

GeoC2

Transformando dados em Conhecimento Azul



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Inovaworks Command and Control?

- Command and Control-related ITC solutions
 - Spun-off out of Inovaworks R&D in July 2011
 - Parent Company worked in SSN, works in THETIS
- Highly-skilled on GIS and Operations Modeling for C4ISR operational scenarios –mostly civilian
- Industry partner for Portuguese BlueMassMed
- Industry partner for Portuguese NIPIM@R
- Industry partner in the 2014 CISE Incubator wrks
 - Implemented the gateway->national node integrations

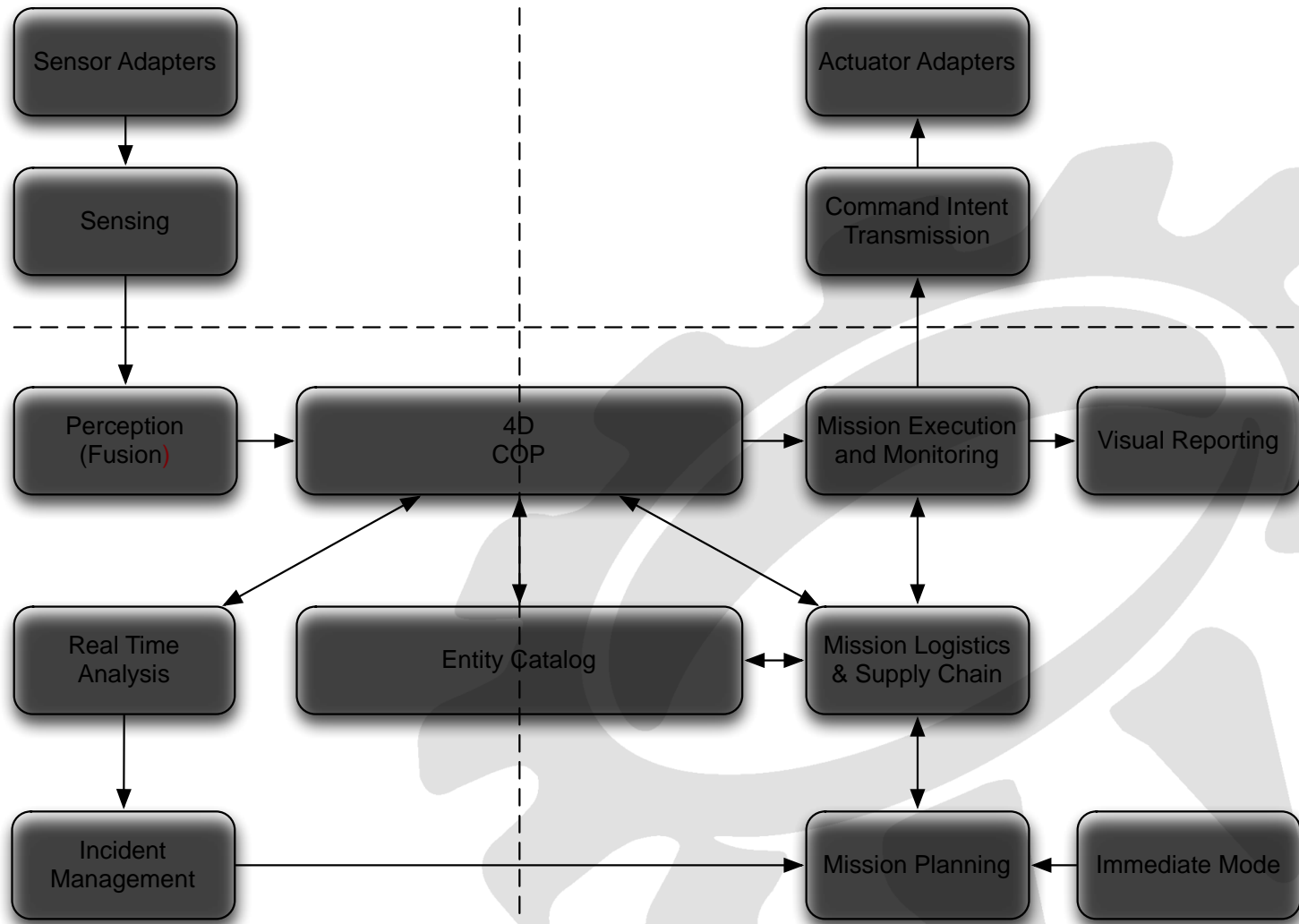
BlueMassMed Demonstration Session



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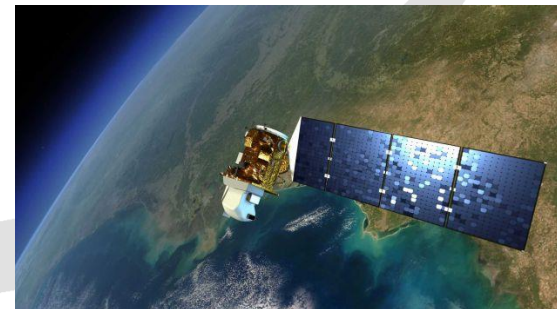
Our software offering



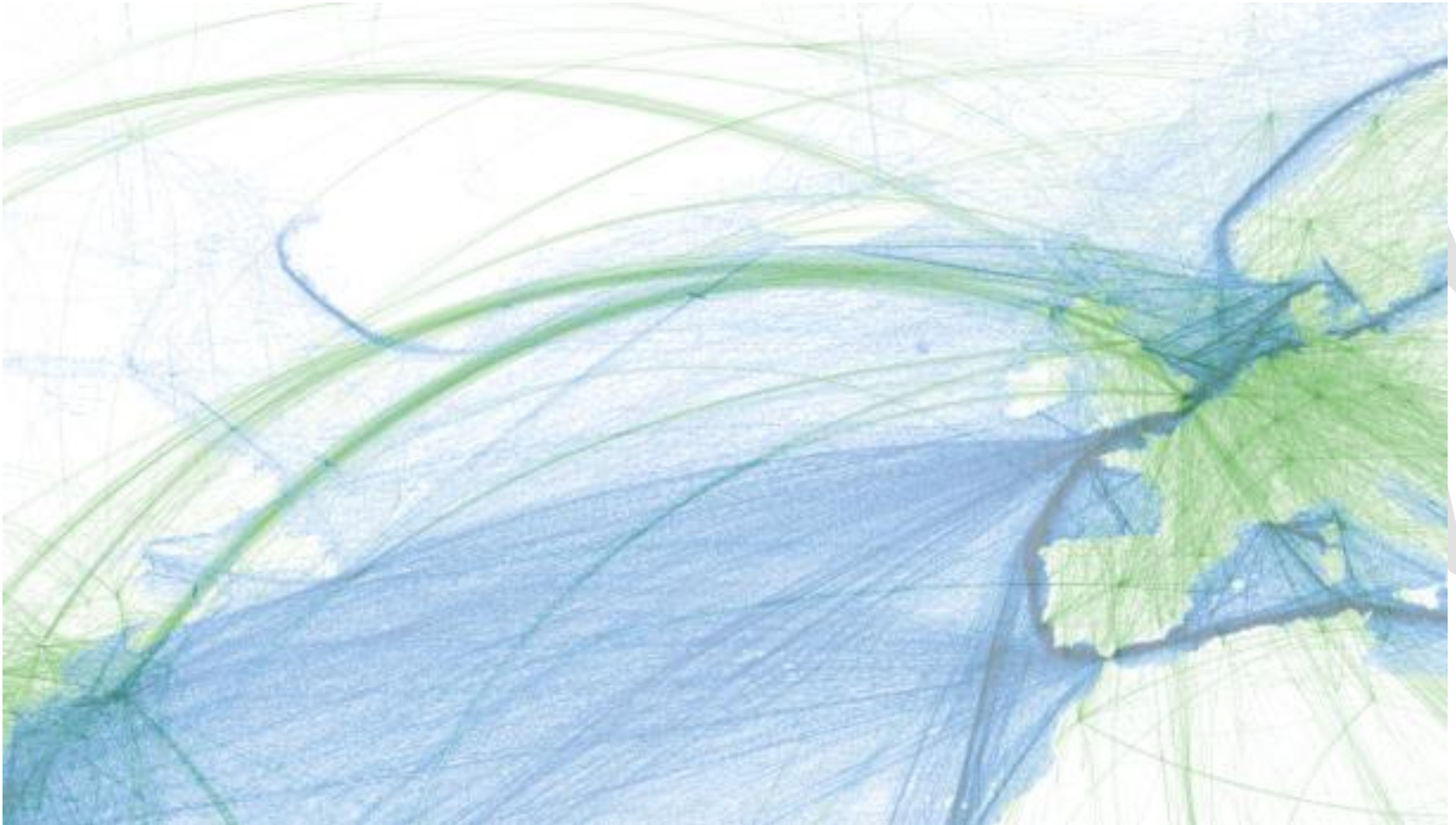
Innovative HMI Technologies



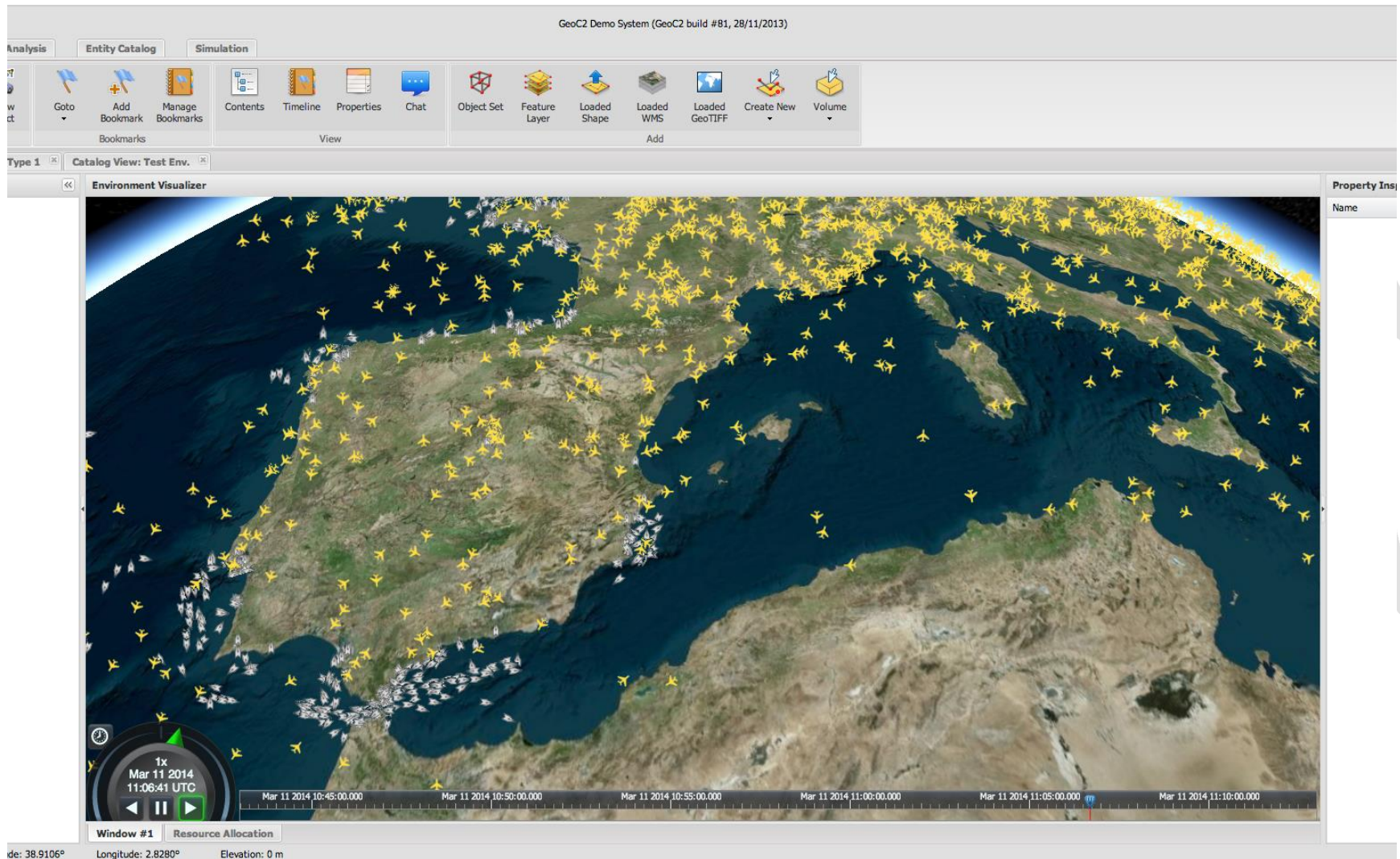
Cada vez mais sensores a olhar o mar



Muitos Dados, Pouco Conhecimento



Muitos Dados, Pouco Conhecimento



“O Mapa não é o Território”

Alfred Korzybski, 1931

4D, time-scrubbing, situational awareness

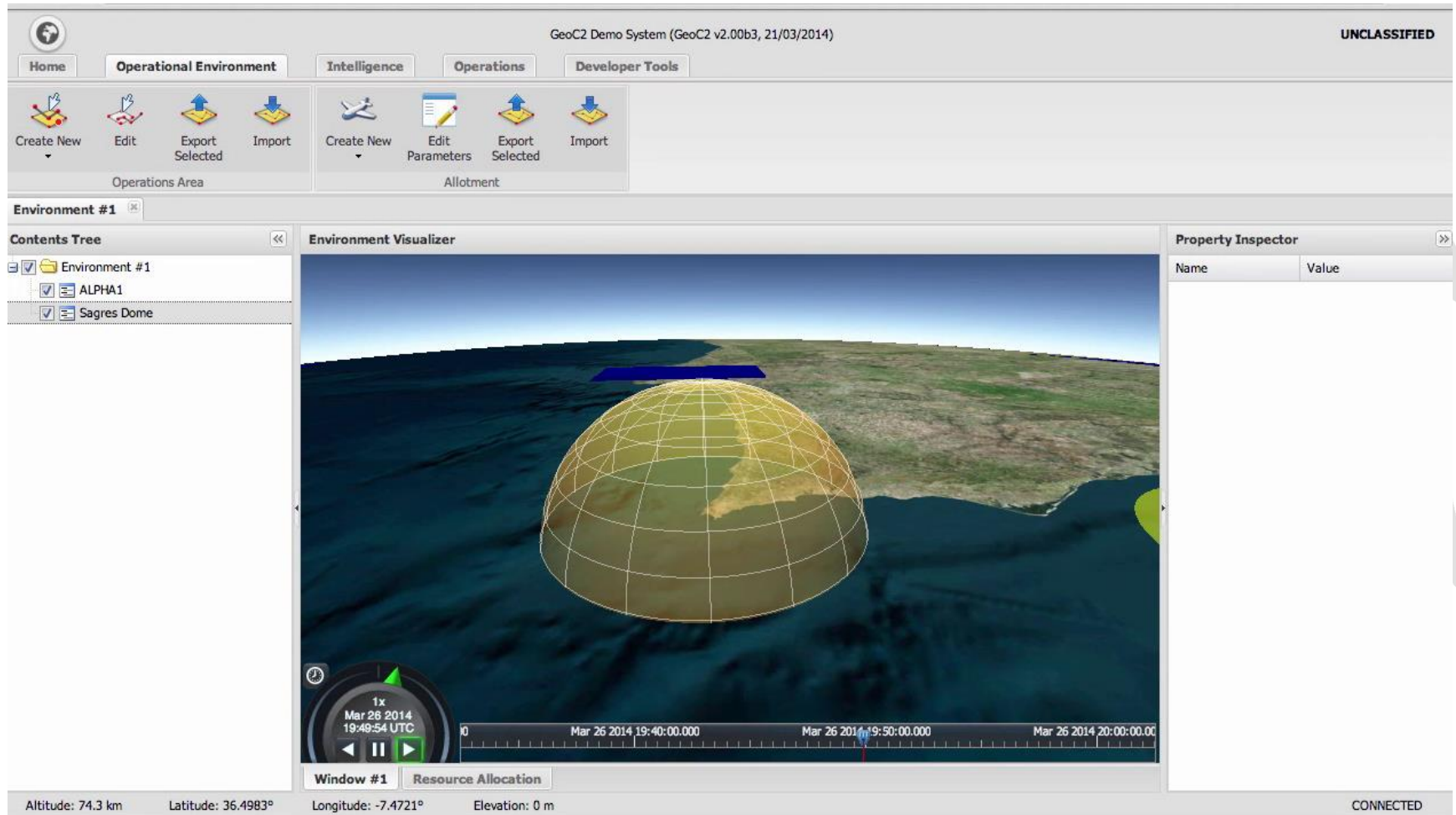
The screenshot displays the GeoC2 Web Client interface, a demonstration environment for GeoC2 build #23 - DEVELOPMENT. The interface is divided into several sections:

- Top Bar:** Includes a browser window titled "GeoC2 Web Client" with the address "localhost:8080/GeoC2/". The main title is "Demonstration Environment for GeoC2 build #23 - DEVELOPMENT" and the status is "UNCLASSIFIED".
- Navigation and Tools:** A row of tabs includes Home, View, Analysis, Planning, Execution, Simulation, and Debug. Below these are icons for navigation (Center North, Zoom, Follow Object), bookmarks (Goto, Add Bookmark, Manage Bookmarks), and data loading (Contents, Timeline, Properties, Chat, Object Set, Feature Layer, Loaded Shape, Loaded WMS, Loaded GeoTIFF, Shape).
- Contents Tree:** A sidebar on the left shows a tree structure for "Scenario 1" with sub-items: Realtime Traffic, Operational Areas, PT SAR, and Alerts.
- Main View:** A large map area showing a 4D visualization of a maritime scenario. It displays numerous yellow aircraft icons and white ship icons on a satellite map of the Mediterranean Sea. A circular radar-like overlay in the bottom left shows a 10x zoom level and a timestamp of "Aug 30 2013 12:19:44 UTC".
- Timeline:** A horizontal timeline at the bottom of the map area allows for time-scrubbing, with markers for "Aug 30 2013 12:10:00.000", "Aug 30 2013 12:20:00.000", and "Aug 30 2013 12:30:00.000".
- Property Inspector:** A panel on the right titled "Property Inspector" displays a table of properties for a selected object.

Name	Value
id	29302503
guid	29302503
Reg. Number	EI-ENT
Aircraft Type	B738
Position	
Ground Speed	428
Vertical Speed	0
Flight Number	FR3153
Call Sign	RYR1JR
Heading	18
Note	(note list)

At the bottom of the interface, coordinates are displayed: Altitude: 912.6 km, Latitude: 39.35559, Longitude: -7.65029, Elevation: 0 m. The status "CONNECTED" is visible in the bottom right corner.

Volumetric Monitoring and Fencing



De um Mapa pobre para um Mapa Rico?





**"Not everything that can be counted counts, and
not everything that counts can be counted."**

William Bruce Cameron

Que eventos? O que é importante?

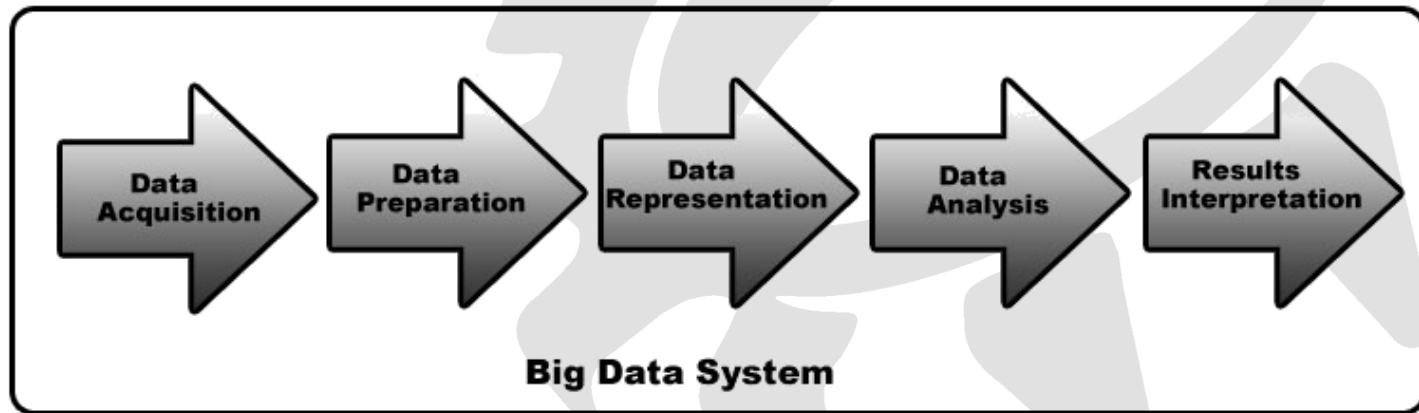
- Coisas que conhecemos e procuramos

- Atrasos e Desvios
- Rotas de Colisão
- Mudanças abruptas de comportamento
- Transgressões de zonas restritas

...portanto, definidas formalmente à priori...

- Coisas que desconhecemos, mas que podem ser interessantes, apesar de não ser claro como

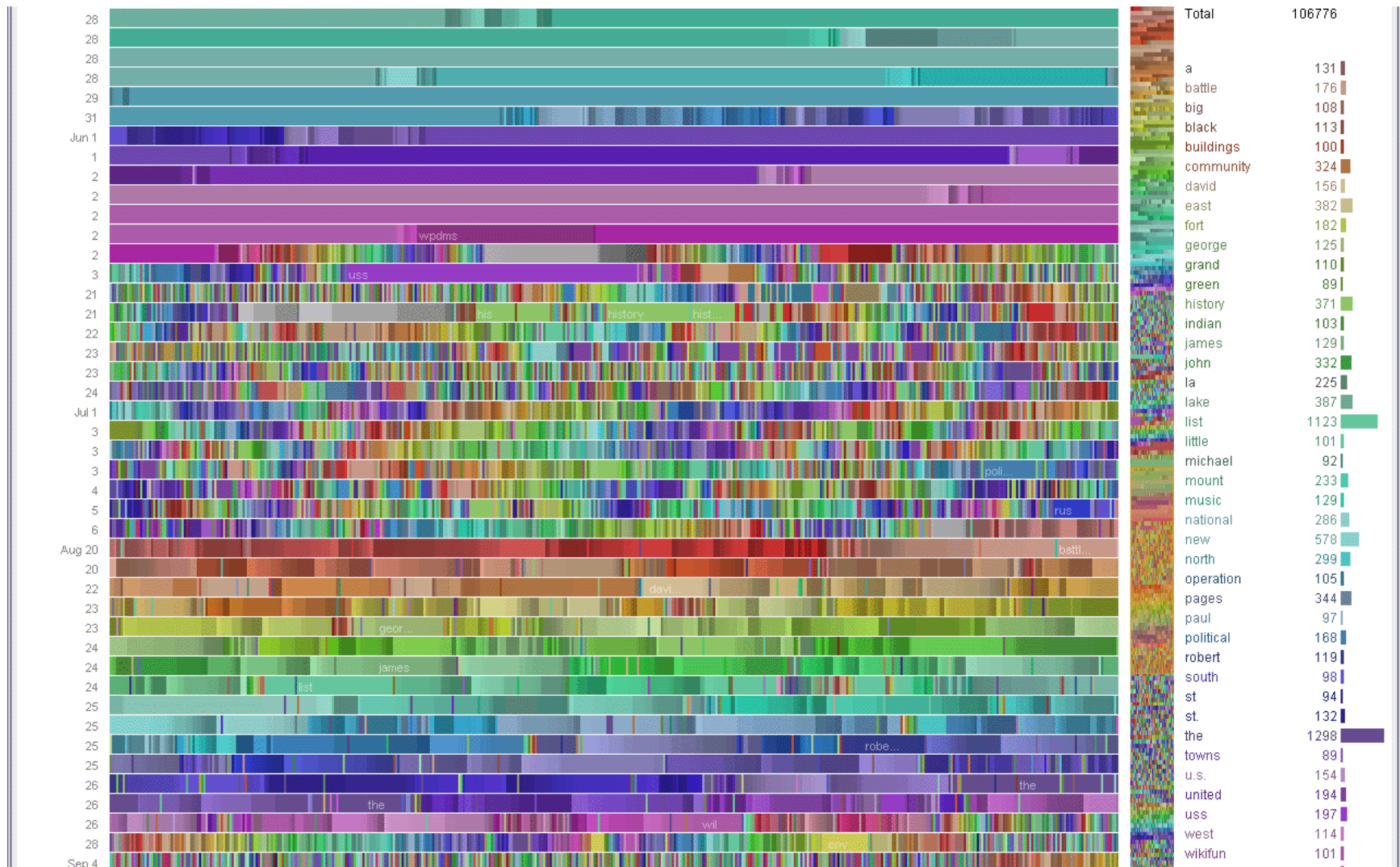
Massive real-time data analysis



Big Data – a Louira de Vestido Vermelho?



Um exemplo menos esotérico





“You can't manage what you can't measure”

William Thomson, Lord Kelvin



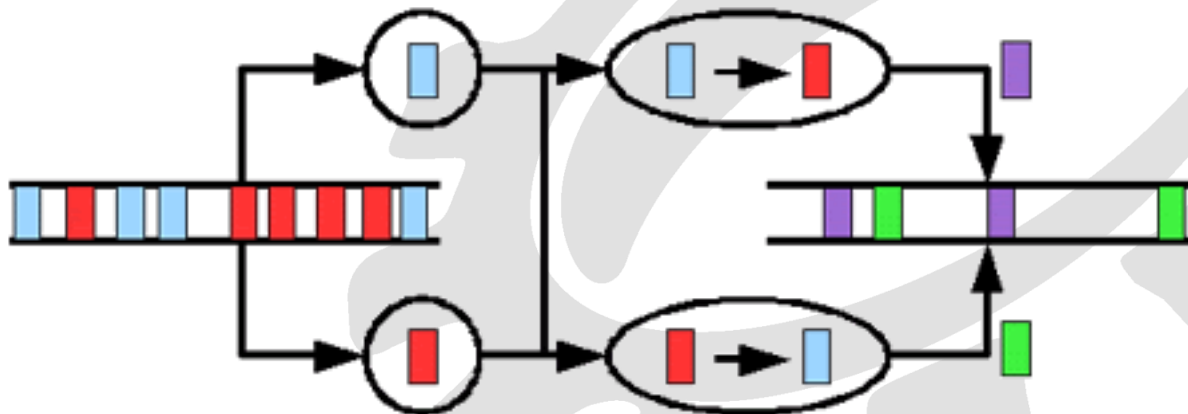
“You can't manage what you can't measure”

William Thomson, Lord Kelvin

...or can you?

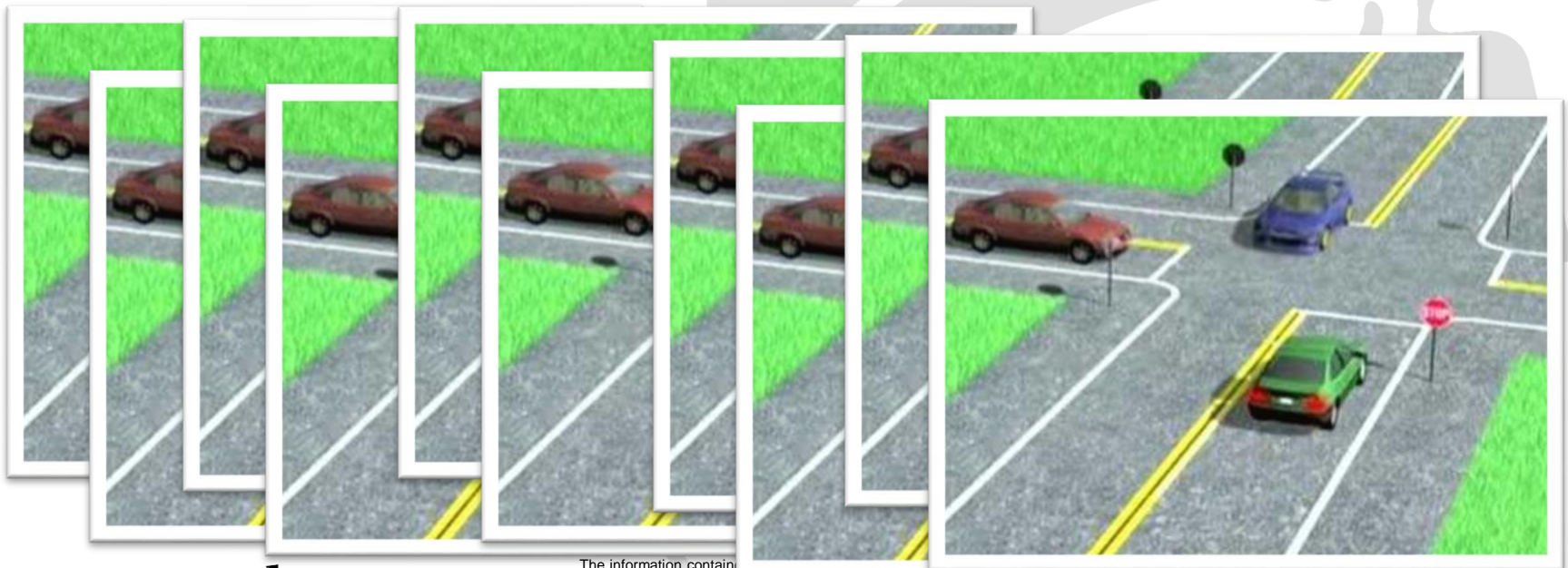
Processamento de Eventos Complexos

- A análise, em tempo real, de um fluxo de contínuo de dados em busca de formas de correlação de padrões complexos, gerando do mesmo novos eventos e significados relevantes

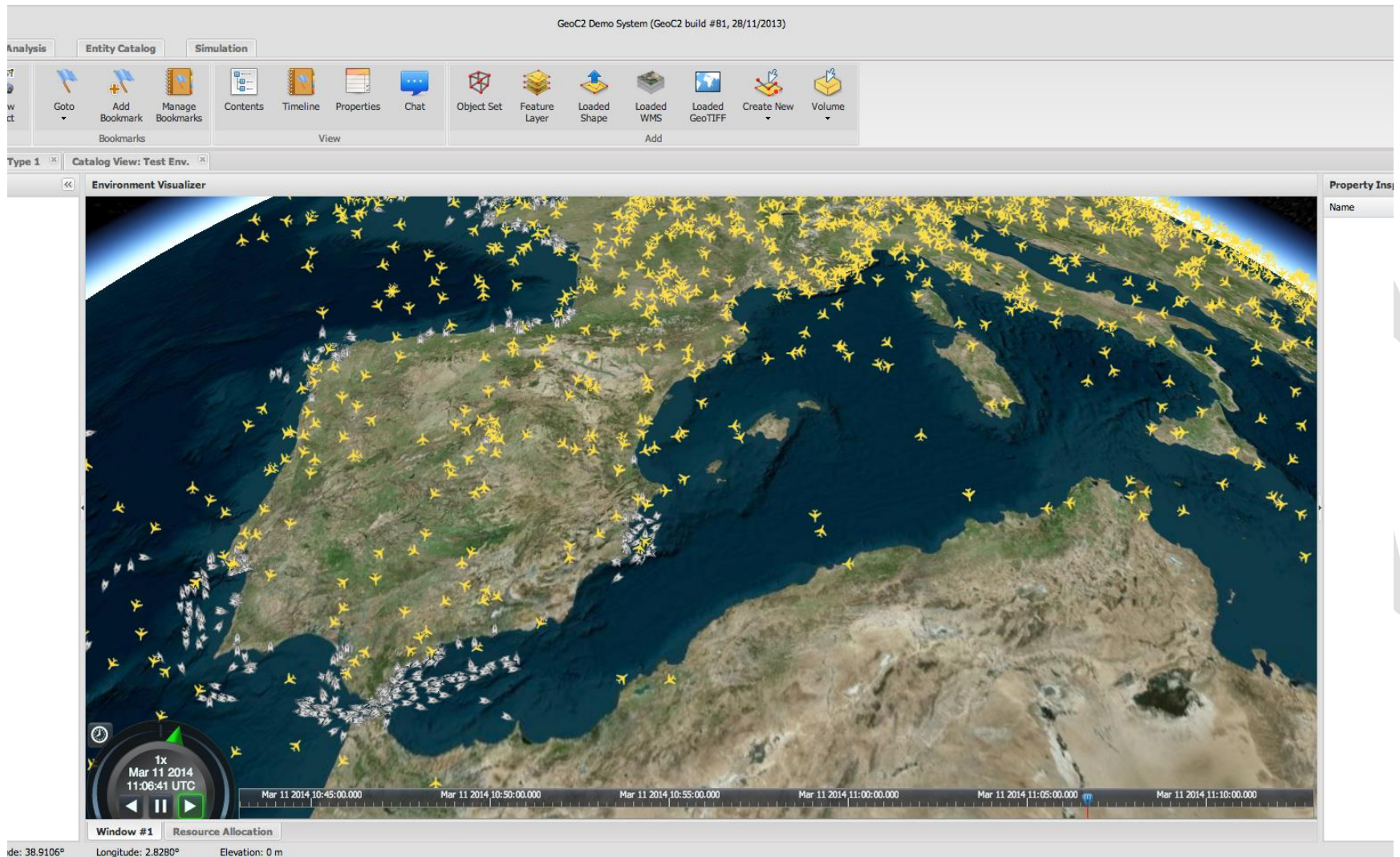


Raciocínio baseado em Casos

- Análise do comportamento passado de um sistema, sem conhecimento à priori das regras implícitas do mesmo, de forma a responder a novos casos que lhe são apresentados

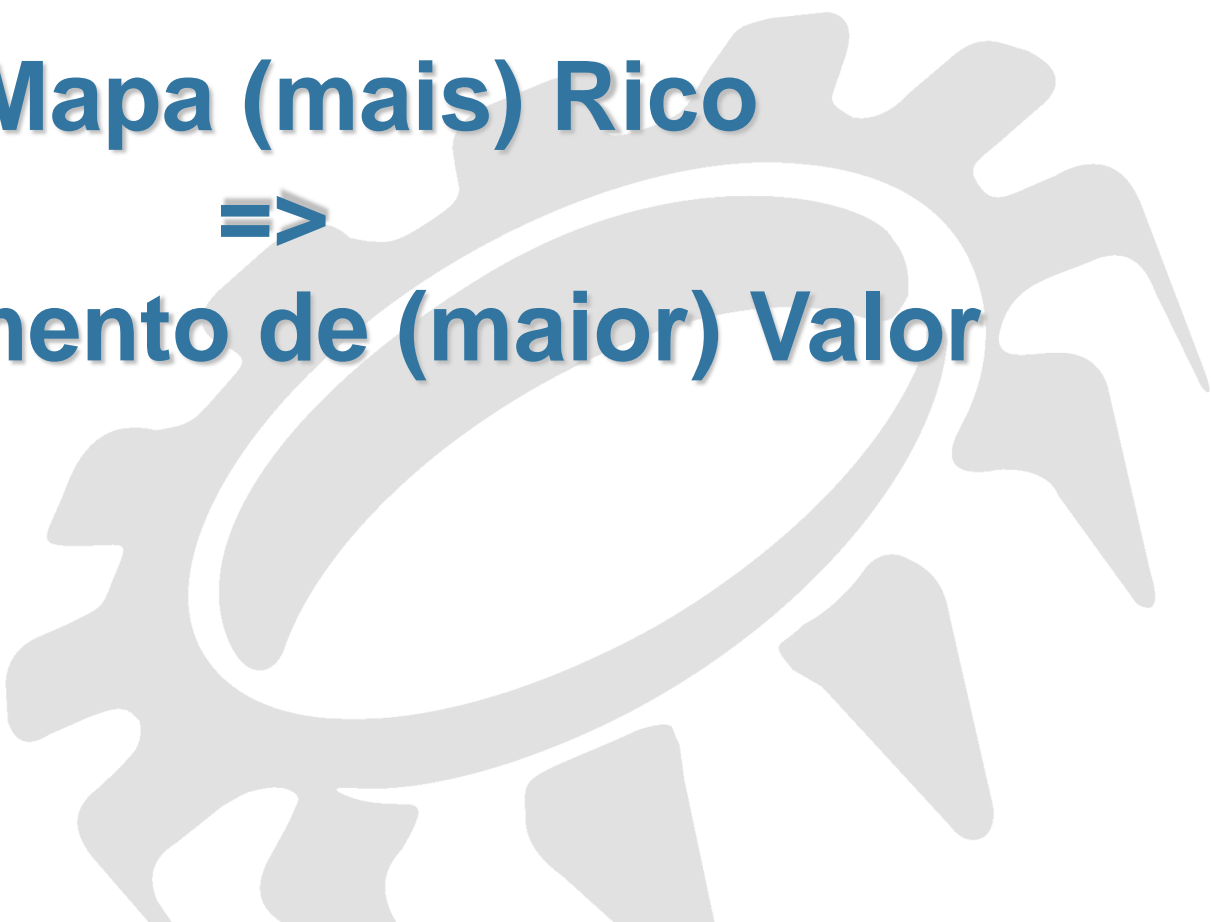


Transformar dados, muitos dados...



...apenas no que é relevante.





Um Mapa (mais) Rico => Conhecimento de (maior) Valor

Mission Planning & Execution Monitoring

The screenshot displays the GeoC2 Web Client interface, a demonstration environment for GeoC2 build #23 - DEVELOPMENT. The interface is divided into several sections:

- Top Bar:** Includes a browser address bar showing "localhost:8080/GeoC2/index.html" and a "UNCLASSIFIED" label.
- Navigation Tabs:** Home, View, Analysis, Planning, Execution, Simulation, and Debug.
- Toolbars:** Contains various icons for navigation (Center North, Zoom, Follow Object), bookmarks (Goto, Add Bookmark, Manage Bookmarks), view (Contents, Timeline, Properties, Chat), and data loading (Object Set, Feature Layer, Loaded Shape, Loaded WMS, Loaded GeoTIFF, Shape).
- Mission Outline Table:** Lists resources and operations for "Mission Type 1".
- Mission Plan Timeline:** A Gantt chart showing the sequence of operations from Sunday 01/09 to Monday 02/09.
- Operation Inspector:** A table for monitoring individual operations.

Mission Outline Table:

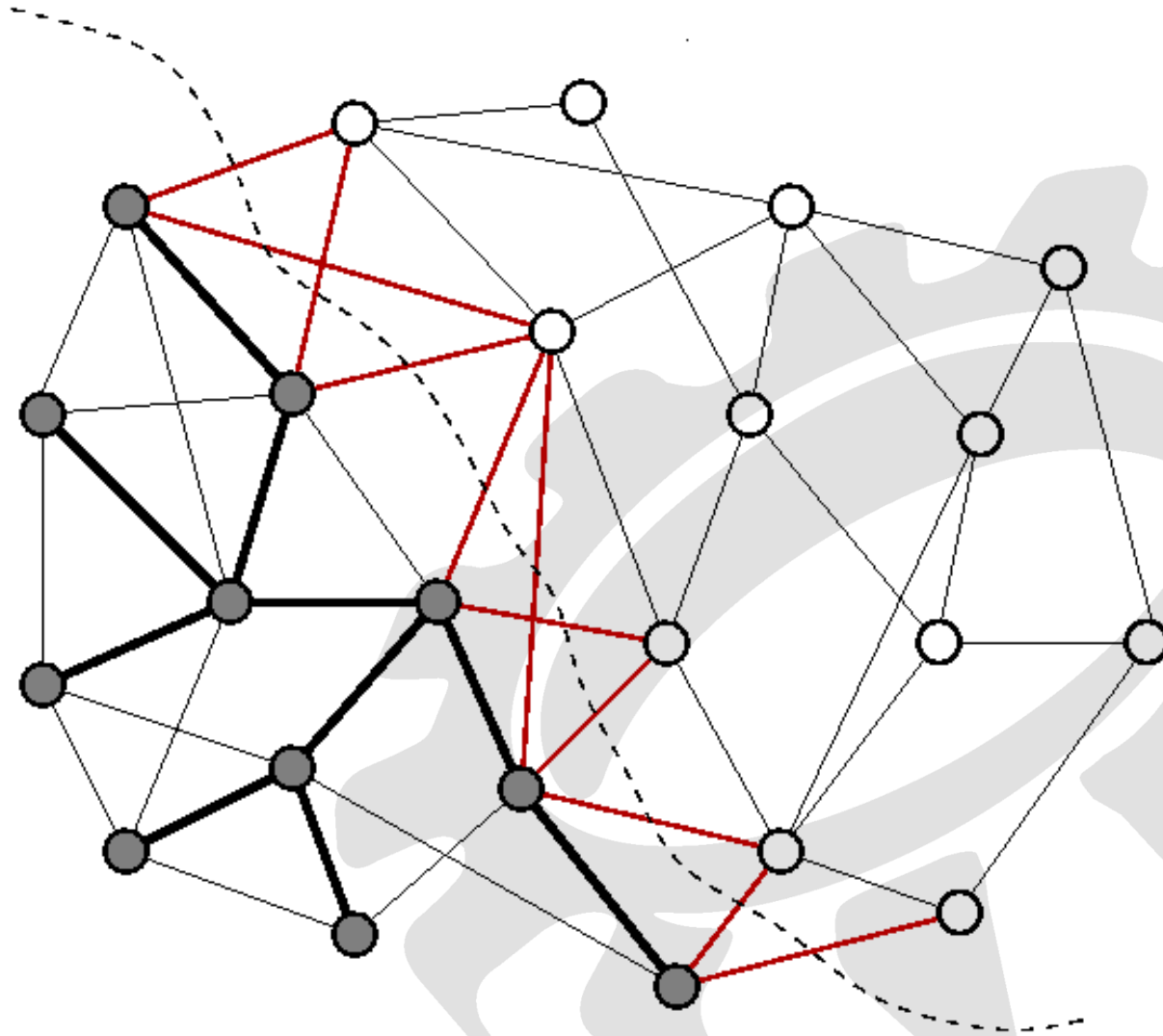
Resource	Operation	Duration
4	Operação SAR	5 hours
385	Fase 1: Busca de Vítimas	3 hours
315 Airplane	Voar para a Area Afectada	1 hour
705 Airplane	Fazer o Padrão	1 hour
646	Vitimas Encontradas	1 hour
770 Airplane	Esperar pelo	1 hour
944	Fase 2: Extração	1 hour
671 Helicopter	Rendez-vous	1 hour
318	Heli no Local	1 hour
637 Helicopter	Fazer a Extração	1 hour
113	Extração Executada	0 hours
503	Fase 3: Retorno	2 hours
589 Airplane	Voltar ao Montijo	1 hour
319 Helicopter	Ir para Figo Maduro	1 hour
394	Missão Concluída	0 hours

Mission Plan Timeline:

The timeline shows the following sequence of operations:

- Sun 01/09:**
 - 19:00 - 20:00: Operação SAR
 - 20:00 - 21:00: Fase 1: Busca de Vítimas
 - 21:00 - 22:00: Fly to Location (Airplane)
 - 22:00 - 23:00: Search for Victims (SAR)
 - 23:00 - 00:00: Vitimas Encontradas (Airplane)
 - 00:00 - 01:00: Loiter over Location (Airplane)
 - 01:00 - 02:00: Fase 2: Extração (Ship)
 - 02:00 - 03:00: Fly to Location (Airplane)
 - 03:00 - 04:00: Extract Victims (SAR) (Helicopter)
 - 04:00 - 05:00: Taxi on Location (Helicopter)
 - 05:00 - 06:00: Return to Base (Helicopter)
 - 06:00 - 07:00: Abort Flight (Helicopter)
 - 07:00 - 08:00: Return to Base (Airplane)
 - 08:00 - 09:00: Missão Concluída (Helicopter)
- Mon 02/09:**
 - 00:00 - 01:00: Fase 3: Retorno
 - 01:00 - 02:00: Return to Base
 - 02:00 - 03:00: Missão Concluída

Adaptive Execution and Corrective Plans



In-situ sensing and actuation platforms

- Inovaworks also developed an in-situ platform for automated dispatch and event capture and cataloguing





Um Mapa (mais) Rico => Conhecimento de (maior) Valor

Partilhável. Vivo. Interactivo.

GeoC2

Thank You!



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