A New Ontology of Care: Frailty, Participation, and Fractal Social Organization in a Hybrid Metaverse Clinic

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From Countdown to Turning Point

Wallis is already living the elderly care crisis that many regions still call "upcoming". That much has been described clearly in my former article **"The Elderly Care Illusion in Wallis"**. I will not repeat that diagnosis here. Instead, I want to explain why I am convinced that a way out exists, and why this way out is not a vague aspiration but a scientifically grounded, implementable redesign of the system.

At the heart of this conviction stands the work of my colleague and friend **Vincenzo De Florio,** a member of our group whose research over many years has quietly built exactly the conceptual tools we need now. Together with his co-authors, he has explored three crucial ideas: the "participant" model for older people, the Mutual Assistance Community as a digital ecosystem for care, and service-oriented communities leading to fractal social organizations. When you place these ideas next to the Hybrid Metaverse Frailty Clinic (HMFC) and the 2b@ging-Well model, the pieces click into place. Wallis suddenly stops being a tragic case study and becomes a place where a new kind of elderly care can be built—and from which others can learn.

Putting Frailty at the Centre

The first step is to accept that frailty, not the hospital, must become the organising principle of elderly care. The HMFC does this explicitly. Instead of treating frailty as a late complication managed through emergency admissions and long hospital stays, it makes **automatised Comprehensive Geriatric Assessment (CGA)** the backbone of the pathway. Every older person identified as at risk is assessed across all relevant dimensions: medical status, function, cognition, mood, nutrition, social support, living environment. These dimensions are not recorded once and forgotten; they are continuously updated and feed into a living, personalised care plan.

Scientifically, this is entirely consistent with decades of geriatric evidence. What is new is the decision to embed CGA in a **digital ecosystem** inspired by De Florio's work on Mutual

Assistance Communities. Frailty is no longer a static label; it becomes a dynamic profile that the system can reason about. This enables very concrete objectives that can be monitored from the first months of implementation. Within a year, for instance, Wallis can track what proportion of its population over 75 has undergone an automatised CGA at least once, how long it takes between a first risk signal and a full assessment, and how many care plans are actively maintained rather than remaining "paper exercises". Over a longer horizon, changes in frailty scores themselves become measurable: are people in Wallis staying robust for longer, or at least declining more slowly, than before?

From there, the HMFC extends the idea of "clinic" into a hybrid space. Home visits, local consultations, and hospital contacts are combined with a **metaverse environment** where older adults, families, nurses, therapists, and doctors can interact around that living care plan. Remote monitoring, tele-rehabilitation, and cognitively engaging tools become part of the same pipeline. The system can detect a subtle deterioration in gait, mood, or nutrition and adjust the care plan within days rather than waiting for a catastrophic event. Short-term success here can be measured through indicators such as the percentage of identified risks that trigger an intervention within a defined time window, or the number of detected deteriorations that are stabilised without requiring an emergency admission. Longer term, Wallis can observe trends in emergency department visits per 1,000 inhabitants over 75, in average length of stay for frail patients, and in the age at which people first require institutional care.

From Patients to Participants

A defining feature of Vincenzo De Florio's earlier work is the **"participant"** concept, introduced with Hong Sun and colleagues. They challenged the classic image of older people as passive, highly dependent "patients" whose only role is to receive professional help. In the participant model, older adults are encouraged—and enabled—to engage in group activities they are still capable of performing: walking together, playing games, attending group exercise or cognitive training. Their roles are not limited to asking for help; they can, within their abilities, **contribute to the support of others**.

This is not a romantic notion. Simulations in that work showed that when older people are treated as participants, a community can both **reduce the use of professional resources** and **improve psychological well-being**, maintaining social networks and self-esteem. The key is the presence of a **service centre** able to understand requests, recognise when several people actually need the same kind of activity, and connect them instead of dispatching a nurse to each of them separately.

The Hybrid Metaverse Frailty Clinic brings this participant model to life in Wallis. Inside the HMFC environment, an older adult does not appear only as an object of clinical parameters, but as a person with abilities, preferences, and availability. Requests such as “I would like to go for a walk twice a week” or “I would like some company for lunch” become machine-interpretable events. The system can then search for others with similar wishes or complementary capacities, propose joint activities, and only fall back on professional services when necessary.

This leads directly to workable objectives. In the short term, Wallis can monitor how many older adults are registered not only with needs but also with declared capabilities, and how many activities are organised as **group sessions** rather than one-to-one professional interventions. It can track the proportion of non-urgent requests that are fulfilled through participants and informal carers versus those requiring a professional response, and the average time to match a request to a suitable partner or group. It can also monitor subjective measures such as self-reported loneliness, sense of usefulness, and satisfaction with social contacts. Over several years, we would expect to see a sustained increase in the density of social connections between older adults in Wallis, a reduction in reported loneliness, and measurable decreases in the number of professional home visits required for tasks that can safely be handled in a mutual assistance model.

A Fractal Community, Not a Central Fortress

The second major scientific pillar in De Florio’s work is the notion of **service-oriented communities** and **fractal social organizations**. In this model, society is seen as a multiset of roles—older adults, nurses, physicians, informal carers, volunteers—tied together through channels of communication and governed by a “social energy” that activates subsets of these roles in response to specific situations. When a fall occurs, for example, a particular configuration of roles is mobilised: perhaps a neighbour, a nurse, and a general practitioner. When an older adult needs companionship, the subset may look different.

The elegance of this approach lies in its scalability. The same pattern applies at the micro-level of a village and at the macro-level of a canton. A **service-oriented community** is a software component that supports this dynamic assembly of roles. Combine many such components, and you obtain a **fractal organization**: self-similar at different scales, capable of reorganising itself when situations change, and far more adaptable than a rigid, centrally orchestrated hierarchy.

In practical terms for Wallis, this means that the HMFC CARE HUB does not sit above a passive landscape of institutions. Instead, each home care service, each nursing home, each village network, and each hospital department can be seen as a service-oriented community, all connected through the HMFC infrastructure. When a situation arises—an alarm from a sensor, a worrying change in a frailty index, a caregiver exhaustion signal—the system can rapidly compose an appropriate "community of response" from roles available at that moment and at that location.

This design allows for very concrete, measurable goals. In the early phases, we can measure how many local communities in Wallis are technically and organisationally integrated into the HMFC network, how long it takes the system to form and dispatch a suitable response community to a new event, and how often the system can handle a new situation with resources already present in the local community versus needing to escalate to higher levels. Over the longer run, indicators of **system manageability** become important: whether staff report fewer coordination bottlenecks, whether waiting times for community services decline, and whether the canton can handle increasing volumes of elderly care requests without a proportional increase in professional workforce or costs.

Measuring Impact, Short Term and Long Term

Any serious proposal for transforming elderly care must show not only what it intends to do but also how success will be recognised, both in the first years and over a decade or more. De Florio's contributions give us a rigorous language to define those success criteria, and the HMFC and 2b@ging-Well framework translate them into practice.

In the **short term**, within one to three years, Wallis can focus on process and adoption indicators. Among the most telling will be the coverage of automatised CGA among people aged 75 and over; the median delay between the identification of concern and the completion of a full assessment; and the proportion of care plans actively updated through the HMFC environment rather than remaining static. Equally important are participation metrics: the number of older adults registered with both needs and capabilities; the frequency of group activities initiated and completed; the share of non-urgent requests resolved through mutual assistance; and the time needed for the system to match a new request with suitable participants or services. Digital adoption will also need to be tracked: the proportion of professionals, patients, and family carers regularly using the HMFC tools, and their reported ease of use.

In the **longer term**, five to ten years, outcome indicators should dominate. Here the ambition is clear. Wallis should see a sustained reduction in emergency admissions and hospital

bed-days for older adults when adjusted for age and baseline risk. The average age at entry into nursing homes should rise, reflecting delayed institutionalisation. Functional trajectories should improve, with more people maintaining independence in activities of daily living for longer. Measures of quality of life, perceived autonomy, and caregiver burden should trend in the right direction. And critically, the canton's per-capita expenditure on elderly care should show a flattening or reduction in growth, not because needed care is denied, but because crises are prevented, resources are better targeted, and the latent social energy of the community is used intelligently rather than wasted.

These are not hypothetical aspirations. They are measurable targets that can be written into the performance framework of SPINDLE and the HMFC CARE HUB Wallis, monitored annually, and transparently reported to citizens, professionals, and policymakers.

An Invitation Backed by a Lineage of Work

The choice facing Wallis is stark but not abstract. One path is to continue to polish the existing system, reorganising ownership structures, merging institutions, refining tariffs, and installing new dashboards, all the while leaving the hospital at the centre and the home at the periphery. The other path is to accept that frailty must become the central organising axis, to adopt a hybrid clinic that truly lives in the community, and to redesign roles so that older adults are no longer only patients but also participants.

That second path is bold, but it is not a leap into the dark. It is anchored in a substantial body of scientific work to which **Vincenzo De Florio** has made decisive contributions. His research on the "participant" model demonstrated that communities can preserve the dignity and psychological health of older adults while using professional resources more sparingly. His work on Mutual Assistance Communities showed that a digital ecosystem can intelligently match needs and capabilities, removing rigid distinctions between care-givers and care-takers. His formalisation of service-oriented communities and fractal social organizations provided an architecture for building scalable, adaptive socio-technical systems—exactly the kind of architecture an ageing canton like Wallis needs.

I am genuinely grateful that Vincenzo has joined this group as a colleague and friend. His ideas are not just cited in footnotes; they are woven into the very fabric of the Hybrid Metaverse Frailty Clinic and the 2b@ging-Well model. Thanks to this lineage of work, we can say with confidence that a scientifically grounded, operationally realistic solution to the elderly care crisis in Wallis does exist—and that, if we choose to build it, its impact will reach far beyond the borders of Wallis, offering a template for ageing societies everywhere.

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2. De Florio, V., Coronato, A., Bakhouya, M., & Di Marzo, G. (2012). Service-oriented communities: Models and concepts towards fractal social organizations. In *2012 8th International Conference on Signal Image Technology and Internet Based Systems (SITIS)* (p. 450). Los Alamitos, CA: IEEE Computer Society.

3. Sun, H., De Florio, V., & Blondia, C. (2013). Implementing a role based mutual assistance community with semantic service description and matching. In *Proceedings of the 5th International Conference on Management of Emergent Digital EcoSystems (MEDES'13)*, October 29–31, Neumünster Abbey, Luxembourg. New York, NY: ACM.