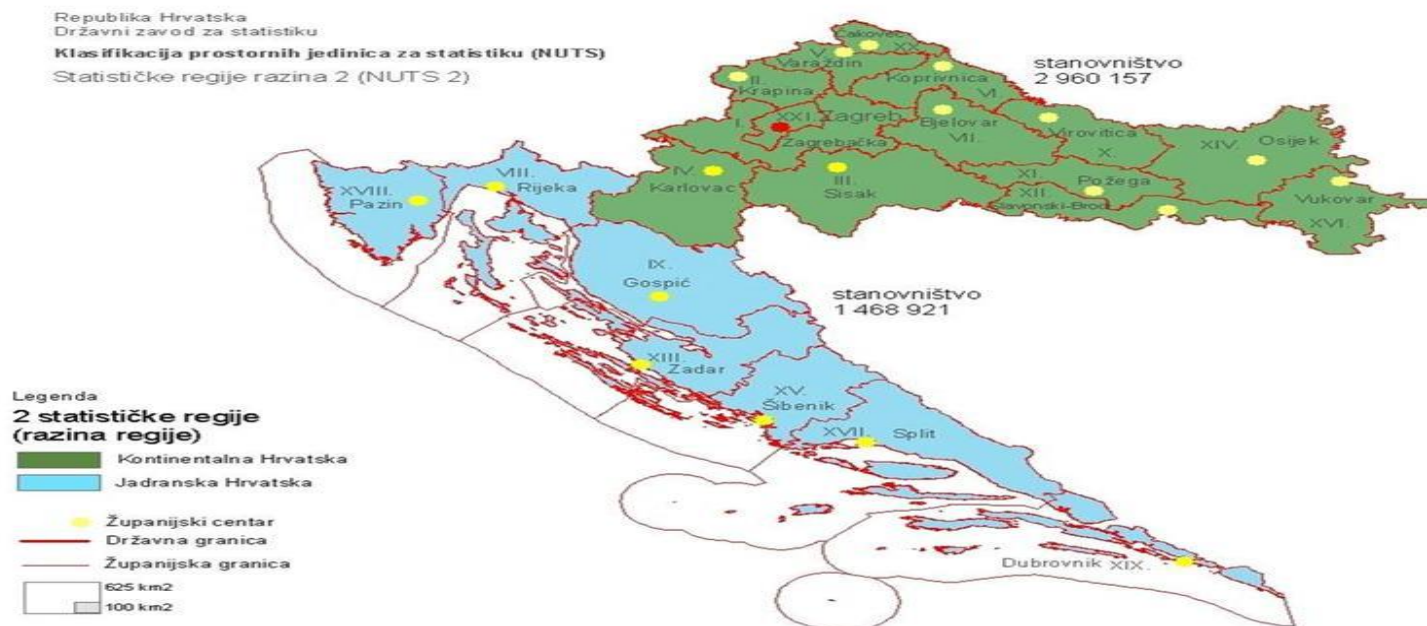


CROATIA

Prioritisation, Entrepreneurial Discovery and Policy mix in the RIS3 process



Portoroz (SI), 15-16 May 2014
Mr.sc. Marija Rajaković

Which issues we would like to discuss and why?



For this Peer-Review Workshop we expect to:

- Exchange experiences about how S3 activities are being developed in other countries/regions
- To discuss if policy mix is appropriated for the challenges and given objectives that Croatia has identified
- To present and discuss how the development of policy instruments and budgetary allocation reflect the prioritisation process
- Capture new thoughts for stakeholders' involvement
- Understand monitoring and evaluation perspectives for RIS3 implementation

Questions we would like peers to discuss after our presentation:

1. What is expected to be outcome of the Entrepreneurial Discovery process?
2. What is driving innovation (How do enterprises innovate? Who is leading the process? Why do enterprises innovate? What can be outcomes of the innovation process?)
3. How to bridge “value of death” in the innovation value chain and to enhance cooperation between the specialized stakeholders (clusters, universities, funding intermediary organizations, investors, enterprises)?
4. How to measure the specialization(s) and to monitor emerging specializations capabilities?



CROATIA - 28th MEMBER



CROATIA – GENERAL INFORMATION

Land area: 56,542 sq km
Capital: Zagreb
Population: 4.284.889

COMPETITIVE CROATIA

INNOVATION

Did you know that the tie, pen, parachute and mp3 engine are invented in Croatia?

Nikola Tesla

Man who invented the 20th century
1856 - 1943



mp3 Engine

Croatian inventor
Tomislav Uzelac
invented 1997



Ball-point pen

Croatian inventor
Eduard Slavoljub Penkala
1871 - 1922



SMS Parking

Croatian invention
invented 2001



Fingerprinting

Croatian inventor
Ivan Vučetić
1858 - 1925

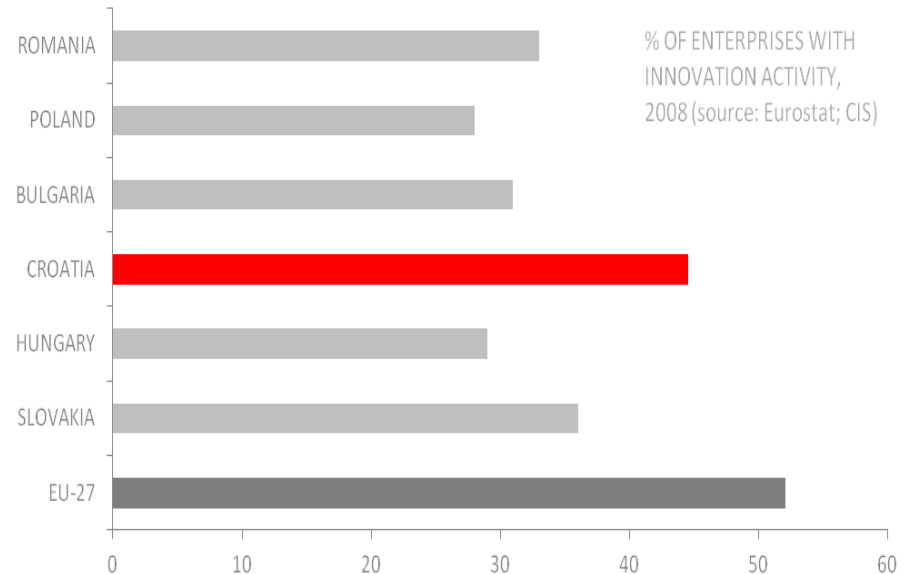


Parachute

Croatian inventor
Faust Vrančić
1551 - 1617



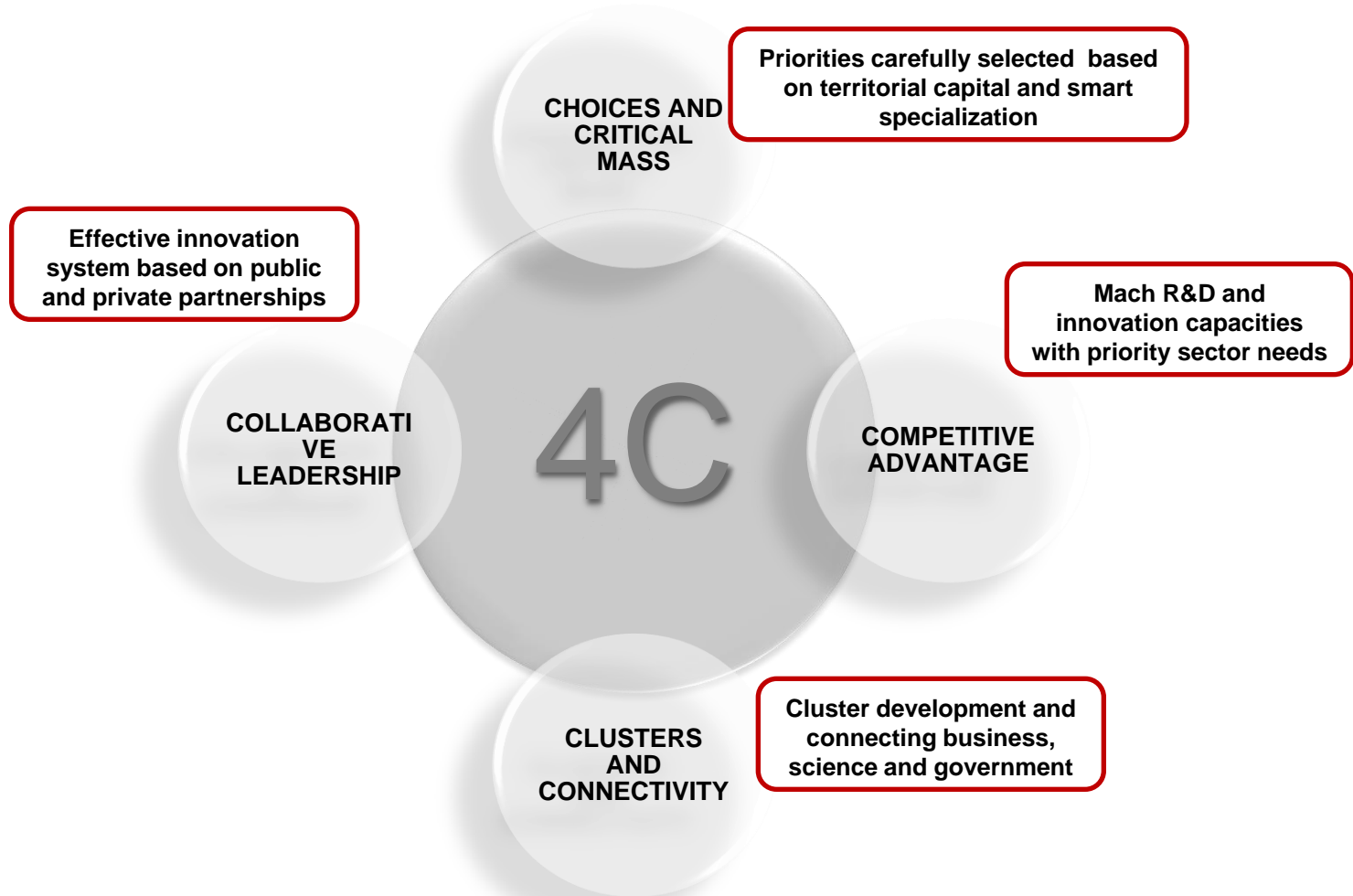
Innovation activity



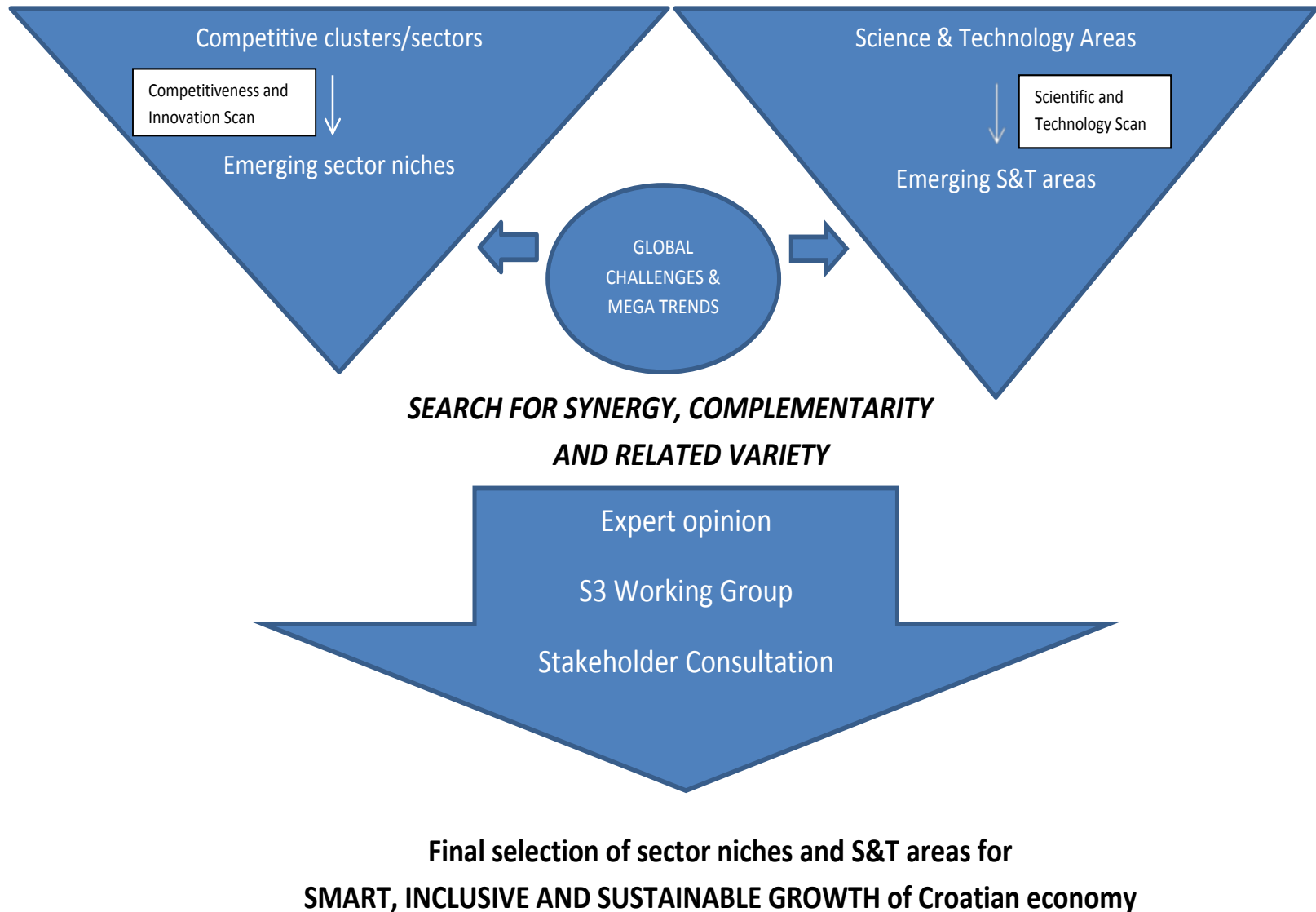
COMPETITIVE CROATIA

S3 - STRATEGY FOR BOOSTING COMPETITIVENESS

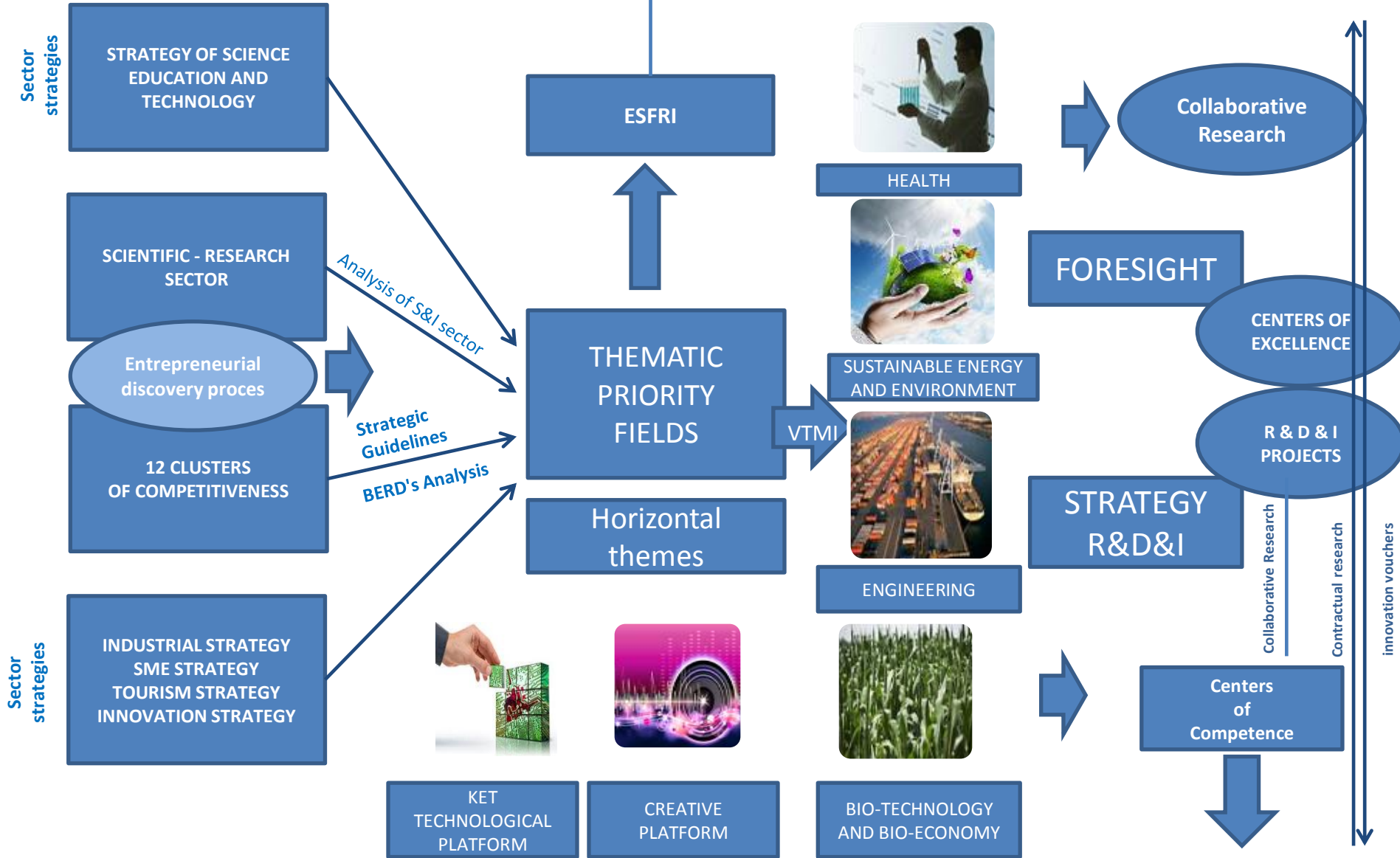
HOW CAN WE EFFECT COMPETITIVENESS



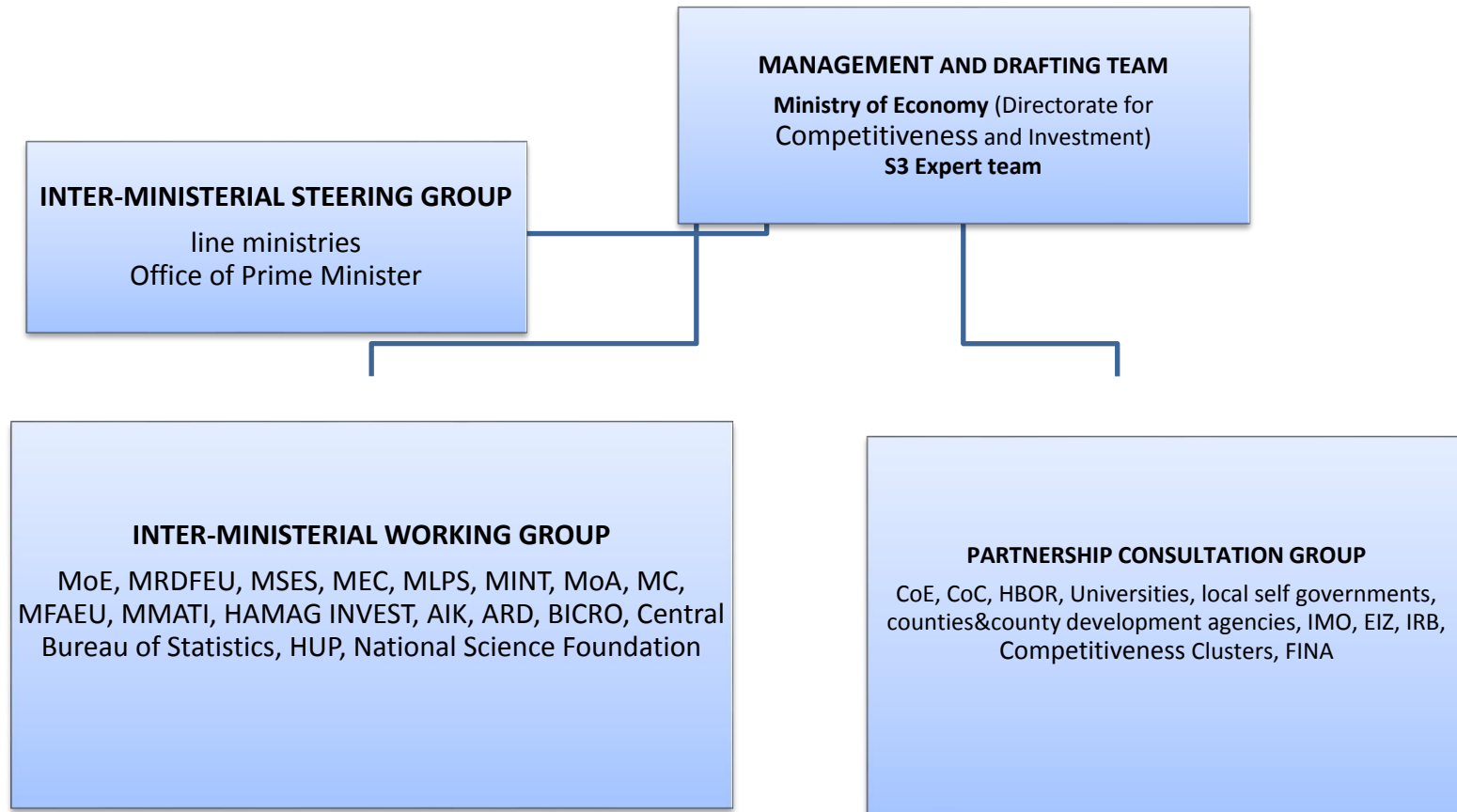
The process of design National S3 in Croatia



SCIENTIFIC - RESEARCH SECTOR



S3 governance



Partnership consultation



KICK-OFF MEETING - Aug 2013

PSC MEETING – November 2013

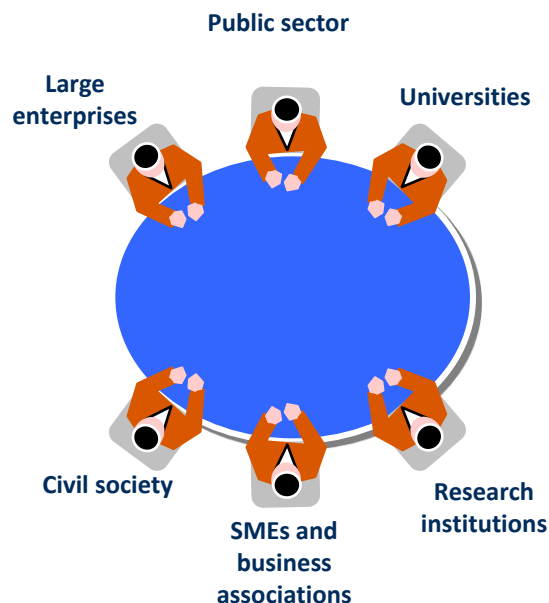
IMWG MEETINGS (3) - September – November 2013

JOINT PSC and IMWG MEETINGS (4) – Dec 2013 – March 2014

HIGH-RANKING OFFICIALS MEETINGS

PARTNERSHIP/STAKEHOLDER CONSULTATION MEETINGS:

- PCG meeting with representatives of Croatian Competitiveness Clusters - September 2013,
- Partnership Consultation meetings – individual interviews (S3-expert team with representatives of relevant ministries, employers, universities, research institutions (August – December 2013, aprox. 70 participants in total) - collecting data for S3-analysis
- Expert group meetings - continuously



PLANNED STAKEHOLDER CONSULTATION :
Rijeka (Health), Rovinj (Tourism),
Zagreb (Creative industry)

Public consultation – in accordance with national procedure for adoption of strategy

All communication infrastructure established so far (clusters, industrial platform, JSC , IMWG, expert groups) will be used during implementation process as well

5 STAKEHOLDER CONSULTATION MEETINGS/Regional workshops with triple-helix representatives – ZG, ZD, RI, OS, Sv. Martin na Muri (January/February 2014, aprox. 160 participants in total)

Purpose: collecting the data for S3 development (defining the territorial capital, development strategies and priority-sectors; instruments for smart specialization and strengthening regional competitiveness; existence of co-operation (business – science), business environment and financial mechanisms, research infrastructure; usage and development of KET technology, relevant instruments (policy-mix) etc.

CONSULTATION MEETINGS with Croatian Competitiveness Clusters (10) – January-March 2014

Purpose: defining the capacity for research, technological development and innovation; presentation of relevant and identified thematic areas and sectoral niches within the S3.

4 STAKEHOLDER CONSULTATIONS MEETINGS/ Zagreb, Čakovac, Zadar, with more than 10 participants involved (triple helix model)

Identification of Research and Innovation strengths and potential (I)

- **Both GERD (0.76%) and BERD (0.34%) lag considerably behind EU-average (both roughly 1/3 of R&D expenditure in % of GDP in EU)**
- **Main areas of R&D expenditure: engineering, life sciences, biomedicine and health, and biotechnical sciences**
- **Main sectors with R&D expenditure: scientific research and development, pharma, telecommunications, followed at some distance by motor vehicles, food, and civil engineering**
- **Limited number of private sector companies with substantial own R&D-activity, most notably in Ericsson-NikolaTesla (ICT, Telecommunication) and PLIVA (pharma)**
- **Top ranking research institutes (ER-rank): UniZagreb Faculty Electrical Engineering, Rudjer Boskovic Institute, Novamine, UniZagreb Medical School. Other indicators also point to excellence of some research outside Zagreb, particularly at University of Rijeka Medical School**

Identification of Research and Innovation strengths and potential (II)

- Top ranked scientific fields in terms of international publications: medicine, agricultural and biological science, biochemistry/genetics/molecular biology, physics&astronomy, engineering, chemistry
- Patenting very low in Croatia, but technological strengths can be found in: Pharmaceuticals, biotechnology, medical technology, ICT
- Croatian participation in EU FP7 quite strong, notably in:
 - Health care (translational Medicine, bone regeneration, brain repair, some cancer treatment, anti-body technology)
 - ICT (robotics, unmanned aerial vehicles)
 - Geodesic applications (e.g. Anti-personnel mines, UXO)
 - Traffic and transport sciences
 - Textile technology

Deployment of KET in Croatia still low but there is some promising activity (data for 2012)

Technology diffusion approach
(Number of patent applications in 'tagged' IPC categories 2000-2012)
Source: Patbase

Component approach
(identifies companies who are handling KET's incorporating them into products based on KET 'tagged' PRODCOM codes)
Data source: Croatian Statistical Office

ADVANCED MATERIALS

30

48

51

509.697

317.136

PHOTONICS

27

3

3

1.044.748

898.348

ADVANCED MANUFACTURING TECHNOLOGIES

27

60

31

916.285

761.008

NANO AND MICRO ELECTRONICS

18

0

0

0

0

INDUSTRIAL BIOTECHNOLOGY

9

5

7

49 749

30.816

NANO-TECHNOLOGY

0

19

12

371570

128.096

NUMBER OF COMPANIES

NUMBER OF PRODUCTS

TOTAL VALUE SOLD 000 HRK

VALUE EXPORTED 000 HRK

VISION:

Croatia will be recognised as an innovation and creative hub and will be one of the leading south-east European knowledge-based countries embracing creativity and innovation at all levels of society.

OVERALL STRATEGIC OBJECTIVES:

Unlocking research and development potential of Croatia and transforming today's industrial forms of production towards more knowledge intensive, sustainable, low-carbon, trans-sectoral manufacturing and processing technologies, to realize innovative products, processes and services and bringing innovation to the market

SPECIFIC OBJECTIVES

| 1. | 2. | 3. | 4. | 5. |
|--|--|---|--|--|
| Raising the level of scientific excellence in the Croatian science base and ensuring an environment for top class research to upgrade Croatian current and future competitiveness especially oriented at meeting present and future economic and societal challenges | Overcoming the fragmentation of innovation value chain and the gap between research and productive systems through development of Innovation infrastructures, clustering and establishment of technological platforms in thematic priority areas of Croatian economy | Fostering the competitiveness and growth of Croatian economy through increasing cooperation and transfer of knowledge between publicly owned research institutions and private enterprises and stimulating business R&D&I investments and upgrading the knowledge intensity of produced goods, services and production and organization processes in key sector of Croatian economy | Using Cross-sectoral themes for the emergence of new economic activities, raising productivity of Croatian economy and the creation of new and sustainable job opportunities | Creating smart skills - upgrading the qualifications of existing and new work force for smart specialisation |



Strengthening infrastructural capacities for scientific excellence



Enhancing scientific excellence through national centres of scientific excellence



Strengthening capacities of research organizations to conduct research that is directed towards practical application of scientific results



Innovation friendly business environments for SMEs



Financial engineering instruments



Establishment of Technology network for industry and development of thematic technological platforms



Support to competitiveness cluster initiatives



Creation of Centres of competence



Support to R&D business investment



Support to non-technological innovation in business sector



Social innovation



Building skills for smart specialisation

DELIVERY INSTRUMENTS

S3 specific objectives/delivery instruments

Specific objective 1

- STRENGTHENING INFRASTRUCTURAL CAPACITIES FOR SCIENTIFIC EXCELLENCE
- ENHANCING SCIENTIFIC EXCELLENCE THROUGH NATIONAL CENTRES OF SCIENTIFIC EXCELLENCE
- STRENGTHENING CAPACITIES OF RESEARCH ORGANIZATIONS TO CONDUCT RESEARCH THAT IS DIRECTED TOWARDS PRACTICAL APPLICATION OF SCIENTIFIC RESULTS

Specific objective 2

- ESTABLISHMENT OF HIGH TECHNOLOGY NETWORK FOR INDUSTRY AND DEVELOPMENT OF THEMATIC TECHNOLOGICAL PLATFORMS
- CREATION OF CENTRES OF COMPETENCE
- SUPPORT TO COMPETITIVENESS CLUSTER INITIATIVE
- INNOVATION FRIENDLY BUSINESS ENVIRONMENTS FOR SMEs

Specific objective 3

- FINANCIAL ENGINEERING INSTRUMENTS
- SUPPORT TO IN R&D&I (business investment)
- SUPPORT TO NON-TECHNOLOGICAL INNOVATION OF BUSINESS SECTOR
- SOCIAL INNOVATION

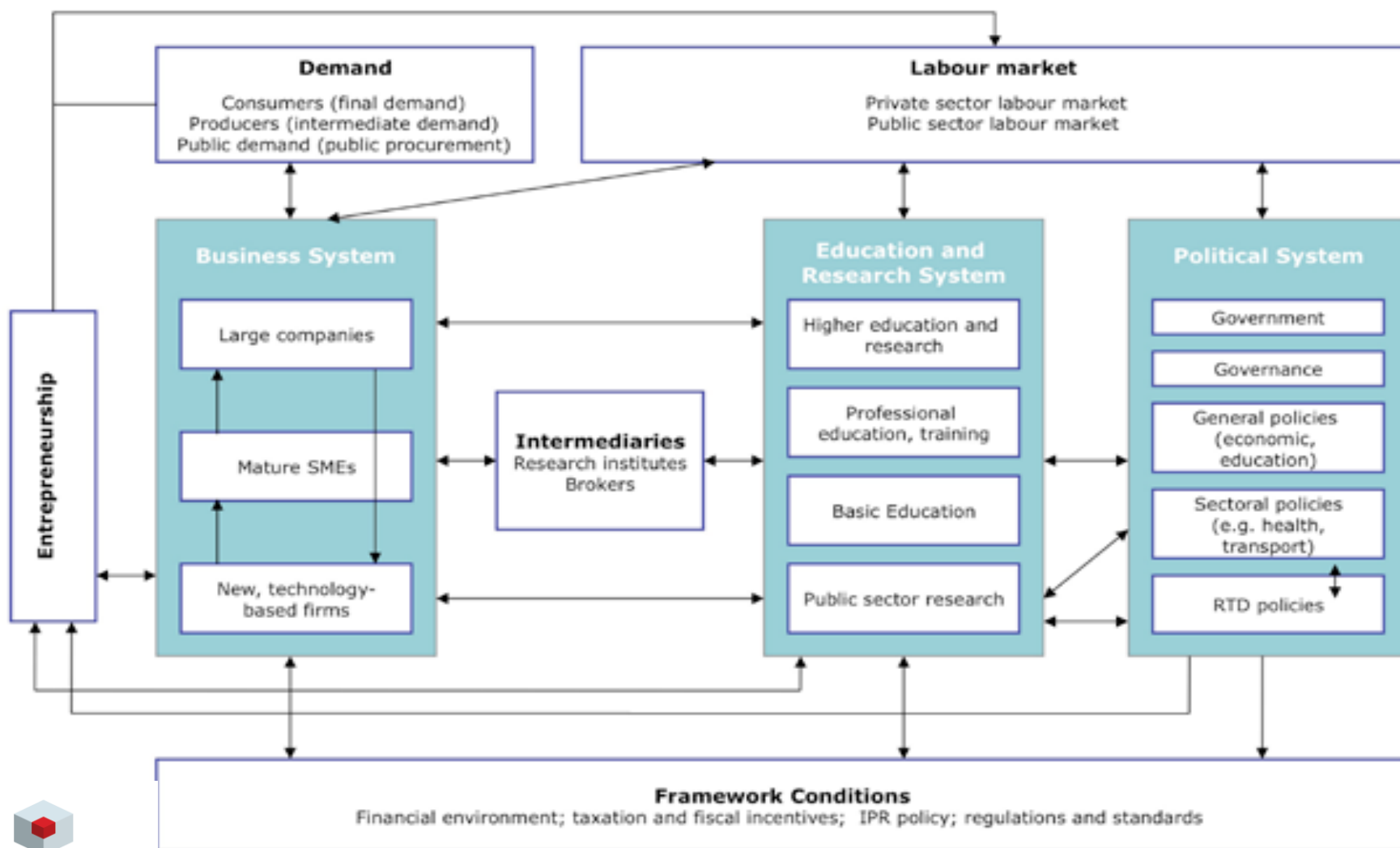
Specific objective 4

- INNOVATION FRIENDLY BUSINESS ENVIRONMENTS FOR SMEs
- FINANCIAL ENGINEERING INSTRUMENTS
- STRENGTHENING CAPACITIES OF RESEARCH ORGANIZATIONS TO CONDUCT RESEARCH THAT IS DIRECTED TOWARDS PRACTICAL APPLICATION OF SCIENTIFIC RESULTS
- SUPPORT TO R&D&I (business investment)

Specific objective 5

- BUILDING SKILLS FOR SMART SPECIALISATIONS

Coverage of delivery instruments in Croatian innovation system



Identification of priority thematic areas

R&D capacity in science and research institutions



Tradition in industrial production and capacity to implement new technology and develop new product and services



PRIORITY THEMATIC AREAS FOR CROATIA



HEALTH



SUSTAINABLE
ENERGY &
ENVIRONMENT



ENGINEERING



BIO-
TECHNOLOGY
AND BIO-
ECONOMY

**Cross-sectoral (Inter-,multi- and trans-disciplinary topics): KET,
ICT, Tourism, Creative & cultural industry, Green growth and
Social challenges**

Link between priority thematic areas and cross-cutting themes

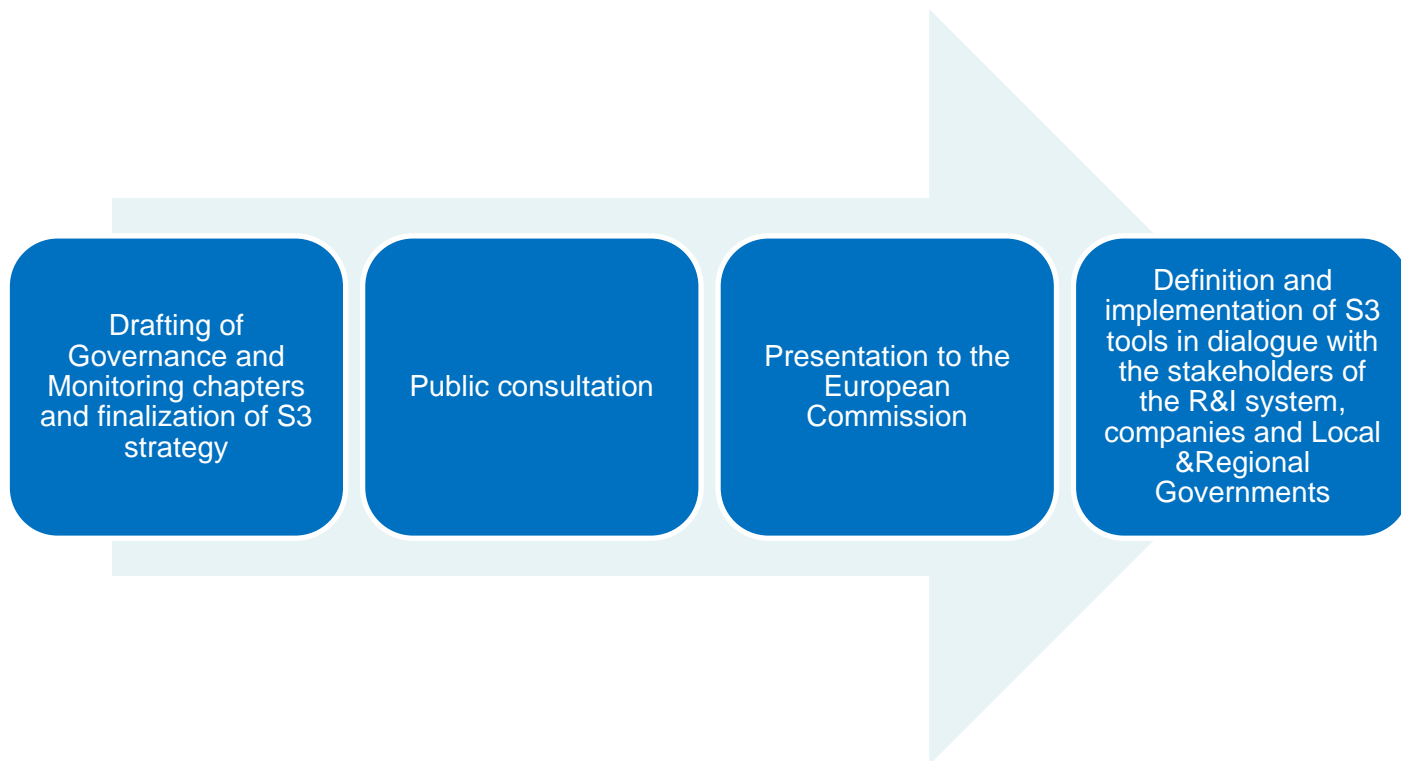
| CROSS-CUTTING THEMES | HEALTH | SUSTAINABLE ENERGY & ENVIRONMENT | ENGINEERING | BIO-TECHNOLOGY AND BIO-ECONOMY |
|---|--|--|--|--|
| KETs | Industrial Biotechnology Nano technology Advanced manufacturing technologies | Advanced materials Micro and nano-electronics Photonics Advanced manufacturing technologies | Advanced materials Advanced manufacturing technologies Nano technologies | Industrial Bio technology Advanced manufacturing technologies Nano technology |
| ICT | E-health robotics | Semi-conductor design Robotics | Automotive embedded systems Video games Robotics | Robotics |
| TOURISM | Health tourism | Green tourism | ICT/tourism Transport solution/tourism | Gastro and eno tourism |
| CREATIVE AND CULTURAL INDUSTRIES | Product design, branding, new media (marketing innovation), packaging etc. | | | |
| GREEN GROWTH | N/A | Applicable | Applicable | Applicable |
| SOCIETAL CHALLENGES | Health, demographic change and well-being | Secure, clean and efficient energy Climate action, environment, resource efficiency and raw materials | Smart, green and integrated transport Secure societies – protecting freedom and security of Europe and its citizens | Food security, sustainable agriculture and forestry, marine and inland water research, and the Bio-economy |

Structural changes envisaged to enable full implementation of the S3 Croatia

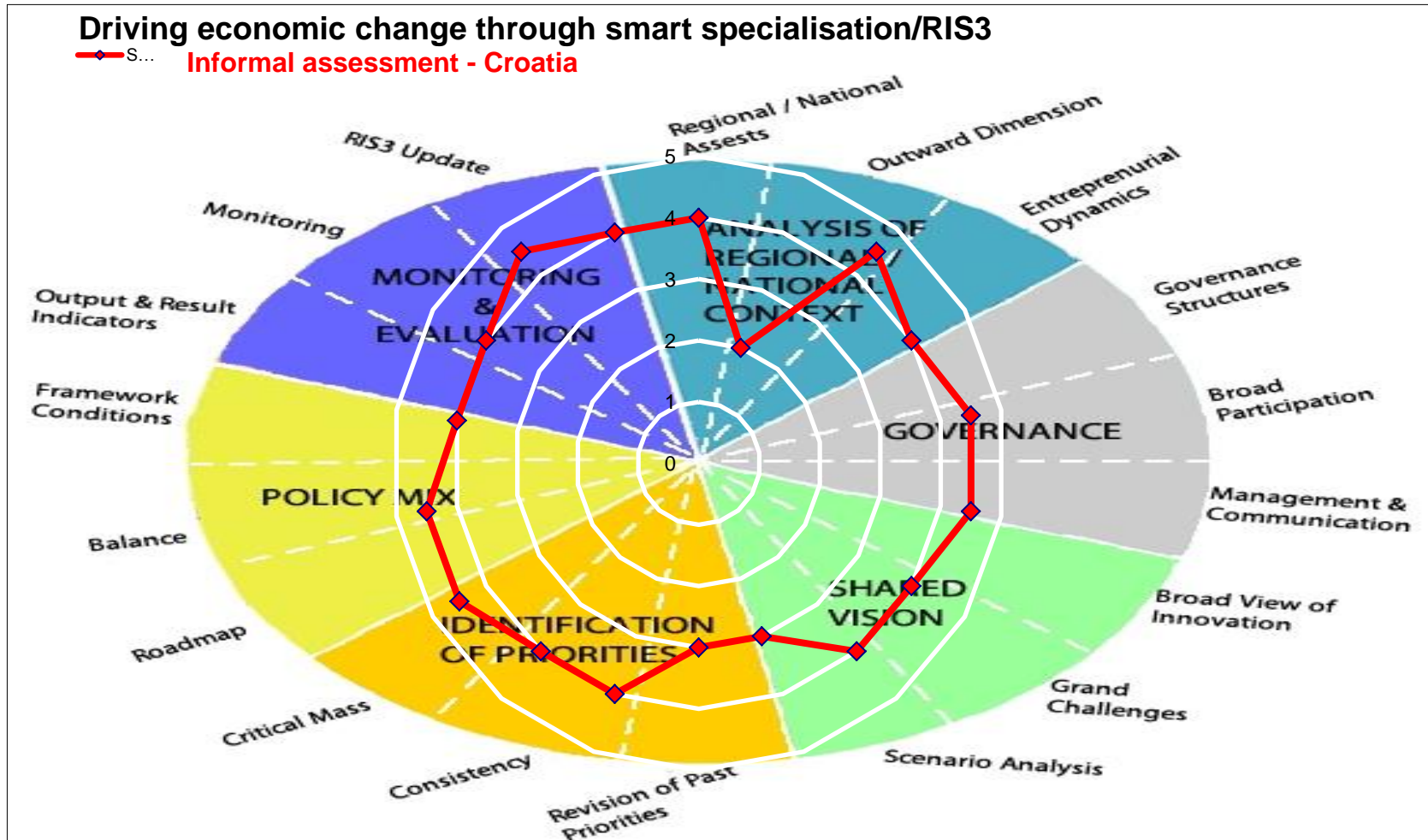
| PRIORITY THEMATIC AREA | HEALTH | SUSTAINABLE ENERGY & ENVIRONMENT | ENGINEERING | BIO-TECHNOLOGY AND BIO-ECONOMY |
|----------------------------|---|--|--|---|
| MODEL OF STRUCTURAL CHANGE | <p>Modernisation based on industrial and r&d capabilities</p> <p>Diversification based on additional activities like medicare to elderly and disabled</p> | <p>Modernisation and diversification of traditional products based on industrial and r&d capabilities</p> <p>Transition to sustainable and advance engineering</p> | <p>Modernisation and diversification of traditional products based on industrial and r&d capabilities</p> <p>Transition to sustainable and advance engineering</p> <p>Radical foundation of new domain of transport solution</p> | <p>Modernisation and diversification of agro-food based on industrial and r&d capabilities</p> <p>Transition to sustainable chemistry</p> |

Next steps

In the next 2 months the Croatian Government will continue to work on:



Informal assessment - Croatia





QUESTIONS FOR WORKSHOP

S3 PEER REVIEW IN PORTOROŽ

Question 1. What is expected to be outcome of the Entrepreneurial Discovery process?

Why: In order to ensure interactive process in which market forces and the private sector discover and produce information about new activities and which enables government to assess the outcomes and to empower those players most capable of realizing the potential

What has been done: 12 national clusters were developed as main communication tool for networking business and R&D side and detecting key players and their orientations towards new challenges

What worked: Slowly companies and R&D institutions have changed their attitude towards more cooperation and discussions on business development, and common identification of their strategic orientation. They also started to be more open towards government in expressing their needs and future niches

What did not work: partnership consultations, workshops, questionnaires initiated organized just for purposes of elaboration of some strategic document

Question 2. What is driving innovation?

- *Why:* In the defining S3 strategy it is important to know: How do enterprises innovate? Who is leading the process? Why do enterprises innovate? What can be outcomes of the innovation process?
- *What has been done:* BICRO has aid schemes for supporting innovation activities of SMEs
- *What worked: Cooperation between business and R&D sector*
- *What did not work: Lack fo risk capital funding*

Question 3. How to bridge “value of death” in the innovation value chain and to enhance cooperation between the specialized stakeholders (clusters, universities, funding intermediary organizations, investors, enterprises)?

- *Why:* bringing knowledge, investments in the R&D and innovations to the market and its commercialization is key precondition for producing value added products and services (development of innovation infrastructure and technological platforms)
- *What has been done:* arising awareness of cooperation and detecting key measures for improving preconditions and environment for innovation system (innovation strategy) and establishment of Competitiveness clusters
- *What worked:* Collaborative project under MSES GS
- *What did not worked :* Innovation infrastructure was too weak and was not providing adequate linkages towards business sector (non existence of Centers of Competences)

Question 4. How to measure the specialization(s) and to monitor emerging specialization capabilities?

- *Why:* in order to timely detect changes in emerging sectors and eventual failures in defining priority interventions
- *What has been done:* constant communication with main economic drivers through cluster platforms, technological platforms, high industrial network about their current position and future orientations (trends) which enable to define main indicators that will be subjected to the monitoring and evaluation
- *What worked: sharing* responsibility/commitment with all stakeholders in achieving main results , providing constant information on where are we now , what is not going in proper direction and what should be done and by whom to improve situation
- *What did not work:* top down approach and neglecting beneficiary opinion on problems in achieving main monitoring indicators