The Galileo model: reengineering financial reporting

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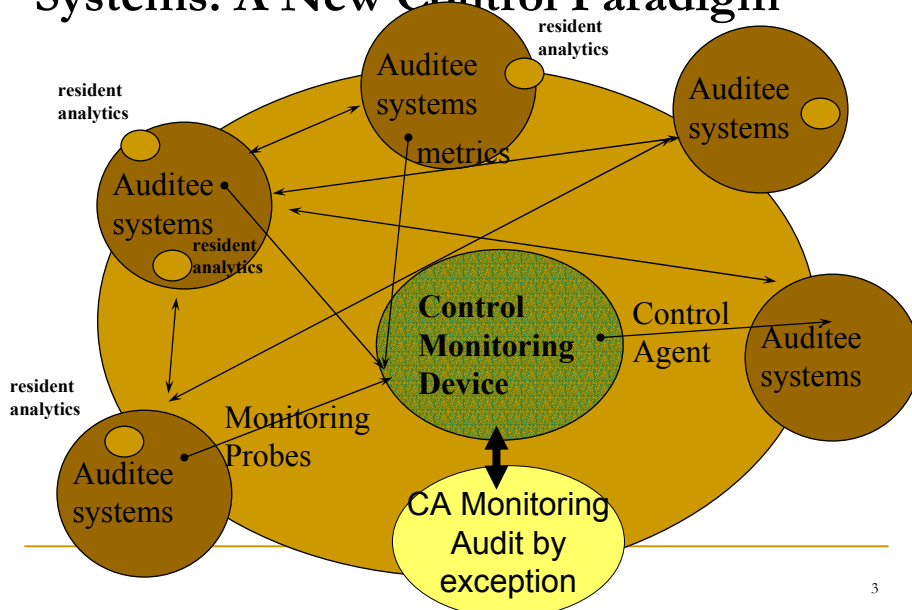
Ongoing CA/R/Lab Projects

CA = Continuous Control + Continuous Assurance

1. Continuous Control Monitoring (CCM)
   - Siemens SALT project
   - KPMG next generation control assessment
   - Control tags
2. Continuous Assurance
   - Advanced analytics at HCA (and Siemens)
   - Liberty CA Simulator (and integrating with CCM)

Distributed And Inter-networked Systems: A New Control Paradigm

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Levels Of Assurance

- **Data Level Assurance (DLA)**
  - Develop innovative tools: control tags, cookie crumbs, control paths, aggregate estimates
- **Process Level Assurance (PLA)**
  - Create a model that allows for the process by process estimate of control effectiveness
- **Opinion Level Assurance (OLA)**
  - Develop temporal related continuous control effectiveness assessments
    - Evergreen opinions
    - Exception frames
    - Probabilistic opinions

Outline

- Problems, Economics and Axioms
- Solution
  - Model
  - Objectives
  - The technology
  - The information
  - Measurement rules
- Conclusions

URL & Discussion Group

- http://raw.rutgers.edu/Galileo/

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Problems

- A real-time economy cannot be measured with static measurements
- The disclosure model is very broken
  - We cannot measure an information economy set of entities and processes with an industrial age measurement model
  - And we are internationally converging towards it
- Audit opinions on irrelevant measures are irrelevant by itself
- The malfeasance crisis is not the problem is the inevitable consequence of the above

▶

New economic facts

- **The technology of conducting business became virtual, distributed and progressively automated while the reporting technology has remained somewhat stagnant**
- **What is expensive is system setup not the creation of repeated reports (that are not massaged)**
  - **Eventually most of new proposed reports will be impounded into ERPSs**
- **For the purpose of valuation and reporting many variables that were important in the industrial economy have limited value on the real-time information economy**
  - **e.g. inventory and plant**

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Consider underlying assumptions of existing financial reporting system

- **Old assumption:** Uninformed users who have little ability to comprehend financial data.
- Hence need for simple summary measures (net income, annual balance sheet), much "pre-processing" of information, avoidance of information overload.
- Firm information aggregated and condensed, episodic and restricted in its domain.
- Assurance focuses on way in which data is aggregated and condensed.

A Conceptual Model for Reengineering the Financial Reporting System

- **New assumption:** Users either highly sophisticated themselves, or else they obtain information and guidance from intermediaries who are.
- These super users demand much more relevant, detailed and timely information and are capable of forming their own metrics of firm performance.
- Less reason to condense and aggregate information to such users, and no need to restrict the timeliness of disclosures since there is less danger of information overload.

Reducing emphasis on summary measures of performance

- Old model focused on income statement and balance sheet. Hence, much emphasis on what goes into statements and what does not—even when it shouldn't seem to matter (i.e. in statements versus in footnotes).
- Auditing also thus centered on these statements.
- This is patently not adequate for user needs, but expansion has been haphazard, arbitrary (eg. Footnotes, MD&E).
- Need to look at information disclosures in totality. Ask not how statements are effected, but how set of available information is affected. Get away from net income straitjacket.

Role of firm in information value chain changing

- Under old assumptions, justified to let firm pre-process much information, aggregating and condensing it, even when that is self serving and leads to information loss.
- Now users demand and can be trusted with un-aggregated, uncondensed information on a wider domain (financial and non financial, operational and strategic, actual and forecast, quantitative and qualitative).
- Have firm do less pre-processing, or at least let users have enough information so that they can see what the firm has done, and be able to do it in alternative ways if they choose to do so.

Underlying Axioms of a Reengineerd Business Reporting Model

- **A1**: This Business Reporting Model is intended to drive discussion, NOT to impose a particular solution. It is only one input into ranges of potential solutions
- **A2**: When in doubt of valuation, disclose the facts
- **A3**: Support estimates
- **A4**: Raw, not processed data, panoramic view of details
- **A5:** Standardization of form and substance of transactions

Axioms (2)

- **A6**:Multiple-model disclosure
- **A7**:Digital standards – not principle-based
- **A8**: Data level assurance
- **A9**: Information provisioning is a continuum from internal to external information

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Monitoring and Control: 5 levels of activity

Continuous Reporting
Continuous Assurance
> Transaction assurance, Estimate assurance, Compliance assurance,
> Judgment evaluation

Analytic monitoring level
> KPIs: Marketing/Sales Ratio
> > Inventory turnover
> > Intra-company transfers

- •Drill Down
  - •History
  - •Distribution

Relationship level
> Sales change = Incremental Marketing cost * 2.7 +- 12%
> E-Care queries = number of sales * 4.1
> Delay relationships

- •Drill Down
  - •History
  - •Distribution

Data level

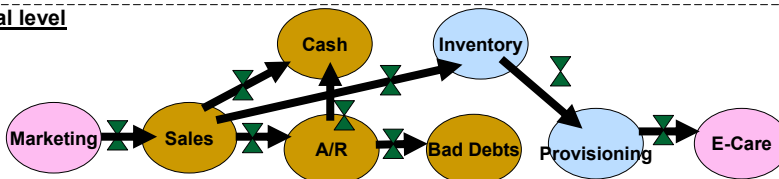| •Investment •Regions •Clients •Dynamics | •Product detail •Regions •Clients •Dynamics | •Collection •Aging of receivables •Clients •Dynamics | •Inventory •Distribution •Ownership •Dynamics | •Drill Down •History •Distribution |

Structural level
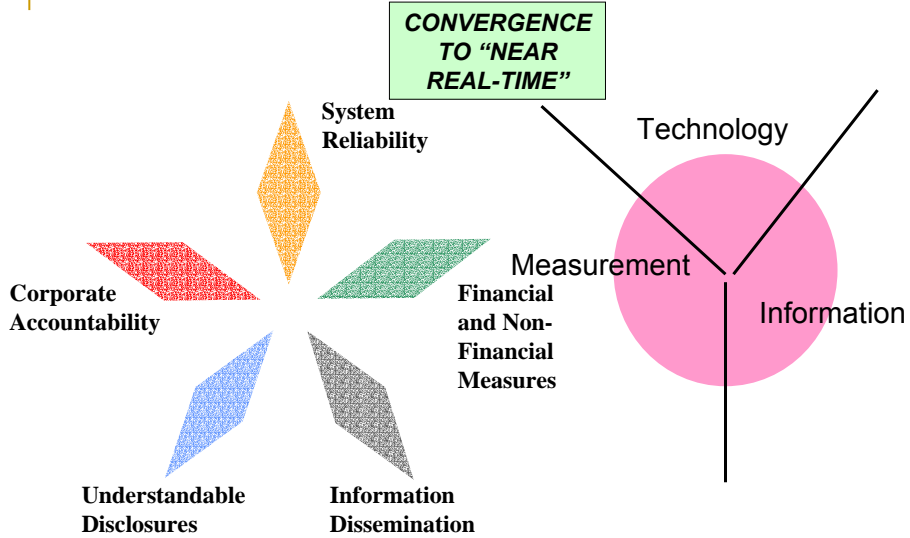
A solution for some of the ailments

- Creation of a multivariate measurement model that does not focus exclusively on earnings per share and allow for users to predict and evaluate business on a multivariate basis even if these measurements are in different dimensions (apples and oranges)
- Creation of a measurement model that is oriented not only to investors but to the other stakeholders of business
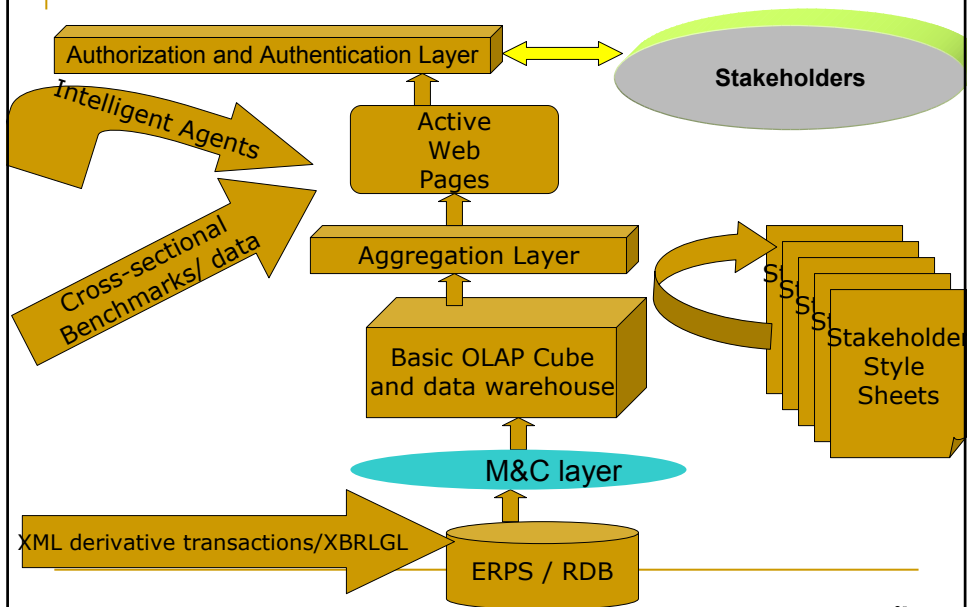
2.2 Objectives

ELEMENTS OF ENHANCED BUSINESS REPORTING

CONVERGENCE TO "NEAR REAL-TIME"

System Reliability

Corporate Accountability

Financial and Non-Financial Measures

Measurement

Technology

Information

Understandable Disclosures

Information Dissemination

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Basic Stakeholder Driven Disclosure Technology

Authorization and Authentication Layer

Stakeholders

Intelligent Agents

Cross-sectional Benchmarks/ data

Active Web Pages

Aggregation Layer

Basic OLAP Cube and data warehouse

Stakeholder Style Sheets

M&C layer

XML derivative transactions/XBRLGL

ERPS / RDB

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With technology

- **The report is user-driven living thing, with automatic updating, based on the life-cycle of the process**
  - Relationships update automatically
  - Partners / Outsourcers work together
  - Users are a part of the reporting process
    - User's reactions are part of the reporting process

Plentiful of external data

- XBRL enabled real-time comparative benchmarks
- Links to vendors and suppliers (enrich the value chain information)
- Required disclosure of related parties like dependent SPEs if not consolidated
  - (a requirement of disclosure even for **private companies** that are SPElike and non-consolidated…)
  - -- research needed to understand all types of related entities that are of this type and are not consolidated
- Information on the markets of the product lines

Internal data

- **multi-layered report**
  - **for the naïve investor**
  - **for the analyst**
  - **bank / insurance /**
- **a representation of the value chain**
  - **broken down by rational line of business (forced 4 digit SIC code)**
- **relationship level continuity equations**
- **disclosure of perceived causalities**
- **disclosure of significant (material) alarms**
- **continuous reporting**
  - **different timing for different data**
  - **a simplified balance sheet and income statement**
  - **significant events disclosed emphasis on management comments on strategic moves**
  - **estimates and their parameter history**

Continuous reporting

- It is paradigmatically different from traditional reporting
  - Different reporting structures are to emerge
  - Mainly internal reporting not external
  - Processes have different life rhythms
  - Part of the real time economy monitoring and control management
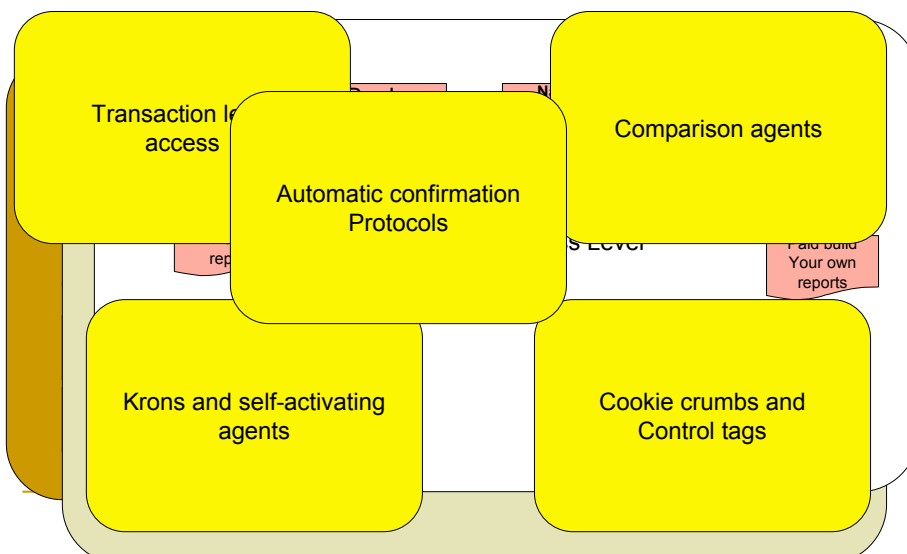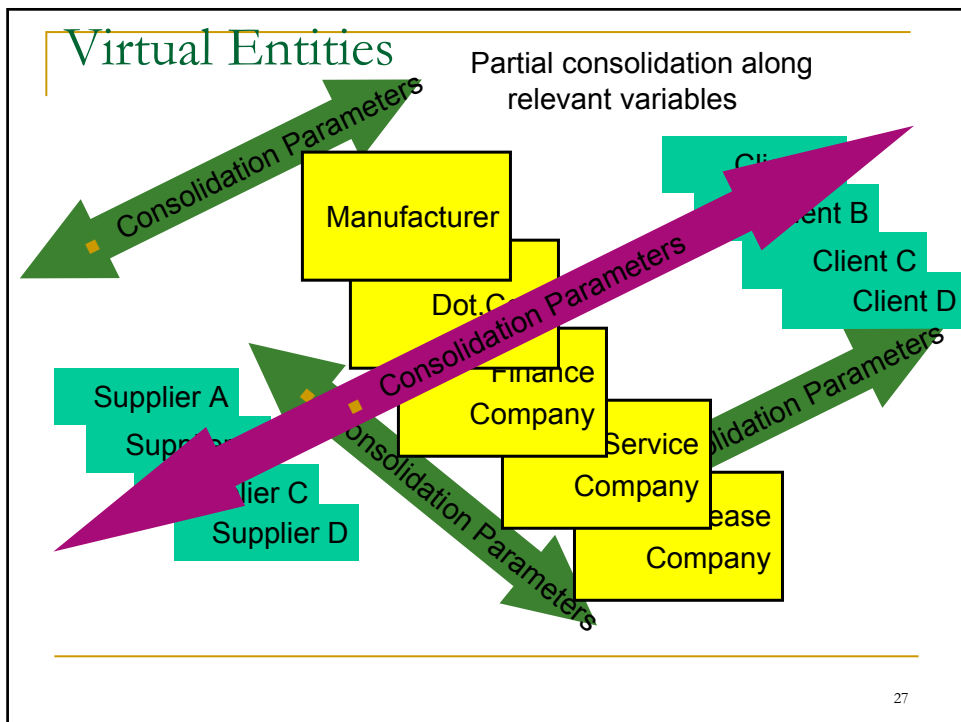 - Closely linked to continuous assurance level process by process

The new accounting

- 2.5.1 The business reporting portal
- 2.5.2 Virtual Entities (consolidation)
- 2.5.3 Non-financial information
- 2.5.4 Relationships
- 2.5.5 Dynamic Valuation
- 2.5.6 Disclosure of KPIs and Analytic Monitoring
- 2.5.7 Points of comparison
- 2.5.8 Future Oriented Information
- 2.5.9 Formalization of Business Artifacts
- 2.5.10 Real time support of estimates

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2.3.1 Business reporting portal

Transaction level access

Automatic confirmation Protocols

Comparison agents

reports

s Level

Paid build Your own reports

Krons and self-activating agents

Cookie crumbs and Control tags

Virtual Entities

Partial consolidation along relevant variables

2.5.3 non-financials

- (focus on redundant multi-source disclosures)
  - HR
  - Markets / marketing / sales and budgeted sale
  - IP
  - Sustainability
  - Resources used
  - Channels and their contribution
  - Supplier managed inventory
  - Contractual and non-contractual contingencies
  - Reserves
  - Forecasts
  - disclose the model and data used
    - broken down by edl /rdl/ fdl
    - discussion of forecast assumptions

2.5.4 Relationships

- **Structural relationships**
  - (# of shipments)[t+δ] = α*(# of P.O.'s)[t] + ϵ.

- **Simultaneous continuity equations**
  - (# of shipments)[t+δ1] = α1*(# of P.O.'s)[t] + ϵ1,
    (# of vouchers)[t+δ2]   = α2*(# of shipments)[t+δ1] + ϵ2.

- **Empirical relationships**
  - (PGC # of employees) = α3*(labor costs)[t+δ1] + ϵ2.

2.5.5 Dynamic Valuation

- The value of an item is not an invariant
- You cannot reasonably value all things in common bases (AFR 190, SFAS 33)
- The real-time economy and technology allows for ongoing valuation
- Different categories of assets cannot be valued the same way therefore their addition is non-sensical
- Tangible assets
  - Property, Inventory
- Non-tangible assets
  - HR, IP, brand, supply chain, clientele

Valuation factors

- Hyperlinks
- New benchmarks
  - Use –ebay factors (new business for them)
  - Real estate comparables (new business)
  - Aggregate value chain comparables
  - B2B / B2C price lists

- Why depreciation? Very misleading –must be abandoned as new measurements can be made

3.5.6 KPI's and Analytical Monitoring

- Plane seat occupancy
  - By route
  - By day
  - With partners
  - PREDICTS MONTHLY INCOME
- Sales of PCs
  - PREDICT TECH SUPPORT CALLS
- Hospital Bed Occupancy
  - PREDICT HOSPITAL RESULTS

3.5.7 Points of comparison (POCs)

- **To achieve comparability in a world of widely diverging reporting and process aggregation key POC metrics are to be defined**
- **These will be compared time-series and cross-sectionally at the virtual entity level**
- **POCs will be single metrics, ratios, KPIs and a wide set of relationships**
- **POCs will be the key elements for analytic monitoring**
- **XBRL/GL will have to be granular enough to satisfy industry-based mandated POCs**

3.5.8 Future Oriented Information
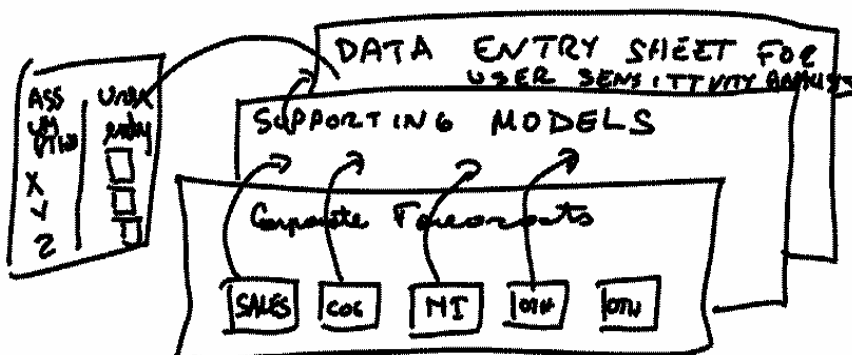
3.5.9 Formalization of Business Artifacts

- Fuzzy organizational structures actions and outcomes
- Taxonomy of business financial instruments
- Taxonomy and structures of footnotes
  - Definition of real-time structures
- Structuring and Formalizing MD&A
- **Digital standards are basic to the above**

3.5.10 Structured support of estimates

- Usage of POCs that require that certain common estimates be disclosed together with key variables
- Hyperlinks to spreadsheets with the exact method of calculation of the estimate
- Parameter estimate reconciliation sheet
- Bottom line effect sheet showing the effect on one of the forms-of-income of the above estimate changes
- Provide a simulator spreadsheet for user sensitivity analysis with some guidance to user

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Conclusions

- New and improved accounting and reporting requirements and mechanisms are needed to meet our commitment to the user/public marketplace of the 21st century.
- The accounting profession cannot create a new business reporting model by itself
- Continuous reporting is emerging
  - Already exists internally in certain forms
  - It is paradigmatically different from traditional reporting

Takeaways

- User driven reports/ appropriate to different constituencies
- More data/ higher frequency/drill down capability
- Less potential manipulation
- Dashboard of all external reports
- Virtual entities/segment reporting/ subsidiaries breakdown/consolidation of commitments to suppliers.
- Technology is the facilitator XBRL/OLAP/Web

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