small businesses in the agriculture sector.

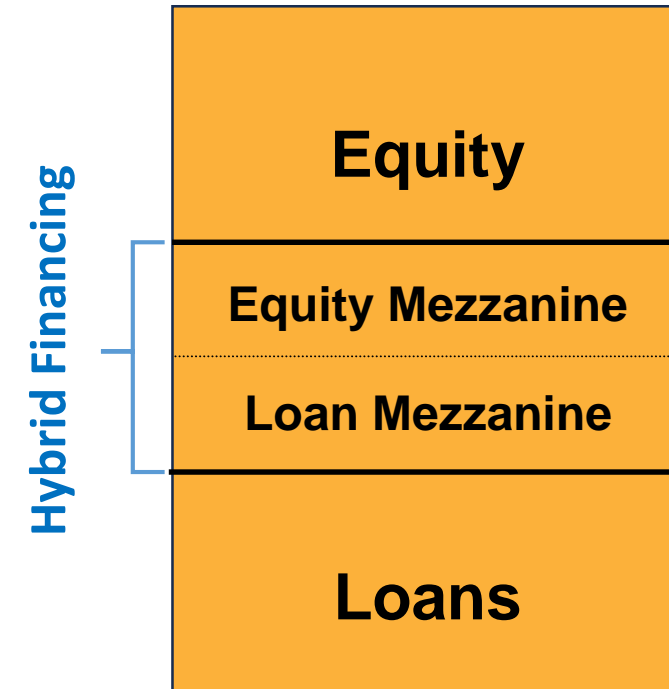
https://www.referenceforbusiness.com/knowledge/Angel_investor.html

Private Equity Investments (2)

There are also "**hybrids**" forms of financing that combines elements of both debt and equity. These are so-called **Mezzanine Funds**.

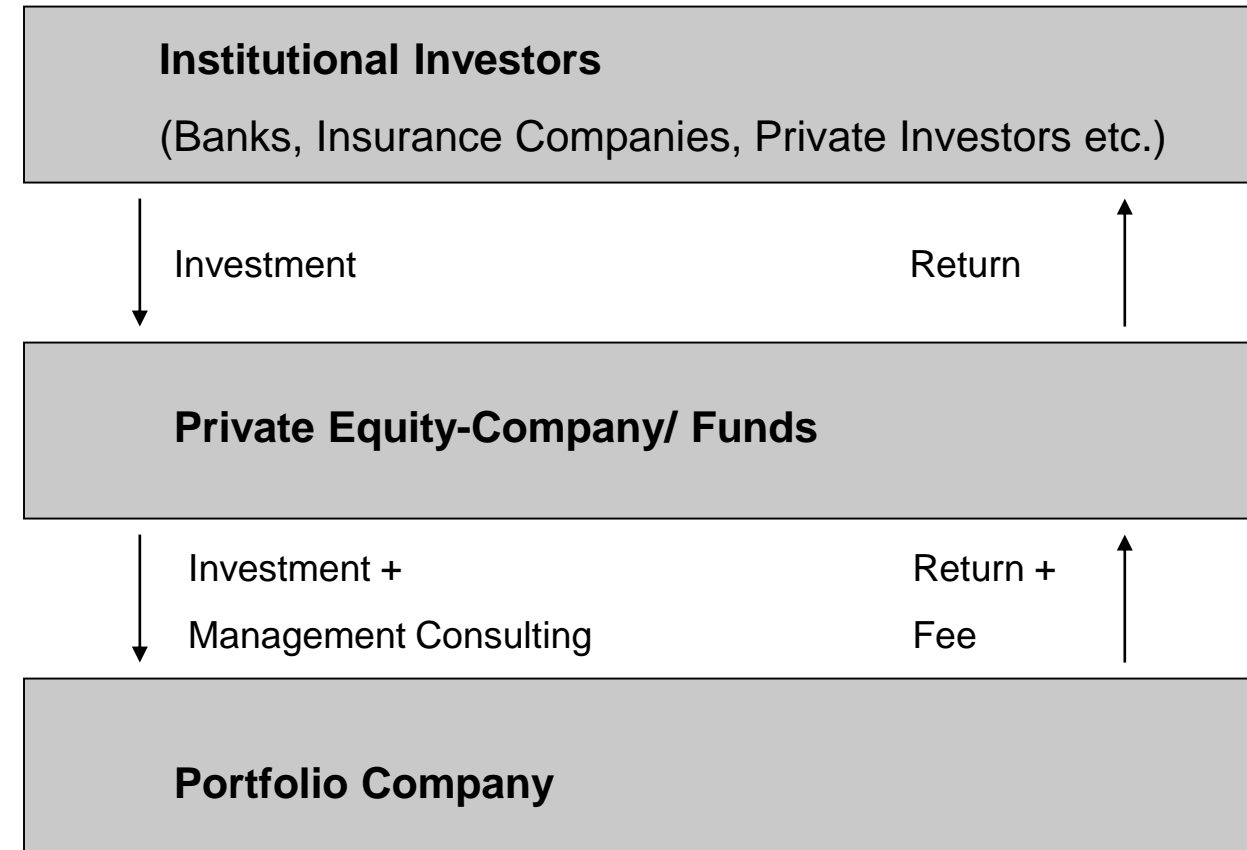
Agricultural companies might want to get mezzanine financing for things like growing their business, buying equipment or land, or using new technology. But not all agricultural businesses can get this kind of financing. It depends on how stable the business is and what the mezzanine fund prefers.

If an agricultural company is thinking about mezzanine financing, they should look closely at the rules and how they'll pay it back. Talking to financial experts can help them decide what's best for them.



Private Equity Investments (3)

- Private Equity Investors are co-owners of the company - they share risks and profits. They target Investments in companies that are not listed in stock markets.
- Private Equity Investments target generally for both: majority or minority participation.
- Participation may be active or in-active as well.



Private Equity Investments (4)

- Private Equity Investor targets a Return of 20% to 25%.
- Normally they do not look for Disinvestments.
- They are used to taking on management responsibility.
- They target an “Exit” after 4 – 7 years.



Private Equity Concept

click



Private Equity Investments (4)

- Private Equity Investor targets a Return of 20% to 25%.

What is Disinvestments?

Disinvestments mean reducing or withdrawing investments from a specific area, like selling assets or cutting financial support. It's a strategic move by individuals, organizations, or governments to reallocate resources, often for reasons like financial restructuring or shifting priorities.

LEVERAGE

IPR

NPV

BUTOUT

PRIVATE
EQUITY

GROWTH

RETURN

VENTURE

Private Equity Concept

click



Unit 3

Venture Capital Investments and How Investors Think

Objectives

- ✓ Learn about the specifics of Venture Capital (VC) to finance innovative businesses
- ✓ Understand pros and cons of VC funding
- ✓ Learn how investors look at your funding proposals



What is Venture Capital?

Venture capital is money that is invested in projects that have a high risk of failure, but that will bring large profits if they are successful.

It is widely believed that venture capital facilitates innovative activities and is a critical aspect of a company's growth.

Venture capital firms can assist entrepreneurs with setting up their businesses.

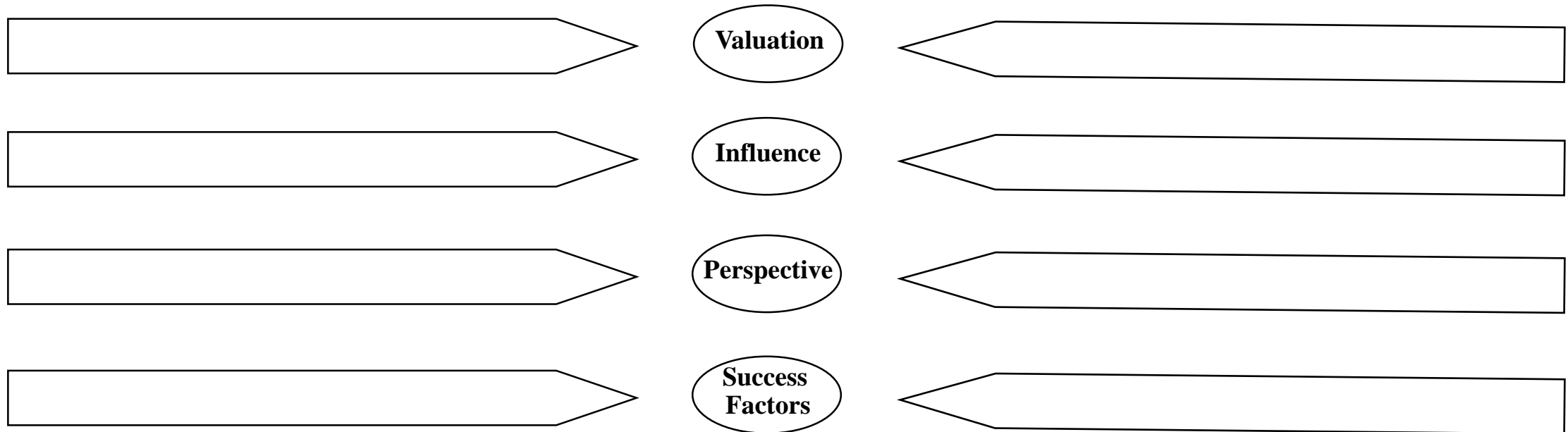
Risk Taking Investment („Private Equity“)

- For Start-ups or already existing companies,
- In-line with management support and coaching,
- Targeting for expansion, and
- Significant growth, and
- Exit after 4 to 7 years.



Activity: Conflicts of Interest between Investor and Entrepreneur

Please look at the figure below and consider investment decision criteria such as valuation, influence, perspective and success factors from the entrepreneurial perspective and from the investor perspective:



Decision Criteria

Venture capital investors apply different decision criteria, addressing:

- The view at the company as well as
- The expectations of the investors that were putting their money into the investment fund.

External criteria: Looking at the Company...



Internal criteria: Looking at the Investor...



Investment Filters (1)

In the decision-making process, the investor especially applies the following so-called investment filters:

- “Management”,
- “Market potential”, and
- “Innovation”.

1. Management

- **Competency**
- **„Track record“**
- **Team**
- **Reputation**

2. Market potential

- **Portfolio - „Fit“**
- **Competitive advantage**
- **USP**
- **Growths potential**
- **International perspective**

3. Innovation

- **High-Low-No-Tech hardware, software,**
- **Intellectual property,**
- **First seller opportunity**

Investment Filter (2)

In addition, also the following so-called investment filters:

- “Profits”,
- “Concept”, and
- “Adding value”.

4. Profits

- R&D, production, services
- Marketing, sales
- Staff
- Finances

5. Concept

- Growth potential
- Profit potential
- Valuation
- Participation
- Exit - orientation

6. Adding value

- Consulting, coaching
- Recruiting
- Portfolio / Synergies
- Contracts, licenses
- International network

HOW INVESTORS THINK?



„Killer Criteria“

VC investors do not accept the following circumstances and consider them as so-called “Killer Criteria”:

- Entrepreneur as part-time manager
- Outsourcing of profitable areas
- No or expansive access to patents
- Low credibility
- Legal issues

- Weak business plan
- Lies
- „Gigantomania“
- Playing several VCs against each other
- Time pressure

The Investor's Orientation

- **Profit orientation:** Business model, USP, expansion perspective, proof of product, management
- **Milestone orientation:** Targets are set with „stop loss“ function
- **Exit orientation:** Sell shares with factor “M” in “N” Years
- **Engagement:** Initiatives, motivation, consulting
- **Back-financing:** Minimizes risks
- **Specialised:** Funds (other people's money) with focus on:
 - a) Technology fields and,
 - b) Maturity of the company



The Dilemma

... for Entrepreneurs:

- They need high investment to ramp up a business



... for Investors:

- Early investment does not reflect the company's value
- Less maturity indicates higher risks

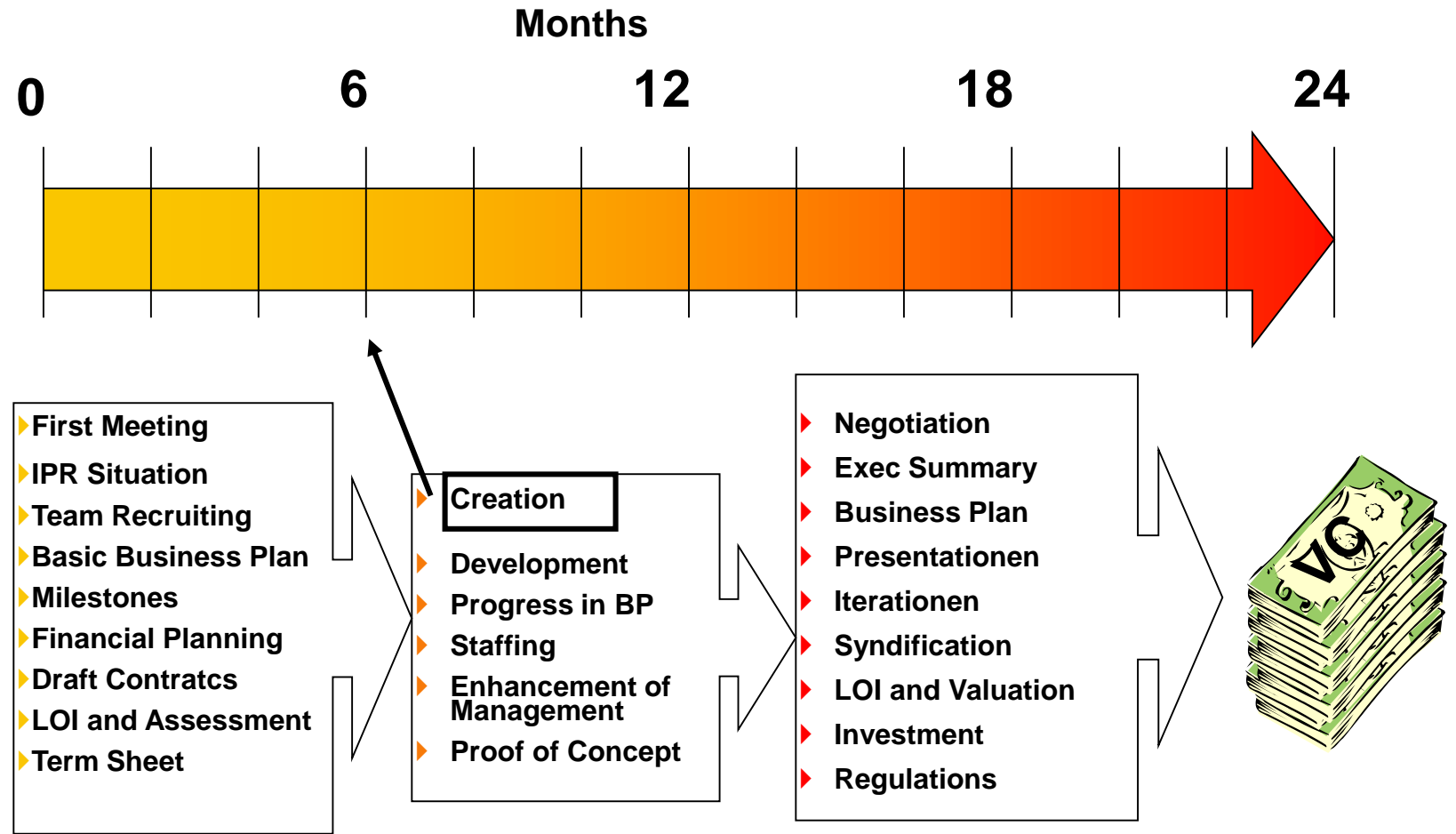
Solutions for Entrepreneurs:

- To co-operation with Universities, R&D Institutes, Networks
- To apply for Public Co-Financing
- (Pre-) Seed Investments



Time to Money

The financial incentive for partners in a VC firm is to manage as much money as possible. The more money they manage, the less time they have to nurture and advise entrepreneurs. Since investment decisions will be taken after a long evaluation and due diligence process, it takes time for entrepreneurs to access Venture Capital investments.





Unit 4

Conclusions for Financing Digital Agriculture

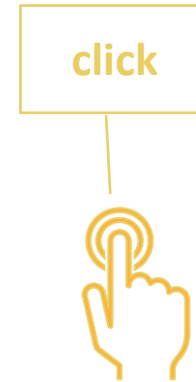
Objectives

- ✓ Understand the financing options of digital agriculture innovation in the context of the other learning modules
- ✓ Understand the key takeaways related to financing considerations within the context of digitalising agriculture
- ✓ Learn why it is important to keep innovating your agriculture business



Understanding Digital Agriculture

Your understanding of Digital Agriculture serves as a foundation for making wise financing decisions when purchasing digital technologies for your agriculture business. It empowers you to make choices that align with your unique needs, goals, and budgets, ultimately driving the successful integration and adoption of these technologies into your agricultural operations.



If necessary, go back to Module 1 and review the content again, considering the financing knowledge already obtained.

Understanding Digital Agriculture

Get the concept of digital agriculture, which means how to using modern technology, data analysis, and digital tools to revolutionize and improve various aspects of your agricultural practices.

This will make your farming activities and agricultural businesses better in different ways.

Enhance your knowledge of digital agriculture with additional information on best practices and show cases from our "**AgriSkills Reference Catalogue for Organizations and Entrepreneurs Acting in the Farming Area**"



and adoption of these technologies into your agricultural operations.

If necessary, go back to Module 1 and review the content again, considering the financing knowledge already obtained.

Financing Challenges in Agriculture

The main three specific financial challenges faced by digital agriculture initiatives are:

- Need for technology investments,
- Covering data management costs, and
- Potential barriers to adaptation.

In addition, it has to be considered that not all technically possible solutions are already further developed into final products or services. The sector needs time to harvest from years of research already accomplished.



If necessary, go back to Unit 2 and Unit 3 and review the content again, considering the financing knowledge already obtained.

Assessing ROI and Value Proposition

Learn to evaluate the return on investment (ROI) and value proposition associated with different digital agriculture technologies.

This involves considering both short-term gains and long-term benefits.



If necessary, go back to Unit 2 in this module and to Module 4 and review the content again, considering the financing knowledge already obtained.



Analyzing Funding Sources

Identify and analyze various funding sources available for your digital agriculture project:

- Public grants,
- Private investments,
- Venture capital, and
- Possible industry partnerships.



If necessary, go back to Unit 2 and review the content again, considering the financing knowledge already obtained.

Risk Management

Understand the potential risks associated with financing digital agriculture projects, including:

- Technological risks,
- Market uncertainties, and
- Data privacy concerns.



If necessary, go back to Module 3 and to Unit 1 in this module and review the content again, considering the financing knowledge already obtained.

Sustainability Considerations

Explore the sustainability of financing strategies over the lifecycle of digital agriculture projects, considering factors such as:

- Scalability,
- Ongoing maintenance, and
- Evolving technology trends.



You can learn more about the evolving technology trends in the AgriSkills Guidebook on Digitalization in Agriculture.

Innovation Ecosystems

Explore the role of innovation ecosystems, startup incubators, accelerators, and research institutions in supporting the financing and development of digital agriculture technologies.



If necessary, go back to Unit 1 in this module and review the content again. Also, see the good practices in the AgriSkills Guidebook on Digitalization in Agriculture.



Collaboration and Partnerships

Understand the importance of collaboration and partnerships between technology providers, farmers, investors, and other stakeholders to ensure successful financing and implementation.



If necessary, go back to Module 3 and learn about the importance of collaboration and partnerships.

Ethical and Social Implications

Consider the ethical and social implications of financing decisions in digital agriculture, including equitable access to technology, data ownership, and environmental sustainability.



Go back to Module 1 and its Unit 2 to detail your knowledge on this topic.

Communication and Advocacy

Develop the skills to effectively communicate the financing needs, benefits, and potential impacts of digital agriculture to various audiences, including investors, policymakers, and the public.

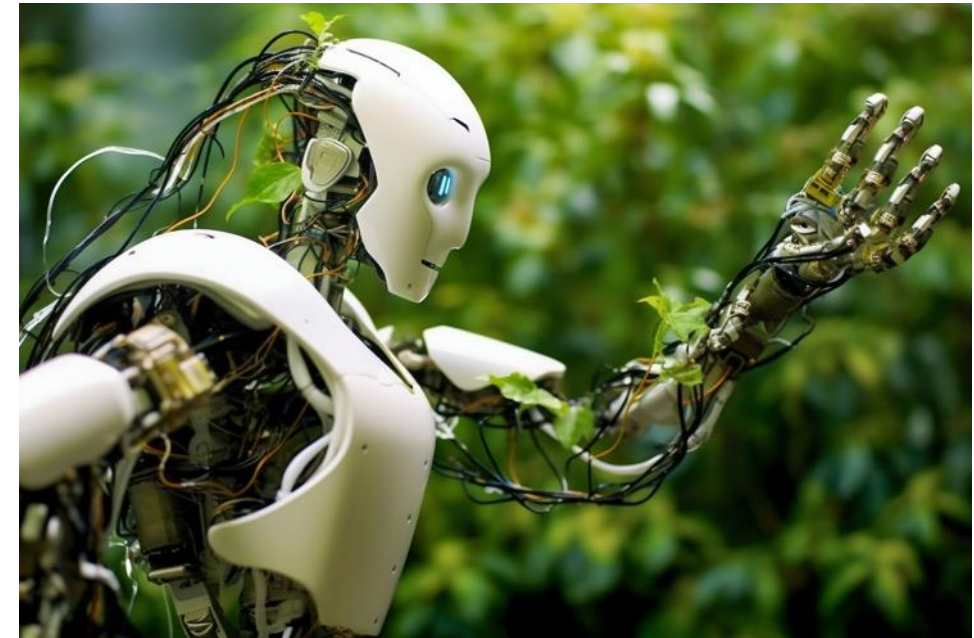


If necessary, go back to Module 3 and to Unit 2 in this module and review the content again, considering the importance of marketing and communication.



Future Trends

Explore emerging trends in both digital agriculture and agricultural finance, understanding how these trends might shape future financing strategies.



If necessary, go back to Module 1 and to Module 3 and review the content again; also see the AgriSkills Guidebook on Digitalization in Agriculture.



Show Cases and Good Practices

Analyze real-world show cases and good practices in financing digital agriculture, learning from successful implementations and understanding lessons from failures.

Here we will insert a picture of the handbook = catalogue



Please see the AgriSkills Guidebook on Digitalization in Agriculture.

Are You Prepared for Raising Money?

We're at the end of Module 5!
But before we finish, there are some closing questions where you can test your knowledge!

Don't worry; it won't be difficult if you have followed the course!





Check your knowledge!



What is Innovation?

Only one answer is correct!

A. New product

B. New technology

C. Invention

D. Creative and useful invention implemented in the market

Which are the elements of an enabling business environment for the growth and advancement of innovation?

Only one answer is correct!

A. Excessive bureaucracy

B. Luck of transparency in governmental processes.

C. Skills, Supporting Policies and Regulations, Clusters

D. Luck of motivation

When you receive a grant to finance digitalization of your agricultural business, the grant providing agency expects some shares in your company (farm).

True

False

What are the external financing instruments?

Only one answer is correct!

A. Amortization

B. Existing resources in the company

C. Equity, Loans and Grants

D. Working Capital Management

**What are the different dilemmas for an entrepreneur and for an investor during the financing process through investment?
Match the columns**

Match the columns !

Dilemma for the Entrepreneur

Less maturity indicates higher risks

Dilemma for the Investor

High Investments needed to implement digital agriculture innovation

Early Investment does not reflect the company's value

What are the specifics of grant funding?

Only one answer is correct!

A. You have to pay interest to the organization that provides the grant.

B. I have to research the right funding sources and how to apply.

C. The grantor wants ownership in your digital agriculture project.

D. I have to share my ideas with other, if I want to apply for a grant.

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- General information about EIB supported projects: <https://www.eib.org/en/projects/index.htm>



AgriSkills



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Entrepreneurial Skills
for Digitization
of Rural Agriculture



connexions



MACEDONIAN ENTERPRISE
DEVELOPMENT FOUNDATION



INNOVATION

ID20 /



Wissenschaftsinitiative
Niederösterreich
Science Initiative Lower Austria

About the Project

AgriSkills – Entrepreneurial Skills for Digitalization of Rural Agriculture is a European project funded by Erasmus+ Program. Our goal is to raise awareness about the digital transformation in agriculture and to provide a training program for entrepreneurial skills in digital, precision and smart farming. Digital agriculture, smart and precision agriculture are important to improve the sustainability of the food industry.

The results of the project stimulate the awareness, knowledge, and skills of learners and trainers in the field on the issues of digitalisation and digital farming:

- *Survey* on the real needs in skills, knowledge and competence development.
- *AgriSkills Training Program*. Developed training program organised like a “guided tour” through the whole range of digital opportunities in agriculture and introducing the needed skills and competencies implemented into a complete training.
- *AgriSkills Reference Catalogue* with collected good practices. AgriSkills will showcase many inspiring initiatives as practical examples, technologies and business models that can be applied in practice.
- *E-learning Platform* as a completely new training approach for digital farming topics for our target groups. Link to the platform: <https://training.agriskills40.com>.

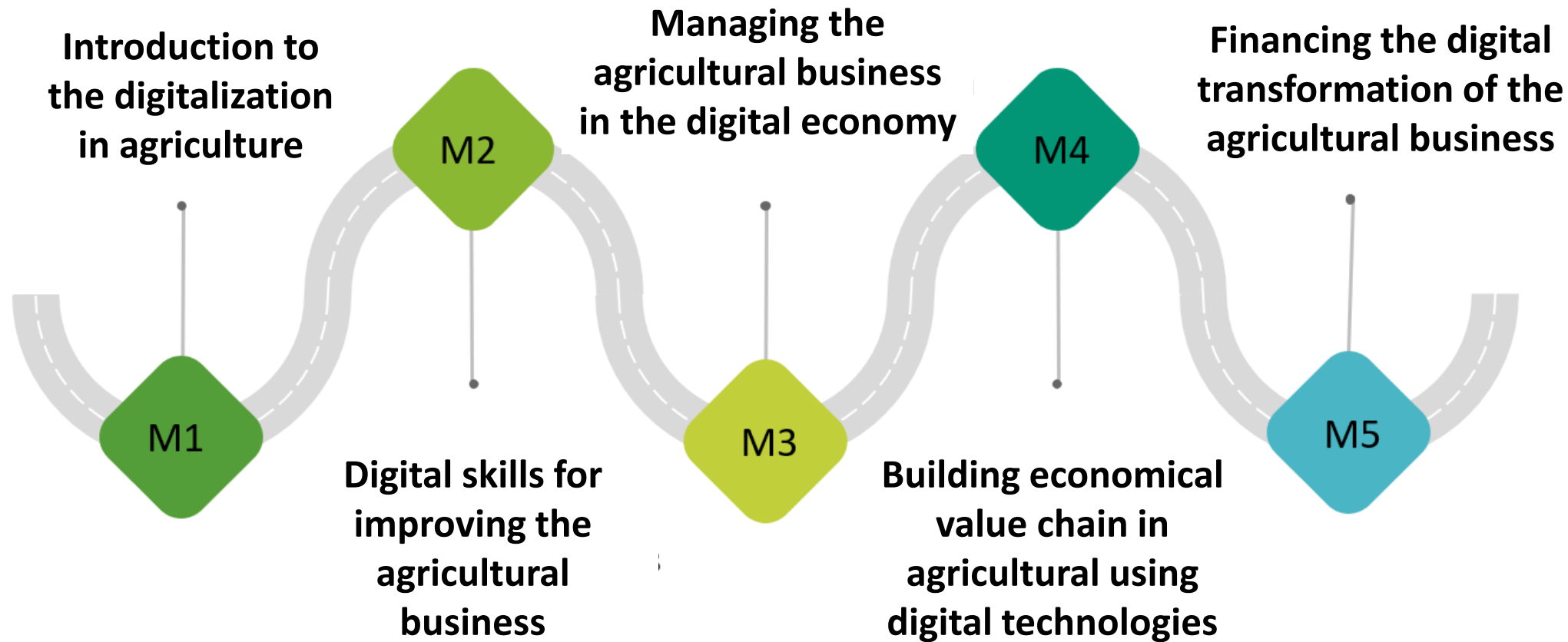


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AgriSkills Learning Roadmap



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Congratulations!
You have completed this Module!

