



MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Peter Burgess

May 2014

peterbnyc@gmail.com

www.truevaluemetrics.org

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The **PURPOSE** of MDIA

The **purpose** of MDIA is to have a system of metrics for everything ... not just the metrics for business profit, stock prices and GDP growth!

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The PURPOSE of MDIA

The **purpose** of MDIA is to have a system of metrics for everything not just the metrics for business profit, stock prices and GDP growth!

The metrics for everything must be as rigorous for people and planet (environment) as conventional accounting and corporate management information systems are for profit performance.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The **PURPOSE** of MDIA

You manage what you measure

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The **PURPOSE** of MDIA

You manage what you measure

When you change the way the game is scored,
You change the way the game is played.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The PURPOSE of MDIA

You manage what you measure

When you change the way the game is scored,
You change the way the game is played.

Consider the case of basketball. There is a simple,
rigorous way of keeping score to know who wins.

The coach plans the game before the game starts.

Each play the coach reviews how it went.

Feedback ... the coach changes the play to get
the best possible result in the next play.

Doing this ... a good coach wins the game.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

This is not the first time!

05/08/14 09:51 AM

C:\TVM\website\WebsiteTrueValueMetricsOrg\TVM-papers\MDIA-Diagrams\MDIA-Presentation-A-140507.odp

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

This is not the first time!

At the beginning of my career I worked on the problem of 'computerization' and getting old line managers to accept and adopt the new fangled 'management information systems and budgeting.

50 years later there are no well managed companies that don't have very sophisticated MIS, budgeting and control all based on the central core company accounting.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

This is not the first time!

Now the challenge is to get people and organizations to adopt metrics that are appropriate to the conditions of the day.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

This is not the first time!

Now the challenge is to get people and organizations to adopt metrics that are appropriate to the conditions of the day.

There are advanced mathematical constructs for all sorts of things:

- Profit optimization;
- Capital market behavior;
- Weather forecasting;
- Selecting players for sports teams.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

This is not the first time!

Now the challenge is to get people and organizations to adopt metrics that are appropriate to the conditions of the day.

There are advanced mathematical constructs for all sorts of things:

- Profit optimization;
- Capital market behavior;
- Weather forecasting;
- Selecting players for sports teams.

But in the game of life ... the state of people and the planet ... there are very poor metrics

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

This is not the first time!

Now the challenge is to get people and organizations to adopt metrics that are appropriate to the conditions of the day.

There are advanced mathematical constructs for all sorts of things:

- Profit optimization;
- Capital market behavior;
- Weather forecasting;
- Selecting players for sports teams.

But in the game of life ... the state of people and the planet ... there are very poor metrics

This has to be changed.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The PURPOSE of Economic Activity

In MDIA it is considered that the purpose of economic activity is to sustain and improve quality of life and standard of living.

High performance economic activity delivers progress for people with the lowest possible stress on the resources of the planet and damage to the environment and natural ecosystems.

People are at the center ... organizations are a means to this end.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Limitation of Conventional Accounting

Conventional accounting is organization centric and only about money transactions, and the way this impacts profit and the balance sheet of the organizations.

Internal management information systems have accounting at their core, and most of the decision making is based on impact on money profit and balance sheet.

This is not enough. Conventional accounting ignores most everything of importance in society at large and the environment.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Business Success -v- Social Success

The idea that what is good for business is good for society is fundamentally wrong.

This may have been a reasonable proxy for improved quality of life and standard of living in the past ... but that past ended about 40 years ago.

We need to look at the world in a very different way. Because of improved labor productivity, more production is possible with less labor, and with less labor the role of labor in delivering quality of life is undermined.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

GDP is a wrong measure of performance

GDP was introduced as a proxy measure for economic activity in the 1930s. GDP as a proxy for improved quality of life and standard of living in may have been realistic in a world where labor was a critical constraint ... but that ended somewhere around the 1970s.

These are better metrics:

GPI ... Genuine Progress Indicator

GNH ... Gross National Happiness

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

My background

I was schooled in maths, physics and chemistry. At university I studied engineering, and then studied economics. Post university I became a Chartered Accountant;

After audit experience, I have had a variety of corporate management accounting roles, including controller, budget manager, CFO, etc.

After corporate career, I became an international management consultant, working on assignments for World Bank, United Nations and private business clients.

I have worked in more than 50 countries including some of the richest places in the World and in some of the poorest.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Key concepts built into MDIA

Some important concepts that drive the MDIA approach to data, metrics and analysis

- 1) The basic ideas of chemistry ... the chemical equations;
- 2) Newton's laws of motion;
- 3) Engineering thermodynamics;
- 4) Hydraulic flows;
- 5) Economic equilibrium;
- 6) Double entry accounting;
- 7) The concept of balance sheet and profit and loss account.
- 8) Value chains;
- 9) You manage what you measure;
- 10) There are limits to everything.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Other initiatives to improve reporting

MDIA is not the only initiative that is working on improving the metrics used for business and social decision making. Some of these are:

- 1) GRI (The Global Reporting Initiative);
 - 2) GIIRS (Global Impact Investment Reporting System) launched by the B-Corp Institute;
 - 3) IRIS (Impact Reporting and Investment System) launched by GIIN (Global Impact Investing Network);
 - 4) IR (Integrated Reporting) launched by IIRC (International Integrated Reporting Council);
 - 5) SASB (Sustainable Accounting Standards Board);
 - 6) SROI (Social Return on Investment);
- etc.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

MIDA is more than reporting

Most of the initiatives to improve reporting are limited in scope, and to a great extent have the organization as the reporting entity.

MDIA has economic activity at the center with people the primary beneficiary, and the natural environment an integral part of the system and

- Profit
- People
- Planet
- Place
- Product

The core architecture of MDIA links efficiently with easily accessible data in conventional accounting and management systems.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

TruCost

Trucost is an organization that has made considerable progress in quantifying 'trucost'. Trucost, the organization, is based in the UK and has been associated with a number of the ground-breaking studies of the impact of product on the environment.

One of these reports was PUMA's Environmental Profit and Loss Account in 2010 that showed how little PUMA's owned operations were impacting environment, but how much impact on the environment was associated with the company's supply chain.

Another TruCost report was prepared for TEEB for Business Coalition about the Top 100 Externalities of Business. This report confirms the high natural capital cost that sectors like coal power generation, iron and steel production, cement manufacturing, cattle ranching, rice farming and wheat farming have on the environment.

The TEEB for Business Coalition is now the Natural Capital Coalition
TEEB stands for 'The Economics of Ecosystems and Biodiversity'

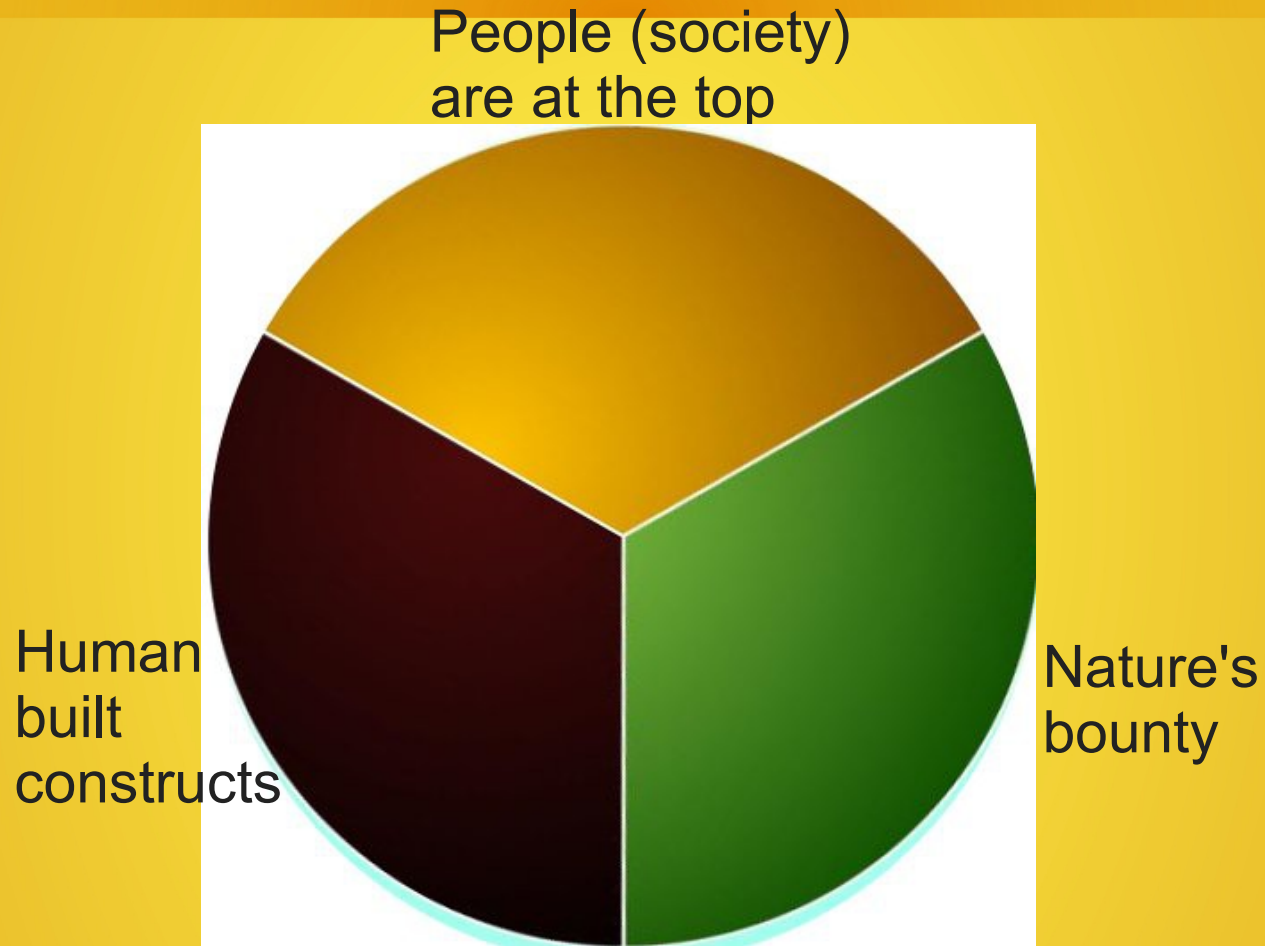
MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

ShrinkThat Footprint

ShrinkThatFootprint is an organization that is working to inform society about the impact of ordinary day to day decisions on the carbon footprint.

<http://ShrinkThatFootprint.com>

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)



MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

MDIA mapping

The idea of three core components sounds easy, but the reality is that society and the economy are incredibly complex.

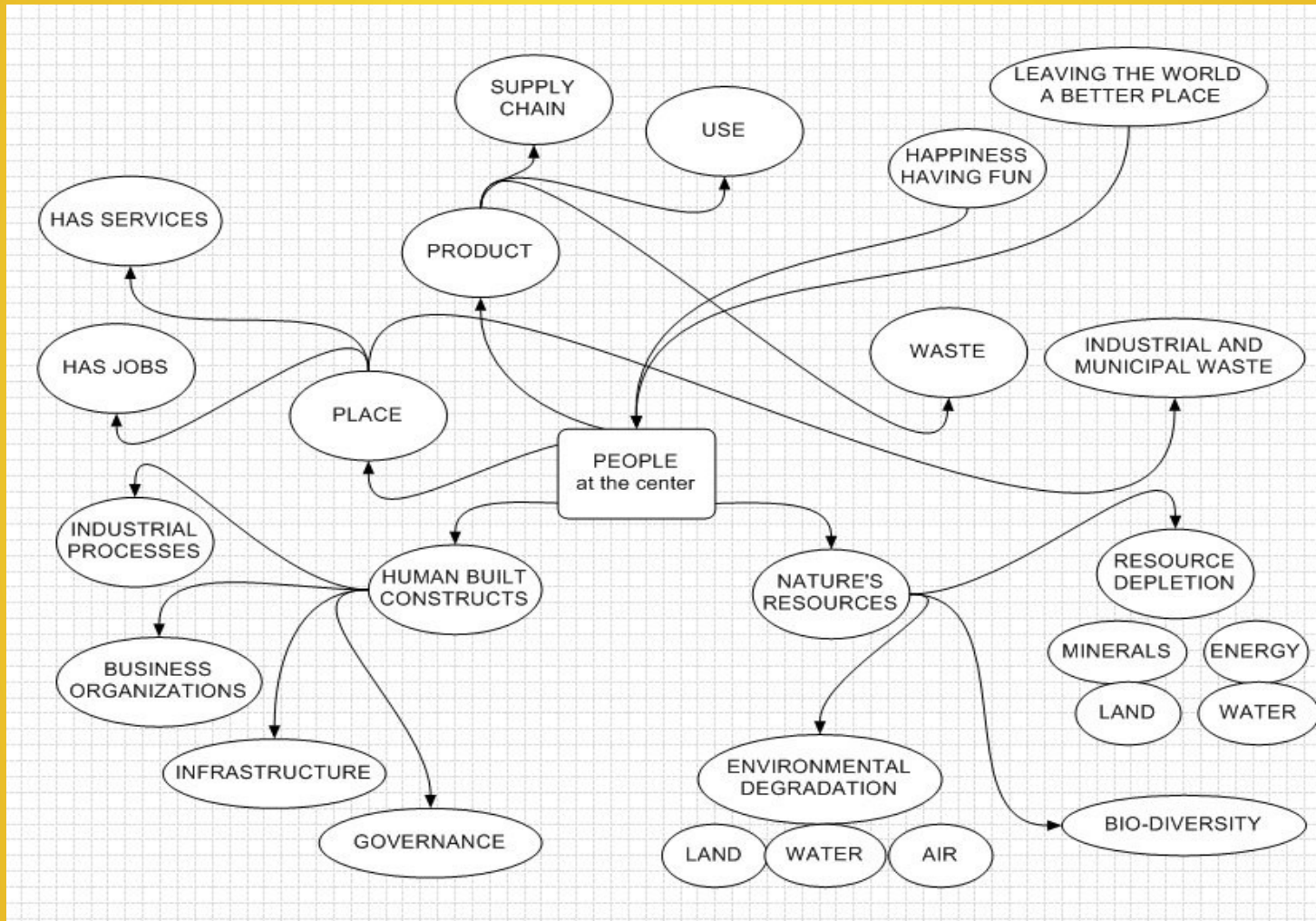
This becomes apparent in the following maps:

- 1) People at the Center
- 2) Organization at the Center
- 3) Product at the Center
- 4) Place at the Center

In reality, analysis of this level of complexity cannot be done with any reliability at all. There are simply too many variables.

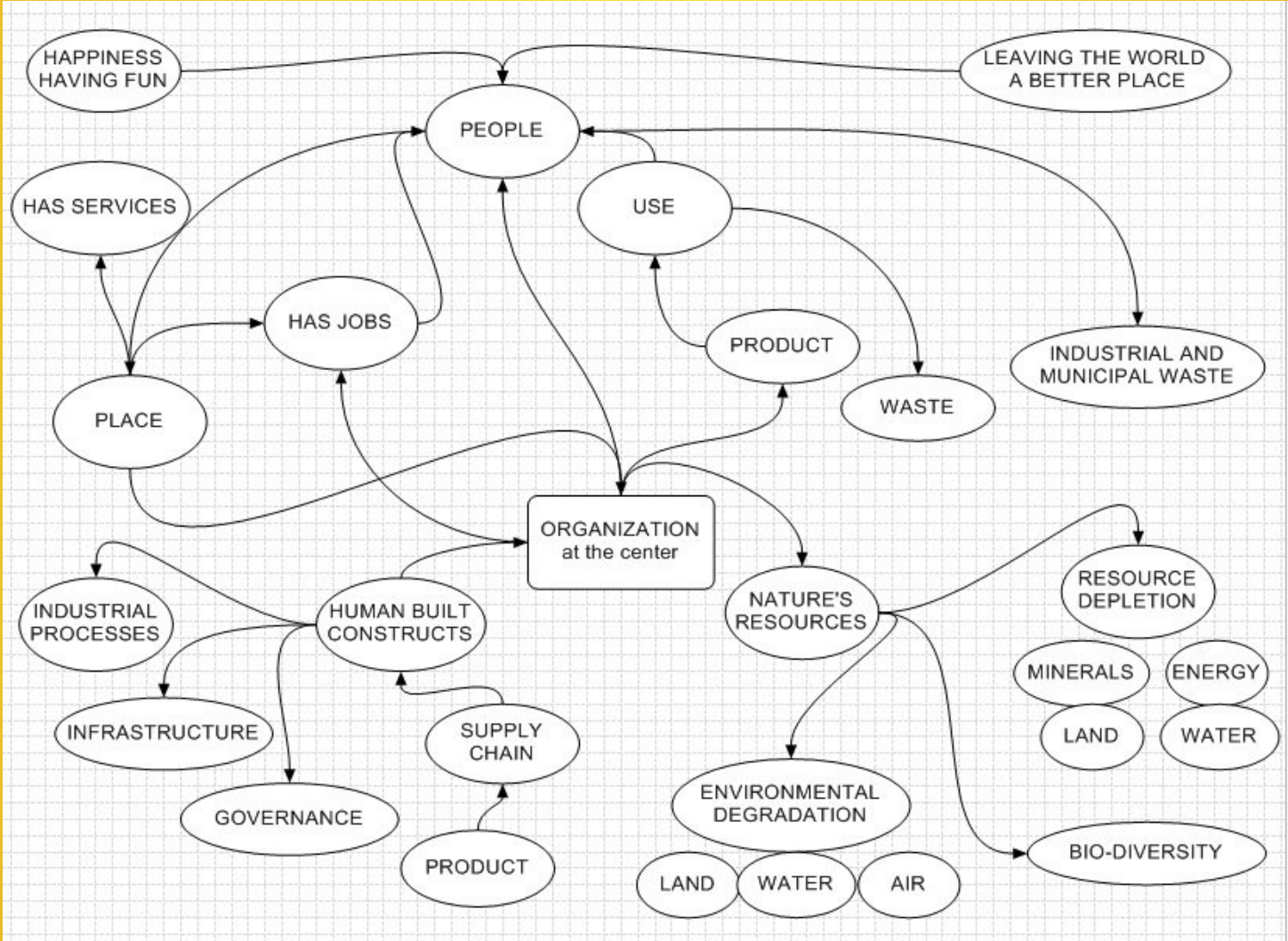
MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

MDIA map ... People at the Center



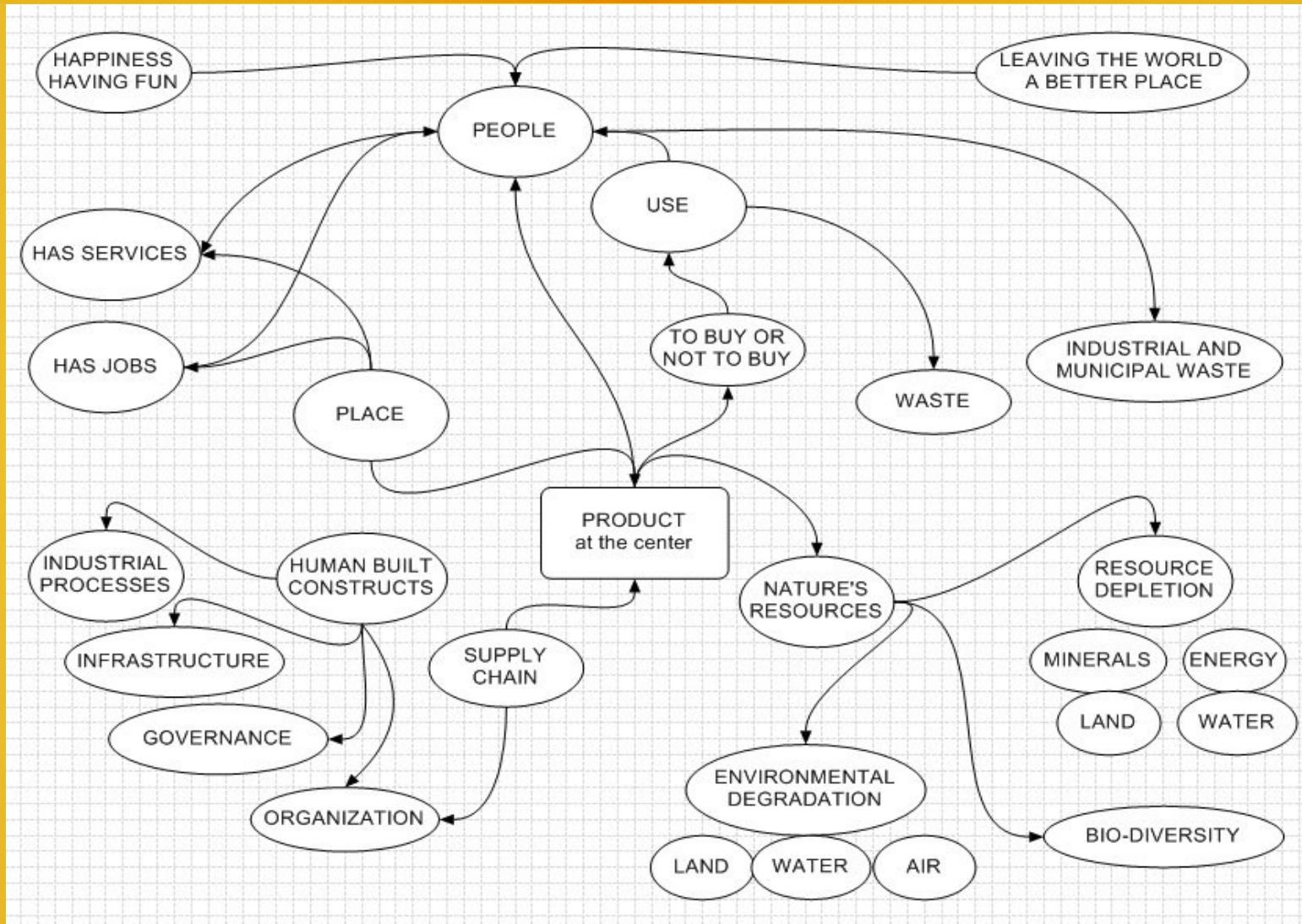
MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

MDIA map ... Organization at the Center



MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

MDIA map ... Product at the Center

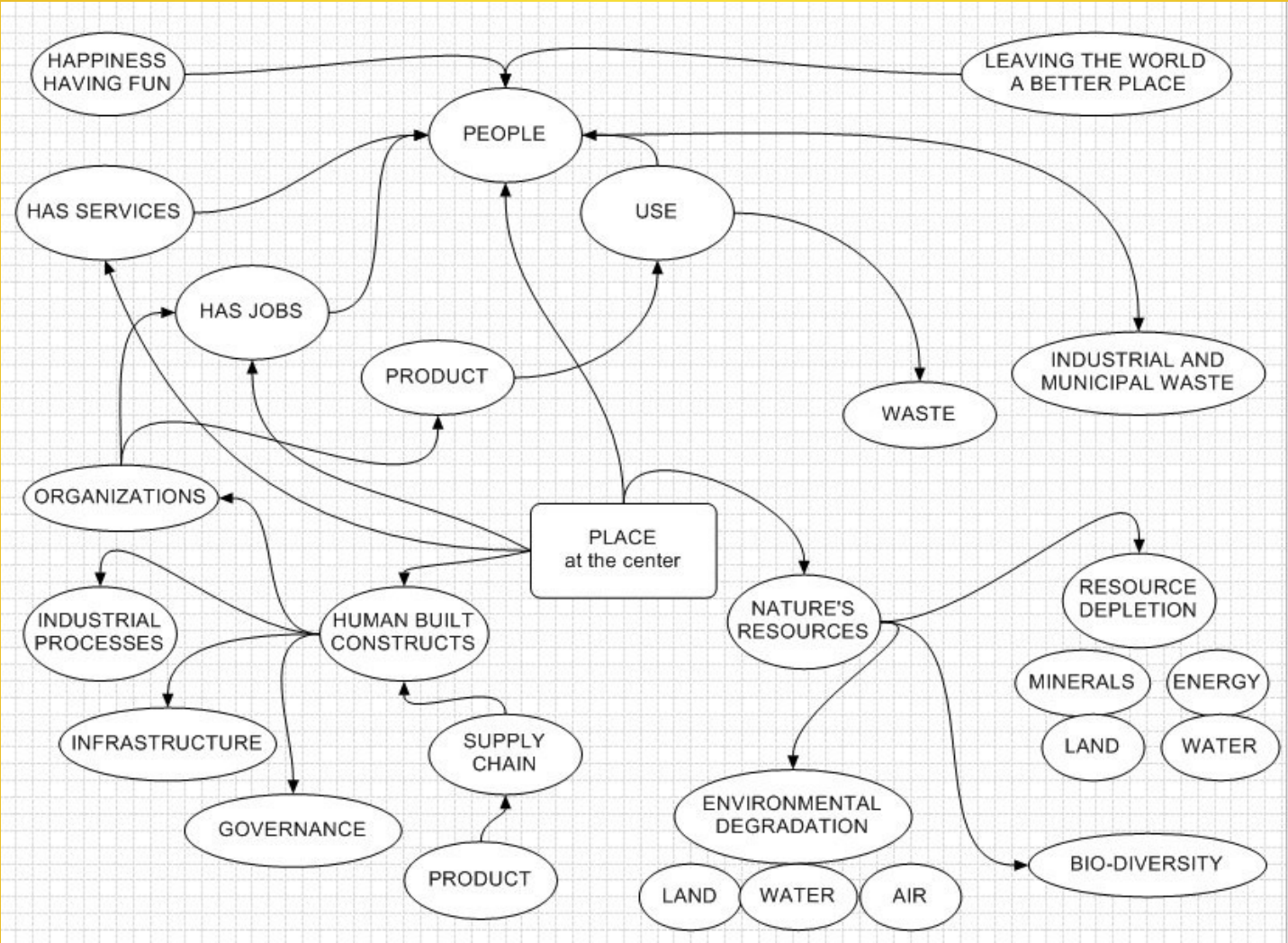


05/08/14 09:52 AM

C:\TVM\website\WebsiteTrueValueMetricsOrg\TVM-papers\MDIA-Diagrams\MDIA-Presentation-A-140507.odp

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

MDIA map ... Place at the Center



MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Accounting has been very successful over a very long time in organizing large amounts of financial data efficiently to manage large business organizations.

Transaction information is organized into 'accounts'.

Accounts are either 'balance sheet' or 'profit and loss accounts'.

Reporting for even very large organizations can be summarized in a simple widely understood manner.

MDIA does something very similar for every aspect of the broader society, the economy and the environment.

This is shown in the next few slides.

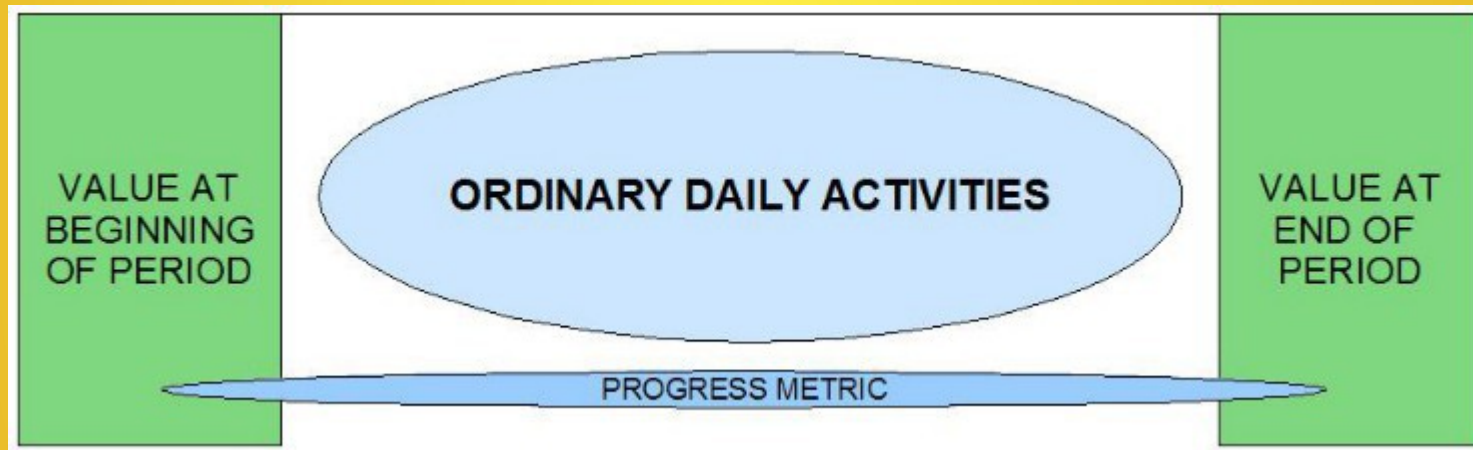
MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

So ... how to make this much simpler?

Beginning balance sheet

Period transactions

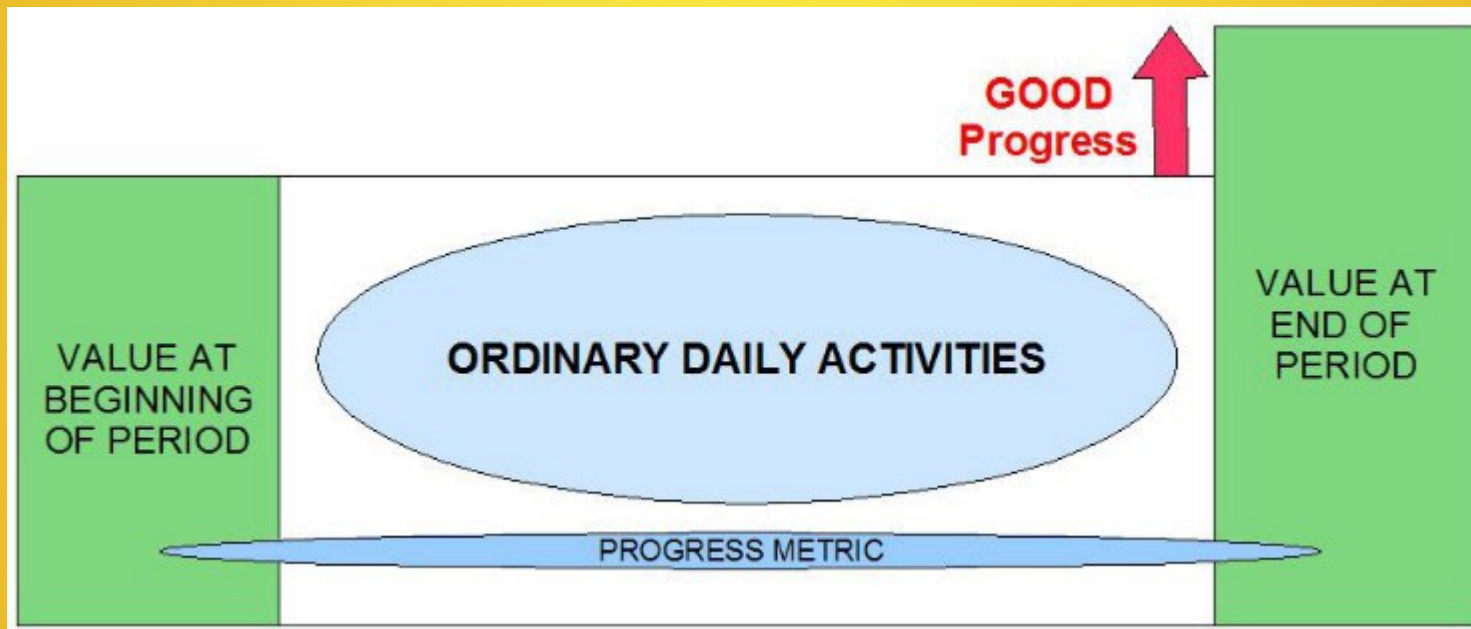
Ending balance sheet



This is the basic construct of money profit business accounting
The same construct may be used for value accounting

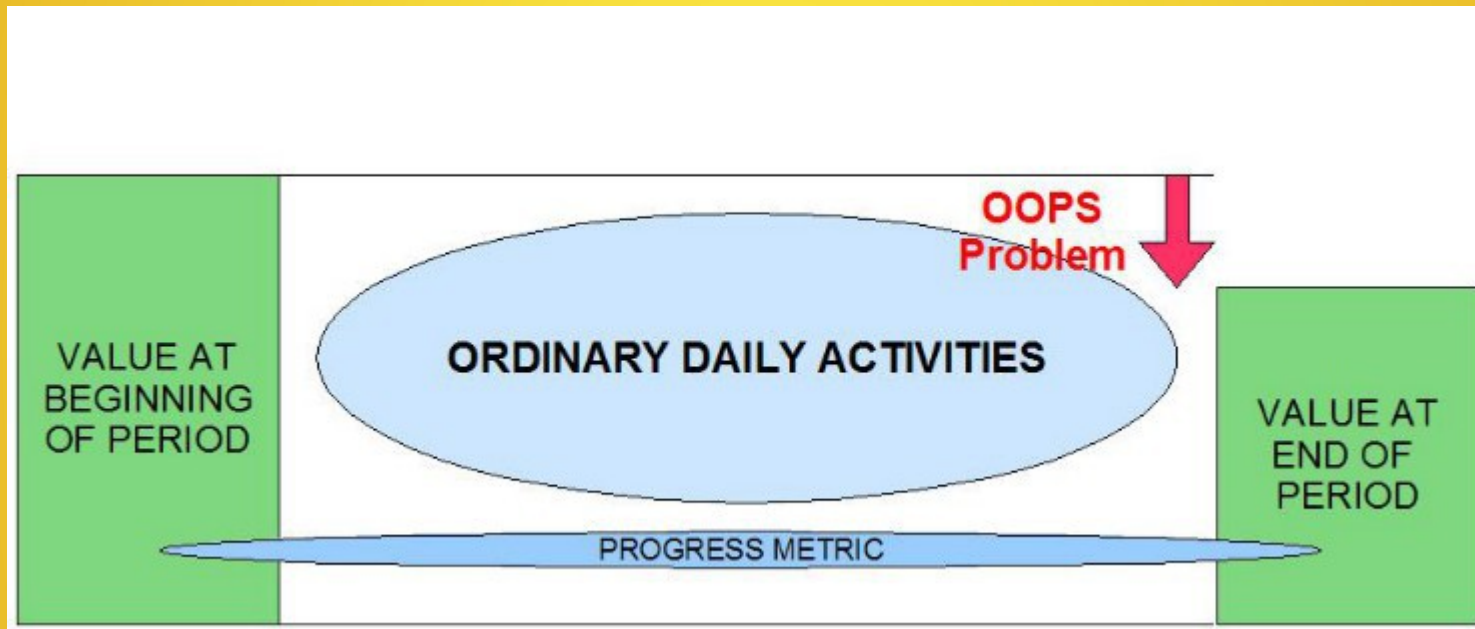
MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

So ... how to make this much simpler?



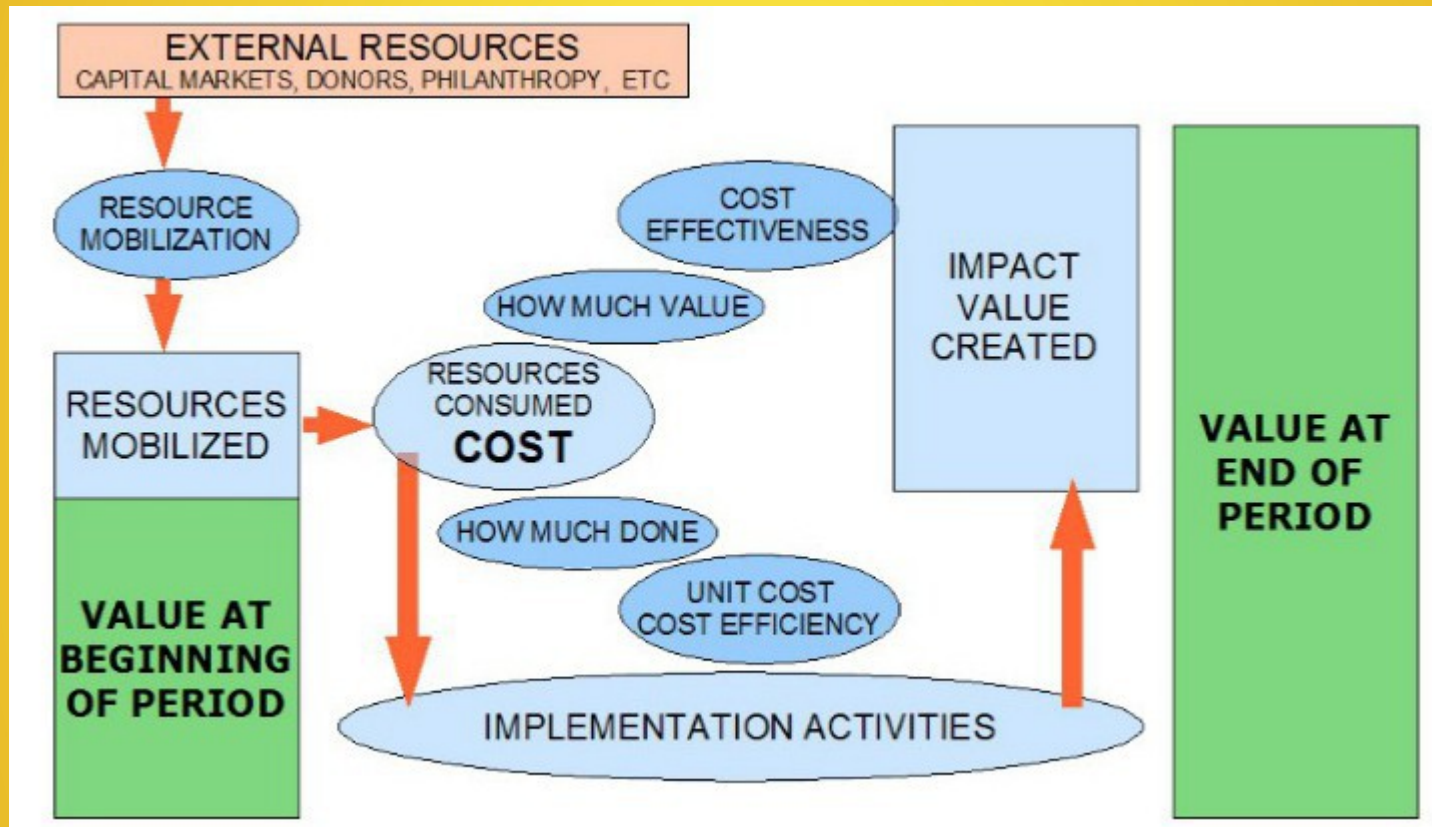
MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

So ... how to make this much simpler?



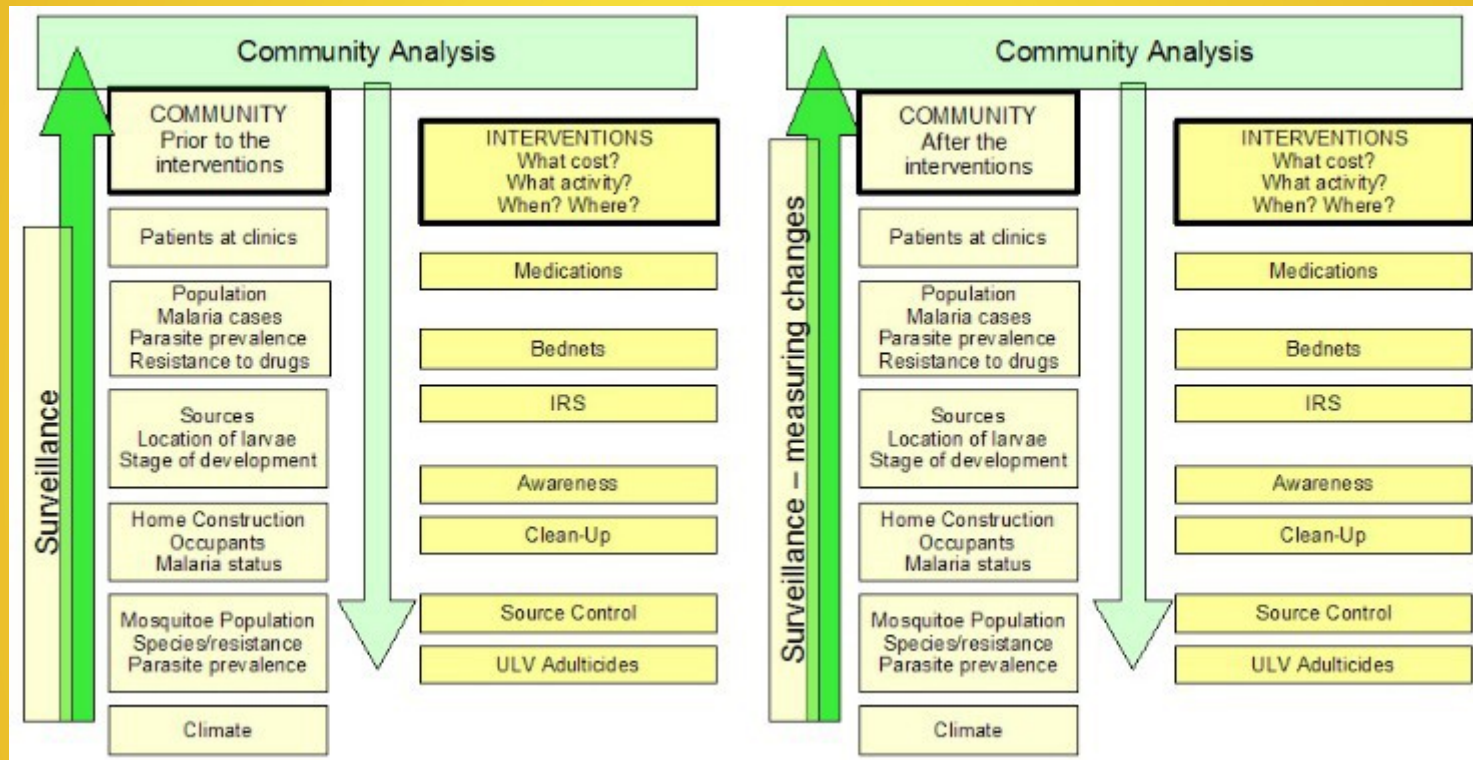
MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The underlying construct for MDIA is this:



MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The MDIA construct applied to malaria:



Note that the performance analysis is being done at the community level where specific interventions and specific impact are easy to measure

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The best data are low cost and high value

The lowest cost data are data that already exist and may simply be repurposed.

In an **organization** there are already conventional financial accounts and a variety of key performance indicators and other operating statistics. These existing data may be linked to MDIA style impact analysis.

A growing amount of data are becoming available about **place**. Such data needs to be organized so that it may be used for MDIA analysis. Additional data may be needed.

A substantial amount of data are available about **products and services**. Much of the data are related to product profitability and advertising initiatives, but similar data may be accumulated about all the impacts of products through the product life cycle.

Social media has a focus on the **individual**. Some of these data may be repurposed to support needed behavior change And the achievement of better quality of life with reduced lower impact on the environment.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

What do business accounts look like

A summary profit and loss account is going to have these elements:

- * Revenues
- * Cost of sales
- * Gross margin
- * Sales, general and admin costs
- * Financial costs
- * Taxes
- * Profit

It is not easy to determine impact on people and planet from this summary information ... but within these numbers there is a lot of useful information.

This includes items like:

- * Production / sales of products
- * Payroll
- * Purchase of products
- * Purchase of energy
- * Purchase of transportation

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Why is product important

Product is a key link that connects everything in the modern global economy.

As product flows one way through the supply chain, money flows in the other direction.

Product is used in an economic activity and new Product comes out of an economic activity.

People make a 'buy' or 'not to buy' decision for a product ... and this, in turn sends a signal to the producers and and the whole of the supply chain.

Product has a supply chain. Product also has impact during use, and then in the post use waste cycle.

To a great extend use of product is an important determinant of quality of life and standard of living.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

What is the impact of product

In conventional accounting product purchased and sold is recorded based on a simple money transaction at a price.

The elements of true cost that are included in the price summarize everything that has happened as this product has passed along the supply chain:

- * materials
- * energy
- * payroll
- * financial costs
- * taxes
- * pro-good expenses
- * profit

There are also beneficial impacts arising as follows:

- * benefits associated with payroll
- * benefits associated with taxes

There are also negative impacts arising as follows:

- * workplace safety
- * resource depletion
- * environmental degradation

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

What organizations are important

Organizations have organization which is missing elsewhere in society. The processes used by organizations are very important in the efficiency of society and the economy.

Organizations have optimized for profit for the past 200 years, and this continues wherever there is conventional money profit accounting.

This explains why electricity is generated using GHG producing coal fired generating stations rather than using renewables. This cannot change as long as money profit remains the dominant metrics

The cost of carbon pollution needs to be costed into the cost of energy everywhere energy is used.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Why place is important

Place is important because all living is done in a place, and all economic activity is done in a place.

It is possible to see things in a place. Without accounting
In a place, it becomes very difficult to have any meaningful accountability.

In my own career I have spend a lot of time in different places. What I have seen because of 'walking around' in a place has given me a perspective on the performance of society that has changed my life.

A specific example that I will never forget is the pollution associated with international oil company operations in the Niger Delta in Nigeria.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

PEOPLE

Individual
Family
Friends
Community
National Society
Global Society

PRODUCTS AND SERVICES

Food
Water
Shelter
Clothing
Energy
Health
Education
Transport
Security

HUMAN BUILT CONSTRUCTS

Place (cities, towns, etc)
Business organizations
Built infrastructure
Governance institutions
Rule of law
Civil society organizations

NATURE'S BOUNTY

Mineral resources
Energy resources
Land
Water
Air
Animal life (fauna)
Plant life (flora)

MDIA is based on the components shown on the left

Note the hierarchy:

- * People at the top
- * It is products and services that deliver quality of life
- * These are produced via human built constructs
- * Everything depends in the end on nature's bounty

High performance is having PEOPLE with a high standard of living and quality of life

AND

While making the least possible demand on NATURE'S BOUNTY

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

PEOPLE

Individual
Family
Friends
Community
National Society
Global Society

People are at the top of the MDIA analysis.

There is progress when people get a better quality of life (QoL) and standard of living.

PRODUCTS AND SERVICES

Food
Water
Shelter
Clothing
Energy
Health
Education
Transport
Security

More income and wealth is an element of QoL, but it is not the only one.

Other elements are:

- * Education, skills and experience;
- * Employment;
- * Access to job opportunities;
- * State of health;
- * Security;
- * Access to food and other products
- * Housing;
- * Family and friends;
- * Access to infrastructure;
- * etc

HUMAN BUILT CONSTRUCTS

Place (cities, towns, etc)
Business organizations
Built infrastructure
Governance institutions
Rule of law
Civil society organizations
Knowledge

What is the impact of people on the environment? This is largely a function of the consumption pattern of the people.

NATURE'S BOUNTY

Mineral resources
Energy resources
Land
Water
Air
Animal life (fauna)
Plant life (flora)

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

PEOPLE

- Individual
- Family
- Friends
- Community
- National Society
- Global Society

Note the role of **products and services** In this framework.

PRODUCTS AND SERVICES

- Food
- Water
- Shelter
- Clothing
- Energy
- Health
- Education
- Transport
- Security

It is products and services that give people their quality of life and standard of living.

Income or wealth makes it possible for people to buy products and services.

Income comes mainly from employment. Income may also come from the investment of wealth.

HUMAN BUILT CONSTRUCTS

- Place (cities, towns, etc)
- Business organizations
- Built infrastructure
- Governance institutions
- Rule of law
- Civil society organizations

Economic activities produce products and services. These require investment, and require labor.

NATURE'S BOUNTY

- Mineral resources
- Energy resources
- Land
- Water
- Air
- Animal life (fauna)
- Plant life (flora)

Getting this in equilibrium in the prevailing outdated monetary economy is difficult.

Money needs to be complemented by a unit of value

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

PEOPLE

Individual
Family
Friends
Community
National Society
Global Society

PRODUCTS AND SERVICES

Food
Water
Shelter
Clothing
Energy
Health
Education
Transport
Security

HUMAN BUILT CONSTRUCTS

Place (cities, towns, etc)
Business organizations
Built infrastructure
Governance institutions
Rule of law
Civil society organizations
Knowledge

NATURE'S BOUNTY

Mineral resources
Energy resources
Land
Water
Air
Animal life (fauna)
Plant life (flora)

Nature's Bounty is the foundation upon which everything rests. It is the origin of all the 'wealth' that presently exists for the benefit of humankind.

For most of history economic activity has been quite small relative to the environment. Over the past 200 years growth of economic activity now strains the natural environment.

* Depletion of natural resources;

- * Depletion of water resources;
- * Depletion of land;
- * Depletion of forests;
- * Depletion of mineral resources;
- * Depletion of energy resources
- * Depletion of biodiversity

* Degradation of the environment;

- * Water pollution ... rivers;
- * Water pollution ... oceans;
- * Water pollution ... aquifers
- * Land ... development
- * Land ... waste land fill
- * Air pollution ... particulates
- * Air pollution ... sulphur, nitrous oxides, etc
- * Air pollution ... greenhouse gases, CO2, methane

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

PEOPLE

- Individual
- Family
- Friends
- Community
- National Society
- Global Society

PRODUCTS AND SERVICES

- Food
- Water
- Shelter
- Clothing
- Energy
- Health
- Education
- Transport
- Security

HUMAN BUILT CONSTRUCTS

- Place (cities, towns, etc)
- Business organizations
- Built infrastructure
- Governance institutions
- Rule of law
- Civil society organizations
- Knowledge

NATURE'S BOUNTY

- Mineral resources
- Energy resources
- Land
- Water
- Air
- Animal life (fauna)
- Plant life (flora)

Note where **business organizations** are in this framework. They are just one part of the human built constructs

The purpose of such organizations is to produce PRODUCTS AND SERVICES in the most efficient way possible.

Efficient is defined as the most good (that is valuadd, with the least consumption of value.

This is similar to business profit and ROI except substituting value units for money

There needs to be a mechanism to reward investors when they invest for good just as there is when they invest for profit.

Maybe this can be accomplished with a construct like a Social Capital Market.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

PEOPLE

Individual
Family
Friends
Community
National Society
Global Society

PRODUCTS AND SERVICES

Food
Water
Shelter
Clothing
Energy
Health
Education
Transport
Security

HUMAN BUILT CONSTRUCTS

Place (cities, towns, etc)
Business organizations
Built infrastructure
Governance institutions
Rule of law
Civil society organizations
Knowledge

NATURE'S BOUNTY

Mineral resources
Energy resources
Land
Water
Air
Animal life (fauna)
Plant life (flora)

Place is a key component of MDIA because it is place where everything of society and the economy is located.

All economic activity is located in a place. The economic activity is where people work and get paid. People live in a place.

Pollution occurs in a place, and it may be identified in a place by simple observation.

* Depletion of natural resources;

- * Depletion of water resources;
- * Depletion of land;
- * Depletion of forests;
- * Depletion of mineral resources;
- * Depletion of energy resources
- * Depletion of biodiversity

* Degradation of the environment;

- * Water pollution ... rivers;
- * Water pollution ... oceans;
- * Water pollution ... aquifers
- * Land ... development
- * Land ... waste land fill
- * Air pollution ... particulates
- * Air pollution ... sulphur, nitrous oxides, etc
- * Air pollution ... greenhouse gases, CO2, methane

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Quantification of Value

You only manage what you measure.

In order to measure, there must be a generally accepted way to quantify value

Up to now the main thrust has been to put a money value on different elements that go into the making of impact.

While this may be helpful, it introduces all the Issues associated with money.

MDIA simple quantifies ALL values relative to each other, without any reference to how these quantities exchange into money.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Quantification of Value

A database of standard values is to be being built.

This database will be updated using a simple crowdsourcing approach.

Small sets of 'standard values' will be presented to users who will give their version of relative values.

The database will be updated with additional values.

Summary benchmark values will be calculation from time to time to reflect the updated data

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Quantification of Value

The 'anchor' for the system of standard values has been derived from the following:

A newborn child has a standard value of 1 million (1,000,000) standard value units (SVUs)

A human life has this standard value.

Depending on all the factors that are part of the MDIA framework, this standard value adjusts to reflect all factors that go into the quality of life (QoL) of the individual.

A newborn child born to a relatively well-to-do family in (say) Germany, will retain a value of 1 million SVU. On the other hand, a newborn child born in a remote part of (say) Somalia will have much lower value as a result of deficits in almost everything that is needed to sustain the norm.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Quantification of Value

More examples:

A newborn child born to a relatively well-to-do family in (say) Germany, will retain a value of 1 million SVU. On the other hand, a newborn child born in a remote part of (say) Somalia will have much lower value as a result of deficits in almost everything that is needed to sustain the norm.

A person in their 70s is unlikely to have retained a value of 1 million SVUs, in large part because expectation of life is now quite short. The value may be something like 500,000. On the other hand QoL may be quite good if health is good. However, the moment that health deteriorates, the value drops dramatically to (say) 200,000 or lower.

A person going through university has many threads associated with their value. As they acquire more learning, the value goes up, But there are expenses associated with the learning so another component of the value goes down. If the job opportunities are good the value tends upward, but if the job opportunities are poor the value tends downward.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Economic Activity - Payroll

For the organization

Payroll is a cost. Improvement in productivity means that more production is possible with less payroll.

In turn this means that payroll can be reduced and profits can be increased.

For people, for society

But what is the impact on the individual when he/she loses his/her job and no longer is earning \$40,000 a year.

And what happens to the family that is not getting an amount of \$40,000 from the job remuneration.

And what happens to the community that used to have this money flowing through the local businesses.

The profit of the organization has increased by some amount ... say \$40,000 less the annualized cost of the productivity improvement investment

The negative impact on society is \$200,000 made up as follows:

- * The impact on the individual ... \$40,000;
- * The impact on the family ... \$40,000 ; and
- * The local multiplier impact on the community (probably between 2 and 4 (say 3) ... \$120,000

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Economic Activity - Purchased Materials

For the organization

Purchased materials have a money cost, and this cost reduces profit by the money cost of the purchases. Efficient processes and product design reduces this cost and increases profit.

Purchased materials carry within them the whole history of the supply chain which should be taken into account. This is done using a standard value. The standard value incorporates a value chain profile for each of the purchased materials.

The blended performance of profit and impact is determined by using standard values for each of the purchased materials.

For society and the environment

There is a positive social impact in the supply chain as a result of jobs and pay sometimes offset by a dangerous workplace.

There is a negative impact in the supply chain because of impact on the environment

- * Resource depletion ...
- * Environmental degradation ... associated with extraction
- * Environmental degradation ... associated with transportation
- * Environmental degradation ... associated with refining
- * Environmental degradation ... associated with burning fuels

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Economic Activity - Energy Use

For the organization

Energy use has a cost, and this cost reduces profit by the money cost of energy use. Efficient buildings and processes reduces energy use and increases profit.

Where fossil fuel energy has a lower money cost than renewable energy from wind or solar, profit is maximum with fossil fuels.

The blended performance of profit and impact is determined by using standard values for each of the energy accounts. The standard value incorporates a value chain profile for each energy type.

For society and the environment

The negative impact on society of fossil fuels includes:

- * Resource depletion ...
- * Environmental degradation ... associated with extraction
- * Environmental degradation ... associated with transportation
- * Environmental degradation ... associated with refining
- * Environmental degradation ... associated with burning fuels

The negative impact on society of renewable energy sources is substantially lower than for fossil fuels.