Business Continuity Planning with Bareos and rear

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Who am I ?

- Independent Unix System Engineer since 1996
- Unix user since 1986
- Linux user since 1991
- Open Source contributor:
  - Upgrade-UX
  - Relax and Recover (rear)
  - SIM Installation and Logging (WBEMextras)
  - Adhoc Copy and Run (adhocr)
  - Config-to-HTML (cfg2html v6.x)
  - Make CD-ROM Recovery (mkCDrec)



Buzz Words

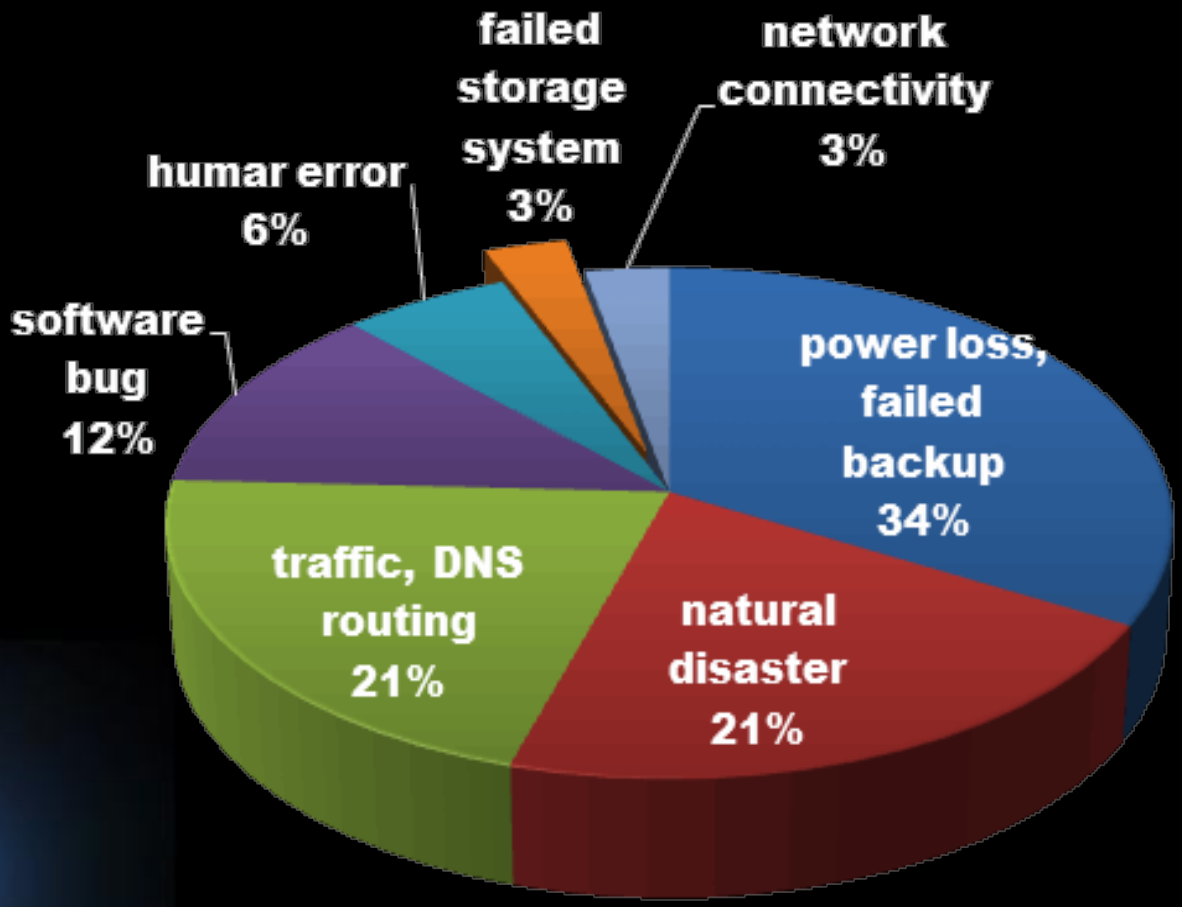
Backup and Replication

Cloud disaster recovery

Business Continuity



Types of Business Interruptions



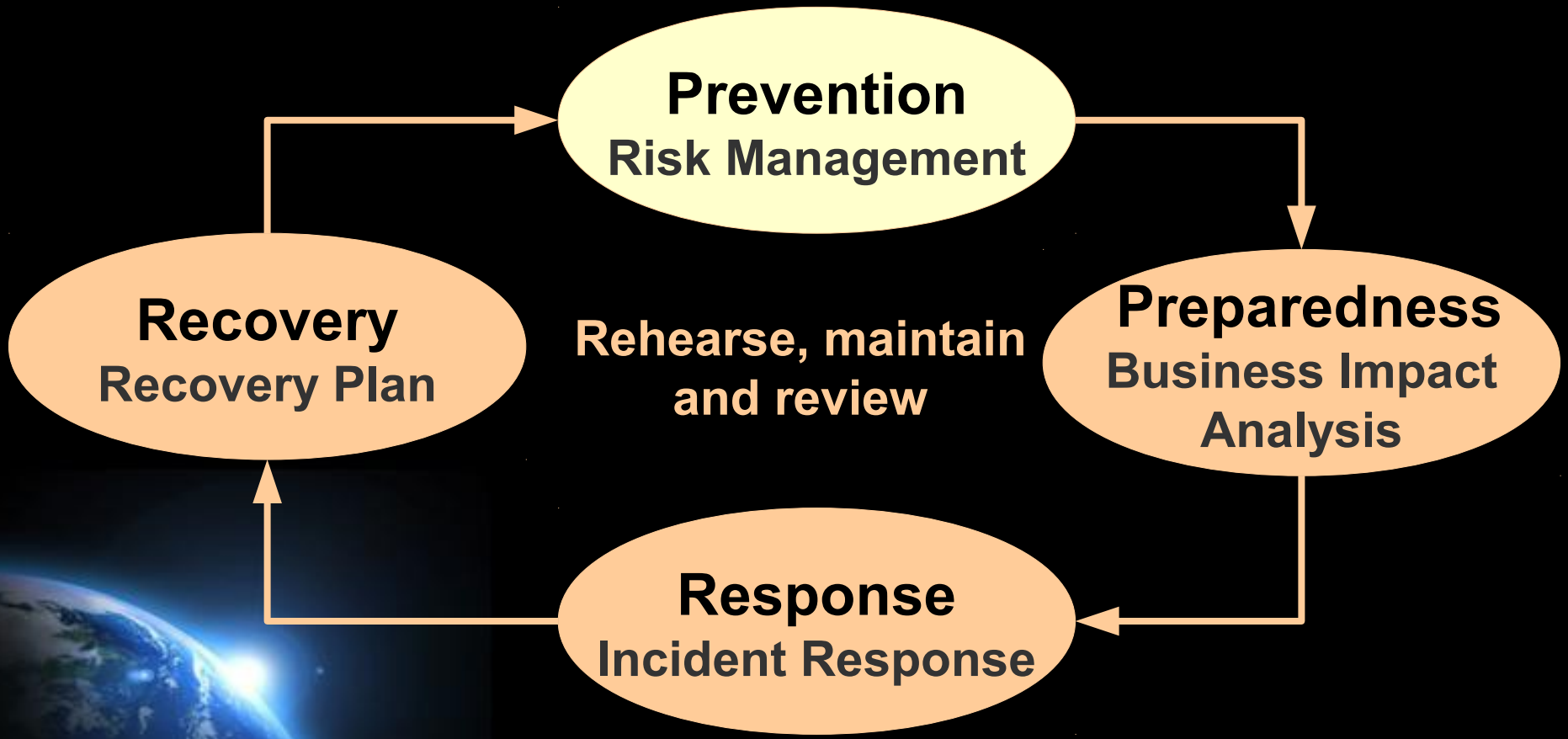
Data from IBM

Business Continuity Planning

- Goal = minimize service interruption
- Business continuity (BC) specifies how a company plans to restore core business operations when disasters occur



Business Continuity Planning Processes



Prevention
Risk Management

- Evaluate Risk
  - Step 1: identify risks that could impact your business
  - Step 2: analyze risks to assess their impacts
  - Step 3: prioritize risks
  - Step 4: treat risks to minimize their impact
  - Step 5: develop and review your risk management plan



Prevention
Risk Monitoring

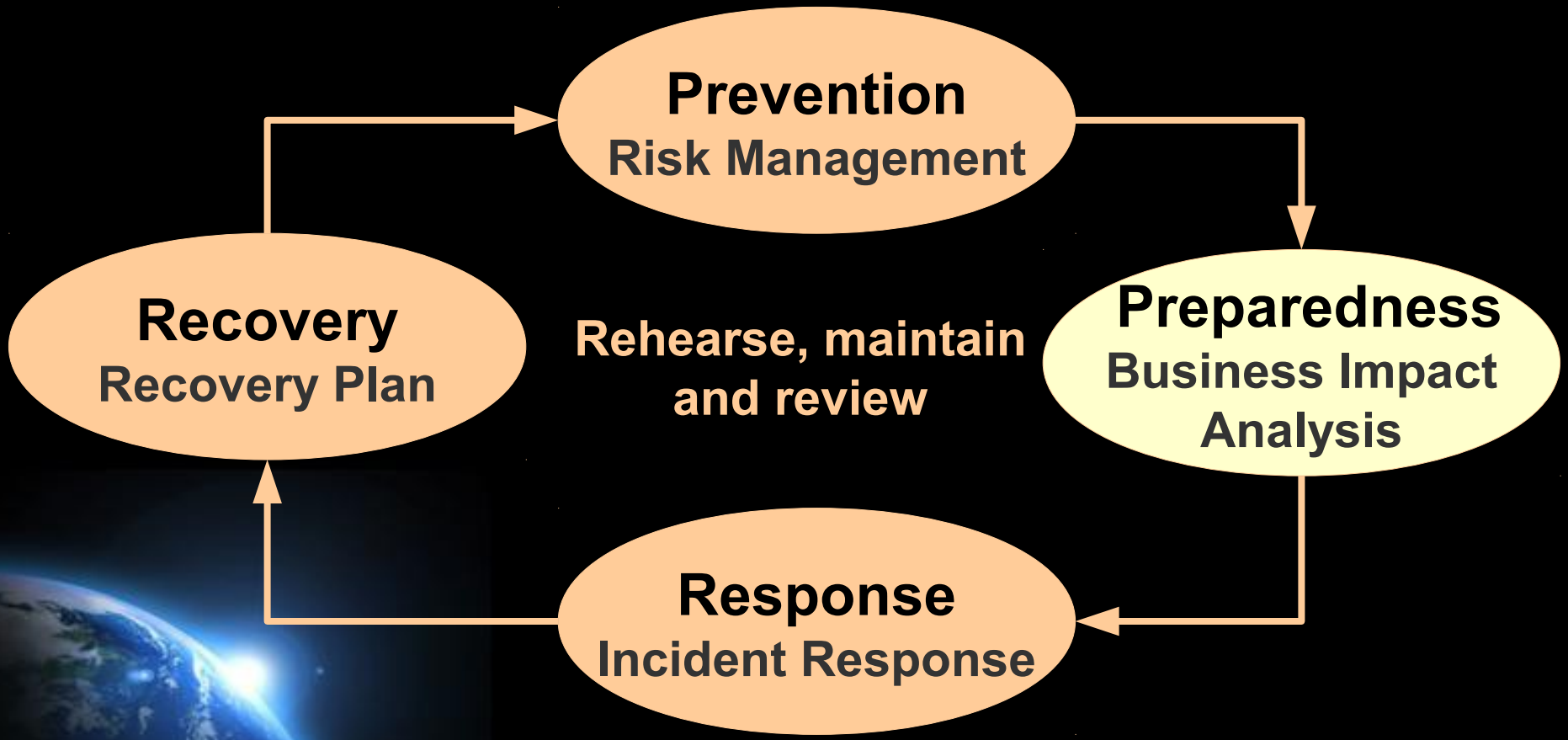
- As business change the risks change accordingly : periodic review required
- Monitor and review the strategies to manage the risks : update!
- Why?
  - Reducing insurance fees
  - Reducing the time when business is unable to operate
  - Reducing loss, damage to equipment in general



Prevention is a lot more...

- Quality control
- Back-up of data (incl. off site)
- Staff training
- Select the proper staff
- Workplace health & safety
- Cloud Computing
- Security measurements
- Emergency procedures
- Maintenance of HW/SW
- Evacuation plans
- Regular drills & tests

Business Continuity Planning Processes



Preparedness
what can you do?

- Taking action prior to an incident occurring to ensure an effective response and recovery
- Proactive and planning are key!
- It won't happen to me? *Right....*
- Business Impact Analysis (BIA)



Preparedness
Business Impact Analysis

- Discover which processes are vital
- Prioritize and cut scope
  - False assumptions about criticality
  - Understand why certain function are more critical then others
  - At what cost? Management must decide
- Requires cross-departmental collaboration



Preparedness
Business Impact Analysis

- Executive staff defines mission critical applications
  - Agree upon what is acceptable downtime (Recovery Time Objective or RTO)
  - Agree upon your recovery point objective (Recovery Point Objective or RPO)
  - Zero downtime is an utopia and becomes extremely expensive
  - You need to guide the executives

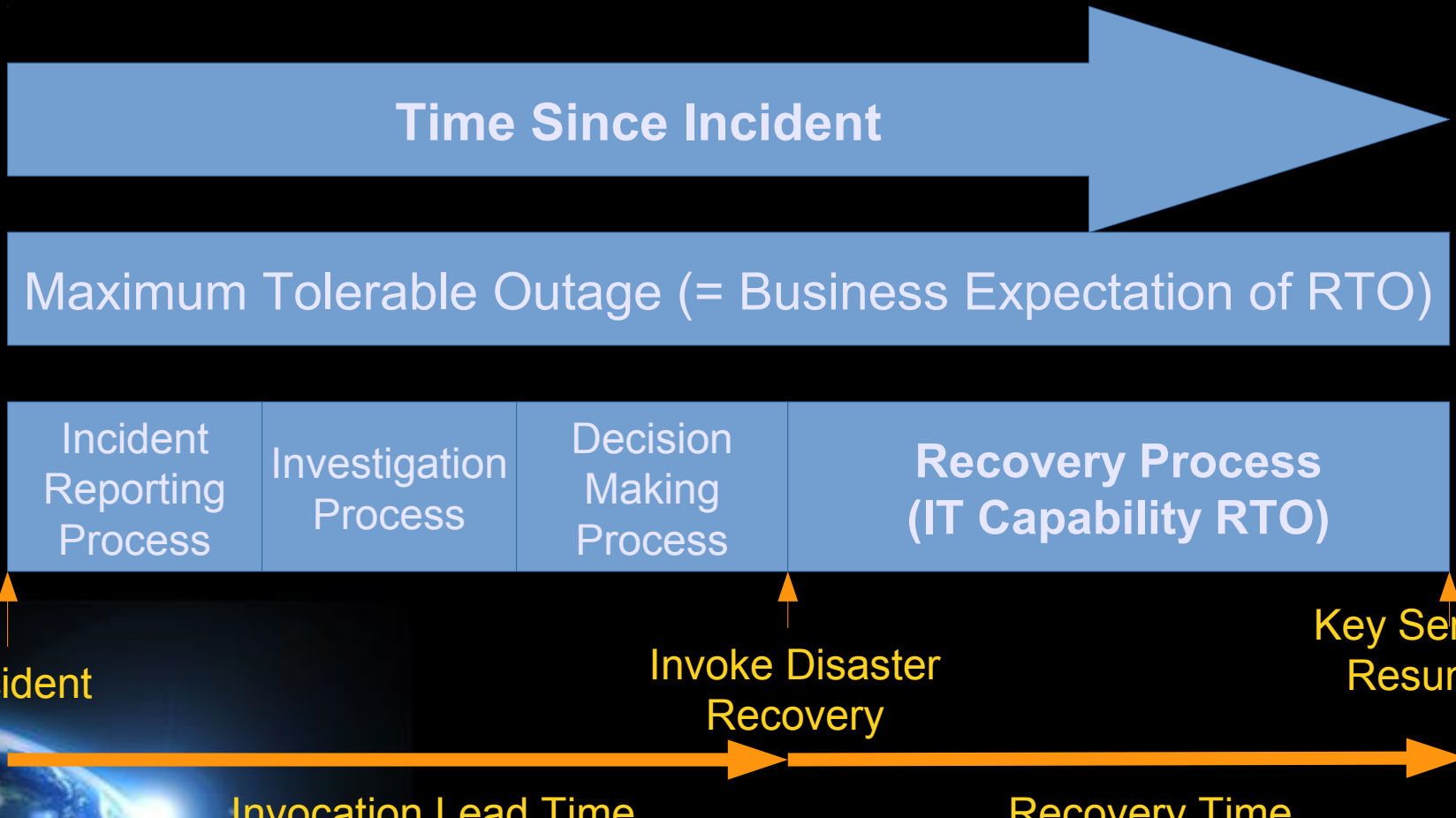


Business Impact Analysis
RPO - RTO

- RPO: Recovery Point Objective
  - How much data are we prepared to lose
    - Zero data loss?
    - Weekly, daily, or in between backups?
- RTO: Recovery Time Objective
  - How much downtime can we afford?
  - Lower recovery time = higher cost
  - Focus on critical processes



Business Impact Analysis
MTO



Business Impact Analysis
Example BIA

- Company X is a mail order retailer
- Almost all revenue is from on-line sales
- Online catalog of 25.000 items
- Online community message board
- Office in one location, including warehouse, IT and call center





Business Impact Analysis
Potential Risks

- Theft (internal & external)
- Fires, Floods, Earthquakes
- Power Outage
- Server Crash (HW or SW)
- Loss of key personnel
- DDoS or web site hacked/outage
- Water pipe burst



Business Impact Analysis
Identify Key Processes

- Pending order
- Tracking stock
- Online assistance
- Credit card processing
- Online message board
- Search database
- IT maintenance



Business Impact Analysis
Inter-dependencies

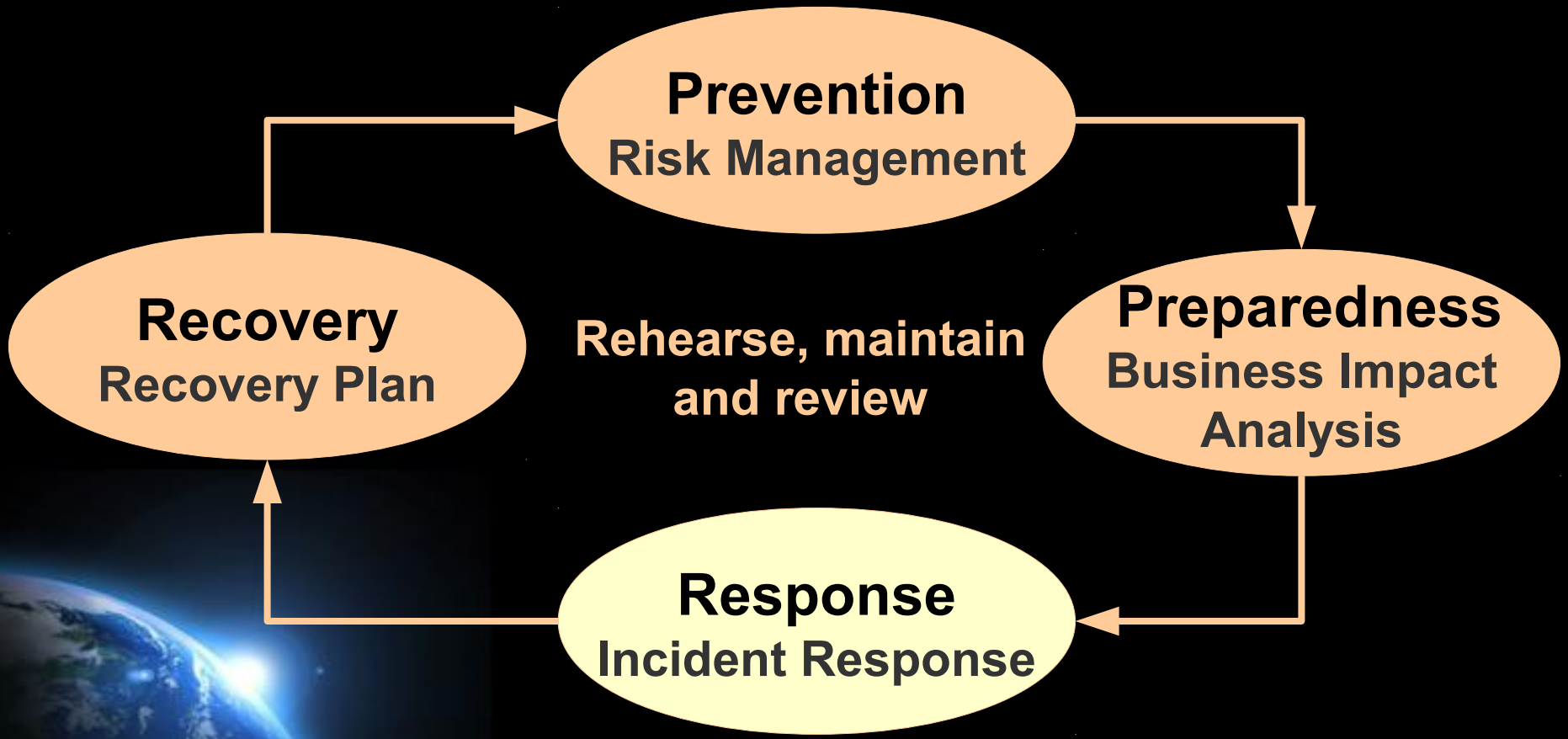
- Pending orders
- Tracking stock
- Online assistance
- Credit card proc.
- Online message board
- Search database
- Stock refill
- IT maintenance
- Public relations
- Legal compliance
- Vendor agreements
- Server room clean-up
- Budgeting
- Emergency loan
- Financial reporting



Business Impact Analysis
Impact on operations

- Online store: high
- Credit card processing: high
- Rebuilding: medium
- Message board: low
- Product search: low
- Financial reporting: low
- Based on revenue value!

Business Continuity Planning Processes



Response

- A response team: experts who are able to understand and evaluate the specific crisis
  - Team leader
  - Response team
  - Spokesperson
  - Others...
- The crisis should be their only concern!



Incidence Response Plan

- Scenario's
- Contact list
- Check lists
- A 'GO' pack:
  - Laptop with all docs; Google doc, ...
  - Event logging
  - Evacuation plan
  - Authority list

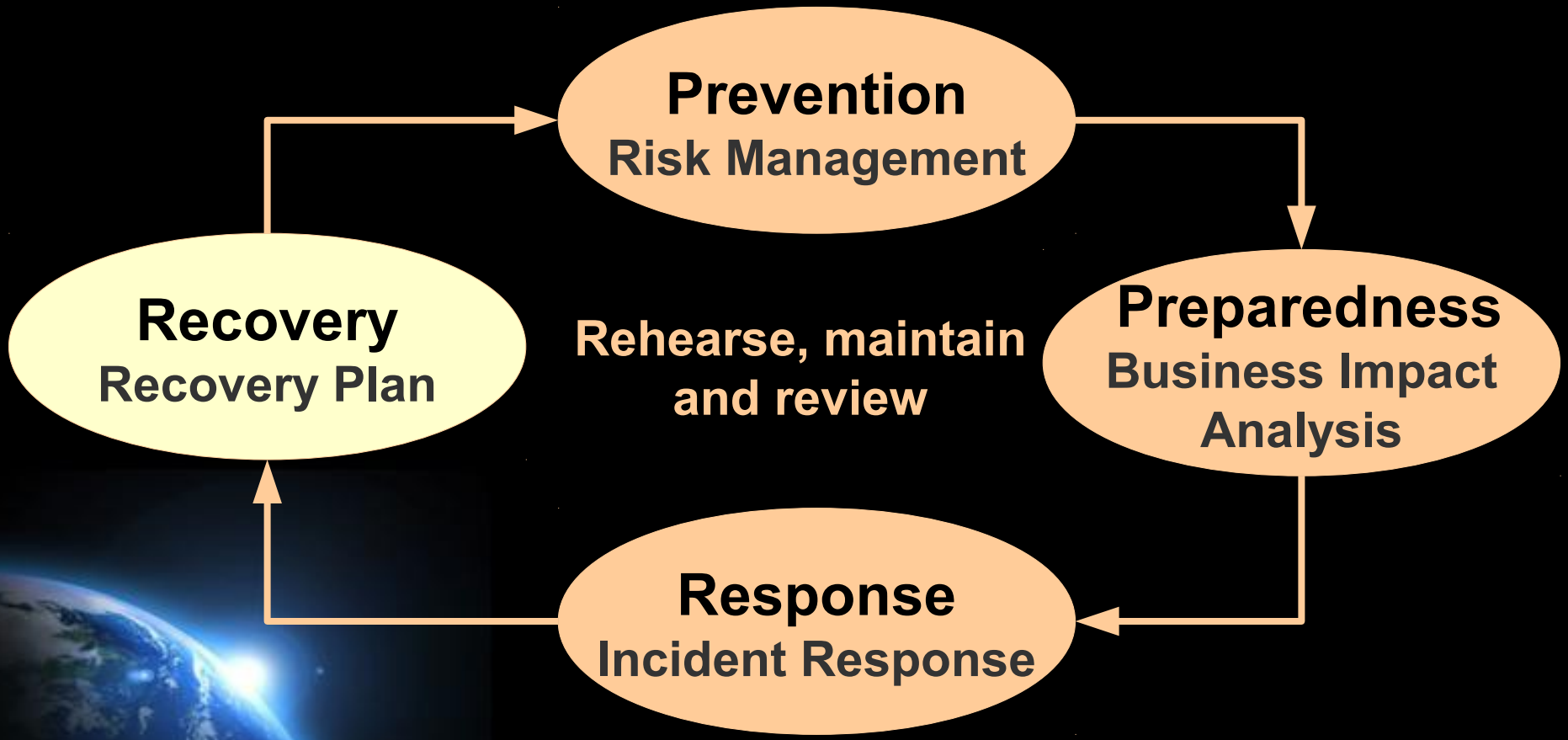


Activate the response team

- Define the real problem and lay out the strategy to resolve
- Act quickly and do not forget to communicate (twitter,...)
- Assume the worst so you are prepared (escalation)
- Use the Subject Matters Experts effectively



Business Continuity Planning Processes



Recovery

- During the incident we concentrate on disaster recovery
  - We have a DR plan, right?
- What about after the crisis?
  - Damage to property, IT equipment, ...
  - Damage to reputation (do not forget communication)
  - Insurance is very important



Disaster Recovery

Disaster Recovery (DR) is the process, policies and procedures that are related to preparing for recovery or continuation of technology infrastructure which are vital to an organization after a natural or human induced crisis



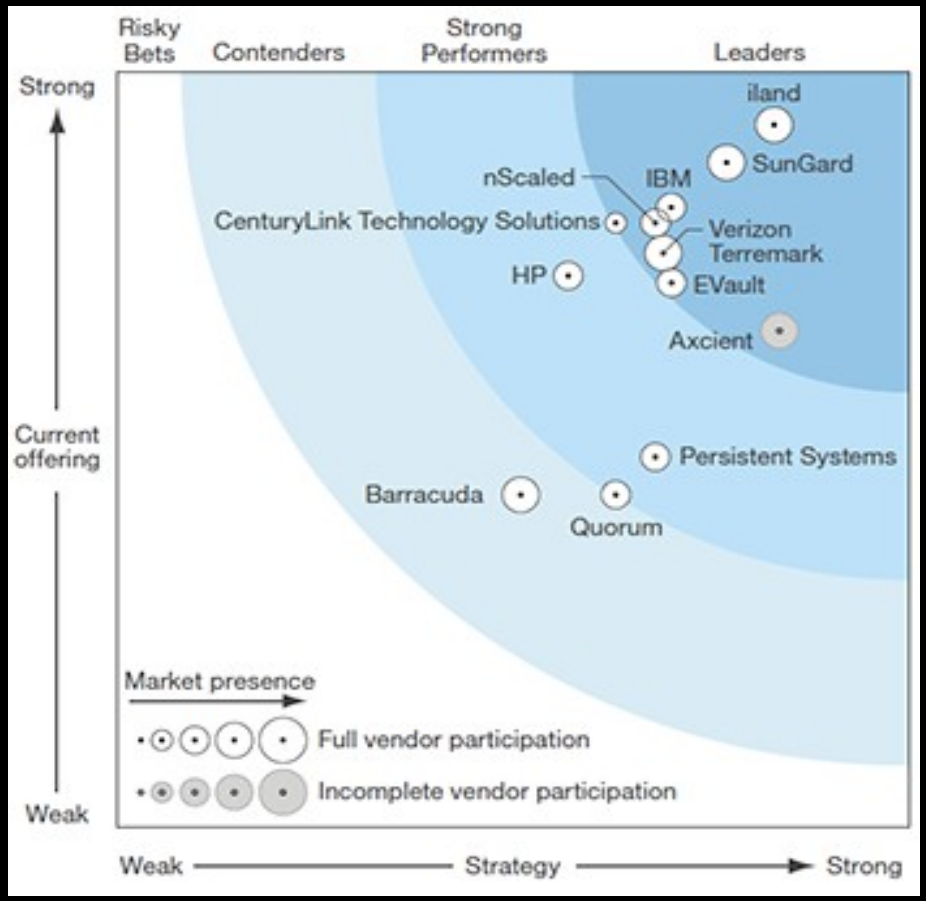
Disaster Recovery is not

- Backup, which is mostly about data loss prevention, DR is about *service availability* (low RPO and RTO)
- Data replication to ensure consistency between redundant sites
- DR complements other *High Availability* activities (dealing with DR prevention), DR is for the times when prevention fails



Cloud Disaster Recovery

- Approaches
  - Do it yourself
  - DRaaS
- Techniques
  - Cold DR
  - Warm DR
  - Hot DR



Source: The Forrester Wave: DraaS Providers, Q1 2014

Critical server: backup system

- In DR site the backup server is key
- Do not forget to create a DR plan for this backup server (rear)
- Synchronize the backup data
  - Disk synchronization
  - Tapes (vaulting)
  - Cloud Storage (if size permits)



Bareos Backup Server

- Bareos (Backup Archiving REcovery Open Sourced) is a fork of Bacula (2010)
- URL: http://www.bareos.org/en/
- Is an excellent choice as it works with
  - Tapes, disks, deduplication
  - Cloud storage
  - Integration with rear



Relax-and-Recover (rear)

- Open Source Bare Metal Restore (DR)
- URL: http://relax-and-recover.org/
- Online: snapshot of running system
  - Creates bootable image (ISO, PXE, USB)
  - Creates archive via GNU tar, rsync, or
  - Integrates with backup software:
    - Bareos, bacula, rbme, duplicity (open source)
    - Commercial backup software (TSM, NBU, DP, GALAXY, NSR, SESAM)

Rear features

- Fully automated recovery
  - On same hardware
  - Similar hardware
- P2V, V2V, V2P, migrate storage (SAN)
- During recovery rear will
  - Prepare storage (partitioning, file systems, mount points)
  - Restore archive from backup
  - Install boot loader



Rear using bareos

- Clients system of bareos
  - BACKUP=BAREOS
  - Rear -v mkrescue
- Bareos backup server
  - BACKUP=NETFS
  - BACKUP_URL=<external storage>, e.g. NFS, USB, ISO
  - OUTPUT=ISO, USB



Recover system

- Recover bareos client with rear
  - Rear -v recover
  - Recreates all file systems
  - Uses bareos to restore all data
- Recover bareos server with rear
  - Rear -v recover
  - Recreates all file systems
  - Uses external storage to restore data
  - Restore latest backup via tape(s)



Business Continuity



Bareos &
relax-and-recover

Prevention
Risk Management

Preparedness
Business Impact Analysis

Response
Incident Response

Recovery
Recovery Plan

Rehearse, maintain and review







At your service...



htttp://www.it3.be/rear-support