

Science to Impact: SERVIR's Service Planning Toolkit

July 26, 2018

Kevin Coffey, USAID

Dan Irwin, NASA

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Introduction to SERVIR

Kevin Coffey, Adaptation Advisor, USAID



SERVIR Works in over 40 Countries



● **SERVIR** Focus Countries ● Additional Countries Reached

SERVIR Service Areas

Land Cover
Land Use
Change and
Ecosystems



Agriculture
and Food
Security



Water and
Water-Related
Disasters



Weather and
Climate



Motivation for Service Planning

Dan Irwin, SERVIR Global Program Manager, NASA

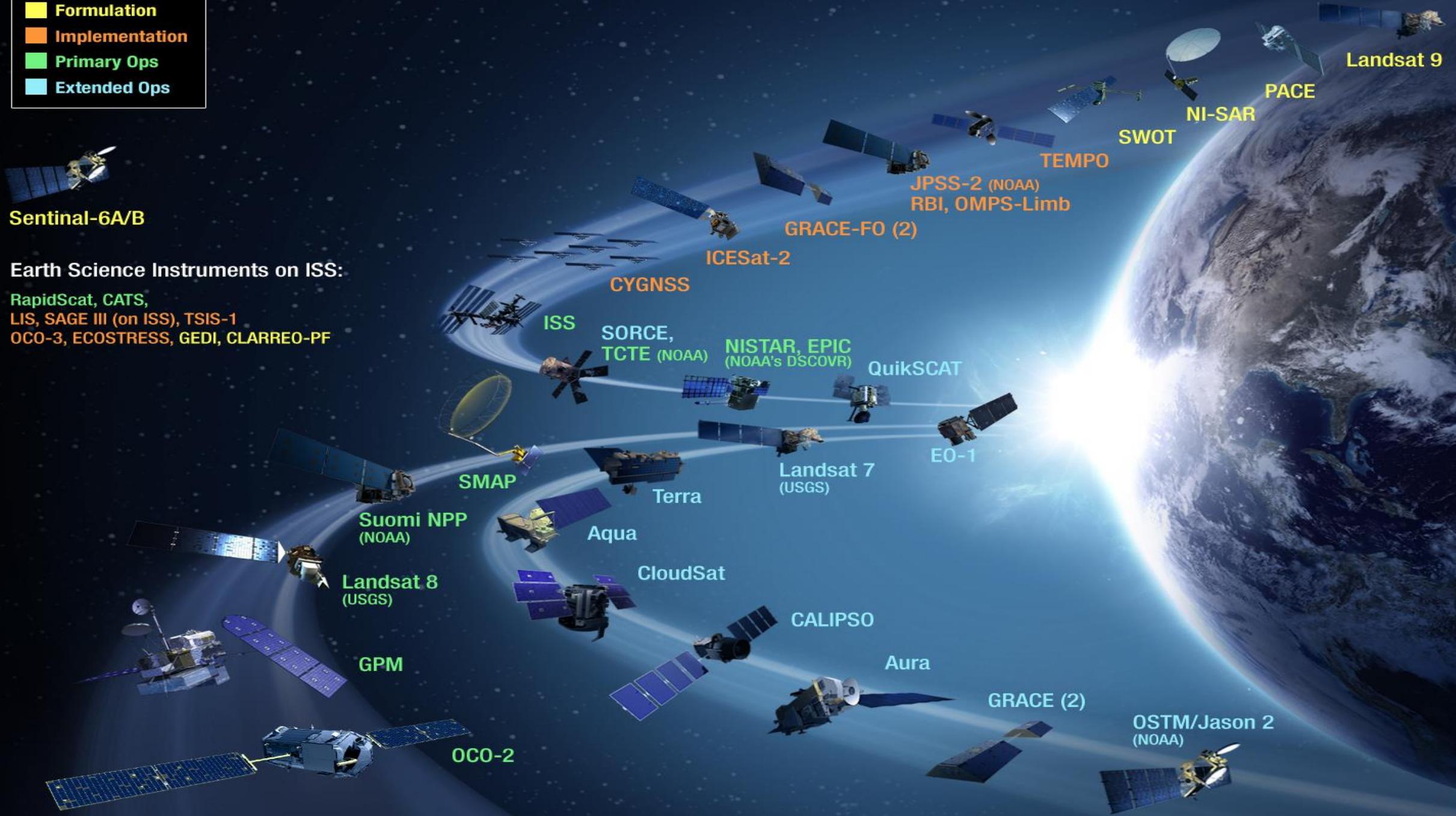


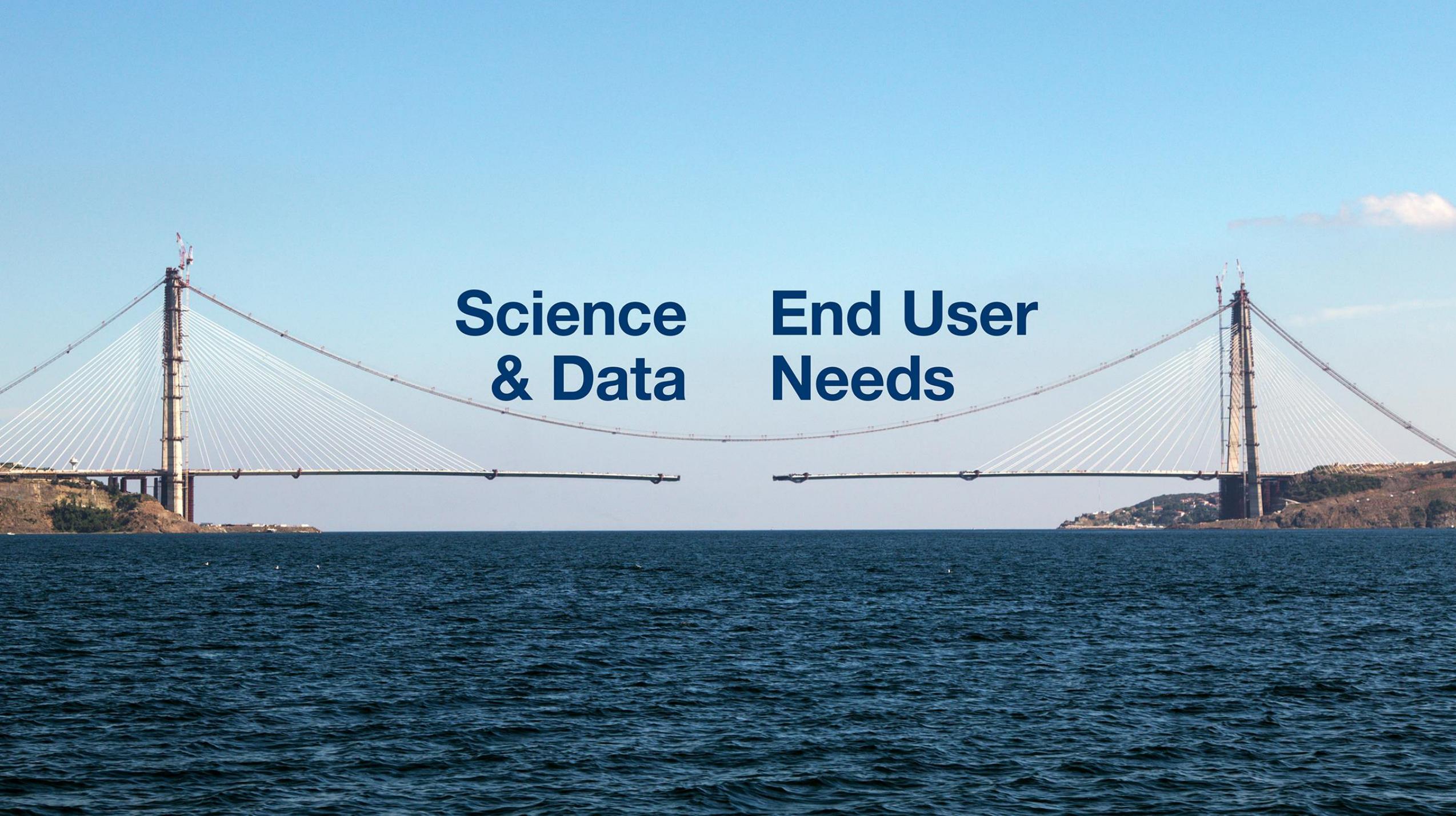
- Formulation
- Implementation
- Primary Ops
- Extended Ops

Sentinal-6A/B

Earth Science Instruments on ISS:

RapidScat, CATS,
 LIS, SAGE III (on ISS), TSIS-1
 OCO-3, ECOSTRESS, GEDI, CLARREO-PF

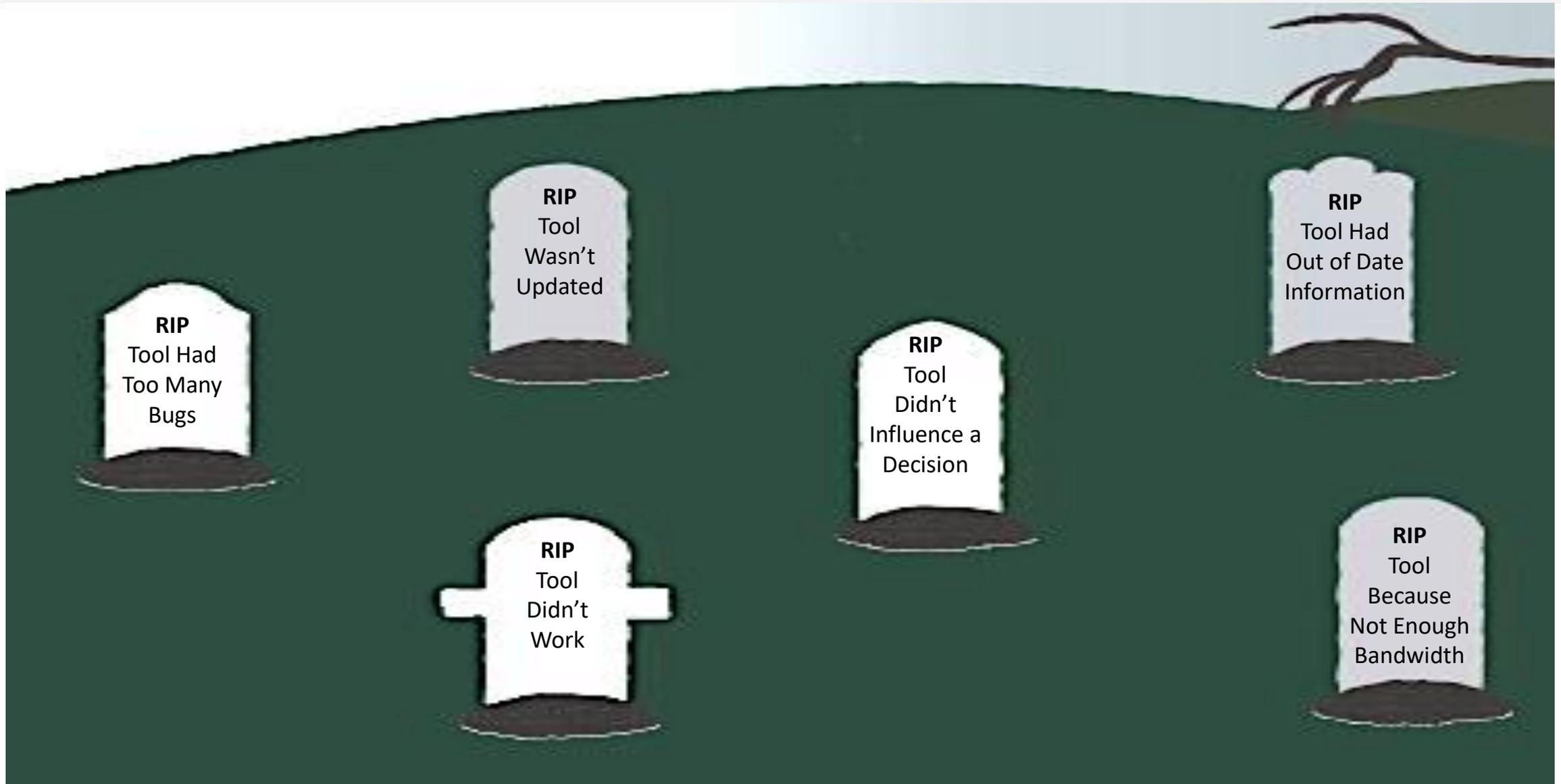




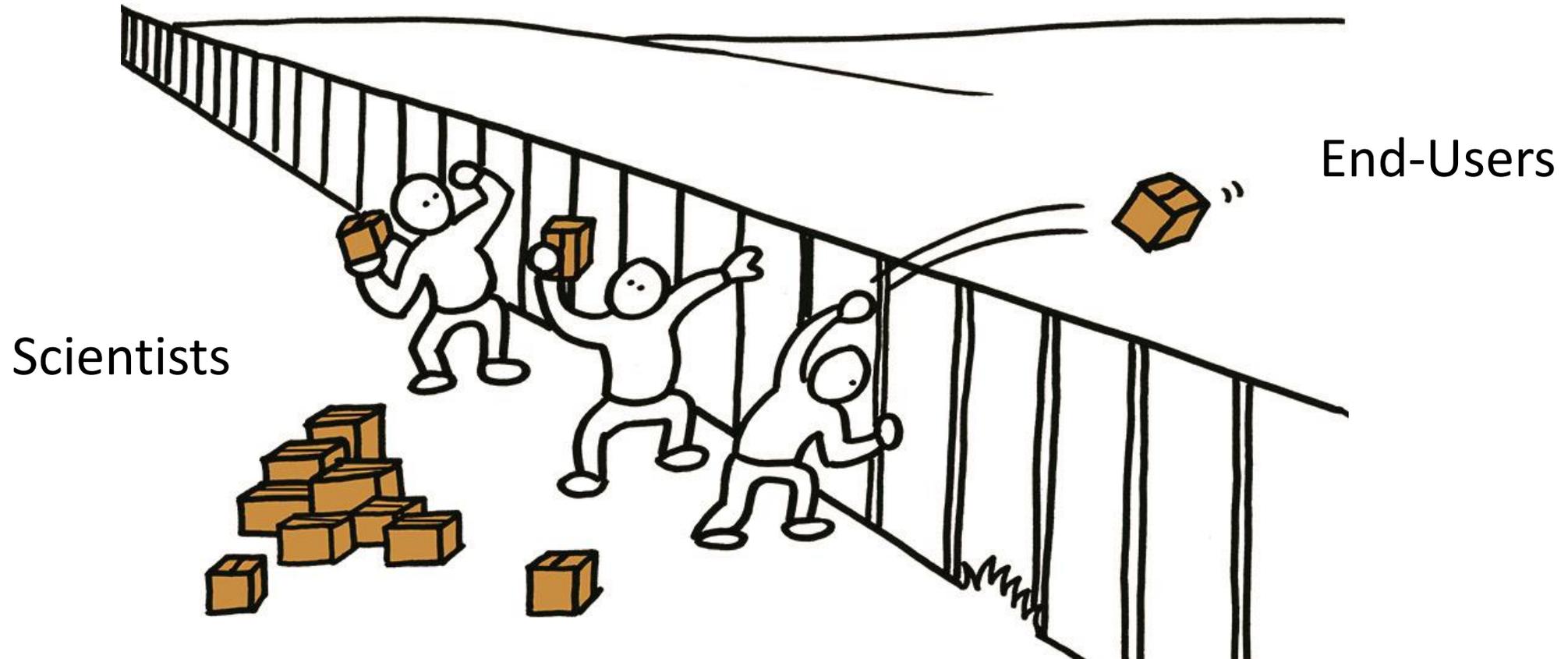
**Science
& Data**

**End User
Needs**

Graveyard of Decision Support Tools



The Over The Fence Method



What Happens

How Projects Really Work (version 1.5)

Create your own cartoon at www.projectcartoon.com



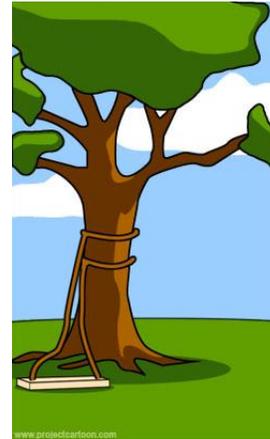
How the customer explained it



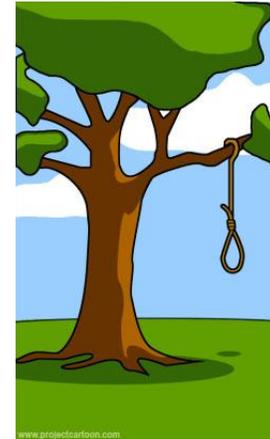
How the project leader understood it



How the analyst designed it



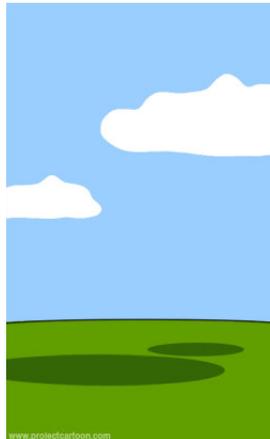
How the programmer wrote it



What the beta testers received



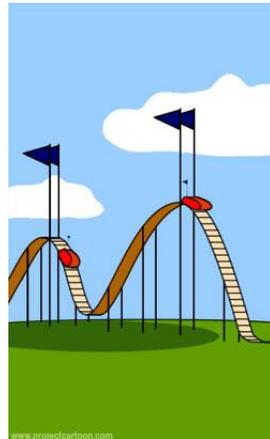
How the business consultant described it



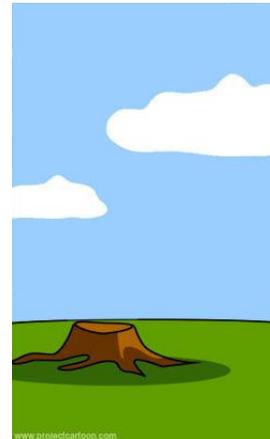
How the project was documented



What operations installed



How the customer was billed



How it was supported



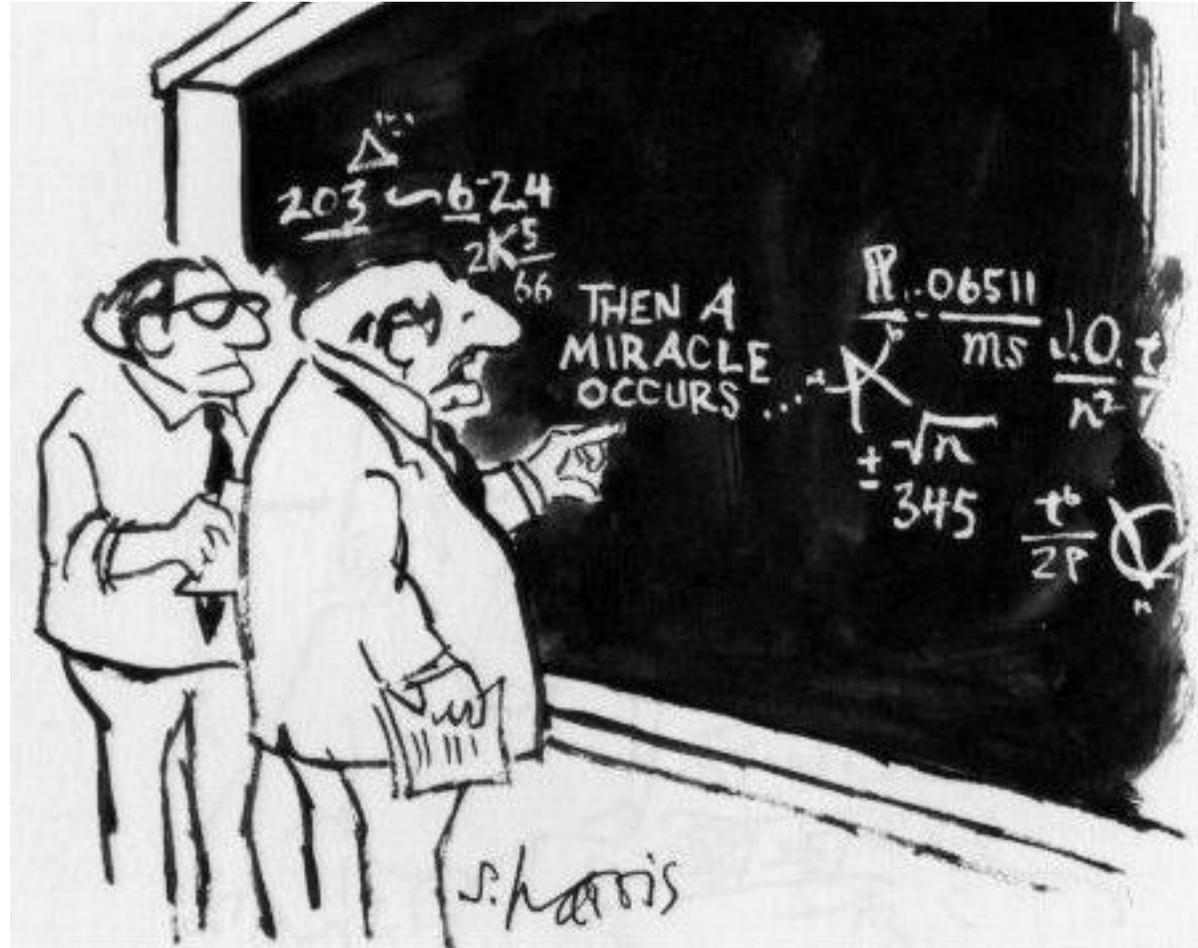
What marketing advertised



What the customer really needed



Miracles Don't Happen



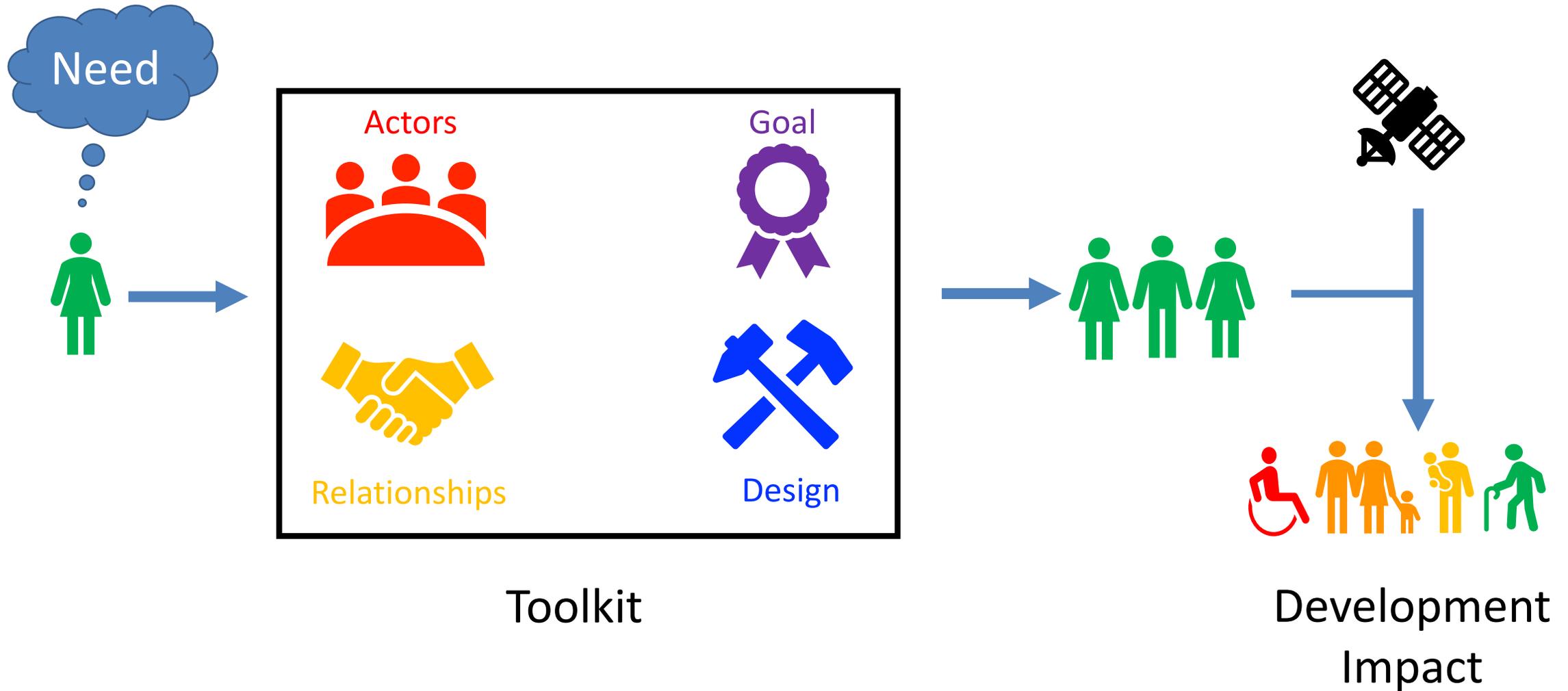
"I think you should be more explicit here in step two."

Service Planning Toolkit

Katherine Casey, Knowledge Management Lead
SERVIR Support Activity



Service Planning Overview



Four tools:



Consultation and
Needs Assessment



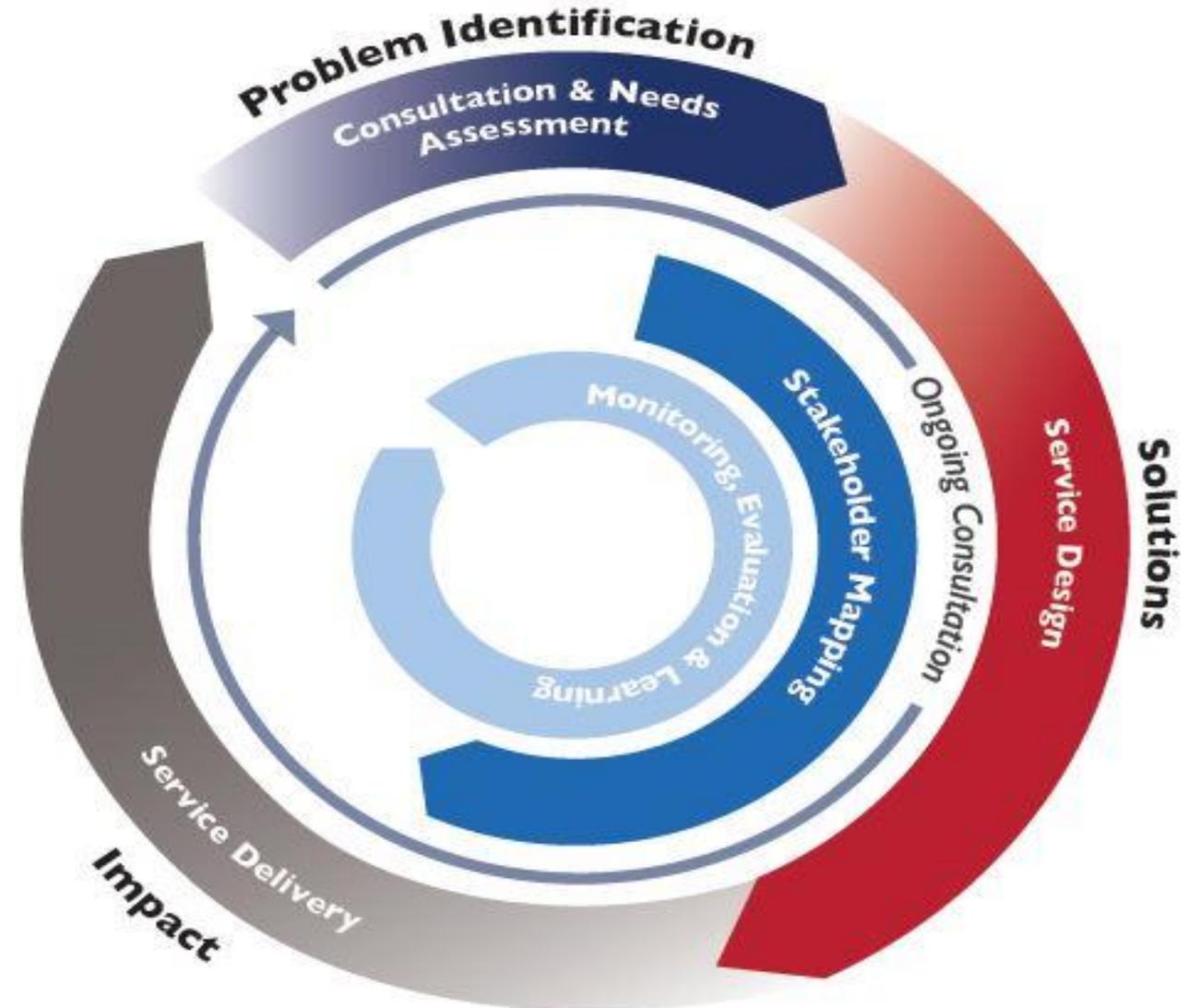
Stakeholder Mapping



Service Design



Monitoring, Evaluation
and Learning



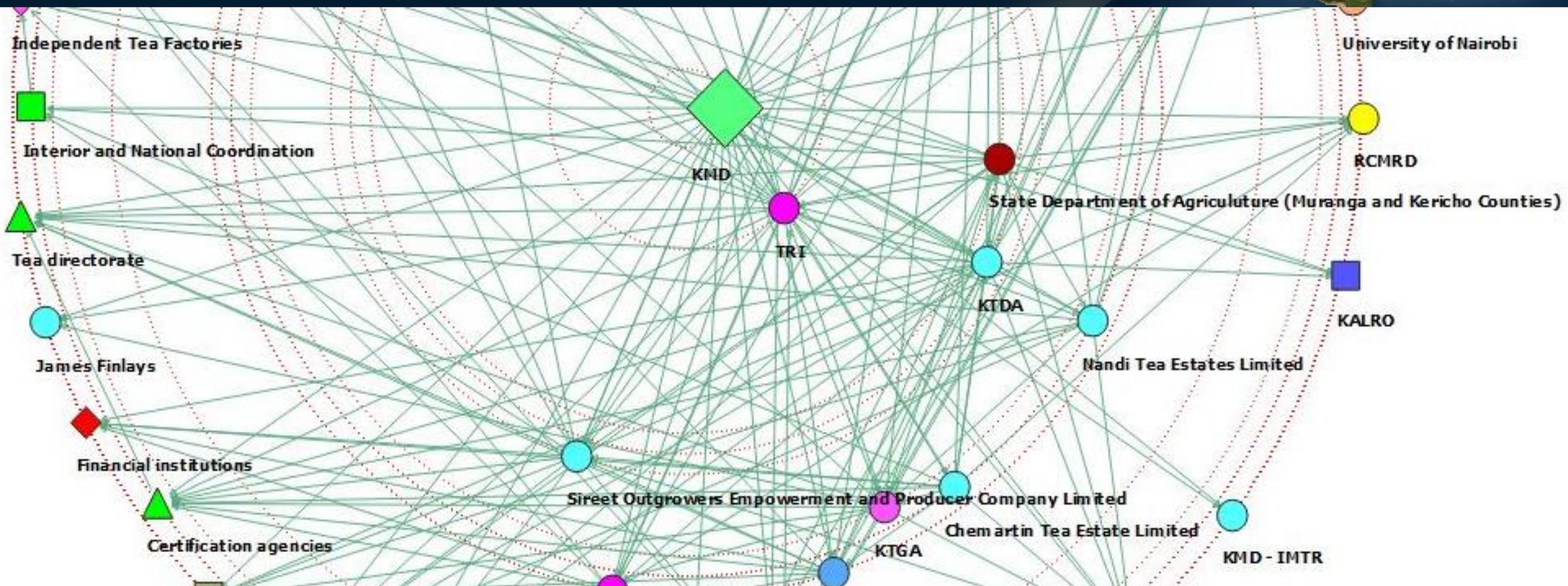
Consultation and Needs Assessment



Establish strong relationships with stakeholders.

Learn about existing efforts and identify opportunities for services and products.

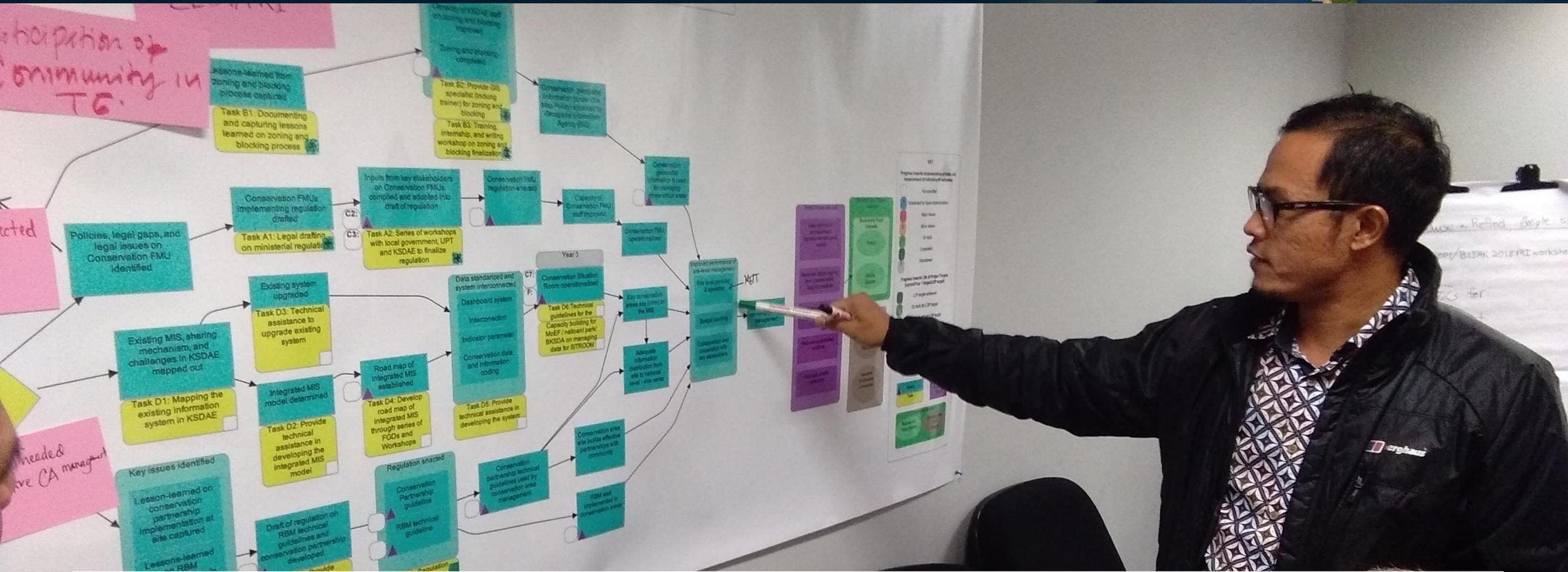
Stakeholder Mapping



Understand stakeholders and leverage relationships to work collectively toward solving a development problem.

KASS FM CBO (Kericho and Nandi)

Service Design



Unite Hub and users in collaborative process to determine service design, development and implementation.

Monitoring, Evaluation and Learning



To strengthen Monitoring, Evaluation, and Learning by developing theories of change for services, capturing a pathway to progress in addressing a development problem.

Learning through implementation



Capturing hub specific innovations
Revisiting toolkit through annual reviews
Sharing with other practitioners

Four tools:



Consultation and
Needs Assessment



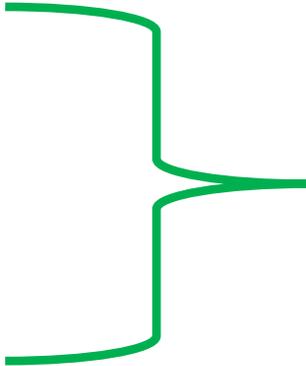
Stakeholder Mapping



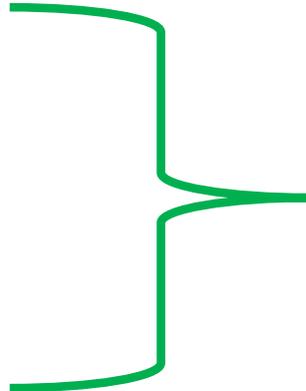
Service Design



Monitoring, Evaluation
and Learning



Kenya Rangelands
Productivity Assessment
and Monitoring



Improving Agricultural
Resilience to Drought
in the Lower Mekong Region

Kenya Rangelands Productivity Assessment and Monitoring

Anastasia Wahome, Science and Data Lead, SERVIR East & Southern Africa



Workshop in Entebbe, Uganda, October 2015

Participants:

IGAD Climate Predications & Applications Centre (ICPAC), Famine Early Warning Systems NETwork (FEWSNET Kenya), Northern Rangelands Trust (NRT), Laikipia Wildlife Forum (LWF)

- Mapping the rangelands/ forage conditions
- Big challenge in accessing available data
- Directorate of Resource Surveys and Remote Sensing (DRSRS) has census data on livestock
- ICPAC/ Texas project mapping changes in forage - only using NDVI, improvements required
- Surface water balance monitoring in rangelands, looking at all the water points – can build on the existing efforts. **Challenges may be on getting the actual volume of water and the exact number of livestock and people using the water**

Results: service prioritization and selection, based on available data and capacity of SERVIR-ESA to address the problem areas.



Overview of the Service

The Kenyan rangelands cover over 70% of the country and are home to both wildlife and pastoral communities.

- Highly dependent on rain-fed pasture
- Degradation of the rangelands due to changing climatic conditions

Problem specification:

Lack of timely information for decision making

- development of proper grazing plans,
- Livestock movement,
- Conflicts,
- implementation of conservation measures meant to rehabilitate degraded lands,
- management of scarce water resources and
- mitigation of the spread of invasive species.

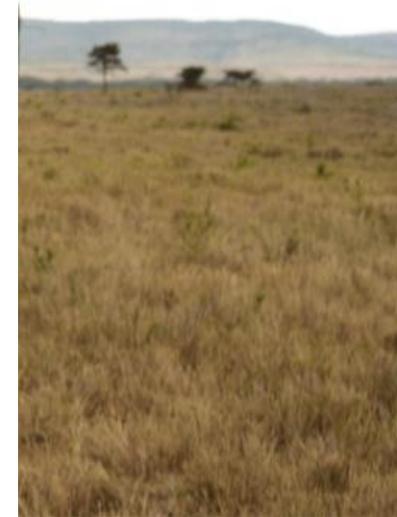
Important information needed for decision making:

- vegetation conditions
- location of water
- extent of unpalatable invasive species
- other ancillary information

Objective:

To facilitate near real time assessment and monitoring of rangeland resources

- development of a web based tool;
- Aggregate key indicators to rangeland productivity with ancillary data;
- produce maps at different administrative and conservancy boundaries.



Rangelands Decision Support Tool



RANGELANDS DECISION SUPPORT TOOL

Greenness Indicator Compose Map

Normalized Difference Vegetation Index (NDVI)

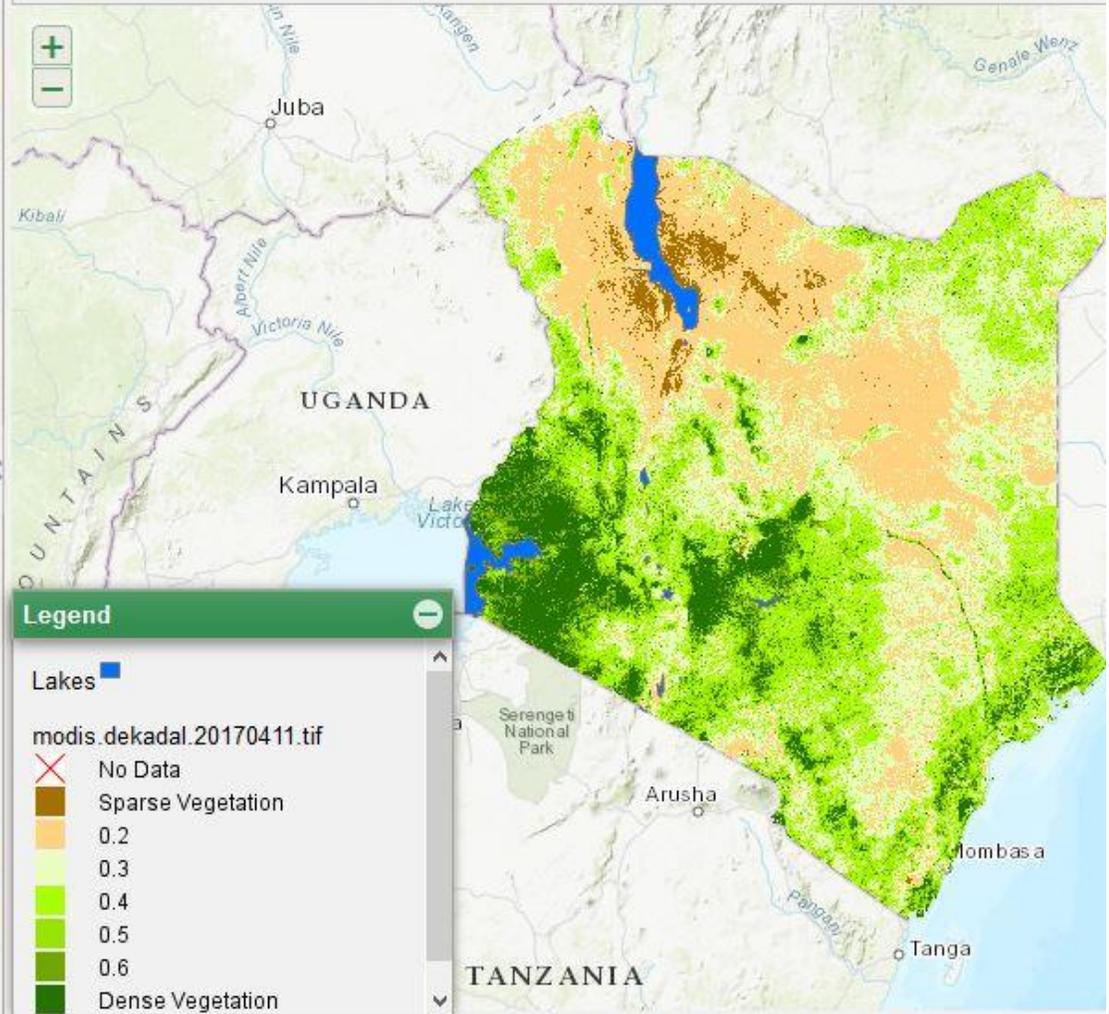
Near Real Time (10 days) Monthly Seasonal

Year: 2017
Month: April
Dekad: Dekad 2 (11th - 20th)

NDVI is an index of plant greenness with maximum NDVI being a better indicator in drylands due to reduced risk of cloud contamination. NDVI ranges between -1,1 where negative values represent water, snow or gaps; values <0.1 represent barren ground, rocks ; 0.2-0.5 represent sparse vegetation such as grasslands, shrubs, crops while values from 0.6 represent dense vegetation such as forests. NDVI can be used to monitor changes in vegetation over time, grazing impacts related to grazing management and plans, changes in land cover, rangeland condition and the type of vegetation.

NDVI Anomaly

Vegetation Condition Index



Legend

- Lakes
- modis.dekadal.20170411.tif
 - No Data
 - Sparse Vegetation
 - 0.2
 - 0.3
 - 0.4
 - 0.5
 - 0.6
 - Dense Vegetation

Service Level User Engagements

Stakeholder consultations (NRT, LWF)

Meetings:

NDMA

PREG and K-Rapid

DOI (Department of Interior)

Kenya Livestock Insurance Program, State Department of Livestock



Results:

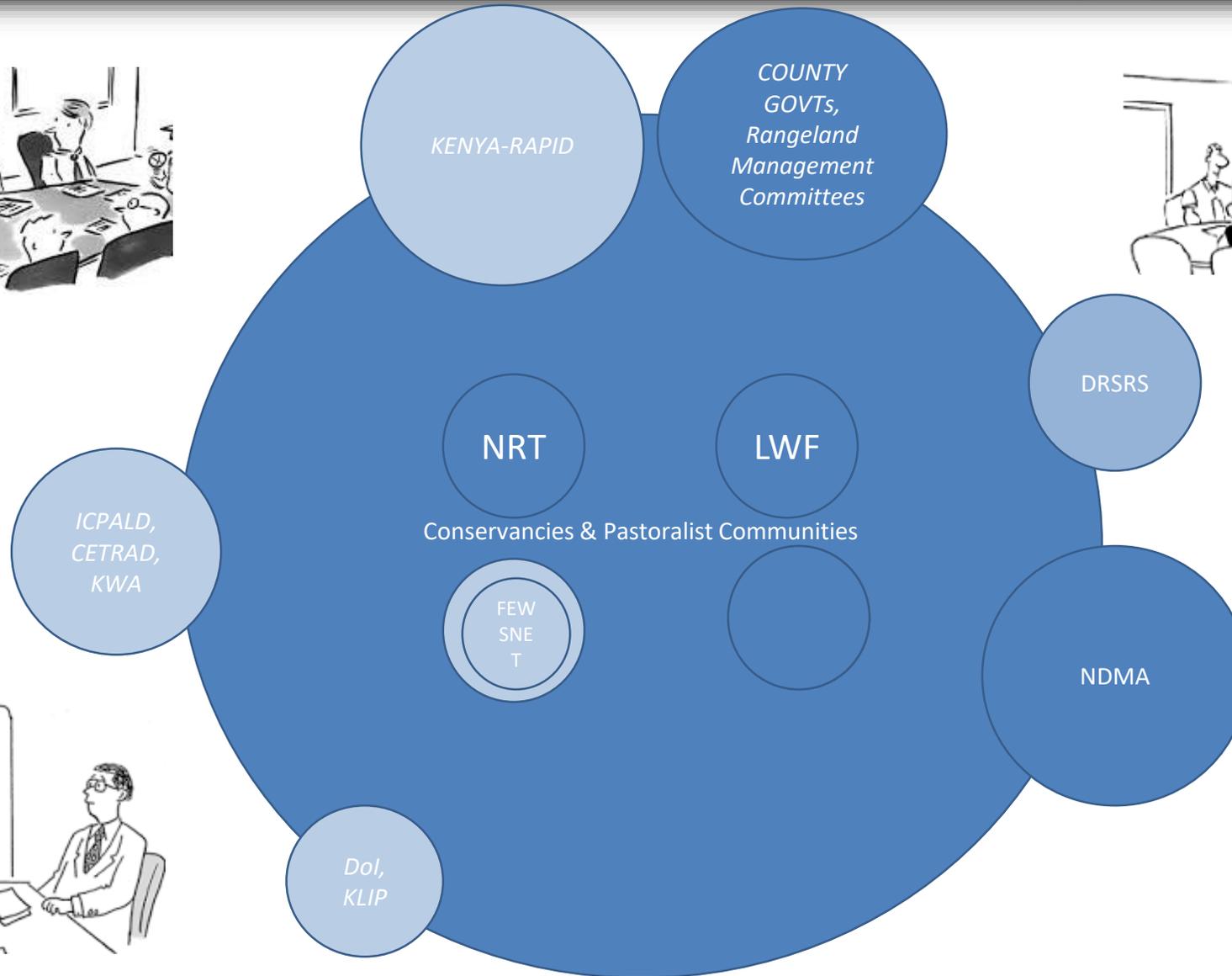
Realization of synergies when key stakeholders come together

Identification of stakeholders who realize and add value to the service

- Web tool improvement: inclusion of finer administrative areas and grazing units in the ancillary data
- Data collection by NDMA county officers – funded by NDMA through their already operational network.
- Digitization of grazing plans – K-Rapid and management committees (5 counties, Turkana, Marsabit, Wajir, Isiolo and Garissa)
- Training to county officers with 3 counties funding for advanced training
- Addition of products to be developed by DoI into the tool (Grassland monitoring tools)

“The strength of the tool lies in its simplicity since county officers can generate the maps they need without engaging the head office”, NDMA.

Stakeholder Mapping



Stakeholders and their roles

Key stakeholders:

Decision makers: Northern rangelands Trust (NRT) and Laikipia Wildlife Forum (LWF) – conservancy owners/managers, Kenya Rapid, National Drought Management Authority (NDMA), County governments, rangelands management committees

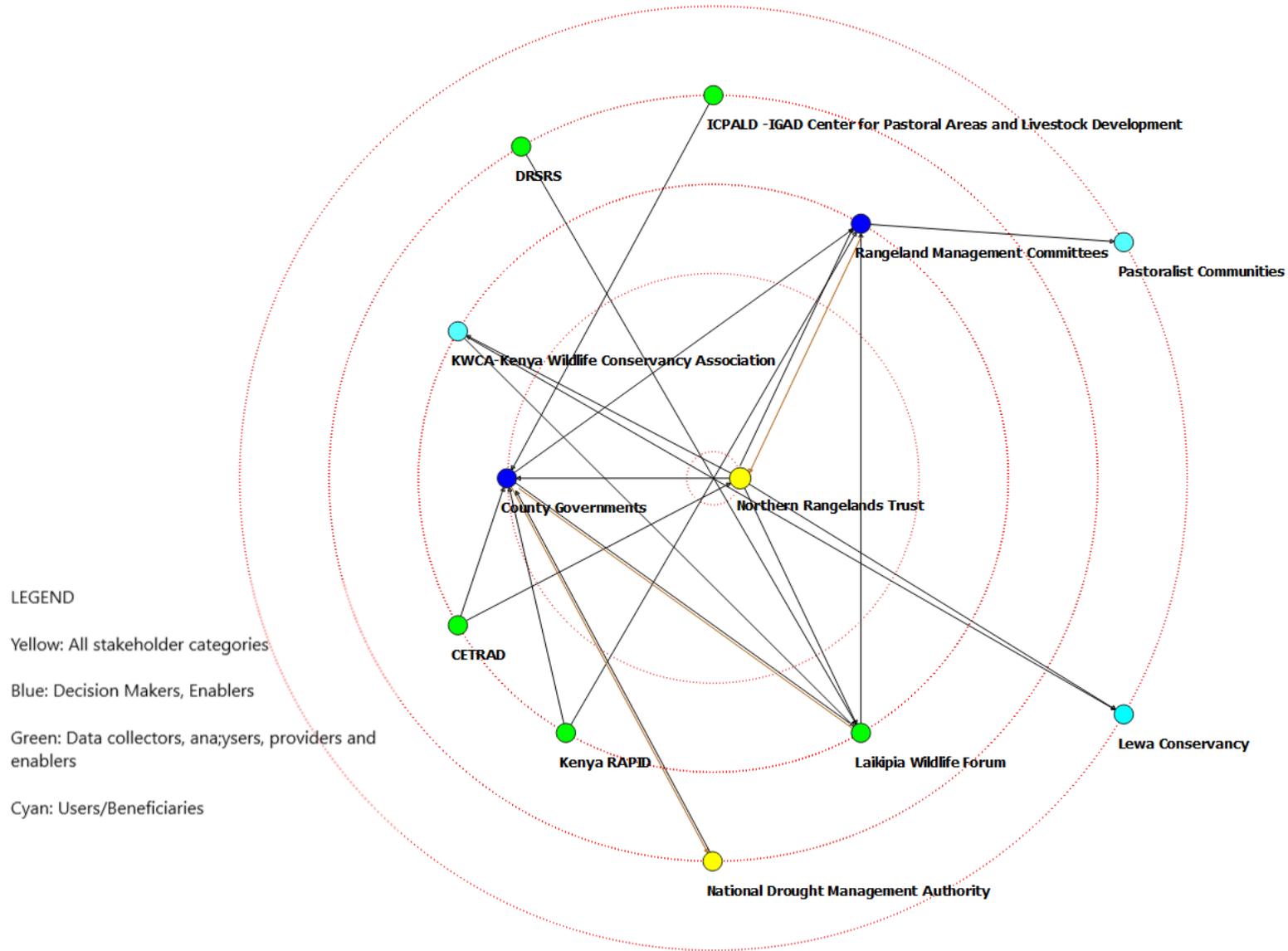
Users: Northern Rangelands Trust (NRT), Laikipia Wildlife Forum (LWF), National Drought Management Authority (NDMA), FEWSNET, Kenya Wildlife Service, Centre for Training and Integrated Research in ASAL Development (CETRAD), Kenya Rapid (under Partnerships for Resilience and Economic Growth (PREG))

Beneficiaries: NDMA county officers, Local communities, Grazing coordinators, Conservancy managers, local conservation groups, Ranch owners and managers

Service integration:

Inputs from invasive species modelling

Current Stakeholders Map



Thank You!

Improving Agricultural Resilience to Drought in the Lower Mekong Region

Farrukh Chishtie, Science and Data Lead, SERVIR Mekong



OBJECTIVES



Increased
Capacity

of analyst and decision makers to use earth observation and geo-spatial information technologies



Improved
Awareness

of and access to geo-spatial data, tools, knowledge products and services



Advancement

and application of user tailored geospatial data, tools and knowledge products to inform decision making

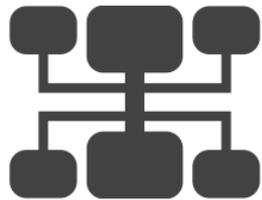


Sustain

ADPC as a leading regional provider of geo-spatial data, analysis and capacity building services



300
People
consulted



> 130
Institutions
participated

Priority Needs Identified:

1. Land cover mapping support
2. Early warning systems
3. Water resources management
4. Crop yield forecasting

Service Planning Approach



Problem: Loss of rice production due to severe drought



Vietnam

Limited Rain Data

Limited Modeling Capacity

Inaccurate Drought Forecast

Unreliable Crop Advisories

Loss of rice production

Stakeholder Mapping: Key Actors

Decision makers:

In Vietnam - Dept of Water Resources (Ministry of Agriculture and Rural Development, MARD), Prime Minister, Ministry of Natural Resources and Environment (MoNRE);

Regional - Mekong River Commission (MRC), National Mekong Committee members

Implementing partners: MRC, VAWR under MARD, Vietnam

Users: MRC, VAWR, National Mekong Committees

Beneficiaries: Water resource managers, farmers, communities in Ninh Thuan and Binh Dinh Provinces in VietNam

Special audiences: Women, Women's organizations, social welfare agencies and NGOs working to reduce drought impacts and plan for climate change with vulnerable groups and ethnic minorities in Vietnam at risk of drought impacts

Technical Co-development Engagements

Vietnam Academy of Water Resources (VAWR):

- Two pilot sites (Ninh Thuan and Binh Dinh provinces) for initial testing

Mekong River Commission (MRC):

- Providing all drought related products generated by RHEAS
- Technical support for developing drought portal

Service Design

Service Concept Document (SCD)

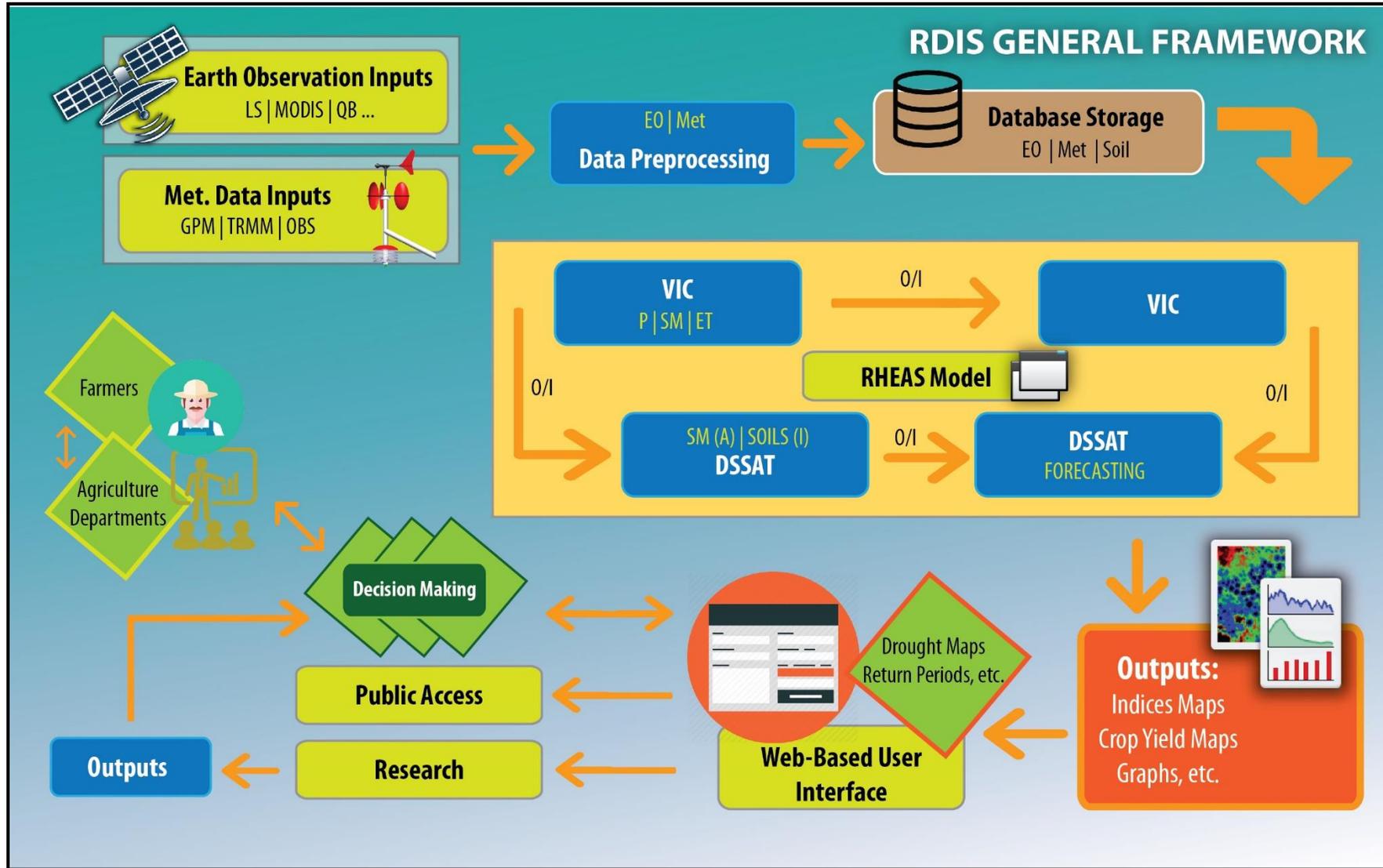
- A key document which requires all aspects of the Theory of Change: integrates stakeholder mapping and needs
- Connects to Product Definition Document (PDD), Training Definition Document (TDD) and Data Management Definition Document (DMDD)
- Devised for both MRC and Vietnam under a broader service:

Enhancing Drought Resilience and Crop Yield Security

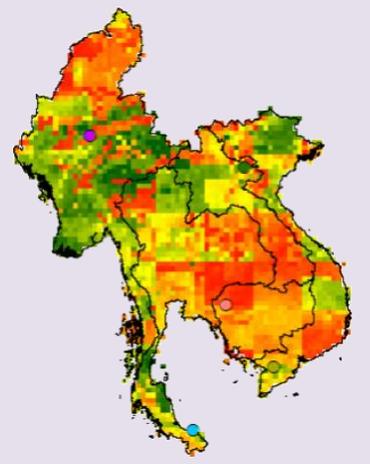
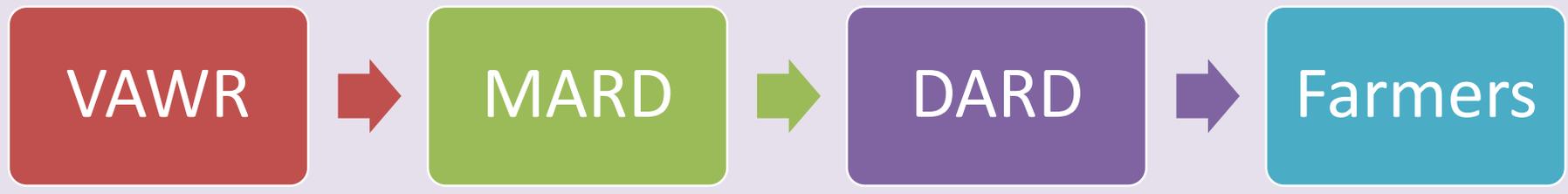
PDD, TDD & DMDD

- Technical details, data requirements, timelines of proposed solution with respect to stakeholder needs
- Developed in coordination with stakeholders including the NASA AST team at the Jet Propulsion Lab with customized fits to each user

Detailed Service Planning and Delivery: an Iterative Process!



Improving Agricultural Planning in Ninh Thuan, VN



Drought Forecast
Drought Maps
Technical Training
Demonstration
Co-development

BỘ NÔNG NGHIỆP & PHÁT TRIỂN KINH DOANH
VIỆN KHOA HỌC THỦY LỢI VIỆT NAM
VIỆN KHOA HỌC THỦY LỢI MIỀN NAM
CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập - Tự do - Hạnh phúc
Tp. Hồ Chí Minh, ngày 20/07/2017

BẢN TIN
ĐƯ BẢO NGUYÊN NƯỚC VÀ KẾ HOẠCH
THỰC VỤ SẢN XUẤT NÔNG NGHIỆP
SÔNG LỬ - SÔNG LA NGÃ TỈNH BÈ
(Thứ 6 21/07/2017 đến 27/07/2017)

1. KIỂM KÊ THỰC TRẠNG NGUỒN NƯỚC
TRÌNH THỦY LỢI TỈNH BÌNH THUAN

1.1. Diễn biến nguồn nước trong các hồ, đập từ n...
Diễn biến nguồn nước trong các hồ, đập đến 14/07/2017 đến 20/07/2017 được trình bày tại Hình 1.1 trong các hồ đập trên địa bàn tỉnh tuân qua có chuẩn bị do chính sách lượng của mùa khô và tình áp thấp của n... diện rộng khiến tổng tích các hồ đập tăng thêm 1.5.1 triệu m³, trong đó mức thay bình quân là 0.85 triệu m³ nước tăng 0.65 triệu m³/ngày của toàn tỉnh.

W (mm)	14/07/2017	16/07/2017	17/07/2017	18/07/2017
Thủy lượng (triệu m ³)	137,27	126,61	137,26	138,75

Hình 1.1. Diễn biến nguồn nước trong các hồ, đập tỉnh B...

1.2. Kiểm kê thực trạng nguồn nước trên địa b... ngày 20/07/2017

1.2.1. Nguồn nước trong các hồ, đập thủy lợi
Tình hình ngày 20/07/2017 tổng dung tích lưu k...

Hình 5: Bản đồ dự báo nguồn nước và khả năng đáp ứng nguồn nước phục vụ sản xuất nông nghiệp trên lưu vực sông LỬ - La Ngà tỉnh Bình Thuận từ ngày 21/07/2017 đến ngày 27/07/2017

Viện Khoa học Thủy lợi miền Nam, 20/07/2017

GIỚI THIỆU: Bản tin này sẽ được Truyền tiếp trực tiếp như trong các tuần lễ tiếp. Để phân và dự báo, cần được báo với nguồn nước của sản xuất vụ Hè. Bản tin dự ngày dự phóng, các đơn vị có liên quan có ý kiến, để nghị phân bổ lại Tổng cục Thủy lợi (Tỷ) Quản lý Công trình và KĐT) để cấp nước trong các lưu vực tiếp nhận.
Bản tin này cũng được đăng trên địa chỉ Website: <http://www.servir.org.vn>. Các thông tin về tình hình nguồn nước, sản xuất và những yêu cầu cấp thiết khác xin gửi về Viện Khoa học Thủy lợi miền Nam qua địa chỉ email: vlhnm@gmail.com và tlhcnh@ntr.com.vn.

Drought Advisories
Rice Advisories



REGIONAL DROUGHT AND CROP YIELD INFORMATION SYSTEM

Drought

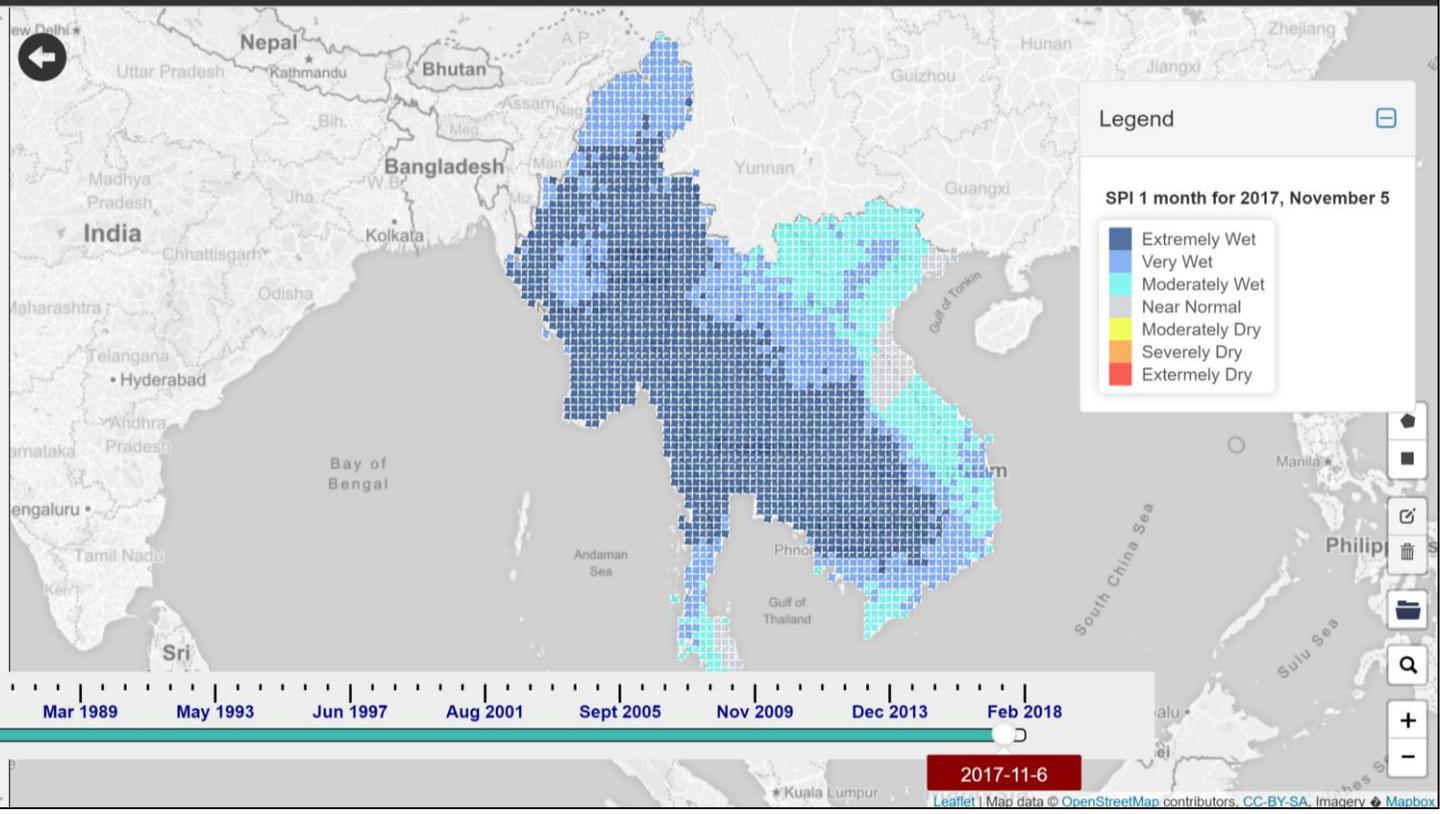
Area
Close All Admin Layers

Select Index
Drought Index

Select Variables
SPI 1 month

Show in Map Show Chart

Crop Yield



<https://rdcyis-servir.adpc.net>

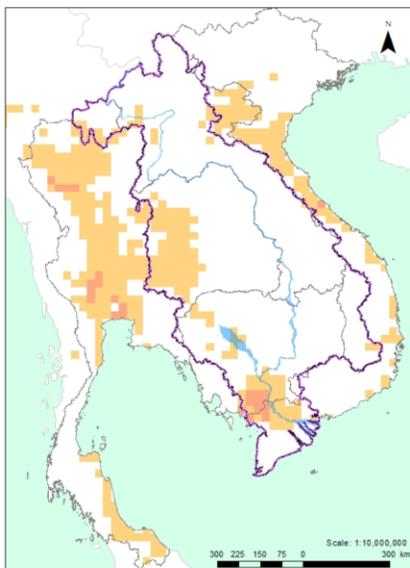
Capacity Building on RHEAS Modeling



Vietnam Academy of Water
Resources (VAWR)
19-23 June 2017



Monitoring and Evaluation: Uptake by MRC



Drought Early Warning Lower Mekong Basin

Date: 04-07-2018

Monitoring

Combined Drought Index (CDI)

- Extremely dry
- Very dry
- Moderate dry
- Near normal
-  Mekong River
-  Country Boundaries
-  LMB

The drought monitor focus on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



Disclaimer: This drought monitoring and forecasting map is calculated based on the satellite imageries with no ground verification. MRC does not guarantee the values and accuracy of the products nor be responsible for any risks of using the products.

This Week's Drought Summary

The combined drought index shows that drought across the LMB region is at near normal conditions for most of the LMB with some moderate dry conditions forming around the border line between Cambodia and Viet Nam from the 2nd to the 7th of June of 2018. Both meteorological and agricultural indicators present near normal conditions that combined with the hydrological indicator moderate dry conditions increase some negative effects which do not give any threats to agricultural crops across most of the LMB except the border between Cambodia and Viet Nam of which conditions are moderately dry. Nevertheless, the overall condition does not show any harmful effect to agriculture.

Challenges and Way Forward

- Model requirements at higher resolution from 25 km to 5 km – computational challenges
- Model improvements require bias corrected satellite products which require long term ground data which is being acquired wherever it is made available
- DSSAT Crop yield requires intensive localized data which is a significant challenge in the face of lack of ground data and sharing
- Stakeholder involvement in co-development efforts still being refined
- Capacity building done at the level of hydro-met agencies, hence reaching to the local level and farmers still requires additional efforts for sustainable impact

Service Planning Toolkit available at:

<https://www.servirglobal.net/about-Servir>

Slides and recording will be available at:

<https://www.climatelinks.org/project/usaid-adaptation-community-meetings>

