



MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Peter Burgess

May 2014

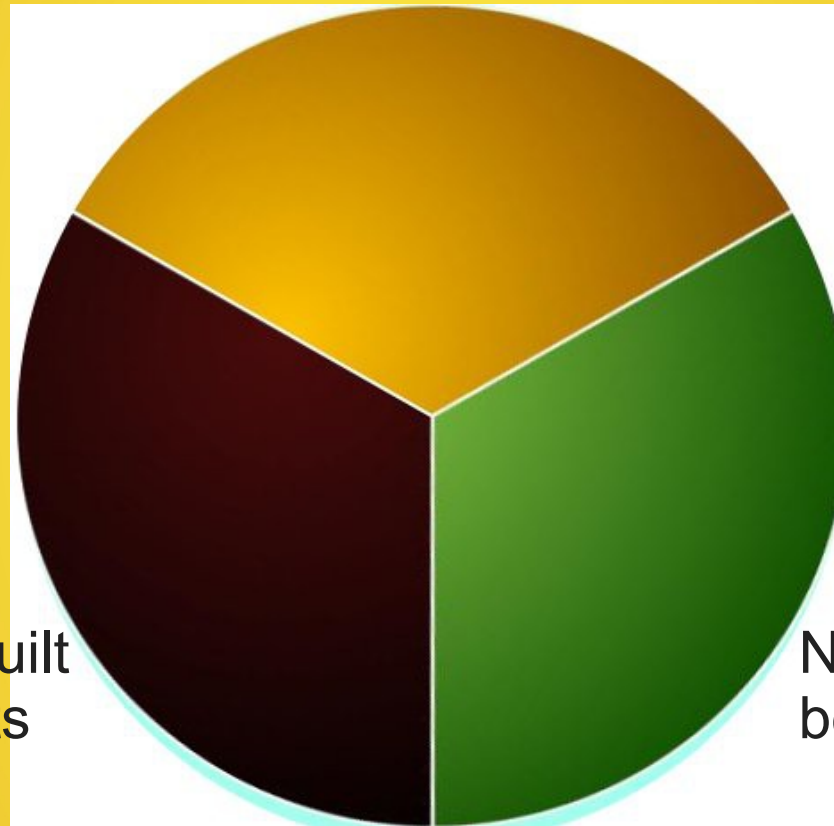
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MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

The FRAMEWORK for Measurement

People (society)



People built
constructs

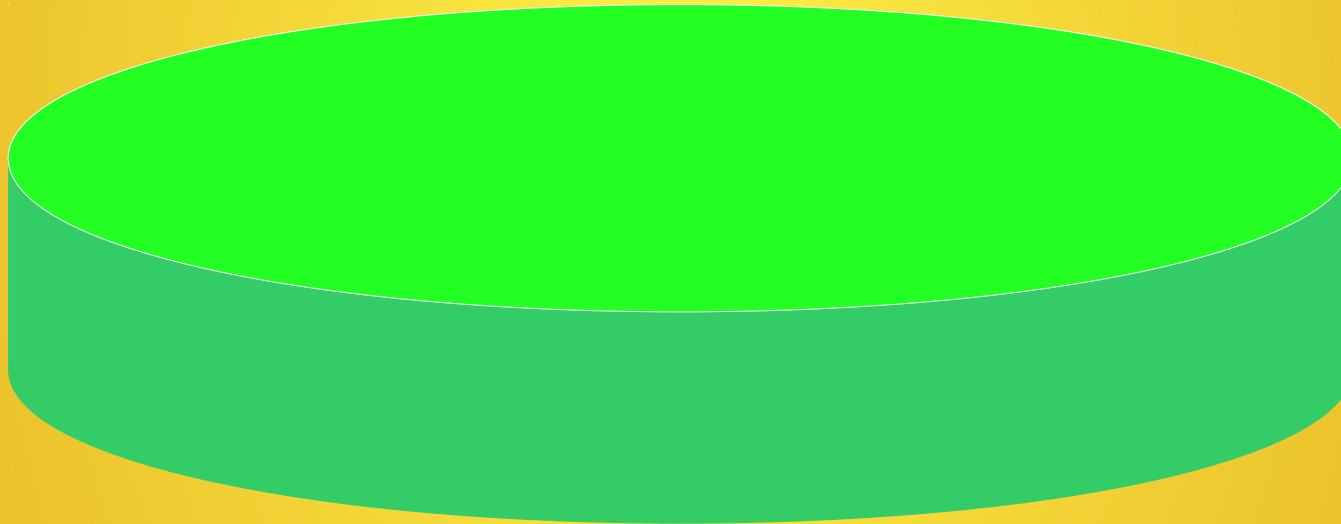
Nature's
bounty

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This is NATURE'S BOUNTY. It is everything that

- is on the earth; and
- is in the earth; and
- comes from the sun.



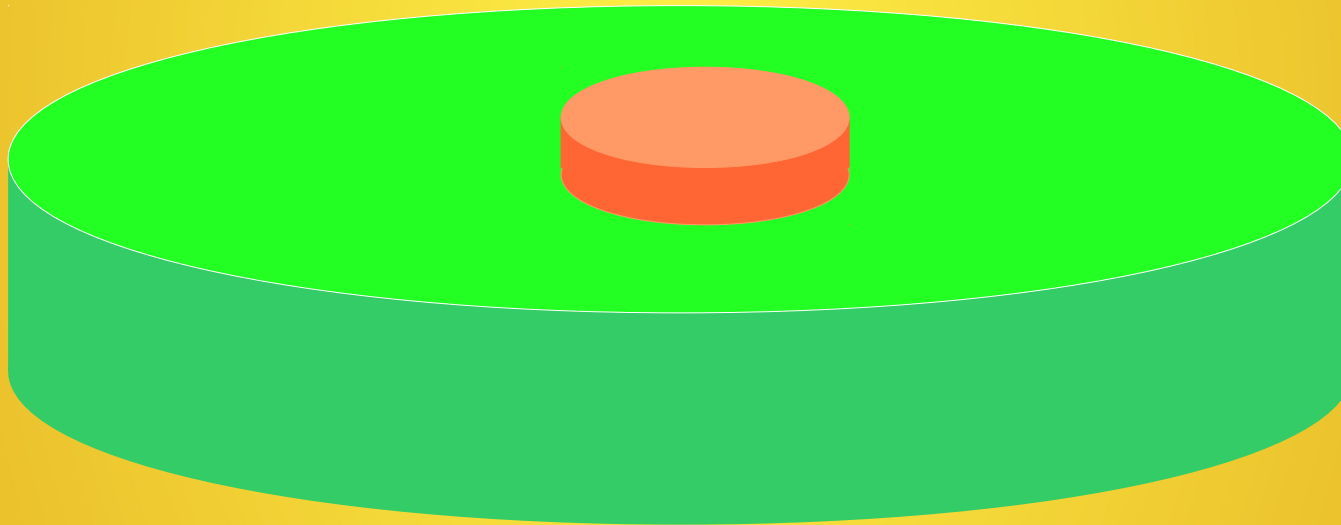
NATURE'S BOUNTY is finite in size

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PEOPLE live on the planet earth.

Everything that people use to live their lives comes from planet earth in some form or other

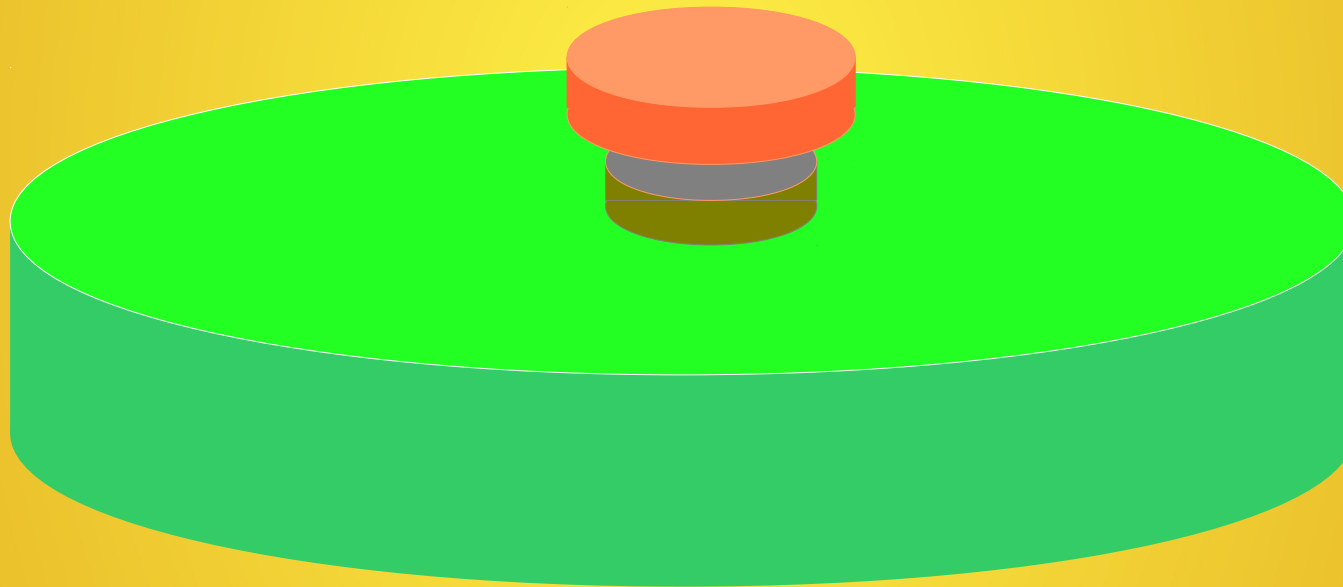


In the beginning PEOPLE were small relative to NATURE'S BOUNTY

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Over time PEOPLE constructed a complex that enabled a better quality of life

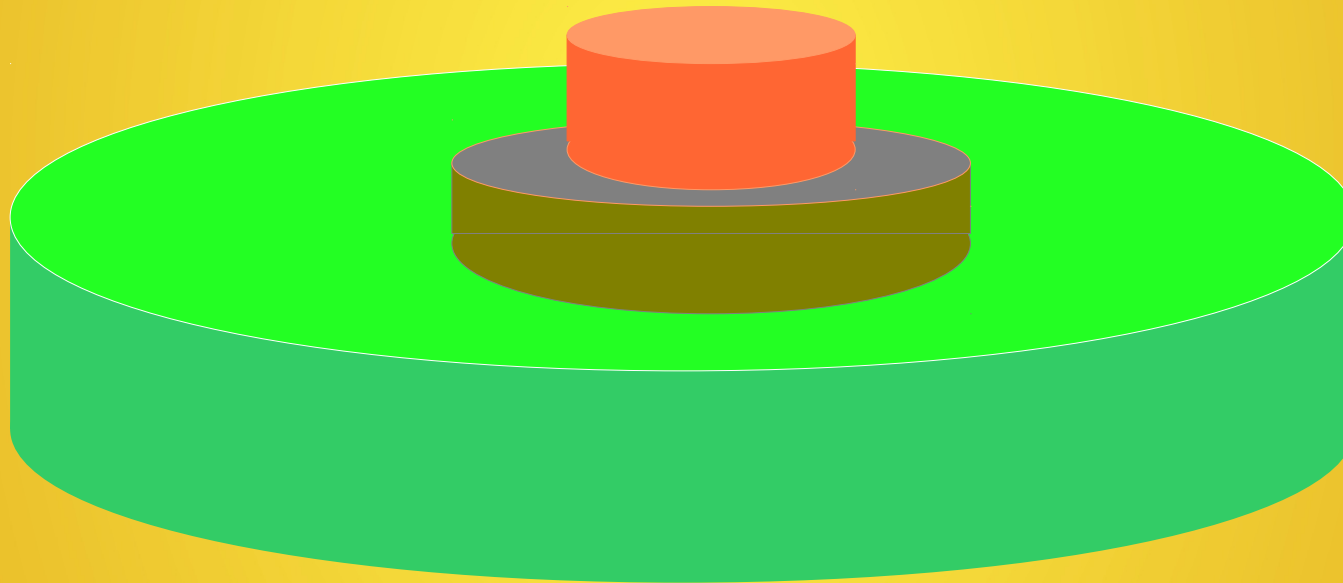


In the beginning the PEOPLE BUILT complex was small relative to NATURE'S BOUNTY.

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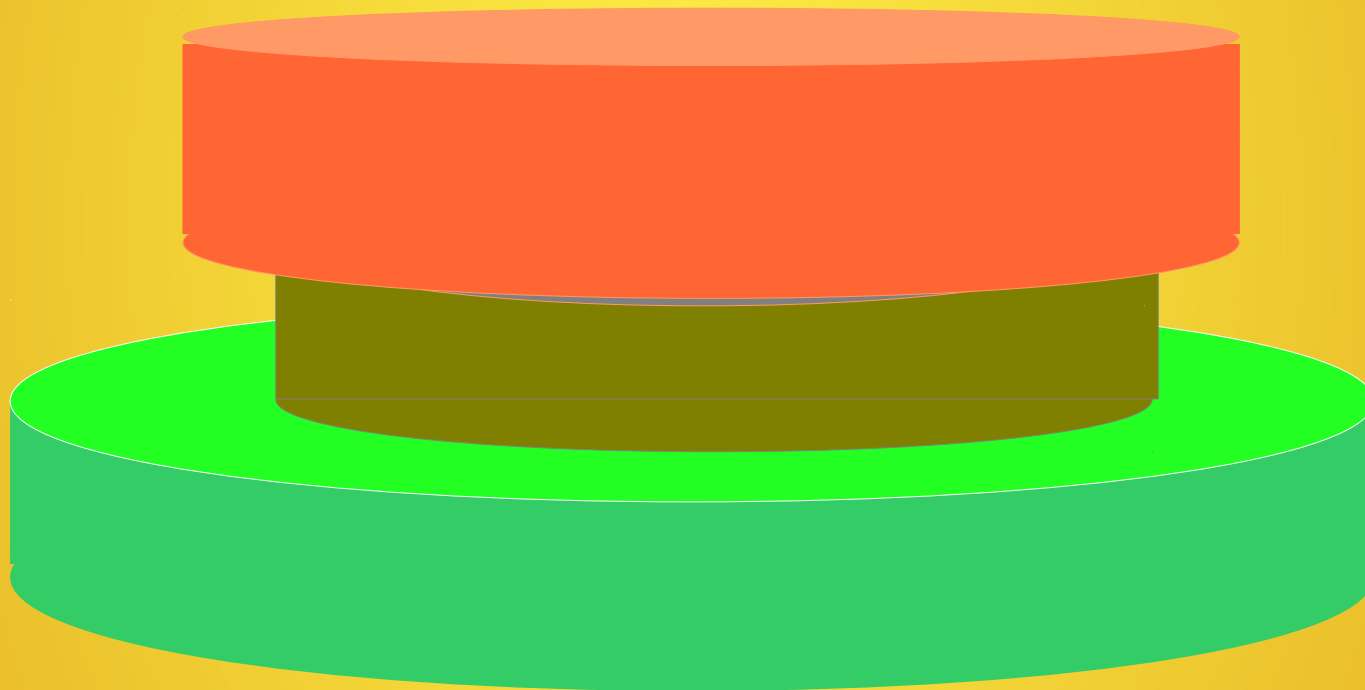
... and this PEOPLE BUILT complex grew bigger and quality of life got better ...



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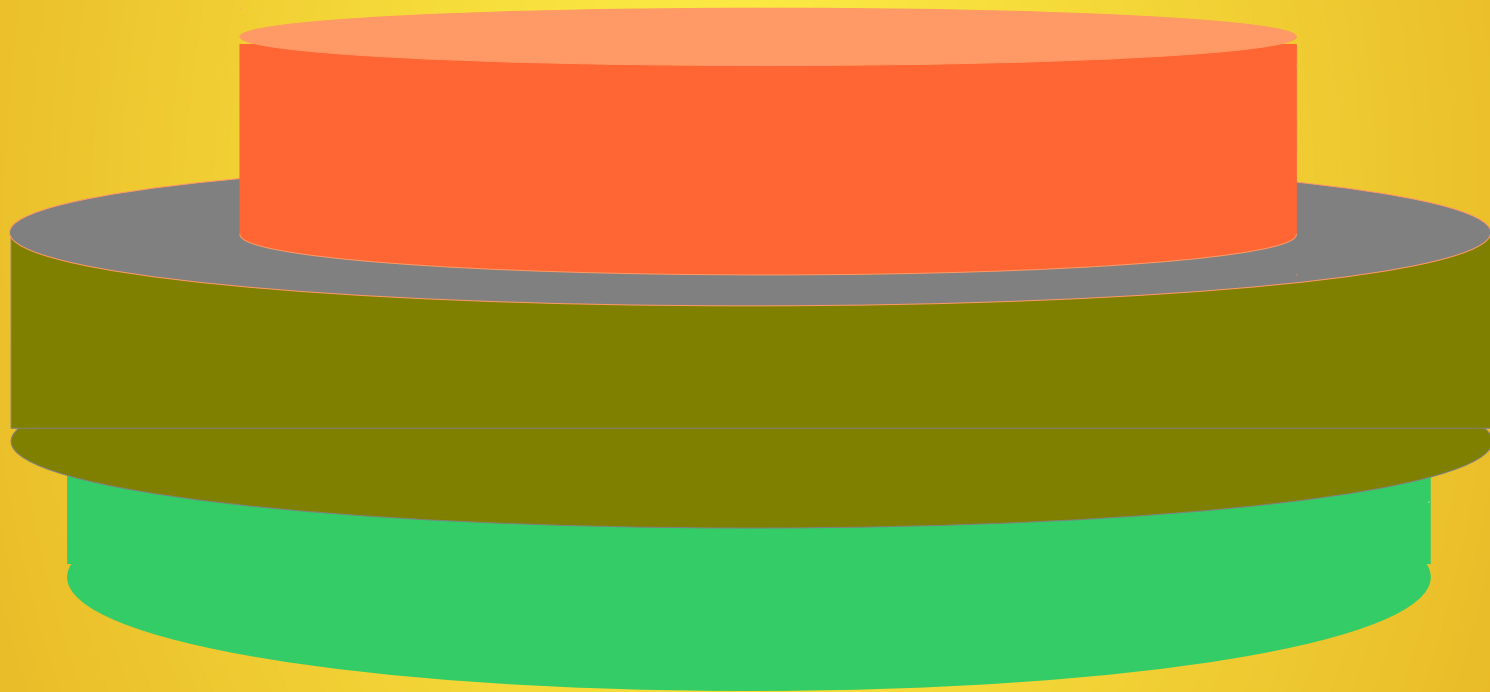
... and this PEOPLE BUILT complex grew bigger and quality of life got better ... and population gets bigger ...



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... until the system looks like this ... and ...



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... and then like this ...



... with nature's bounty being compromised

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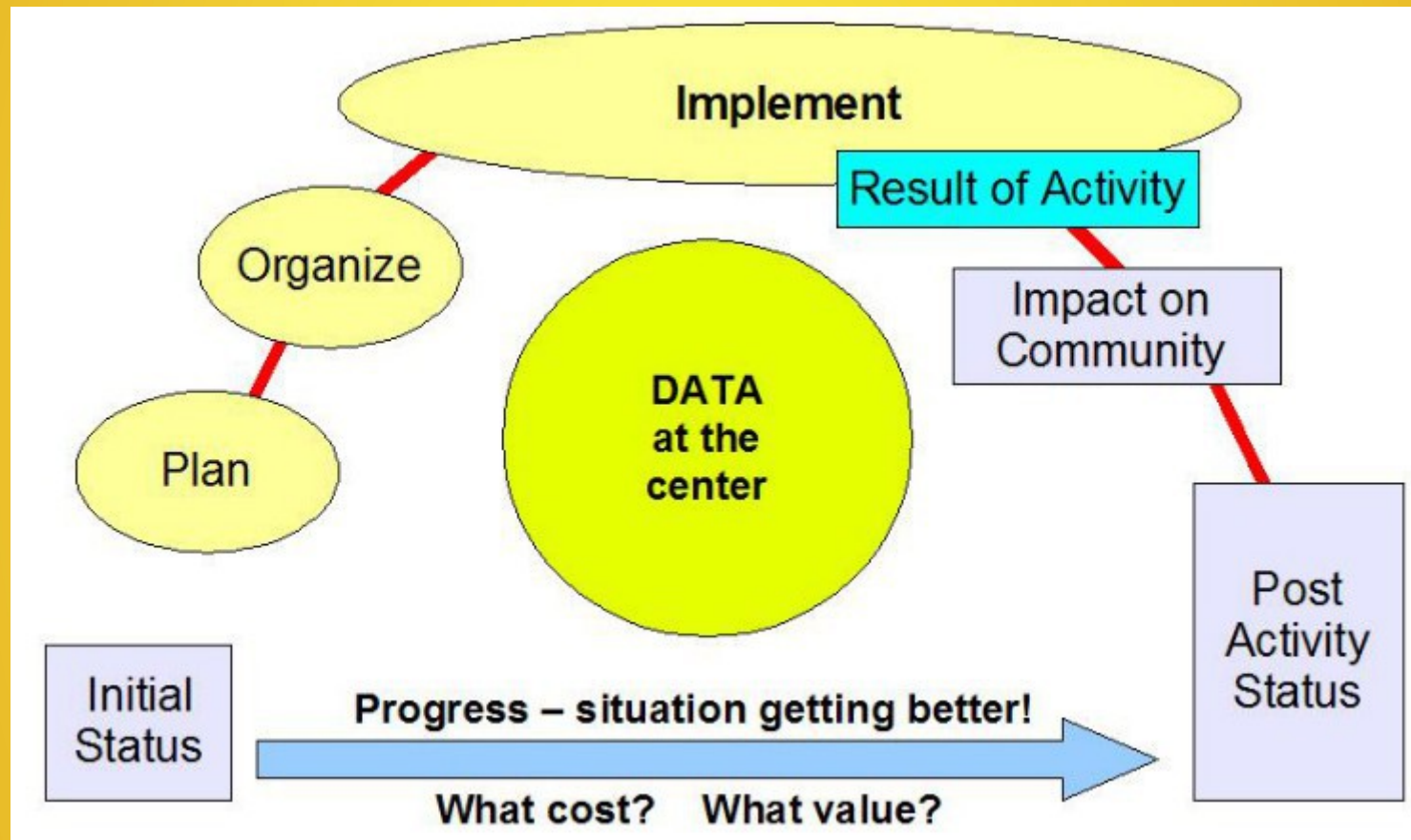
The FRAMEWORK for Measurement

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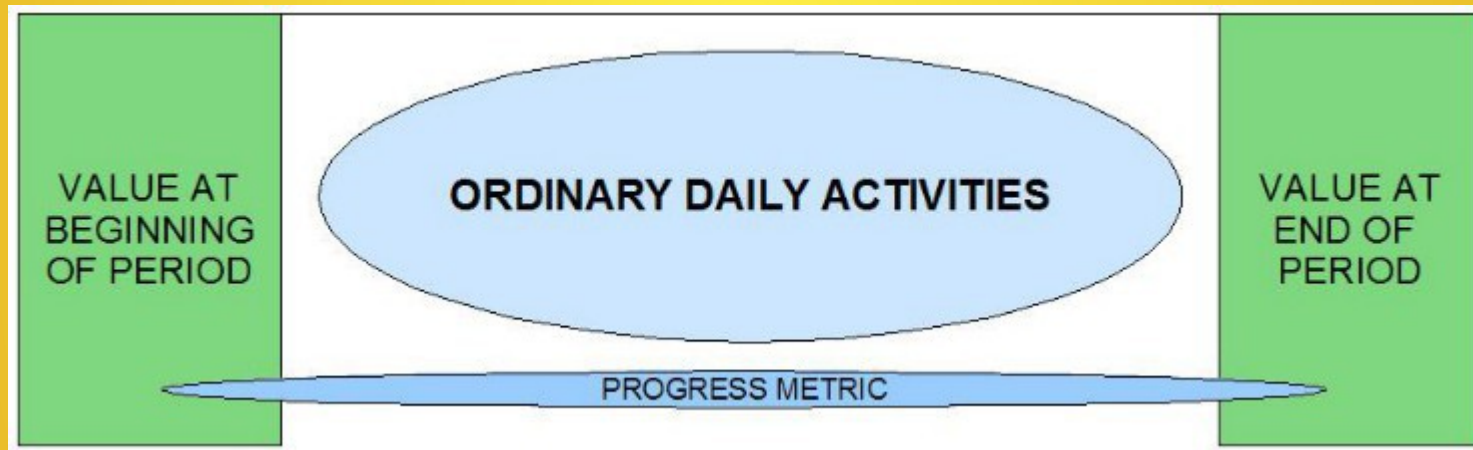
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Beginning balance sheet

Period transactions

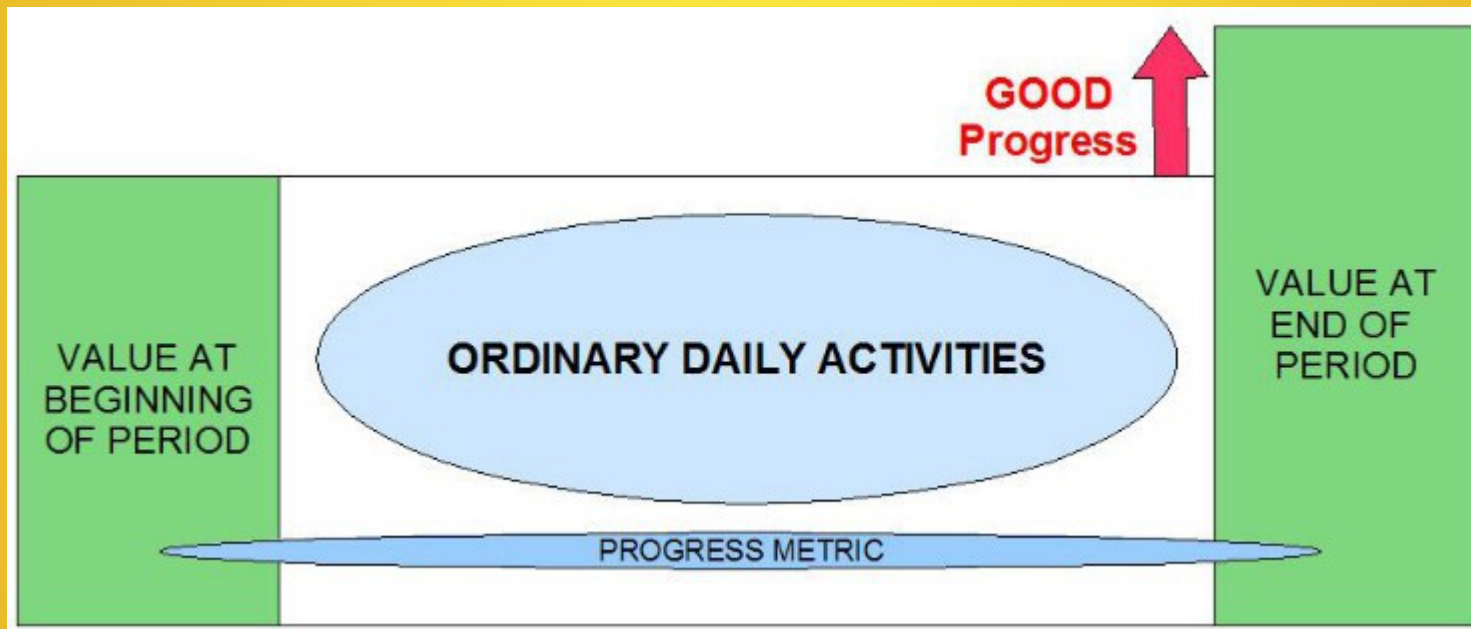
Ending balance sheet



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

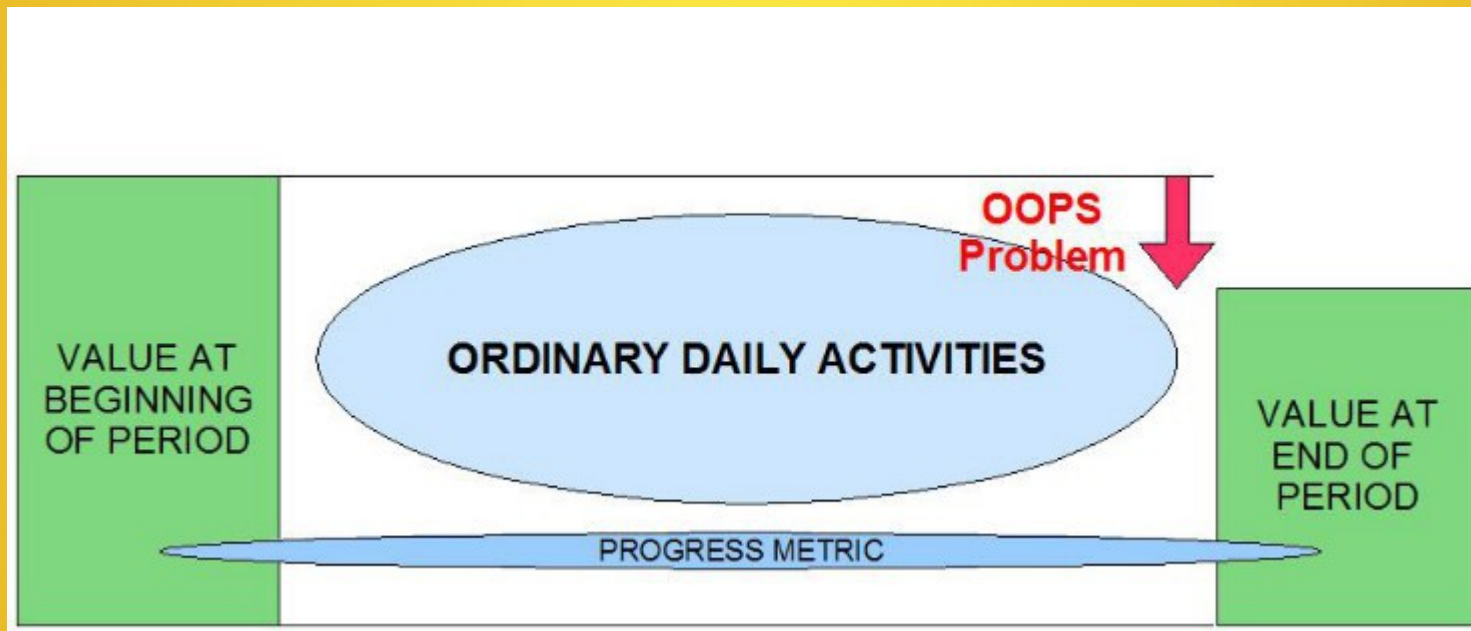
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The FRAMEWORK for Measurement



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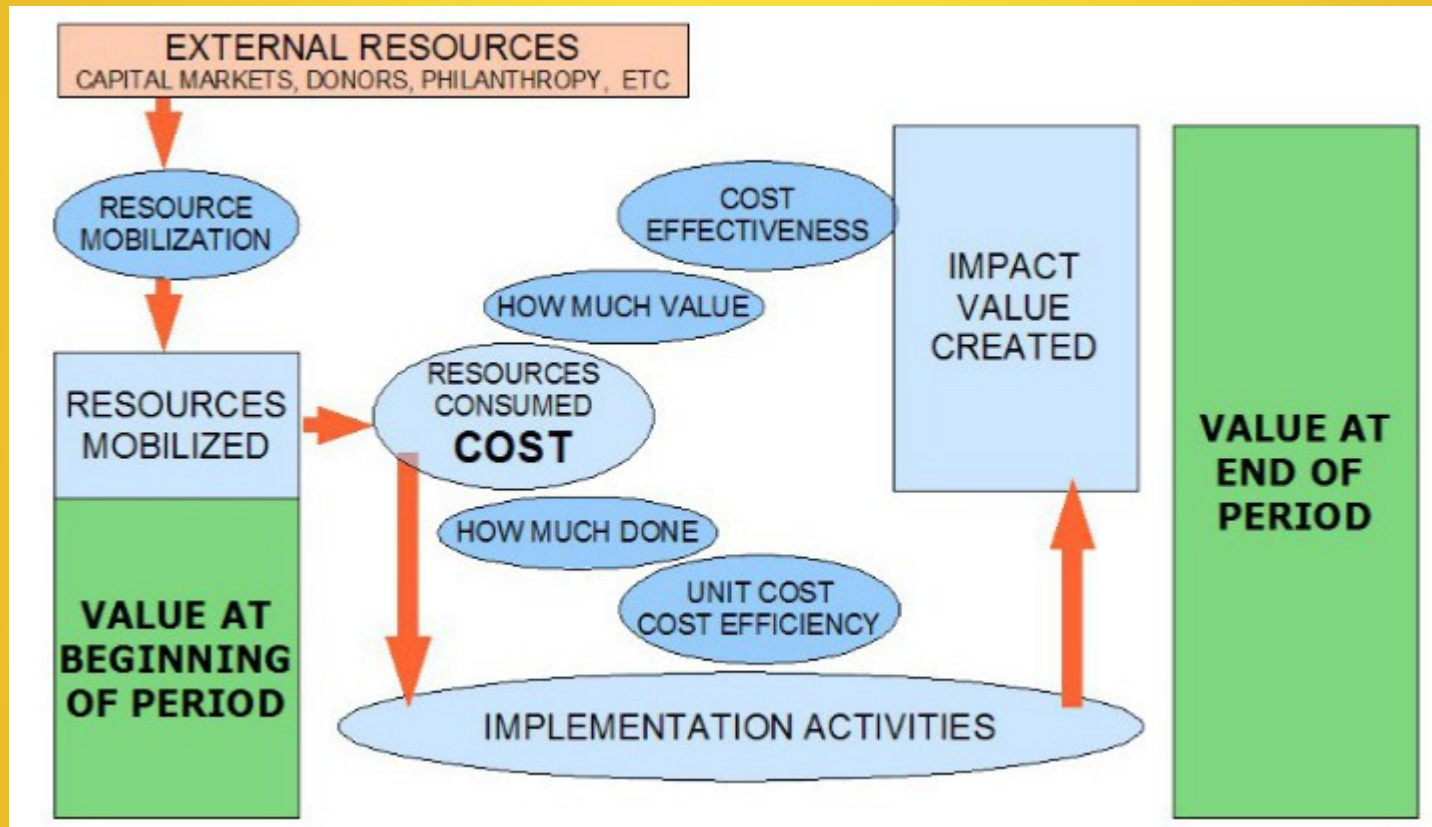
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The FRAMEWORK for Measurement

The key idea is that you can measure progress during a period by comparing the 'State' from the beginning to the end of the period.

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The underlying construct for MDIA is this:



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The **PURPOSE** of MDIA

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

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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.

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The **PURPOSE** of MDIA

You manage what you measure

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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)

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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.

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Every sport has sophisticated metrics ...

But in the game of life ... the only metrics are
wrong metrics!

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

This is not the first time!

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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.

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

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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.

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The PURPOSE of MDIA

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

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Metrics have to be:

- Easy to understand;
- Quick to produce;
- Low cost;
- Believable;
- Relevant;
- And the list goes on ...

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The **PURPOSE** of Economic Activity

The **PURPOSE** of economic activity is to sustain and improve quality of life and standard of living.

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

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.

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The PURPOSE of Economic Activity

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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.

This is not what has been taught at prestigious business schools for the past 50 years.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

Limitations of Conventional Accounting

- Conventional accounting is organization centric;
- It is only about money transactions;
- It is about impact of transactions on profit; and
- It is about how profit impacts stock price.

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EXTERNALITIES ARE IGNORED

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Limitations of Conventional Accounting

The ignored externalities are big and many:

- Impact on PEOPLE
- Impact on COMMUNITY / PLACE
- Impact on PLANET
 - ◆ Resource depletion
 - ◆ Environmental degradation

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Limitations of Conventional Accounting

Product cost is incomplete:

- It is only about the money transaction

There is a history of the product in the supply chain that is ignored

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There is a history of the product in the supply chain that must be integrated into the product trucost:

- People impact ... good and bad;
- Taxes paid ... or not paid;
- Raw materials consumed;
- Impact on resource depletion;
- Energy consumed;
- Impact on environmental degradation;
- Profits earned.

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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.

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We need to look at the world in a very different way

LABOR ... 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 and standard of living is diminished.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

We need to look at the world in a very different way

COMMUNITY ... because of technology it has been possible to have globalization, and the role of the local community has been diminished. This has had a detrimental impact on quality of life.

When issues like energy use are taken into account, some of advantages of technology and globalization are no longer positive.

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CONSUMPTION ... poor people who have little benefit from being able to have higher consumption.

There is a point where more consumption has relatively little impact on quality of life.

We have a situation where there is more and more consumption, but this is not because it is needed to improve quality of life but because the corporate business model is based on more and more sales to produce more and more profit.

Whether or not this improves quality of life is of no concern to most business organizations.

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)

We need to look at the world in a very different way

LABOR ... 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 and standard of living is diminished.

With more productivity PEOPLE should be having a better quality of life than ever before.

This will only happen when the 'business model' has people at the center and not profit.

See the Johnson and Johnson business 'credo'

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We need to look at the world in a very different way

The Johnson and Johnson Credo.

Some things are written in stone ...



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We need to look at the world in a very different way

The Johnson and Johnson Credo.

EXTRACTS:

'We are responsible to the doctors, nurses and patients, to mothers and fathers and all others who use our products and services ...

'We are responsible to our employees ...

'We are responsible to the communities in which we live and work ...

'Our final responsibility is to our stockholders ...

This was written in 1943 just before the company went public!

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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

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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.

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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.

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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.

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More initiatives

Some of the these are:

- 1) Trucost
 - 2) CDP (formerly the Carbon Disclosure Project)
 - 3) PUMA's Environmental Profit and Loss Account
 - 4) TEEB (The Economics of Ecosystems and Biodiversity)
 - 5) Natural Capital Coalition (formerly TEEB for Business)
 - 6) ShrinkThatFootprint
- etc.

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MIDA is accounting ... the basis for 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.

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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'

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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>

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MDIA mapping

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

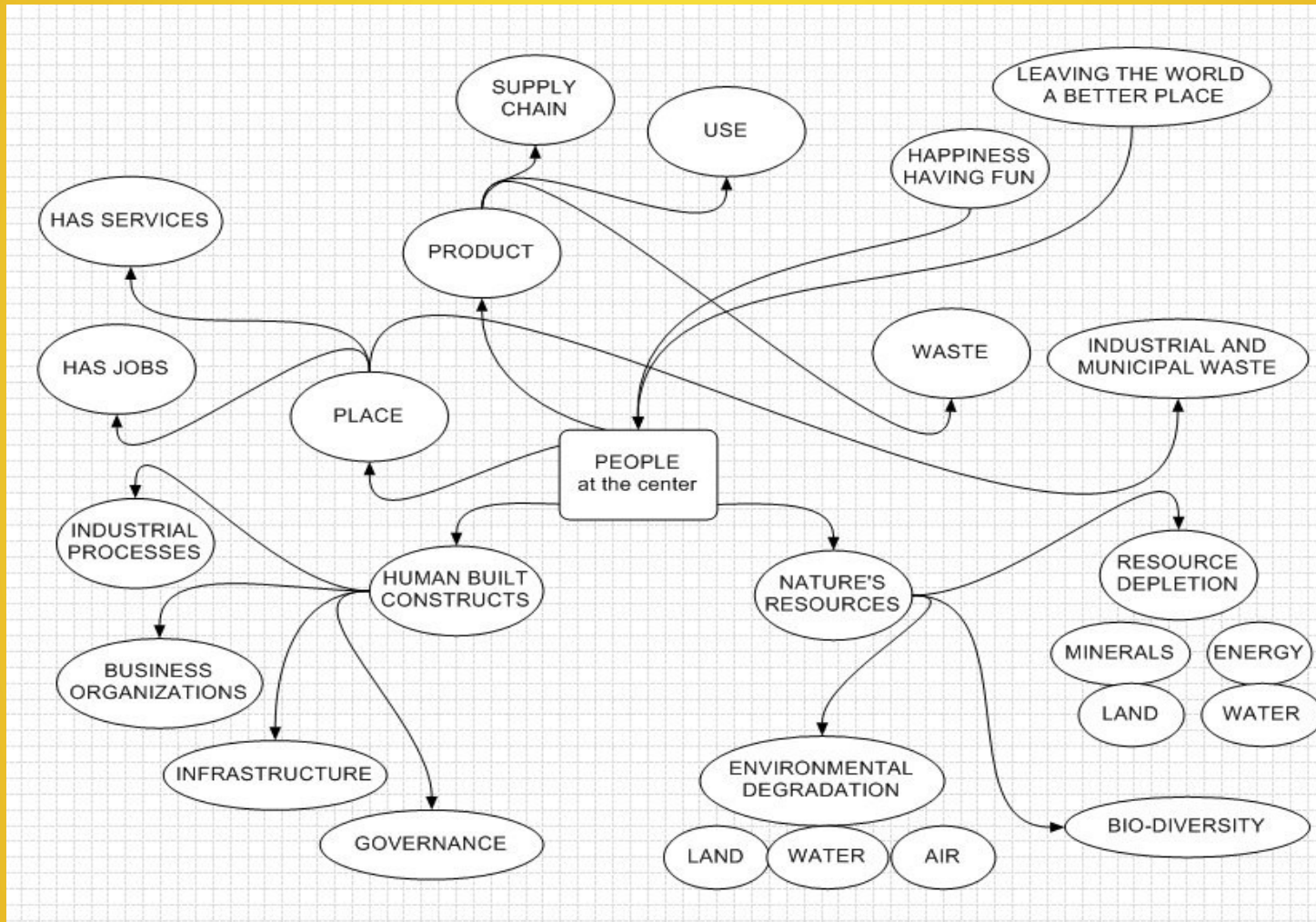
This becomes apparent in the following maps:

- 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.

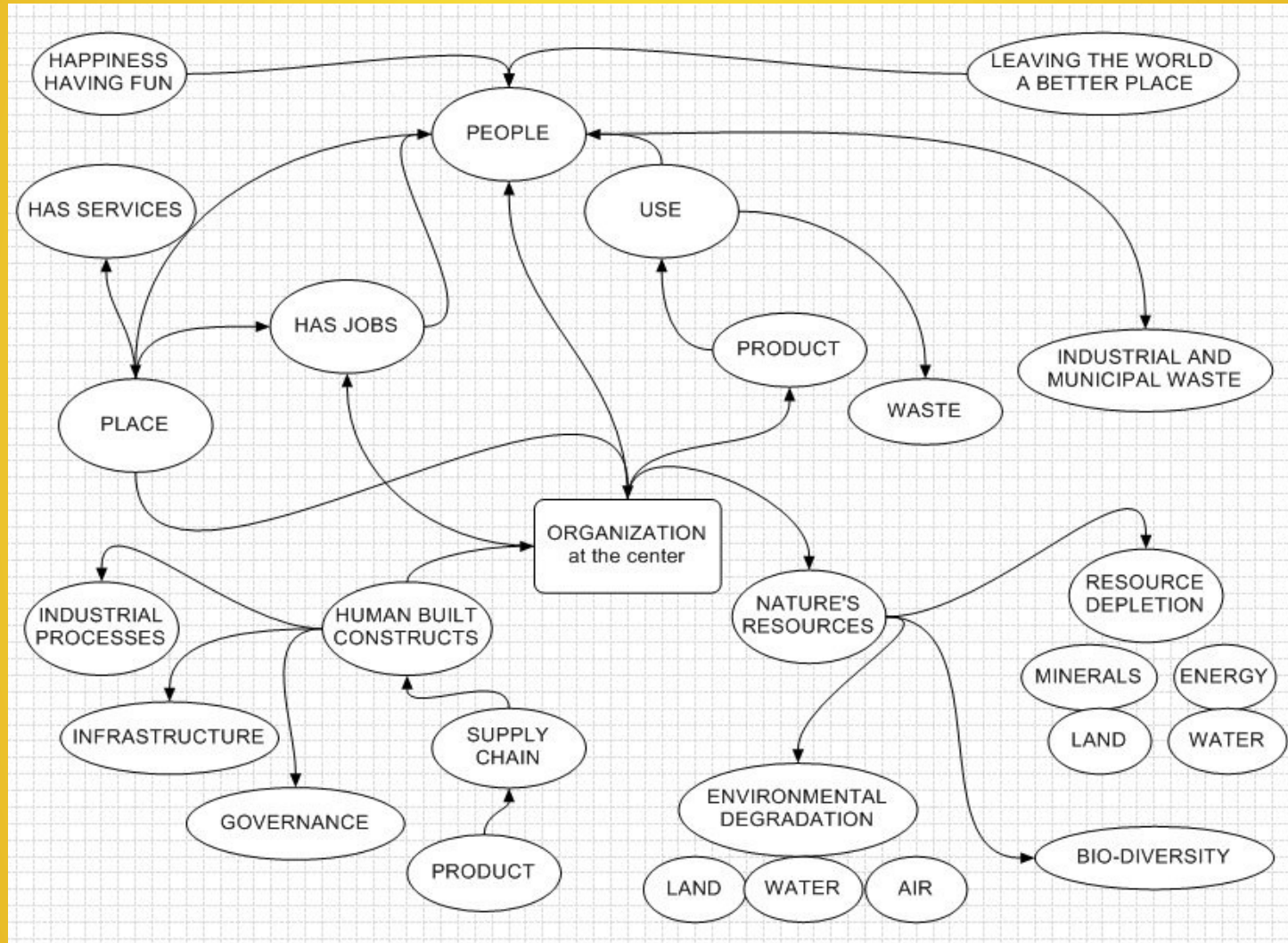
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MDIA map ... People at the Center



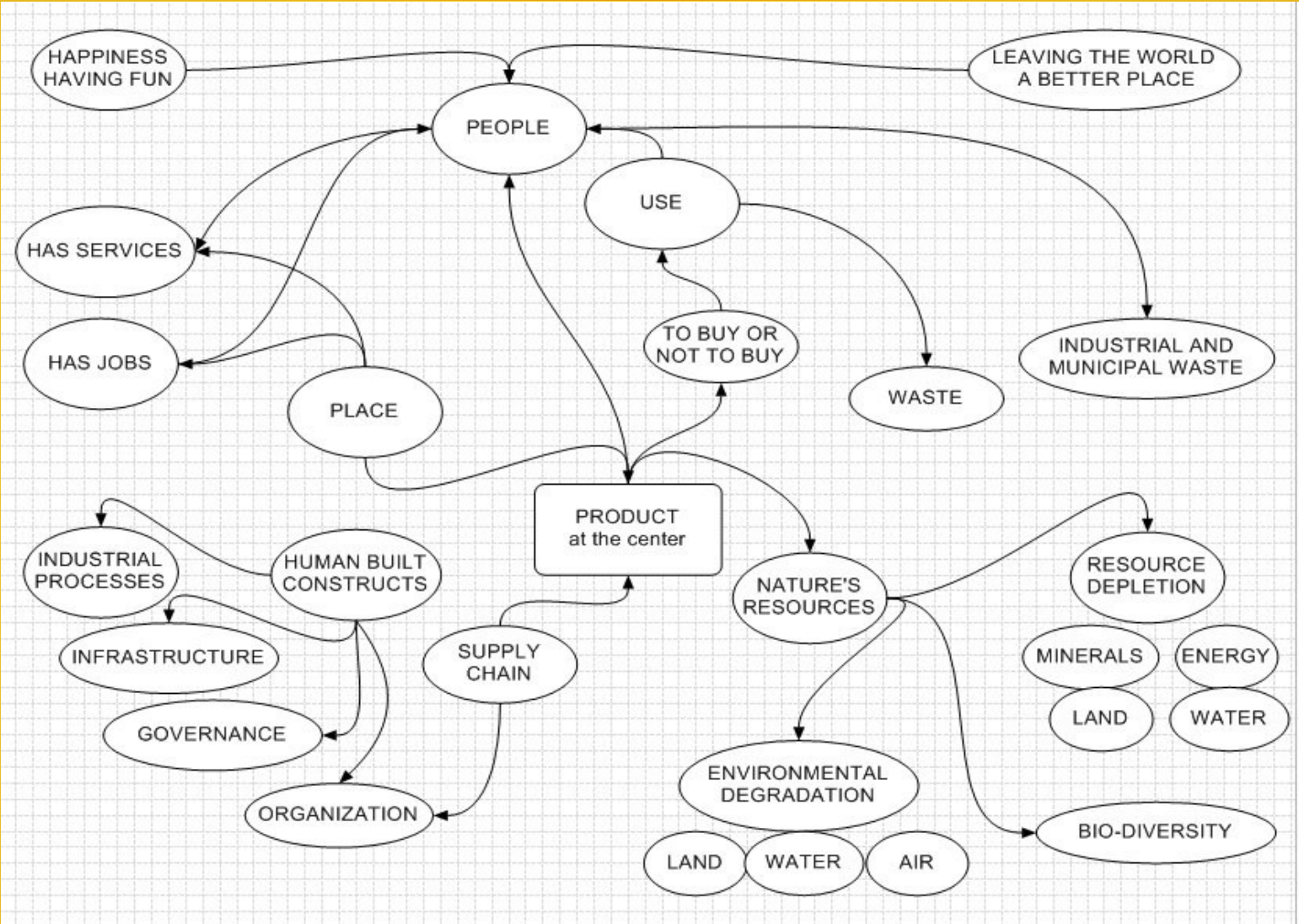
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MDIA map ... Organization at the Center



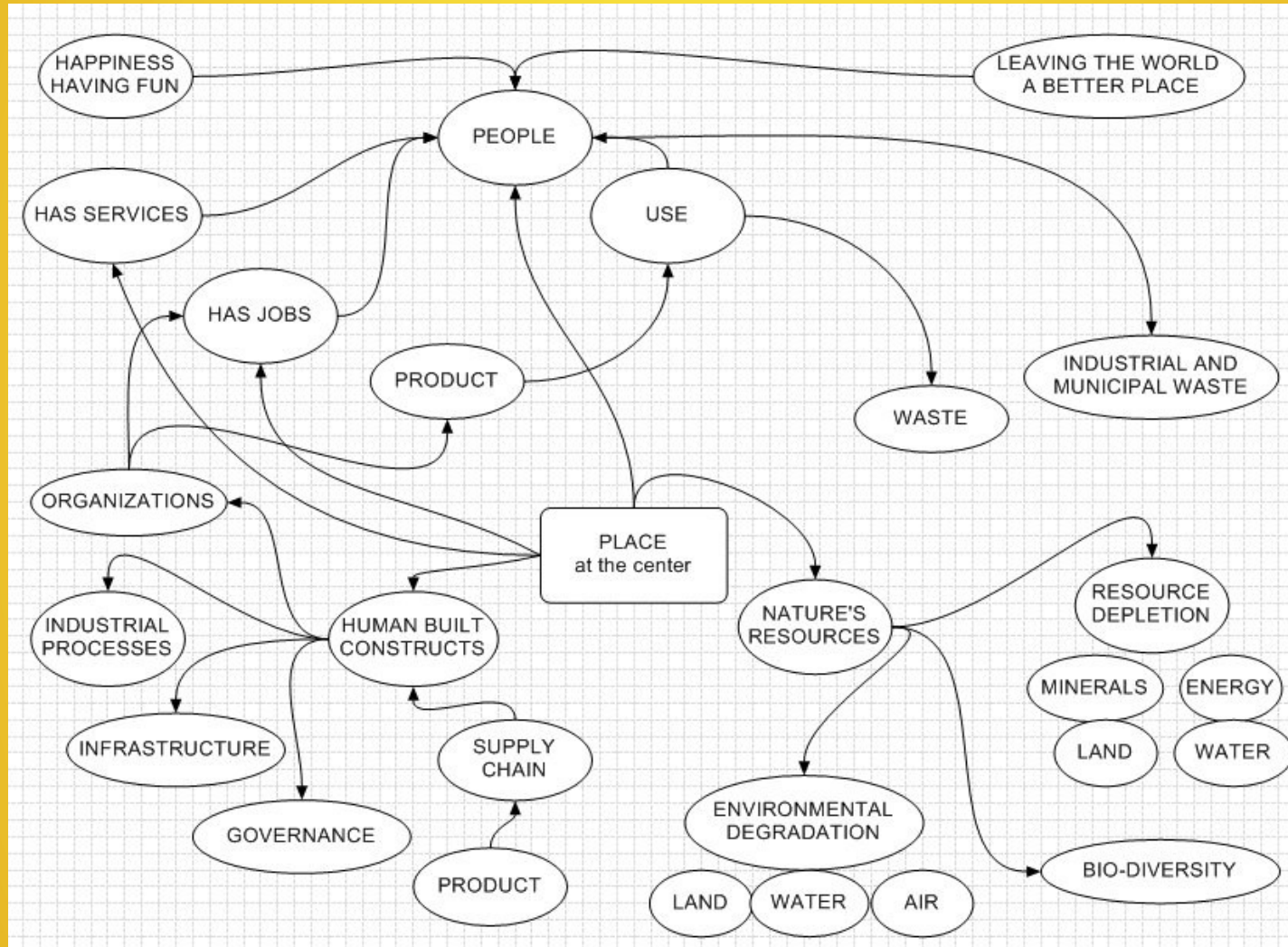
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MDIA map ... Product at the Center



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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'.

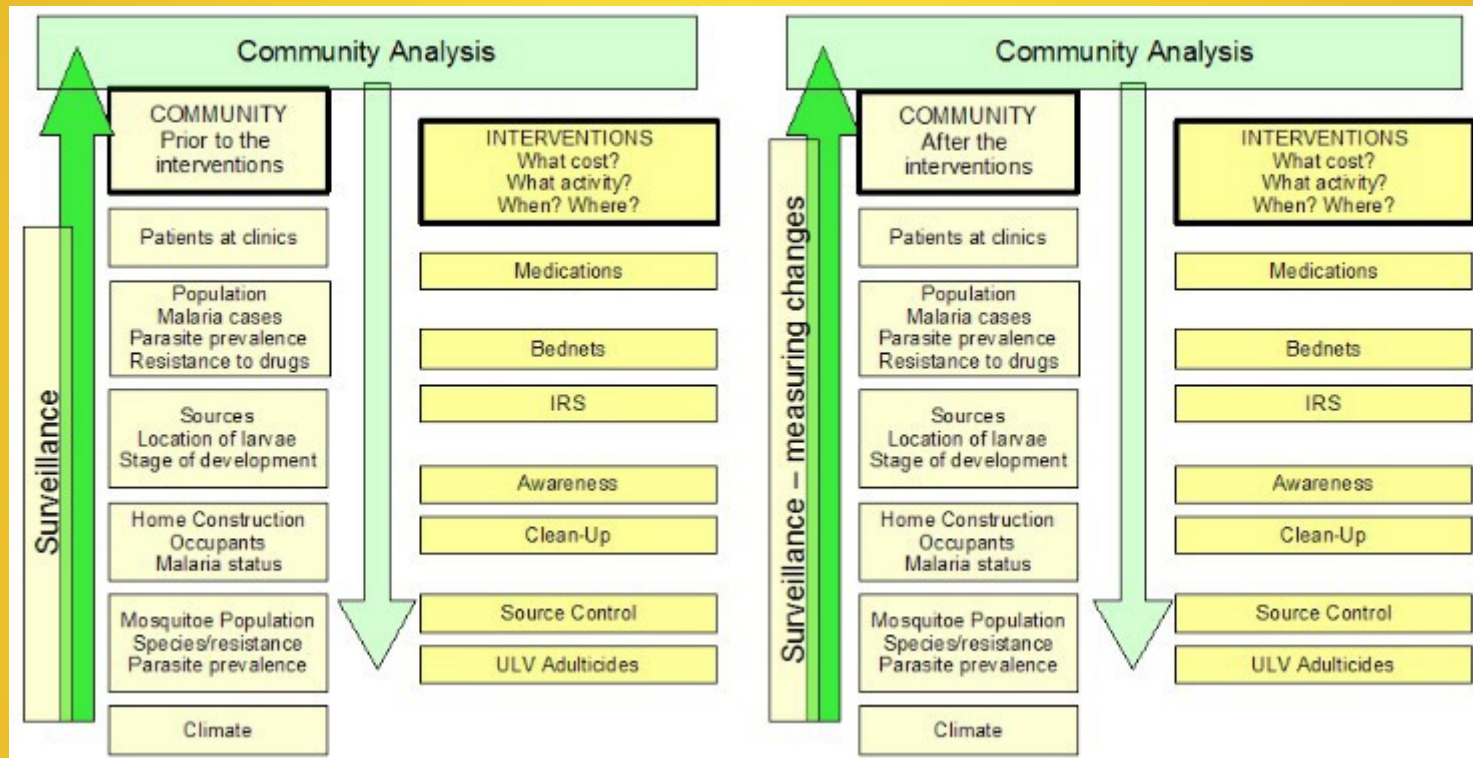
Reporting for even very large organizations can be summarized in a simple widely understood manner.

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.

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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.

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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

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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 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 extent use of product is an important determinant of quality of life and standard of living.

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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

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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.

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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)

PRODUCTS AND SERVICES

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

PEOPLE

- Individual
- Family
- Friends
- Community
- National Society
- Global Society
- Quality of life
- Impact of consumption

PEOPLE BUILT CONSTRUCTS

- Place (cities, towns, etc)
- Business organizations
- Industrial processes
- Mining
- Energy production
- 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)
- Resource depletion
- Environmental degradation

State of Place ... impact on people, resource depletion and environmental degradation

Profit of Business ... impact on people, Resource depletion and environmental degradation.

Supply chain trucost

Waste chain trucost

Resource depletion and environmental degradation

MULTI DIMENSION IMPACT ACCOUNTING (MDIA)



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

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

NATURE'S BOUNTY

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

Money needs to be complemented by a unit of value

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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

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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.

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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;
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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)

Analysis of an Economic Activity

Payroll ... Impact for people and society

The impact on the individual when he/she loses his/her job and no longer is earning \$40,000 a year is bigger than the impact on the business profit.

The individual and the family are not getting an amount of \$40,000 from the job remuneration.

The community does not have this money flowing through the local businesses.

The profit of the organization has increased by some amount ... \$20,000 (that is \$40,000 less (say) \$20,000 (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.