



Theme: Social and Techno-innovation for impact

Panel Discussion Topic: Approaching innovation for impact from within an African university

by

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Outline

- A brief description of the University
- The Research-Innovation Ecosystem and
- The Dedan Kimathi Science and Technology Park
- Examples of innovations and their impact
 - Semiconductor Technologies
 - Transforming the energy use in the Tea Industry

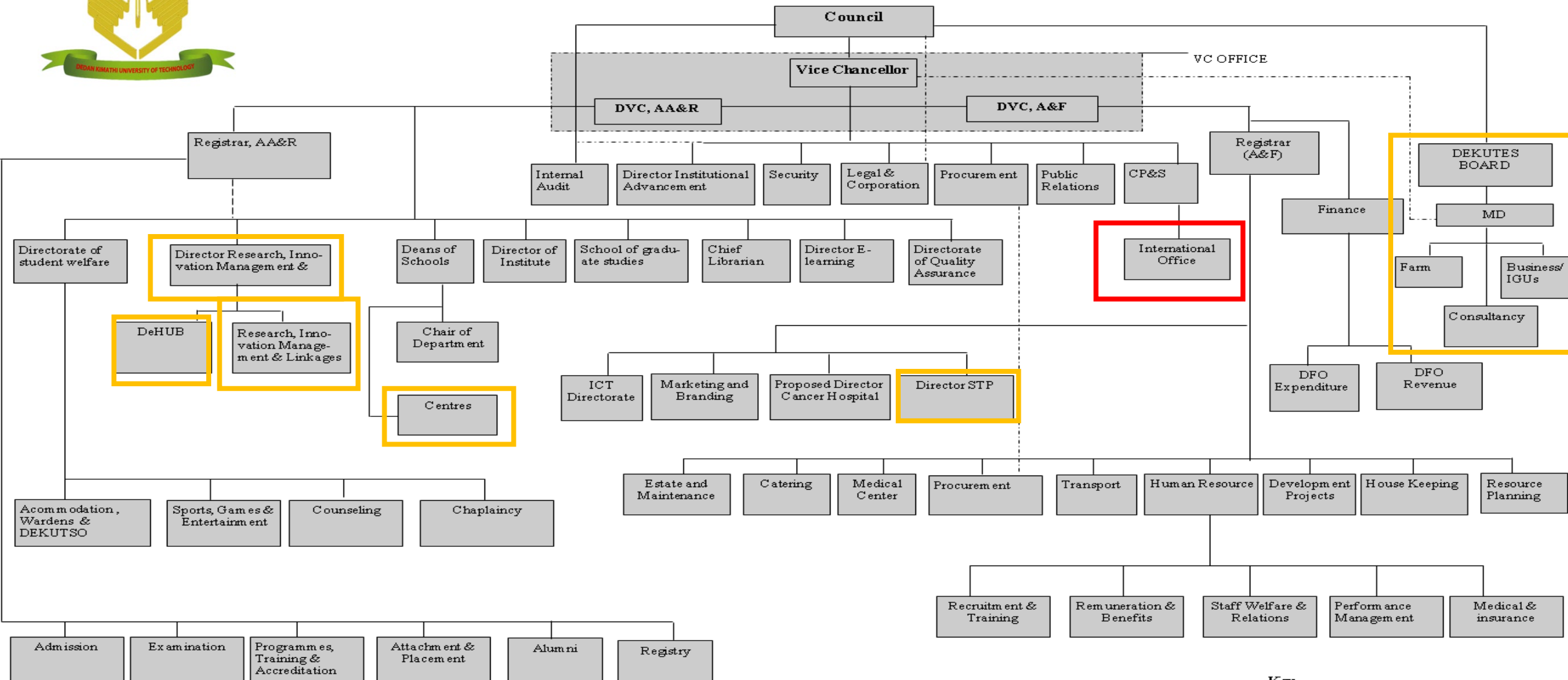


DeKUT in Brief

- A University of Technology
- Year of Charter award: 2012
- Total Student population: 9500; 70 % programmes are in STEM
- Postgraduate student population: 850
- Faculty: Staff 250;
- Vision: Vision: *“To be the Premier Technological University Excelling in Quality Education, Research, and Technology Transfer for national development.”*
- Hosts Dedan Kimathi Science and Technology Park (DeST-Park) which is a National Science and Technology Park.



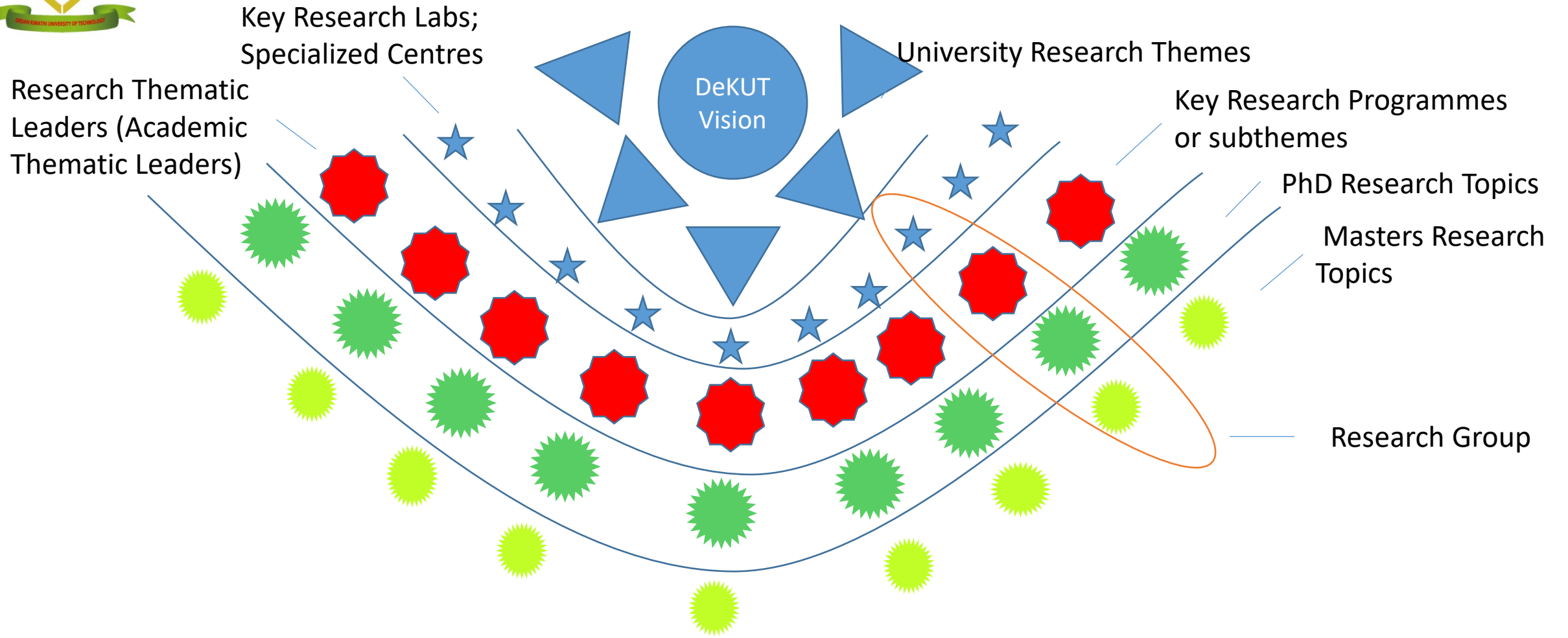
DEKUT ORGANISATIONAL STRUCTURE



- Key**
AA&R : Academic Affairs and Research
A&F : Administration and Finance
CP&S : Corporate Planning & Strategy
DFO : Deputy Finance Officer
AA : Academic Affairs



Research-Innovation Ecosystem



DeKUT Research Model



Thematic Areas



- **Design, Manufacturing and Materials (DMM):** development and commercialization of innovative devices based on application of state of the art design tools, manufacturing techniques and mastery of material science.
- **Information Communication Technology (ICT):** Development of globally competitive ICT solutions to local and regional problems leveraging on data science, artificial intelligence, machine learning technologies, game development and animation.
- **Food bio-resources value addition (Agri-tech):** Innovation and commercialization solutions for enhanced value addition to natural products and food bioresources through smart technologies and green techniques for production of healthy foods

DeKUT Centres Linked to DeST-Park

CIEM
(Centre for
Innovation and
Entrepreneurial
Management
Studies)

CEPTED
(Centre for
Economic
Policy and
Technology
Development
Studies)

**Centre for
Data Science
and Cyber
Security**

CIEPS
(Centre for
Industrial
Engineering and
Productivity
Studies)

DSAIL
(Data Science
and Artificial
Intelligence
Centre)

**UNESCO Chair
for
Anticipatory
Social
Technical
Systems**

DeHUB
(DeKUT
Innovation
Hub)

**Coffee
Technology
Centre**

**Software
Development
Centre**

**Start-Up
Centre**

**Centre for
Food Safety
Studies**

**Centre for
Energy Studies**

**Siemens
Mechatronic
Engineering
Design Centre**

**Institute for
General
Studies**

FICs

**DEKUT/KFC
Film Hub**

**Research
Centre for
Nano-
Materials and
Nano-Science**

**Centre for
Development
of Electronic
Devices**

WRMC
(Water
Resources
Management
Centre)

**Centre for
Geotechnical
Engineering
Studies**

**Centre for
Spatial
Information
Studies**

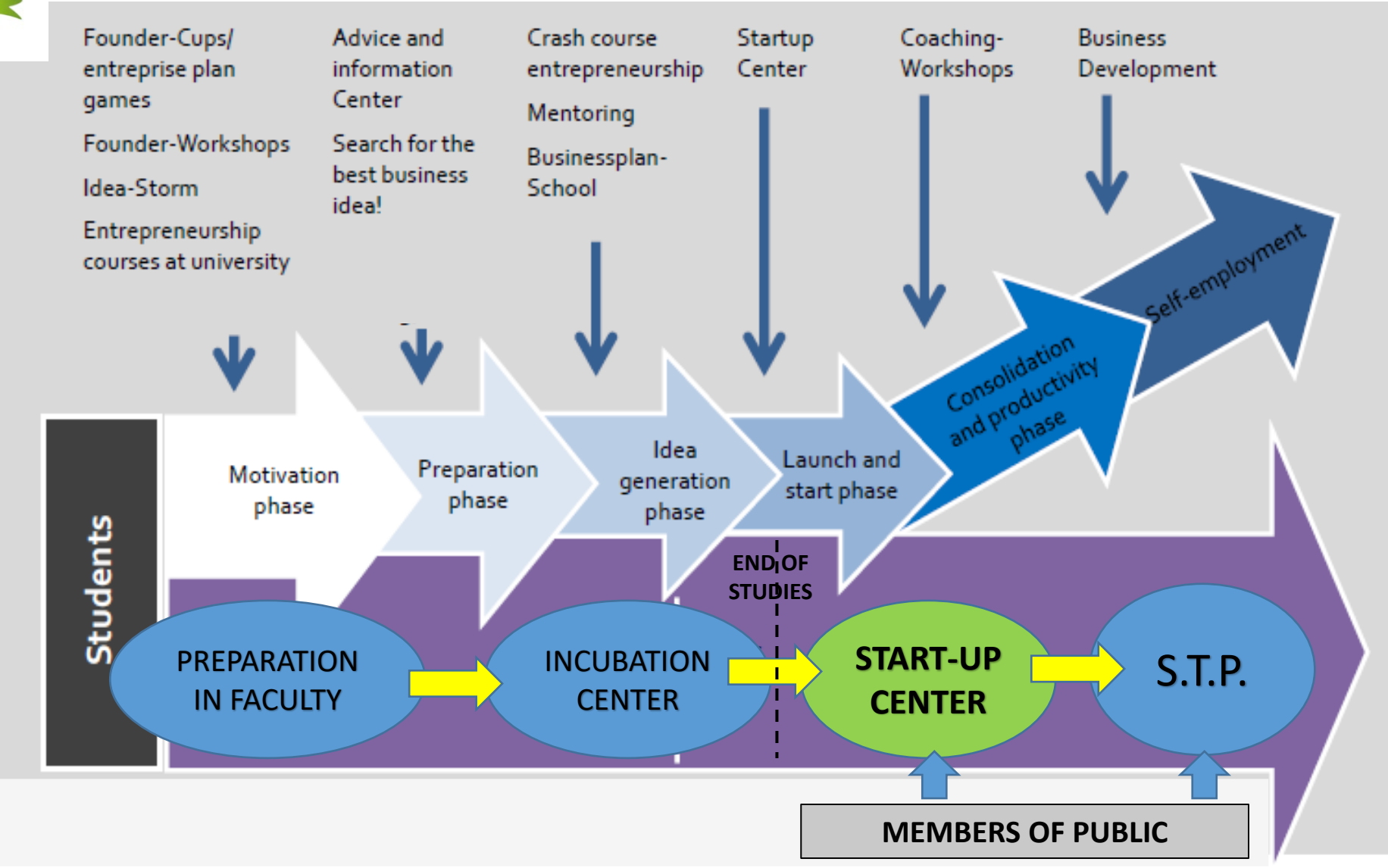
**Centre for
Gaming and
Animation**



Innovation pipeline



Innovation/Start-up pipeline Ecosystem





Startup Weekends

DEKUT STARTUP WEEKEND 2021

- ❖ Inter-University Startup Fair hosted at DeKUTs
- ❖ 95 Students Participants
- ❖ 5 Universities
- ❖ Around 10 Sponsoring Organizations
- ❖ 56 initial ideas Pitched
- ❖ 22 Teams did the final presentation

DeKUT Startup Fair Innovating the Future



Build and Launch a startup in 3 Days.

Ideation | Prototyping |
Business Modeling & Validation |
Pitching | Launching a Business

8th - 10th October 2021
Dedan Kimathi University of Technology- Nyeri



DeKUT Startup Fair Innovating the Future

Experiencing DeKUT Startup Fair



Ideation | Prototyping |
Business Modeling & Validation |
Pitching | Launching a Business

8th - 10th October 2021





The Science and Technology Park



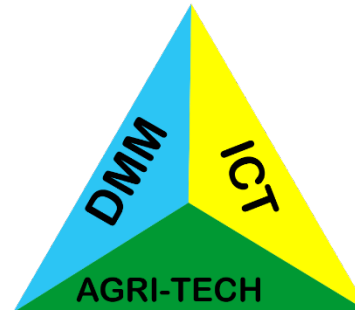
DeST-Park Ecosystem

GOVERNMENT

Ministry of Education
Ministry of ICT, Innovation
& Youth Affairs
Ministry of Trade and Industrialization
National Treasury

ACADEMIA

DeKUT and Affiliated
Universities
Research Institutes



INDUSTRY

Anchor Clients
Capital

SOCIETY/MARKETS



KABIRUJI ASK
SHOWGROUND

NYERI FOREST

PROPOSED MADISA
HOUSING SCHEME

UNIVERSITY COFFEE
FARM

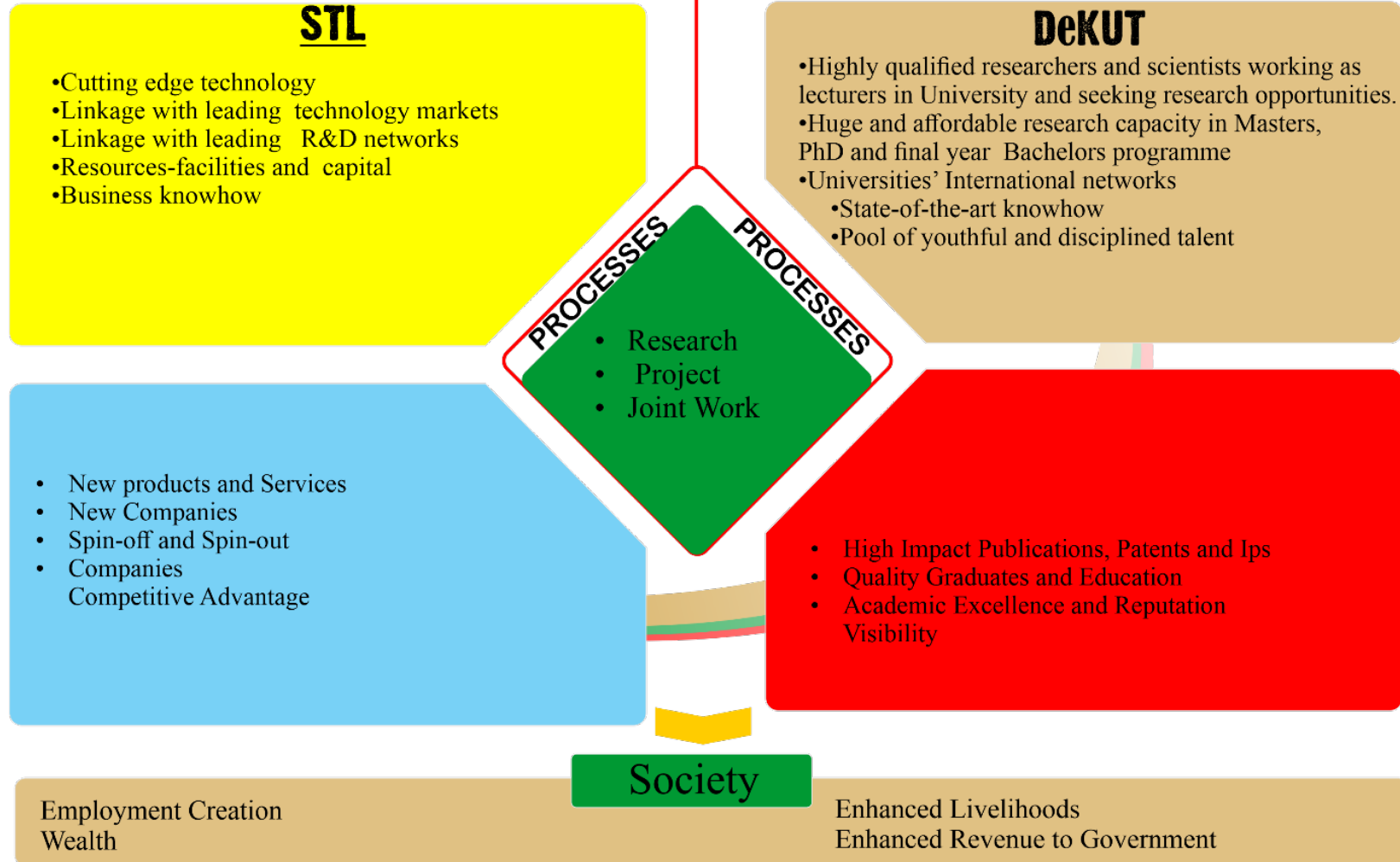
FARM HOUSE

- LEGEND**
- LOGISTICS AND WAREHOUSING
 - FOOD AND AGRITECH HUB
 - SHARED FACILITIES
 - INNOVATION HUB
 - DESIGN MATERIAL AND MANUFACTURING HUB
 - INFORMATION & COMMUNICATION TECHNOLOGY (ICT)
 - RESIDENTIAL HUB
 - SHOWCASE DEVELOPMENT LIMITED
 - ROADS
 - PLANT/GRASS

DeKUT Linkage with STL (Example of Anchor Client)



DeKUT's Centre for Nano Materials and Science Research





- Picture taken on 26th April, 2021 during the launch by the President
- Employed over 80 people by May 2022
- Plans to expand to 300 employees in the in the next one year.



Challenges of the current tea sector thermal energy system

- *2 million m³ of wood fuel per annum, 8 million eucalyptus trees*
- *200,000 semi truck loads of wood fuels per annum*
- *The environmental impact is immense over the 10 years cycle*

Benefits of solar wood drying

- *Structured Solar fuel wood drying (result in up to 40% annual savings on fuel wood consumption) > well dried wood fuel (<20% MC), improved steam boilers combustion, improved steam quality, reduced plant down time*
- *Reduced deforestation (A saving of 1000 acres of trees/annum)*
- *KSh 1.5 to 2 billion savings/per annum*
- *Increased returns to farmers*

Coffee Technology Centre: University's Demonstration of the full Innovation Process



Quality Test Lab –Service to the sector



Partnership with CRF



The Motivation

M.Sc. research output::
Coffee flavoured yoghurt
IP no.
KE/U/2017/00859.



Capacity Building programmes



Coffee Kenya Mark of origin no.
CBK/CMO/188744683257

Partners: CRF, NGOs, County Governments, Cooperatives Societies, International Companies



THANK YOU



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