

The Synergies with Research and Innovation Funds: Stairway to Excellence
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Moving towards effective RIS3 implementation: An illustrative case study

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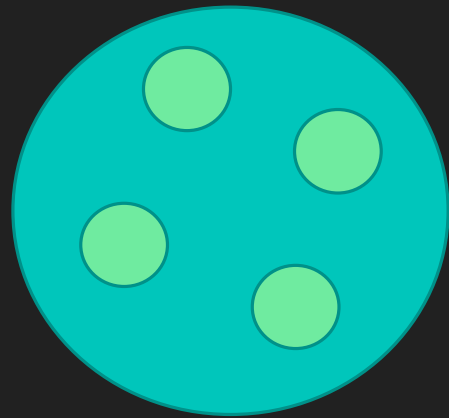
Member Monitoring Council Regional Operational Program

Romania

Regional smart specialization (RS2) :: personal practical perspective

RS2 = Regional R&D in **niche areas** that are strongly **correlated** with embedded economic sectors in the region, **rapid assimilated** in **specialized innovation projects** by local companies, clusters or economic alliances/consortia that are keen (and capable) to **develop and produce** “blue-ocean” driven (**differentiated**) and disruptive and/or inclusive and/or breakthrough technologies, products and/or product-service systems to **sustainably compete** in international markets using a “positive sum” (**win-win**) competitive strategy

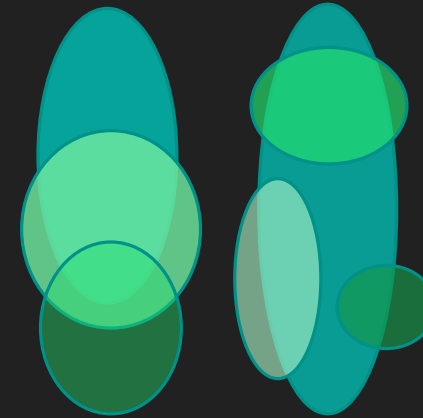
Regional innovation strategy for smart specialization (RIS3) :: quality issues



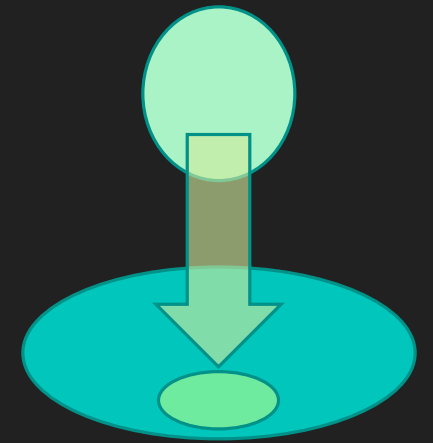
How many S2 fields?



How wide/narrow the S2 fields?



How much interdisciplinary the S2 fields?
How much transdisciplinary?



S2 is **NOT** about industrial specialization of the region

S2 is about **specializing innovation** and **specialized innovation** in the region based on **niche R&D**

Recommendation: Fix potential poorer quality RIS3 through a good quality guide for applicants

Recommendation: If too many S2 fields, group them: **1.** catapult S2 fields; **2.** challenger S2 fields

Effective RIS3 implementation

Revisit RIS3 before implementation and **adjust** it if new elements are revealed

If necessary, we can locate the regional poles by replacing region with locality and country with region in the calculation of IQ_A , IQ_B , IQ_C

$$IQ_A = \frac{\frac{a_S}{a_R}}{\frac{A_S}{A_R}}$$

Employees in the X sector from the region

Total employees in the region

Employees in the X sector from the country

Total employees in the country

$$IQ_B = \frac{\frac{b_S}{b_R}}{\frac{B_S}{B_R}}$$

Active companies in the X sector from the region

Total active companies in the region

Active companies in the X sector from the country

Total active companies in the country

$$IQ_C = \frac{\frac{c_S}{c_R}}{\frac{C_S}{C_R}}$$

Value added of the X sector from the region

Value added in the region

Value added of the X sector from the country

Value added in the country

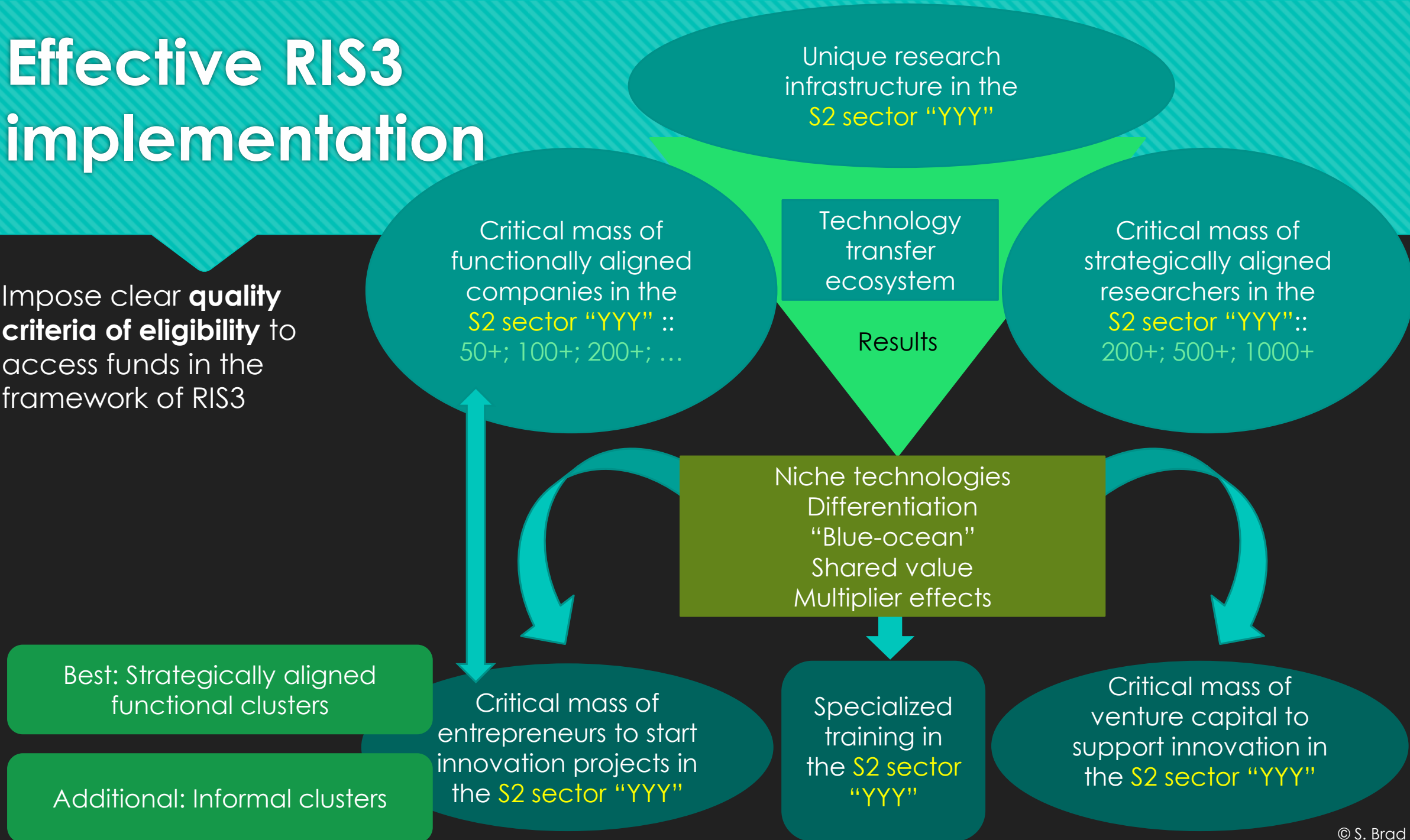
Select those sectors with:

$IQ_A > 1$ (AND/OR) $IQ_B > 1$ (AND/OR) $IQ_C > 1$

Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources

Effective RIS3 implementation

Impose clear **quality criteria of eligibility** to access funds in the framework of RIS3



Effective RIS3 implementation

Introduce adequate metrics
(**progress indicators**) to
evaluate the programs for RIS3

- Maturity and no. of functional innovative clusters in the S2 fields
- Level of interdisciplinarity between clusters (integrated meta-clustering)
- No. companies that introduced new innovation activities / new businesses / new non-traditional products (in niche / interdisciplinary areas) [disruptive, inclusive/social, radical disruptive, breakthrough]
- Co-invention of applications (CIA) with KET in the key local economic sectors
- S2 networks between regions (co-patents; co-publications)
- No. patent applications and publications “academia & industry”
- No. of patent applications (EPO) linked to local economic sectors
- No. of EPO, USTPO, WPO patents in the S2 fields
- No. of local patents and licensed patents applied in CIA products and technologies from the S2 fields
- Correlation between the specialized training programs and R&D areas for S2 fields
- Critical mass of researchers in each S2 field
- Level of innovation differentiation (B-O) with respect to the key competitors
- Level of collaborations in polycentric innovation
- No. of joint ventures in innovation projects
- Level of business internationalization based on local R&D and innovation programs
- Turnover from the commercialization of local solutions in the S2 fields from the total turnover
- (No. new KETs in the S2 fields)

Case study :: N-W region Romania

... S2 major fields

S2 fields:

- Organic agro-food, bioenergy and biotechnologies
- Energy and technologies for energy storage
- Intelligent systems and technologies for the city of the future
- Public health, oncology and healthy ageing



$$P_i > P_{i-1} \times \beta_{R\&D} + P_{i-1} \times \eta_{T\&P}; \beta_{R\&D} + \eta_{T\&P} < 1$$

Case study :: N-W region Romania

... S2 deeper investigation



	Strong link
	Medium link
	Weaker link
	No link

Emerging technologies identified in the core preoccupations of the research labs / structures from the region

Embedded economic sectors in the region with product/technology-driven innovation potential

Level: sum of weighted S2 criteria
Weights defined with AHP
Criteria assessed on a 1 to 10 scale

						1
						3
						4
						-
						5
						2

SELECTED S2 FIELDS

1	-	(4)	-	3	2

Selected R&D and innovation niche areas to be primarily financed

Recommended S2 criteria:

1. research infrastructure and equipment in the sector	9. capacity to attract public & private funds to support R&D in the sector
2. no. researchers in the sector	10. capacity to attract public & private funds for TT in the sector (TRL 3 → TRL 6)
3. excellence of applied research in the sector	11. capacity to innovate (TRL 6 → TRL 9)
4. excellence of fundamental research in the sector	12. horizontal multipliers (leverage effects)
5. no. of companies in the sector	13. vertical multipliers
6. no. of innovative companies in the sector	14. no. of lead inno-entrepreneurs & expertise for "lean" innovation in the sector
7. level of integrated teams academic-industry in the sector	15. maturity of the aligned S2 strategy in the sector → 2030
8. capacity to diversify specialization in the sector	16. capacity to achieve deep "blue-ocean" in the sector

Case study :: N-W region Romania

... deeper entrepreneurial search →
niche areas within the S2 fields

Technologies
and co-
invention of
applications
(CIA) for smart
cities

Co-invention of
applications
(CIA) in
renewable
energy (solar,
hydro, biogas,
geothermal,
photosynthesis)

Smart luxury
furniture and
smart
reconfigurable
furniture with
the support of
information
technology

Permaculture,
mountain
/highland
organic
agriculture and
e-agriculture
for peripheral
rural zones

Level 1

Balneal tourism
with the
contribution of
holistic
medicine and
information
technology

Digital
medicine in
oncology and
technologies
for e-health

Gerontology,
geriatrics and
green/natural
cosmetics

CIA and smart
components
for vehicles, for
FoF and for
logistic
infrastructure in
energy

Level 2

Case study :: N-W region Romania

... exemplification


Technologies and co-invention of applications for smart cities

City with high level of de "intelligence"

Systems capable to "socialize", to "negotiate", to change the own strategy in the context, to learn from experiences, to act proactive, to collaborate and to achieve their objectives with a minimal resource consumption

"DNA" of smart city

Unsustainable, non-inclusive, inefficient, non-effective, poor connected, low adaptive, unsecure, vulnerable, polluted, unattractive city




- Smart technology
- Smart citizens
- Smart economy
- Smart mobility
- Clean environment
- Smart health systems
- Smart living and working
- Smart infrastructure
- Competitive solutions of UTC-N** [significant differentiation by smart specialization]

VISION

ITC	Cluj IT	Clusters
Energy	TREC	
Energy	Green Energy	
Creative industry	Mobilier Transilvan	
Environment	ETREC	
Materials	MetalCluster	
Environment	AFI Napoca	

+ informal clusters
300+ software companies

110 IT and energy companies



Research & innovation topics
→ 2020; → 2028



60 research labs; 600+ researchers;
8 competence units

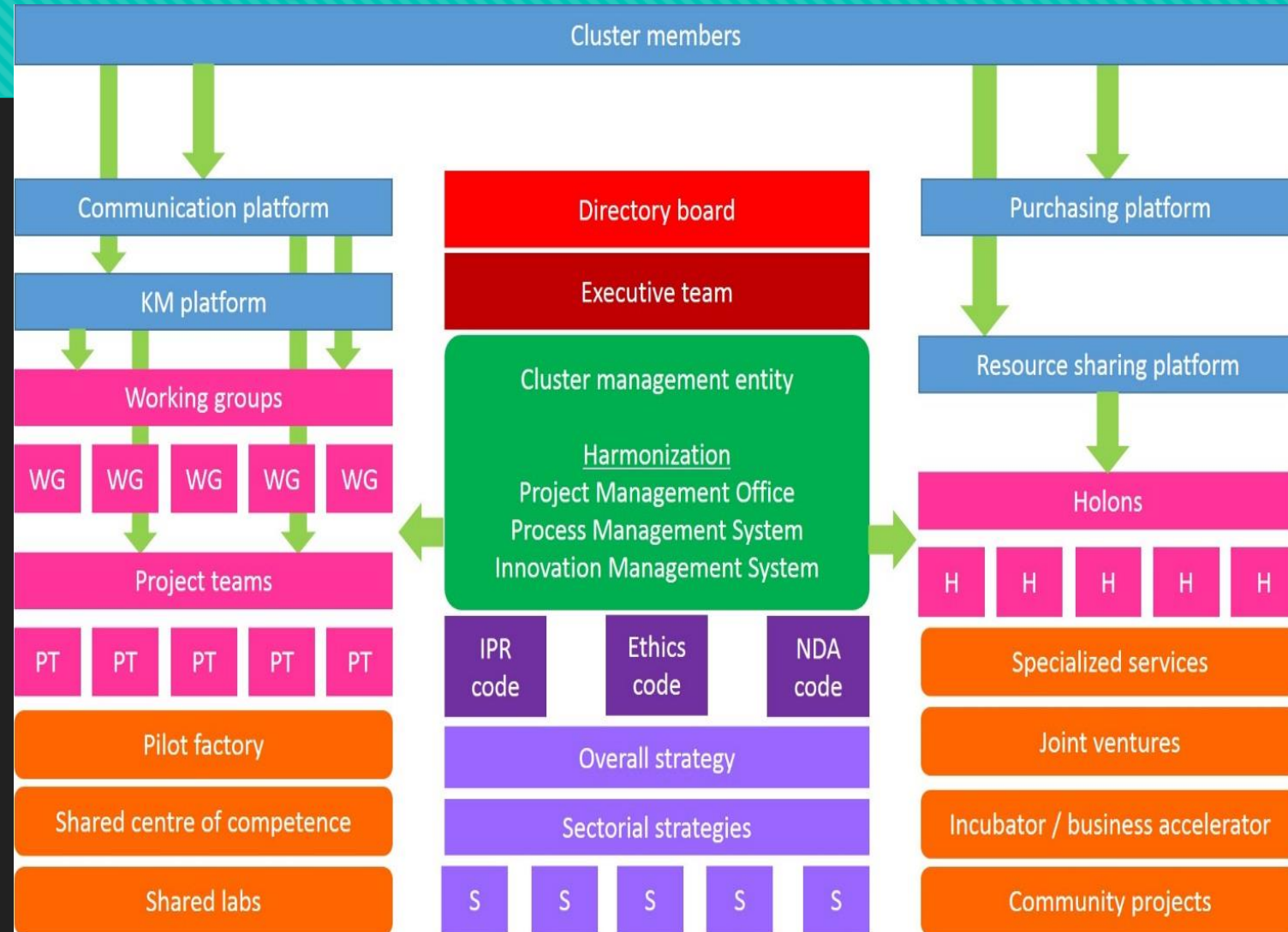


Case study :: N-W region Romania strategic functional alignment

Cluj IT cluster

strategic functional alignment

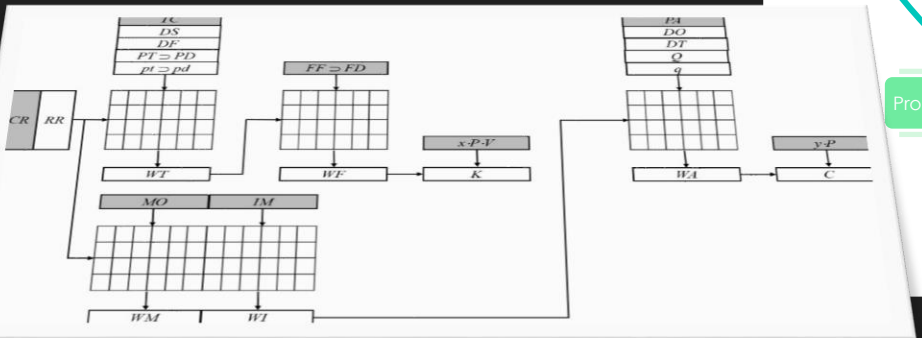
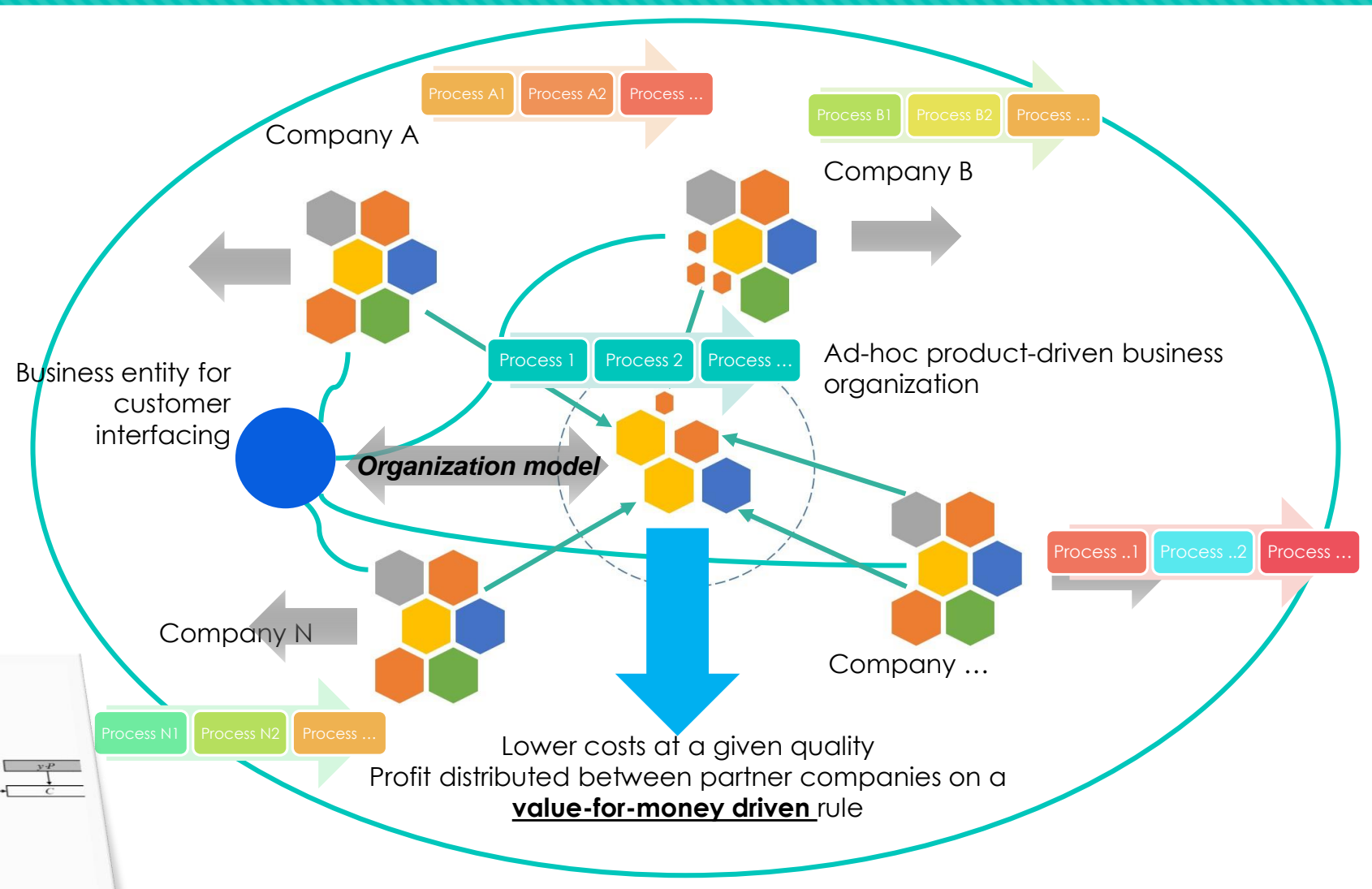
40 IT companies
4 R&D universities
2 R&D institutes
9 catalyst organizations



Case study :: N-W region Romania polycentric innovation model

Cluj IT cluster

product-driven
polycentric innovation
model



Lessons to take away

- RIS3 is not static – adjust it when new elements are in place or new lessons are learned
- Focus on the innovation ecosystem to succeed with RIS3, especially on “lean” TT ecosystem
- Narrowing and inter-, trans -“seasoning” S2 wider fields by deeper investigation procedures (selection quantitative matrices) and evolutionary entrepreneurial search
- Split S2 fields into “S2 catapults” and “S2 challengers” → put local “actors” to compete on maximizing results related to S2 progress indicators; do not let them fighting each-other to share the limited resources
- Promote polycentric innovation models to support RIS3 in practice
- Focus on functional strategic aligned innovative clusters as catapults for RIS3 implementation
- Finance only those projects that bring critical mass of S2-related endowments, balance and cumulate good/high levels of capability/maturity of the S2 progress indicators/criteria → activate “actors” by imposing a clever S2 context

Q & A

“stump” the speaker

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