




HENDYPLAN

**YOUR PARTNER FOR THE PRODUCTION
OF STATISTICS**



United Nations
Economic and Social Commission for Western Asia

For



Organizer of the Regional Seminar on the SUT



SUT EQUALIZER

**A NEW GENERATION TOOL FOR THE
PRODUCTION OF SUT AND IOT**

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**BY FRANÇOIS LIBEAU
GENERAL MANAGER - HENDYPLAN**



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1. The **methodology**
2. The **IT architecture** of the tool
3. The **implementation** of the solution

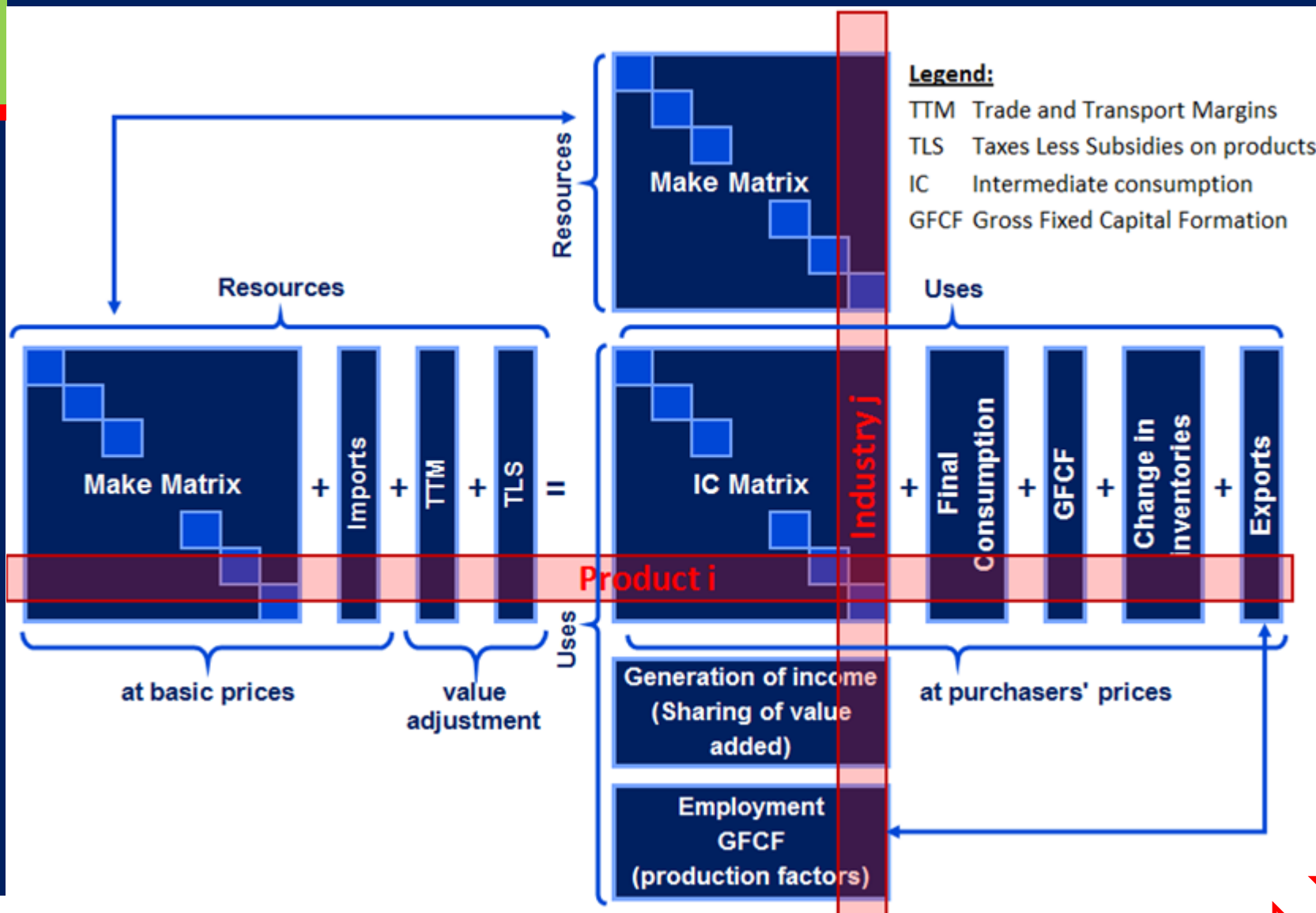
CONCLUSIONS



MOTIVATIONS: *WHY the SUT-Equalizer?*

- The SUT, as a synthetic tool for convergence between **expenditures** and **production** (combined with **income**) approaches, either in **values** and in **volume**
- The **disaggregation** becomes a **necessity** now-a-days (in the ESS ~ 300 products even more)
- Disaggregation is often synonym of lack of quality. A mechanism should be invented to help going through it (**sources, corrections, balancing**)
- The **IOT** in current prices, as an analytic tool for **economic studies**, on a 5 years basis
- Often uneasy to solve IOT after the end of the NA computation

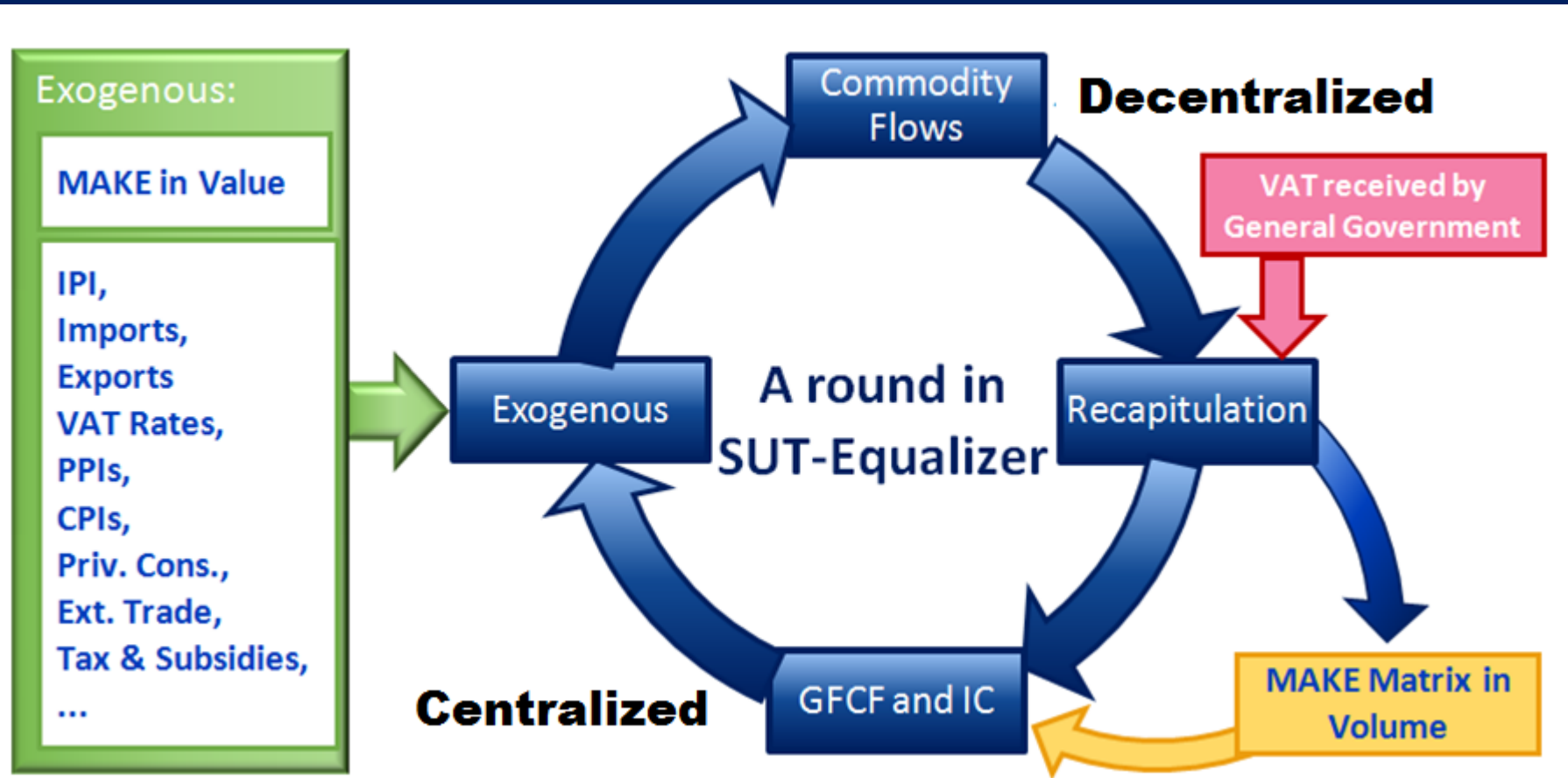
REMINDER: WHAT is a SUT and/or an IOT?



Read vertically by Industry the **production** approach

Read horizontally by product the **expenditures** approach

THE CORE: Exogenous data in cycles



- Production approach / sector accounts provide exogenous data. The **upper side** of the cycle transmits this information to **expenditures approach by products**. The **lower side** brings back information for the **production approach / sector accounts** (prod., GFCF, stocks, IC, VA...). 6



KEY TARGET: Guaranteeing the accuracy

For this, SUT-Equalizer is

- **INTEGRATED**: expenditures approach v.s. production and income approaches are in the same solving process
- **ITERATIVE**: each product is capturing updated information, then each IS / operation ... Loop after loop the values are converging to the consistency.
- **SIMULTANEOUS**: Current and previous year prices are solved within the same framework at every step (Val_{n-1} if necessary, the VAL_n , then VOL_n).
- **STRUCTURAL**: The commodity flows are compiled « decentralized » (spread in the team), while IS and operations are « centralized » (by the coordinator or few persons)



MANY CONCEPTS for the exhaustiveness

The SUT-Equalizer is hosting:

- **Decentralised objects**

- **The Commodity Flow** (as many as products)

- **Centralized objects**

- ✓ **The MAKE matrix** describing the output [Product x Industry]
- ✓ **The IC matrix** describing the intermediate consumption [Product x Industry], distinguishing DEDuctible and Non-DEDuctible
- ✓ Both organised in **Process Tables**, transitions from 'source' to 'final'



PLUS A SHARED CONCEPT: The MODEL

It is a set of variables, some provided (**EXOGENOUS**) others calculated (**ENDOGENOUS**) interconnected by relationships (**EQUATIONS**).

- The target is to calculate all **ENDOGENOUS**
- And sometimes
 - ✓ **Perfect match**
 - ✓ **Over-representation** (conflict of values)
 - ✓ **Under-representation** (need more exogenous)



PLUS A SHARED CONCEPT: The MODEL

Translated in the SUT-Equalizer paradigm, there are:

- **Automated models;** all variables are calculated straight;
- **Semi-automated models,** i.e. as many patterns of equations which are focussing on the properties of a product and on the reliability of the exogenous.

For example, a focus may be on the trade margins, whether PPI, XMPI exist, if FC or IC is the main use, etc.



Which IT solution?



- ✓ A comprehensive information system
- ✓ A user-friendly interface
- ✓ The tracking of all your changes



SUT-Equalizer has its own IT environment



DESIGN: Balance between Ms-Excel and a Tool

- The SUT equalizer has been originally developed in Excel.

⇒ Flexibility, easy dialogue with sources and clients

But important limitations

⇒ Risk in formulas with large amount of cells, of sheets, of files

⇒ 300 CPAs ... A pool of at least 600 files for each iteration

- Need of the implementation of an Information System

⇒ Robustness, safe recording of various sources and versions

- 2 classes of users: one Coordinator – National Accountants

**Ms-Excel alone is not the sustainable solution
SUT-Equalizer and Ms-Excel is relevant**



ARCHITECTURE: The functional (IT) cycle

- S1 and S2: Create a set of exogenous variables ●
- S3: Import Final: Load the set of exogenous in the database
- S4: New or EDIT any CF
- S5: CF checked – A CF is balanced
- S6: Save to DB – A CF dataset is saved in the database
- S7: Recap – Populate individual balancing equilibrium
- S8: Build – Check the overall equilibrium (Make, IC, Other Exog)
- S9: Update- Checks on the convergence procedure
- S10: publish – Prepare the standard ESA 2010 tables

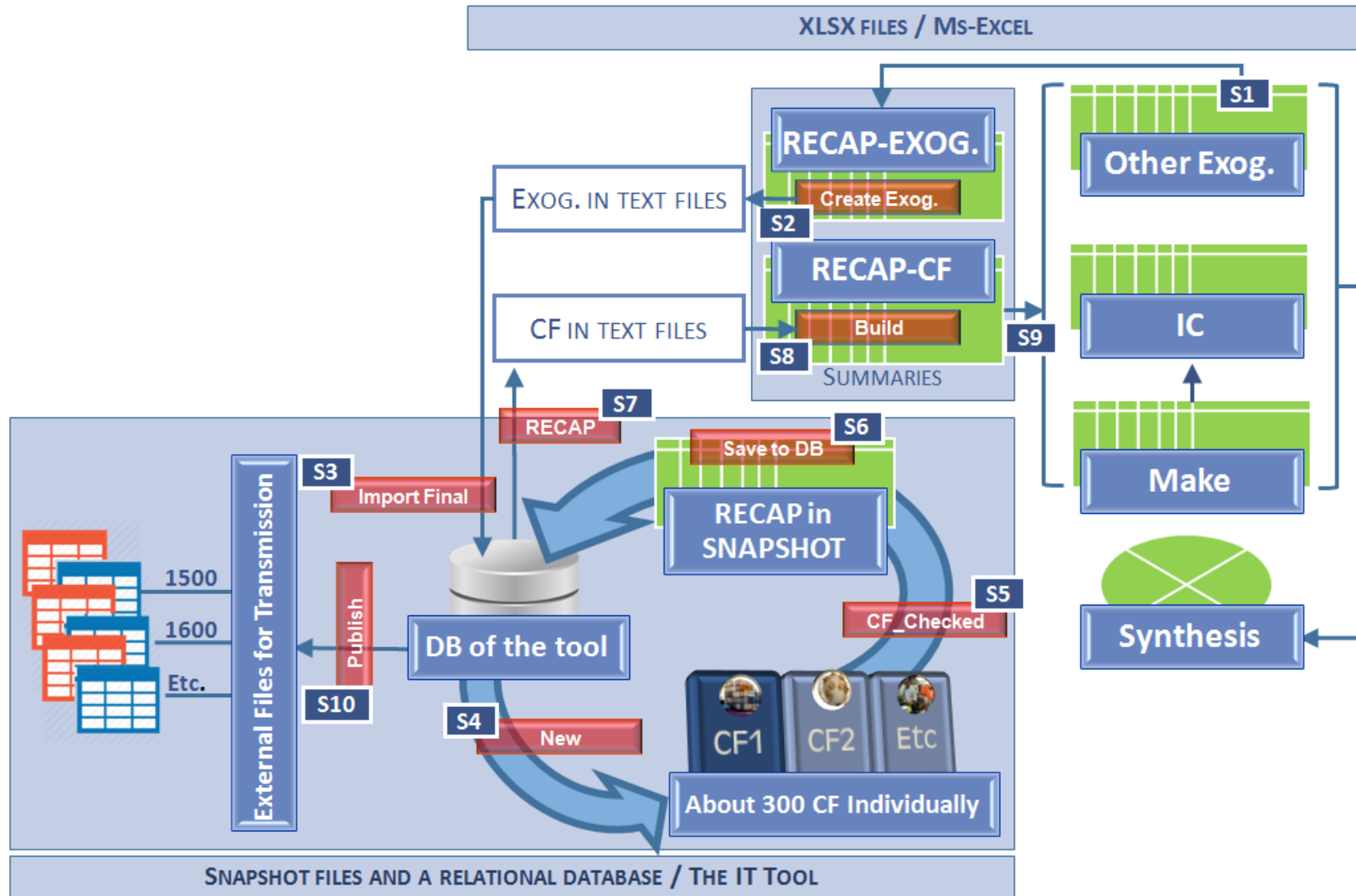
End-user cycle

Coordinator cycle

Once fully validated ●



ARCHITECTURE: The Production cycle





ARCHITECTURE: *A sophisticated database*

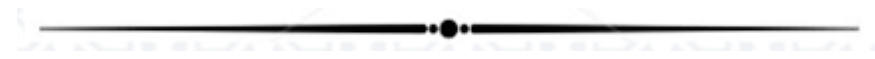
- **A relational model and a database**
 - Usage of standard database management system (Ms-SQL in the demonstration)
- A system **compatible** with Data and Metadata concept (**SDMX**)
- Many groups of fields and tables:
 - ✓ Data
 - ✓ Versions for complete tracking
 - ✓ Dimensions and codelists (SDMX compatible)
 - ✓ Formulas
 - ✓ Etc

The last generation of Ms-Windows objects

And comprehensive IS functionalities



- A monitoring frame,
- Mimic of Ms-Excel everywhere a sheet is manipulated,
- Workspace and dynamic toolbars,
- Docking station effects,



- Eight statuses in the progress of the convergence of commodity flows towards the convergence,
- Full access to the compilation of models
- Integration of the DISSEMINATION module
- Visualisation of the historical data at any time



FUNCTIONALITIES : A spreadsheet approach

- Mimic of Ms-Excel for a user-friendly environment
- Interaction with sheet in a workbook
- Full compatibility with Ms-Excel
 - ⇒ **Very fast learning phase regarding IT manipulations**
- Flexibility in the manipulation of the sheet
 - ✓ Formulas in Ms-Excel format and through variable names,
 - ✓ Editable formulas
 - ✓ Coloured and locked cells,
 - ✓ Integrated balancing as a sheet in the workbook
- Status of the balancing by layer of SUT



FUNCTIONALITIES: Others

- A toolbar for each profile, the Coordinator and the National Accountants
- Immediate access to the actions by steps, in proper order
- Mutual exclusion on forbidden actions
- Contextual menu (right click)
- The historical view: retrieval of all actions through commenting areas
- Coming: a manager for the implementation of CF standard models

How comprehensive is the project?



- ✓ **The tool**
- ✓ **The training**
- ✓ **The coaching**
- ✓ **The follow-up**

Are in a single package



SUT-Equalizer is a capacity building project



THE TEAM: Pluri-disciplinary and adequate

From Hendyplan:

- Through the intervention of a **Field Expert**
- Assisted by:
 - ✓ **Statisticians,**
 - ✓ **IT specialists** to customize the tool,
- Coordinated by a **Project Manager**

Plus the local team at the NSO



THE PHASES: *Standardized*

- Kick-off meeting
- Analysis of existing materials, choice of initial year,
- Analysis of available indicators,
- Definition of the main dimensions and their code-lists,
- Identification of the standard models by product,
- Initialization of the tables, the tools, the models, ...
 - **The tool is available**
- Implementation of the tool and first data at your premises,
- Agreement on a coaching agenda,
 - **Ideally during a 2-year period**

And finally ...



**SUT-EQUALIZER PROJECT IS THE SUBSTRATUM FROM
WHERE THE CAPACITY BUILDING WILL BE EFFECTIVE**



Conclusions about SUT-Equalizer

- Capacity to compute the **SUT before the GDP** is known
- **Creates a dynamic** in the National Accounts department through an organisation of statisticians (eventually from different departments) around a coordinator
- **Forces accuracy** in the knowledge of the National Accounts data
- **Guides the users** and forces the methodology to be applied properly
- **Implements a comprehensive information system** guaranteeing the data consistency and keeping the track of the changes.
 - ✓ SUT-Equalizer carries the knowledge you accumulate over the years



Contact us ...

THANK YOU



FRANÇOIS LIBEAU, DIRECTOR
FRANCOIS.LIBEAU@HENDYPLAN.COM

TEL: +352 2664 4424

**Uitbreidingstraat 84/3
2600 Berchem
Belgium**

www.HENDYPLAN.com