

Living Lab Badevel: A demonstrator of smart and sustainable village



by Samuel Gomes

Badevel Mayor since 2020

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Badevel: A small village with big ambitions in sustainable development

Location	Population	Position	Governance
<ul style="list-style-type: none">- Eastern France, close to Swiss border (4km)- Bourgogne Franche-Comté Region	<ul style="list-style-type: none">- Approximately 818 resident- School with 68 children (national policy program)- Afterschool program (our own policy program)	<ul style="list-style-type: none">- Rural yet strategically positioned in cross-border region	<ul style="list-style-type: none">- Dynamic, forward-looking local government- 15 persons elected as members of the City hall committee- 10 staff members including 2 PhD students



From Vision to Strategy:

-  **May 2020 – Mayor election milestone**
Launch in Badevel village of new local vision for smart, sustainable rural development
-  **Policies alignment**
Strong alignment with national and European transitions – Focused on digital transition
-  **Support**
Financial support from French Government programs  (including EU fundings)
-  **Engagement**
Connection with 2 local universities, and with regional and local innovation ecosystems

Success factors behind the transformation



Academic Partnerships

Co-development with UTBM and other universities

Funding Capabilities

Leveraging national, regional, sub-regional and inter-cities programs

Operational Leadership

Proactive municipality driving experimentation

Private Sector Engagement

Collaboration with SMEs and startups



Operational actions engaged



Digital Twin Development

Created virtual model for municipal asset management



IoT Sensor Deployment

Installed AI based smart monitoring in public buildings, in our AI e-ecofarm



Innovation Demonstrator

Built real-scale testing environment with academic partners



Sustainability Projects

Implemented: Energy renovations, Local digital farming systems for canteen meal supplying, Garbage collectors monitoring, Solar panel energy production, Advanced digital technologies classes for kids and seniors, AI based e-health systems, etc.





Case study: making our buildings smarter



Install Sensors (Wifi, Zigbee, LoRa)

Monitoring temperature, humidity, light, doors, etc.



Collect Data

Real-time monitoring for efficiency



Optimize Usage

Adjust heating settings for 70% energy savings



Integrate Systems

Contribute data to our own made village digital twin



Badevel can be a Living Lab for Europe

6

Scalable Model

Our approach can be replicated in villages across Europe. A start-up is associated for the future replication process

Small Community Leadership

Size is not a barrier to innovation. Our village proves small communities can drive significant change.

Rural Tech Integration

Cutting-edge technologies thrive in rural settings when supported by strong partnerships and clear vision, driven by a strategy



Thank You



Contact

Samuel Gomes –
Mayor of Badevel |
Professor at UTBM



Website

www.badevel.fr



Partnerships

Open to collaboration
with other villages
and organisations

Questions ?

Living Lab BADEVEL Smart and Sustainable Village Demonstrator



Conservation
arboriculture

Market Gardening
Robotics 6.0

e-ECOFERME

Connected
Beekeeping 6.0

Demographic
transition

HINOUNOU

e-Health

e-SENIORSCHOOL

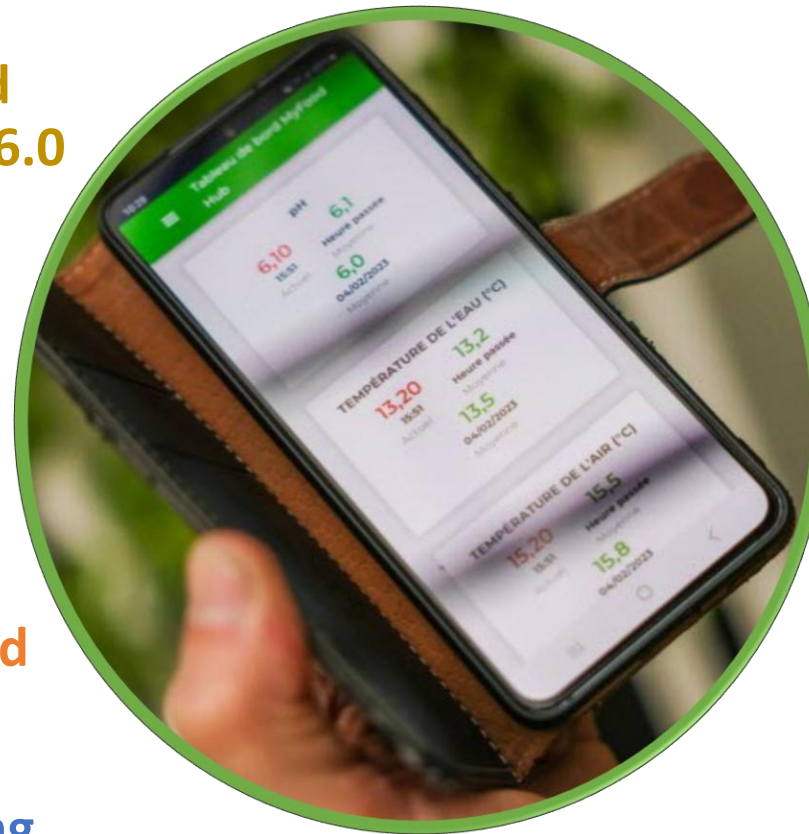
3D modeling

Connected
objects

e-PERISCHOOL

3D printing

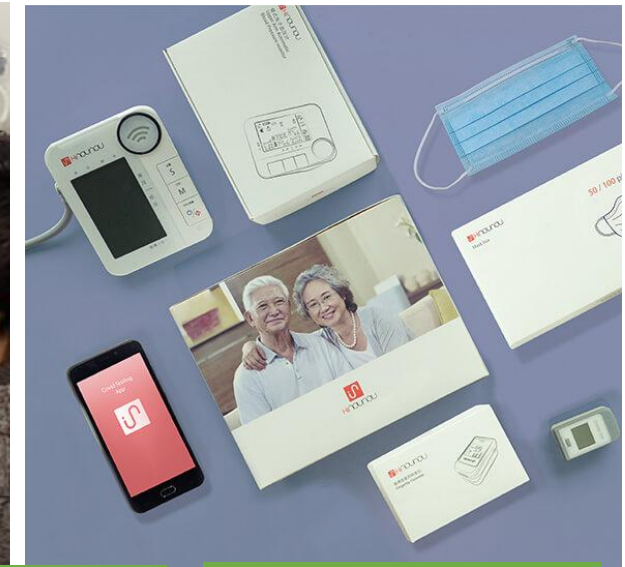
PLATFORMS in operation



INTELLIGENCE
ARTIFICIEL



SCHOOL 6.0



FARM 6.0

HEALTH 6.0



Living Lab BADEVEL Smart and Sustainable Village Demonstrator



Biochar bagging
plant

Local energy
community

Energy
autonomy

Energy
sobriety

Renewable energy
production

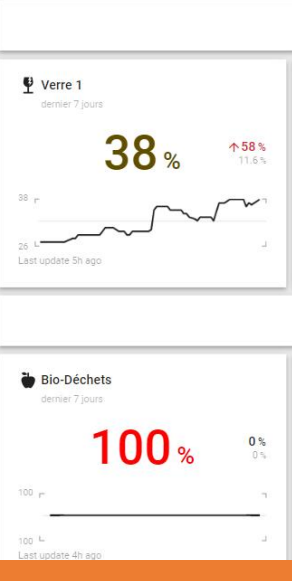
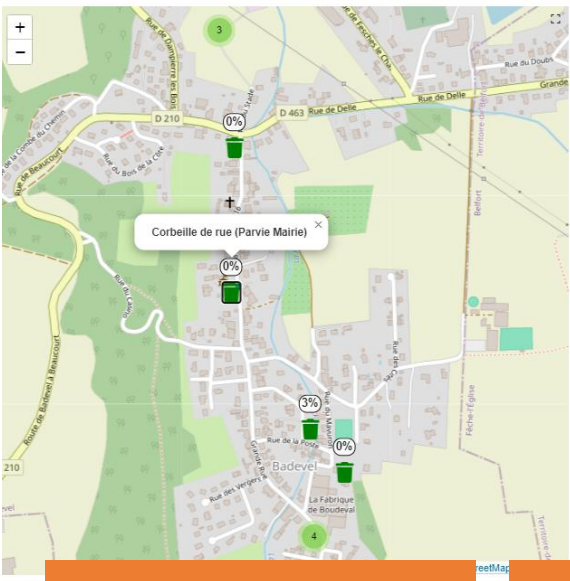
Waste
Management 6.0

" Vehicle to
grid "

Water
Management 6.0

Cognitive digital twin

Electric
mobility



FACTORY 6.0

BUILDING 6.0

CITY 6.0



Future PLATFORMS

INTELLIGENCE
ARTIFICIAL



Future Directions



Expanded Digital Twin

Complete virtual model for entire village



Predictive Resource Management

Smart water and energy monitoring systems (production and consumption)



Agricultural Innovation

Smart permaculture greenhouse development, farm robots, smart composting



European Partnerships

Not started yet (but EU funding through France 2030 and BFC Region)

A Model for Rural Innovation



Scalable and replicable model for other villages



Proof that small communities can lead innovation



Rural areas can host cutting-edge technologies when partnerships and vision align



Innovation is not only urban—it belongs everywhere

Territorial Impact

30%

Energy Savings

Reduction in public building energy consumption

12

New Projects

Innovation initiatives launched since 2020

2

Academic Partners

Universities actively collaborating with our village

€2.5M

Investment

Total funding secured for rural innovation



What We Did: Key Actions

Digital twin development for municipal asset management

IoT sensor deployment in public buildings

Creation of a real-scale innovation demonstrator in partnership with academia

Energy renovation projects for public buildings

Local food ecosystem and permaculture experimentation

LED street lighting to reduce energy use