



the partnership
for water sustainability in bc

Waterbucket eNews on May 2, 2023
<https://waterbucket.ca/wscblog/>

Living Water Smart in British Columbia:

***Erik Karlsen and the
Streamside Protection
Regulation***

Note to Reader:

[Waterbucket eNews](#)¹ celebrates the leadership of individuals and organizations who are guided by the vision for [Living Water Smart in British Columbia](#)².

The edition published on May 2, 2023 featured the late Erik Karlsen (1945-2020) and highlighted his contributions to streamside protection in British Columbia. Erik Karlsen developed a matrix that integrated the work of Ian McHarg, Daniel Pauly, Richard Horner and Chris May to provide local governments with a decision tool for riparian area protection.

The umbrella for Partnership initiatives and programs is the [Water Sustainability Action Plan for British Columbia](#)³. In turn, the Action Plan is nested within [Living Water Smart, British Columbia's Water Plan](#).



Cover Image Credit: photo by Kim Stephens

¹ <https://waterbucket.ca/wscblog/>

² https://waterbucket.ca/wcp/wp-content/uploads/sites/6/2017/11/livingwatersmart_book.pdf

³ <https://www.waterbucket.ca/cfa/sites/wbccfa/documents/media/81.pdf>

Editor's Perspective

Erik Karlsen and I met in October 1997 at a UBCM consultation workshop when he was the Director of Regional Growth Strategies with the Ministry of Municipal Affairs. Erik was the provincial lead for the inter-ministry working group that developed the [Streamside Protection Regulation](#) which operationalized the *Fish Protection Act*.

Erik retired early from government, in 2002. For the balance of his life, he was the Partnership's *eminence grise* and my mentor. His last contribution before his health declined was the **integrating matrix** (next page). It is a significant piece of work and is an element of Erik Karlsen's legacy as a thought leader in BC.

An example of what the Shifting Baseline looks like

A stream in a natural condition is supported by a riparian ecosystem. In urban, suburban and rural settings around BC, however, riparian ecosystems have been reduced to riparian zones.

A riparian zone is a fragmented portion of the riparian ecosystem in developed areas. Diminution due to fragmentation results in a loss of a riparian network's ecological services.

This has become the norm because the intent of the Riparian Areas Protection Regulation has been compromised over time. This loss is what Daniel Pauly describes as a 'failure to notice change'.

The 2014 investigation and [Striking a Balance report by the BC Ombudsperson](#) identified "significant gaps between the process the provincial government had established when the Riparian Areas Protection Regulation was enacted and the level of oversight that was actually in place."

[Investigative Update: Striking a Balance \(2022\)](#) states that "many of the issues we identified remain as pressing as they were in 2014; there is work ahead to ensure that the systemic issues are fully addressed."

Erik Karlsen was concerned about the Ombudsperson's findings. With development of [EAP, the Ecological Accounting Process](#), the Partnership honours Erik's memory and legacy by providing local governments with a methodology, metrics and a path forward to tackle the **Riparian Deficit**.



Kim A. Stephens, MEng, PEng (non-practising),
Executive Director
Partnership for Water Sustainability in BC
May 2023



Erik Karlsen's "Design With Nature Integrating Matrix"

With release of the Water Sustainability Action Plan in 2004, a '**design with nature**' philosophy was embedded in the branding for green infrastructure, rainwater management and water sustainability in BC. This borrows from the title of the seminal book by Ian McHarg, published in 1969, one of the most influential works of its kind.

'Design With Nature' going forward:

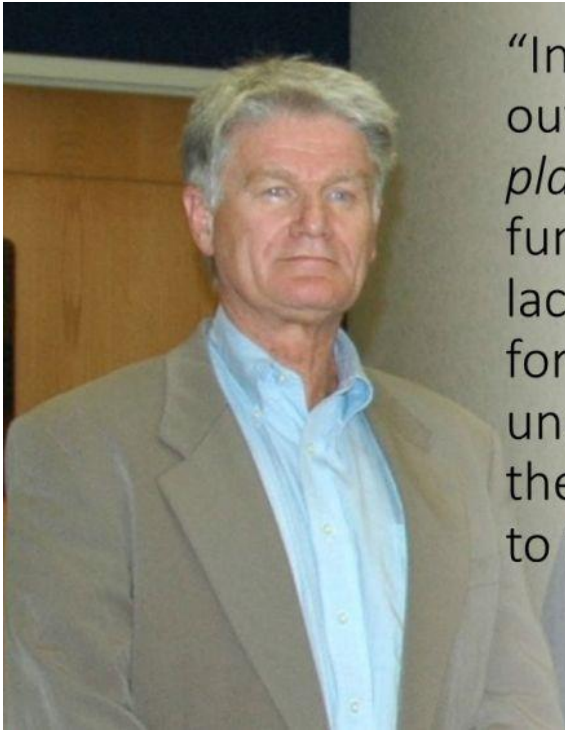
The matrix illustrates how to integrate the work of Daniel Pauly (left column), Richard Horner and Chris May (top row) to apply science-based understanding & adapt to changing conditions:

From top to bottom - illustrates a watershed's progression through three stages along the Shifting Baseline (before, now and in future).

From left to right - describes the implications for each of the four Limiting Factors for stream system integrity at each stage of the progression.

		Road Map for Protecting Stream System Integrity			
		Watershed Hydrology	Riparian Corridor	Within the Stream	Quality of the Water
Shifting Baseline	Nature As It Was Before Settlement	Clean and clear water supported aquatic habitat, fish lifecycles, and community uses of streamflow	Intact corridor provided multiple functions related to water quality and beneficial nutrients	Instream gravel supported spawning; large woody debris moderated streamflow and sheltered fish	Beneficial water quality, in particular temperature, supported ecosystem functions and community uses of streamflow
	Cumulative Impacts After Development	Changes in water balance distribution resulted in erosion, degrading of habitat, drought, or flooding	Habitat removal exposed fish to interventions and resulted in multiple impacts	Streams no longer support fish lifecycles	Toxic liquid wastes destroyed habitat, killed fish, and impacted community uses of streamflow
	By Designing with Nature	Water balance approach can restore hydrologic integrity & habitat function	Restoration of riparian integrity can restore ecosystem functions	Streams can again support fish lifecycles	Source-controls can prevent toxic liquid wastes from entering streams

One-Minute Takeaway



“In the integrating matrix, I set out to capture three ‘*states of play*’ as row headings: naturally functioning, degraded through lack of awareness, and going forward with science-based understanding. The cells contain the actionable points which relate to the row and column headings.”

Erik Karlsen (1945-2020)

former Director of Regional Growth Strategies
in the Ministry of Municipal Affairs

With development of metrics to tackle the Riparian Deficit, the Partnership honours the legacy of the late Erik Karlsen who did so much for streamside protection in BC

In this edition, we honour Erik Karlsen, a one-of-a-kind public servant. He was a thought leader and his impact on the world of local government was profound. His influence ripples through time.

The [Georgia Basin Initiative](#), regional growth strategies, and streamside protection regulation did not result from spontaneous combustion.

Erik Karlsen was the catalyst, the instigator, the leader.

Erik Karlsen was a master at communicating concepts. His genius is illustrated in the creative way he integrated the learnings from four renowned thought leaders, namely: Ian McHarg, Daniel Pauly, Richard Horner and Chris May.

Erik Karlsen integrated three foundational concepts to create a decision tool

In 1969, the legendary Ian McHarg published his seminal book, [Design With Nature](#). He was one of the most influential environmental planners and landscape architects of the 20th century. With release of the Water Sustainability Action Plan in 2004, a 'design with nature' philosophy was embedded in the branding for green infrastructure, rainwater management and water sustainability in BC.

In 1995, UBC's Daniel Pauly wrote a short but impactful article titled the [Shifting Baseline Syndrome](#). This concept is a driver for intergenerational collaboration. Environmental baselines shift when successive generations of planners, engineers, and decision-makers do not have an image in their minds of the recent past. Pauly described how a lack of understanding plays out as a **'failure to notice change'**.

1996, the University of Washington's Richard Horner and Chris May published seminal research that correlated land use changes with the impacts on stream condition. They identified and ranked four limiting factors in order of consequence from an ecological perspective. This ranking is the [Road Map for Protecting Stream System Integrity](#).

“We can bend the curve upwards,” Erik Karlsen would state with conviction

In 2015, Erik Karlsen created the **“Design With Nature Integrating Matrix”** to help local governments operationalize the learnings from Ian McHarg, Daniel Pauly, Richard Horner and Chris May.

An inter-generational outcome: Erik Karlsen hoped that local governments would apply the understanding embedded in the matrix to **"bend the curve"** upwards. He believed that restoring a desired watershed and stream condition is an inter-generational responsibility and obligation.

“Communities and successive generations of their elected representatives and staffs must commit and recommit to restoring functional watersheds and streams. When they do, we will be successful in achieving this inter-generational outcome,” Erik Karlsen would say again and again.

Fast forward to the present: The "integrating matrix" is a foundation piece for [EAP, the Ecological Accounting Process](#), which is a pillar for asset management that protects and restores riparian area integrity.



Road Map for Stream System Integrity

West coast research in the 1990s by Horner, May et al at the Center for Urban Water Resources Management in Seattle applied a systems approach and demonstrated that the order-of-priority for factors limiting ecological values of urban streams is:

LIMITING FACTOR 1: **Changes in Watershed Hydrology**
addressed thru the Water Balance Accounting Pillar

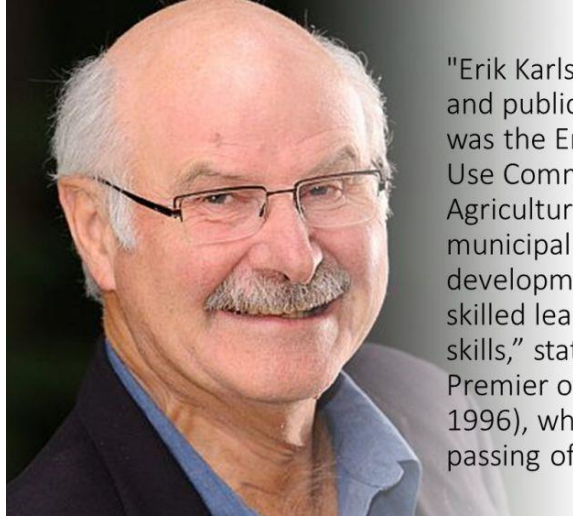
LIMITING FACTOR 2: **Disturbance and/or Loss of Integrity of Riparian Corridor**
addressed through the Ecological Accounting Pillar

LIMITING FACTOR 3: **Degradation and/or Loss of Aquatic Habitat within the Stream**

LIMITING FACTOR 4: **Deterioration of Water Quality**

STORY BEHIND THE STORY:

Erik Karlsen and the Streamside Protection Regulation



"Erik Karlsen was a splendid person and public employee. Whether it was the Environmental and Land Use Committee Secretariat, the Agricultural Land Commission, or municipal planning and development, he was a quietly skilled leader with huge people skills," stated Mike Harcourt, former Premier of British Columbia (1991-1996), when he reflected on the passing of Erik Karlsen in 2020.

Testimonial from Peter Law

"Wow. What a vibrant and connected person Erik Karlsen was," recalls Peter Law. He served with Erik Karlsen on the inter-ministry committee that developed provincial regulations for streamside protection.

Formerly a Senior Biologist in the Vancouver Island Region of the Ministry of Environment, Peter Law is a founding Director of the Partnership for Water Sustainability and Past-President of the Mid Vancouver Island Habitat Enhancement Society.

As well as serving on the Streamside Protection Committee, Peter Law chaired the inter-governmental committee responsible for development of Stormwater Planning: A Guidebook for British Columbia. The Guidebook flowed from Peter and Erik's collaboration on streamside protection.

"Erik Karlsen bridged two provincial ministries," continues Peter Law. "He started with the Ministry of Environment in the former Environment and Land Use Secretariat back in the early 1970s. He then switched to the Ministry of Municipal Affairs. In 2005, he was appointed Chair of the Agricultural Land Commission. So, his hands were all over BC land use decisions for a long time."

Streamside Protection Committee was honoured with a Premier's Award of Excellence in 2001:



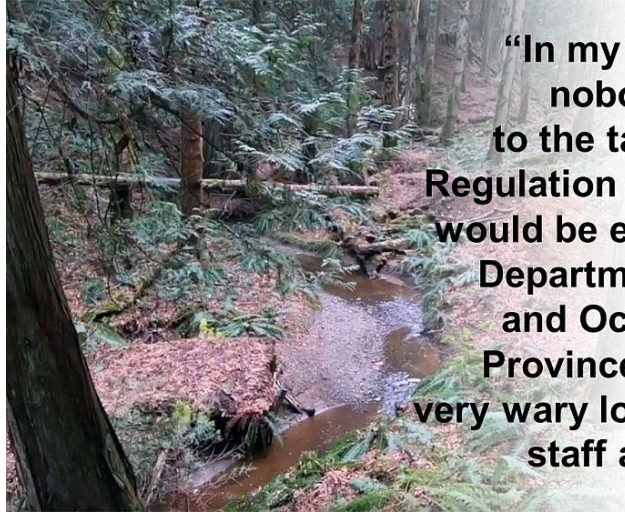
Erik Karlsen developed the language for riparian area protection

"Erik played the central role in bringing the attention to streamside protection that it deserved politically. He did that by drafting the wording of Section 12 (riparian protection) in the Fish Protection Act of 1997," explains Peter Law.

"His participation in resolving provincial land use conflicts, with a growing chorus of environmental conservation (in the 1970's and 1980's), gave him unique insight into the important role an informed local citizenry and their local governments can play in implementing effective conservation strategies (on the private land base) to protect salmon."

"Erik was delegated the role of being the lead in developing the wording of an Order in Council to enact Section 12. It was a unique position, as this legislation was a Ministry of Environment initiative, led by Erik, who was the Director of Regional Growth Strategies in the Ministry of Municipal Affairs."

"Salmon management was a big deal in the late 1990's, as Coho and Chinook populations were under threat from habitat loss. Federal agencies were wanting Provincial leadership on the issue of habitat protection, especially riparian areas adjacent fish bearing streams."



“In my view, there was nobody more suited to the task of crafting a Regulation that, in the end, would be embraced by the Department of Fisheries and Oceans (DFO), the Province and of course, very wary local government staff and politicians.”

“Over a period of two years, Erik Karlsen chaired a ‘colourful’ committee of experts in a process that focused on the science, the policies, the costs, the benefits (the good, the bad and ugly) with a goal of gaining consensus from all sectors.”

“During this time, Erik took great care in keeping all ‘interested parties’ up to speed with the direction of the work, to ensure that politicians, at all levels, were aware of how things were taking shape. This was an enormous task, and he was ‘on the road’ meeting with local government Councils and staff (from Kamloops to Courtenay), in open Council sessions, with packed chambers full of local citizens – from stream stewards to loggers.”

“Erik always impressed upon me a quotation from Aldo Leopold, author of Sand County Almanac: **The real substance of conservation lies not in the physical projects of government, but in the mental processes of citizens**”, concludes Peter Law.

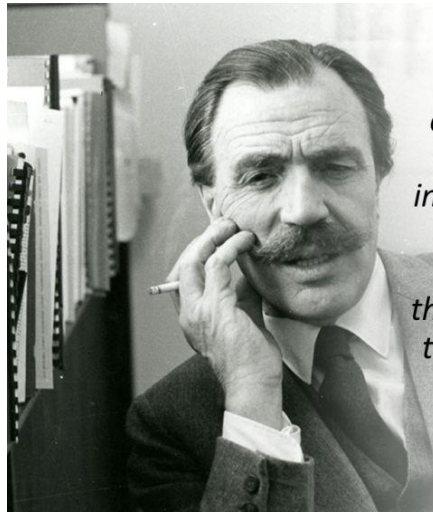
"The intent of the current Riparian Protection Areas Regulation was to provide flexibility based on the expected scientific outcomes. Instead, we have ended up with simple and minimal-type measures of the level of riparian protection on behalf of fish. The message for local governments is ...
give streams space to live."

- Peter Law



Quotable quotes from five thought readers provide context for riparian area protection and Erik Karlsen's "integrating matrix"

Ian McHarg is described as the most influential landscape architect of the twentieth century. He is recognized as "the father of GIS". His *Design With Nature* vision, more manifesto than scholarly text, has for two decades influenced implementation of BC's Water Sustainability Action Plan.



*"So, I commend **Design with Nature** to your sympathetic consideration. The title contains a gradient of meaning. It can be interpreted as simply descriptive of a planning method, deferential to places and peoples, it can invoke the Grand Design, it can emphasize the conjunction **with** and, finally it can be read as an imperative.*

DESIGN WITH NATURE!"

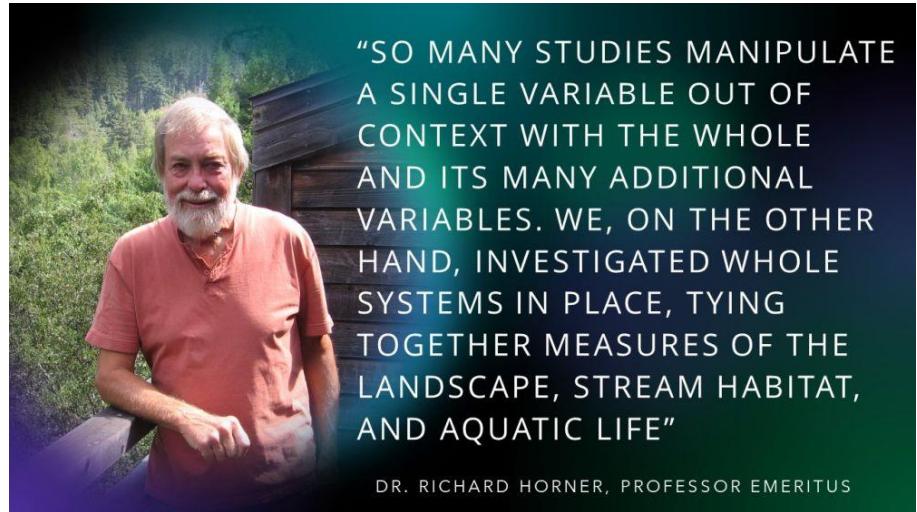
Every generation is handed a world that has been shaped by their predecessors – and then seemingly forgets that fact. Legendary UBC fisheries scientist Daniel Pauly coined this as the **shifting baseline syndrome**. It happens in any realm of society where a baseline creeps imperceptibly over generations.

"We transform the world, but we don't remember it. We adjust our baseline to the new level, and we don't recall what was there."

"To fix this problem, we must learn how to stay in touch with the past while continuing to move forward."

Dr. Daniel Pauly
Global Fisheries Scientist
University of British Columbia

In the 1990s, Richard Horner led an urban water resources research centre at the University of Washington. Eight key questions defined areas of research for a team of graduate students by Chris May. He then synthesized the findings in his PhD dissertation.



Prior to retirement, Chris May held a leadership position in Washington State local government – first with the City of Seattle and then with Kitsap County - for two decades. The latter was his **"living laboratory"**. As Director of the Surface & Stormwater Division, Chris May could put science into practice.



“There are many factors that influence stream degradation. There is not a single smoking gun. Sure, impervious area is the main culprit. But you can trash a stream just as badly by deforestation of the riparian zone as you can by paving over the headwaters with a mall.”

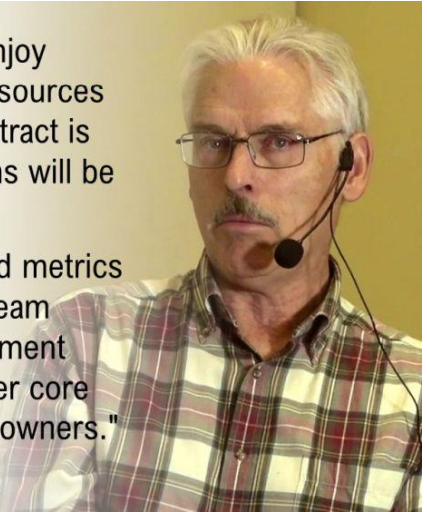
Dr. Chris May

The EAP methodology and metrics represent the destination for a three-decade journey by Tim Pringle, EAP Chair. His mantra is that **use and conservation of land are equal values**. The principle that we manage what we measure guides his approach to applied research.

"Communities expect to use and enjoy stream systems as landmarks and sources of ecological services. A social contract is implied; that these natural commons will be maintained and managed."

"EAP provides the methodology and metrics to make the financial case for a stream system to include it in local government management of assets which deliver core services to residents and property owners."

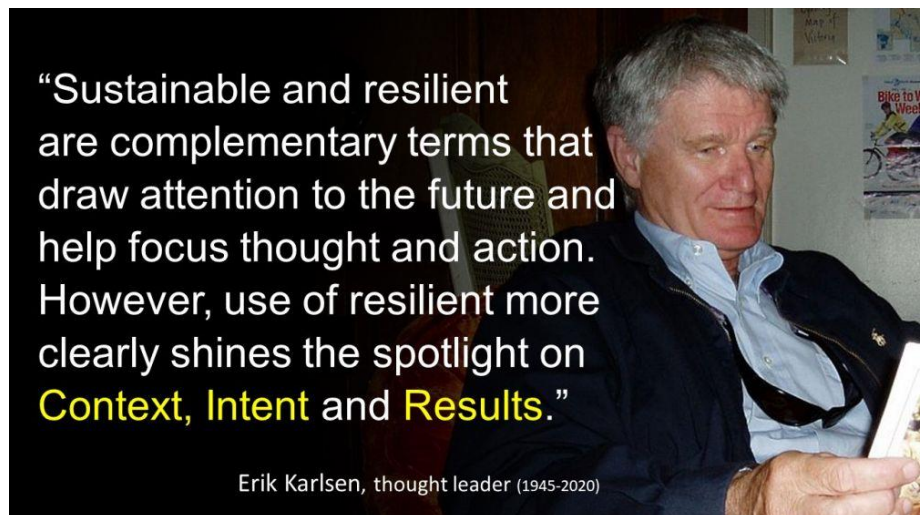
- Tim Pringle



One more Erik Karlsen quote!

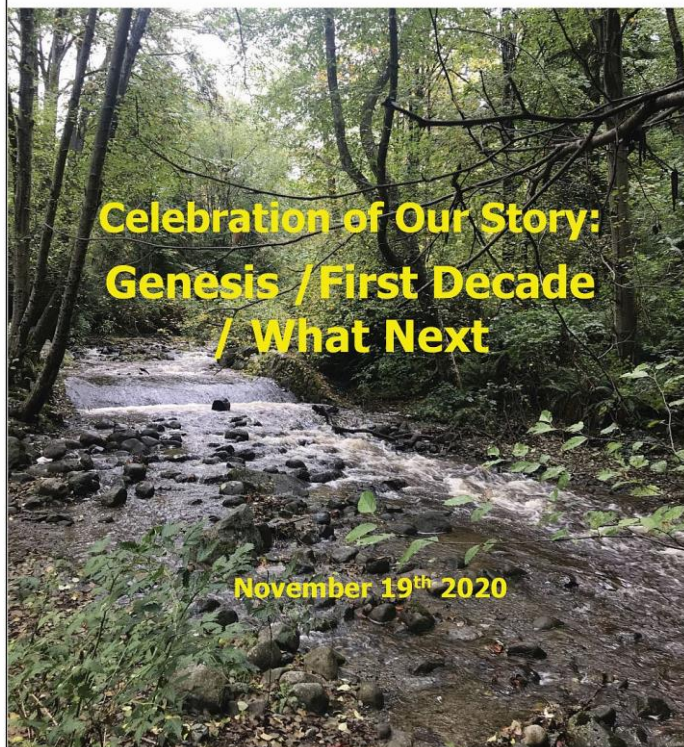
"Sustainable and resilient are complementary terms that draw attention to the future and help focus thought and action. However, use of resilient more clearly shines the spotlight on **Context, Intent and Results.**"

Erik Karlsen, thought leader (1945-2020)





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About the Partnership for Water Sustainability in British Columbia

Incorporation of the Partnership for Water Sustainability in British Columbia as a not-for-profit society on November 19, 2010 was a milestone moment. Incorporation signified a bold leap forward.

Over two decades, the Partnership had evolved from a technical committee in the 1990s, to a “water roundtable” in the first decade of the 2000s, and then to a legal entity. The Partnership has its roots in government – local, provincial, federal.

The Partnership has a primary goal, to **build bridges of understanding** and pass the baton from the past to the present and future. To achieve the goal, the Partnership is growing a network in the local government setting. This network embraces collaborative leadership and **inter-generational collaboration**.

The Partnership believes that when each generation is receptive to accepting the inter-generational baton and embracing the wisdom that goes with it, the decisions of successive generations will benefit from and build upon the experience of those who went before them.



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