



I Jornadas de Innovación
Docente en grados y
posgrados en Ciencias
Experimentales e Ingenierías

Universidad Rey Juan Carlos

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Sustainable Precision Agriculture: *Research and Knowledge for Learning how to be an agri-Entrepreneur*

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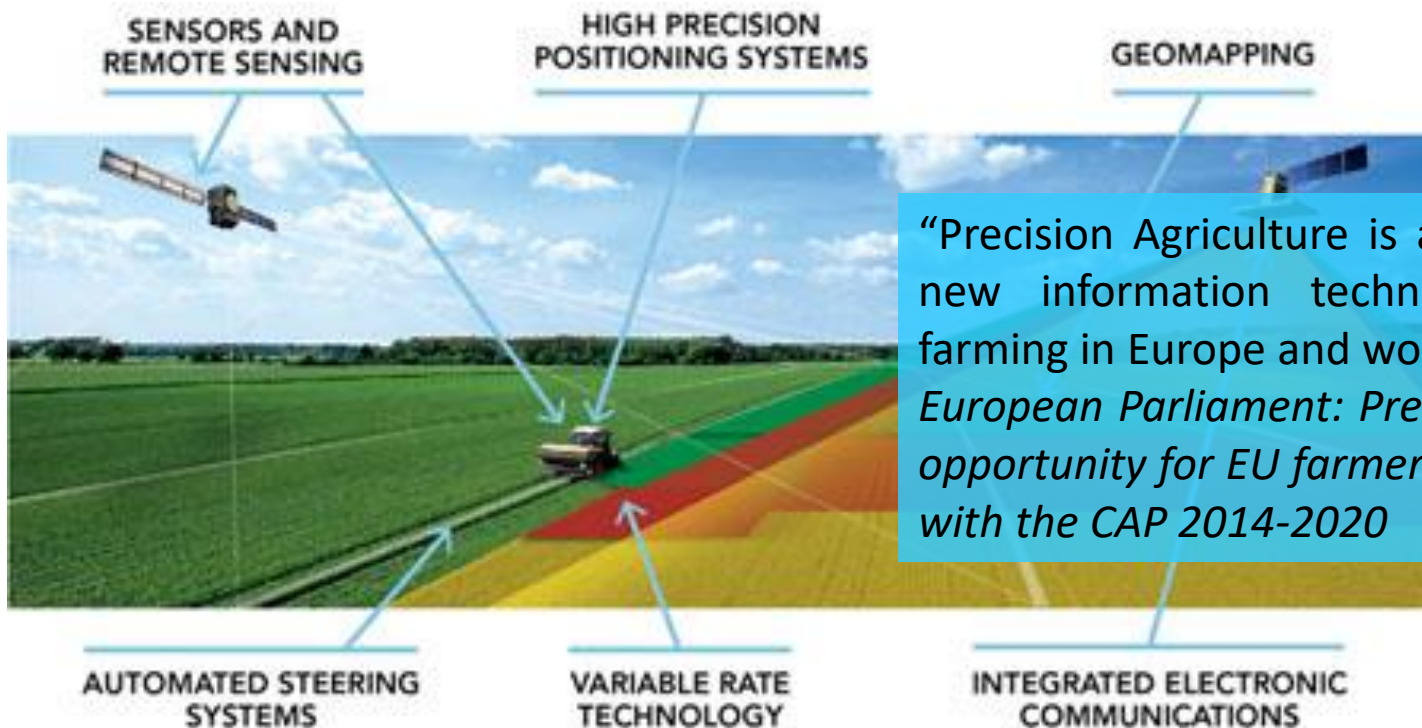


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¿What is Precision Agriculture?

- Given that each field has variability...
- PA is to provide to each spot of a field just what is needed, automatically, using GNSS, sensors, electronics, ICTs → variable rate of inputs



“Precision Agriculture is an inevitable fact, as new information technologies will impact farming in Europe and worldwide”
European Parliament: Precision Agriculture: an opportunity for EU farmers, a potential support with the CAP 2014-2020



Educational need

- Education about new technologies not included deeply in Universities all around Europe.
- Some Universities have courses about PA, but in a fragmentary way.
- Agricultural sector is more traditional, BUT
- There is an ongoing revolution: **digital agriculture** is changing the paradigm
- There is a **gap in the educational system**

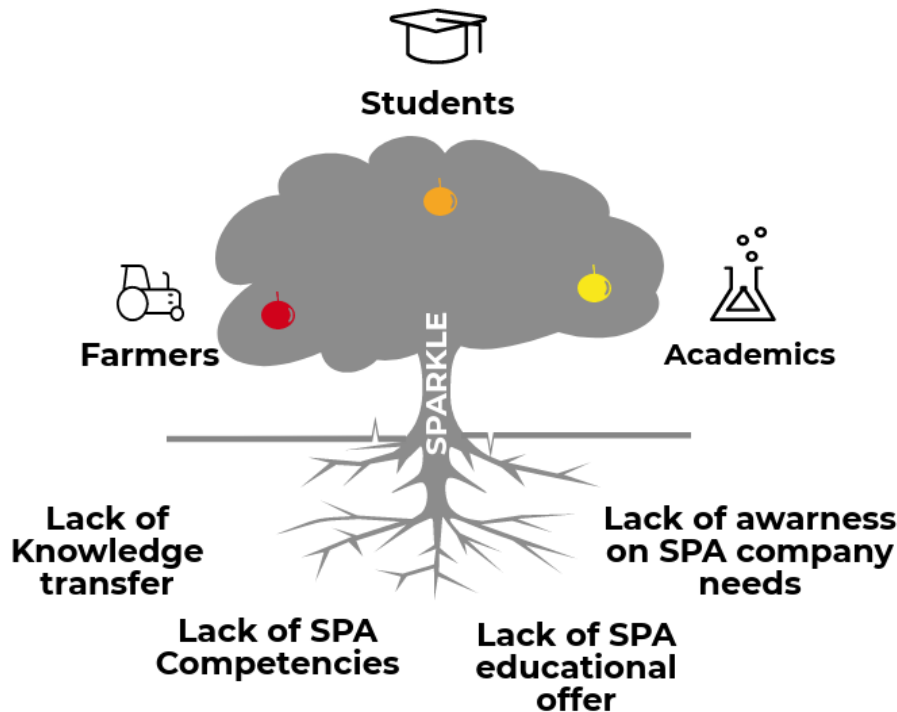


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*University of Florence
School of Agriculture
(coordinator of Sparkle Erasmus+ project)*



WHAT ARE WE TRYING TO DO?



Problems:

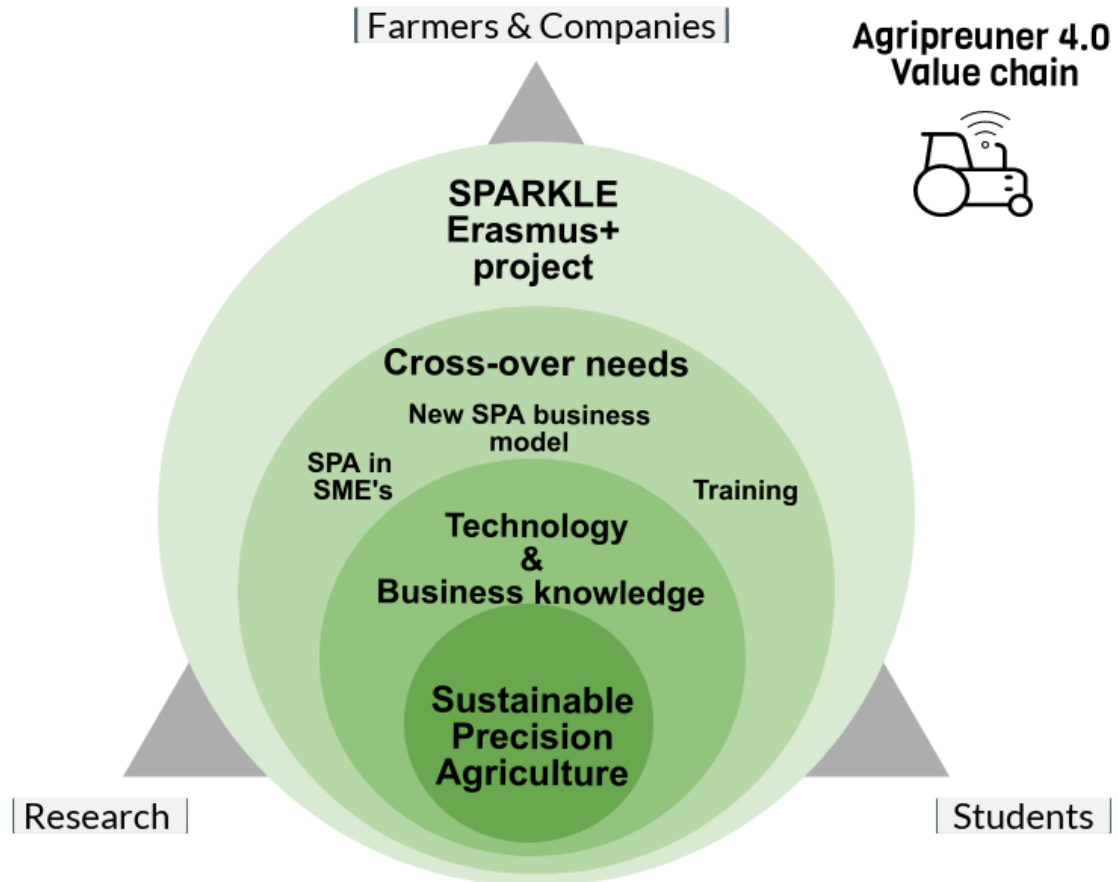
- Lack of innovation potentiality **self-awareness of farm companies**
- Lack of **knowledge transfer of SPA**
- Lack of SPA knowledge and **entrepreneurial skills of agricultural science students**
- Lack of SPA and entrepreneurial **educational offer of Universities**

Objectives

- Fostering the introduction of the new paradigm in Agriculture: **sustainable precision agriculture**
- Supporting the **digitalization and High Tech Farming**, providing new competencies as agro-electronics and agro-informatics.

A Comprehensive Ecosystem

- 1) **Involving** the whole agricultural ecosystem
- 2) **Designing** the future of the sector and providing the required skills
- 3) **Mobilizing** digital knowledge through academics, students and farmers



Project Structure

4 Universities

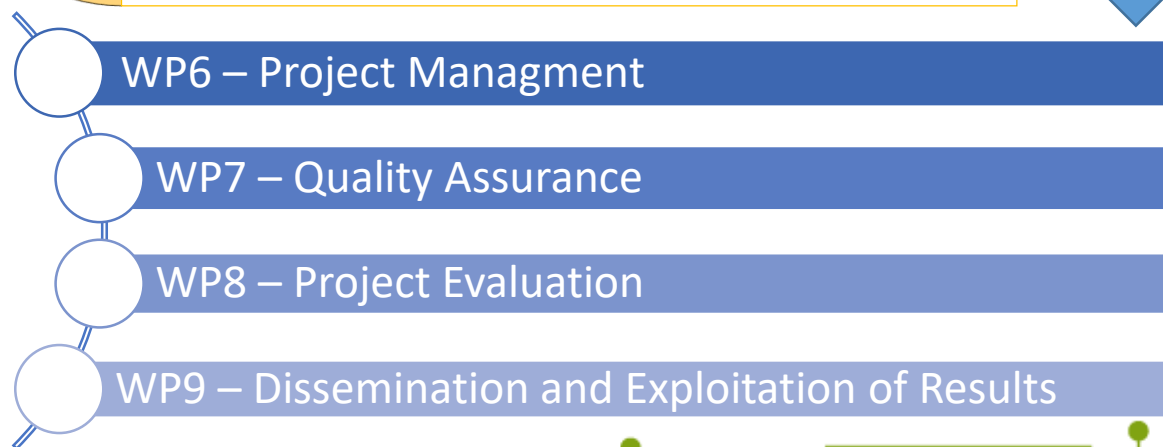
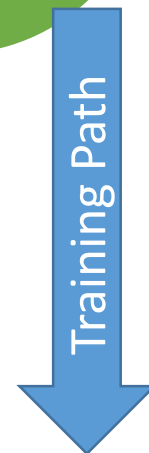
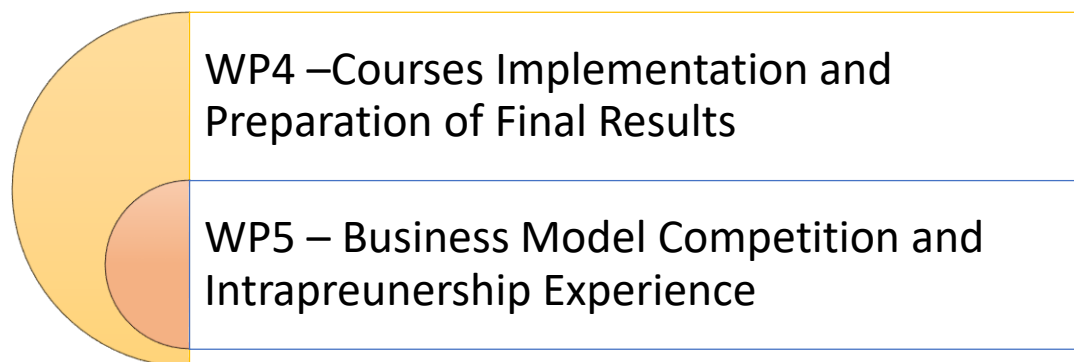
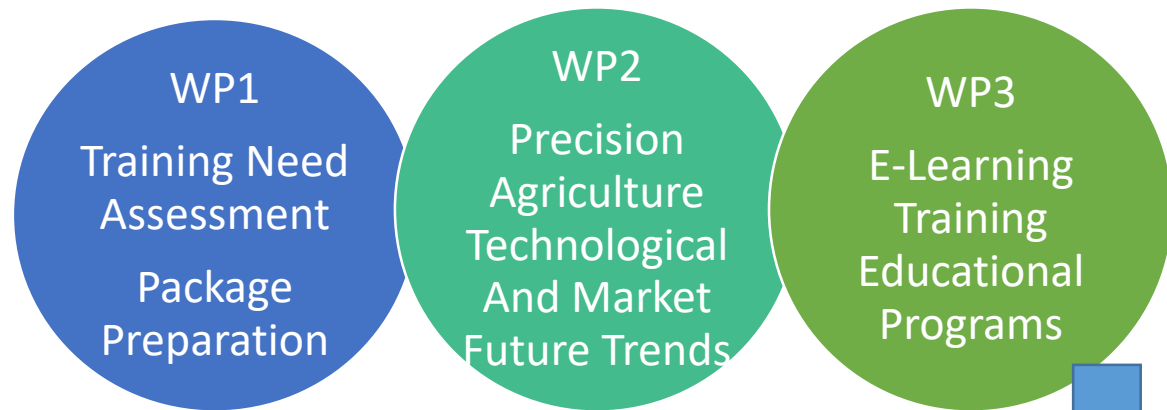
from Italy, Spain,
Greece, Portugal

4 Companies

providing advanced
services to
companies/farms

3 Farms

already adopting PA
technologies



5

Expected Impacts

Universities and Students

- Identification of entrepreneurial skills and competences required by the farmers
- Elaboration of educational packages;
- Reinforcing the technological transfer and enlarging the networks

Measuring the impact:

- Evaluation form for students
- Modules
- Peer-review with partners
- External evaluation on training

Farm companies

- Free access to entrepreneurship and PA technologies educational resources (e-learning);
- Scouting trained students
- Creation of a strong partnership with Universities and other farms

Measuring the impact:

- Evaluation form for entrepreneurs
- Modules
- Peer-review with partners
- External evaluation on training

Visibility And Dissemination

Main communication channels

Flyers, Project website, social media (Fb, Twitter, LinkedIn), public events, meetings, written material, scientific articles, EIP-AGRI platform, ERIAFF EU Regions network, AIIA,.. National association of biosystem engineering.

Associate Partners

9 organizations (Universities, farms, service providing companies, research centers) have already given their effective support to the project

We will be happy if..

We will have created not just training materials, but also a **new vision on agriculture education** involving many European stakeholders



What are we doing at present?

- Study the sector (surveys) :
 - Farmers
 - Agricultural students
 - Researchers in PA
- Study the technologies (bibliography & prospective)
- We want to know:
 - What should be taught? To students, to farmers...
 - Why PA is not being used broadly? Difficulties?
 - Why some advanced farmers are successful with PA?

Surveys

- Questionnaires have been developed for
 - University students
 - Selected farmers (already using some PA)
 - Selected researchers (on PA)
- Farmers: 30 (Greece, Italy, Portugal, Spain)
- Students: 100 Gr, 100 It, 144 Pt, 192 Sp
- Researchers: 16 (Gr, It, Pt, Sp)

[WP1 – R1.1b: Questionnaire for students]

Afirmación	Muy en desacuerdo [1]	Desacuerdo [2]	Ni de acuerdo ni en desacuerdo [3]	De acuerdo [4]	Muy de acuerdo [5]	
La AP requiere mucha inversión						Código [12x
Implica un riesgo económico grande						Código [12z
Los productos obtenidos con AP son seguros						Código [12g
Los productos primarios obtenidos con AP tienen alto valor nutritivo						Código [12h
La AP protege en medioambiente						Código [12i
La AP mejora la sostenibilidad de las fincas						Código [12j
Prefiero métodos de la agricultura convencional						Código [12k
La AP necesita disponer de información relevante						Código [12l
La AP requiere formación específica						Código [12m
Para hacer AP es necesario ser joven						Código [12n
No consigo familiarizarme con los métodos de AP						Código [12o
Casos de éxito de otros agricultores han influido en mi uso de la AP						Código [12p
Otros agricultores han influido en mi uso de la AP						Código [12q
La AP requiere capacidad de innovación por parte de los agricultores						Código [12r
Expertos de empresas han influido en mi uso de la AP						Código [12s
El gobierno o las iniciativas públicas han influido en mi uso de la AP						Código [12t
La AP es necesaria						Código [12u
La AP mejorará mi posición social						Código [12v

13. Estarías dispuesto a pagar el coste de un curso online (MOOC) ofrecido por una universidad o institución educativa?

	Muy improbable [1]	Poco probable [2]	Neutral [3]	Probable [4]	Muy probable [5]	
Estaría dispuesto a pagar el coste de un curso						Código [13

14. ¿Cuándo crees que es el mejor momento de recibir formación sobre AP (elige sólo una respuesta)?

- Durante los años de formación / estudios (antes de aplicar AP en campo) [1]
- Durante la etapa de aplicación de AP en campo [2]
- Después de un periodo de intentarlo en campo por mi cuenta [3]

Código [14

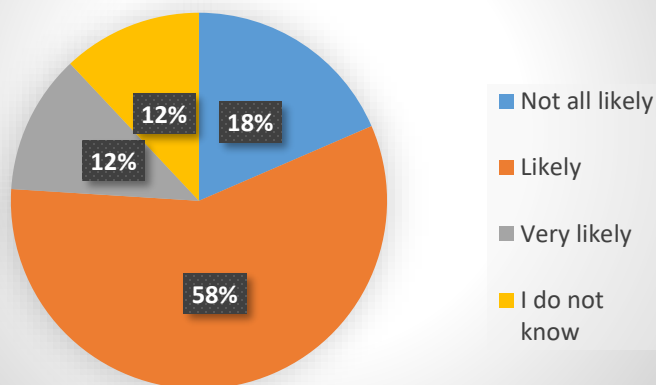
Encuesta para estudiantes

6

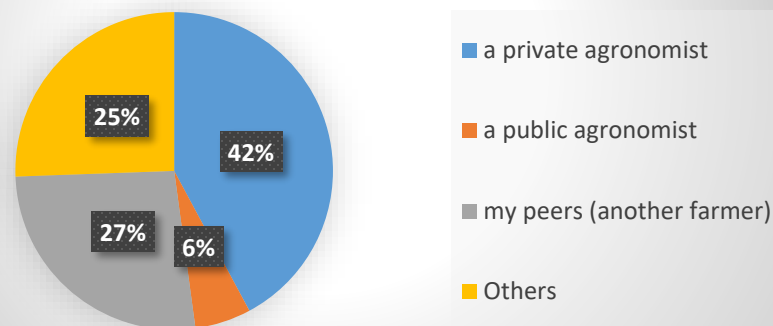
Farmers

(some preliminary results)

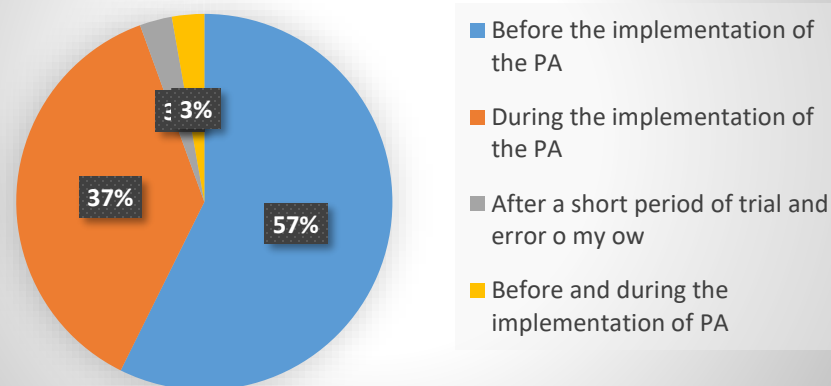
Would you be willing to pay a cost for a MOOC?



To whom do you turn to for advice when you encounter a problem at the farm level?



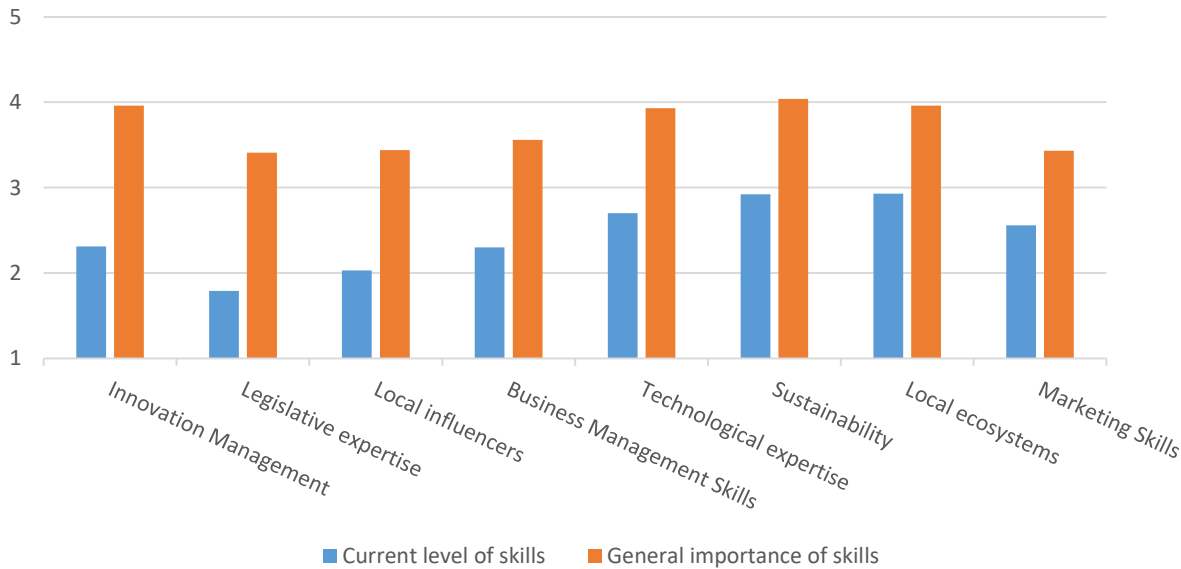
When do you think is the best time to get training in PA?



Students

(some results)

Current skills and general importance of knowledge categories in order of descending gap size

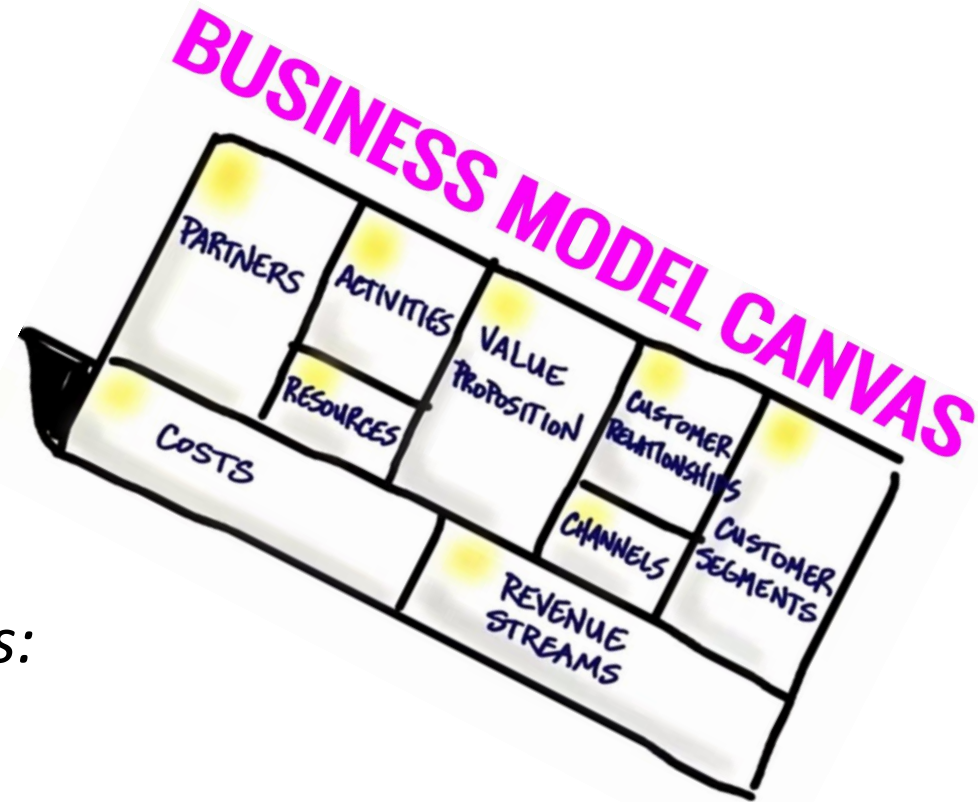


PA training needs rating - Mean Values



Business model

- Why PA is not adopted?
- Why some farmers are successful?
- Using *Business Model Canvas*:
 - *To learn from enterprises*
 - *To help enterprises*
 - *To teach students - entrepreneurs*
- Competition for students → final Price: practical stay at farm





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Gracias

