CIP Technologies

9 TECHNOLOGIES | CREATED ON JUN 30, 2025 BY TAAT PROFILING TEAM | LAST UPDATED JUL 24, 2025

TECHNOLOGIES IN THIS TOOLKIT

- **Community-based multiplication of sweet potato vines and**…
- **Purple Antioxidant Potatoes**: Purple-fleshed sweet potato (hig…
- **Relay intercropping of sweet potato with legumes**
- **Silage production from sweet potato vines and tubers**
- **Raised beds for sweet potato production and weed**…
- **Tent-style greenhouse for multiplication of sweet potato**…
- **Drought and Virus Tolerant Orange-Fleshed Sweet Potato**
- **OFSP**: Orange-Fleshed Sweet Potato (High provitamin A)
- **OFSP puree and products**: Puree Production and Products for Swe…

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Community-based multiplication of sweet potato vines and cuttings

Boost Your Yield and Cut Costs with Community-Sourced Sweet Potato Vines.

International Potato Center (CIP)
Norman KWIKIRIZA

Community-based multiplication of sweet potato vines is a scalable agricultural technology that enhances the quality and availability of planting materials in rural communities. It addresses challenges such as cost reduction, pest management, and timely distribution, while utilizing local resources. This adaptable method supports smallholder farmers, making it a valuable tool for rural communities.

This technology is TAAT1 validated.

5·5 Scaling readiness: idea maturity 5/9; level of use 5/9

Gender assessment 4

Climate impact 7

Problem

1. Limited access to quality materials.
2. High prices and distribution issues.
3. Lack of effective measures.
4. Limited access for smallholder farmers.
5. High susceptibility in crops.

Solution

1. Organize large-scale multiplication of sweet potato vines.
2. Establish reliable supply chains and improve rainy season distribution.
3. Enhance quality, reduce prices, and achieve economies of scale.
4. Maintain hybrid and resistant varieties effectively.
5. Guard against pests and diseases using local resources.

Key points to design your project

The community-based multiplication of sweet potato vines and cuttings is a technology that can significantly impact gender equality, climate resilience, and multiple Sustainable Development Goals (SDGs). It empowers women by providing them with agricultural opportunities, enhances climate resilience through the cultivation of a resilient crop, and contributes to several SDGs, including ending hunger, promoting decent work and economic growth, and supporting responsible consumption and production.

To integrate this technology into a project, the steps include project planning, dissemination of advantages, planning of multiplier sites, procurement of planting materials, implementation of the multiplication process, quality control and pest management, distribution of planting materials, and monitoring and evaluation. The success of the project relies on the collaboration and participation of the entire community.

Cost: $$$

10,000 USD

Capital investments for a screen house, irrigation system, fertilizers and disease control agents to set up a sweet potato multiplication site Per 0.4 ha

IP

Open source / open access

Technology from

ProPAS

Commodities

Sweet Potato

Sustainable Development Goals

2 ZERO HUNGER · 8 DECENT WORK AND ECONOMIC GROWTH · 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

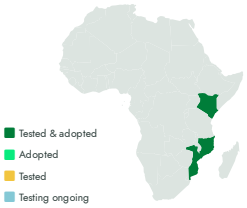
Categories

Production, Practices, Seed system

Best used with

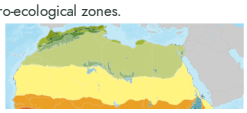
- Orange-Fleshed Sweet Potato (High provitamin A) ›
- Drought and Virus Tolerant Orange-Fleshed Sweet Potato ›
- Tent-style greenhouse for multiplication of sweet potato vines and cuttings ›
- Specialty blended fertilizers for root and tuber crops ›

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.



Purple Antioxidant Potatoes: Purple-fleshed sweet potato (high in antioxidants)

Sustain Your Health with Purple Potato

The Purple-fleshed sweet potatoes (PFSP) is a sweet potato variety with purple-colored flesh. These PFSP varieties are characterized by their high levels of anthocyanins, a type of flavonoid that imparts the purple color and contributes to their antioxidant properties.

This technology is TAAT1 validated.

8·8 Scaling readiness: idea maturity 8/9; level of use 8/9

Gender assessment 4

Climate impact 7

Problem

- Vitamin deficiencies are widespread in subsistence farming and poor communities
- People in these communities face health risks related to heart disease and cancer
- There is a need to address dietary imbalances in these communities.

Solution

- PFSP varieties have two to three times more antioxidant activity compared to white or yellow sweet potatoes.
- The high levels of antioxidants in PFSP contribute to the body's growth, immune system, and brain activity.
- Residues from PFSP, such as vines, peels, and deformed tubers, can be repurposed into silage, providing nutritious fodder for ruminants and pigs.
- PFSP varieties are rich in potassium, fiber, vitamin C, and vitamin B6

Key points to design your project

The Purple-fleshed sweet potato (PFSP) technology offers a sustainable solution with significant impacts on nutrition. To integrate this technology into your project:

- Raise awareness among farmers and food processors about the nutritional benefits of PFSP.
- Estimate the quantity of vines needed based on cost and seed requirements. Acquire improved PFSP varieties.
- Develop communication materials to promote PFSP adoption.
- Collaborate with agricultural development institutes and seed multiplication companies for effective implementation.

Cost: $$$ **20 USD**

A bag of 10 Kg of sweet potato vines

ROI: $$$ **30 %**

Increase in better health

IP

Open source / open access

International Potato Center (CIP)

Kwikiriza Norman

Technology from

ProPAS

Commodities

Sweet Potato

Sustainable Development Goals

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

Categories

Production, Improved varieties, Quality improvement

Best used with

- Community-based multiplication of sweet potato vines and cuttings ›
- Tent-style greenhouse for multiplication of sweet potato vines and cuttings ›
- Raised beds for sweet potato production and weed management ›
- Specialty blended fertilizers for root and tuber crops ›
- Relay intercropping of sweet potato with legumes ›
- Silage production from sweet potato vines and tubers ›

Tested/adopted in

Relay intercropping of sweet potato with legumes

Harvest More, Worry Less with Sweet Potato-Legume Relay Intercropping

Relay intercropping of sweet potato with legumes is a farming method where two crops, sweet potato and legumes like beans or cowpeas, are grown together in the same field. Farmers can plant sweet potato first, then plant legumes later.

This technology is TAAT1 validated.

8·8 Scaling readiness: idea maturity 8/9; level of use 8/9

Gender assessment 4

Climate impact 7

Problem

- Reduced land productivity due to monoculture practices.
- Nitrogen deficiency in soil leading to lower crop yields.
- Vulnerability to crop failure and food insecurity due to pest attacks and droughts.

Solution

- Improved land productivity through efficient utilization of available resources.
- Enhanced soil nitrogen levels through symbiotic nitrogen fixation by legumes.
- Increased resilience to pest attacks and droughts through diversified cropping systems.

Key points to design your project

This technology boosts crop productivity, ensures food security, and fosters economic sustainability. To integrate this technology:

- Educate farmers about the benefits of intercropping sweet potato and legumes.
- Select suitable varieties based on local conditions.
- Obtain quality planting materials.
- Purchase mineral fertilizer and legume inoculants

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Technology from

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Commodities

Sweet Potato

Sustainable Development Goals

2 ZERO HUNGER

3 GOOD HEALTH AND WELL-BEING

1 NO POVERTY

13 CLIMATE ACTION

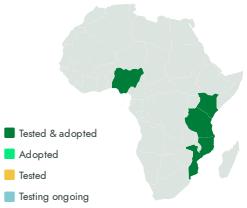
Categories

Production, Practices,

Pest control (excluding weeds),

Yield improvement

Tested/adopted in



Where it can be used

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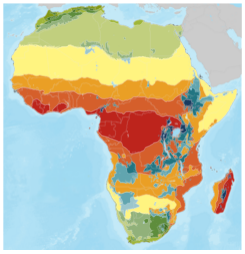


Target groups

Silage production from sweet potato vines and tubers

Fodder Enrichment for Thriving Livestock

Sweet potato silage production is an agricultural innovation that efficiently turns underutilized resources into high-quality animal fodder. The fermentation process preserves nutrients, making it a valuable addition to traditional feeds. Sweet potato silage promotes rapid livestock growth and maintains good health.

This technology is TAAT1 validated.

7·8 Scaling readiness: idea maturity 7/9; level of use 8/9

Gender assessment 4

Climate impact 7

Problem

- **Resource Wastage**: Leftover sweet potato parts perish in hot, moist conditions.
- **Fodder Availability**: Persistent gaps exist in fodder availability.
- **Digestibility and Nutrition**: Fresh vines have poor digestibility and nutritional value.
- **Resource Collection**: Harvesting leftover sweet potato parts is labor-intensive.

Solution

- **High-Quality Fodder**: Converts leftovers into nutritious animal feed.
- **Bridging Fodder Gaps**: Ensures consistent fodder availability.
- **Enhanced Digestibility and Nutrition**: Improves digestibility and conserves nutrients through fermentation.
- **Efficient Resource Utilization**: Reduces labor and effort in resource collection by providing a sustainable and cost-effective solution.

Key points to design your project

Sweet potato silage empowers both genders by providing sustainable livestock feed, reducing emissions, and boosting income. It supports Zero Hunger, Responsible Consumption, No Poverty, and Decent Work goals. Here's how to implement it:

1. **Educate farmers** through workshops on the benefits.
2. **Identify** ideal mixtures and storage setups based on local resources.
3. **Procure equipment** like chippers and compactors.
4. **Invest in materials** for storage (plastic sheets, sealing materials, trenches).
5. **Organize collection** of sweet potato vine and tuber waste.
6. **Establish markets** for on-farm use or local sales (cooperatives, farmers' markets).
7. **Develop communication** materials (flyers, videos, radio) to promote the technology.
8. **Collaborate** with agricultural development institutes for successful implementation.

International Potato Center (CIP)
Norman KWIKIRIZA

Technology from

ProPAS

Commodities

Sweet Potato

Sustainable Development Goals

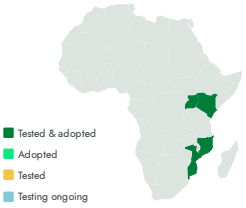
2 ZERO HUNGER

8 DECENT WORK AND ECONOMIC GROWTH

Categories

Transformation, Practices, Post-harvest management

Tested/adopted in



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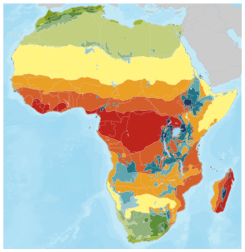

Target groups

Breeders, Farmers

Raised beds for sweet potato production and weed management

Raise tuber yields with raised beds

The raised bed technology elevates sweet potatoes for better growth. By creating designated areas with loose soil, it prevents soil compaction and weed growth, ensuring optimal nutrient absorption. This method is beneficial in areas with poor soil quality, promoting healthier crops and easier maintenance for farmers.

This technology is TAAT1 validated.

7·7 Scaling readiness: idea maturity 7/9; level of use 7/9

Gender assessment 4

Climate impact 7

Problem

- Uncontrolled weeds compete with sweet potatoes, reducing yields and stunting growth.
- Traditional methods can lead to poor root development and tuber growth.
- These diseases can devastate sweet potato crops, leading to lower yields and economic losses.
- Manual weeding diverts resources from other crucial activities.

Solution

- Elevates sweet potato plants, creating ideal conditions for tuber development. Prevents soil compaction and waterlogging, ensuring healthy growth.
- It provides an environment hostile to soil-borne diseases, fostering healthier crops and minimizing disease-related losses.
- It maximizes tuber yields by maintaining optimal soil conditions, reducing dependency on external inputs and manual labour.

Key points to design your project

The technology of raised beds for sweet potato production and weed management promotes healthier plant growth and ecosystem preservation. Key steps for integration include

- Educating farmers about the benefits, selecting suitable sweet potato varieties,
- Ensuring access to quality planting materials,
- Providing support for raised bed construction, and associating with complementary technologies.

Cost: $$$ **584 USD**

Installation of raised beds per acre

7 %

Fresh tuber weight increased

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Technology from

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Commodities

Sweet Potato

Sustainable Development Goals

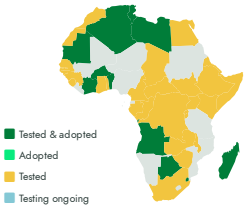
2 ZERO HUNGER

13 CLIMATE ACTION

Categories

Production, Practices, Weed management

Tested/adopted in



Where it can be used

This technology can be used in the colored agro-ecological zones.

Target groups

Farmers

Tent-style greenhouse for multiplication of sweet potato vines and cuttings

Greenhouse Solutions for Thriving Sweet Potato Farms

The tent-style greenhouse, built with local materials and screen nets, provides an optimal, pest-free environment for sweet potato vines. It maintains soil moisture and ensures the production of high-quality, disease-free planting material. This cost-effective and easy-to-assemble technology is a practical tool for farmers to increase sweet potato yield.

This technology is TAAT1 validated.

8·9 Scaling readiness: idea maturity 8/9; level of use 9/9

Gender assessment 4

Climate impact 6

Problem

- **Planting Material**: Shortage and degradation over time.
- **Pests/Diseases**: Susceptibility impacting crop health and yield.
- **Infrastructure/Cost**: High costs and local material availability issues.

Solution

- **Efficient Production**: Multiplication of healthy vines and cuttings.
- **Pest/Disease Control**: Screen nets for a pest-free environment.
- **Cost-Effective**: Built with cheaper, locally available materials.

Key points to design your project

The tent-style greenhouse technology bolsters climate resilience, optimizes resource use, and aligns with SDGs like Zero Hunger and Climate Action.

For farmer adoption, the project activities include:

1. **Training**: Educate farmers on the greenhouse benefits and operation.
2. **Site Preparation**: Assist in location selection and site preparation.
3. **Construction**: Guide through greenhouse assembly and screen net installation.
4. **Arrangement**: Train on plant arrangement inside the greenhouse.
5. **Maintenance**: Teach soil moisture maintenance and temperature control.
6. **Feedback**: Evaluate technology effectiveness and gather farmer feedback.

The timeline depends on the farmers' specific context and needs.

Cost: $$$ **7.66 USD** total investment per square meter	ROI: $$$ **56 %** over 3 year
4-9 USD sales of vines per square meter	**IP** Open source / open access

International Potato Center (CIP)
Paul Demo

Technology from

ProPAS

Commodities

Sweet Potato

Sustainable Development Goals

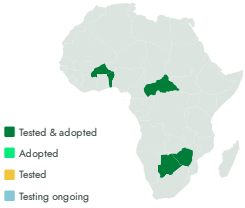
Categories

Production, Equipment, Seed system

Best used with

- Orange-Fleshed Sweet Potato (High provitamin A) ›

Tested/adopted in



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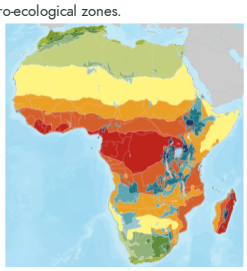


Drought and Virus Tolerant Orange-Fleshed Sweet Potato

Resilient and Nutrient-Rich OFSP for Better Agriculture

Drought and Virus Tolerant Orange-Fleshed Sweet Potato (OFSP) is a variety that withstands drought, heat stress, and common viruses. It matures in 90 days, reducing the risk of incomplete tuber filling during uncertain rainfall. This technology addresses climate, pest, and virus challenges.

This technology is TAAT1 validated.

7·7 Scaling readiness: idea maturity 7/9; level of use 7/9

Gender assessment 4

Climate impact 5

Problem

Drought and Heat Stresses negatively impacting sweet potato cultivation.

Common viruses affect sweet potato crops, causing reduced yields and crop damage.

Short Growing Seasons with Uncertain Rainfall.

Sweet potato crops are vulnerable to pests and insects causing damage to both field crops and stored tubers.

Solution

OFSP cultivars with traits like early maturation, deep roots, and high vine survival for resilience in drier and warmer climates.

OFSP varieties are resistant to common viruses, including stunt virus (SPCSV) and mottle virus (SPFMV), achieved through mass selection and genetic marker techniques.

OFSP varieties are resistant to pests like weevils, aphids, and whiteflies, safeguarding field crops and stored tubers.

Key points to design your project

Cultivating orange-fleshed sweet potato (OFSP) in Sub-Saharan Africa positively impacts gender and climate. To integrate this technology, estimate seed quantity and costs, consider delivery logistics, and plan training and communication support. Recommended measures for OFSP optimization include community-based cutting production and collaboration with agricultural institutes and seed companies.

Cost: $$$ **2 USD**
per kg of vines

ROI: $$$ **30 %**
increase in wealth

IP
Open source / open access

International Potato Center (CIP)
Norman KWIKIRIZA

Technology from

ProPAS

Commodities

Sweet Potato

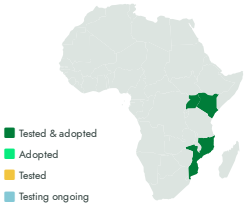
Sustainable Development Goals

2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
13 CLIMATE ACTION

Categories

Production, Improved varieties, Disease resistance, Drought tolerance

Tested/adopted in



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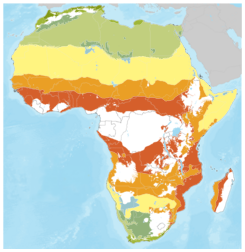


Target groups

Farmers, Seed companies

OFSP: Orange-Fleshed Sweet Potato (High provitamin A)

Orange Sweetness, Nutrient Richness, and Farmer's Success - Embrace OFSP!

Orange Fleshed Sweet Potato (OFSP) is a biofortified crop rich in beta-carotene, particularly in comparison to light-colored flesh cultivars. Upon consumption, the beta-carotene converts into vitamin A, enhancing nutrition and supplementing diets. OFSP holds significant potential for improving food and nutritional security throughout Africa.

This technology is TAAT1 validated.

8·9 Scaling readiness: idea maturity 8/9; level of use 9/9

Gender assessment 5

Climate impact 6 1

Problem

- Widespread vitamin A deficiency contributes to malnourishment,
- Traditional sweet potato varieties yield only 3-7 tons per hectare, resulting in limited food availability and income for farmers.
- The lack of diverse and nutrient-rich crops hampers overall nutrition, posing a challenge to addressing dietary deficiencies and promoting sustainable agriculture.

Solution

- It addresses vitamin A deficiency by providing a rich source of this essential nutrient, promoting better health and nutrition.
- OFSP's improved varieties yield 25 tons per hectare, significantly surpassing traditional varieties, thereby enhancing food security and increasing farmers' income.
- OFSP offers a versatile and nutrient-rich crop, diversifying nutrient sources and contributing to overall nutrition, promoting a sustainable and healthier agricultural ecosystem.

Key points to design your project

This technology promotes gender inclusion by improving nutrition and food security. To integrate it into your project,

- Estimate vine quantity needed,
- Actor in delivery costs and import duties,
- Provide training and support and develop communication materials.

Cost: $$$ **20 USD**

10kg vines

200 kg	**25 tons**	**IP**
vines for 1 acre (0.3 hectare)	per hectare	Open source / open access

International Potato Center (CIP)

Kwikiriza Norman

Technology from

ProPAS

Commodities

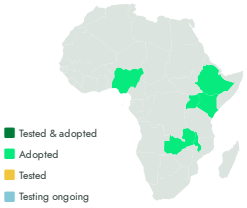
Sweet Potato

Sustainable Development Goals

Categories

Production, Improved varieties, Yield improvement, Quality improvement

Tested/adopted in



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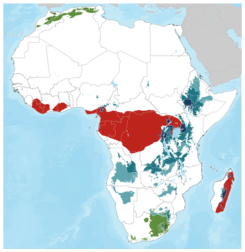


Target groups

Farmers, Seed companies

OFSP puree and products: Puree Production and Products for Sweet Potato

Effortless sweet potato puree, every time!

The OFSP (Orange-fleshed sweet potato) puree technology involves the conversion of fresh sweet potato tubers into a stable and versatile puree by using advanced equipment. The process includes cleaning, steaming, peeling, and mashing or pureeing the sweet potato flesh.

This technology is TAAT1 validated.

8·8 Scaling readiness: idea maturity 8/9; level of use 8/9

Gender assessment 2

Climate impact 5

Problem

- Fresh tubers of sweet potato tubers perish rapidly
- Making sweet potatoes smooth is a tough job.
- It's a challenges to make sure the puree is safe and good to eat.
- Manual processes takes a lot of time and effort and may lead to rough-textured puree.

Solution

- Orange-fleshed sweet potato (OFSP) puree provides a cost-effective alternative to wheat flour as it can substitute 30-60% of the flour in a wide range of processed foods,
- With this equipment, quality control is enhanced through automated checks
- Increase production speed, making the process more efficient.
- Delivers consistent results, ensuring a smooth texture every time and extends the puree's shelf life.

Key points to design your project

OFSP puree production and products technology enhances food security and economic sustainability. To integrate this technology:

- Conduct awareness-raising campaigns and training sessions with cooperative and industrial food processors.
- Ensure availability and continuous supply of quality OFSP roots.
- Implement good supply chain management from farm to processing plant.
- Provide technical support to factory staff and extension service providers.
- Create consumer awareness and demand among farmers, producers, and consumers.
- Consider equipment needs, delivery, installation, and training costs.

0.36—0.53 USD
Per kilogram of OFSP puree production

18—42 %
Net profit margin

IP
Open source / open access

International Potato Center (CIP)
Kwikiriza Norman

Technology from

ProPAS

Commodities

Sweet Potato

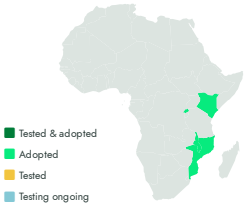
Sustainable Development Goals

2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING

Categories

Transformation, Practices, Agri-food processing

Tested/adopted in



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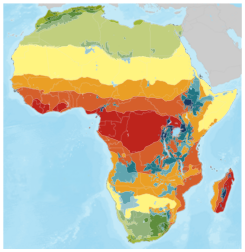

Target groups

Processors

CIP Technologies

https://taat.africa/obl

ABOUT US

TAAT

TAAT, Technologies for African Agricultural Transformation, is an African Development Bank initiative to boost agricultural productivity by rapidly rolling out proven technologies to more than 40 million smallholder farmers.

TAAT aims to double crop, livestock, and fish productivity by 2025 by engaging both public and private sectors to expand access to productivity-increasing technologies across the continent.TAAT advises African government who receive funding from international financial institutions such as the African Development Bank to help them integrate the best agricultural technologies in their development projects. TAAT also offers technical assistance for the integration of these technologies, when needed.

TAAT Technologies

TAAT definition of agricultural technologies is very broad: they include improved varieties, inputs, equipment, agricultural infrastructure, practices and agricultural policies. In short, any solution to an agricultural constraint. TAAT technologies have been developed by a wide variety of organizations: the CGIAR, other international research institutions, national research organizations, or the private sector.

TAAT Clearinghouse

Within TAAT, the Clearinghouse has the remit to select, profile and validate agricultural technologies, and showcase them in online catalogs to support the advisory role that the Clearinghouse offers to governments and the private sector. The Clearinghouse strives to be an 'honest broker' of technologies through its selection, profiling, validation and advice.

TAAT e-catalogs

The e-catalogs are designed to be used by decision-makers within governments, private sector companies or development organizations. They facilitate the search for appropriate solutions that are adapted to local conditions and requirements, and provide all necessary information, presented in jargon-free and easy to analyze technology profiles. Once a decision-maker has selected a technology of interest, the e-catalogs facilitate their direct contact with those who can help them implement the technology, whether they are a research group or a private company.

TAAT Technology Toolkits

Technology toolkits are hand-picked selections of technologies from the TAAT e-catalogs. We offer some curated toolkits for specific cases, and registered users can create their own toolkits, showcasing their selection of technologies. Toolkits can be used online and shared as links, as mini e-catalogs, they can also be downloaded, saved, shared or printed as collections of technology pitches in PDF format (pitches are one-page summaries of technology profiles, available for all technologies on the e-catalogs).

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